Economía y Sociedad, Vol. 20, Nº 48, julio-diciembre 2015, pp. 1-21
EISSN: 2215-3403 URL http://www.revistas.una.ac.cr/economia

WHAT MAKES MICROFINANCE HAPPEN?

¿CUÁLES SON LAS CONDICIONES QUE GENERAN EL ÉXITO MICRO-FINANCIERO?

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Abstract

In this paper we have attempted to shed light on what makes development happen from those determinants that enable microfinance work as an effective tool to eradicate poverty. The effectiveness of such instrument in the generation of wealth to the poorest class demand overcoming the minimalist approach that condemns its practices to a mere provision of microfinancial services. This hypothesis will be analytically and empirically proven assuming human development as a cause and not only as an outcome of the microfinance success. To such end, two regression lines were designed where variables such as education, health and food security proved to be explanatory determinant to explain income behaviour for those beneficiaries of the microfinance programs.

Keywords: Determinants of development; human development; microcredit; poverty.

Resumen

En este trabajo nos aproximaremos al estudio de las causas del desarrollo desde aquellos elementos que hacen de la micro-financiación una herramienta efectiva en la erradicación de la pobreza. La eficacia de tal instrumento en la generación de riqueza a las clases más empobrecidas exige superar el marco minimalista de actuación que condena sus prácticas a la mera provisión de servicios microfinancieros. Esta proposición será

Doi: http://dx.doi.org/10.15359/eys.20-48.4

Fecha de recepción: 29-10-15. Fecha de reenvío: 23-11-2011. Fecha de aceptación: 23-11-15. Fecha de publicación: 08-12-15

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corroborada analítica y empíricamente desde la asimilación del desarrollo humano como causa y no solo resultado del éxito microfinanciero. Para ello diseñamos dos rectas de regresión donde variables como la educación, sanidad y seguridad alimentaria mostrarán ser determinantes a la hora de explicar el comportamiento en los ingresos de los beneficiarios de tales programas microfinancieros.

Palabras claves: Determinantes del desarrollo; desarrollo humano; microcréditos; pobreza.

Minimalist Approach and Microfinance

The classical inquiry of development studies "What makes Economic Progress happen?" has been strongly discussed along the history of economic thought by a large number of scholars with disputed results (Smith, 2007; Landes, 1999; Rogers & Stern, 2005; Acemoglu & Robinson, 2012). Shedding light on why some countries are rich while others maintain poor is considered as one of the key point of social science. Recently, one of the methods popularized to face this issue has been microfinance, as a financial poverty's inclusion to serve in a better way humanity´s most pressing needs (Yunus, 2010). Financial constrains have been highlighted as an underlying developmental barrier that holds a vast majority of developing countries' population under the absolute poverty line.

Microfinance movement began with the revolutionary idea that formal markets are unable to attract informal sector´s financial demand (Yunus, 2001; Robinson, 2004). Such market failure was enough to enrich an academic literature where microfinance was placed into the core of development debate. In last three decades, it was mostly accounted that welfare in developing countries could rise up whether financial inclusion strategy were implemented, among others, in those areas where capital accumulation unveiled disarticulated. Some authors such as Karlan & Valdivia (2011) stated that a lack of guaranties as result of badly-defined property right impede poor people reasonably access to financial program, condemning them into a vicious circle of poverty and debt. The potential high success in debt-repayment was declared as an objective fact by which the poorest could well-integrate into the financial sector as long as finance programs adapt to beneficiaries' situation (Aghion & Morduch, 2003). To some extent this proved correct, with some Microfinance Institutions making profits without subsidies around the world. Nevertheless, the matter was highly focused on a restrictive interpretation, confusing poverty decline with financial sustainability (Jimenez, 2013).

This new kind of social business developed by M. Yunus among others, has recently received some strong criticizes in terms of its real capability to explain the struggle of poverty across the

developing world (Banerjee & Duflo, 2011). The minimalist approach defined as the mere provision of financial resources to poor people, has been insufficiently proved to enhance their standards of living. The intellectual struggle among pro-minimalist and pro-integrated approach has driven microfinance and poverty reduction debate in an infertile and irresolvable understanding (De la Cruz et al., 2009; Cohen & Nelson, 2011). In this paper, we account to review the epistemological bases in which microfinance is traditionally settled. To this end, we contrast the predictable potentiality of minimalist approach from a reinterpretation of its conceptual framework. Our primary goal is to reflect on the theoretical question regarding to "why there is a strong controversial related to microcredit impact on fostering human development" (Nanor, 2008; Karlan & Zinman, 2009; Devoto et al. 2011). Also, we will expose the specific limitations of minimalist approach and its integrated alternative, introducing a new re-conceptualization of microfinance as a non-aprioristic developmental phenomenon. In this sense, we propose a different microfinance scenario, analyzed as result of the economic and social system in which it gets involved. Finally, we design an econometric regression in order to corroborate this issue. Taken three distinctive human variables such as Education, Health and Food Security, we hypothesize a correlation between those independent variables and microcredit impact on micro-borrowers standard of living.

The aim of this paper is not fully theory-oriented, but also motivated by the gap between the classical minimalist and integrated approaches and the empirical reality. In most works related to minimalist theory (Robinson, 2004;Yunus, 2010) a surprisingly uniform answer defines microcredit as a suitable instrument for stimulating profitable investment when the empirical evidence tends to suggest a different story. Over 50 studies of microcredit impact assessment, Khandeker (1998) showed that the impact on poverty reduction and food security across developing countries is insignificant, and the Poverty Action Lab, after nearly 300 studies implemented, showed a slightly positive effect on reaching Millennium Development Goals. Similarly, the alternative approach was tested equally unable to increase microfinance efficiency. Despite some positive outcomes listed by Cohen & Nelson (2011) and Leatherman & Dunford (2011), where microfinance effectiveness increase when it is pooled with others no financial services, a substantial number of studies have not appreciated significant results (Fisher&Sriram, 2002), (Karlan&Zinman, 2009). Our model offers a suggestive explanation of why neither of those microfinance approaches work efficiently as aprioristic, designing new theoretical and econometric interpretation of microfinance as result of other phenomena.

In our study, it is found that microfinance effective operability (financial sustainability and social purposes) do not derive from its self-potential features, but the social and human condition where microfinance program is implemented. It is not only a social supporting as integrated approach defends (De la Cruz *et al.*, 2009), but a new manner of (Meta)-analysing microfinance from developmental experience. We show that when microfinance services fail to reduce poverty, it is because programs have not been implemented taking into account how human

development variables radically affect those aspect that determinate microfinance success. Such way of analysing microfinance strongly assumes human development as essential part of microfinance social targets. In a first sight, this argument might appear to be ambiguous since microfinance is focused as "object under analysis" rather than being a direct instrument for development. Nevertheless, it is exactly in such meta-philosophy of assuming microfinance as an instrument to be explored where this work gains its relevance.

This paper provides a theoretical support for a new understanding of economic development. Analysing microfinance throughout this methodology supposes explaining development from a new multidisciplinary approach rather than fixing economic phenomena to a simplistic and mechanical classical interpretation. The rest is organized as follow. Section 2 discusses the related literature. Section 3 presents the new theoretical microfinance approach considered as an "epistemological bridge" from *minimalist* and integrated microfinance approach to a new manner of conceiving microfinance. Section 4 presents an econometric model, which justifies the theoretical assumptions evolved in preceding section, and Section 5 presents the results. Section 6 concludes.

Microcredits and Human Development

The specific literature related to *ex-post* microfinance approach is clearly limited. Analysing microfinance as consequence of others phenomena has not been largely considered by academic due to the dominance of classical epistemological framework that for so long has monopolized development economic research.

Microfinance literature has been traditionally distinguished by two different models of lending. On one hand, microcredit lending with joint liability that Aghion & Murdoch (2003) has strongly defended as a suitable strategy to assure repayment through peer pressure in microcredit schemes. Others such as Devoto *et al*. (2011) argue that this kind of lending may also reinforce social activities, reducing monitoring and information costs. Besley & Coate´s (1993) and Ghatak & Guinnance´s (1999) research defend joint responsibility as the optimal system to reduce verification costs and moral hazard problems using a "frequent repayment" system. Precisely, it is here where our paper gains its originality, since both sets of works account only one side of the equation. For example, some researchers such as Mcintosh & Wydick (2002) and Field & Pande (2007) have severely disputed the group-lending´s potential benefits. The difficulty to create optimal size of groups lending and the increasing cost to generate social capital among groups (Sadoulet, 2003) tend to diminish potential benefits. On the other hand, it has recently raised individual liability as alternative method to overcome some joint liability barriers. Throughout a progressive lending and for an empirical research implemented in Filipinas, Yunus (2001) and Giné & Karlan (2007) concluded that this individual mechanism control is not only a more cost-efficient, but return rate-effective.

Our paper is clearly far related to all of those empirical works unable to prove significant impact on poverty reduction and income distribution (Khandker, 1998, Montgomery, 2005, Nanor, 2008, Karlan & Zinman, 2009). Even those that propose an integrated approach as De la Cruz´s et al. (2009) and Nelson´s (2011) studies are also distant from our aim. Some integrated research studies such as Karlan & Valdivia (2011) in which they incorporated financial advice to increase the potential effects of micro-lending on employment and female empowerment, have not shown significant correlation. In any case, this particular approach is underlying to start designing our new epistemological basis due to it inserts in an insufficient but underlying way human variable into microfinance context.

Searching for a New Theoretical Approach

Despite *minimalist* microfinance approach has particularly spread the understandable spheres of economic development; it is not enough to postulate it as a well-defined instrument for enhancing human development and reducing poverty. Along with the so-called "integrated approach", they are commonly featured for being expressed in deterministic and inconsistent terms, reducing the large sort of development dynamics to a *fetishized i*nterpretation of its framework. From this perspective, it raises a simplified dialectical relationship among microfinance and development; strongly restricting it to an impoverished hermeneutics. The fact of "getting better" of integrated approach is subordinated to a minimalist framework and not to the empirical evidence (Jimenez, 2013). In this sense, all types of human variables inserted in this approach such as financial education, health and food security are condemned to a reductionism sphere constrained to microfinance minimalist framework.

As we have already exposed, we attempted to explain microfinance as consequence of human phenomena from a multidisciplinary approach. For that reason, we focused our research on a complexity reality through a development epistemological turning. Through this shift, this paper presents development as a non-deterministic dynamics caused by a sort of interrelation elements that successfully shape it. For all of these, we econometrically present microfinance as result of some others specific human phenomena.

Model Setting

Preliminaries

It is rarely to find out along microfinance literature an empirical conclusion where microcredit is presented simultaneously as primary cause and empirical consequence of other developmental phenomena. In this paper, we measured the determination of human variables on microcredit impact as income-maker and poverty reduction instrument.

For implementing this unprecedented empirical research we made use of an econometric model composed by 4 variables where 3 of them (Education, Health and Food Security) were explanatory or independent human variables, whereas dependent one was defined as the impact of microcredit on individual incomes.

In order to contrast whether human development is a crucial factor to explain microcredit impact, we disaggregated microcredit variable in a double direction that allowed to design two econometric regressions by a sample of 28 and 18 countries respectively, where microfinance program was implemented: on one hand, and for the first regression, the impact of microcredit was addressed by all individual incomes of microcredit programs implemented for a sample of 28 impact assessments; for the second regression, and for expressing the impact on poverty reduction, microcredit variable was composed only by those 18 sample-data in which microcredit impact on income was clearly higher. While for the first regression we are concern about in what grade microfinance operability is explained by human development; in the second one, we focus on how human development determinates microfinance as a poverty decline instrument. In this sense, we have assumed with the large restriction of the data available that poverty decline will be correlated with those microfinance programs (18) which underwent the largest impact on micro-borrowers incomes. Even whether such reasoning has many analytical weaknesses can be useful in order to explain in what grade human development is a key factor for microfinance success in terms of poverty decline and not only as financial repayment activity. Finally, we justified independent variables elected by potential effects on human development[2].

Experimental design

For dealing with the empirical design, we have selected an econometric approach following the least squares method. Such model was explained by a regression line whose function is given by$Y = f(X\imath, X2, \dots, X\kappa;\ \beta)$; where Y is a dependent variable and $X\imath, X2, \dots X\kappa$ are independentones. Since the purpose of this research rested on the identification of microcredit impact determinants, a double lineal regression line was designed;

$$Y = \beta_0 + \beta_1 E + \beta_2 H + \beta_3 Fs + \omega \quad (1)$$

$$Y^* = \beta_0 + \beta_1 E^* + \beta_2 H^* + \beta_3 Fs^* + \omega^* \quad (2)$$

[2] See Gallup & Sachs, 2001; Leive & Xu, 2008; Banerjee & Duflo, 2011)

For the design of each variable, we collected a set of indicators from the World Bank´s and UNDP´s database that derived from the impact assessment sample used for the analysis[3]. Such indicators for Education variable were: *youth literacy, population reaching grade 5* and *primary enrolment*. For Health variable were selected the following: *infant immunized, maternal mortality,* and *safe drinking water*. Finally, for Food Security variable was composed by *national consumption*, *infant with low birth weight* and *infant mortality*. The purpose for selecting such variables is twofold. On one hand, all such indicators are highly explicative of each variable indicated; in the sense of reflecting the most underlying aspect of its meaning as traditionally follow United Nations. On the other hand, the restrictions of indicators derive from the scarcity of some data and the undermined capability to data-collection in some poor countries.

Subsequently, indicators data obtained directly from the World Bank and United Nations Development Program were homogenized in a same measuring unit throughout the composition of a sort of indices that follow the Human Development Index (UNDP, 1994). For each indicator a limited value derived from a maximum and minimum was established by a general formulation. Even if for the design of indexes we assume the HDI methodology, some of them was necessary redesigned following some variations from the original formulation in order to standardize the data. For example, to obtain the index "infant mortality" we designed a logarithmic function to avoid some imbalance in the data produced by using as maximum and minimum ratio extreme values from 0 to 100.000. Since index values range between 0 and 1, and considering 1 as the best possible result, those countries where infant mortality rate is lower would be corresponded with an index close to 1. Therefore, the index for infant mortality can be expressed by following

$$(1) \qquad Infant\ M.I.\ Corrected = 1 - \frac{log(real\ val.) - min.\ val.}{log(max.val.) - min.val.}$$

To obtain such indexes that comprise food security variable have been conducted the following modifications derived from the general formulation. For the equation (2) "national consumption of the poorest quintile" has made used of the logarithmic version in base 10 to compensate the disruption that causes a range between the minimum and the maximum value comparatively smaller than other indexes.

$$(2) \qquad NationalConsumption = \frac{log(\ real\ val.) - min.\ val.}{log(max.val.) - min.\ val.}$$

[3] We used a sample of 28 evaluations of microcredit´s impact on incomes. According to those countries where each evaluation was implemented, we collected their statistic data in terms of education, health and food security, in accordance with those indicators that composed each independent variable. Source: http://data.worldbank.org/ and http://hdr.undp.org/en/data

In order to design the index (3) 'rate of babies with low birth weight" and since a low rate would correspond to a high level, we have corrected the relationship using the following arithmetic formulation:

(3) $$Infant\ with\ low\ weight\ Corrected = 1 - \frac{real\ val.-min.value}{max.\ val.-min.\ val.}$$

Finally, for the equation (4) we followed the same arithmetic logic as the education index "maternity mortality".

(4) $$Maternal\ M.I.\ Corrected = 1 - \frac{log(\ real\ val.)-min.\ val.}{log(max.\ val.)-min.\ val.}$$

After indexes estimation process, each variable was arithmetically designed according to its human significance[4].For the case of Education variable (5), the fact of weight in a higher proportion youth literacy index derives from its much more qualitative relevance in order to explain the real meaning of education (PNUD, 2012). This is the only index that considers the implications of education in the real life of young people.

(5) $$Education = \frac{2}{5} youthliteracy + \frac{2}{5} pop.reaching\ 5º + \frac{1}{5} primaryenroll$$

Secondly, for Health variable (6) we have weighted in a higher proportion infant immunized index since it reflects in a considerable manner some kinds of distributional health services among population. In the next table, we expose the results obtained after the data transformation.

(6) $$Health = \frac{2}{4} infantimmu. + \frac{1}{4} maternalmort. + \frac{1}{4} safedrinkingwater$$

Finally, Food Security variable equation (7) is weighted accounting the capacity of each index for reflecting the well-provision of familiar, cultural and economic assets. Although national consumption shows some particular aspects of income distribution, it is more "static" in comparison to the others, in the sense of being substantially impermeable to reflect some indirect social implications. The results are presented in the following table.

[4]The manner in which indexes were weighted does not respond to any statistical treatment but the literature review´s understanding on human development. For this empirical approaching, we assumed that the special nature of such indexes cannot be statistically homogenized without losing some of its problematic meaning. For such reason, indexes were treated in accordance with what development theory states about the relationship between such indexes and variables.

(7) $$FoodSecurity = \frac{1}{5}nationalconsum. + \frac{2}{5}infan.lowb.w + \frac{2}{5}infan.mortal$$[5]

To design dependent variable we followed a double methodological phase. Firstly, we converted indicator of microcredit impact on individual income to current US$ for each microcredit program.

(8) $$Indiv.Incomes\$(Baseyear) = Ind.IncomesImpac. \times XE(PPP)$$

After that, indicators were statistically treated and converted in constant US$. Thus, the arithmetical equation that express microcredit variable can be represented by this manner;

(9) $$Microcredit\ impact\ \$\ (2011) = Microcredit\ imp.\$ + \frac{cum.inflationxMicrocreditimp.\$}{100}$$

Finally, all data were processed usingEviews' econometric program, getting the following results exposed in the next section.

Microcredit and its potential Human Determinants

Effects of Human Development on Microcredit Impact

The correlation results for the regression 1 between microcredit impact on individual income and human variables are strongly positive. According to the data, we state that microfinance operability (financial sustainability) demands as key factor high levels of human development to make it works. The analysis of determination coefficient indicated that human development variables explain microcredit impact in 88,5%. That means that the level of explained variability in the model is quite high and robust.

In terms of coefficient estimation, we observed that average value of microcredit impact is strongly determined by independent variables. As it can be observed from Table 1, Health coefficient reached the highest value with 156,9 followed by Food Security with 146,3 and Education with 108,9. These results show that human development variables not only explain in a strongly way microcredit impact's statistical behaviour but they also strongly determinate it.

[5] Infant mortality rate can be interpreted from a multidimensional perspective. Even if it is often seen as an indicator of a population´s health status, it can be also associated with the national capacity to ensure food resources in order to avoid famines, droughts and other natural disasters. Taking into account that many of infant deaths derive from undernourishment (UNDP, 2012), such index can be suitable interpreted to mean food security variable.

In reference to the second hypothesis, we analysed statistically the relationship between human development variables and microcredit impact on poverty reduction. As it was mentioned earlier, we assume poverty decline effects in those 18 microfinance programs where micro-borrowers incomes were higher. The idea was to conceptualize both the role of human development in the sustainability of microfinance programs and its capability to makes microfinance an instrument for development. In this sense, the philosophy behind this is not longer than releasing the role of human development as cause and not only results of microfinance success. What does the data show? The coefficient of determination indicates that human development variables explain microcredit impact in 88%. Whether we compare with regression 1, that means that statistic determination of human variables has almost the same relevance on microcredit impact.

Regarding coefficients outcomes, the model result that Food Security is the most significant variable (187,58) followed by Health (123,55) and Education (91,18). Whether we compare coefficient results for both regressions, we obtained that Education is significantly less determinant than the others variables. Similarly, outcomes reflect that Food Security is the most relevant variable when we considered microcredit as an instrument for poverty-reduction while Health rises to the top for explaining the impact on individual incomes. We could also indicate that Food Security, Health and Education variables are clearly less significant to explain microcredit as poverty reduction instrument than as income-making. Such results could be interpreted following evidence generated by Arcand &Faye (2002). They expose that stability and free access on food provision could definitively reduce economic uncertainty, realising economic resources to other financial purposes.

Primary Results

The findings of this study are consistent with the epistemological turningon microcredit approach hypothesized along this paper. Although there are not specific studies that emphasize microcredit as result of others phenomena, our empirical study reinforce the complexity idea according to which what makes microcredit work depends not entirely on microcredit policies design but strongly on the grade of human development. Taken all these findings we suggest that even though an optimal design of microcredit programs is required for an efficient implementation, external conditions such as Education, Health and Food Security are in a great proportion determinant of its successfulness.

The findings on Education show that its statistical significance is absolutely lower than those other human variables. These results are clearly inconsistent with those of Bruhn & Love (2009), where Education is considered as the strongest variable in strengthening financial inclusion. In

this sense, this study also contradicts the claim robustly defended by Todd (1996) who presents education literacy as the secret element for enhancing microcredit repayment in joint liability lending models. Nevertheless, the implications of our paper do not finish here. Even referring to Education and whether, we connect our empirical results with those of Karlan & Valdivia (2011), we may conclude that education could not be the most relevant factor to increase microcredit investment on micro-business. The thesis holds by MkNelly & Dunford (1998) indicates that education and financial literacy are the most relevant variables to increase micro-investment and thus, marginal returns in those micro-enterprises aimed to enhance the rate of employment.

The results on Food Security, revealed as the most significance human variable in order to explain microcredit success, contributed to shed light on Banerjee & Duflo´s (2011) findings. According to this research, those micro-borrowers who received a microcredit for specifically entrepreneur purposes just only invested a slight proportion on it. That arises from low expectative of future economic returns and high uncertainly that force to invest a considerable amount of microcredit to basic goods (Maniruzzama & Rutherford, 1998). In this sense, our results are consistent with this theory due to when food consumption is guaranteed micro-borrowers release more financial resources to entrepreneurial activities. In general, we could maintain that uncertainty reduction is the most relevant factor to increase microcredit effectiveness. As our results point out, health and food security are revealed as priority elements to explain microcredit. While Education holds as pertinent factor of microcredit significance, its relevance as Nelson (2011) argues, depends on a previous mitigation of high social and economic uncertainly.

Conclusions

In the vast majority of microcredit programs implemented across developing countries over the last decade, the effects on poverty reduction and human rights increasing have traditionally been so poor (Banerjee & Duflo, 2011). It is important to comprehend how could become microcredit in a better development instrument to increase poorest people´s standard of living. In particular, the results of our study provide some fascinating insights in order to make better understandable the mechanism that allow microcredit increases its economic potentiality for diminishing economic misery. For doing that, we presented an epistemological turning –from minimalist to complexity approach- where external conditions (human and social development) were addressed as determinant of microcredit impact. Contrary to what classical literature predicts, microfinance is clearly unable to impact on economic poverty without considering its effects as part of a wider scenario where human development works as potential promoter. Our meta-model predicts that human development variables strongly affect microcredit operability as development instrument. We also obtained, what really impede microfinance pro-developmental effects are not a political design of repayment responsibility but rather a reduction of material and health uncertainly as our model clearly express.

Thus, this study has attempted to refocus how development in general and microfinance in particular should be analysed. Our results predict that developmental success by microfinance programs is strongly associated with human development matters. To sum up, in a complexity approach, human development is not only consequence but rather cause of a developed economy.

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Appendixes

Table 1.

Education Outcomes

Countries	Indicators \ indexs						Variable
	Youth literacy		Population reaching grade 5		Primary enrolment		
	Indicator (%)*	Index	Indicator (%)**	Index	Indicator (%) ***	Index	
Bangladesh	63,00	0,330	54,00	0,540	33,00	0,630	0,450
Bangladesh*	75,10	0,377	67,00	0,670	37,70	0,751	0,536
Bangladesh**	87,00	0,497	65,00	0,650	49,70	0,870	0,610
Bolivia	94,30	0,973	78,00	0,780	97,30	0,943	0,903
Brazil	97,10	0,920	71,00	0,710	92,00	0,971	0,858
Chile	90,40	0,987	99,90	0,999	98,70	0,904	0,977
Ethiopia	35,20	0,345	51,00	0,510	34,50	0,352	0,401
Filipinas	94,00	0,951	75,00	0,750	95,10	0,940	0,882
Ghana	43,40	0,895	63,00	0,630	89,50	0,434	0,729
Haiti	19,40	0,441	34,00	0,340	44,10	0,194	0,366
India	74,30	0,620	64,00	0,640	62,00	0,743	0,647
India*	89,00	0,764	59,00	0,590	76,4	0,890	0,727
Indonesia	98,00	0,850	96,00	0,960	85,00	0,980	0,908
Kenya	70,00	0,958	75,00	0,750	95,80	0,700	0,845
Malawi	98,50	0,558	21,00	0,210	55,80	0,985	0,513
Malaysia	95,00	0,960	88,00	0,880	96,00	0,950	0,931
Mexico	97,90	0,974	94,00	0,940	97,40	0,979	0,963
Morocco	80,00	0,705	79,00	0,790	70,50	0,860	0,758
Nigeria	65,00	0,690	78,00	0,780	69,00	0,650	0,713
Pakistan	59,00	0,614	70,00	0,700	61,40	0,590	0,638
Pakistan*	68,00	0,651	70,00	0,700	65,10	0,680	0,672
Peru	93,80	0,883	75,00	0,750	88,30	0,938	0,847
Sri-Lanka	98,00	0,920	92,00	0,920	92,00	0,980	0,930
Sri-Lanka*	97,00	0,956	93,00	0,930	95,6	0,970	0,949
Tanzania	58,00	0,780	55,00	0,550	78,00	0,580	0,670
Thailand	88,00	0,988	94,00	0,940	98,80	0,880	0,954
Zambia	72,50	0,766	84,00	0,840	76,60	0,725	0,788
Zimbabwe	93,10	0,847	76,00	0,760	84,70	0,931	0,832

Data Source: Self-elaboration based on indicators results from WB's and UNDP's database. *UNDP's database. **UNDP's database. ***WB's database

Table 2.

Health Outcomes

Countries	Indicator \ indexs						Variable
	Infant Immunized rate		Maternal Mortality rate corrected		Population access to safe water rate		
	Indicator (%)*	Index	Indicator (x100.000 births)**	Index	Indicator (%)***	Index	
Bangladesh	49,00	0,490	600,00	0,444	46,00	0,460	0,471
Bangladesh*	50,30	0,503	850,00	0,414	84,00	0,840	0,565
Bangladesh**	57,00	0,570	380,00	0,484	97,00	0,970	0,648
Bolivia	48,00	0,480	420,00	0,475	83,00	0,830	0,566
Brazil	56,60	0,566	160,00	0,559	76,00	0,760	0,612
Chile	64,80	0,648	2300	0727	81,00	0,810	0,708
Ethiopia	7,00	0,700	1.400,00	0,370	45,00	0,450	0,555
Filipinas	56,00	0,560	230,00	0,527	85,00	0,850	0,624
Ghana	49,60	0,496	210,00	0,535	65,00	0,650	0,544
Haiti	25,40	0,254	1.000,00	0,400	26,00	0,260	0,292
India	17,00	0,170	340,00	0,493	75,00	0,750	0,395
India*	21,00	0,210	540,00	0,453	84,00	0,840	0,428
Indonesia	43,00	0,430	450,00	0,469	28,00	0,280	0,402
Kenya	40,00	0,400	1.000,00	0,400	57,00	0,570	0,442
Malawi	65,40	0,654	560,00	0,450	19,00	0,190	0,487
Malaysia	36,75	0,367	59,00	0,646	95,60	0,956	0,584
Mexico	71,20	0,712	60,00	0,644	97,00	0,970	0,759
Morocco	81,00	0,810	240,00	0,523	81,00	0,810	0,738
Nigeria	5,00	0,050	700,00	0,431	57,00	0,570	0,275
Pakistan	22,50	0,225	340,00	0,493	79,00	0,790	0,433
Pakistan*	23,00	0,230	320,00	0,498	91,00	0,910	0,467
Peru	57,90	0,579	280,00	0,501	72,00	0,720	0,594
Sri-Lanka	59,00	0,590	60,00	0,644	60,00	0,600	0,606
Sri-Lanka*	69,30	0,693	58,00	0,647	79,00	0,790	0,705
Tanzania	53,00	0,530	530,00	0,455	54,00	0,540	0,513
Thailand	92,00	0,920	44,00	0,671	84,00	0,840	0,837
Zambia	63,90	0,639	940,00	0,405	17,00	0,170	0,463
Zimbabwe	63,90	0,639	570,00	0,448	25,00	0,250	0,494

Data Source: Self-elaboration based on indicators results from WB's and UNDP's database. *UNDP's database. **WB's database. ***UNDP's database.

Table 3.

Food Security Outcomes

Countries	Indicator \ indexs						Variable
	Infant with low weight rate		Infant Mortality rate		National Consumption rate		
	Indicator (%)*	Index	Indicator (%)**	Index	Indicator (per thousand births)***	Index	
Bangladesh	7,80	0,685	50,00	0,500	186,00	0,243	0,434
Bangladesh*	8,70	0,722	30,00	0,700	139,70	0,284	0,538
Bangladesh**	9,00	0,733	36,00	0,640	121,00	0,305	0,524
Bolivia	4,00	0,462	9,00	0,910	105,00	0,326	0,586
Brazil	2,50	0,305	8,00	0,920	160,00	0,265	0,535
Chile	3,50	0,418	5,00	0,950	23,00	0,546	0,682
Ethiopia	7,10	0,654	51,00	0,490	159,20	0,266	0,433
Filipinas	5,40	0,562	20,00	0,800	66,00	0,393	0,589
Ghana	8,40	0,710	8,00	0,920	210,00	0,225	0,600
Haiti	2,00	0,239	28,00	0,720	163,50	0,262	0,439
India	10,20	0,775	30,00	0,700	155,00	0,269	0,542
India*	8,90	0.729	30,00	0,700	141,00	0,283	0,539
Indonesia	10,6	0,788	14,00	0,860	109,00	0,320	0,629
Kenya	5,60	0,575	11,00	0,890	149,00	0,275	0,581
Malawi	5,00	0,537	49,00	0,510	253,0	0,198	0,390
Malaysia	4,40	0,494	8,00	0,920	151,00	0,274	0,576
Mexico	5,00	0,537	8,00	0,920	18,00	0,581	0,707
Morocco	6,50	0,624	15,00	0,850	78,00	0,369	0,612
Nigeria	4,40	0,494	16,00	0,840	133,00	0,292	0,551
Pakistan	9,50	0,751	25,00	0,750	500,00	0,100	0,490
Pakistan*	9,30	0,744	19,00	0,810	125,00	0,301	0,593
Peru	4,40	0,494	10,00	0,900	92,60	0,344	0,596
Sri-Lanka	6,65	0,632	28,00	0,720	156,00	0,268	0,521
Sri-Lanka*	7,00	0,649	22,00	0,780	20,00	0,566	0,668
Tanzania	6,80	0,639	14,00	0,860	160,00	0,265	0,577
Thailand	6,10	0,603	9,00	0,910	17,00	0,589	0,720
Zambia	3,30	0,398	59,00	0,410	191,70	0,239	0,339
Zimbabwe	4,00	0,462	10,00	0,900	99,50	0,334	0,586

Data Source: Self elaboration based on indicators results from WB's and UNDP's database. *UNDP's database. **WB's database. ***WB's database.

Table 4.

Individual Income Microcredit Impact

Countries	Evaluation program year	Individual Income Microcredit Impact in local currency*	Exchange Rate Local Currency/$ PPP	Individual Income Microcredit Impact in current dollars, base year	Cumulative Inflation Rate (%)**	Dependent Variable: Individual Income Microcredit Impact
Bangladesh	1986	69,21	0,380	26,30	79,63	47,26
Bangladesh*	1997	83,30	0,200	16,66	34,0	22,33
Bangladesh**	2002	1.761,89	0,037	65,19	22,67	79,98
Bolivia	2008	195,10	0,503	98,14	4,25	102,32
Brazil	2008	112,97	0,886	100,10	4,25	104,36
Chile	2009	52,10	2,720	141,73	16,87	165,65
Ethiopia	2006	51,98	0,443	23,03	9,63	25,25
Ghana	2007	226,23	0,406	91,85	6,45	97,78
Haiti	2003	20,19	0,103	2,08	20,15	2,5
India	2003	245,66	0,053	13,02	20,15	15,65
India*	2010	471,64	0,067	31,60	2,2	32,30
Indonesia	1990	16.071,05	0,0038	61,07	56,62	95,65
Kenya	2003	1.968,35	0,039	76,76	20,15	92,23
Malawi	1995	9,49	0,263	2,94	39,12	4,1
Malaysia	2010	142,13	0,734	104,33	2,20	106,63
Mexico	2008	1.108,09	0,126	139,62	4,25	145,56
Morocco	2010	532,31	0,207	110,19	2,20	112,62
Nigeria	2010	722,33	0,030	21,67	2,2	22,15
Pakistan	2003	184,52	0,084	15,50	20,15	18,63
Pakistan*	2007	1.267,85	0,056	71,00	6,45	75,58
Peru	2000	148,00	0,577	85,40	27,50	108,89
Philippines	2008	2.435,95	0,042	102,31	4,25	106,66
Sri-Lanka	2009	1.773,39	0,056	99,31	2,91	102,2
Sri-Lanka*	2005	2.449,77	0,044	107,79	13,14	121,96
Tanzania	2004	24.962,50	0,0024	59,91	16,87	70,02
Thailand	2008	1.794,69	0,098	175,88	4,25	183,36
Zambia	1999	20.350,56	0,0016	32,56	30,30	42,43
Zimbabwe	1998	1.201,16	0,050	60,08	32,41	79,56

Data Source: Self elaboration based on World Bank's database. *Outcomes derived from Impact assessment. To see data source go Bibliography

Table 5.

Variable definitions

Variable	Indicators	Description
Education	Population reaching grade 5	The estimated proportion of the population entering primary school who reach grade 5
	Youth literacy rate	Population age 15 and above who can with understanding read and write a short statement
	Primary enrollment rate	Total enrollment in primary education, regardless of age, expressed as a percentage of the total population
Health	Infant Immunized rate	The estimated proportion of the population under 5 who are treated with anti-malaria anti-diarrhea and measles drugs
	Population access to safe water rate	The percentage of population using an improved drinking water source
	Maternal Mortality rate	The number of maternal deaths per 1,000 women of reproductive age in the population
Food Security	Infant Mortality rate	The probability that a child born in a specific year will die before reaching the age of one
	National Consumption rate	The share of a country´s national consumption that accrues to the poorest quintile of the population
	Infant with low weight rate	A birth weight of a live born infant of less than 2.500g
Microfinance Impact	Individual Income Microfinance Impact	The amount of income earned by a micro-borrower in current dollars 2011

Data Source: Self elaboration based on indicators results from WB's and UNDP's database

Table 6.

The Effects of Human Development Variables on Microcredit Impact

Dependent Variable: Microcredit Impact on Income

Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Education	108.99	25.47	4.27	0.0003
Health	156.95	29.14	5.38	0.0000
Food Security	146.38	52.21	2.80	0.0098
C	-170.42	19.82	-8.59	0.0000

Table 7.

The Effects of Human Development Variables on Poverty Reduction

Dependent Variable: Microcredit Impact on Poverty Reduction

Included observations: 18

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Education*	91.18	26.37	3.45	0.0038
Health*	123.55	25.62	4.83	0.0003
Food Security*	187.58	56.91	3.29	0.0053
C	-156.53	27.40	-5.71	0.0001