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Credit access and life satisfaction:
evaluating the non monetary effects of
micro finance

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Abstract

Microfinance institutions are used to claim that their impact goes beyond money since rescuing from exclusion uncollateralized poor borrowers significantly affects their dignity, self-esteem, social recognition and, through it, life satisfaction. Our paper aims to verify the validity of this claim by evaluating whether access to microfinance loans has significant direct impact on life satisfaction beyond its indirect impact via income changes. Empirical findings on a sample of poor borrowers in the suburbs of Buenos Aires show that, after controlling for survivorship, selection and interview bias, the number of credit cycles has a significant and positive effect on life satisfaction.

Keywords: microfinance, happiness, impact study.

1. Introduction

Successful development projects which rescue beneficiaries from marginalization and provide access to opportunities go beyond the provision of monetary resources since they end up healing in beneficiaries wounded relationships with themselves (restoration of dignity and self-esteem) and with other members of the society (social recognition and reputation).

Along this line many MFIs argue that lending to the uncollateralized poor living close to the poverty line has an impact which goes beyond the mere money concession. This is well reflected in the main advertising statement of the Wordrelief organization claiming that:

“The world of microfinance opens the door of opportunity for the poor – providing the dignity and satisfaction that comes from working to support one’s family. Microfinance is about much more than just money. It helps create stability at home, teaches individuals how to thrive, and fosters self-respect and community well-being. Once empowered, men and women are able to support their families for a lifetime

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– not just a few days or weeks. It's the difference between a hand up and a handout”
(<http://worldrelief.org/microfinance>).¹

Are these claims overstated? In order to give an answer it is necessary to broaden the scope of microfinance impact analyses by considering among performance variables not only standard economic (consumption, productivity, income per capita) but also non pecuniary wellbeing indicators.

This enhanced focus is important for at least four reasons.

First, the discussion on the relationship between income and happiness and, more generally, between subjective and objective wellbeing measures is always more at the center of the economic debate² and is relevant not only for highly industrialized countries but also for developing countries (see section 2). This growing attention may be explained by the increasing awareness that social sustainability, local empowerment and active participation to development projects are fundamental for their success. In this perspective measuring the effects of projects characteristics on broader concepts of wellbeing may help to evaluate the local support and the probability of success of future initiatives beyond their expected income and economic effects.

Second, findings from life satisfaction estimates can be a good complement of standard impact analyses since they are able to capture the effect of relevant (material and immaterial) omitted factors on individual wellbeing. This point is all the more important in microfinance where a loan to an uncollateralized borrower may save him from social exclusion. From this point of view we may conceive the capacity of an individual to contribute to social life and to create economic life as an “iceberg”. The smaller visible part (easier to investigate) is its productivity and its visible contribution to the creation of economic value in the society, while the larger hidden part, made of dignity, self-esteem and social recognition is actually the invisible pillar of the former.

This perspective may help us to solve some microfinance puzzles such as the surprisingly high repayment rates despite loans are generally uncollateralised. In order to explain the paradox the literature has emphasized so far the role of assortative matching (Murdoch 1999; Ghatak and Guinnane 1999), peer monitoring in presence of group lending with joint liability (Armendariz, 1999; Stiglitz 1990; Banerjee, Besley and Guinnane 1994) and dynamic incentives in presence of individual progressive loans (Wydick 1999; Karlan 2005a). Beyond these monetary incentive based rationales, the loss of the

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² Within this debate a line of thought argues that happiness indicators represent a unique, subjective and “non paternalistic” measure of wellbeing which cannot be suspected of imposition from external experts and should reflect the real desires (driven by individual tastes which may be self driven or affected by social norms) of those who are targets of a policy intervention (Sugden, 2008). The critique to this position is well expressed by the “happy slave paradox”: if individuals are so deprived of their rights, they may be in a condition of not even desire their emancipation and therefore remain satisfied of their condition of slavery (Sen, 2005). The ample empirical literature however shows that happy slave paradoxes are irrelevant when drawing inferences on large samples which always reveal a strong positive correlation between life satisfaction and capabilities (Frey and Stutzer, 2002b).

two “invisible pillars” (social recognition and self esteem) which may originate from non repayment may be enough to avoid moral hazard during the project and strategic default at the end of it, when the social sanctions and the loss of dignity effects more than compensate the sums diverted from the bank. From this point of view our analysis on the effects of the microfinance loan concession on life satisfaction helps us to identify, net of the income effect, an extra non-pecuniary benefit which is an additional deterrent to opportunistic behavior.

Third, further motivation for our study may come from the fact that the life satisfaction literature has started investigating the role of financial capabilities also in high income countries. From this point of view Taylor et al. (2009) document in their empirical analysis on the British Household Panel Survey that financial capability has a significant and positive impact on life satisfaction and health reducing by 15 percent the possibility that an individual suffer from anxiety or depression. This implies that, if the same nexus holds also in poor countries, part of the microfinance effect on life satisfaction may be due to the enhanced financial capability (provided that the borrower successfully repays).

The fourth reason which motivates our work is that another component (not fully captured by traditional quantitative indicators) in the overall effect of microfinance on life satisfaction may be its impact on trust and trustworthiness. First of all, the loan concession is an act of trust (after the verification of borrower qualities) on the borrower’s capacity to repay which has horizontal externality effects since it reveals to individuals living in the same geographical area the creditworthiness of the new borrower. This signaling effect may improve relationships with neighbors (Becchetti and Conzo, 2009) and, through it, life satisfaction.³

Based on these considerations which help us to understand the multifaceted effects of microfinance (not all captured by traditional quantitative indicators) our paper aims to verify its impact on the synthetic indicator of borrower’s life satisfaction. To do so we perform an impact study on poor individuals living in the suburbs of Buenos Aires. Half of them are clients of Protagonizar (an MFI organization) and are heterogeneous in terms of length of the relationship (credit cycle). The other half of the sample is made of a control group of individuals living in the same area and being eligible according to the Protagonizar standards for creditworthiness.

³ Consider however that part of this enhanced trustworthiness may also have sound economic effects since, in a framework of contract incompleteness, many aspects of business relationships may be modeled under the form of an investment game (Berg, Dickhaut and McCabe, 1995). More specifically, the relationships between business partners, between an entrepreneur and her partners generally assume a sequential structure. One of the two players takes the initiative first by sharing something (knowledge, physical or financial assets) and, after it, the counterpart may decide whether to do the same or to abuse of the trust of the first mover. As in the typical investment game the counterparts joint decision to share (the trustor) and not to abuse (the trustee) has superadditive effects and a higher outcome than the two suboptimal equilibria in which the first player shares and is abused or the first player decides not to share because she is afraid of the risk of being abused. As a consequence, enhanced reputation has monetary but also non monetary effects.

Our main finding is the identification of strong and significant correlation between progression into the borrower-MFI relationship and life satisfaction, net of the effect on the latter of household income and after controlling for survivorship, interview and selection bias. More specifically on this point, our final result on the positive and significant relationship between credit cycle and life satisfaction in the subsample of MFI borrowers and dropouts only (excluding eligible non participants) overcomes the selection problem between MFI and non MFI borrowers, can hardly be explained by the desire of respondents to please the interviewer (which can exist for MFI borrowers only and can hardly be assumed to be proportional to credit cycles) and corrects for the selection bias problem.

Our interpretation is that this finding captures all those positive MFI effects which do not materialize into current income (such as future perspectives arising from current investment, social recognition, self esteem, etc.).

The paper is divided into five sections (introduction and conclusions included). In the second section we shortly summarize the literature on life satisfaction with specific reference to studies in developing countries. In the third section we briefly describe the characteristics of the MFI under scrutiny. In the fourth section we illustrate our survey design and present descriptive statistics. In the fifth section we comment our econometric findings. The sixth section concludes.

2. Shall we rely life satisfaction results ?

Starting from the well known Easterlin (1974) paradox⁴ which documented the decoupling between the dynamics of per capita income and happiness in the postwar US, the economic literature on the determinants of life satisfaction has flourished with an increasing number of published contributions. More in general, and beyond the provocation of the paradox, the interest in this strand of the literature arises from the desire to test empirically the undemonstrated assumptions about the shape of utility functions which are at the basis of economic models once a wide array of large databases including information on self declared life satisfaction has become available.⁵

The life satisfaction empirical literature has examined the relationship between happiness and several determinants such as income (see, among others, Easterlin, 1995 and 2000; Frey and Stutzer, 2000; Di Tella et al. 2005 Winkelmann and Winkelmann, 1998; Ravallion and Lokshin, 2001; Ferrer-i-Carbonell

⁴ Evidence supporting the paradox is also reported by Blanchflower and Oswald (2004) for the UK, Frey and Stutzer (2002b) on a large sample of countries using data from the World Database of Happiness and the U.S. Bureau of Census and Veenhoven (1993) for Japan over the period 1958-1987. In spite of it, the Easterlin paradox is not in itself a regularity always confirmed across countries and time. When Castriota (2006) repeats the Easterlin exercise on Eurobarometer data for some European countries in the last decade he actually finds that the paradox applies to Germany but not to Italy where a quite strong positive relationship between the happiness and per capita income is found.

⁵ Even though the question whether life satisfaction responses measure flow or lifetime utility is still open, life satisfaction measures nonetheless represent the closest empirical proxies to the standard utility concept in economic theories.

and Frijters, 2004; Ferrer-i-Carbonell, 2005 and Clark et al., 2005), employment status (Winkelmann and Winkelmann, 1998), marital status (Argyle, 1999; Johnson-Wu, 2002; Blanchflower- Oswald, 2004; Frey and Stutzer, 2002a, 2002b and 2006), unemployment and inflation (Clark and Oswald, 1994; Gallie and Russell, 1998; Di Tella et al., 2001, 2003) and many other factors.

Life satisfaction studies are also of practical interest since they reveal themselves very useful for estimating with approaches such as the compensating surplus, the shadow value of several non marketable goods such as air quality and pollution (Welsch, 2002 and 2006), airport noise (Van Praag and Baarsma, 2005), terrorism (Frey et al., 2007), the fear of crime (Moore and Shepherd, 2006), marriage (Johnson and Wu, 2002; Blanchflower and Oswald, 2004; Frey and Stutzer, 2006) and unemployment (Clark and Oswald, 1994; Gallie and Russell, 1998; Di Tella et al., 2001 and 2003).

From a methodological point of view life satisfaction has been measured either as a short run reaction to daily events (momentary affect) with the diary method (Kahneman et al., 2006), or as a comprehensive long run evaluation of one's own satisfaction about life. The largest part of empirical contributions has followed this second direction considering that a clearer evaluation of one's own satisfaction requires the contribution of a (delayed in time) inner resounding of lived experiences.

The use of interview based information on respondents' evaluation about the overall quality of their life is not free of methodological problems well discussed in this literature – i.e. the signal on the inner state of the respondent mixed with the noise caused by the current affect (Schwarz and Strack, 1999), the intercomparability of ordinal scales across different cultures, etc.). In spite of these problems there is substantial evidence that life satisfaction passed a series of validation checks (for references see Frey and Stutzer, 2002b).

2.1 Life satisfaction studies in developing countries

Most empirical studies investigate determinants of life satisfaction in high income countries, while research on the effects of development projects in low income countries, not just on economic indicators but also on broader concepts of wellbeing and life satisfaction, is still lagging behind. In the last decade however several authors have tried to bridge this gap by emphasizing that the combination of quantitative and qualitative wellbeing indicators can yield important additional insights also in the case of development studies (Herrera et al., 2006; Ravallion and Loskin, 2002a and 2002b and Narayan et al., 2000a and 2000b). More specifically, since inclusion processes involve important non economic effects (on self-esteem, dignity, social recognition), while changes in economic conditions have indirect effects on population cultures and habits, the broader wellbeing effect of development policies does not coincide with the traditionally measured economic one. Furthermore, life satisfaction indicators

may help to measure shadow values of non market goods for the affected populations and the real distribution of benefits of a given policy program among different stakeholders. In this respect Rojas (2008) analyses the intra-household distribution of health satisfaction and identifies in this way gender inequalities which can be due to cultural discrimination and bargaining in family arrangements.

A typical finding of life satisfaction studies in developing countries, when compared with those in high income countries, is the confirmation of the concave life satisfaction-income hypothesis and of the implied law of decreasing marginal utility,⁶ one of the basic tenets of the standard economic theory formulated well before the availability of data for empirical testing.

From this point of view Herrera et al. (2006) compare Madagascar and Peru, and document that the correlation between subjective wellbeing and income is stronger in poorer environments. A similar result is obtained by Becchetti et al. (2009) comparing the life satisfaction effect of affiliation Fair Trade in two areas with markedly different standard of living. In the same direction Becchetti and Castriota (2009) illustrate how exogenous shocks on income, such as the “negative lottery” of the tsunami, and the subsequent project to recapitalise microfinance institutions, determine changes in the life satisfaction of the borrowers hit by the catastrophe which appear stronger than those observed with parallel exogenous shocks in rich countries (Gardner and Oswald, 2004; Frijters et al., 2004).

A second peculiarity of determinants of life satisfaction in developing countries is that we generally observe (especially in societies with high perceived vertical mobility) a more positive reaction to income inequality than in high income countries (Herrera et al., 2006) since wellbeing improvements by peers are interpreted as increased opportunities for social mobility. This is consistent with what observed in transition countries, in which the Hirschman’s (1973) tunnel effect generally prevails over the negative impact of inequality (Senik, 2004).

Within this literature we aim to extend the use of life satisfaction measures of the impact of development projects to initiatives explicitly designed to promote inclusion and credit access such as microfinance. We hope in this way to open a new strand in this literature by testing for the existence of the immaterial (psychological and social) benefits of inclusion which add value to microfinance projects beyond their direct economic effects.

3. Protagonizar

⁶ For its earliest formulations see Gossen (1854), Jevons (1886) and Menger (1971).

The help we received from Protagonizar was enormous. I felt that not everything was lost. On some occasions we tried to get a bank loan but they asked for a credit card and wages receipt; impossible. Here instead, we go with our word, they believe and trust us. This is beautiful and I feel we are not alone.⁷

Protagonizar is a microfinance organization with 6 years of life providing uncollateralized loans to small microentrepreneurs engaged in activities such as bakeries, textile enterprises, beehives or basketworks. The organization operates in a well circumscribed area (the three districts of Santa Brígida, Villa de Mayo and Barrio Mitre and in the suburbs of Buenos Aires). This choice determines low operative costs and makes it feasible an approach of personalized attention to the borrowers. A group of motivated volunteers working together with the paid professional staff members support the microfinance institution.

Protagonizar lending activity started with staggered individual credits and more recently evolved to a group lending mechanism with full joint liability. The staggered individual credit mechanism required the formation of a group of three entrepreneurs with independent projects (who, differently from the Grameen and many other examples, can also be connected by family ties). The MFI lent sequentially to each member of the group, conditional to the repayment of the member who borrows before.

The group lending credit is based on the creation of groups of 4-6 individuals which receive their loan simultaneously. There is full joint liability among members since, when one of them is unable to repay, the groupmates are called to cover in full that amount.

Under both (staggered individual and group) lending approaches, administrative costs charged by the Foundation are 5 percent monthly over the debt balance against an average lending rate charged by moneylenders in the three villas of around 5 percent monthly.⁸

The following eligibility criteria are required to obtain the loan: i) a minimum of six month entrepreneurial experience; ii) absence of family ties between groupmates, iii) maximum living distance of three blocks among group components and iv) (in order to diversify risk within the group) diversification of business activities (only one street vendor per group). Note also that the money of the group is not given individually but to the coordinator of the group (one of the group members) who distributes it to the other and collect the installments to pay to the lender.

Protagonizar's group lending system has a three-sided screening process on the prospective borrower. The organization evaluates both the payment capacity of the client and the consideration that other

⁷ Extracted from the "microentrepreneurs' stories" section of the Protagonizar handbook (2005).

⁸ Real interest rates are not particularly high if we consider unofficial inflation rates. Consider in fact that several authors judge Argentinean poverty lines grossly undervalued due to a downward bias in computing domestic inflation. One of the main independent research centers, Ecolatina, estimates that prices rose 65 percent from Dec. 1, 2006, to July 31, 2009, compared with the 20 percent increase calculated by the statistical institute (to follow this debate see <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aKQUiLozzZko> and http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a5joiySC_mXc).

Protagonizar borrowers (which are not part of her/his lending group) have of her/him. The group lending mechanism is expected to induce assortative matching with the consequence that, for groupmate-neighbours, trust on the borrower is not just declared in words but must be demonstrated by accepting a joint liability.

4. The research design

To assess the impact of microfinance participation on a set of quantitative and qualitative indicators, we develop an empirical analysis based on survey data. From June to September 2009 a questionnaire has been delivered to 360 micro-entrepreneurs located in proximity of the three agencies of Protagonizar (Santa Brigida, Barrio Mitre and Villa de Mayo) by two teams composed by one researcher and one field assistant each⁹.

Treatment and control groups are formed as follows. From a list of all the Protagonizar's clients we randomly select 150 borrowers (in equal proportion from Barrio Mitre and Santa Brigida) equally representing new and veteran clients¹⁰. We use the credit cycle information (while not the time distance from the first loan) for the definition of borrowers' seniority since the former is better suited to proxy for borrowers' quality in terms of solvency. As a control sample, from the three areas of interest we randomly choose 150 eligible non participants micro-entrepreneurs who were not borrowers (neither of Protagonizar nor of any other MFI) at the moment of the interview. In addition, we also create a sample of 60 Protagonizar's former borrowers who dropped out from the program.¹¹

Following the standard notation in the impact analysis literature, the group composed by the 150 MFI borrowers will be referred to as the *treatment group*, whereas the one by 150 eligible non-participants as the *control group*. The selection of control group members according to the eligibility criteria allows us to reduce the potential heterogeneity between MFI and non-MFI individuals, thus moderating the impact of the selection bias in our quasi-experimental framework. Moreover, by also including drop-out borrowers in our study we reduce the effects on our estimates of the survivorship bias (Alexander and Karlan, 2009).

⁹ The questionnaire is omitted for reasons of space but is available from the authors upon request.

¹⁰ Borrowers' seniority is evaluated according to their credit-cycle. Since borrowers must first reimburse the previous loan in order to ask for a new one, a higher credit cycle is a proxy of a better borrower's repayment record. Given a median credit-cycle of 17, borrowers with a credit-cycle higher than (or equal to) 17 are categorized as "veteran", while borrowers with a credit-cycle below the median as "new".

¹¹ We selected a number of dropouts from each area which is proportional to historical exit rates of borrowers from the organization.

5. Descriptive findings

Descriptive statistics (Tables 2 and 3) document that the average schooling level is quite low (8.4 years) and that of the respondent partner is even lower (5.8 years).¹² Average monthly household income is 4,096 pesos while median income is 3,000 pesos. This implies that half of sample household lives with around 100 pesos (5 euros) per day. Since the number of members of the household is around 4, interviewed individuals live on with roughly 12.29 PPP US\$ per day.¹³

The average amount of last monthly repayment for the microfinance loan among MF borrowers is 108 pesos, that is, 27 percent of median income.

In spite of it around 20 percent of income is saved. Respondents have no temporary employees. Average total productivity (considering main and other jobs) is around 17 pesos per hour.

When we decompose the sample in three groups (clients, eligible non participants and dropouts) we find that eligible non participants and dropouts have on average 73 and 60 percent of the monthly average household income of MF borrowers (the difference in means is significant at 95 percent with dropouts and not so with eligible borrowers). However the Wilcoxon non parametric test shows that clients and dropouts have on average higher household income than eligible non participants (Table 3). Productivity is 21 pesos per hour worked against 16 pesos of eligible non participants and 13 pesos of dropouts (again the difference in means is significant at 95 percent with dropouts and not so with eligible borrowers). Interestingly, MF borrowers and dropouts have a significantly higher number of children than eligible non participants.

The distribution of life satisfaction for the different groups shows that none of the respondents declares level below 3 and that the frequency of MF borrowers giving answers from 7 to 10 is higher than that of the other groups (see Figure 1). The average level of self declared life satisfaction is significantly higher for MF borrowers than for eligible non participants (8.62 against 8.14). Life satisfaction of dropouts is in the middle and not significantly different from that of MF borrowers. The Wilcoxon non parametric test documents that clients and dropouts have on average a significantly higher level of life satisfaction than eligible non participants (Table 3).

6. Econometric specification

¹² Table 1 contains variable legend.

¹³ During the survey period (July-Sept. 2009), the average malnutrition and poverty thresholds are set by the INDEC (National Statistical Agency of Argentina) at 4.88 and 11.04 pesos/day respectively, which are in turn equivalent to 3.84 and 8.70 PPP -US\$ according the PPP country's factor evaluated by the World Bank in 2005. When considering the country's implied PPP factor in 2009 (US\$ 2.033, source: IMF), both the malnutrition and poverty lines fall to 2.40 and 5.43 PPP-US\$ per day respectively. Consider however that several authors consider Argentinean poverty lines grossly undervalued do a downward bias in computing domestic inflation (see footnote 8).

To analyse the effect of MFI participation on life satisfaction we estimate the following specification:

$$\begin{aligned}
 LifeSatisfaction_i = & \beta_0 + \beta_1 Age_i + \beta_2 Female_i + \sum_k \beta_{3k} Marstatus_{ik} + \sum_l \beta_{4l} Wealthdummies_{ik} + \\
 & + \sum_m \beta_{5m} Villagedummies_{ik} + \beta_6 JobExp_i + \beta_7 Schooling_i + \beta_8 Hcomponents_i + \beta_9 Savings_i + \\
 & + \beta_{10} Hincome + \varepsilon_i
 \end{aligned} \tag{1}$$

The specification includes all traditional regressors used in life satisfaction estimates (age, gender, marital status, employment status, village, household income, number of household members, wealth proxies) without any variable measuring the microfinance impact (MFI). More specifically, Age is respondent's age; Female is the gender dummy taking value of one if the respondent is female and zero otherwise; marital status dummies in the Marstatus group include Married, Widowed, Divorced, Cohabitant; Wealth Dummies include possession of a ceramic floor, of a brick-finished house and of a private indoor toilette; Village Dummies control for the respondent's geographical location (S. Brigida, Mitre, Villa de Mayo); Schooling is the number of schooling years; Hcomponents is the number of household components and Hincome is household income.

We estimate the model for the overall sample (Table 4) and for the sample of microfinance borrowers only (Table 5).

Since the dependent variable is reported in an ordinal scale, life satisfaction regressions are generally estimated with an ordered probit or logit. Van Praag and Ferrer-i-Carbonell (2004 and 2006) however show that the simple linear models are as good as the Probit and Logit method¹⁴, but computationally much easier.¹⁵ For this reason we will propose both OLS and ordered probit estimates in order to check the robustness to estimating techniques of each model specification.

6.1 Empirical findings

Our findings on the overall sample show that the only significant variables (with positive effect) are household income and the married and cohabiting status (Table 4, columns 1 and 2).

¹⁴ Van Praag (2007 p. 18) simply argues that "All these specifications amount to different specifications of the labeling system of the underlying indifference curves, but the indifference curves themselves are unchanged and are these indifference curves which are estimated, either by Ordered Probit, Logit or what else."

¹⁵ For a robustness check with random effect ordered probit see section 6.

In a second specification we exclude the drop-out sub-sample and introduce the MF customer status dummy (dient) which is equal to one if the interviewee is a MF borrower. The variable is strongly significant and the effect of income vanishes.¹⁶

As it is well known, the calculation of the marginal effect of a change in a regressor on the probability of declaring oneself very happy in the ordered probit estimate is obtained with the following formula:

$$\Delta \Pr(\text{VerySatisfied}) = F(S + \Delta S - c) - F(S - c)$$

where F is the cumulative normal distribution, S the predicted average satisfaction level and c the highest cutpoint. By applying this formula we find that the MF borrower status is correlated with a 12 percent higher probability of declaring the highest life satisfaction score (Table 6).

Obviously, such a specification is fully subject to selection bias which is particularly severe in microfinance studies.¹⁷ Is the nexus between life satisfaction and the borrower status driven by participation to microfinance or is it pre-existent and due to heterogeneous characteristics between treatment and control sample? In this second case a reverse causality nexus applies: individuals endowed with specific personality traits (assertiveness, sociability, etc.) are both happier and more likely to be successful in their job. Such individuals are thus more prone to receive a micro-loan and, by considering them as the treatment group, the impact of MF participation might be overestimated. Note as well that the presence of a selection bias, by overestimating the effect of the treatment on the treated, leads to wrong policy conclusions on its effectiveness. In essence, the argument for the endogeneity between income and happiness applies also to the relationship between life satisfaction and MF borrower status.

As a partial solution to the heterogeneity problem between treatment and control sample consider however that control sample individuals are chosen among those eligible as Protagonizar customers. They therefore live in the same three barrios, have income which falls in the category of potential MFI borrowers and have started an economic activity since at least 6 months. Finally, only one out of six of them is a street vendor (see eligibility criteria in section 3).

A second problem which prevents us from interpreting our result in the second specification as a causality nexus is the survivorship bias. What we observe are only successful borrowers (those for which the loan, the ex-post economic performance and, presumably, life satisfaction are positively correlated). However the initial pool of borrowers included also those who failed at a given credit cycle and therefore terminated their relationship with the MFI. This second group of initial borrowers is more likely to register a non positive nexus between the microfinance loan, economic success and life satisfaction. In order to have an evaluation of the impact of microfinance which mitigates survivorship

¹⁶ Consider that the correlation between the two variables is of 7.5 percent (with the dummy including both MFI borrowers and dropouts and 15 percent with the dummy including MFI borrowers only).

¹⁷ Among the first microfinance papers dealing with these issues see Hulme and Mosley (1996), Pitt and Khandker (1998) and Coleman (1999).

bias, we create a dummy taking value of one for both current microfinance borrowers and dropouts. Results from this third specification document that the MFI borrower status effect on life satisfaction does not disappear when we take into account survivorship bias (Table 4, columns 5 and 6). The magnitude of the effect is just slightly reduced since the MFI borrower or dropout status is correlated with a 11 percent higher probability of declaring the highest level of life satisfaction.

As a fourth specification, in order to reduce heterogeneity between treatment and control group we estimate the model on the treatment group only by using the number of credit cycles as proxy of the microfinance effect. Note that we can restrict our analysis on the treatment group only since we have a non dichotomous measure of the treatment, that is the number of cycles. Here again, we find a strong positive effect of the number of credit cycles with life satisfaction (Table 5, columns 1 and 2). With regard to economic significance we find that a unit increase in the credit cycle from its sample mean increases the probability of declaring oneself at the higher level of life satisfaction by 1 percent. We can therefore conclude that the length of the relationship with the lender makes borrowers happier beyond current income which is also included as regressor. The result persists when we include dropouts in the sample even though its magnitude is weaker (the quantitative effect is reduced to 0.5 percent) (Table 5, columns 3 and 4 and Table 6).

Among the possible interpretations (widely discussed in the previous section) for this findings we may consider the expected effect of the financed investment on future income, the nonmonetary benefit of the increased self-esteem and social reputation, the enjoyment of the higher social capital lived in terms of increased trust and trustworthiness in interpersonal relationships.

Consider that when we use the credit seniority variable it is not fully possible to control for survivorship bias since dropouts interrupt their relationship and therefore have on average a lower number of credit cycles. However when looking at life satisfaction and not at income survivorship bias is not so problematic.

If in terms of income the inclusion of non survivors eliminates a positive effect this implies that, overall a given treatment has not increased income. If the same occurs in case of happiness we can say that happiness is higher for those who are so able to persist and survive but not if we consider also those who did not survived.

Another typical objection which may be raised on a survey measuring the effects of MF on happiness is that microfinance borrowers may feel themselves obliged to declare higher happiness levels if they figure that the MF institution may in some way check their answers. We however find that our result is robust to the inclusion of dropouts which should not feel the same obligation. In addition to it, it is hard to believe that the number of credit cycle effect may be interpreted in the sense that the interview bias is growing proportionally with the number of successful loans.

7. Conclusions

The process of inclusion of marginalised producers generated by a microfinance loan implies more than a simple improvement of economic conditions induced by the opportunity of financing a productive investment.

Rescue from poverty involves relevant non income (or non economic) effects arising from a process of “dignification” which increases self-esteem and social recognition of the financed borrower. As a consequence, we expect that when measuring the impact of microfinance program on a broader concept of wellbeing such as life satisfaction, such impact has an independent effect not absorbed by the change in income generated by the loan.

Our results support this hypothesis of a relevant microfinance effect independent of income showing its robustness to survivorship, selection and interview bias and its sensitivity to the number of credit cycles. Actually, we observe that, in spite of a low correlation between participation to the microfinance project and household income, when adding the MFI borrower status to the standard life satisfaction estimate the effect of household income disappears. This suggests that non income effects absorbed by the MFI status variable are crucial to generate the positive effect of the program on life satisfaction.

Unfortunately, it is impossible with the available data to assess which non income factors explain our findings. We argue that potential candidates are self-esteem, social recognition, improved expectations on future economic perspectives and enhanced trust and trustworthiness but the incidence of other unmeasured factors cannot be excluded and is left to future research.

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Table 1. Description of the main variables

VARIABLE	DESCRIPTION
Age	Age of the respondent.
Household Income - Hincome	Monthly respondent's and partner's income from I and II activities.
Household Food expenditure	Daily expenditure in food for the family.
Total Productivity	Monthly productivity measured by the ratio of respondent's + partner's income from I and II activities and the average number of hours worked.
Job Experience (years) - JobExp	Years of experience in the main respondent's activity.
Savings/month - Savings	Monthly savings generated.
Distance from MFI	Distance from the closer Protagonizar's local office (in cuadras; 1 cuadra = 130 m. approximately).
Distance from main road	Distance from the closer main route of commerce (usually, the closer asphalted road) - in cuadras; 1 cuadra = 130 m. approximately.
Life-Satisfaction	Respondent's general life satisfaction captured by the question "how happy do you consider yourself with your life" [from 0 to 10].
House satisfaction	Respondent's satisfaction about house conditions captured by the question "how happy do you consider yourself with the condition of your house" [from 0 to 10].
Self-esteem	Respondent's self-esteem captured by the question "how much do you consider yourself a good worker" [from 0 to 10].
N. of persons in the house - Hcomponents	Total n. of components in the house.
N. of children	N. of children living in and outside the respondent's house.
Schooling years (Respondent) - Schooling	Respondent's total n. of schooling years (included repetitions).
Schooling years (Partner)	Partner's total n. of schooling years (included repetitions).
Credit cycle	Cycle of current credit.
Total amount of last microcredit received	Amount of the last loan asked and received.
Amount of last repayment	Amount of the last installment.
Duration of the microcredit (weeks)	Duration of last micro-loan received (in weeks)
Indoor private toilette - Toilette	Dummy variable = 1 if the respondent's house enjoys private and complete toilette (not-shared).
Ceramic Floor - CeramicFloor	Dummy variable = 1 if the respondent's house enjoys a ceramic floor.
Brick Finished House- BrickFinished	Dummy variable = 1 if the respondent's house is finished and made of bricks and concrete.
N. of Bedrooms- Bedrooms	N. of bedrooms in the respondent's house.
Female	Dummy variable = 1 if the respondent is female and 0 otherwise.
Widow	Dummy variable = 1 if the respondent is widow.
Divorced	Dummy variable = 1 if the respondent is divorced.
Married	Dummy variable = 1 if the respondent is married.
Cohabitant	Dummy variable = 1 if the respondent is cohabitant.
Villa de Mayo	Dummy variable = 1 if the respondent lives in Villa de Mayo district.
S. Brigda	Dummy variable = 1 if the respondent lives in S. Brigda district.
Client	Dummy variable = 1 if the respondent is a borrower of Protagonizar.
Clients&Drops	Dummy variable = 1 for present borrowers (Clients) and former borrowers (Dropouts) of Protagonizar

Table 2 - Summary statistics of Socio-Demographic and Economic Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Age	361	43.19114	12.74666	17	79
Household Income	361	4096.097	4922.754	150	65000
Household Food expenditure	361	38.85286	30.12302	6.666667	400
Total Productivity	361	17.3678	22.59894	0	312.5
Productivity from I activity (Respondent)	361	11.06951	18.97678	0	312.5
Productivity from II activity (Respondent)	361	2.226235	8.611873	0	125
Productivity from I activity (Partner)	361	4.04512	6.653818	0	66.66666
Productivity from II activity (Partner)	361	0.0269314	0.3932752	0	6.944445
Job Experience (years)	349	8.340974	8.728824	0.6	50
Savings/month	361	186.0295	525.4139	0	5000
Distance from MFI*	361	16.77701	13.89867	0	120
Distance from main road*	361	1.285319	2.601609	0	25
Life-Satisfaction	360	8.390278	1.38929	3	10
House satisfaction	360	7.836111	1.771274	0	10
Self-esteem	360	9.048611	1.220643	4	10
N. of persons in the house	359	4.247911	1.920876	1	15
N. of children	361	2.99169	2.135009	0	13
Schooling years (Respondent)	359	8.477716	3.054131	1	18
Schooling years (Partner)	361	5.587258	4.503548	0	18
Credit cycle	361	6.614958	8.687712	0	26
Total amount of last microcredit received	209	1086.158	647.1381	150	3000
Amount of last repayment	209	108.3245	64.54202	11	354
Duration of the microcredit (weeks)	209	10.85167	3.185304	4	30
Indoor private toilette	361	0.7368421	0.4409586	0	1
Ceramic Floor	361	0.565097	0.4964323	0	1
Brick Finished House	361	0.4598338	0.4990758	0	1
N. of Bedrooms	361	2.204986	1.025821	0	9

Variable legend: see Table 1.

Table 3 -Summary statistics for eligible non participants, clients and drop-outs

Variable	Eligible non participants					Clients					Drop-outs				
	Obs	Mean	Std. Err.	95% Conf. Interval		Obs	Mean	Std. Err.	95% Conf. Interval		Obs	Mean	Std. Err.	95% Conf. Interval	
Age	152	43.68421	1.104722	41.5015	45.86692	150	42.53333	0.9579838	40.64034	44.42632	59	43.59322	1.697304	40.1957	46.99074
Household Income	152	3662.599	462.1428	2749.497	4575.7	150	4982.687	387.5127	4216.956	5748.417	59	2958.864	266.5228	2425.361	3492.368
Household Food expenditure	152	42.29793	3.249835	35.87691	48.71895	150	35.89159	1.725943	32.4811	39.30207	59	37.50605	2.055087	33.39235	41.61976
Total Productivity	152	15.79351	2.223757	11.39981	20.18721	150	20.60705	1.636741	17.37283	23.84127	59	13.1882	1.480573	10.22451	16.15189
Productivity from I activity (Respondent)	152	10.34208	2.111818	6.169552	14.51461	150	12.75111	0.9573707	10.85933	14.64288	59	8.668322	1.318832	6.028393	11.30825
Productivity from II activity (Respondent)	152	2.131734	0.5867983	.9723387	3.29113	150	2.92921	0.9037184	1.14345	4.714969	59	0.6824724	0.3089192	.0641034	1.300841
Productivity from I activity (Partner)	152	3.319697	0.4336696	2.462853	4.176541	150	4.861917	0.6576364	3.562419	6.161415	59	3.837402	0.719836	2.396494	5.278311
Productivity from II activity (Partner)	152	0	0			150	0.0648148	0.0497471	-.0334861	.1631158	59	0	0	0	0
Job Experience (years)	152	7.447368	0.684113	6.095699	8.799038	147	9.390476	0.7362667	7.935359	10.84559	50	7.972	1.253365	5.45327	10.49073
N. of temporary employess	152	0.0263158	0.0130265	.000578	.0520536	150	0.06	0.0254358	.0097385	.1102615	59	0	0	0	0
Savings/month	152	78.48684	25.43209	28.23815	128.7355	150	313.8444	57.65782	199.9118	427.7771	59	138.1356	41.49351	55.07732	221.1939
Distancia from main road	152	0.7927632	0.1110844	.5732826	1.012244	150	1.77	0.2964982	1.184116	2.355884	59	1.322034	0.1844173	.9528825	1.691185
Life-Satisfaction	151	8.142384	0.1221928	7.900943	8.383825	150	8.623333	0.097386	8.430897	8.815769	59	8.432203	0.1912987	8.049277	8.815129
House-satisfaction	151	7.728477	0.1505498	7.431005	8.025949	150	7.92	0.1384704	7.646381	8.193619	59	7.898305	0.2302324	7.437445	8.359165
Self esteem	151	8.983444	0.1008154	8.784242	9.182645	150	9.096667	0.1016306	8.895843	9.29749	59	9.09322	0.1457936	8.801383	9.385058
N. of persons in the house	150	4.013333	0.1608108	3.695569	4.331098	150	4.44	0.1529662	4.137737	4.742263	59	4.355932	0.2450715	3.865368	4.846496
N.of children	152	2.519737	0.1600503	2.20351	2.835964	150	3.253333	0.169797	2.917812	3.588854	59	3.542373	0.3182745	2.905277	4.179469
Schooling years (Respondent)	150	8.9	0.2614278	8.383415	9.416585	150	8.403333	0.2370445	7.93493	8.871736	59	7.59322	0.3753966	6.841782	8.344658
Schooling years (Partner)	152	5.828947	0.3903659	5.057663	6.600232	150	5.28	0.3360675	4.615926	5.944074	59	5.745763	0.6056394	4.533444	6.958082
Indoor private toilette	152	0.7894737	0.0331767	.7239231	.8550242	150	0.74	0.0359343	.6689933	.8110067	59	0.5932203	0.0645021	.4641054	.7223353
Brick Finished House	152	0.4802632	0.0406577	.3999317	.5605946	150	0.44	0.0406656	.3596442	.5203558	59	0.4576271	0.065417	.3266807	.5885735
N. of Bedrooms	152	2.144737	0.0926019	1.961774	2.327699	150	2.26	0.0782527	2.105372	2.414628	59	2.220339	0.1135676	1.993009	2.447669
Ceramic floor	152	0.5986842	0.039889	.5198715	.6774969	150	0.5466667	0.0407828	.4660793	.627254	59	0.5254237	0.0655683	.3941745	.6566729
Credit cycle						150	15.76	0.4911458	14.78949	16.73051					
Total amount of last microcredit received						150	1209.513	52.15598	1106.452	1312.574					
Amount of last repayment						150	121.1681	5.290582	110.7139	131.6224					
Duration of the microcredit (weeks)						150	10.84	0.1938841	10.45688	11.22312					

Figure 1 Distribution of life satisfaction (full sample, MF borrower, dropouts, eligible non participants)

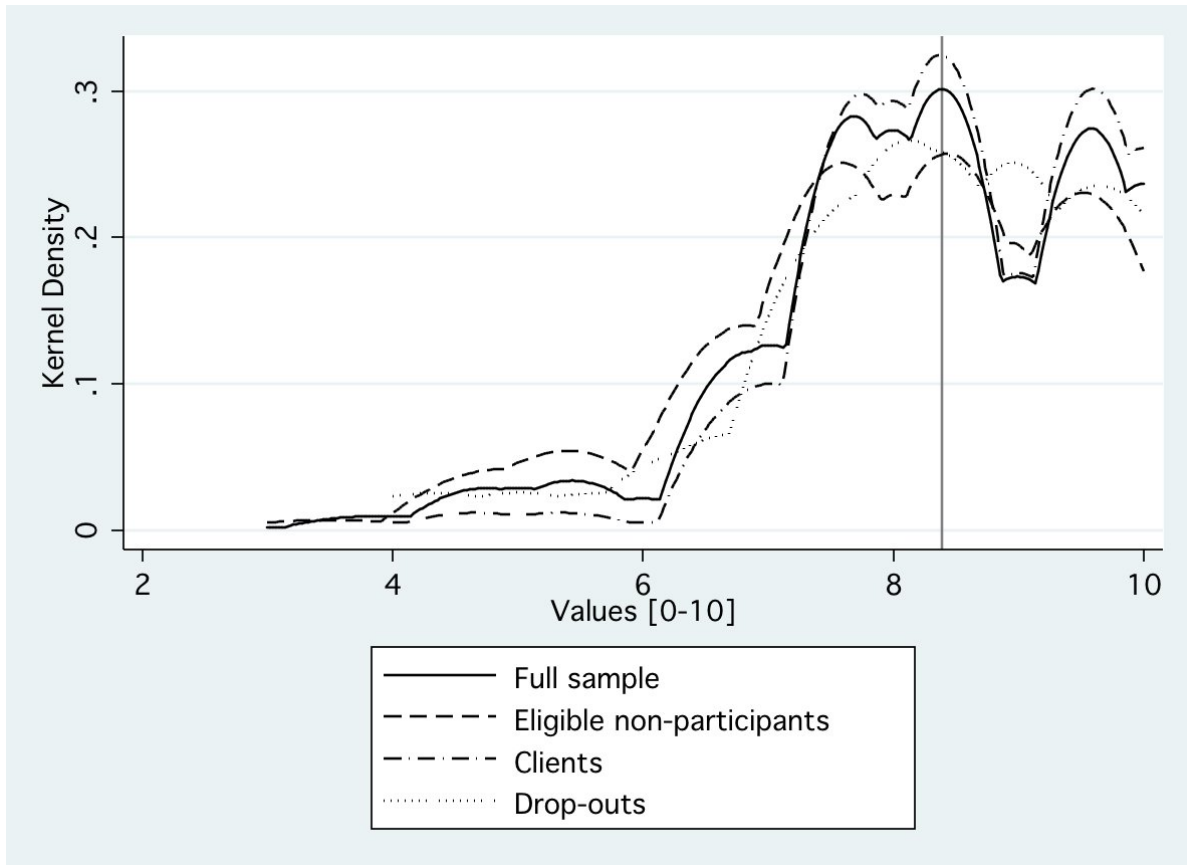


Table 3. Non parametric tests on differences in life satisfaction between groups

Test type	z- stat	p-value
Wilcoxon rank-sum equality test on life satisfaction: clients and dropouts vs. eligible non participants.	-2.663	(0.0077)
Wilcoxon rank-sum equality test on household's income: clients and dropouts vs. eligible non participants.	-3.974	(0.0001)

Table 4 - The determinants of life satisfaction for MFI and non MFI borrowers

Dep. Var.: LifeSatisfaction	OLS	OPROBIT	OLS	OPROBIT	OLS	OPROBIT
	1	2	3	4	5	6
Age	-0.00109 (0.00762)	-0.000773 (0.00593)	-0.00964 (0.00896)	-0.00830 (0.00697)	-0.00199 (0.00760)	-0.00162 (0.00595)
Female	0.142 (0.173)	0.0728 (0.132)	0.0744 (0.191)	0.0230 (0.146)	0.0951 (0.171)	0.0361 (0.131)
Widow	0.402 (0.360)	0.309 (0.274)	0.561 (0.411)	0.472 (0.319)	0.488 (0.372)	0.380 (0.285)
Divorced	-0.129 (0.794)	-0.0387 (0.536)	-0.273 (0.924)	-0.104 (0.637)	-0.0903 (0.810)	-0.00310 (0.547)
Married	0.505** (0.200)	0.391*** (0.147)	0.486** (0.210)	0.422*** (0.161)	0.545*** (0.196)	0.434*** (0.147)
Cohabitant	0.586*** (0.214)	0.426*** (0.163)	0.455* (0.232)	0.349* (0.182)	0.590*** (0.214)	0.435*** (0.164)
Toilette	0.339* (0.204)	0.266* (0.151)	0.255 (0.227)	0.197 (0.169)	0.375* (0.201)	0.296** (0.151)
CeramicFloor	-0.0789 (0.180)	-0.0826 (0.139)	-0.0268 (0.198)	-0.0240 (0.154)	-0.0694 (0.179)	-0.0742 (0.139)
BrickFinished	0.0849 (0.157)	0.0674 (0.125)	0.0518 (0.169)	0.0484 (0.136)	0.0683 (0.154)	0.0577 (0.124)
Savings	0.000138 (0.000108)	0.0000978 (0.0000869)	0.0000795 (0.000119)	0.00005.29 (0.0000970)	0.0000832 (0.000113)	0.0000518 (0.0000906)
JobExp	-0.00512 (0.00929)	-0.00532 (0.00725)	-0.0124 (0.0104)	-0.0110 (0.00832)	-0.00636 (0.00921)	-0.00643 (0.00725)
Bedrooms	0.0339 (0.0815)	0.0193 (0.0634)	0.0532 (0.0803)	0.0402 (0.0623)	0.0322 (0.0805)	0.0198 (0.0627)
Villa de Mayo	-0.382 (0.283)	-0.219 (0.202)	-0.113 (0.321)	0.00598 (0.231)	-0.104 (0.312)	0.0121 (0.223)
S. Brigida	-0.0161 (0.149)	-0.0179 (0.118)	-0.0234 (0.163)	-0.0162 (0.133)	0.0255 (0.151)	0.0169 (0.120)
Schooling	-0.0215 (0.0270)	-0.0250 (0.0212)	-0.0249 (0.0295)	-0.0262 (0.0235)	-0.0183 (0.0269)	-0.0229 (0.0212)
Hincome	0.0000191** (0.00000905)	0.0000209* (0.0000108)	0.0000126 (0.0000116)	0.0000135 (0.0000122)	0.00000783 (0.0000152)	0.0000179 (0.0000112)
Hcomponents	0.0201 (0.0472)	0.0221 (0.0376)	-0.00823 (0.0490)	-0.00233 (0.0395)	0.0128 (0.0475)	0.0156 (0.0379)
Client			0.439** (0.174)	0.376*** (0.139)		
Clients&Drops					0.405** (0.164)	0.345*** (0.127)
Observations	360	360	301	301	360	360
R-squared	0.070	0.0215	0.086	0.0277	0.085	0.0272

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

All the specifications consider the whole sample except spec. 3 and 4 for which drop-outs are not included

Table 5 - The determinants of life satisfaction for MFI borrowers only

Dep. Var.: LifeSatisfaction	OLS	OPROBIT	OLS	OPROBIT
	7	8	9	10
Age	-0.0201*	-0.0226**	-0.00424	-0.00551
	(0.0103)	(0.0103)	(0.00860)	(0.00791)
Female	0.0535	0.0708	0.0814	0.0568
	(0.236)	(0.223)	(0.202)	(0.180)
Widow	0.150	0.140	-0.109	-0.149
	(0.308)	(0.303)	(0.321)	(0.279)
Divorced	-0.420	-0.0878	-0.238	-0.0190
	(1.624)	(1.212)	(1.261)	(0.846)
Married	0.636**	0.643***	0.702***	0.594***
	(0.255)	(0.241)	(0.238)	(0.195)
Cohabitant	0.254	0.258	0.525**	0.423**
	(0.286)	(0.273)	(0.262)	(0.215)
Toilette	0.0356	0.0339	0.283	0.246
	(0.232)	(0.235)	(0.214)	(0.192)
CeramicFloor	-0.218	-0.179	-0.148	-0.138
	(0.233)	(0.228)	(0.202)	(0.185)
BrickFinished	0.0437	0.0927	0.132	0.161
	(0.200)	(0.203)	(0.175)	(0.167)
Savings	0.0000407	0.0000256	0.0000329	0.00000648
	(0.000103)	(0.000101)	(0.000105)	(0.0000934)
JobExp	-0.00240	-0.00409	0.00257	-0.000134
	(0.0118)	(0.0118)	(0.0102)	(0.00916)
Bedrooms	0.173	0.154	0.0837	0.0573
	(0.115)	(0.114)	(0.112)	(0.0998)
S. Brigida	-0.0317	-0.0264	-0.00229	0.00221
	(0.189)	(0.194)	(0.180)	(0.161)
Schooling	-0.0958***	-0.106***	-0.0753**	-0.0818***
	(0.0365)	(0.0382)	(0.0317)	(0.0292)
HIncome	0.00000868	0.0000134	0.0000169	0.0000223
	(0.0000159)	(0.0000182)	(0.0000146)	(0.0000174)
HComponents	-0.0201	-0.00901	0.0145	0.0298
	(0.0726)	(0.0662)	(0.0701)	(0.0593)
CreditCycle	0.0377**	0.0344**	0.0188*	0.0153*
	(0.0170)	(0.0149)	(0.00980)	(0.00879)
Observations	150	150	209	209
R-squared	0.220	0.0834	0.153	0.0549
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table 6. Quantitative effects of microfinance participation on life satisfaction

Prob. LifeSatisfaction = 10	Marginal effects			
	model 4	model 6	model 8	model 10
Client	0.12056396*** (0.0444291)			
Clients&Drops		0.1103267*** (0.0397572)		
CreditCycle			0.0115379** (0.0050477)	0.0052357* (0.0029858)

Effect of a unit change in the regressors on the probability of declaring the highest level of life satisfaction

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1