

## Volume 39, Issue 1

### Microfinance for women: Are there economic reasons? Evidence from Latin America

Rodrigo de O. Leite  
*Rio de Janeiro State University*

Jamil Civitarese  
*Brazilian School of Public and Business Administration*

#### Abstract

Our main research question is whether, using more robust statistical methods, the effect of the percentage of female borrowers of a Microfinance Institution (MFI) on the delinquency of the portfolio still holds. By using two samples of Latin American MFIs, we show that there is no relation between the percentage of female borrowers in an MFI portfolio and MFI economic outcomes. The relation between portfolio-at-risk and gender is not found when using a dynamic panel to account for serial autocorrelation, thus not accepting the hypothesis that women repay better than men. Hence, this paper suggests that MFIs lend more to women for reasons beyond just "economic" ones, such as empowering women and helping poor people, otherwise unable to access credit lines, get loans in Latin America.

---

We thank Prof. Jose Fajardo for his comments in an earlier version of this paper. We also thank Juliana Queiroz, Layla Mendes, Luiz C. Sacramento, the discussants and participants of the VII Meeting of the Brazilian Finance Society and the XLI Meeting of Brazilian Academy of Management, where this paper was presented. We also thank the financial support from the National Research Council of Brazil (CNPq), Higher Personnel Advancement Coordination (CAPES) - Finance Code 001, and the Getulio Vargas Foundation (FGV).

**Citation:** Rodrigo de O. Leite and Jamil Civitarese, (2019) "Microfinance for women: Are there economic reasons? Evidence from Latin America", *Economics Bulletin*, Volume 39, Issue 1, pages 571-580

**Contact:** Rodrigo de O. Leite - [rodrigo.de.oliveira.leite@gmail.com](mailto:rodrigo.de.oliveira.leite@gmail.com), Jamil Civitarese - [jamilkpc@gmail.com](mailto:jamilkpc@gmail.com)

**Submitted:** July 10, 2018. **Published:** March 16, 2019.

# 1 Introduction

In the last few decades, microfinance has been achieving increasing prominence in policy-making for the poor. Hence many companies – and empirical evidence – have emphasized the role of women to attain the desired financial and social outcome. However, there is not much agreement on how the percentage of female clients in microfinance institutions (henceforth MFIs) portfolios should affect their economic outcome.

On the one hand, behavioral research highlights overconfidence and time inconsistency as preponderant in men (Barber and Odean, 2001); thus the relative risk of lending to women could be smaller. On the other hand, there are reasons an excessive focus on women could bring higher risks for banks. For instance, sexism may impair the return on investments for women entrepreneurship. If this posited mechanism is true, not only psychological questions must be considered in predictions, but the cultural environment might influence the result of MFIs' lending to women as well.

Latin America is an understudied area in microfinance since most studies were conducted in different cultures such as India (Swain and Wallentin, 2009; Guérin et al., 2013), Pakistan (Mahmood, 2011) and African countries (Lewis, 2004; Belwal et al., 2012; Kim et al., 2007). Consequently, it brings the opportunity for a test of the behavior of MFIs that lend in a different cultural context. Latin America has an economic environment that motivates political scientists to distinguish it from other regions in terms of capitalism variety (Schneider, 2009); moreover, its “macho/tough guy” culture is a delicate theme for anthropological research and has quite complex implications for gender roles for both men and women (Mirandé, 1997).

We show, using two samples of Latin American MFIs (41 MFIs from 2005-2014 and 102 MFIs from 2010-2014), that, although there is an association between a higher percentage of female borrowers and a lower portfolio at risk, when using a dynamic panel in order to control serial autocorrelation, there is no effect between the gender of the portfolio and the portfolio at risk. We present robustness tests for this evidence through logistic regression and a two-stage least squares.

In this way, this paper suggests that MFIs in Latin America lend more to women for reasons not limited to “economic” ones. These might be empowering women and providing access to credit to those that cannot get it through the established financial market as, in developing countries, a largely neglected part of this market is comprised of women. These social outcomes are not tested in this paper but are not negligible when studying the microfinance phenomenon. Nevertheless, in financial terms, we dismiss the economic hypothesis regarding women being more important to banks than men.

Nonetheless, the cultural reasons for such results must be studied. We segmented the recent sample into countries with high gender inequality and tested how this influences the MFI behavior towards lending. This analysis has shown a tendency for MFIs in countries with low feminine empowerment to lend more to women. The result suggests a “social hypothesis” is a plausible explanation for MFIs' decisions.

The paper is structured as follows: section two is a brief literature review. This literature review is mainly focused on both correlational finance articles and experimental field data. Section three presents the econometric methods used and the results achieved. We conclude in section four with some practical issues related to women and microfinance.

## 2 Literature Review

In an overview of MFIs, Hulme and Mosley (1996) had shown they tend to have a high percentage of females in their loan portfolio. The many reasons for this are discussed, classified and summarized in this section. Two explanations are considered here: the economic – which can be segmented into the one based in gender differences in financial decision-making and the one grounded in the economic context – and the non-economical ones.

As noted by Kabeer (2005), the goal to increase gender equality and women's empowerment is very central is “an end in itself rather than an instrument for achieving other goals”. Hence it can be argued that it also should be a fundamental goal for MFIs to achieve.

It is argued that MFIs might tend to lend more to women because they may be better customers (Abdullah and Quayes, 2016; Hermes et al., 2011), being this a financial-decision making reason. Support for the “economic view” can be drawn by the fact that, in some countries, women are not able to access traditional finance and credit lines due to a lack of credit history and collateral, therefore having a greater need to repay the loans in order to obtain future credit lines (Armendáriz and Morduch, 2004). One could argue that lack of credit history and collateral is a problem for all entrepreneurs in developing countries, not just women, however, as Cheston and Kuhn (2002) notes, in 1995 70% of the population living with less than \$1 per day were women. Hence, the problems aforementioned, although also may

afflict male entrepreneurship, disproportionately affects females more.

Additionally, behavioral reasons could make women better customers than men. For example, women may be less overconfident than men (Barber and Odean, 2001; Cardoso et al., 2016)<sup>1</sup>, which could increase caution in taking a loan, hence increasing repayment rates. Also, women might be more susceptible to peer pressure in microfinance (Goetz and Gupta, 1996; Rahman, 2001), and that women tend not to travel and, thus, to be closer to home, which can increase the monitoring power of MFIs (Armendáriz and Morduch, 2004; Goetz and Gupta, 1996).

Nevertheless, Armendáriz and Morduch (2004) noted that Bank Rakyat in Indonesia had an almost-perfect repayment score without any specific target towards women. It could also be that banks that have better strategies to overcome the “collateral problem” are also the ones that lend more to women, due to “non-economic reasons”. If women are as good customers as men, then another explanation resides in *non-economical* (or ethical) reasons. MFIs might view women as more “unfavored”, and thus they lend to women to empower them (Hunt and Kasynathan, 2001; Mayoux, 2002; Weber and Ahmad, 2014).

For the welfare of women, the effects of microfinance-based interventions can be very positive. As evidence provided by Kim et al. (2007) shows, microfinance can indeed empower women and better their lives. In South Africa, after two years, the effect of microfinance policies was very positive, for example “sexual violence by an intimate partner was reduced by more than half” and “improvements in all nine indicators of empowerment were observed”.

As previously argued in the current paper, the “macho/tough guy” culture in Latin America can hinder the empowerment of women (Mirandé, 1997). Hence the situation of the countries in our sample makes microfinance a possible viable policy to empower women. Moreover, since microfinance programs can make women “challenge the existing social norms and culture, to effectively improve their well-being” (Swain and Wallentin, 2009), this can make MFIs more prone to lend to women aiming to improve their well-being.

Thus, a utility-maximizing MFI may lend to women in order to maximize its “economic” returns if women are better clients. Even if they are indeed better clients, a utility-maximizing MFI may lend to women for reasons other than just “economic” ones if their utility function encompasses “non-economical terms” such as maximizing outreach and increasing the improvement in their clients’ lives. However, if there is no causal economic benefit in lending to women, a preference in this lending behavior of the firm can only be explained by these “non-economical” factors.

## 3 Methodology and Empirical Results

### 3.1 Causality assessments

It is crucial to find causal mechanisms that explain how microfinance might affect the real world. In many studies, the treatment and control group are seldom the same in terms of observable variables such as loan amount, landholding, and in unobservable characteristics, like investment opportunities and intrinsic risk. These issues raise questions about the exogeneity of the treatment and claims of causality. Thus, for non-randomized studies, the researcher must use the “statistical toolbox” in order to reduce the effect of possible alternative explanations as Leite (2017) notes.

Randomized Control Trials (RCTs) are considered one of the best solutions to deal with the lack of exogeneity in microfinance research, as per Karlan et al. (2009). In a big review, Banerjee et al. (2015b) evaluated six RCTs published in the *American Economic Journal: Applied Economics*, establishing RCTs as the *gold standard* of causality assessments in microfinance research.

In this research line, economic reasons have been explored by several authors in different cultures. As an example, in a Philippines study, Ashraf et al. (2006) have shown that women with a lower discount rate for future relative to current trade-offs are usually more probable to commit to depositing money without the possibility of withdrawing before an accorded time.

Nevertheless, RCTs are not perfect. The researcher may gamble on luck by including several dependent variables or increasing the sample size after doing preliminary estimations. The p-values are reliable in a single estimation: when a researcher starts using several dependent variables, the likelihood of finding some false positives increases sharply. Thus, to claim causality, the researcher not only must focus his or her attention on design but also on the statistical methods and assumptions behind the estimated models.

Another problem is the question of external validity of experiments. As their implementation is usually local, cultural and institutional questions might limit our capacity to generalize the results. If

---

<sup>1</sup>Notice that the evidence presented shows that women are less *overconfident* than men, not less *confident*. The reasons for such behavior are complex and is not the main goal of our paper to analyze the underlying of such behavior, but if the percentage of female borrowers in a portfolio has any effect on the delinquency, and also if there is evidence of non-economic reasons behind targeting women as clients.

this is true even for hard sciences (Rothwell, 2005), when dealing with social sciences – a realm where even the boundaries of innate action and social construction are blurred (Berger and Luckmann, 1966) –, it is critical to use heterogeneous samples at least as a robustness test.

Additionally, RCTs are not always a possible solution. Many times, the research question that a paper wants to answer is related to a variable that cannot be manipulated. Thus, other statistical methods can be used to reduce endogeneity, such as fixed-effects panel data (Abdullah and Quayes, 2016; Khandker, 2005), hierarchical models (Leite et al., 2019) or dynamic panels (Khandker and Samad, 2014).

That is the case in our paper. We cannot randomly assign different percentages of female borrowers for different firms. Therefore, in this paper, we use secondary data with several different statistical techniques – panel logit, dynamic panel and an instrumental variable approach in a two-stage least squares – in order to assess if there is any economic reasoning behind microfinance for women. Whilst not completely causal, the usage of these methods together may suggest a very robust correlation.

## 3.2 Sample and variables

The sample is composed of 41 MFIs from Latin America (12 countries), from 2005 to 2014 in a balanced panel, thus making a total of 410 observations. The data comes from the Microfinance eXchange (MIX) project. As a robustness estimation, we also use a balanced panel sample from a smaller time frame (2010-2014) at section 3.3.2, which enables us to enlarge the number of MFIs from 41 to 102 (15 countries).

We use variables depicted in Armendáriz and Morduch (2004) and Abdullah and Quayes (2016). These variables are Gross Loan Portfolio (GLP), Profit Margin, Yield on GLP, Portfolio at Risk (P@R), Operational Self-sufficiency, Cost per Borrower, Return on Equity and the Percentage of Female Borrowers (PFB). Additionally we used the log of the Assets as a control variable in section 3.3.

## 3.3 Logistic model

We first assess if there is any relation between the economic indicators of MFI performance and the composition of its portfolio of clients, namely the percentage of female borrowers (PFB). To verify this relation, we tested if the economic indicators of a year  $t$  could predict the PFB of that MFI in the same year  $t$ .

We created the variable  $fem_{i,t}$ , which is a dummy, to equal 1 if  $PFB_{i,t} > \sum_{i=1}^{41} \frac{PFB_t}{41}$ . Thus the dummy  $fem_{i,t}$  equals 1 if the MFI  $i$  had a PFB greater than the mean for that year  $t$ . After the creation of this variable, we estimated the following logistic panel model:

$$p(fem_{i,t} = 1|X_{i,t}) = \Lambda(\beta X_{i,t} + \theta_i + \tau_{i,t}).$$

In the aforementioned model,  $X_{i,t}$  is the vector of the main variables in this study (gross loan portfolio, profit margin, yield on gross loan portfolio, portfolio at risk, operational self-sufficiency cost per borrower and return on equity),  $\theta_i$  is the MFI fixed effects and  $\tau_{i,t}$  is the year fixed effects. In the model, the  $\Lambda$  denotes the logistic CDF ( $\Lambda(X'_{i,t}\beta) = \frac{r}{1+r}$  with  $r = e^{X'_{i,t}\beta}$ ). Table 1 shows the results for the estimations.

A higher percentage of female borrowers was associated with a lower cost per borrower and a smaller return on equity. This shows that firms which choose to be focused on women tend to have smaller returns, even though they also have lower costs per borrower. While smaller costs are in line with the literature (Caudill et al., 2009; Leite et al., 2019), the smaller returns might indicate firms prefer to operate with smaller prices. This is robust to the addition of MFI fixed-effects, controlled for the country and the competition the firm may have on such place.

It could be the case that smaller MFIs, with high capital, have a higher percentage of female borrowers, what could be driving the negative effect of ROE on  $fem_{i,t}$ . We control for this possible explanation by adding the log of total assets in model 4. There is no significant effect of the size of the MFI on  $fem_{i,t}$ , and the ROE still has a significant negative association with our dependent variable.

To consider women as a neglected segment of the market leads to an alternative economic explanation for lower costs per borrower in banks focused on them. They would represent a market with higher demand, thus reducing the costs of marketing. However, this is ruled out by the non-significance of Gross Loan Portfolio: bigger banks are not particularly focused on women. This result is corroborated by the fact that the coefficient of the  $\ln(Assets)$  is also not significant.

This suggests that the idea that MFIs, at least in Latin America, have economic reasons for having a higher percentage of women in their portfolio is not supported by empirical evidence. Instead, we found that MFIs that have *smaller* returns tend to have *higher* shares of women in their portfolio, which may suggest non-economical reasons behind this decision.

Table 1: Results from logistic model

	1	2	3	4
Gross Loan Portfolio	-0.005 (0.013)	0.090* (0.053)	0.083 (0.079)	0.079 (0.091)
Profit Margin	11.771 (12.871)	34.902 (23.571)	48.306 (30.167)	48.315 (29.887)
Yield on GLP	9.567** (4.697)	12.021 (8.345)	13.271 (10.467)	13.534 (10.741)
Portfolio @ Risk (90d)	-5.202 (15.534)	-13.823 (19.066)	-21.072 (23.558)	-20.918 (23.595)
Operational Self-Sufficiency	-1.356 (8.439)	-6.732 (13.332)	-14.217 (16.231)	-14.076 (16.143)
Cost per Borrower	-0.007* (0.004)	-0.011** (0.006)	-0.013** (0.007)	-0.013** (0.007)
Return on Equity	-9.073** (3.675)	-24.917*** (9.340)	-29.191*** (11.528)	-29.669** (12.472)
ln(Assets)				0.184 (1.841)
No. Obs.	410	410	410	410
MFI FE	No	No	Yes	Yes
Year FE	No	Yes	Yes	Yes

Standard errors in parentheses. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1

### 3.4 Dynamic panel and instrumental variable (2SLS)

#### 3.4.1 2005-2014 sample

Now, after relating MFI economic performance to the percentage of female borrowers in its portfolio, we proceed to analyze if having a higher PFB decreases the portfolio at risk. This is a harder relationship to analyze since it could mean that women are better clients, or that companies with smaller delinquency use their slack to increase female participation in their portfolio. In addition, there is a strong autocorrelation in our model (P@R(90days):  $F(1, 40) = 30.00, p < .001$ ; P@R(30days):  $F(1, 40) = 31.50, p < .001$ ).

In order to solve these problems, we use two different methods. The first one is the estimation of a dynamic panel using first-differences as instruments in a generalized method of moments (developed by (Arellano and Bond, 1991)), applying the routine developed by Roodman (2009). The equation below describes the model used:

$$P@R_{i,t} = \beta P@R_{i,t-1} + \gamma(PFB_{i,t} - PFB_{i,t-1}) + \lambda(X_{i,t} - X_{i,t-1}) + \epsilon$$

In this way, the portfolio at risk on year  $t$  is explained by its lag  $P@R_{i,t-1}$ , and the first differences in the other variables as instruments ( $X_{i,t} - X_{i,t-1}$ ). Therefore, this method eliminates the necessity of fixed effects, since all time-invariant effects are dispensed with through the first-differences. Nevertheless, this model assumes that there is no overidentification in the instruments and that, after controlling for the dynamic effects, there is no significant autocorrelation.

We also performed an instrumental variable analysis. First we created a weakly exogenous dummy variable  $\widehat{fem}_{i,t}$ , as described below (based on the results presented at section 3.3):

$$\widehat{fem}_{i,t} = \aleph_1 CPB_{i,t} + \aleph_2 ROE_{i,t}.$$

Then we used  $\widehat{fem}_{i,t}$  in the following regression:

$$P@R_{i,t} = \alpha + \gamma \widehat{fem}_{i,t} + \lambda X_{i,t} + \theta_i + \tau_{i,t} + \epsilon.$$

As the first case, this method assumes no overidentification. In addition, it also assumes weak exogeneity, and we test both assumptions. Table 2 shows the results from all estimations.

First, there is no significant evidence of first and second order autocorrelation and overidentification restrictions on the dynamic panel model. Additionally, there is no significant evidence of endogeneity (thus our instrument is weakly exogenous) and overidentification restrictions in the 2SLS model. The results show no evidence that a higher female portfolio composition leads to a lower portfolio at risk.

Table 2: Results from dynamic panel and 2SLS

DV: Portfolio at Risk	Dynamic Panel		2SLS	
	90 days	30 days	90 days	30 days
L.Portfolio @ Risk (90d)	0.384** (0.195)			
L.Portfolio @ Risk (30d)		0.401* (0.231)		
Percent of Female Borrowers	0.012 (0.083)	0.037 (0.104)		
Dummy (1 if $\widehat{fem}_{i,t} > mean_t$ )			0.033 (0.039)	0.057 (0.045)
N	321	321	410	410
MFI FE	No	No	Yes	Yes
Year FE	No	No	Yes	Yes
AR(1) test (p-value)	.091	.120		
AR(2) test (p-value)	.860	.910		
Sargan test (p-value)	.873	.458	.376	.149
Endogeneity test (p-value)			.348	.600

Standard errors in parentheses. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Other variables ( $X_{i,t}$ ) are omitted.

### 3.4.2 2010-2014 sample

In this sub-section we apply the dynamic panel model depicted in the previous section 3.4.1 in a balanced sample that includes only the years between 2010 and 2014. As a result, there is an increase in the number of MFIs in our sample: from 41 (12 countries) to 102 (15 countries) in the afterward of the 2008 crisis scenario.

In addition, we compare our results to a “naïve” estimation, described below:

$$P@R_{i,t} = \alpha + \gamma PFB_{i,t} + \lambda X_{i,t} + \theta_i + \eta_t + \epsilon.$$

In the model above,  $\eta_t$  are year fixed effects. This estimation is “naïve” in the sense that it does not account for autocorrelation, which is strong even in this smaller time frame (P@R(90days):  $F(1, 101) = 32.19, p < .001$ ; P@R(30days):  $F(1, 101) = 47.18, p < .001$ ). The results from both models are depicted at Table 3.

Table 3: Results from dynamic panel and “naïve panel” (2010-2014)

DV: Portfolio at Risk	Dynamic Panel		Naïve panel	
	90 days	30 days	90 days	30 days
Percent of Female Borrowers	0.002 (0.067)	-0.059 (0.106)	-0.192*** (0.039)	-0.278*** (0.042)
N	302	302	510	510
MFI FE	No	No	Yes	Yes
Year FE	No	No	Yes	Yes
AR(1) test (p-value)	.116	.112		
AR(2) test (p-value)	.083	.091		
Sargan test (p-value)	.922	.578		

Standard errors in parentheses. \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

Lags and other variables ( $X_{i,t}$ ) are omitted.

The results from the dynamic panel from a larger sample in the 2010-2014 period replicated the ones from the previous section 3.4.1: there is no significant relationship between PFB and P@R. Nevertheless, using the specification similar to the one used by Abdullah and Quayes (2016) and D’espallier et al. (2011), the result shows that there is a *significant negative* relationship, so that the higher the female share in the MFI portfolio, the smaller the portfolio at risk.

However, since there is serial autocorrelation, this result is biased. By using the lag of the P@R as

a control and using  $PFB_{i,t} - PFB_{i,t-1}$  as an instrument, we can reduce this bias and make claims of causality stronger, since the P@R is explained by the increase or decrease of PFB, eliminating, in this manner, a possible spurious interpretation (it is not that MFIs that lend more to women experience higher repayments rates, but MFIs with high repayment rates are the ones that lend more to women).

Thus, we show that, although a panel model suggests there is a relationship between PFB and P@R, when using the lag of P@R as a control and first-differences as instruments for the independent variables, this relationship disappears. The hypothesis women repay better is, therefore, not robust.

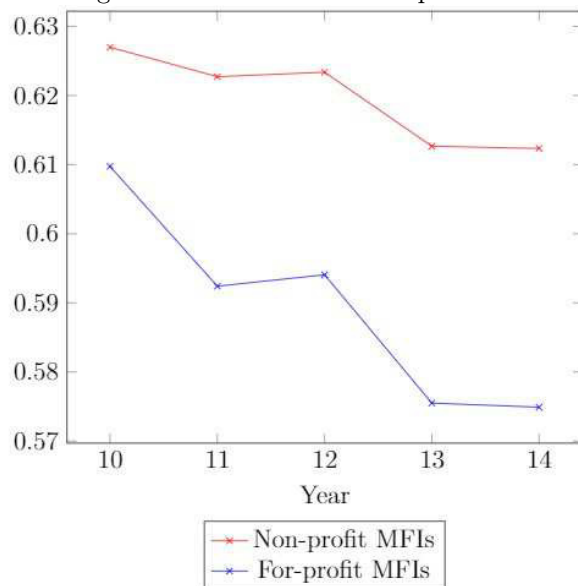
### 3.5 On Motivated Agents

In previous subsections, we showed it does not seem to be the case that female borrowers are better clients than men. Indeed, we indicate that the percentage of female borrowers is not linked to the delinquency of the portfolio in both 30 and 90 days time frames. However, that does not mean that MFIs are indifferent to the gender of their clients. Lending to women may increase the MFI’s utility for “non-economical” reasons, such as maximizing outreach and increasing the improvement in their clients’ lives, as we discussed in the literature section.

In this subsection, we show some evidence supporting this view. If we assume that non-profit MFIs have more “non-financial” incentives to lend money, i.e., they are “motivated agents” (Karaivanov, 2017; Besley and Ghatak, 2005), and that female borrowers are more in need of credit than their male counterparts, then it is reasonable to expect that non-profit MFIs would have a higher percentage of female borrowers when compared to for-profit MFIs.

Moreover, as Kabeer (2005) argued, the goal to increase gender equality and women’s empowerment is “an end in itself rather than an instrument for achieving other goals”. Thus, MFIs could be indeed motivated agents with a goal to help female entrepreneurship.

Figure 1: Percentage of female borrowers: for-profit vs. non-profit MFIs



As shown in Figure 2, non-profit MFIs lent more to women than for-profit MFIs. Indeed, between 2010 and 2014, the percentage of female borrowers in non-profit MFIs was of 61.96% versus 58.93% in for-profit MFIs ( $t = 5.52, p < .001$ ). Thus, we show there is some evidence the reasons why MFIs target women go beyond purely “economic” ones, encompassing “non-economical” factors since it is reasonable to assume that a utility function for non-profit MFIs would give a higher weight to the latter when compared to a utility function for for-profit MFIs.

Also, if our theory is consistent, in countries where there is less gender equality, MFIs should lend more to women. Hence, they should have a higher percentage of female borrowers. By using the Women Political Empowerment Index by the Varieties of Democracy Project (Sundström et al., 2017) and a regression analysis in which we regressed the PFB variable on a gender equality dummy (1 if a country has an equality index lower than the median of Latin American countries), the usual controls and a dummy for the profit status, we found a significant association between the gender equality dummy and the percentage of female borrowers in the portfolio.

In countries with a lower women political empowerment index (as measured by the Varieties of Democracy Project), MFIs tend to have a higher percentage of female borrowers ( $\beta = .05, t = 3.03, p =$

.003). This is another evidence supporting our conclusion: MFIs tend to have higher percentages of female borrowers in their portfolios not because they are better clients than men, but because it is consistent with the mission of these institutions.

## 4 Conclusion

We found that MFIs lending to women is associated not only with smaller costs per borrower but also with lower returns on equity and no difference on the gross loan portfolio, which may suggest a more diluted base of clients. This is not consistent with “economic” motives. Rather, this may suggest that there might be “non-economical” reasons behind the decision of increasing the participation of women in their portfolio.

Indeed, we found no evidence that a higher percentage of female borrowers in an MFI portfolio is related to a smaller portfolio at risk, which strengthens the claim that, at least in Latin America, the reasons for an MFI to lend money to women go beyond just the “economic” ones. Those motives could be empowering women or increasing social welfare (Banerjee et al., 2015a). Additionally, we show that non-profit MFIs lend more to women when compared to for-profit MFIs, what is in line with our reasoning.

Moreover, we also compared the estimations between a conventional panel (with MFI and year fixed effects) and a dynamic panel, which uses the lag of the dependent variable as a control and first-differences of the independent variables as instruments. This approach enhances the claim of causality, since it accounts for autocorrelation and uses instruments instead of the variables.

While the conventional panel showed a significant negative relationship between the percentage of females in the MFI portfolio and the portfolio at risk (both 30 and 90 days), when accounting for correlation and using instrumental variables (first-differences), this relationship disappeared. Therefore, we claim that there is no causal evidence which shows that females are inherently better clients than males, at least in Latin America.

In addition, not-for-profit MFIs and a higher percentage of females in the portfolio being associated and higher gender disparity and a higher percentage of females in the portfolio also being correlated suggest that MFIs tend to have a higher percentage of female borrowers not because they are better clients than men, but because it is consistent with the mission of these institutions.

Possible implications of these results are essential for the decision-making process of MFIs. Hence practitioners can use these results in their decision-making process. Although the literature is focused on why it could be economically beneficial for MFIs to lend to women (Abdullah and Quayes, 2016; D’espallier et al., 2011), we show that this economic difference may not be so significant after all. Thus, when an MFI is deciding whether or not to increase the percentage of female borrowers in its portfolio, “non-economical” motives should also be considered.

We also note that our paper is not assessing the true riskiness of MFIs, but instead we show that, at least in South America, there is no association of a higher percentage of female borrowers and lower delinquency (measured by the portfolio at risk in both 30 and 90 days time frames). The effect of the riskiness of an MFI and the gender composition of its portfolio remains a question for further research.

For future research, other questions such as the effect of the 2008 financial crisis on the composition of MFIs’ portfolio, or what is the decision-making weight of “non-economical” (or ethical) reasons could be explored, since in this paper we show evidence that these factors could be as important (or even more so) in the MFI decision-making than merely “economic” ones.

## References

- S. Abdullah and S. Quayes. Do women borrowers augment financial performance of MFIs? *Applied Economics*, 48(57):5593–5604, 2016.
- M. Arellano and S. Bond. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, 58(2):277–297, 1991.
- B. Armendáriz and J. Morduch. *The Economics of Microfinance*, 2004.
- N. Ashraf, D. Karlan, and W. Yin. Tying odysseus to the mast: Evidence from a commitment savings product in the philippines. *The Quarterly Journal of Economics*, 121(2):635–672, 2006.
- A. Banerjee, E. Duflo, N. Goldberg, D. Karlan, R. Osei, W. Parienté, J. Shapiro, B. Thuysbaert, and C. Udry. A multifaceted program causes lasting progress for the very poor: Evidence from six countries. *Science*, 348(6236):1260799, 2015a.



- A. Banerjee, D. Karlan, and J. Zinman. Six randomized evaluations of microcredit: Introduction and further steps. *American Economic Journal: Applied Economics*, 7(1):1–21, 2015b.
- B. M. Barber and T. Odean. Boys will be boys: Gender, overconfidence, and common stock investment. *Quarterly Journal of Economics*, 116(1):261–292, 2001.
- R. Belwal, M. Tamiru, and G. Singh. Microfinance and sustained economic improvement: Women small-scale entrepreneurs in ethiopia. *Journal of International Development*, 24:S84–S99, 2012.
- P. L. Berger and T. Luckmann. *The social construction of reality: A treatise in the sociology of knowledge*. Anchor Books, 1966.
- T. Besley and M. Ghatak. Competition and incentives with motivated agents. *The American economic review*, 95(3):616–636, 2005.
- R. L. Cardoso, R. O. Leite, and A. C. B. de Aquino. A graph is worth a thousand words: How overconfidence and graphical disclosure of numerical information influence financial analysts accuracy on decision making. *PloS one*, 11(8):e0160443, 2016.
- S. B. Caudill, D. M. Gropper, and V. Hartarska. Which microfinance institutions are becoming more cost effective with time? evidence from a mixture model. *Journal of Money, Credit and Banking*, 41(4):651–672, 2009.
- S. Cheston and L. Kuhn. *Pathways Out of Poverty: Innovations in Microfinance for the Poorest Families*, chapter “Empowering women through Microfinance”, pages 167–228. Kumarian Press, 2002.
- B. D’espallier, I. Guérin, and R. Mersland. Women and repayment in microfinance: A global analysis. *World Development*, 39(5):758–772, 2011.
- A. M. Goetz and R. S. Gupta. Who takes the credit? gender, power, and control over loan use in rural credit programs in Bangladesh. *World Development*, 24(1):45–63, 1996.
- I. Guérin, S. Kumar, and I. Agier. Women’s empowerment: Power to act or power over other women? lessons from indian microfinance. *Oxford Development Studies*, 41(sup1):S76–S94, 2013.
- N. Hermes, R. Lensink, and A. Meesters. Outreach and efficiency of microfinance institutions. *World Development*, 39(6):938–948, 2011.
- D. Hulme and P. Mosley. *Finance against poverty*, volume 2. Psychology Press, 1996.
- J. Hunt and N. Kasynathan. Pathways to empowerment? reflections on microfinance and transformation in gender relations in South Asia. *Gender & Development*, 9(1):42–52, 2001.
- N. Kabeer. Gender equality and women’s empowerment: A critical analysis of the third millennium development goal 1. *Gender & Development*, 13(1):13–24, 2005.
- A. Karaivanov. Non-grant microneance, incentives and efficiency. Working paper, 2017.
- D. Karlan, N. Goldberg, and J. Copestake. Randomized control trials are the best way to measure impact of microfinance programmes and improve microfinance product designs. *Enterprise Development and Microfinance*, 20(3):167–176, 2009.
- S. R. Khandker. Microfinance and poverty: Evidence using panel data from Bangladesh. *The World Bank Economic Review*, 19(2):263–286, 2005.
- S. R. Khandker and H. A. Samad. Dynamic effects of microcredit in Bangladesh. *World Bank Policy Research Working Paper*, 6821, 2014.
- J. C. Kim, C. H. Watts, J. R. Hargreaves, L. X. Ndhlovu, G. Phetla, L. A. Morison, J. Busza, J. D. Porter, and P. Pronyk. Understanding the impact of a microfinance-based intervention on women’s empowerment and the reduction of intimate partner violence in south africa. *American Journal of Public Health*, 97(10):1794–1802, 2007.
- R. O. Leite. Microfinance: methodological review and reserach agenda. *Revista de Contabilidade do Mestrado em Ciências Contábeis da UERJ*, 22(3):54–63, 2017.
- R. O. Leite, L. S. Mendes, and L. C. Sacramento. To profit or not to profit? Assessing financial sustainability outcomes of microfinance institutions. *International Journal of Finance & Economics*, Forthcoming, 2019.

- C. Lewis. Microfinance from the point of view of women with disabilities: Lessons from zambia and zimbabwe. *Gender & Development*, 12(1):28–39, 2004.
- S. Mahmood. Microfinance and women entrepreneurs in pakistan. *International journal of gender and entrepreneurship*, 3(3):265–274, 2011.
- L. Mayoux. Microfinance and women’s empowerment: Rethinking ‘best practice’. *Development Bulletin*, 57(76-80), 2002.
- A. Mirandé. *Hombres y machos: Masculinity and Latino culture*. Westview Press, 1997.
- A. Rahman. *Women and Microcredit in Rural Bangladesh: An Anthropological Study of Grameen Bank Lending*, volume 1. Westview Press, 2001.
- D. Roodman. How to do xtabond2: An introduction to difference and system GMM in Stata. *Stata Journal*, 9(1):86–136, 2009.
- P. M. Rothwell. External validity of randomised controlled trials:“to whom do the results of this trial apply?”. *The Lancet*, 365(9453):82–93, 2005.
- B. R. Schneider. Hierarchical market economies and varieties of capitalism in latin america. *Journal of Latin American Studies*, 41(3):553–575, 2009.
- A. Sundström, P. Paxton, Y.-T. Wang, and S. I. Lindberg. Women’s political empowerment: A new global index, 1900–2012. *World Development*, 94:321–335, 2017.
- R. B. Swain and F. Y. Wallentin. Does microfinance empower women? evidence from self-help groups in india. *International Review of Applied Economics*, 23(5):541–556, 2009.
- O. Weber and A. Ahmad. Empowerment through microfinance: The relation between loan cycle and level of empowerment. *World Development*, 62:75–87, 2014.

## Appendix

Table 4: Sample Description  
**MFIs (10y)   Obs. (10y)   MFIs (5y)   Obs. (5y)**

	<b>MFIs (10y)</b>	<b>Obs. (10y)</b>	<b>MFIs (5y)</b>	<b>Obs. (5y)</b>
Bolivia	4	40	7	35
Brazil	1	10	1	5
Colombia	0	0	6	30
Costa Rica	0	0	1	5
Dominican Republic	1	10	5	25
Ecuador	13	130	33	165
El Salvador	3	30	8	40
Guatemala	5	50	12	60
Haiti	1	10	1	5
Honduras	5	50	10	50
Mexico	1	10	2	10
Nicaragua	4	40	10	50
Panama	2	20	3	15
Paraguay	0	0	2	10
Peru	1	10	1	5
<b>Total</b>	<b>41</b>	<b>410</b>	<b>102</b>	<b>510</b>