



WHAT DRIVES DEBT DEFAULTS IN MICROFINANCE? THE CASE OF THE ASOCIACIÓN CIVIL AVANZAR

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Abstract

This paper sets out to elucidate the variables driving higher or lower rates of microfinance borrowers defaulting on paying back their loans in a case study of Asociación Civil Avanzar. We analyze the database held by this Argentinean civil society organization, examining the most salient data on borrowers, including personal, household, and loan information, to explain their behavior with respect to paying their installments. Interesting conclusions emerged that could help make progress down the path toward solving reporting problems when institutions similar to those in this study are deciding whether to grant a loan or not.

Keywords: Microfinance; default; borrowers; microcredit; financial services; econometric analysis.

1. INTRODUCTION

Microfinance institutions (MFI) aim to make a sustainable social impact by providing a credit flow to allow borrowers to gradually develop their entrepreneurial endeavors. In order for these institutions to ensure they can keep offering loans, they also need to worry about their own financial sustainability.

On the one hand, this sustainability requires tracking operating and financial economic indicators, considering income levels, wages, and other expenses the institution incurs to carry out its work. Nevertheless, analyzing loan payback rates—default rates—is also vital, as the loan portfolio quality is generally taken from the largest asset the MFI manages (Bekerman and Ozomek, 2003).

Looking into the features of the borrowers, several questions arise: Are women better at paying loans back than men? How do indicators like borrower's level of poverty, education, degree of access to financing sources, financial education process, amount and/or term of the loan, evaluation and follow-up from each advisor, and geographic proximity of the borrower to the institution influence loan repayment and timeliness? In short, this paper analyzes the empirical results obtained from accessing the database of an institution with a 17-year history of granting micro-loans.

The first section summarizes some overarching concepts related to the topic of microfinance as a tool to access credit for low-income people, with the significance of dealing with loan defaults as a way to ensure that institutions are sustainable in the long term, as well as background information available in the literature and outcomes of other similar experiences in Latin America. The second section outlines the main traits of the Asociación Civil Avanzar. The third section talks about the methodology and the hypotheses guiding this work. The results are presented in the fourth section, analyzing how each of the variables considered behaves. The fifth section contains the econometric analysis, which provides technical support for the compositional study in the earlier section. Finally, we sketch out some conclusions.

2. THE IMPORTANCE OF ACCESS TO CREDIT FOR LOW-INCOME SECTORS AND CONTROLLING DEFAULT

Earlier Studies

Definitions, international experiences, and extensive analysis with respect to the world of microfinance abound in the economic literature. The collective argument goes that microfinance is an innovative financing system as compared to the instruments used by the formal banking market. The word "poverty" arises as an imperative to examine this topic, as microfinance is geared toward improving quality-of-life for low-income individuals performing small-scale economic activities in informal working conditions (Sacroiski and Urturi, 2004; Muñoz, 2007).

The existence of programs and institutions designed to mitigate social vulnerability through financial services dates back nearly four decades, and has taken off in peripheral economies ever since the valuable experience of the scholar Muhammad Yunus and the Grameen Bank in Bangladesh, in 1976 (Yunus, 1997).

Sacroiski and Urturi (2004) characterize microcredit by its specific destination; they mainly discuss low-capital productive units operating under their own risk in the market, based fundamentally on the work of their own members, aiming to improve self-employment conditions. The point to microcredit schemes that stand out for their distinctive and innovative design, the usage of non-equity guarantees predicated on solidary backers, or third party or institutional cosigners, progressively-growing loan amounts over time, and the inclusion of short-term payback plans. They also recognize the importance of proximate relationships with the microcredit-granting institutions; direct follow-up, contact, and closeness with the borrower are all attributes intrinsic to microfinance schemes.

Armendáriz and Morduch (2011) remarked that risk is the top factor that dissuades banks from granting loans to the poor. The causes behind that include banks having incomplete information about low-income borrowers and their lack of collateral to offer an acceptable guarantee. To these failings of the formal credit market, the authors add the high costs of formal credit and challenges pertaining to contract enforcement. They conclude that without the right financing, the poorest aspirants will never be able to scale up to the degree they need to compete with better-endowed business owners, which places them in a poverty trap when it comes to getting loans.

The understanding, therefore, is that microfinance is a new way to break the vicious cycle of poverty as a reproducer of more poverty, reducing transaction costs and overcoming information problems. Using methodologies based on the use of private information and direct loan follow-up, among other tactics, MFIs manage to diminish the aforementioned effect of the risk of adverse selection (Dominguez *et al.*, 2007).

The Importance of Tracking Loan Defaults

Defaults, per se, do not necessarily mean the institution suffers a definitive loss, but they do drive their credit rating and require the institution to set up an accounting provision to back up the non-payment or only partial repayment of a loan.

When it comes to the effects of payment delays on how MFIs function, Ledgerwood (1999) found two major issues:

- Reduced liquidity due to spending on oversight and follow-up for loans behind on payment.
- Reduced financial revenue and increased operating expenses related to loan recovery.

Shaffer and Westley (1997) explained that when default rates are high, credit advisors are compelled to allocate a considerable portion of their time to negative interactions with borrowers in order to have adequate oversight over loans granted, in opposition to the ideal of an institution that is helping and supporting its beneficiaries. Moreover, the long-term relationship between the MFI and the borrowers could be impacted, eroding loyalty and leading to a negative contagion effect to the rest of the borrowers.

The recognition is, therefore, that having a lot of loans that have fallen behind on payment or whose borrowers have stopped paying altogether is one of the top reasons for insolvency and decapitalization, which in the end, in the long term, is detrimental to the solidity and sustainability of the institution (Ledgerwood, 1999).

Similar Experiences and Other Work Done Related to Asociación Civil Avanzar

Latin America has longstanding experience in developing microfinance. Countries like Peru and Bolivia are some of the main examples in the region when it comes to implementing loan strategies for local development. Multiple papers have analyzed defaults in the microfinance world in these countries (Aguilar and Camargo, 2004; Murrugarra and Ebentreich, 1999; Romero, 2007), using macroeconomic approaches, looking at financial solvency, and dealing with state regulations, among other techniques. Other studies have focused on the inherent characteristics of borrowers, households, or entrepreneurial endeavors, to determine the influence they have on access to credit (Díaz, 2008) or financial education (Mejía and Rodríguez, 2016).

Nevertheless, there are scant few studies done through the socio-demographic lens in Latin America. The Clavijo (2016) study is one such piece of research, diving into the socioeconomic variables of micro-entrepreneurs and MFI entrepreneurship in Colombia. Other standout examples include Bekerman and Ozomek (2003) and Renaud and Iglesias (2008), both about Asociación Civil Avanzar in Argentina.

For their part, Bekerman and Ozomek (2003) posited the importance of analyzing differences across defaulting borrowers as compared to "good borrowers" as a fundamental tool to manage bad debt for institutions. Their study corroborated that income level, prior experience in performing economic activities, credit terms, the number of employees at the micro-enterprise, the amount of time the borrower has been living in that town, their civil status, and number of children are all variables that influence credit behavior. The originality of that study makes it a great point of departure, but other variables could be added in, too.

Renaud and Iglesias (2008), for their part, compared borrowers and a control group to differentiate between "good" repayers and "bad." These authors referenced the credit characteristics (amount, term, how long the borrower had been with the MFI, geographic zone of residence, and activity sector). The results obtained demonstrated the positive impact on compliance with the number, amount, and age of the loans. They used the same method to score the entrepreneurs working in the service sector and those living nearby to the institution.

3. ASOCIACIÓN CIVIL AVANZAR FOR HUMAN DEVELOPMENT

The institution was founded in 2000, led by teachers and students from the University of Buenos Aires Faculty of Economic Sciences as a non-profit organization. Its objective set out to help improve living conditions for the neediest micro-entrepreneurs, and it works with people in the southern neighborhood of Ciudad Autónoma in Buenos Aires, especially those most affected by poverty and lack of job opportunities (Villa Soldati, Villa Lugano, Mataderos, and Villa Riachuelo).²

To reach these objectives, Avanzar, on the one hand, extends loans to micro-entrepreneurs in the regions it works to prevent the lack of financing from limiting their growth possibilities, and, on the other, offers training for capacity-building and to great job opportunities for the vast number of people who are unemployed or who are already micro-entrepreneurs.

In the MFI universe, there are those essentially geared toward attaining sustainability and financial surplus, while others are more focused on socioeconomic impacts. Against that backdrop, although Avanzar does aim to deepen the social impact of the microloans it offers, its other goal is to ensure its own financial sustainability as the only way to make sure the project will last over time. This is one strength that sets Avanzar apart from other smaller non-profit institutions to the extent that it is following up strictly with its borrowers, checking on default and progress made to support financial sustainability. These regular activities are strengthened markedly through course development, mentorship, and encouraging people to participate on a range of virtual commerce platforms, all designed to boost capacity-building and make borrowers more autonomous.

With respect to larger or for-profit institutions, Avanzar's mission is to reach the poorest of the poor, even if that entails a higher cost when it comes to granting loans. Higher costs are essentially due to the lower amount of the loans these sectors need and the higher levels of default found among people getting their first loan.

The fact that a loan is small (on average, Avanzar's loans are around 300 dollars) means that the amounts these institutions earn in interest are equally small with respect to the effort required to get borrowers to comply with the minimum requirements to take out a loan. Undoubtedly, this requires, generally speaking, more human capital. The cost is exacerbated by the courses, workshops, and coaching (as already mentioned) offered to improve the quality of the entrepreneurs' businesses. In Argentina, these human capital costs become much more onerous because wages are higher there than they are in other places throughout Latin America.

In that context, Avanzar has two nominal annual interest rate systems for the loans it grants to borrowers. One is for the most disadvantaged, at 24%, and the other is for those who have already made progress in managing their businesses, at 65%. These rates may seem high, but several clarifications bear keeping in mind. Number one, inflation in Argentina has hovered around 25% since 2007, with a couple of spikes in recent years, which has had a negative impact on the real value of the institution's portfolio. Number two, the inter-bank rate currently charged in Argentina is more than 50%, which rises to 70% for financing credit cards.

Finally, another distinction is worth remembering about Avanzar versus other MFIs in the country. It is that Avanzar has ties to the University of Buenos Aires, which means that its field activities are closely related to the research done by university students and scholars.

4. METHODOLOGY, HYPOTHESIS, AND CLASSIFYING THE BORROWERS BY DEFAULT CIRCUMSTANCE

When doing an intake for someone interested in taking out their first loan, credit agents capture a ton of data, including both qualitative and quantitative variables. Of 2,500 borrowers at Asociación Civil Avanzar who have taken out microloans, we managed to put together a complete database for a total of 861 borrowers, who had data for all of the variables considered. Then, we cross-checked that database with the internal default database: a monthly record that advisors keep to measure and identify unpaid installments.

There are 13 potential variables classified into three groups: personal, household-related, and credit-related. Likewise, the ex post credit experience analysis divided the participants into four groups pursuant to the degree to which they paid back their agreed installments.

On the one hand, there are those individuals called the "excellent payers" (EP) and the "good payers" (GP), comprising the "low-default borrowers" group (LDB). The first are perfectly compliant paying back their loans, and have never been behind on any payment during the years of analysis. The GPs are admitted with a maximum of a monthly delay, considering a contingent term and without any major administrative issue for the institution in terms of both liquidity and financial solvency.

On the other hand, the two groups comprising the significant delay group were denominated the "late payers" (LP) and the "defaulters" (DR), and both are "high-default borrowers" (HDB). The former group has been late on payment by one to three months; the defaulters have more than a quarterly delay. All of the borrowers began with Avanzar as EPs, but their statuses changed at some point throughout the time period analyzed if one or more payments was late. Accordingly, their status changed to GP, LP, or DR, depending on how late their payments were made.

By recognizing the salience of personal, household, and loan traits for the borrowers, it is possible to determine a set of hypotheses pertaining to the significance of the variables in explaining the financial behavior of borrowers.

Working Hypothesis

Hypothesis on the impact of personal variables

The assumption is that certain individual characteristics could infer people's creditworthiness as timely or untimely repayers. These include: age, nationality, gender, education, civil status.

For the first variable, we predicted that individuals on the way up and on the way down in their professions would have lower payment capacity due to a lack of experience or a low propensity to work, respectively; this would make them more vulnerable and, in turn, less likely to pay up.

Nationality: not expected to be significant in terms of credit culture; a priori, there are no theoretical arguments that have found that this innate characteristic of a population could lead to discrepancies in debt repayment behavior. But the outlook for gender is quite another: several studies have indeed been published finding a hypothetical comparative advantage for women as microfinance customers. The arguments are, essentially, that they have even less access to economic opportunities or sectors, and those who do get that access are more grateful (Rahman, 1997).

Another assumption is that education level is generally relevant to making someone a better borrower, by giving them greater skills to manage their profit-earning activity, money, or investments (Renaud and Iglesias, 2008). As far as civil status, we emphasize that borrowers who live with a partner may have additional or alternative income from their spouse, which could play a role as a guarantee in case of a contingency.

Hypotheses tied to household characteristics

These characteristics speak to borrowers' needs and emergencies in the family realm. These variables related to household proximity to the MFI, residential status (leaser, owner, lender), declared household income, and number of household members.

Where the first hypothesis is concerned, living close to the institutions means advisors go make household visits to the borrower to do follow-ups more often. This speeds up transactions, helps gather and update pertinent information, and forges ties of trust that improve compliance. When it comes to housing circumstance, paying a rent (in contingency situations) will often come before paying back a loan, which impact's the timeliness.

Looking at micro-entrepreneurs' capacity to take on debt, the assumption is that borrowers who earn lower incomes would be more likely to default on payments as they are more vulnerable in times of crisis. By contrast, higher income earners will have more ability to save, and could finance more profitable projects. Likewise, if a household has a high rate of dependency on the income, due to having more household members in the non-working age range sharing those assets, per capita income will be lower, as will capacity to save.

Hypotheses Related to Microcredit

Variables involved in this hypothesis are of vital importance to determining the inclusive role microfinance institutions play. Top variables include: whether borrowers are also engaged with other institutions, a positive relation between credit amount and timeliness, underlying vulnerability for those taking out their first loan, and a greater predisposition to compliance for short-term loans.

The first three variables have in common the thread of the learning effect, which underpins more credit experience. Whether with Avanzar or with other entities, the recognition is that this effect improves credit behavior. Once borrowers have incorporated regular payments to an MFI into their budgets, they start to want to take out bigger and bigger loans and make an effort to respect payment deadlines (Renaud and Iglesias, 2008).

When it comes to credit amounts, Asociación Civil Avanzar bases its work on a model known as "dynamic incentives." This model is designed to encourage borrowers to pay back their loans on time so that they when they go to renew their loans, they can get a bigger amount. There is a rising scale of amounts that becomes concrete with each renewal every time the borrower is perfectly payment-compliant. If a borrower falls behind, depending on how much, the credit amount can only be maintained or might even be reduced. This is one way to raise the opportunity cost for falling behind, and, as a result discourage strategic non-compliance (Armendáriz and Morduch, 2011). The objective is to help reduce the moral risk, to ensure minimum operating efficiency (Bekerman and Ozomek, 2003). Thus, the longer someone has had a loan (observed through the growing credit amount), the more timely they are likely to be, goes the assumption.

Along these same lines is the analysis pertaining to first-time borrowers. Borrowers who have only recently joined the financial system ought to fall behind more or generate more bad debt due to their lack of credit experience. Moreover, because the non-formal guarantees the institution uses to raise credit amounts arise from a link that is consolidated throughout the loan term, the first loans have a higher moral risk, because the information advisors have is incomplete.

In a preliminary study, Bekerman and Ozomek (2003) analyzed borrowers' behavior when credit terms were shortened and found that this shortening, in conjunction with other measures, could lead to better performance on a range of financial indicators. On another note, when beginning microfinance activity, most borrowers state their intent to raise the credit amount to be able to finance bigger projects; if the credit term is lower, they may think about a closer cancellation timeline and have more incentives to be punctual.

5. RESULTS

Crossing the institutional data on borrowers with the information pertaining to late payments on a monthly basis, we classified individuals into their payment categories, which gave rise to a compositional analysis, comparing the proportional distribution of EP, GP, LP, and DR for each variable available, trying to identify any bias due to the distribution of the original sample (see Table 1).

Table 1. Classifying the Borrowers by Their Creditworthiness or Default Level

<i>Excellent Payers</i>	<i>Good Payers</i>	<i>Late Payers</i>	<i>Defaulters</i>	<i>Total</i>	<i>LDB</i>	<i>HDB</i>
323	359	89	90	861	682	448
37.51%	41.70%	10.34%	10.45%	100%	79.21%	20.79%

Source: Created by the authors based on Avanzar's records.

Of the 861 borrowers in the sample analyzed, nearly 80% were EPs or GPs, which is to say, LDBs. The HDBs, meaning those more likely to default or pay late, were the LPs and DRs.

Personal Variables

Age. The results made clear that default or late payment is lower among older borrowers, with nearly 85% of them scored as EPs or GPs. Accordingly, the cohorts of older individuals had approximately half of the number of defaulting borrowers as the rest of the categories did, as well as a marked decrease in the number of late payers. As such, the hypothesis on this matter was not valid (see Table 2).

Table 2. Default or Late Payment Circumstance by Age

Age	Excellent Payer %	Good Payers %	Late Payers %	Defaulters %	Total	LDB %	HDB %
18-34	39.59	37.55	12.24	10.61	245	77.14	22.85
35-44	37.45	41.09	9.82	11.64	275	78.54	21.46
45-55	33.49	45.45	10.05	11.00	209	78.94	21.05
>55	40.15	44.70	8.33	6.82	132	84.85	15.15
Total	37.51	41.70	10.34	10.45	861	79.21	20.79

Source: Created by the authors based on Avanzar's records.

Nationality. The distribution of borrowers in terms of nationality points to one third each of Paraguayans, Argentineans, and Bolivians, with a minority share of Peruvians. The compositional analysis by category revealed that despite the fact that the late payment rate held relatively steady across the nationalities, there was a notable difference when it came to the DR variable. Argentineans and Bolivians had the most borrowers at least one quarter late on their payments (12.36% and 11.83%, respectively), as compared to the Paraguayan and Peruvian borrowers, with substantially lower rates (7.66% and 6.66%, respectively) (see Table 3). This is consistent with the opinion of the credit agents who evaluated borrowers of Paraguayan origin and found they are more timely payers, and once again does not fit with the original hypothesis of no difference due to nationality.

Table 3. Default or Late Payment Circumstance by Nationality

Nationality	Excellent Payer %	Good Payers %	Late Payers %	Defaulters %	Total	LDB %	HDB %
Argentina	40.54	36.29	10.81	12.36	259	76.83	23.17
Bolivia	33.59	43.89	10.69	11.83	262	77.48	22.52
Paraguay	38.32	43.80	10.22	7.66	274	82.12	17.88
Peru	39.62	45.28	9.43	5.66	53	84.90	15.09
Other	30.77	46.15	0.00	23.08	13	76.92	23.08
Total	37.51	41.70	10.34	10.45	861	79.21	20.79

Source: Created by the authors based on Avanzar's records.

Gender. It is essential to look at the values pertaining to gender distribution emanating from the study: of the 861 borrowers, 585 were women and 276 were men. In relative terms, 68% versus 32% points to a situation in which there are clearly more women than men involved in microfinance.³ The values obtained, nevertheless, did not display any significant differential in terms of payment compliance.

Education received. The education category was divided into categories by the maximum school level borrowers reached. They were screened by the following attributes: incomplete elementary school, complete elementary school, incomplete high school, complete high school, and university.⁴ The percentage of non-punctual payers rose as education level went up, beginning with 16.36% of individuals who did not complete elementary school to one-quarter of those who had some sort of tertiary-level education.

Civil status. The compositional analysis for this variable revealed that borrowers who entered "married" as their civil status accounted for a lower proportion of the defaulters. "Cohabitants," in turn, had the highest number of excellent payer borrowers, confirming out hypothesis. In that context, it is worth bearing in mind that the proportion of married or cohabitating men who were borrowers was far higher than that of women. By contrast, all of the "separated" borrowers were women, and the distribution is clearly biased toward defaulting, with 22.58% of borrowers in that category.

Household Characteristics

Residence zone. Six residence zones were classified pursuant to proximity to the Asociación Civil Avanzar headquarters.⁵ Number one, keep in mind that most of the borrowers (77%) were living in homes adjacent to Villa Soldati and Volla Lugano, very close by to the Avanzar offices. It turned out that the three zones closest to the institution happen to be where the best results were found for loan repayment punctuality. The farther away a household was from the institution, the more drastically the results diverged, with late payments and defaulting going up. This confirms our hypothesis.

Housing circumstance. Borrowers living in lent property they do not own had default rates substantially lower than any of the alternatives, representing 4.41% of the individuals who confirmed this housing circumstance. Moreover, this group had the highest rate of excellent payers, at nearly 16 percentage points (51.47%) higher than in the other two housing

groups. On another note, more than one-fourth of the borrowers renting their homes fell into the very late payer group, in contrast with 19.49% of the owner borrowers (see Table 4), which tends to confirm our hypothesis.

Table 4. Late Payment or Default Circumstance by Housing Status

<i>Housing Situation</i>	<i>Excellent Payer %</i>	<i>Good Payers %</i>	<i>Late Payers %</i>	<i>Defaulters %</i>	<i>Total</i>	<i>LDB %</i>	<i>HDB %</i>
Rented	34.74	38.50	12.21	14.55	213	73.24	26.76
Borrowed	51.47	35.29	8.82	4.41	68	86.76	13.23
Own	36.90	43.62	9.83	9.66	580	80.52	19.49
Total	37.51	41.70	10.34	10.45	861	79.21	20.79

Source: Created by the authors based on Avanzar's records.

Household members. One relevant outcome is the high degree of compliance seen in single-member households. Essentially, they had a very low percentage of late payers and defaulters (5.56% and 7.41%), confirming the hypothesis. Another noteworthy outcome, confirming the proposed argument, is that families with seven or more members performed poorly,⁶ with nearly one third of these households classified as HDB.

Total household income. With respect to the family income variable, the choice was made to divide income into four groups, looking at the minimum and mobile wage at the time the research was done.⁷ Households with income less than 440 dollars, between 440 and 660 dollars, between 660 and 880 dollars, and income above two minimum wages.

The most relevant corollary to the analysis of this category refers to the marked drop-off in the number of DRs as total household income rises (see Table 5). Nevertheless, although households earning less than the minimum wage did exhibit high levels of defaulting, they did, at the same time, have a high proportion of EPs as compared to the higher income categories. These results may reflect, for certain borrowers, a lack of credit or business experience that leads to a default, and in others, better performance in light of the reality of a microfinance supply very restricted to them. Thus, the hypothesis is only partially met.

Table 5. Late Payment or Default Circumstance by Total Household Income, in Dollars

<i>Total Household Income</i>	<i>Excellent Payer %</i>	<i>Good Payers %</i>	<i>Late Payers %</i>	<i>Defaulters %</i>	<i>Total</i>	<i>LDB %</i>	<i>HDB %</i>
<440	41.96	24.11	9.82	24.11	112	66.07	33.93
440-660	33.92	43.36	12.59	10.14	286	77.28	22.72
660-880	39.21	41.85	10.13	8.81	227	81.06	18.94
>880	38.14	47.88	8.05	5.93	236	86.02	13.98
Total	37.51	41.70	10.34	10.45	861	79.21	20.79

Source: Created by the authors based on Avanzar's records.

Loan Characteristics

Credit status with other financial entities. Analysis of the sample showed that most of the borrowers (54%) did not have any sort of financial contact with any other institution, so Avanzar would represent their sole contact with the lending system.

Of those borrowers who did hold liabilities with third parties, 17% were involved with formal and identified institutions. However, 30% were engaged with institutions not identified as consumer credit, or durable goods, or productive loan bodies. This means that they were facing high interest rates or credit plans that did not reflect their development as micro-entrepreneurs.

What immediately emanates from this analysis is that borrowers who have some sort of tie to the institutions identified have an extremely low percentage of defaulting (4.17%). This might indicate that borrowers took some kind of financial education after making contact with these credit institutions. By contrast, borrowers involved with unidentified lenders had a much higher rate of default than the average (13.28%), pointing to vulnerability to indebtedness at very high interest rates (see Table 6).

Table 6. Late Payment or Default Circumstance by Credit Status

<i>Credit Status</i>	<i>Excellent Payer %</i>	<i>Good Payers %</i>	<i>Late Payers %</i>	<i>Defaulters %</i>	<i>Total</i>	<i>LDB %</i>	<i>HDB %</i>
Important*	40.28	44.44	11.11	4.17	144	84.72	15.28
None	39.26	40.78	9.11	10.85	461	80.04	19.96
Other	32.81	41.80	12.11	13.28	256	74.61	25.39
Total	37.51	41.70	10.34	10.45	861	79.21	20.79

*(Banco Ciudad + Banco Provincia + FIE + Cordial + Coopel).

Source: Created by the authors based on Avanzar's records.

Amount of last loan and current loan. The distribution reflects that 25% of borrowers in the database did not have any prior loans, so this loan was their first. For those getting their first loan, they showed the same dual behavior as found in the "Total Household Income" category.

Along these lines, what emerges is that despite the fact that certain first-time borrowers behave excellently, the rest of these borrowers do display a high rate of default (13.7%), and a large number of them display behaviors indicating their loans will be uncollectible (17.81%). In other words, around one third of them fell into the high likelihood to pay late or default category (LP and DR). To the extent that credit amounts increase, and, therefore, the seniority of the borrower with the institution, the proportion of default and late payment falls. Once the loan amount surpasses the threshold of 4,000 pesos (290 dollars), borrowers' behavior changes markedly. In particular, for loans above the value of 440 dollars, borrowers scored as DR fell to one third of those getting a first loan (see Table 7).

Table 7. Late Payment or Default Circumstance by Amount of Last Loan, in USD

<i>Last Loan Amount</i>	<i>Excellent Payer %</i>	<i>Good Payers %</i>	<i>Late Payers %</i>	<i>Defaulters %</i>	<i>Total</i>	<i>LDB %</i>	<i>HDB %</i>
0 (First loan)	54.79	13.70	13.70	17.81	219	68.49	31.51
<290	34.78	39.13	13.77	12.32	276	73.91	26.09
290<440	31.52	58.79	6.06	3.64	165	90.31	9.70
>440	27.36	61.69	5.47	5.47	201	89.05	10.94
Total	37.51	41.70	10.34	10.45	861	79.21	20.79

Source: Created by the authors based on Avanzar's records.

Current loan term. Borrowers were put into one of three groups: those with a loan term less than or equal to six months, between seven and eleven months, and more than twelve months.

One eloquent result that arises is the percentage of excellent payers in the first group, at 46.49%, as compared to 36.69% and 30.45% in the other two. Crossing this variable against the loan amounts corroborated the following: as the amount rises, borrowers prefer to distribute the capital across more installments, aiming to reduce the monthly pressure on their income. Essentially, most of the loans less than 290 USD (47.7%) were granted in six or less installments, but only 16.61% of these loans required payback over one year. As compared to that, most of the loans above 660 USD (70.9%) were given for longer terms, and only 10.05% were amortized over a time period less than six months.

One interesting outcome that surges from analyzing late payment in this variable cross-check is that there is a higher likelihood of default among borrowers with lower loan amounts when the terms are long. When loan amounts are low, what is most salient is to grant a short repayment term, because it underscores the impact of the dynamic incentive by shortening the loan renewal timeline, fostering a positive attitude among borrowers toward punctuality.

6. ECONOMETRIC ANALYSIS OF DEFAULTING BORROWERS

The econometric analysis took borrower default as the dependent variable. To this effect, a Logit model was built, aiming to establish whether the applicants' traits had a significant impact on the dependent variable.

Model (1) was designed pursuant to the aforementioned hypotheses:

$$\begin{aligned}
 Y_{\text{default}} = & \alpha + \delta_1 \text{nacparagu} + \delta_2 \text{age} + \delta_3 \text{gender} + \delta_4 \text{education} + \delta_5 \text{civilstatus} \\
 & \delta_6 \text{home} + \delta_7 \text{zone} + \delta_8 \text{householdmem} + \delta_9 \text{income} + \delta_{10} \text{liability} \\
 & \delta_{11} \text{lastloanamt} + \delta_{12} \text{curramt} + \delta_{13} \text{loanterm} + \varepsilon
 \end{aligned} \quad (1)$$

Nevertheless, the lack of individual significance for some variables led to the construction of another reduced model (2). Both appear in Table 8.

$$Y_{\text{default}} = \alpha + \delta_1 \text{nacparagu} + \delta_2 \text{age} + \delta_3 \text{home} + \delta_4 \text{zone} + \delta_5 \text{householdmem} + \delta_6 \text{income} + \delta_7 \text{liability} + \delta_8 \text{lastloanamt} + \delta_9 \text{curramt} + \delta_{10} \text{loanterm} + \varepsilon \quad (2)$$

Table 8. Results of Econometric Analysis

Default	Model (1)	Model (2)
1 if Paraguayan nationality	-0.6374 (-0.2821)**	-0.6513 (-0.276)**
1 if age <35 or >55	-0.4263 (-0.2522)*	-0.4242 (-0.2511)*
1 if female gender	-0.0523 (-0.2646)	- -
1 if elementary education (C and I)	-0.04894 (-0.2454)	- -
1 if civil status married/cohabitant	-0.1352 (-0.2601)	- -
1 if housing status is renting	0.553 (-0.259)**	0.5522 (-0.2587)**
1 if living near Avanzar	-0.7951 (-0.2412)***	-0.7979 (-0.2407)***
Household members	0.1417 (-0.0645)**	0.1348 (-0.0636)**
Total household income	-0.00009 (-0.00004)**	-0.0001 (-0.00003)**
1 if liabilities with unknown institutions	0.5336 (-0.2508)**	0.5216 (-0.2497)**
Current loan amount	-0.0001 (-0.00005)**	-0.0001 (-0.00005)**
1 if the last loan is > six installments	0.622 (-0.2848)**	0.6217 (-0.2848)**
1 if the current loan is the first loan	0.5017 (-0.28)*	0.516 (-0.2786)*

Note: For all dichotomous variables, values are 1 and 0.

References: ***significant variable at 1%; **significant variable at 5%; *significant variable at 10%. In parentheses are the p values of the individual significance test for the coefficients.

Source: Created by the authors.

Thus, the final model is determined by the following significant variables: a) nationality, because if the borrower is Paraguayan, the likelihood that the debt becomes uncollectable drops; b) age, because if the borrower is under 35 years old or older than 55 years old the likelihood of default falls; c) housing situation, because if the borrower rents, the likelihood of being untimely rises; d) residential zone, because proximity to the institution drives down the likelihood borrowers fall behind; e) number of household members, which drives up the likelihood of falling behind on a payment; f) household income, because as income rises, the probability of default wanes; g) if the borrower has a loan with other unrecognized institutions, the likelihood of default goes up; h) loan amount, as an indicator of the longevity of the tie to the institution; negatively related to the likelihood of delay; i) loan term, because if it is more than six installments, the likelihood of defaulting rises; and j) if the borrower is taking out their first loan, the likelihood of defaulting is higher.

These econometric results match the results of the compositional analysis in the above section. Likewise, they are aligned with the results found in Clavijo (2016), who proposed a Probit model and another multinomial Logit model. The author reached the same conclusions, with the exception of the outcomes for gender, education level, and civil status, which turned out to be not significant in this study.

7. CONCLUSIONS

The hypotheses were made pursuant to practical intuition, comments from advisors, and theoretical interpretations emanating from the pertinent literature. However, not all of them were validated by the study experience, and some were ruled out. Such was the case of the variables nationality, age, sex, and education.

The above conclusions refer, in terms of the first variable, to *more punctual repayments by Paraguayan and Peruvian borrowers*, the former backed by the econometric analysis and comments by credit officers themselves. Where age was concerned, the notion that *middle-aged borrowers behave better* was ruled out, as they are even worse than the younger borrowers. Nevertheless, older borrowers perform better, which may be tied to receiving benefits from the government or from their families, which guarantee them a more stable income.

As far as the third variable, *despite the existence of international experiences indicating that women are better repayers, this study did not demonstrate that they are more punctual than men are*. In the econometric analysis, the variable of gender was discarded for having null significance. Even so, although the reason for bias toward women in receiving microcredit could not be justified from the standpoint of sustainability for the MFI, the far-reaching role female empowerment plays in terms of their economic autonomy is still recognized, the role of microfinance as traction for their productive insertion should still be fostered, as they are at a disadvantage compared to men at present.

The final rejected variable, education, reached the conclusion that *higher formal school would not be an indicator of better creditworthiness*; on the one hand, based on the variables of credit status with other institutions and current credit amount, it *emerged that loan-related or financial education* is what matters, coming not from school but from the practice of microfinance itself. Experience with loans is a factor that makes people pay them back in a more timely fashion, either because of their education or some tie with the institution. It is no triviality that ties to unrecognized institutions, often other individuals at abnormally high rates, is linked to late-paying and non-paying behavior, given that both the loan and the institution are low quality, in terms of the rates and coaching provided, and this has a negative impact on the entrepreneur's finances.

Other features that matched the hypotheses included civil status and residential zone. The compositional results support the thesis that *entrepreneurs in a relationship are less late on payments*. Nevertheless, there is no drastic difference between them and single people. On the other end of the spectrum, *separated individuals, mainly women, did have payment issues*, getting categorized as the most likely to default; this would back up the need for a second income to ensure stability in the face of contingencies. Looking at residence zone, as claimed in the hypothesis, geographic proximity to the institution is positively related to good creditworthiness. The econometric study made a notable contribution to this hypothesis, corroborating the role of distance in the likelihood of non-payment. The conclusions speak to the behavior of the advisors, as they are more able to visit and stay in touch, and provide coaching, to those living closer by.

In terms of housing status, the results demonstrate that *renting borrowers are the latest in their repayments*, as they exceed in proportion of defaulters and late payers the rest of the housing options, also corroborated by the econometric analysis. One auxiliary outcome of that is that borrowers living in a "borrowed" house behave better. Another variable that proved the hypothesis posed is related to number of people in the household, *because beginning with six members or more, there is a trend toward defaulting*. In contrast to that, entrepreneurs living alone were the timeliest payers.

Of total household income, conclusions can be drawn pertaining to the hypothesis: the results once again support the arguments about the integral role of microfinance in diminishing poverty, as *to the extent that micro-entrepreneurs consolidate their credit experience and gain financial know-how, their standard of living improves, and they become more efficient and reliable for future loans at the institution*. Likewise, what can be deduced from the behavior of first-time borrowers is that in light of the lack of formal guarantees, and therefore inability to access regular loans, many low-income borrowers behave impeccably, harnessing the opportunity available to them.

Finally, when it comes to the features of the loans, the hypotheses posited were partially true: in the case of the last loan amount, *borrowers taking out their first loan effectively did display a trend to default*, with respect to those who already had experience at the institution. There is also radically opposite behavior in many of the first-time borrowers, moving with household income. When it comes to current credit term, even though borrowers with higher installments on their first loans were the most behind on payments, *longer terms for installments are very effective to the extent the loan amount is higher*. Because the amount to pay is divided over more months, it is easier to pay back because each monthly amount is lower.

In short, the "timely payers" (EP and GP) are the Paraguayan and Peruvian borrowers, older borrowers, those living in a couple, those living close to the institution, those living alone or with fewer members of the household, those living in borrowed homes, those with complete elementary school education, those with higher income, those who have had some loan with another recognized institution, beginning their experience with small loans and short-term installments, to later expand both to the extent their relationship with the institution solidifies. On the other hand, the "very late payers" (LP and DR) tend to be the Argentinean and Bolivian borrowers, with higher levels of education, separated women, living in rented homes or far away from the institution, with lots of members of the household, and low income. They are more frequently first-time borrowers, so following up with them is essential to reducing the financial costs of payment non-compliance.

The hope is that the information and methodology introduced here, about Asociación Civil Avanzar, will fuel the discussion around the moral risk credit advisors face, in an attempt to identify drivers of late payment or default for the microfinance world. This local case is not free from limitations, which could be resolved in large measure with a more exhaustive survey system that would deal with qualitative aspects, which were not taken into account here as they were not available. One such need is to obtain more specific data on entrepreneurship, like the type, longevity, and number of active employees. Even so, it does fulfill the ideal of providing a methodological reference framework for other MFIs to stack up against and use their services. It is vital to recall that although the profiles that emerged as the "timely payers" are not expected to constitute an ideal "package" for the objective borrower, they are a good benchmark for making official loan decisions. Accordingly, even though lower-income borrowers or renter borrowers are more likely to make late payments, it is up to MFIs to find tools to guarantee financial stability and continuity for the most vulnerable borrowers' entrepreneurial endeavors. It is worth acknowledging that the progressive credit strategy and offering workshops and courses are instruments that pave the way to cementing financial experience, strengthening trust in the institution, and developing entrepreneurial capabilities, all key aspects to tackling the vulnerability underlying poverty.

This sort of project leads to reflection on the importance of implementing public policies that would strengthen the work MFIs do. To start, it will be necessary to set up a mechanism to carry out strict auditing of the mission and efficacy of microfinance institutions that need support. From there, the idea would be to encourage, among other measures,

coordinated actions between the institutions and public programs, fund provision, networking, public sharing of activities, and the enactment of prudent norms appropriate for institutions of this sort.

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² Also including Villas de Emergencia de Los Piletones, Fátima, Villa 15 (Ciudad Oculta), Villa 1-11-14, Villa 21-24, and Villa 20, among others.

³ These values match with the results of the Microcredit Summit Campaign, which in 2007 reported that 70% of customers in the microfinance world were female (Daley-Harrys, 2009).

⁴ Incomplete and complete university studies were combined because there were so few data points from either of these variables.

⁵ *Zone 1:* SOLDATI, Carrillo, Fátima, Calasita, Edificios Soldati, Los Piletones, and Los Pinos. *Zone 2:* FLORES, Bajo Flores, Villa 1-11-14, Rivadavia, Charrúa, and Pompeya. *Zone 3:* LUGANO, Ciudad Oculta, Bermejo, Villa-20, Inta, Piedrabuena, Mataderos, Samoré, Cildañez, Pirelli. *Zone 4:* PROVINCE OF BSAS: Fiorito, Esperanza, G. Catan, Glew, LaFerrere, Lanús, Villa Celina, Lomas del mirador. *Zone 5:* Villa 21-24. *Other:* Palomas, Santander, Escarpino, Once, Villa Puyrredon.

⁶ The system only records the number of people in the household without breaking it down by gender or age.

⁷ The minimum wage was set at 6,060 Argentine pesos, equivalent to 440 USD.



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