

Who Takes Up Debt Relief?

Evidence from a Voluntary Restructuring Program ^{*}

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Abstract

We study participation in a large, voluntary consumer debt restructuring program implemented in Uruguay. Exploiting the program's staged design, we distinguish borrowers' engagement with the program through inquiry from their acceptance of standardized restructuring terms. We develop a simple model in which borrowers differ in effort costs and in the value they attach to restoring a clean credit record, yielding comparative statics for participation and its heterogeneity. Using administrative loan-level data, we find that take-up is positively associated with an observed component of program relief and declines sharply with age. Take-up also varies systematically with borrower characteristics that proxy for repayment effort, financial vulnerability, and the valuation of credit rehabilitation. These patterns suggest that participation in voluntary restructuring programs is shaped by both financial incentives and non-monetary frictions.

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1 Introduction

Household indebtedness is a pressing challenge in many economies, particularly among low-income populations with limited access to affordable credit. In response, governments, financial authorities, and the credit industry have implemented a range of debt relief programs to alleviate financial distress and promote financial inclusion. Yet, despite their potential benefits, there remains limited evidence on how borrowers respond to such initiatives—especially when participation is voluntary. Understanding what drives participation is therefore central to the design of programs that balance repayment incentives with social inclusion (Allen et al., 2022).

To rationalize the participation patterns, we develop a simple model in which heterogeneous borrowers differ along two key dimensions: their valuation of restoring a clean credit record and their cost of exerting repayment effort. Borrowers decide whether to enter the program and, conditional on entry, how much effort to exert to meet the repayment requirement. Participation depends on both observable factors—such as the amount of debt relief, income, and family responsibilities—and unobservable characteristics, in particular the subjective value attached to credit rehabilitation.

The model yields clear comparative statics that guide the empirical analysis. Participation is governed by a cutoff rule: borrowers compare their valuation of a clean credit record to the effective cost of obtaining it, which reflects both the repayment burden and any additional effort required. Participation always increases with the degree of relief, but the strength of this response depends on the nature of the effort choice. When a borrower’s unconstrained effort suffices to repay (an interior solution), the effect of relief is mechanical and homogeneous across individuals; differences in participation arise solely from heterogeneity in credit valuation. By contrast, when repayment requires additional effort (a corner solution), responsiveness to relief becomes intrinsically heterogeneous. Borrowers facing higher effort costs experience larger utility gains from marginal reductions in the repayment requirement and therefore respond more strongly to incremental relief. In this regime, debt

relief both raises participation and amplifies underlying differences across borrowers. At the aggregate level, the sensitivity of participation to relief depends on the share of borrowers in each regime.

The empirical analysis exploits the staged structure of a large-scale voluntary consumer debt restructuring program implemented in Uruguay between July and November 2024. Borrowers must first initiate an inquiry to learn their eligible exposures and the standardized repayment menu, and only then can they proceed to a pre-arranged renegotiation. This structure is empirically valuable because it lets us separate frictions related to awareness, access, and attention (the inquiry decision) from the trade-off emphasized in the model (acceptance of restructuring terms conditional on inquiry).

We estimate (i) the probability of reaching a pre-arranged renegotiation conditional on inquiry, and (ii) a selection model that jointly accounts for inquiry and acceptance as a robustness exercise. The results are consistent with the model’s comparative statics: take-up is positively associated with the observed relief component, and varies with borrower characteristics related to repayment capacity and financial vulnerability. Importantly, lower repayment burdens do not eliminate substantial participation gaps: families with children, retirees, disability pension recipients, and unemployed borrowers remain less likely to complete a renegotiation.

These findings have implications for the design of future voluntary debt-relief programs. First, financial incentives matter: even our incomplete measure of program relief is positively associated with take-up. This suggests that participation may have been higher if the program had informed borrowers about the size of the write-off. Second, the staged structure of the program reveals a distinction between interest and feasibility. For instance, borrowers with children are more likely to inquire about the program but less likely to proceed to a pre-arranged renegotiation, suggesting a gap between initial interest and the feasibility of accepting the standardized repayment terms. This pattern suggests that observable borrower characteristics could be used to tailor repayment terms or relief schedules, increasing

acceptance among groups that express interest but face higher barriers to participation.

Our work contributes to the growing literature on household debt relief, renegotiation, and program take-up. Existing studies document low and selective participation in voluntary restructuring programs, pointing to substantial frictions at the participation stage (Allen et al., 2022; Bianco and Moellman, 2022). Related evidence from loan moratoria and other relief initiatives emphasizes the role of liquidity constraints, borrowing limits, and demographics (Dancsik and Fellner, 2021), while work on mortgage modification programs highlights informational frictions, strategic delay, and perceived costs (Agarwal et al., 2017; Mayer et al., 2014). More broadly, the program take-up literature stresses the importance of psychological frictions and hassle costs (Bhargava and Manoli, 2015; Finkelstein and Nowidigdo, 2019). We add to this literature by showing that attrition in voluntary debt relief programs continues even after borrowers have obtained information about the offer. The program’s sequence from inquiry to pre-arrangement allows us to study acceptance of the restructuring terms separately from initial awareness and access. We then use our model to interpret heterogeneity in post-inquiry take-up in terms of repayment effort, repayment feasibility, and the expected value of renewed credit access.

The rest of the paper is organized as follows. Section 2 describes the institutional background of the program. Section 3 presents the theoretical framework and its comparative statics. Section 4 describes the data, while Section 5 outlines the empirical strategy. Section 6 reports the results, and Section 7 concludes. All proofs are collected in the Appendix.

2 The voluntary debt restructuring program

Between July and November 2024, Uruguay implemented a nationwide consumer debt restructuring program aimed at resolving long-standing delinquent credit exposures. The program combined two forms of relief. Small debts were automatically cancelled without requiring borrower action, while other eligible debts could be restructured under standardized,

interest-free repayment terms. Our analysis focuses on the second component: borrowers' voluntary take-up of restructuring terms.

The restructuring component targeted individuals classified as non-collectable borrowers in the Uruguayan Credit Risk Registry. It covered a large population, with eligibility extending to nearly one-fourth of the adult population. Nevertheless, as shown below, there was substantial attrition across the stages of voluntary participation, from eligibility to inquiry and from inquiry to pre-arranged renegotiation. This attrition motivates our focus on the frictions shaping borrower take-up.

2.1 Eligibility

Eligibility involved both borrower-level and loan-level conditions. At the borrower level, individuals had to be classified as category 5 borrowers as of April 30, 2022—the date marking the end of the COVID-19 health emergency—and remain in that category through May 2024.¹ In addition, the borrower's accumulated debt within the program had to be below 200,000 Uruguayan pesos.

At the loan level, eligible obligations had to be unsecured consumer credit exposures with outstanding balances above 5,000 and up to 100,000 Uruguayan pesos. Throughout the paper, we refer to each eligible borrower–institution exposure as a loan. Debts below 5,000 pesos were not restructured; instead, they were automatically canceled without requiring borrower action.²

¹Category 5 is the lowest credit-risk classification in the Uruguayan Credit Risk Registry. Borrowers in this category are those whose credit-quality assessment shows clear evidence of uncollectability, including borrowers with arrears of 180 days or more.

²The program excluded automobile loans, mortgage-backed credit, loans secured by personal guarantees or pledges, rent deposit guarantees, and other operations backed by real or personal collateral. In the case of debt collection agencies, only debts with balances below 1,000 pesos were automatically canceled; larger balances were eligible for restructuring.

2.2 Restructuring terms

The restructuring offer was standardized across creditors and substantially reduced repayment burdens. Although participation was voluntary for financial institutions, all eligible financial institutions decided to join the program. Once an institution joined, it accepted the standardized program rules and could not selectively reject eligible renegotiations that satisfied those rules.

For eligible restructured debts, creditors waived accrued interest, penalties, and charges accumulated since the original impairment date. Borrowers were required to repay only the original impaired amount that triggered the nonperforming classification. The waiver of accrued interest, penalties, and charges was therefore the main restructuring relief, together with the fact that the original debt was to be repaid in several installments without any interest.

Eligible borrowers could choose among several monthly repayment plans. The maximum number of installments was increasing on the original impaired amount, with repayment horizons extending up to 48 months.

2.3 Application process and staging

The program was administered by a private entity designated by the participating financial institutions. Between July 9 and November 15, 2024, eligible individuals could initiate participation by contacting the administrator to verify their eligibility and outstanding obligations. Until August 8, all procedures were conducted exclusively online through the program website, *www.soluciondeuda.com.uy*. From mid-August onward, a dedicated phone line and a WhatsApp channel were added, although not all financial institutions supported all communication modes.³ In the final weeks before the program closed, mass SMS messages were sent to eligible individuals to encourage participation.

Participation unfolded in distinct stages. The first stage was an inquiry (*consulta*),

³For example, two institutions did not accept applications via WhatsApp.

in which borrowers contacted the program channels to verify eligible debts and learn the restructuring options available to them. Inquiry identifies borrowers who were aware of the program or had sufficient access to the program administrator to obtain information about their eligible debts and restructuring options. However, it does not imply that the borrower accepted the restructuring offer or selected a repayment plan.

The second stage was a pre-arranged renegotiation (*preacuerdo*). Conditional on having made an inquiry, borrowers could proceed to a *preacuerdo* by selecting one of the standardized repayment plans through the online platform administered by the program administrator. Since participating institutions could not selectively reject eligible renegotiations satisfying the program rules, this stage primarily captures the borrower’s decision to move beyond information acquisition and proceed with the standardized restructuring offer.

The final agreement stage (*acuerdo*) required an additional step. After reaching a *preacuerdo*, the borrower had to go to the corresponding financial institution to sign the final restructuring contract. Borrowers had 30 days to convert a *preacuerdo* into a final agreement. This stage may therefore reflect not only the borrower’s acceptance of the standardized offer, but also additional administrative, mobility, time, and institution-specific frictions. More than 90 percent of *preacuerdos* subsequently became final agreements. None of these stages required immediate repayment. Subsequent repayment behavior is therefore a distinct take-up outcome, which we do not analyze in this paper, though it is part of our research agenda.

We focus on *preacuerdo* as the main early-stage take-up margin in our analysis because it is the cleanest observable measure of borrower acceptance of the standardized restructuring offer. Unlike *consulta*, it occurs after the borrower has reviewed the offer and selected a repayment plan. Unlike *acuerdo*, it did not require an in-person visit to the financial institution, and is therefore less exposed to additional mobility, time, or institution-specific administrative frictions. Finally, because no repayment was due at the *preacuerdo* stage, it captures the decision to proceed with the restructuring offer before subsequent repayment

capacity or compliance is realized.

Table 1 summarizes participation across the main stages of the program at the borrower, loan, and amount levels. The table highlights substantial attrition between eligibility, inquiry, and pre-arranged renegotiation. This staged structure is central to our empirical strategy: it allows us to distinguish initial awareness and access to the program from early-stage take-up of the standardized restructuring offer.

3 The model

3.1 Environment and timing

Consider a continuum of borrowers indexed by $i \in [0, 1]$, each owing an outstanding debt $D_i > 0$ to a financial institution. Borrowers differ along two dimensions: an effort cost parameter $k_i > 0$, capturing heterogeneity in the disutility or opportunity cost of effort; and a private valuation $B_i \geq 0$ of regaining a clean credit record, which reflects the expected benefits from renewed access to credit and other financial services once arrears are cleared. Each borrower chooses effort $e \geq 0$ to generate income $I(e)$, incurring a cost $C(e, k_i)$.

A voluntary debt relief program is introduced. It lowers the repayment requirement from D_i to $D_i - t_i$, where the policy parameter $t_i \in [0, D_i]$ measures the degree of relief. Both borrowers and lenders decide voluntarily whether to participate; the analysis focuses on the borrower's decision.

The timing is as follows:

- At time 0, the borrower observes (k_i, B_i) and the program terms t_i . She decides whether to participate in the program.
- At time 1, income is realized. A borrower who participated chooses effort $e \geq 0$ and repays deterministically if income exceeds $D_i - t_i$. A borrower who does not participate exerts effort only to maximize current income.

Participation therefore represents a precommitment to engage in repayment in exchange for potential restoration of credit access, whereas non-participation maintains the default status and its consequent exclusion from formal credit markets.

3.2 Preferences and technology

The following assumptions describe the properties of the income and cost functions.

Assumption 1 (Income technology). *The income function $I(e)$ satisfies the following condition:*

- $I_e(e) > 0$, and $I_{ee}(e) < 0$ for all e , income is increasing in effort and concave in effort.

Assumption 2 (Effort cost). *The cost of effort $C(e, k_i)$ satisfies the following two conditions:*

- $C_e(e, k_i) > 0$ and $C_{ee}(e, k_i) > 0$, cost is increasing and convex in effort.
- $C_{ek}(e, k_i) > 0$, borrowers with higher cost parameter face higher marginal disutility of effort.

Assumptions 1 and 2 ensure a unique interior optimum and monotone comparative statics of effort.

Borrower i 's utility from exerting effort e under a debt relief level t is

$$U(e; t_i) = I(e) + \mathbf{1}\{I(e) \geq D_i - t_i\} [B_i - (D_i - t_i)] - C(e, k_i), \quad (1)$$

where the indicator function captures the repayment rule: repayment is feasible whenever income exceeds $D_i - t_i$.

3.3 Effort choice

Given parameters (k_i, B_i, t_i) , the borrower chooses effort e to maximize utility $U(e; t_i)$ defined in (1). The unconstrained optimum $e^{FOC}(k_i)$ solves the first-order condition

$$I_e(e^{FOC}) = C_e(e^{FOC}, k_i), \quad (2)$$

representing the effort that would be optimal in the absence of repayment constraints.

If income at this unconstrained optimum exceeds the repayment threshold, $I(e^{FOC}) \geq D_i - t_i$, the borrower can repay without additional effort. Otherwise, repayment requires a higher effort level $e^R(t_i)$ satisfying $I(e^R) = D_i - t_i$. These two situations define the *interior* and *corner* regimes, respectively.

Optimal effort. The borrower's realized effort choice, denoted $e^*(k_i, B_i, t_i)$, is therefore:

$$e^* = \begin{cases} e^R, & \text{if } B_i > D_i - t_i + \Delta U_{\text{effort}}, \\ e^{FOC}, & \text{otherwise,} \end{cases} \quad (3)$$

where $\Delta U_{\text{effort}} = [C(e^R, k_i) - C(e^{FOC}, k_i)] - [I(e^R) - I(e^{FOC})]$ is the net utility loss from exerting the additional effort required to reach the repayment threshold.

Comparative statics of effort. The next lemmas summarize how optimal effort responds to borrower characteristics and program parameters.

Lemma 1 (Unconstrained effort). *Let $e^{FOC}(k_i)$ denote the unconstrained optimal effort level that solves $I_e(e^{FOC}) = C_e(e^{FOC}, k)$. Under Assumptions 1-2, the following comparative statics hold:*

$$\frac{\partial e^{FOC}}{\partial k} = \frac{C_{ek_i}}{I_{ee} - C_{ee}} \leq 0, \quad \frac{\partial e^{FOC}}{\partial t} = 0.$$

Borrowers with higher effort costs exert lower levels of unconstrained optimal effort. Impor-

tantly, the unconstrained optimal effort does not depend on the degree of debt relief.

Lemma 2 (Required effort). *Let $e^R(t_i)$ denote the effort required to satisfy the repayment condition $I(e^R) = D_i - t_i$. Under Assumption 1, the following comparative statics hold:*

$$\frac{\partial e^R}{\partial k} = 0, \quad \frac{\partial e^R}{\partial t} = -\frac{1}{I_e(e^R)} < 0.$$

A greater debt relief reduces the effort required to meet the repayment threshold, while effort costs k_i play no role since they do not affect the income function.

3.4 Participation decision

The borrower first decides whether to enroll in the program. If she does not enroll, she chooses her unconstrained optimal effort $e^{FOC}(k_i)$ and obtains the outside-option payoff

$$U^{\text{out}}(k_i) = I(e^{FOC}) - C(e^{FOC}, k_i).$$

If she enrolls, she chooses effort optimally given the relief t_i , her characteristic k_i , and her perceived benefit B_i . Let $U^{\text{enroll}}(t_i, B_i, k_i)$ denote the resulting maximal utility under enrollment. The borrower enrolls if and only if

$$U^{\text{enroll}}(t_i, B_i, k_i) \geq U^{\text{out}}(k_i).$$

This inequality is equivalent to a threshold condition on the perceived benefit B_i . In particular, the borrower enrolls whenever

$$B_i \geq B^*(t_i, k_i),$$

where $B^*(t_i, k_i)$ is the minimum benefit that makes enrollment at least as attractive as

default. This cutoff is given by

$$B^*(t_i, k_i) = \begin{cases} D_i - t_i, & \text{if } I(e^{FOC}) \geq D_i - t_i \quad (\text{interior}), \\ D_i - t_i + \Delta U_{\text{effort}}, & \text{otherwise} \quad (\text{corner}), \end{cases} \quad (4)$$

where ΔU_{effort} is defined in Section 3.3 as the net utility loss from exerting the additional effort required to reach the payment threshold.

In the interior regime, debt relief has only a mechanical effect on the cutoff: the borrower already generates enough income to repay at e^{FOC} , so no additional effort is required and $B^*(t_i, k_i) = D_i - t_i$. In this case, the participation condition has an intuitive interpretation: the benefit B_i needs to be higher than the repaid amount $D_i - t_i$. In the corner regime, repayment requires a higher effort level $e^R(t_i) > e^{FOC}$, and the participation cutoff reflects the associated change in utility. Using the repayment condition $I(e^R) = D_i - t_i$, we can rewrite the cutoff as

$$B^*(t_i, k_i) = D_i - t_i + \Delta U_{\text{effort}}(t_i, k_i) = U^{\text{out}}(k_i) + C(e^R(t_i), k_i).$$

Thus, in the corner regime, the cutoff $B^*(t_i, k_i)$ has also an intuitive interpretation: the borrower enrolls only if her perceived benefit B_i exceeds the outside option plus the cost of exerting the required repayment effort.

3.5 Comparative statics of participation

To study how participation responds to debt relief and borrower characteristics, we now suppress borrower subscripts and work with generic variables. Let D denote the original outstanding debt, t the debt relief, k the effort-cost parameter, and B a generic draw from the valuation distribution, with cumulative distribution function F_B and density f_B . The participation cutoff derived in the previous subsection is therefore written as $B^*(D, t, k)$.

Throughout the comparative statics, D is held fixed unless otherwise stated.

From the previous subsection, enrollment occurs whenever $B \geq B^*(t, k)$. The resulting participation probability is therefore

$$P(t, k) = \Pr(B \geq B^*(t, k)) = 1 - F_B(B^*(t, k)). \quad (5)$$

By the chain rule,

$$\frac{\partial P}{\partial x} = -f_B(B^*(t, k)) \frac{\partial B^*(t, k)}{\partial x}, \quad x \in \{t, k\}. \quad (6)$$

Thus, all comparative statics of participation operate through the way debt relief and borrower characteristics shift the cutoff $B^*(t, k)$, scaled by the density of valuation at that cutoff.

Proposition 1 (Effect of debt relief on the participation cutoff). *For any given cost of effort k , the participation cutoff $B^*(t, k)$ is strictly decreasing in the level of debt relief t :*

$$\frac{\partial B^*(t, k)}{\partial t} < 0.$$

Debt relief lowers the repayment requirement from D to $D - t$, thereby reducing the minimum perceived benefit B^* needed to make enrollment attractive. In the interior regime, repayment already occurs at the unconstrained effort level, so the effect is purely mechanical: $B^*(t, k) = D - t$. In the corner regime, the borrower must increase effort to repay; debt relief reduces the required effort $e^R(t)$, which further lowers the cutoff.

Proposition 2 (Effort costs and the participation cutoff). *The participation cutoff $B^*(t, k)$ is weakly increasing in the effort-cost parameter k_i :*

$$\frac{\partial B^*(t, k)}{\partial k} \geq 0,$$

with strict inequality in the corner regime, where repayment requires additional effort.

The effort-cost parameter k captures the disutility of effort. In the interior regime, where the borrower can repay at her unconstrained effort level, the cutoff $B^*(t, k)$ does not depend on k . In the corner regime, by contrast, repayment requires exerting additional effort above the unconstrained optimum. A higher effort cost raises the disutility of this extra effort, increasing the effective cost of obtaining a clean credit record and therefore raising the participation cutoff.

Proposition 3 (Heterogeneous responsiveness of the participation cutoff). *In the corner regime, the sensitivity of the participation cutoff $B^*(t, k)$ to debt relief t varies with the effort-cost parameter k . In particular,*

$$\frac{\partial^2 B^*(t, k)}{\partial t \partial k} < 0,$$

so the responsiveness of B^ to debt relief becomes stronger as effort costs increase.*

Debt relief reduces the repayment requirement and thus lowers the effort level $e^R(t)$ needed to repay in the corner regime. When effort is more costly, i.e., when the parameter k is higher, the utility gain from this reduction in required effort is larger. As a result, debt relief decreases the effective cost of obtaining a clean credit record by a greater amount, making the effect of relief on the cutoff $B^*(t, k)$ stronger.

Propositions 1–3 characterize how debt relief and borrower characteristics shift the participation cutoff $B^*(t, k)$. Since participation depends on (t, k) only through this cutoff, the comparative statics of the participation probability follow directly from Equation (5):

$$\frac{\partial P}{\partial x} = -f_B(B^*) \frac{\partial B^*}{\partial x}, \quad x \in \{t, k\}.$$

Thus, the sign and magnitude of any participation response are determined by (i) the structural effects of (t, k) on B^* , as established in the preceding propositions, and (ii) the local behavior of the density f_B around the cutoff. The next corollary collects these implications

for participation probabilities.

Corollary 1 (Comparative statics of participation). *Let $P(t, k) = 1 - F_B(B^*(t, k))$ denote the participation probability. Then:*

1. **Debt relief.** *For all k , participation increases with debt relief:*

$$\frac{\partial P(t, k)}{\partial t} > 0.$$

2. **Borrower characteristics (levels).** *For all t , participation decreases with the cost of effort:*

$$\frac{\partial P(t, k)}{\partial k} \leq 0,$$

with strict inequality in the corner regime.

3. **Heterogeneous responses to debt relief.** *The sensitivity of participation to debt relief satisfies*

$$\frac{\partial^2 P}{\partial t \partial k} = - \left[f'_B(B^*) \frac{\partial B^*}{\partial t} \frac{\partial B^*}{\partial k} + f_B(B^*) \frac{\partial^2 B^*}{\partial t \partial k} \right].$$

The heterogeneous effects of debt relief on participation depend not only on the structural comparative statics of the cutoff $B^*(t, k)$, but also on the shape of the density f_B around that cutoff. In particular, the cross-partial derivatives of P involve the term $f'_B(B^*)$, so the direction and magnitude of heterogeneous responses depend on whether the density is increasing or decreasing at the relevant point of the distribution. When $f'_B(B^*) > 0$, a movement of the cutoff toward higher values encounters a denser region of the distribution, amplifying the effect of debt relief on participation. Conversely, if $f'_B(B^*) < 0$, the same movement has a dampening effect. Hence, the distribution of perceived benefits shapes how differences in borrower characteristics translate into differences in program responsiveness. To illustrate how the structural and distributional effects interact, and how the participation response to debt relief varies with borrower effort costs, Figure 1 displays the movement of

the cutoff and the corresponding shaded areas of newly entering participants for low and high values of k .

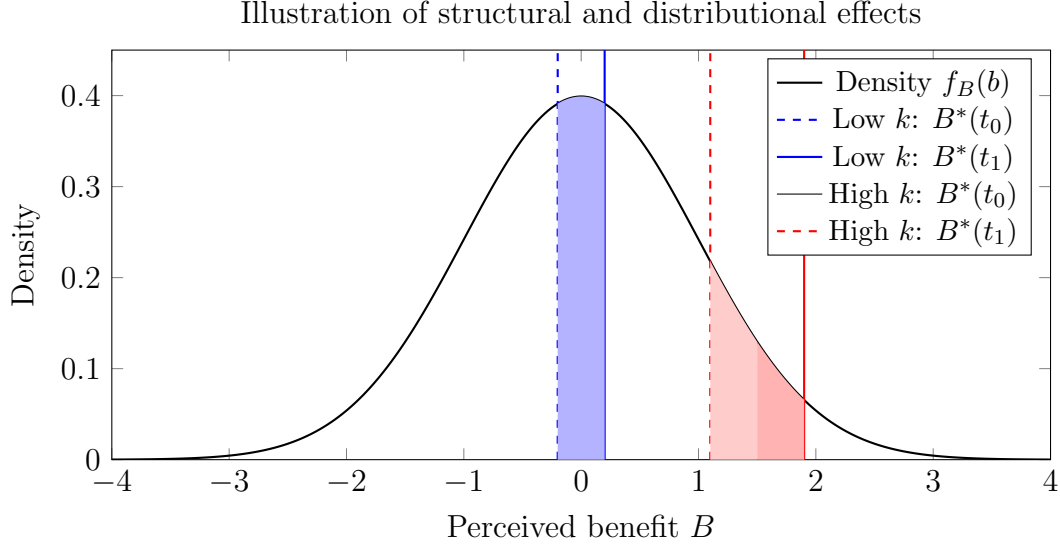


Figure 1: Debt relief lowers the participation cutoff $B^*(t, k)$, generating a change in participation equal to the area between the two cutoffs. The blue shading shows the baseline response for a given cutoff movement. When effort cost k is high, the cutoff reacts more strongly to debt relief, producing an additional participation response shown in light red. This structural component corresponds to the cross-partial $\partial^2 B^*/(\partial t \partial k)$ in the comparative statics.

Proposition 4 (Participation and the borrower's valuation distribution). *Let g index observable borrower groups (e.g. age groups), and let F_B^g denote the cumulative distribution function of valuations B in group g . For any contract (D, t) and borrower type k , the participation rate in group g is*

$$P^g(t, k) = \Pr(B \geq B^*(t, k)) = 1 - F_B^g(B^*(t, k)).$$

If group g' has a valuation distribution that first-order stochastically dominates that of group g , that is,

$$F_B^{g'}(b) \leq F_B^g(b) \quad \text{for all } b,$$

then

$$P^{g'}(t, k) \geq P^g(t, k),$$

with strict inequality whenever $F_B^{g'}(B^*(t, k)) < F_B^g(B^*(t, k))$. Thus, groups with stochastically higher valuations exhibit higher participation for any given contract.

This result formalizes how differences in the valuation of a clean credit record translate into differences in participation across observable borrower groups. For borrowers facing the same effective cost of obtaining a clean record, heterogeneity in participation arises solely from differences in how groups value credit rehabilitation. A group whose valuation distribution places more probability mass above the cutoff will naturally exhibit higher participation for any given level of relief. First-order stochastic dominance provides a simple condition under which this ordering holds: if group g' has uniformly higher valuations than group g , then a weakly larger fraction of borrowers in g' exceed the cutoff, leading to higher participation.

3.6 Empirical implications

The model generates testable predictions about how participation in the debt-relief program varies with observable borrower characteristics. Participation increases with the degree of relief t and depends on effort cost k_i , and the valuation of a clean credit record B_i . Although these structural parameters are not directly observed, the administrative data allow for some empirical counterparts.

Mapping model primitives to data.

- **Debt relief, t .** In the model, t denotes the reduction in the repayment requirement from D to $D - t$. The model predicts that participation increases with t , because larger relief lowers the effective cost of obtaining a clean credit record. In the full administrative sample, however, we do not observe the complete value of t , since the loan-level value of waived interest, penalties, and charges is not available for all institutions. We

therefore use low-balance debt cancellation as our observed measure of program relief in the baseline empirical analysis.

- **Effort costs (k).** The parameter k captures how costly it is for borrower i to generate the effort required for repayment. Higher k makes effort more burdensome and lowers the net benefit of participating in the program, implying $\partial P / \partial k \leq 0$, with strictly lower participation in the corner regime where additional effort is required to repay. The model also implies that k affects how debt relief shifts the participation cutoff $B^*(t, k)$. In the data, we use borrower characteristics that proxy for these effective effort costs and earning capacity, such as reported income, employment status, and household composition.
- **Valuation of rehabilitation (B).** Borrowers placing a higher value on regaining credit access are more likely to participate. In the model, participation occurs when $B \geq B^*(t, k)$, so the predicted participation rate in group g is

$$P^g(t, k) = \Pr(B \geq B^*(t, k) | g) = 1 - F_B^g(B^*(t, k)).$$

If two groups g and g' differ in their valuation distributions such that $F_B^{g'}(b) \leq F_B^g(b)$ for all b (i.e. group g' has stochastically higher valuations), then $P^{g'}(t, k) \geq P^g(t, k)$. Age proxies this valuation in our setting: younger borrowers have longer planning horizons and stronger demand for future credit, implying a right-shifted valuation distribution. The model therefore predicts higher participation among younger borrowers.

Regarding the effect of debt relief, the model implies

$$\frac{\partial P^g}{\partial t} = -f_B^g(B^*(t, k)) \frac{\partial B^*(t, k)}{\partial t}.$$

Because $\partial B^* / \partial t$ does not vary across groups, the effect of debt relief is a local property: the marginal response $\partial P^g / \partial t$ depends only on the density of valuations at the

participation cutoff, $f_B^g(B^*)$. Since the two groups may have valuation densities that cross, their relative responsiveness depends on where the cutoff B^* lies. If the cutoff falls in a region where the young group has greater density, $f_B^{\text{young}}(B^*) > f_B^{\text{old}}(B^*)$, the young will respond more strongly to relief. Empirically, this corresponds to a negative coefficient on the interaction $t \times \text{Age}$. These comparative statics motivate the empirical specification.

4 Data and Sample Construction

4.1 Data sources

Our empirical analysis combines several administrative sources. The primary source is the program administrator file, which records borrowers' progression through the restructuring process, including inquiry (*consulta*), pre-arranged renegotiation (*preacuerdo*), and the number of installments chosen in the event of a *preacuerdo*. Importantly, these records also report the repayable amount under the program for each borrower-institution exposure, which is the empirical counterpart of the model's post-relief repayment requirement, $D - t$. For expositional convenience, we refer to each borrower-institution exposure as a "loan" throughout. A second source is the Central Bank's credit registry, which provides outstanding debt balances as of the start of the program.

This information is complemented with socio-demographic and labor-market variables from administrative social security records. These data provide borrower characteristics used as baseline controls and for heterogeneity analyses, including age, reported monthly income, and indicators for retirement, disability or old-age pension receipt, and unemployment status. Finally, we use administrative records from the public university to identify debtors who were enrolled in tertiary education and thus attained at least a bachelor's degree.

4.2 Key variables

Outcome: pre-arranged renegotiation. Our main outcome is Y_{il} , an indicator equal to one if eligible exposure l of borrower i reaches a pre-arranged renegotiation, or *preacuerdo*. This outcome captures early-stage take-up of the standardized restructuring offer: the borrower has reviewed the offer and selected a repayment plan, but has not yet completed the in-person final agreement stage or begun repayment.

Inquiry. We denote by I_i an indicator equal to one if borrower i reaches the inquiry stage, or *consulta*. Inquiry is initiated at the borrower level and corresponds to the borrower contacting the program administrator to obtain information about eligible debts and restructuring options. In the loan-level dataset, this borrower-level inquiry status is assigned to all eligible exposures of the borrower. Our baseline analysis conditions on $I_i = 1$, thereby focusing on take-up behavior among borrowers who have already crossed the initial awareness and access hurdle.

Debt relief measures. As explained in Section 2, the program reduced repayment burdens mainly by waiving accrued interest, penalties, and charges accumulated since the original impairment date. However, we do not observe this amount in the full sample. For this reason, our baseline empirical analysis uses low-balance debt cancellation as our observed relief measure. This variable, denoted by C_i , measures the amount of debt automatically cancelled under the low-balance threshold and is aggregated at the borrower level. It captures a directly observed reduction in the borrower’s obligations generated by the program, but it should not be interpreted as total debt relief.⁴

Borrower characteristics. We collect borrower-level socio-demographic and credit characteristics in X_i . The socio-demographic characteristics include reported monthly income,

⁴Low-balance debt cancellation refers to debts below the program threshold that were automatically cancelled without requiring borrower action.

age, gender, education, retirement status, disability or old-age pension receipt, unemployment status, family structure, and location. The credit characteristics are current and overdue debt balances, total eligible debt, the number of eligible loans in the program, the number of financial institutions involved, and the total observed debt in the credit register. These variables proxy for components of the model primitives, including the valuation of credit rehabilitation and effort or compliance costs.

Loan controls. Loan-level controls, denoted by Z_{il} , include the outstanding balance of exposure l and an indicator for whether the exposure is handled by a debt collection agency.

4.3 Descriptive statistics

Table 2 reports descriptive statistics for the estimation sample used in the regression analysis. This sample differs from the full program population reported in the previous table. In particular, it is restricted to eligible loans for borrowers that can be matched to the socioeconomic and administrative records used to construct the control variables. We also exclude automatically cancelled low-balance loans, since they did not require borrower action and are not part of the voluntary restructuring program analyzed in the regressions.

The resulting sample contains 1,204,495 eligible loans. Among these, 510,337 are associated with borrowers who initiated an inquiry, and 23.8 percent of those loans reached a *preacuerdo*. In the estimation sample, 10.1 percent of loans reached *preacuerdo*. This difference highlights the importance of the staged structure of the program: a substantial part of overall attrition occurs before borrowers reach the information stage.

Panel A reports the main program outcomes. The inquiry variable, *consulta*, indicates whether the borrower contacted the program administrator to obtain information about eligible loans and restructuring options. The main outcome, *preacuerdo*, indicates whether an eligible loan reached the first formal step toward renegotiation after inquiry, when the borrower selected one of the standardized repayment plans.

Panel B summarizes observed relief and credit-market characteristics. Low-balance debt cancellation averages 0.26 thousand pesos and captures the component of program relief directly observed in the sample. The average outstanding balance per eligible loan is 20.6 thousand pesos, while the average borrower has 75.6 thousand pesos of eligible debt, 3.7 eligible loans, and debt with 2.6 financial institutions. About 65.6 percent of the loans are handled by a recovery agency. Borrowers also have additional credit-market exposure: current debt averages 73.9 thousand pesos, and overdue debt recorded in the credit registry averages 86.3 thousand pesos.

Panel C reports borrower characteristics. The average borrower in the estimation sample is 45.6 years old and has reported monthly income of 20.2 thousand pesos. Around 51.8 percent of observations correspond to female borrowers. The average number of children is 0.88. About 8.1 percent of observations correspond to retired borrowers, 2.1 percent to disability or old-age pension recipients, and 2.5 percent to unemployed borrowers. These variables are used in the empirical analysis as proxies for effort costs, repayment feasibility, and the valuation of credit rehabilitation.

5 Empirical framework

The empirical analysis follows the staged structure of the program. Borrowers first decide whether to initiate an inquiry, or *consulta*, which captures awareness of and access to the program. Conditional on inquiry, they may proceed to a pre-arranged renegotiation, or *preacuerdo*, by selecting one of the standardized repayment plans. We first describe the inquiry margin and then estimate take-up conditional on inquiry. We subsequently estimate a bivariate probit model to assess the role of selection into inquiry.

5.1 Inquiry and conditional take-up

We begin by estimating a reduced-form inquiry equation in the full estimation sample:

$$\Pr(I_i = 1) = \Phi(\kappa + \psi C_i + X_i' \pi), \quad (7)$$

where I_i equals one if borrower i initiates an inquiry, or *consulta*; C_i denotes low-balance debt cancellation; and X_i contains the borrower-level characteristics and controls defined in Section 4. This equation is not intended to estimate a structural participation primitive. Instead, it describes which observable borrower characteristics and observed relief components are associated with crossing the initial awareness and access hurdle.

The theoretical model implies that a borrower participates when the private value of restoring a clean credit record exceeds the participation cutoff. For borrower i and eligible exposure l , this condition can be written as

$$Y_{il} = 1 \iff B_{il} \geq B_{il}^*(t_i, k_i), \quad (8)$$

where Y_{il} equals one if the exposure reaches a pre-arranged renegotiation, or *preacuerdo*. The model motivates the empirical specification by identifying the channels through which debt relief, effort costs, and the valuation of credit rehabilitation affect take-up. Because the structural primitives B_{il} and k_i are not separately observed, and the model's relief parameter t_i is not available for the full sample, the empirical model is written as a reduced-form latent-index specification. The coefficients should therefore be interpreted as conditional associations guided by the model, rather than as direct estimates of structural primitives.

Using the notation introduced in Section 4, we write the latent value of proceeding to *preacuerdo* as

$$Y_{il}^* = \alpha + \beta C_i + X_i' \gamma + Z_{il}' \delta + \varepsilon_{il}, \quad (9)$$

with

$$Y_{il} = 1\{Y_{il}^* > 0\}. \quad (10)$$

The error term ε_{il} captures the unobserved component of the net value of proceeding to *preacuerdo*; that is, residual variation in the difference between the borrower's private valuation and the participation cutoff after conditioning on C_i , X_i , and Z_{il} . This includes unobserved differences in the value of credit rehabilitation, repayment feasibility, administrative costs, attention, and other borrower specific factors. The coefficient β captures the conditional association between the observed relief component, C_i , and early-stage take-up.

For estimation, we assume the standard probit normalization $\varepsilon_{il} \sim N(0, 1)$. The baseline participation equation is therefore

$$\Pr(Y_{il} = 1 \mid I_i = 1) = \Phi(\alpha + \beta C_i + X_i' \gamma + Z_{il}' \delta), \quad (11)$$

where $I_i = 1$ indicates that borrower i reached the inquiry stage. By conditioning on inquiry, this specification focuses on borrowers who have already crossed the initial awareness and access hurdle. It therefore isolates early-stage take-up of the standardized restructuring offer from earlier frictions that affect whether borrowers engage with the program in the first place.

To study heterogeneity in take-up responses, we also estimate specifications that interact the observed relief component with borrower characteristics:

$$\Pr(Y_{il} = 1 \mid I_i = 1) = \Phi(\alpha + \beta C_i + X_i' \gamma + Z_{il}' \delta + (C_i \times W_i)' \theta), \quad (12)$$

where $W_i \subseteq X_i$ collects the borrower characteristics used in the heterogeneity analysis. These interactions are motivated by the model's prediction that borrower characteristics may shift both baseline participation and responsiveness to relief. Because the full-sample measure C_i is an observed component of relief rather than total restructuring relief, the interaction

coefficients should be interpreted as heterogeneity in the association between observed relief and take-up.

All specifications report average marginal effects. Standard errors are clustered at the borrower level to account for correlation across multiple eligible exposures belonging to the same borrower.

5.2 Selection into inquiry

The baseline specification estimates early-stage take-up conditional on inquiry. This is useful for studying the borrower’s decision to proceed with the standardized restructuring offer after obtaining information about eligible debts and repayment options. However, inquiry is itself a choice. Borrowers who contact the program administrator may differ from non-inquiring borrowers in unobserved ways that also affect their probability of reaching *preacuerdo*. To assess the role of selection into inquiry, we estimate a bivariate probit model with sample selection.

For this exercise, we reshape the data into a borrower–loan–month panel. Inquiry is initiated at the borrower-month level: when borrower i contacts the program administrator in month m , she observes all eligible loans and restructuring options at once. We therefore denote inquiry by I_{im} . In the loan-level panel used for estimation, this borrower-month inquiry indicator is assigned to all eligible exposures l of borrower i . The pre-arrangement outcome remains exposure-specific and is denoted by Y_{ilm} .

The estimation sample is restricted to borrower–loan–month observations in which the exposure is still at risk of reaching *preacuerdo*. Specifically, we keep monthly observations up to and including the first month in which the exposure reaches *preacuerdo*. Months after an exposure has already reached *preacuerdo* are excluded.

The inquiry equation is

$$I_{im}^* = \pi_0 + \pi_1 \text{Campaign}_m + X_i' \pi_2 + \eta_{im}, \quad I_{im} = 1\{I_{im}^* > 0\}, \quad (13)$$

where Campaign_m is an indicator equal to one in August and November, the months in which nationwide advertising campaigns took place. The vector X_i contains the borrower-level characteristics and controls defined in Section 4. The error term η_{im} captures unobserved factors affecting awareness, attention, access, trust in the program, or the ability to navigate the initial administrative step.

The latent pre-arrangement equation is

$$Y_{ilm}^* = \alpha + \beta C_i + X_i' \gamma + Z_{il}' \delta + \varepsilon_{ilm}, \quad Y_{ilm} = 1\{Y_{ilm}^* > 0\}. \quad (14)$$

The observed pre-arrangement outcome is therefore

$$Y_{ilm}^{obs} = I_{im} Y_{ilm}. \quad (15)$$

When $I_{im} = 0$, the borrower has not initiated an inquiry, so *preacuerdo* is not feasible. When $I_{im} = 1$, the observed outcome equals the pre-arrangement decision for exposure l . The selection model accounts for the fact that the set of borrowers reaching the *preacuerdo* stage is selected through the prior inquiry decision.

The bivariate probit model allows the unobserved determinants of inquiry and pre-arrangement to be correlated:

$$(\eta_{im}, \varepsilon_{ilm}) \sim N \left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right). \quad (16)$$

The parameter ρ captures selection on unobservables.

Exclusion restriction. To separate selection into inquiry from progression to *preacuerdo*, the selection model includes a variable that affects the inquiry decision but is excluded from the pre-arrangement equation. We use the timing of nationwide advertising campaigns for this purpose. The campaign indicator enters the inquiry equation but is excluded from

the pre-arrangement equation. The exclusion assumption is that the campaigns increased awareness and salience of the program, thereby affecting the probability of initiating an inquiry, but did not alter the standardized restructuring terms, repayment menus, relief parameters, or creditor approval rules. Conditional on inquiry, borrowers observed the same program terms regardless of whether the inquiry occurred during a campaign month.

The bivariate probit therefore complements the conditional probit estimates. The conditional probit describes take-up among borrowers who have already initiated contact with the program, while the bivariate probit assesses whether selection into inquiry is correlated with subsequent progression to *preacuerdo*.

6 Empirical results

We first report reduced-form estimates for the two first stages of the program: inquiry, or *consulta*, and pre-arranged renegotiation, or *preacuerdo*, conditional on inquiry. We then examine heterogeneity in the association between observed relief and take-up. Finally, we assess the role of selection into inquiry using the bivariate probit specification described in Section 5.2.

6.1 Baseline: Inquiry and conditional take-up

Table 3 reports average marginal effects from the inquiry and conditional take-up equations. Column 1 estimates the probability that a borrower initiates an inquiry in the full estimation sample. Column 2 estimates the probability that an eligible loan reaches *preacuerdo*, conditional on the borrower having initiated an inquiry.

The two columns show that the correlates of inquiry and conditional take-up are not the same. This distinction is empirically relevant: inquiry and acceptance respond differently to borrower characteristics. For example, households with children are more likely to initiate an inquiry, but conditional on inquiry they are less likely to proceed to *preacuerdo*. Similarly,

unemployment is positively associated with inquiry, but is not positively associated with conditional take-up. These patterns suggest that groups with greater financial need may be more likely to seek information about the program, while still facing constraints that limit progression to a pre-arranged renegotiation.

Column 2 is the baseline specification for the main take-up analysis. Low-balance debt cancellation, our observed measure of program relief, is positively associated with *preacuerdo*. An additional 1,000 pesos of low-balance cancellation is associated with a 1.1 percentage-point higher probability that an eligible loan reaches *preacuerdo*, conditional on inquiry. This association is statistically significant and economically meaningful relative to the conditional take-up rate of 23.8 percent reported in Table 2.

The remaining coefficients are consistent with the mechanisms highlighted by the model. Age is negatively associated with conditional take-up: each additional year of age is associated with a 0.24 percentage-point lower probability of reaching *preacuerdo*. One interpretation is that older borrowers attach a lower value to credit rehabilitation, reflecting shorter planning horizons or lower expected future demand for formal credit. Borrowers with university studies are more likely to reach *preacuerdo*, with an estimated marginal effect of around 11.8 percentage points. This may reflect lower administrative costs, greater ability to navigate the process, or a higher value of restoring access to formal credit.

Several variables associated with effort costs or repayment feasibility are negatively related to conditional take-up. Relative to borrowers without children, borrowers with one or two children are about 1.3 percentage points less likely to reach *preacuerdo*, and borrowers with three or more children are also less likely to proceed. Retired borrowers and disability or old-age pension recipients have substantially lower conditional take-up, with marginal effects of approximately -8.7 and -11.9 percentage points, respectively. Unemployment is also negative, although smaller and not statistically significant in the baseline conditional probit.

The divergence between inquiry and conditional take-up is informative for program design. Inquiry suggests that these households were interested in the program or perceived

a need for debt relief, while lower conditional take-up suggests that the standardized repayment terms may have been harder for them to accept. This pattern suggests that future programs could use observable and verifiable borrower characteristics to tailor the size of the relief, or the associated repayment schedule, with the aim of converting initial interest into actual acceptance among constrained borrowers.

Credit-market characteristics also matter. Larger numbers of eligible loans and financial institutions are associated with lower conditional take-up, suggesting that portfolio complexity may create additional frictions. Loans handled by recovery agencies are 5.6 percentage points less likely to reach *preacuerdo*. Female borrowers are more likely to proceed to *preacuerdo*, conditional on observables.

6.2 Heterogeneity in take-up

Table 4 examines whether the association between low-balance debt cancellation and *preacuerdo* varies across borrower characteristics. Each panel reports the average marginal effect of C_i from a specification with one interaction at a time.

The association between observed relief and take-up is positive across all groups. For family structure, the marginal effect of low-balance cancellation is similar across borrowers with and without children. The estimates are approximately 1.1 percentage points for borrowers without children, 0.9 percentage points for borrowers with one child, 1.3 percentage points for borrowers with two children, and 1.0 percentage points for borrowers with three or more children. These differences are small relative to the standard errors and do not suggest that households with children are systematically less responsive to observed relief. Combined with the lower baseline take-up documented in Table 3, this suggests that family structure primarily shifts the level of participation rather than the response to observed relief.

Age displays a clearer gradient. The estimated marginal association between observed relief and *preacuerdo* declines from about 1.4 percentage points at age 25 to about 0.6 percentage points at age 65. This pattern is consistent with the model’s valuation channel:

younger borrowers may place a higher value on restoring a clean credit record because they have longer planning horizons and greater expected future demand for formal credit. Figure 2 illustrates this gradient.

Income shows the opposite pattern. The marginal association between observed relief and take-up increases across the income distribution, from around 0.9 percentage points at the bottom of the distribution to around 1.4 percentage points at higher income values, as shown in Figure 3. However, the confidence intervals overlap and pairwise comparisons do not reject equality of the marginal effects across income values. One interpretation is that borrowers with higher income may be better able to convert a reduction in repayment burden into actual participation, because repayment is more feasible once the offer becomes attractive enough.

By contrast, heterogeneity by university studies, retirement status, disability or old-age pension receipt, and unemployment is limited. The point estimates are generally positive, but differences relative to the corresponding reference groups are not statistically strong. This reinforces the main message from the baseline estimates: vulnerable groups are less likely to reach *preacuerdo* overall, but the evidence does not show that they are uniformly less responsive to observed relief. Their lower participation appears to operate mainly through baseline frictions rather than through a weaker marginal association with relief.

6.3 Selection into inquiry

Table 5 reports average marginal effects from the selection model. The model is estimated in the borrower–loan–month panel, restricted to observations that are still at risk of reaching pre-arrangement. Column 1 reports marginal effects on the probability of inquiry. Column 2 reports marginal effects on the probability of pre-arrangement conditional on inquiry. The campaign-month indicator enters only the inquiry equation and provides excluded variation for the selection margin.

The campaign indicator is a strong predictor of inquiry. Campaign months are associated

with an 18.4 percentage-point increase in the probability of inquiry. This supports the interpretation that the campaigns increased awareness and salience of the program. At the same time, the estimated correlation between the unobserved determinants of inquiry and pre-arrangement is positive and statistically significant, with $\hat{\rho} = 0.308$. The Wald test rejects independence of the two equations. This indicates that unobserved factors associated with inquiry are also related to progression to pre-arrangement.

The selection-adjusted estimates preserve the main qualitative patterns from the baseline conditional probit. The observed relief component remains positively associated with pre-arrangement conditional on inquiry. An additional 1,000 pesos of low-balance debt cancellation is associated with a 0.3 percent higher monthly probability of pre-arrangement, conditional on inquiry.

Borrower characteristics associated with repayment feasibility and non-monetary frictions remain important. Families with children are less likely to proceed to pre-arrangement conditional on inquiry. Retired borrowers and pension recipients also have substantially lower conditional pre-arrangement probabilities. Loans handled by recovery agencies and borrowers with more eligible loans are less likely to reach pre-arrangement, consistent with administrative or portfolio-complexity frictions. University studies and female gender remain positively associated with progression to pre-arrangement. The conditional marginal effect of age remains negative in sign, although it is not statistically significant in the selection adjusted monthly specification.

Overall, the selection exercise suggests that the inquiry and pre-arrangement decisions are strongly related through unobserved factors. However, accounting for selection into inquiry does not overturn the main interpretation of the baseline results: observed relief is positively associated with take-up, while participation gaps are also shaped by borrower characteristics linked to repayment feasibility, administrative frictions, and the value of credit rehabilitation.

7 Conclusion

This paper studies participation in a large-scale voluntary debt restructuring program and examines how observed relief, borrower characteristics, and non-monetary frictions jointly shape take-up. Exploiting rich administrative data and the staged structure of the program, we distinguish engagement with the program from acceptance of standardized restructuring terms. By focusing on take-up conditional on inquiry, we separate heterogeneity in acceptance behavior from earlier access, awareness, and information frictions, and connect the empirical patterns to the mechanisms highlighted by the model.

Across borrower groups, low-balance debt cancellation, the observed relief component available in the full sample, is positively associated with the probability of reaching a pre-arranged renegotiation. Lower repayment burdens therefore appear to increase early-stage take-up. At the same time, substantial participation gaps persist across socio-economic groups. Families with children, retirees, disability pension recipients, and unemployed borrowers are less likely to complete the renegotiation process, even after initiating contact with the program. In the model’s terms, these groups appear to face a higher effective cost of converting the restructuring offer into a feasible repayment commitment.

The heterogeneity analysis further clarifies this distinction. Vulnerable borrowers exhibit lower baseline participation, but their marginal responsiveness to the observed relief component is broadly similar to that of non-vulnerable borrowers. This suggests that lower take-up among these groups does not simply reflect weaker responses to financial incentives. Instead, it points to differences in repayment feasibility, administrative or compliance costs, and the value borrowers attach to restoring access to credit. Overall, the findings indicate that lower repayment burdens raise take-up, but that financial incentives alone do not determine who completes the restructuring process.

These results have implications for the design of future voluntary debt-relief programs. First, the presentation of relief may matter for take-up. Low-balance debt cancellation is positively associated with take-up even though it captures only a small and incomplete

component of total relief. This suggests that borrowers respond to financial incentives, but may not fully perceive the value of the offer when they observe only the remaining repayment obligation. Future programs could make relief more salient by showing borrowers the original debt, the amount forgiven, and the post-relief repayment requirement.

Second, standardized offers may leave behind borrowers who are interested but constrained. Families with children are more likely to initiate an inquiry, yet less likely to proceed to pre-arrangement conditional on inquiry. This gap between interest and acceptance suggests that observable and verifiable characteristics, such as family responsibilities, age, income, or education, could be used to tailor the relief parameter or the associated repayment schedule. Conditioning program terms on such characteristics may help convert initial interest into acceptance, especially among vulnerable borrowers facing higher repayment or administrative costs.

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A Appendix: Proofs

This appendix collects the proofs of all results stated in the main text.

A.1 Proof of Lemma 1

It follows by the implicit function theorem applied to $I_e(e) - C_e(e, k) = 0$. Since $I_{ee} - C_{ee} < 0$ by concavity of income and convexity of costs, and $I_e > 0$, $C_{ek} > 0$ by Assumptions 1–2, the signs follow immediately.

A.2 Proof of Lemma 2

Applying the implicit function theorem to $I(e^R) - (D - t) = 0$ yields the following derivatives:

$$\frac{\partial e^R}{\partial k} = 0, \quad \frac{\partial e^R}{\partial t} = -\frac{1}{I_e(e^R)}.$$

Because $I_e > 0$ by Assumption 1, the term is negative.

A.3 Proof of Proposition 1

Interior: $B^* = D - t \Rightarrow \partial B^* / \partial t = -1 \Rightarrow \partial P / \partial t = f_B(D - t) > 0$. Corner: $B^* = I(e^{FOC}) + C(e^R, k) - C(e^{FOC}, k)$ and $\partial e^R / \partial t = -1 / I_e(e^R)$, so $\partial B^* / \partial t = -C_e(e^R, k) / I_e(e^R) < 0$. $\square$

A.4 Proof of Proposition 2

From Equation (4), the participation cutoff is

$$B^*(t, k) = \begin{cases} D - t, & \text{if } I(e^{FOC}) \geq D - t \quad (\text{interior}), \\ D - t + \Delta U^{\text{effort}}(k, t), & \text{otherwise (corner),} \end{cases}$$

Interior regime. If $I(e^{FOC}) \geq D - t$, then $B^*(t, k) = D - t$, which does not depend on k .

Hence

$$\frac{\partial B^*}{\partial k} = 0 \quad \Rightarrow \quad \frac{\partial P}{\partial k} = 0.$$

Corner regime. In the corner regime the threshold can be written as:

$$B^*(t, k) = I(e^{FOC}) + C(e^R(t), k) - C(e^{FOC}, k),$$

where $e^{FOC} = e^{FOC}(k)$ solves the unconstrained FOC $I_e(e^{FOC}) = C_e(e^{FOC}, k)$ and $e^R = e^R(t)$ solves $I(e^R) = D - t$.

Differentiating with respect to k gives

$$\frac{\partial B^*}{\partial k} = I_e(e^{FOC}) \frac{\partial e^{FOC}}{\partial k} + C_e(e^R, k) \frac{\partial e^R}{\partial k} + C_k(e^R, k) - C_e(e^{FOC}, k) \frac{\partial e^{FOC}}{\partial k} - C_k(e^{FOC}, k).$$

By Lemma 2, $e^R(t)$ does not depend on k , so $\partial e^R / \partial k = 0$. Using again the FOC $I_e(e^{FOC}) = C_e(e^{FOC}, k)$, the terms with $\partial e^{FOC} / \partial k$ cancel, leaving

$$\frac{\partial B^*}{\partial k} = C_k(e^R, k) - C_k(e^{FOC}, k).$$

In the corner regime we have $e^R > e^{FOC}$, and Assumption 2 implies $C_{ek} > 0$, so $C_k(e, k)$ is increasing in e . Therefore

$$e^R > e^{FOC} \quad \Rightarrow \quad C_k(e^R, k) > C_k(e^{FOC}, k) \quad \Rightarrow \quad \frac{\partial B^*}{\partial k} > 0.$$

□

A.5 Proof of Proposition 3

We distinguish again between the interior and corner regimes.

Interior regime. If $I(e^{FOC}) \geq D - t$, then $B^*(t, k) = D - t$, so

$$\frac{\partial B^*(t, k)}{\partial t} = -1 \quad \text{and} \quad \frac{\partial^2 B^*(t, k)}{\partial t \partial k} = 0.$$

Thus, in the interior regime the responsiveness of B^* to debt relief does not depend on k .

Corner regime. In the corner regime we have

$$B^*(t, k) = I(e^{FOC}) + C(e^R(t), k) - C(e^{FOC}, k),$$

where $e^{FOC} = e^{FOC}(k)$ solves the unconstrained first-order condition $I_e(e^{FOC}) = C_e(e^{FOC}, k)$ and $e^R = e^R(t)$ solves $I(e^R) = D - t$.

From the expression above and Lemma 2, we obtain

$$\frac{\partial B^*(t, k)}{\partial t} = C_e(e^R, k) \frac{\partial e^R}{\partial t} = - \frac{C_e(e^R, k)}{I_e(e^R)}.$$

Define $h(t, k) := \partial B^*(t, k) / \partial t$. Then

$$h(t, k) = - \frac{C_e(e^R(t), k)}{I_e(e^R(t))}.$$

By Lemma 2, $e^R(t)$ does not depend on k , so when differentiating h with respect to k we only need to differentiate C_e :

$$\frac{\partial h(t, k)}{\partial k} = - \frac{C_{ek}(e^R, k)}{I_e(e^R)}.$$

Assumption 2 implies $C_{ek}(e, k) > 0$ and Assumption 1 implies $I_e(e) > 0$, so

$$\frac{\partial h(t, k)}{\partial k} = \frac{\partial^2 B^*(t, k)}{\partial t \partial k} = - \frac{C_{ek}(e^R, k)}{I_e(e^R)} < 0.$$

Hence, in the corner regime the responsiveness of the participation cutoff $B^*(t, k)$ to debt relief becomes stronger (more negative) as the effort-cost parameter k increases. $\square$

A.6 Proof of Proposition 4

Fix a contract (D, t) and borrower type k . For any observable group g , the participation rate is

$$P^g(t, k) = \Pr(B \geq B^*(t, k)) = 1 - F_B^g(B^*(t, k)),$$

where F_B^g is the cumulative distribution function of valuations B in group g .

Suppose that group g' has a valuation distribution that first-order stochastically dominates that of group g , i.e.

$$F_B^{g'}(b) \leq F_B^g(b) \quad \text{for all } b.$$

Evaluating this inequality at $b = B^*(t, k)$ yields

$$F_B^{g'}(B^*(t, k)) \leq F_B^g(B^*(t, k)).$$

It follows that

$$P^{g'}(t, k) - P^g(t, k) = \left[1 - F_B^{g'}(B^*(t, k))\right] - \left[1 - F_B^g(B^*(t, k))\right] = F_B^g(B^*(t, k)) - F_B^{g'}(B^*(t, k)) \geq 0.$$

Hence $P^{g'}(t, k) \geq P^g(t, k)$ for any given contract (D, t) and borrower type k .

Moreover, if the FOSD relation is strict at the cutoff, in the sense that

$$F_B^{g'}(B^*(t, k)) < F_B^g(B^*(t, k)),$$

then the last inequality is strict and we obtain $P^{g'}(t, k) > P^g(t, k)$. This proves that groups with stochastically higher valuations exhibit higher participation for any given contract. $\square$

A.7 Proof of Corollary 1

By definition,

$$P(t, k) = \Pr(B \geq B^*(t, k)) = 1 - F_B(B^*(t, k)),$$

where F_B is the cumulative distribution function of B and f_B its density.

(1) *Debt relief*. Differentiating with respect to t and applying the chain rule gives

$$\frac{\partial P(t, k)}{\partial t} = -f_B(B^*(t, k)) \frac{\partial B^*(t, k)}{\partial t}.$$

By Proposition 1, $\partial B^*/\partial t < 0$, and since $f_B \geq 0$, it follows that $\partial P/\partial t > 0$.

(2) *Effort costs (levels)*. Similarly, differentiating with respect to k yields

$$\frac{\partial P(t, k)}{\partial k} = -f_B(B^*(t, k)) \frac{\partial B^*(t, k)}{\partial k}.$$

By Proposition 2,

$$\frac{\partial B^*(t, k)}{\partial k} \geq 0,$$

with strict inequality in the corner regime. Since $f_B \geq 0$, it follows that

$$\frac{\partial P(t, k)}{\partial k} \leq 0,$$

with strict inequality in the corner regime whenever $f_B(B^*(t, k)) > 0$.

(3) *Heterogeneous responses to debt relief*. Taking the mixed partial derivative with respect to (t, k) and using the product and chain rules gives

$$\frac{\partial^2 P(t, k)}{\partial t \partial k} = -\left[f'_B(B^*(t, k)) \frac{\partial B^*(t, k)}{\partial t} \frac{\partial B^*(t, k)}{\partial k} + f_B(B^*(t, k)) \frac{\partial^2 B^*(t, k)}{\partial t \partial k} \right].$$

This expression shows that the heterogeneous effects of debt relief on participation depend both on the structural comparative statics of the cutoff $B^*(t, k)$ and on the local shape of the density f_B around that cutoff, as stated in the corollary. $\square$

Table 1: Participation Across Program Stages

Stage	Total	All	Restruct.	Cond.
Panel A. Borrower-level participation				
Eligible under the program	864,622	1.000	–	–
Automatically cancelled	116,194	0.134	–	–
Eligible for restructuring	823,191	0.952	1.000	–
Reached inquiry (<i>consulta</i>)	271,803	0.314	0.330	0.330
Reached pre-arrangement (<i>preacuerdo</i>)	81,088	0.094	0.099	0.298
Panel B. Loan-level participation				
Eligible under the program	1,838,734	1.000	–	–
Automatically cancelled	122,211	0.066	–	–
Eligible for restructuring	1,716,523	0.934	1.000	–
Reached inquiry (<i>consulta</i>)	643,579	0.350	0.375	0.375
Reached pre-arrangement (<i>preacuerdo</i>)	156,810	0.085	0.091	0.244
Reached final agreement (<i>acuerdo</i>)	150,914	0.082	0.088	0.962
Panel C. Amount-based participation, millions of Uruguayan pesos				
Eligible restructuring amount	32,383	–	1.000	–
Amount reaching pre-arrangement (<i>preacuerdo</i>)	3,175	–	0.098	–
Amount reaching final agreement (<i>acuerdo</i>)	3,069	–	0.095	0.967

Notes: This table summarizes participation across the main stages of the debt restructuring program. Panels A and B report borrower-level and loan-level counts, respectively. Panel C reports amounts in millions of Uruguayan pesos. “All” reports shares relative to all eligible borrowers or loans under the program. “Restruct.” reports shares relative to borrowers, loans, or amounts eligible for voluntary restructuring. “Cond.” reports shares relative to the immediately preceding voluntary stage within each panel. “Automatically cancelled” refers to debts below the low-balance threshold that were cancelled without requiring borrower action. At the borrower level, categories are not mutually exclusive when borrowers hold multiple debts; a borrower may have both automatically cancelled debts and debts eligible for restructuring. In Panel A, borrower-level indicators for *preacuerdo*, *acuerdo*, and paid first installment equal one if the borrower reached that stage for at least one eligible loan. A *consulta* indicates that the borrower initiated an inquiry about eligible debts and restructuring terms. A *preacuerdo* indicates that the borrower selected one of the standardized repayment plans through the program administrator. An *acuerdo* indicates that the pre-arrangement became a final agreement.

Table 2: Descriptive Statistics for Regression Variables: Estimation Sample

Variable	Observations	Mean	SD	Min–Max
Panel A. Program outcomes				
Inquiry, <i>consulta</i>	1,204,495	0.424	0.494	0–1
Pre-arrangement, <i>preacuerdo</i>	1,204,495	0.101	0.301	0–1
Pre-arrangement, conditional on inquiry	510,337	0.238	0.426	0–1
Panel B. Observed relief and credit-market characteristics				
Low-balance debt cancellation	1,204,495	0.260	0.914	0–12.865
Outstanding balance per loan	1,204,495	20.630	19.513	0.001–100.000
Total eligible debt per borrower	1,204,495	75.582	68.101	0.001–736.946
Number of eligible loans	1,204,495	3.694	2.137	1–18
Number of financial institutions	1,204,495	2.618	1.256	1–10
Loan handled by recovery agency	1,204,495	0.656	0.475	0–1
Current debt	1,204,495	73.925	187.934	0–9,276.262
Overdue debt in credit registry	1,204,495	86.266	87.572	0.001–5,329.200
Panel C. Borrower characteristics				
Monthly income	1,204,495	20.205	25.951	0–310.000
Age	1,204,495	45.593	14.865	18–100
Female	1,204,495	0.518	0.500	0–1
Number of children	1,204,495	0.880	1.096	0–11
Retired	1,204,495	0.081	0.272	0–1
Disability or old-age pension recipient	1,204,495	0.021	0.143	0–1
Unemployed	1,204,495	0.025	0.156	0–1

Notes: This table reports descriptive statistics for the estimation sample used in the regression analysis. The estimation sample is restricted to eligible loans for borrowers matched to the socio-economic and administrative records used to construct the regression controls. Automatically cancelled low-balance debts are excluded because they did not require borrower action and are not part of the voluntary restructuring margin analyzed in the regressions. The unit of observation is the loan, unless otherwise stated. Borrower-level variables are repeated at the loan level. Monetary variables are expressed in thousands of Uruguayan pesos. *Consulta* is an indicator equal to one if the borrower initiated an inquiry about eligible debts and restructuring terms. *Preacuerdo* is an indicator equal to one if the loan reached the first formal step toward renegotiation after inquiry. The row “Pre-arrangement, conditional on inquiry” is computed among observations with *consulta* = 1. Low-balance debt cancellation measures the amount of debt automatically cancelled under the low-balance threshold and is aggregated at the borrower level. Number of children is reported as a count variable in this table; in the regression analysis it is entered categorically. Location fixed effects are included in the regressions but not reported individually.

Table 3: Baseline Correlates of Inquiry and Program Take-Up

	Inquiry Pr(<i>consulta</i> = 1)	Pre-arrangement Pr(<i>preacuerdo</i> = 1 <i>consulta</i> = 1)
<i>Observed relief</i>		
Low-balance debt cancellation	−0.004*** (0.001)	0.011*** (0.001)
<i>Borrower characteristics</i>		
Monthly income	0.002*** (0.000)	0.001*** (0.000)
Age	−0.007*** (0.000)	−0.002*** (0.000)
Female	0.086*** (0.002)	0.024*** (0.002)
University studies	0.053*** (0.005)	0.118*** (0.005)
Children (base: no children)		
One child	0.046*** (0.002)	−0.013*** (0.002)
Two children	0.071*** (0.002)	−0.013*** (0.003)
Three or more children	0.065*** (0.003)	−0.006* (0.003)
Retired	−0.026*** (0.004)	−0.087*** (0.004)
Disability or old-age pension recipient	−0.131*** (0.006)	−0.119*** (0.006)
Unemployed	0.046*** (0.005)	−0.007 (0.006)
<i>Debt and exposure characteristics</i>		
Outstanding balance per loan	0.000*** (0.000)	−0.000*** (0.000)
Total eligible debt per borrower	−0.000*** (0.000)	−0.000** (0.000)
Current debt	0.000*** (0.000)	0.000*** (0.000)
Overdue debt in credit registry	0.000*** (0.000)	−0.000*** (0.000)
Number of eligible loans	0.010*** (0.001)	−0.030*** (0.001)
Number of financial institutions	0.006*** (0.001)	−0.011*** (0.002)
Loan handled by recovery agency	0.003*** (0.001)	−0.056*** (0.001)
Observations	1,204,495	510,337
Borrower clusters	489,457	195,432
Location fixed effects	Yes	Yes
Model	Probit	Probit

Notes: This table reports average marginal effects from probit models. Standard errors, clustered at the borrower level, are reported in parentheses. The inquiry outcome is an indicator equal to one if the borrower initiated an inquiry, or *consulta*. The pre-arrangement outcome is an indicator equal to one if the eligible loan reached a *preacuerdo*, conditional on inquiry. Low-balance debt cancellation is the observed component of program relief available in the full sample and is measured at the borrower level. Monetary variables are expressed in thousands of Uruguayan pesos. Borrower-level variables are repeated at the loan level. Location fixed effects are included but not reported. Values are rounded to three decimal places. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Heterogeneity in the Association Between Observed Relief and Take-Up

Dimension	Group or value	AME of C_i
<i>Children</i>		
	No children	0.011*** (0.002)
	One child	0.009*** (0.002)
	Two children	0.013*** (0.002)
	Three or more children	0.010*** (0.003)
<i>Age</i>		
	25 years	0.014*** (0.002)
	35 years	0.012*** (0.001)
	45 years	0.010*** (0.001)
	55 years	0.008*** (0.002)
	65 years	0.006** (0.002)
<i>Income</i>		
	P10: income = 0	0.009*** (0.001)
	P25: income = 15	0.010*** (0.001)
	P50: income = 35	0.012*** (0.002)
	P75: income = 55	0.014*** (0.002)
<i>University studies</i>		
	No university studies	0.011*** (0.001)
	University studies	0.012* (0.007)
<i>Retirement status</i>		
	Not retired	0.011*** (0.001)
	Retired	0.007 (0.005)
<i>Disability or old-age pension</i>		
	Not recipient	0.011*** (0.001)
	Recipient	0.007 (0.005)
<i>Unemployment status</i>		
	Not unemployed	0.011*** (0.001)
	Unemployed	0.011* (0.007)
Observations	510,337	
Borrower clusters	195,432	
Location fixed effects	Yes	
Model	Probit; one interaction at a time	

Notes: This table reports average marginal effects of low-balance debt cancellation, C_i , on the probability that an eligible loan reaches a *preacuerdo*, conditional on inquiry. Standard errors, clustered at the borrower level, are reported in parentheses. Each block is computed from a separate probit model that interacts C_i with the reported borrower characteristic. Low-balance debt cancellation is measured in thousands of Uruguayan pesos and captures an observed component of program relief, not total restructuring relief. All specifications include the baseline controls reported in Table 3 and location fixed effects. Values are rounded to three decimal places. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Selection into Inquiry and Conditional Pre-Arrangement

	Inquiry $\Pr(I_{im} = 1)$	Conditional pre-arrangement $\Pr(Y_{ilm} = 1 \mid I_{im} = 1)$
<i>Observed relief</i>		
Low-balance debt cancellation	-0.001** (0.000)	0.003*** (0.001)
<i>Borrower characteristics</i>		
Monthly income	0.001*** (0.000)	0.000*** (0.000)
Age	-0.002*** (0.000)	-0.000 (0.000)
Female	0.025*** (0.001)	0.004*** (0.001)
University studies	0.011*** (0.001)	0.026*** (0.002)
Children (base: no children)		
One child	0.012*** (0.001)	-0.007*** (0.002)
Two children	0.018*** (0.001)	-0.009*** (0.002)
Three or more children	0.017*** (0.001)	-0.016*** (0.002)
Retired	-0.009*** (0.001)	-0.046*** (0.003)
Disability or old-age pension recipient	-0.046*** (0.002)	-0.068*** (0.005)
Unemployed	0.013*** (0.002)	-0.002 (0.004)
<i>Debt and exposure characteristics</i>		
Outstanding balance per loan	—	-0.000*** (0.000)
Total eligible debt per borrower	-0.000 (0.000)	0.000** (0.000)
Number of eligible loans	0.001*** (0.000)	-0.016*** (0.001)
Number of financial institutions	0.002*** (0.000)	-0.001 (0.001)
Loan handled by recovery agency	—	-0.009*** (0.001)
Borrower has recovery-agency exposure	0.001 (0.001)	—
<i>Excluded selection variable</i>		
Campaign month	0.184*** (0.001)	—
At-risk borrower–loan–month observations		4,769,514
Selected observations		557,240
Non-selected observations		4,212,274
Borrower clusters		489,457
Location fixed effects		Yes
Credit-registry controls		Yes
$\hat{\rho}$		0.308***
Wald test of independent equations		$\chi^2(1) = 844.90$
Model	Bivariate probit with sample selection	

Notes: This table reports average marginal effects from a bivariate probit model with sample selection. Column 1 reports marginal effects on the probability of inquiry. Column 2 reports marginal effects on the probability of pre-arrangement conditional on inquiry. The model is estimated in the borrower–loan–month panel and is restricted to observations in which the exposure is still at risk of reaching pre-arrangement. Campaign month equals one in August and November and enters only the inquiry equation. Low-balance debt cancellation, C_i , is the observed relief component available in the full sample and should not be interpreted as total restructuring relief. Standard errors, clustered at the borrower level, are reported in parentheses. Location fixed effects and credit-registry controls are included but not reported. Values are rounded to three decimal places. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

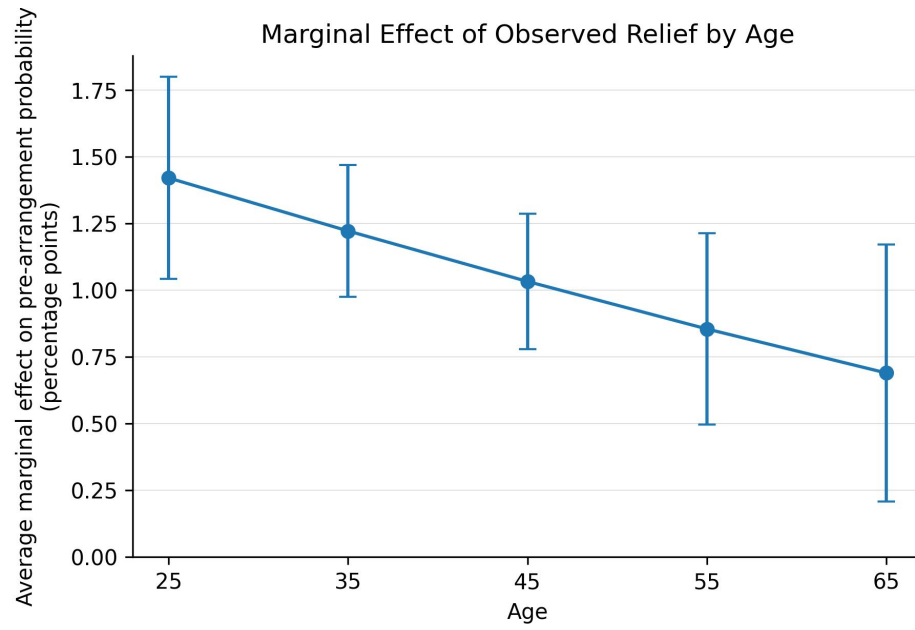


Figure 2: Marginal Effect of Observed Relief on Take-Up by Age

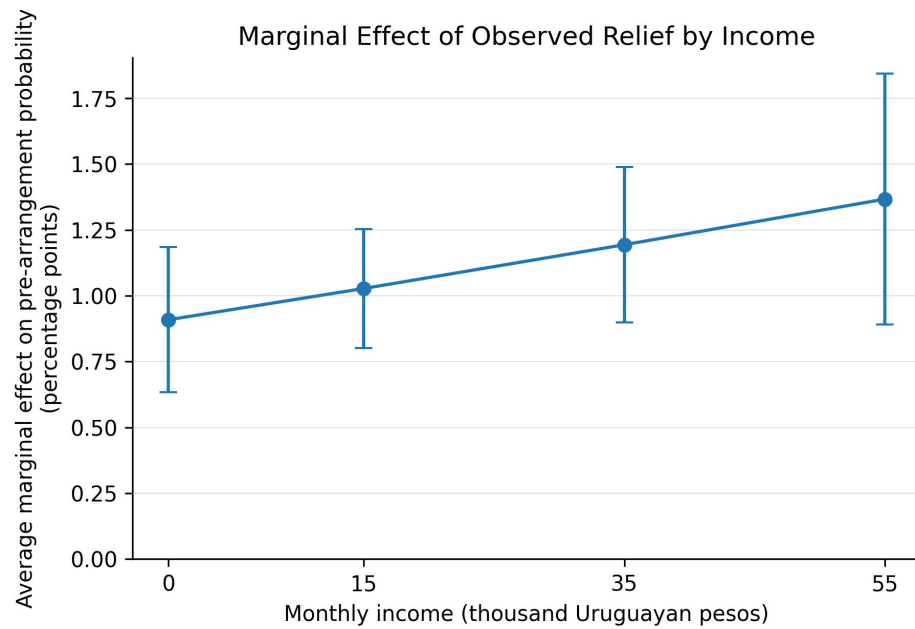


Figure 3: Marginal Effect of Observed Relief on Take-Up by Income