Does Microfinance Repayment Flexibility Affect Entrepreneurial Behavior and Loan Default?

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Abstract

Recent evidence suggests heterogenous impacts of microfinance loans, with limited average effects on enterprise growth among the poor. One possibility is that the rigidity of the classic microcredit contract – widely held to be important for reducing default – inhibits investment in microenterprises. To explore these trade-offs, we provide experimental estimates of the consequences for client repayment and investment behavior of introducing a grace period before repayment begins. Delaying the onset of repayment by two months significantly increases both business investment and default. Taken together, the results are consistent with clients on the delay cycle choosing investments with more variable returns.

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1 Introduction

Microfinance has been widely hailed as one of the most promising tools for fighting poverty in the developing world (UN Department of Public Information, 2005). A common claim is that by allowing poor households to finance basic self-employment activities and/or weather shocks to household production, microfinance loans can act as an important catalyst of economic growth (see, for instance, Nobel Peace Prize 2006 citation). These claims have been paralleled by a significant expansion of this sector in recent years – In 2007, Microfinance Institutions (MFIs) provided 150 million clients across the globe access to small-scale loans through group lending (Daley-Harris, 2006).

Emerging empirical evidence, however, suggests that access to microcredit may have limited impacts on average income growth of the poor (Banerjee et al., 2009; Karlan and Zinman, 2009). A possibility, and one which we explore in this paper, is that, in a quest to keep default rates to a bare minimum, MFIs are not offering their clients the optimal financial product from an investment perspective. In particular, the immediate repayment obligations of the classic microcredit contract – widely held to be important for reducing default – may actually inhibit investment in microenterprises by making relatively illiquid entrepreneurial investments too risky in the short run.

To examine this hypothesis we test whether client investment behavior, and therefore the economic impact of microfinance loans, is sensitive to introducing greater flexibility in loan contracts. We focus on a central feature of the classic "Grameen Bank" contract – repayment in small installments starting immediately after loan disbursement. Using a field experiment we evaluate the effect of relaxing the liquidity demands imposed on households early in the loan cycle by offering a random set of clients a two-month grace period before repayment begins. We then compare repayment and business investment behavior across these clients and those required to initiate repayment within two weeks of receiving the loan.

Relaxing short-run liquidity needs should increase the portfolio of investment available to a household, specifically make illiquid investments more viable. This, in turn, should increase the average return on available investments and therefore expected business profits for a household. While the predictions for average returns are straightforward, the effect of investment choices on default and delinquency are ambiguous as they depend on the variability of returns: If relatively illiquid investments also have more variable returns (or, more generally, increase expected variance of household income by, for instance, reducing short run ability to deal with shocks), then we may observe higher default even as average returns on business investments increase. In contrast, by distorting investment towards less risky choices, immediate repayment obligations may simultaneously limit default *and* income growth.[1] We would also expect this effect to be more pronounced for clients with more growth opportunities, i.e. those with higher returns to capital today and, therefore, a higher discount factor.

The contractual form underlying lending to very small businesses in rich countries provides a good benchmark for comparison. This pool of borrowers is typically perceived to be risky – however, the typical small business loan contract in developed countries is significantly more flexible. Using data from the Small Business Administration lending program in the US, Glennon and Nigro (2005) document default rates between 13-15% for typical small business loans in the US, which often have a significant grace period between loan disbursement and the start of repayment.[2] These rates are much higher than typical MFI default rates (2-5%), consistent with the tradeoffs discussed above.

To the best of our knowledge, there is no prior empirical evidence on whether immediate repayment obligations distort investment in microenterprises, largely because MFIs almost universally follow this practice.[3] We report robust evidence that both client investment

[1]Early repayment may also discourage risky investments by improving loan officers' ability to monitor borrower activities early on in the loan cycle.

[2]Flexible repayment options are available on SBA loans, and typically negotiated on a loan-by-loan basis including. Payments are typically via monthly installments of principal and interest. There are no balloon payments, and borrowers may delay their first payment up to three months, with prior arrangement. For details, see for instance https://www.key.com/html/spotlight-quantum-health.html.

[3]Selection issues inhibit causal interpretations of existing non-experimental studies of how greater repayment flexibility affects default, and may explain the mixed findings: Armendariz and Morduch (2005) reports that more flexible repayment is associated with higher default in Bangladesh, while McIntosh (2008) finds

and repayment behavior is sensitive to when repayment obligations start. Microenterprise investment is approximately 8% higher and the likelihood of starting a new business is twice as high among clients who receive a two-month grace period. Strikingly, these clients are also roughly 8% more likely to default on their loan, indicating that the liquidity of investment is indeed correlated with variability of returns, as is likely to be the case with new business ventures. We also find indirect evidence of this interpretation based on survey data on client's attitudes towards risk and future payoffs: The effect of the grace period increases significantly with a client's discount rate, suggesting that investment choices are most distorted by liquidity demands early on in the loan cycle among clients with a high opportunity cost of capital, and also appears to increase with the client's level of risk aversion, suggesting that risk averse clients are the most deterred by repayment obligations.

Section 2 describes the MFI setting and client characteristics, the experimental intervention and the basic analytical framework. Section 3 describes the data and empirical strategy and Section 4 our findings. Section 5 concludes.

2 Background

2.1 Institutional Details

Our partner micro-finance institution 'Village Welfare Society' (VWS) started operations in the Indian state of West Bengal in 1982, and is among the leading MFIs in the state. It only lends to women, and loan sizes vary from Rs. 4000 to 12,000 (100-300 US dollars). The typical loan has an implied annual interest rate of 22%, and clients repay these loans through fixed installments usually starting 2 weeks after the loan has been disbursed. Default is low – in 2006, when we initiated work with them, the VWS end-year financial statement reported a repayment rate of 99%.

The average baseline household in our intervention has 4 members, with monthly income of Rs. 5300 ($590 PPP). The most common occupations are small business owners,

that Ugandan MFI clients who choose more flexible repayment schedules are less likely to be delinquent.

cooks/domestic servants, and factory workers. Seventy-six percent of clients report having a household business, and the most common businesses are clothing, retail, and tailoring. Figure 1 shows the distribution of client businesses at baseline across the entire sample – selling clothes (saris) and vending are the two most common businesses.

The functioning of most of these business rely significantly on clients' labor supply. At baseline, eighty percent of clients report a household event in which they missed days of work and/or spent money within the last 30 days.[4] In addition to their direct negative effect on household income, such events are also likely to adversely affect the functioning of household businesses (by reducing available labor and credit). One way of smoothing such a shock is via the use of credit and savings. In terms of financial access, clients enjoy reasonable access to banking services but undertake limited borrowing from other banks or MFIs. Thirty-one percent of clients have a household savings account, and twenty-eight percent have some form of formal insurance (26% have life insurance, 5% have health insurance), which is mainly provided through VWS. All clients report at least one loan taken out within the year prior to the experiment, the bulk of which were taken out through VWS.

2.2 Experimental Design

Between March and December 2007 we formed 169 five member groups comprising 845 clients.

After group formation was finalized and prior to loan disbursement, repayment schedules were randomly assigned in a public lottery. Randomization occurred at the group level, after groups had been approved for loans. Treatment status was assigned to batches of 20 groups at a time, and we control for this stratification in all regressions. No clients dropped out of the experiment between randomization and loan disbursement. Eighty-four groups were assigned the contract with a grace period and 85 groups were assigned to the standard contract with immediate repayment. Other features of the loan contract were held constant across the two groups, including interest charges. Once repayment began, both groups of

[4]Household events include birth, death, festival, flood, guest, crime, travel, ceremony, and police case.

clients were required to repay fortnightly over the course of 44 weeks. Loan sizes varied from Rs. 4000 to Rs. 10,000, with the modal loan amount being Rs. 8000.

Importantly, since clients with a grace period had a total of 55 as opposed to 44 weeks before their full loan amount was due and faced the same total payment amount, they also faced a lower effective interest rate on the loan. Hence, the experiment simultaneously introduced repayment flexibility and increased effective income.

2.3 Predictions

Introducing a grace period and thereby a longer total period over which to repay the same absolute amount should make it easier for clients to accumulate the income needed to repay their loan. This is essentially the income effect implied by the lower interest rate in the grace period credit contract.[5] Further, by reducing liquidity needs in the early phase of a client's loan cycle, the intervention enhanced client ability to take on less liquid investments. This works to increase the investment opportunities available to the client. These factors would suggest that clients assigned to the delay group should differ in their business investments, earn higher average business profits and repay their loans at a higher rate. However, this presumes that investing in an illiquid project does not affect client risk. In reality, illiquid investments carry significant risk. For instance, if clients have a sudden need for money they may be forced to sell off their investment at a loss. Therefore, we might expect the grace period to both increase investment and worsen repayment outcomes.

Here we formalize the intuition above with a simple model. There are three periods $t = 0, 1, 2$. Clients are risk-neutral with utility function $u(c_0, c_1, c_2) = c_0 + c_1 + c_2$. Clients have access to a liquid investment which pays off R_L in the following period for each unit invested. They also have access to an illiquid investment which pays off R_I after two periods for each unit invested. In period zero clients receive a loan amount X which they must

[5]Differences in implicit interest rates across treatment arms has no direct implication for repayment timing since clients must pay a fixed interest amount regardless of when they repay. Hence, clients offered the standard contract have no added incentive to repay early to avoid higher interest charges.

repay in two installments, P_1 in period one and P_2 in period two. Assume that the illiquid investment is lumpy and requires the entire loan amount X to be invested. If the client chooses to invest in the illiquid asset, there is a probability π_S that in period one she will face an urgent need for money such as sudden sickness and have to pay a cost S. The nature of the illiquid investment is such that selling it before period two yields very low returns. Here, we take the extreme case in which liquidation net of the liquidity demand (S) is zero. However, it is possible that the client has enough money on hand or emergency sources to borrow from that she will not have to liquidate her investment in the face of the liquidity shock[6]. We denote the probability that a client will be forced to liquidate her investment given she must pay S to be π_L. π_L is a decreasing function of cash on hand in period one and therefore is increasing in the period one loan payment ($\pi_L'(P_1) > 0$). Clients will invest in the illiquid asset if and only if:

$$\begin{aligned}(1-\pi_S)R_I X + \pi_S(1-\pi_L(P_1))(R_I X - R_L S) - R_L P_1 - P_2 \geq \\ R_L^2 X - \pi_S H R_L - R_L P_1 - P_2\end{aligned} \tag{1}$$

where the left hand side denotes the payoff from investing in the illiquid asset and the right hand side denotes the payoff from investing in the liquid asset. We specialize to the case in which $\pi_S = 1$ as it reduces clutter substantially without affecting the results. We also assume that if successful, the illiquid investment pays off more than the liquid investment ($R_I > R_L^2$) and that the return from liquidation of the illiquid project is less than the return from successfully completing the illiquid project ($R_I X > S R_L$). Equation (1) will be satisfied as long as:

$$\pi_L(P_1) \leq \min\{\frac{(R_I - R_L^2)}{R_I - (S/X)R_L}, 1\} \tag{2}$$

Equation (2) shows that in deciding between the illiquid and the liquid investment, clients weigh the risk that they will be forced to sell off their investment before it pays off (higher π_L) with the higher return from the illiquid investment (R_I). In the present context, grace

[6]For simplicity, we assume that borrowing to pay S is at rate R_L.

period clients will have a lower P_1 and therefore a lower π_L than clients without a grace period. The model predicts that grace period clients will be more likely to invest in the illiquid investment. Although the illiquid investment affords higher returns on average, the risk of forced liquidation means that grace period clients will also be more likely to enter period two with no cash on hand, which implies they must default on their loan.

The example above was motivated using the risk of liquidation as the disincentive to take on the illiquid project. However, an alternative story is that clients face an uncertain demand for their product and therefore are reluctant to make large inventory investments. This fear is especially relevant for clients who have to make early repayments on their loan. A grace period allows clients to invest in inventory without the concern that they may not be able to sell it quickly. In this case, S is zero since clients who invest in the liquid asset do not face any shocks. For clients with a grace period, we could think of π_L as corresponding to the probability that a client faces low demand in both period one and period two in which case she would have to sell at a loss. Clients without a grace period face a higher π_L because they do not have the luxury of waiting until period two to sell their product.

3 Data and Empirical Strategy

The data used in this paper come from multiple sources which we describe below.

To gather information on business investments, we collected detailed baseline and endline survey data from all clients at the time of and approximately one year after loan disbursement. Baseline surveying was conducted between April and August 2007 and endline surveying between January and November 2008. The baseline survey gathered background information on household business activities, socio-economic status and demographic characteristics, along with survey measures of risk aversion and discount rates.

Table 1 presents means of a range of variables collected in the survey separately for clients assigned to the treatment and control group. The majority of clients are literate and married with two children living at home. Consistent with the type of clients targeted by

VWS, over three quarters of the households in the sample run some kind of microenterprise. While the group is relatively educated, the rate of shocks experienced by households is high, as is typical in this setting: 78% of households report experiencing a shock to household income over the past month. Although there are statistically significant differences across treatment groups in three of the fourteen characteristics (literacy, risk index, and loan amount), the point estimates of the differences are small. To confirm that small differences in treatment arm balance are not biasing the experimental results, we estimate all regressions with and without all controls.

The endline survey included a detailed loan use module on business expenditure amounts and types. [7] Clients were asked how they spent their VWS loan and answers were divided into five broad categories (business, health, school, housing, savings, and other). Figure 2 lists average spending in these broad categories. The most significant expenditure is business spending – on average, a client spent 80% of her loan on business related activities.

To study delinquency and default, we tracked client repayment behavior using two sources. First, we used VWS administrative data in which repayment date and amount paid were recorded by loan officers on a continuous basis in clients' passbooks and then compiled into a centralized bank database. We have data on all clients through July 1, 2009, by which date at least 16 weeks had passed since the loan due date for all clients.[8] Administrative data were verified with information on meeting activities from log books kept by loan officers

[7] Surveyors were explicitly instructed to alert the client if the total reported expenditure did not sum to the loan amount. Still, in 93 cases the sum of reported expenditures differed from the loan amount. Of these, 59 reported expenditures were found to match exactly a subsequent loan from VWS. The remaining 34 mismatched expenditures were still within 10 percent of the loan amount. In the subsequent analysis, we include a dummy variable for clients whose reported expenditures match a subsequent loan. As the contract terms of the study loan amount are unlikely to impact loan use for subsequent loans, mistakenly measuring subsequent loan expenditure rather than loan expenditure for the experimental loan will biased any differences between treatment and control towards zero.

[8] Since the loan due is not recorded in the VWS administrative records, it is assumed that the loan due date is 42 weeks after the first group meeting. Due to holidays, this measure may differ from the true loan due date slightly.

for the purpose of our experiment that recorded date of meeting, number of clients present, and names of clients who repaid at the meeting. Discrepancies between the two sources were double-checked with loan officers.

Since VWS does not have explicit penalties for late payment, some clients repay their loans long after the due date. For this reason, we present results for different lengths of delinquency. Our preferred measure is 16 weeks over due since it is short enough that all clients have passed it.

Randomization of repayment schedule implies that a comparison of the average outcomes across clients on the delay versus no-delay interventions has a causal interpretation. For all outcome variables we estimate regressions of the following form:

$$y_{ig} = \beta D_g + B_g + \delta X_{ig} + \epsilon_{ig} \tag{3}$$

where y_{ig} is the outcome of interest for client i in group g. D_g is an indicator variable which equals one if the group was assigned to the delay intervention. All regressions include batch dummies for stratification (B_g). Throughout, we report regressions with and without the controls (X_{ig}) listed in Table 1 and loan officer fixed effects. All standard errors are corrected for clustering within loan groups. To examine heterogeneity in the treatment effect across subgroups of clients, we estimate a version of the above regression using a baseline client variable Z_{ig} included on its own and interacted with D_g:

$$y_{ig} = \beta D_g + \gamma Z_{ig} + \theta Z_{ig} \times D_g + B_g + \delta X_{ig} + \epsilon_{ig} \tag{4}$$

Table 2 summarizes the implicit first stage results of our experiment in a regression framework. The odd columns report regressions without controls, and even columns regressions with controls. Columns (1) and (2) show that clients assigned to the treatment arm that included a grace period made their first loan installment an average of 54.4 days after clients in the control group, or approximately 2 months later. This is reflected in an equivalent delay in time lapsed between disbursement and final loan due date (columns (3) and (4). In general, clients tend to repay earlier than when the loan is actually due; however, columns (5) and (6) show that the difference in total loan cycle duration persists between clients in treatment and control arms. Finally, columns (7) and (8) show a weak tendency towards early repayment among clients on the delay intervention.

4 Repayment Flexibility and Client Behavior

4.1 Loan Use and Investment Behavior

We start by presenting the evidence on loan use. Figure 3 presents a bar graph with the average expenditures for the main categories divided between clients with and without a grace period. Business expenditures dominate spending with the average client using eighty percent of her loan for business expenses. The second largest category is house repairs. The graph also suggests a significant difference in spending in these two categories across clients on different loan cycles. In Table 3 we investigate this in a regression framework. We present results from the estimation of equation (3) using different categories of business expenditure as outcomes. Columns (1) and (2) show a significant increase in business spending. The average client on the grace period contract spends roughly 8% (Rs. 462) more on business items. They spend less on house repairs (columns (3) and (4)), but this estimate is statistically insignificant.

Given the difference in business expenditure and the fact that most loan money is spent on business expenditures, we further break down business spending into inputs, equipment and other business spending in Figure 4. The difference in business spending appears to be driven by differences in spending on inputs – which, in turn, is made up of inventory purchases and raw materials. Table 4 presents results for the corresponding regressions, and we observe a significant difference in spending on raw materials. These results are consistent with the prediction that grace period clients increase their spending on illiquid investments. Raw materials are valuable if clients can find a market for the finished product, but if demand is uncertain, it may take a while for the investment to pay off.

Next, we examine client propensity to start new businesses. We asked clients whether they had started a new business both immediately following loan disbursement and again twelve months later during the endline. Our measure for whether a client started a new business is one if a client reported starting a new business in either survey. Overall, the rate of new business formation is low - in the control sample only 2% of clients start new businesses. However, Table 5 shows that the likelihood of starting a new business is doubled among the treatment group.

4.2 Loan Repayment Behavior

Having established a link between the more flexible loan contract and business investment, we next investigate client delinquency and default. Recall that our analytical framework suggests increased investment may come at the cost of increased default. If we find that a grace period is associated with both higher business investment and higher default, it implies that, in this setting, relatively illiquid investments carry with them more risk.

We start by providing a graphical illustration of the impact of providing a grace period on client repayment behavior. In Figure 5 we show the densities of days from first meeting in which the client made a payment to when the client finished repaying for clients who repaid in full as of July 1, 2009. The horizontal bars indicate the average loan due date and 4 months after the loan was due. The Figure indicates that, although a significant fraction of clients were late, the vast majority of loans were repaid within four months of being due. We also observe a significant difference in the repayment patterns of clients who received a grace period versus those who did not. While repayment by clients without a grace period is heavily concentrated around the loan date, there is significantly more dispersion in time to repayment among clients who received a grace period. Given that the delay clients, in effect, had a longer period over which to repay the same size loan, it is not surprising that many of them were able to repay early relative to the no delay clients.

To see default more clearly, Figure 6 graphs the fraction of clients who have not repaid in full relative to the date of first installment. As in the previous Figure, the horizontal bars indicate the loan due date and four months after the loan was due. Truncation is not an issue since all clients had reached 600 days past their first loan payment by July 1, 2009.

Here we observe a clear difference in the fraction of grace period clients who have repaid in full four months past the due date.

To test for the statistical significance of these patterns, in Table 5 we estimate regressions of experimental assignment on default using three measures of default: whether the client repaid within 8, 12 and 16 weeks of the loan due date (defined as the date when the final installment was due). The fraction of defaulting clients roughly halves between eight weeks after the loan was due and sixteen weeks. However, in all cases we see a robust difference in default patterns between the delay and no-delay clients. Delay clients are, on average, between 6 to 8 percentage points more likely to default than non-delay clients. Sixteen weeks after the loan was due, 3% of the non-delay clients and 11% of the delay clients have failed to repay. Including controls in the regressions has very little impact on the point estimates, providing evidence that the results are not contaminated by treatment imbalance.

4.3 Heterogeneous Treatment Effects

The results outlined in the previous section establish that grace period clients are more likely to start new businesses and invest in existing businesses. Grace period clients are also more likely to default. These results suggest that clients who are offered a grace period were encouraged to invest their loan in riskier though perhaps higher return business ventures.

As a consistency check on this interpretation, in Table 7 we look for evidence of differences in the influence of the grace period on the business expenditures of various subgroups of clients.

First, we examine whether the grace period has a larger effect on default for clients who have a higher discount rate, indicating that they have a higher opportunity cost of capital. To determine clients' discount rates, we asked a series of questions about the relative attractiveness of money today compared with a greater sum of money one week or one month from now. We increased the second sum of money until clients reported they would prefer the money at the later date. Using the responses we then computed the net monthly interest rate that would make clients indifferent between the amount of money today and the amount of money a month from now. A higher number therefore corresponds to a higher implied opportunity cost of capital. We report results using the opportunity cost of capital computed using the one-month time period (we get qualitatively similar results if we compute discount rates using the one-week method). In columns (1) and (2) of Table 7 we present results using total business expenditure as an outcome. The regressor of interest is the measured discount rate interacted with treatment status. These estimates reveal that the grace period had a larger impact on clients with higher discount rates. In the context of the model presented in section 2.3 the discount rate is most naturally associated with a higher return on short-term investments R_L. From equation (2), we can see that an increase in R_L will make clients less likely to invest in the illiquid project consistent with the negative point estimate on the level effect of the discount rate in columns (1) and (2) of Table 7. To determine the effect of a rise in R_L on an increase in π_L, we have to make an assumption about how R_L is distributed throughout the population. If it was uniformly distributed, then since $\frac{R_I - R_L^2}{R_I - (S/X)R_L}$ is increasing and concave in R_L, a shift upwards in π_L will cause a switch into more illiquid investments by a larger number of clients the higher is R_L. This is consistent with the positive coefficient on the interaction between delay and the discount rate in columns (1) and (2) of Table 7.

Second, we study the interaction between survey measures of client risk aversion and the influence of grace period on business investment. Presumably, risk-averse clients are the least willing to risk missing a loan installment and facing the associated penalties, so are most constrained by early repayment obligations. In our model, this prediction corresponds to a higher $\pi'_L(\cdot)$ for risk-averse clients. To elicit risk preferences in the baseline survey we used the random lottery pairs technique in which subjects were given a sequence of binary lottery choices and must choose the preferred lottery, allowing us to deduce risk aversion based on their switching point from certainty to uncertainty. [9]

Regression estimates of the coefficient on the interaction term between risk aversion

[9] The lotteries were presented as hypotheticals, and clients were not financially incentivized to answer these questions.

and assignment to the grace period group indicate that more risk averse clients increase business investment by more in response to the grace period contract relative to less risk averse clients. This result is especially striking given that the level effect of risk aversion is to decrease business investment. While the coefficient estimates are only weakly significant, this pattern suggests that the standard loan contract without a grace period deters risk averse clients most from taking on illiquid investments.

5 Conclusion

Our findings suggest that introducing flexibility to microfinance contracts presents a trade-off for banks and clients. On the one hand, we find evidence that average levels of default an delinquency rise when clients are offered a grace period before repayment begins. This basic finding supports the predominant view among micro-lenders that rigid repayment schedules are critical to maintaining low rates of default among poor borrowers. On the other hand, our findings are consistent with a model in which delayed repayment encourages more profitable, though riskier, investment.

The pattern of long-run default we observe in the data also sheds light on the investment opportunity set clients face. The fact that a substantial number of grace period clients still have not repaid more than a year after the loan due date suggests that the available higher return, less liquid investments also carry higher risk that leads to more variable business outcomes. In ongoing work we will look for direct evidence of this by examining differences across experimental groups in long-run business profits.

Assuming for now that the illiquid investments clients undertook were in fact socially desirable, we perform a back-of-the-envelope calculation to compute the interest rate required to compensate VWS for the additional default. Given a baseline default rate of 3% for clients without a grace period and 11% for clients with a grace period, VWS would have to increase its annualized interest rate from 22% to 33% to cover the additional default. Of course, a higher interest rate may itself cause a yet higher default rate if moral hazard or adverse selection are significant, so the new interest rate should be taken as a minimum.

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Table 1: Delay vs. No Delay Randomization Check

		No Delay	Delay	Diff (2) - (1)	Full Sample
	Client-level variable	(1)	(2)	(3)	(4)
1	Age	34.228	33.394	-0.7645	33.816
		0.408	0.414	0.5584	0.291
2	Married	0.901	0.875	-0.024	0.888
		0.015	0.016	0.0211	0.011
3	Literate	0.849	0.792	-0.0616**	0.821
		0.017	0.02	0.0296	0.013
4	Muslim	0.007	0.019	0.0118	0.013
		0.004	0.007	0.0106	0.004
5	Self-Employed	0.501	0.471	-0.0357	0.486
		0.024	0.025	0.0386	0.017
6	Waged Work	0.2	0.204	0.0046	0.202
		0.019	0.02	0.0332	0.014
7	Housewife	0.299	0.325	0.0311	0.312
		0.022	0.023	0.0324	0.016
8	Discount	18.708	19.105	0.4685	18.902
		0.571	0.574	0.9006	0.405
9	Risk Index	0.283	-0.302	-0.5964**	-0.003
		0.119	0.119	0.2298	0.085
10	Household Size	3.685	3.797	0.1387	3.74
		0.08	0.078	0.1244	0.056
11	Household Shock	0.769	0.766	-0.002	0.767
		0.021	0.021	0.0453	0.015
12	Household Savings	0.32	0.342	0.0212	0.331
		0.023	0.023	0.0376	0.016
13	Household Business	0.766	0.766	0.0025	0.766
		0.021	0.021	0.0411	0.015
14	Loan Amount	7395.294	7633.333	271.1052**	7513.609
		64.053	67.231	135.5592	46.543
	N	425	420	845	845

Notes:

* significant at 5% level ** significant at 1% level *** significant at .1% level

(1) Standard errors adjusted for within loan group correlation in parenthesis.

(2) Column (3) is the coefficient on a dummy for delay in a regression of the client-level variable on stratification of group formation fixed effects.

(3) Overall Effect: Chi-Sq. Stat and p value are computed by jointly estimating a system of seemingly unrelated regressions consisting of a dummy for no delay/delay with standard errors adjusted for within loan group correlation.

(4) Rows 1-9 reflect answers about the individual client. Rows 10-14 refer to the household.

(5) Refer to the data appendix for a full description of the variables

Table 2: First Stage between Delay and No Delay

	Disbursement to first meeting		Disbursement to due date		Disbursement to full loan repaid		First meeting to full loan repaid	
	(1)	(2)	(3)	(4)	(5)	(6)	(5)	(6)
Delay	54.16***	53.49***	54.16***	53.49***	45.41***	43.74***	-8.642	-9.810**
	(1.521)	(1.446)	(1.521)	(1.446)	(5.369)	(4.344)	(5.261)	(4.606)
Controls Used	No	Yes	No	Yes	No	Yes	No	Yes
Observations	845	845	845	845	799	799	799	799
Mean for No Delay	14.57	14.57	308.6	308.6	326.4	326.4	311.7	311.7
	(0.637)	(0.637)	(0.637)	(0.637)	(2.594)	(2.594)	(2.516)	(2.516)

Notes:

* significant at 5% level ** significant at 1% level *** significant at .1% level

(1) Standard errors adjusted for within loan group

(2) Controls used can be found in Table 1

(3) All regressions include stratification of group formation fixed effects. Control equations also include loan officer fixed effects.

(4) In cases when a control variable is missing, its value is set to zero and a dummy is included for whether the variable is missing.

(5) Refer to the data appendix for a full description of the variables

Table 3: Loan Use-All Categories

	Health		Savings		Education		Other		Home Repairs		Business	
	(3)	(4)	(9)	(10)	(5)	(6)	(11)	(12)	(7)	(8)	(1)	(2)
Delay	18.08	28.41	-12.19	6.456	-50.47	-59.80	-28.02	-13.49	-207.5	-232.7	517.6***	462.4**
	(67.21)	(62.73)	(44.45)	(46.81)	(47.46)	(50.17)	(109.8)	(119.3)	(134.8)	(149.7)	(197.9)	(202.6)
Controls Used	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	845	845	845	845	845	845	845	845	845	845	845	845
Mean for No Delay and Matches	107.2	107.2	122.9	122.9	127.7	127.7	402.0	402.0	570.3	570.3	6142.7	6142.7
	(52.07)	(52.07)	(32.86)	(32.86)	(53.29)	(53.29)	(88.67)	(88.67)	(115.4)	(115.4)	(162.4)	(162.4)

Notes:

* significant at 5% level ** significant at 1% level *** significant at .1% level

(1) Standard errors adjusted for within loan group correlation in parenthesis.

(2) Controls used can be found in Table 1

(3) All regressions include stratification of group formation fixed effects. Control equations also include loan officer fixed effects.

(4) In cases when a control variable is missing, its value is set to zero and a dummy is included for whether the variable is missing.

(5) Clients were asked about the loan they received in this intervention. Some of the clients who went on to the next intervention answered about the next loan. So all regressions include a dummy for whether the sum of loan use expenditures matched the 3rd intervention loan instead of the 2nd intervention loan

(6) Refer to the data appendix for a full description of the variables

Table 4: Loan Use-Business Expenditures Break Down

	Inventory		Raw Materials		Inputs		Equipment		Other Business Expenditures	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Delay	126.8	122.7	410.6*	312.9	537.5*	435.6	-47.44	-23.32	27.53	50.14
	(294.1)	(293.8)	(222.0)	(225.2)	(282.4)	(276.5)	(240.3)	(240.8)	(45.90)	(48.44)
Controls Used	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	845	845	845	845	845	845	845	845	845	845
Mean for No Delay and Matches	3241.2	3241.2	1272	1272	4513.2	4513.2	1552.4	1552.4	77.12	77.12
	(230.3)	(230.3)	(144.9)	(144.9)	(225.4)	(225.4)	(172.0)	(172.0)	(34.24)	(34.24)

Notes:
* significant at 5% level ** significant at 1% level *** significant at .1% level
(1) Standard errors adjusted for within loan group correlation in parenthesis.
(2) Controls used can be found in Table 1
(3) All regressions include stratification of group formation fixed effects. Control equations also include loan officer fixed effects.
(4) In cases when a control variable is missing, its value is set to zero and a dummy is included for whether the variable is missing.
(5) Clients were asked about the loan they received in this intervention. Some of the clients who went on to the next intervention answered about the next loan. So all regressions include a dummy for whether the sum of loan use expenditures matched the 3rd intervention loan instead of the 2nd intervention loan
(6) Refer to the data appendix for a full description of the variables

Table 5: New Business Creation

	New Business	New Business
	(1)	(2)
Delay	0.0248*	0.0243*
	(0.0145)	(0.0141)
Controls Used	No	Yes
Observations	830	830
Mean for No Delay and Matches	0.0254	0.0254
	(0.00842)	(0.00842)

Notes:

* significant at 5% level ** significant at 1% level *** significant at .1% level

(1) Standard errors adjusted for within loan group correlation in parenthesis.

(2) Controls used can be found in Table 1

(3) All regressions include stratification of group formation fixed effects. Control equations also include loan officer fixed effects.

(4) In cases when a control variable is missing, its value is set to zero and a dummy is included for whether the variable is missing.

(5) Clients were asked about the loan they received in this intervention. Some of the clients who went on to the next intervention answered about the next loan. So all regressions include a dummy for whether the sum of loan use expenditures matched the 3rd intervention loan instead of the 2nd intervention loan

(6) Refer to the data appendix for a full description of the variables

Table 6: Default between Delay and No Delay

	Full loan not repaid within 8 weeks of due date		Full loan not repaid within 12 weeks of due date		Full loan not repaid within 16 weeks of due date	
	(1)	(2)	(3)	(4)	(5)	(6)
Delay	0.0758**	0.0733**	0.0904***	0.0843**	0.0880**	0.0829**
	(0.0375)	(0.0357)	(0.0341)	(0.0338)	(0.0340)	(0.0338)
Controls Used	No	Yes	No	Yes	No	Yes
Observations	845	845	845	845	845	845
Mean for	0.0659	0.0659	0.0376	0.0376	0.0376	0.0376
No Delay	(0.0190)	(0.0190)	(0.0132)	(0.0132)	(0.0132)	(0.0132)

Notes:

* significant at 5% level ** significant at 1% level *** significant at .1% level

(1) Standard errors adjusted for within loan group

(2) Controls used can be found in Table 1

(3) All regressions include stratification of group formation fixed effects. Control equations also include loan officer fixed effects.effects.

(4) In cases when a control variable is missing, its value is set to zero and a dummy is included for whether the variable is missing.

(5) Refer to the data appendix for a full description of the variables

Table 7: Heterogenous Effects for Business Expenditures
Dependent Variable: Business Expenditures

	Discount Rate	Discount Rate	Risk Index	Risk Index
	(1)	(2)	(3)	(4)
Regressor x Delay	27.85*	28.62*	-133.0*	-108.2
	(16.02)	(15.69)	(75.92)	(75.48)
Delay	52.61	-47.00	565.8***	478.0**
	(365.9)	(372.0)	(205.7)	(208.8)
Regressor	-12.36	-12.93	50.39	31.80
	(10.58)	(10.25)	(55.44)	(55.61)
Controls Used	No	Yes	No	Yes
Observations	845	845	845	845
Mean for No Delay	6282.7	6282.7	6282.7	6282.7
	(163.0)	(163.0)	(163.0)	(163.0)

Notes:
* significant at 5% level ** significant at 1% level *** significant at .1% level
(1) Standard errors adjusted for within loan group correlation in parenthesis.
(2) Controls used can be found in Table 1
(3) All regressions include stratification of group formation and loan officer fixed effects.
(4) In cases when a control variable is missing, its value is set to zero and a dummy is included for whether the variable is missing.
(5) Clients were asked about the loan they received in this intervention. Some of the clients who went on to the next intervention answered about the next loan. So all regressions include a dummy for whether the sum of loan use expenditures matched the 3rd intervention loan instead of the 2nd intervention loan
(6) Refer to the data appendix for a full description of the variables

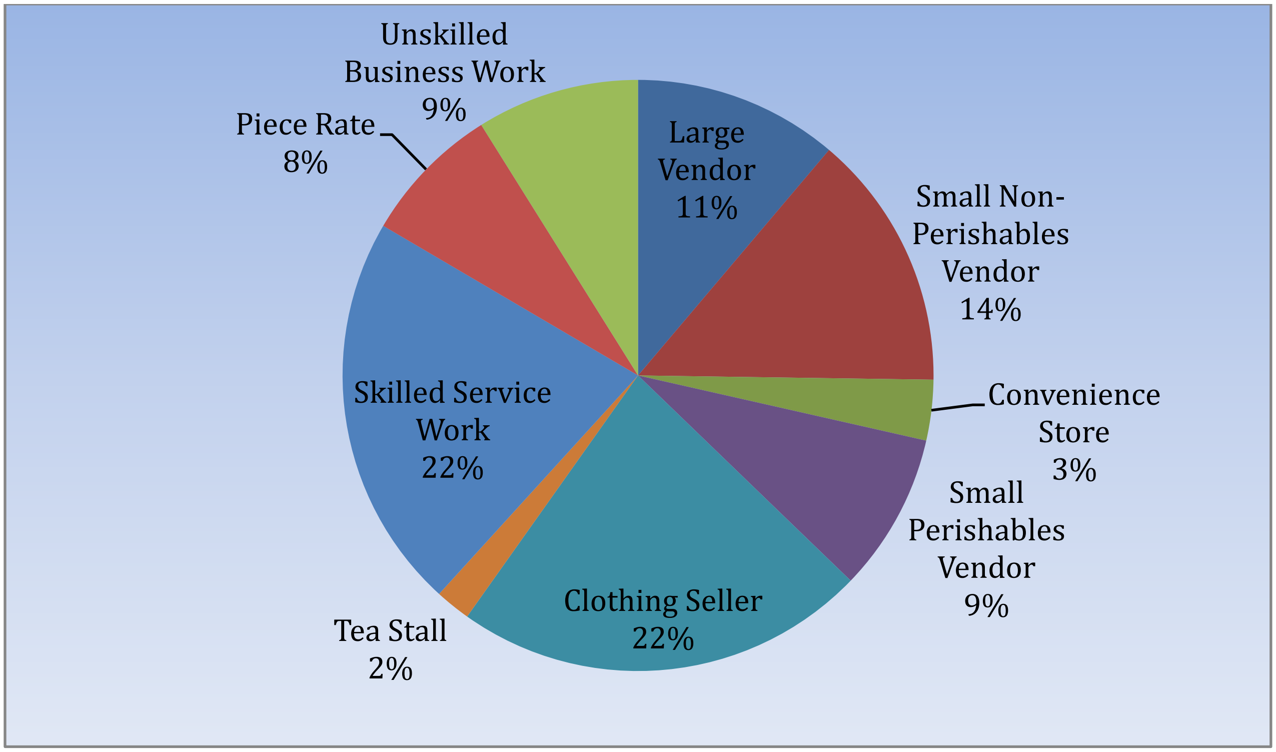

Figure 1: Distribution of Household Business Types

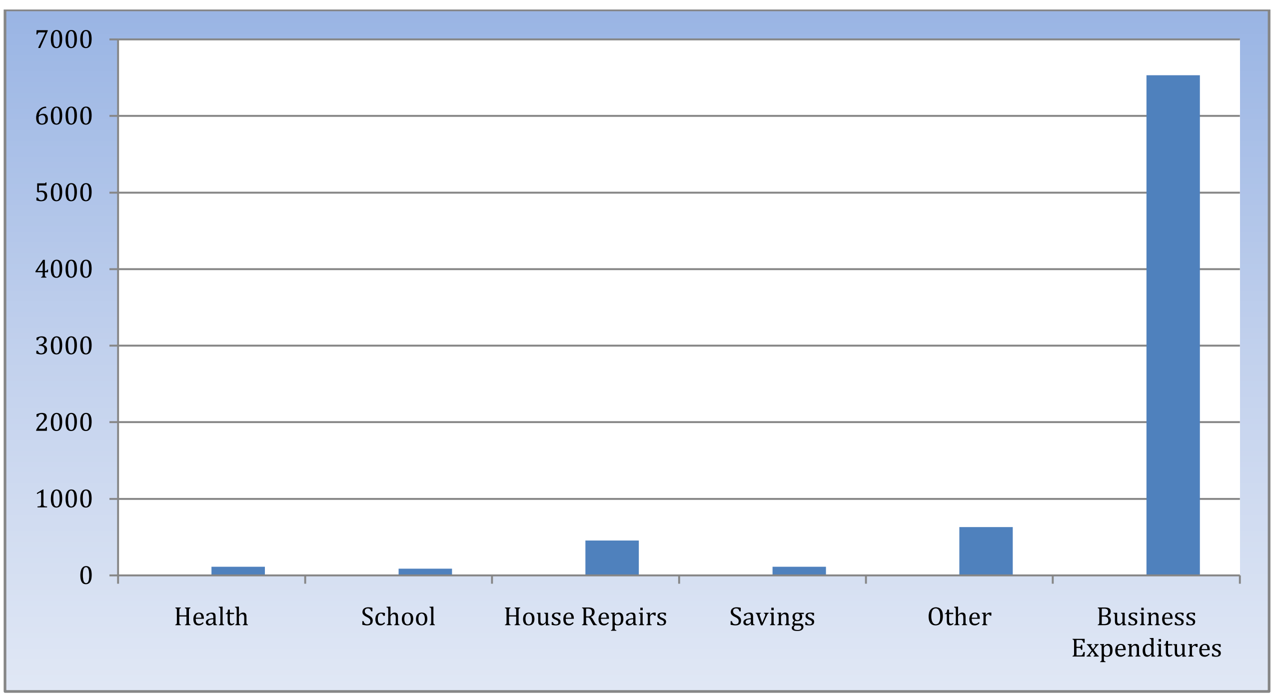

Figure 2: Loan Expenditure Categories

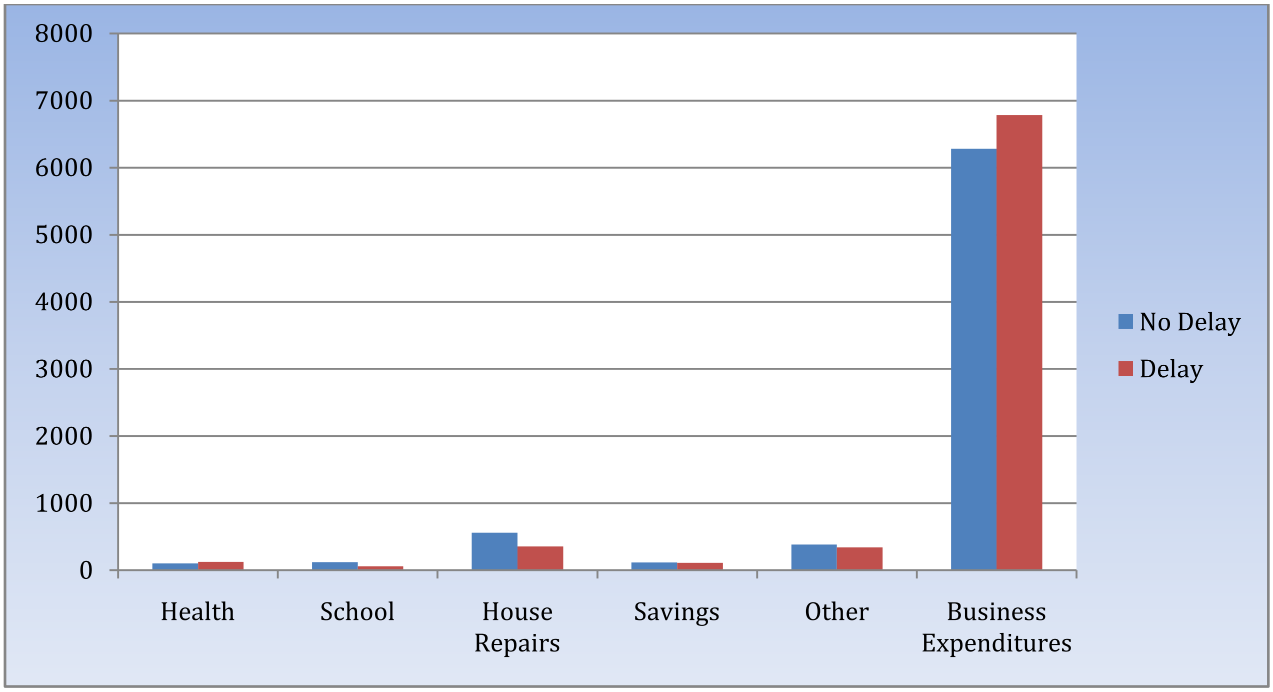

Figure 3: Loan Expenditure Categories by Delay and No Delay Clients

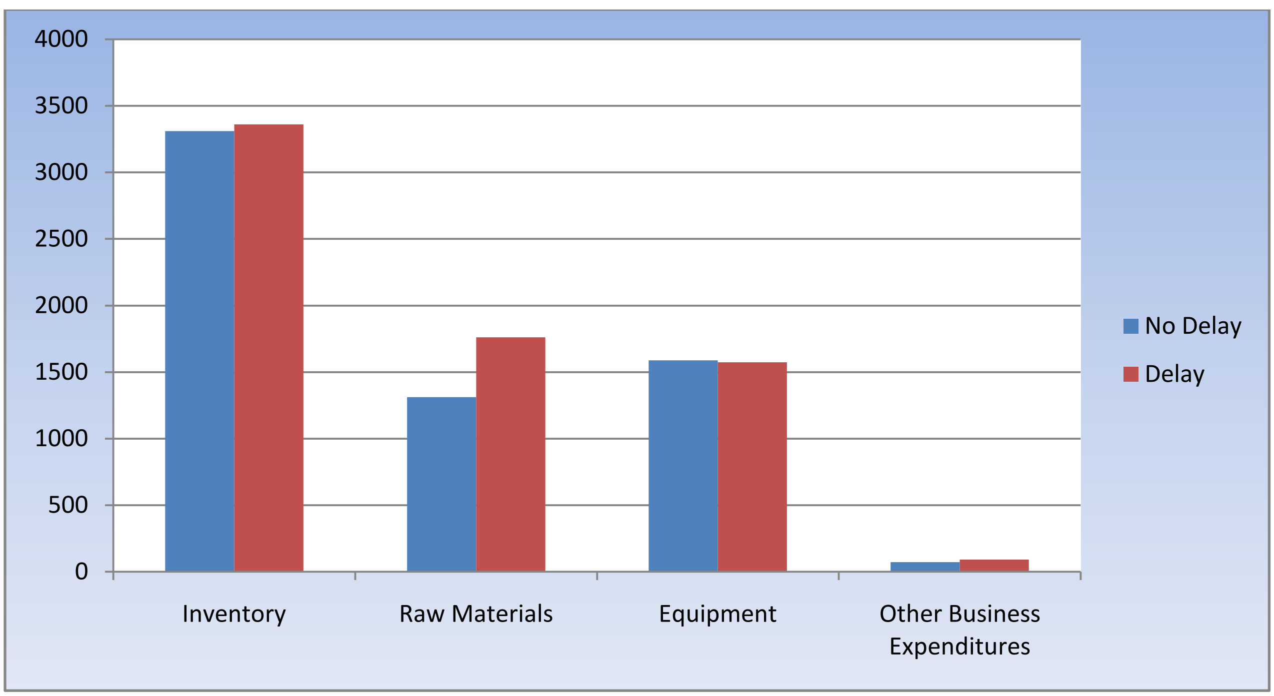

Figure 4: Business Expenditure Categories by Delay and No Delay Clients

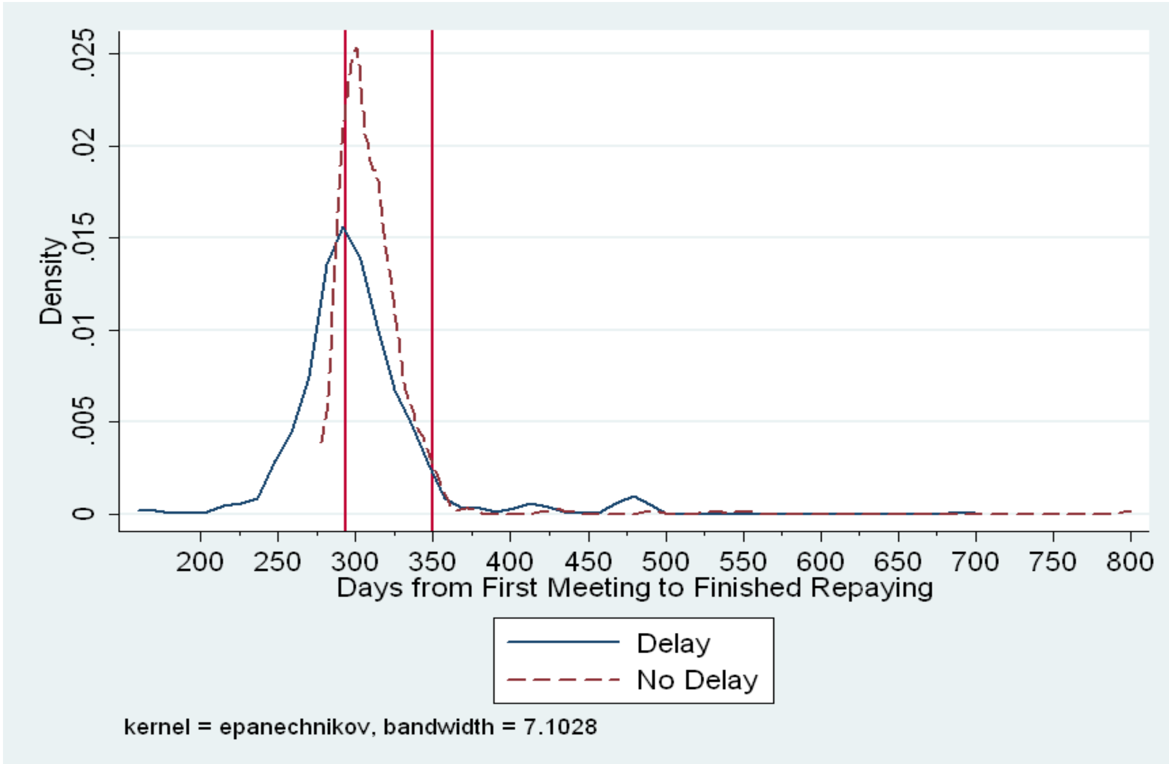

Figure 5: Kernel Density of Days Taken to Repay

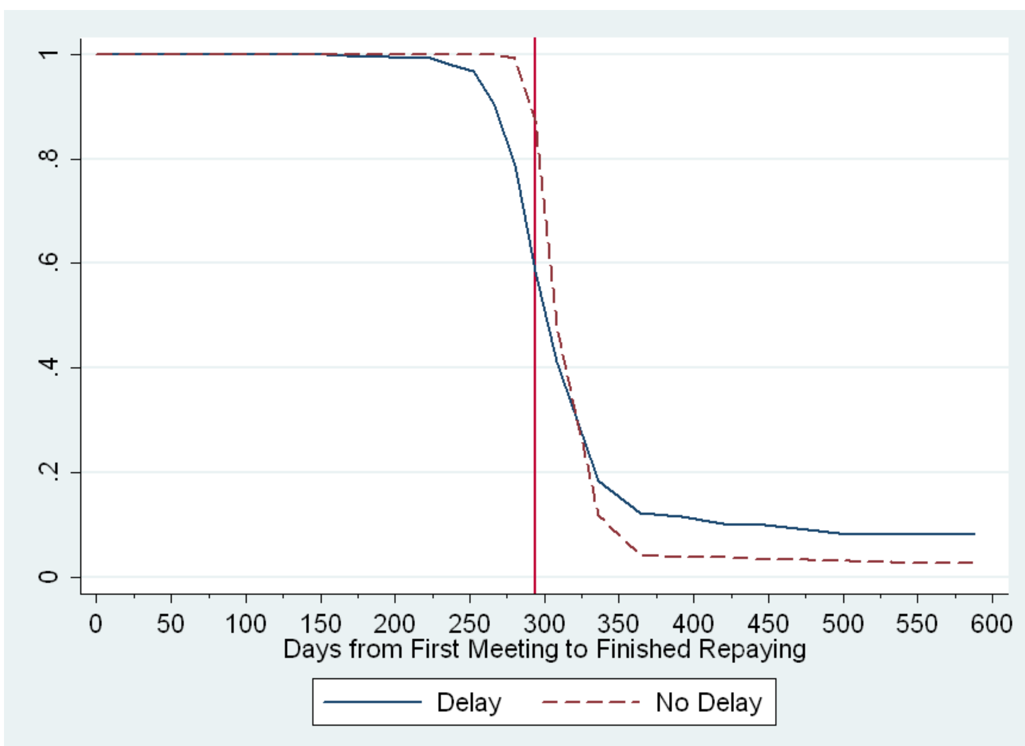

Figure 6: Fraction of Clients Who Have Not Repaid