Dropouts, Defaulters and Continuing Borrowers: Client Exit from Microfinance

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Abstract: High dropout rates are a problem faced by many microfinance institutions, with borrowers exiting after few loans. The curiosity of dropouts is that, unlike defaulters, they repay their loans. To understand this I investigate differences across borrowers using data from Zimbabwe. I find that negative shocks are a significant predictor of dropout, but not of default, and that social networks are the most important correlate of on-time repayment. The results show the importance of social networks in determining credit relationships.

1. **Introduction**

One of less understood phenomenon regarding microfinance is the high dropout rates faced by many microfinance institutions. A surprisingly large number of borrowers do not maintain their relationships with microfinance institutions (MFIs), leaving after only a few loans. For example, a 2001 survey estimates yearly dropout rates that range from 29% to 66% (MicroBanking Bulletin 2001)[1]. While some dropouts eventually return, the number of clients who do not regularly borrow is strikingly high. Microfinance practitioners recognize this as a serious problem, as it may indicate a failure to meet borrowers' financial needs (Cohen 2002). Furthermore, the loss of clients makes it more difficult for institutions to recover the costs of initiating the loan contract, dampening profitability (Pawlak and Matul 2004, Urquizo 2006).

Microfinance dropout is curious for several reasons. First, borrowers, particularly firms with few assets and little reputation, can benefit from long term relationships with lenders. As banks acquire more information about borrowers and subsequently face lower costs, they can pass on the benefits in the form of larger loans, longer terms, less frequent repayments, and fewer collateral or personal guarantee requirements (Armendariz and Morduch 2010). Second, for most poor microentrepreneurs the cessation of a microfinance relationship constitutes an exit from formal credit markets altogether, as graduation rates to larger formal lenders tend to be low. Third, and most curiously, dropout rates generally are not matched by high default rates, suggesting the majority of dropouts repay existing loans and remain in good standing with the lender. Thus dropouts are distinct from defaulters. Unlike defaulters, who cut themselves off from additional microfinance loans, dropouts keep the option of future borrowing open. The voluntary nature of this exit raises questions about some of the proposed explanations for dropout, such as borrowers' dissatisfaction with high transaction costs, loan type, loan size, term length, repayment inflexibility,

and the use of microfinance for one large purchase (CGAP 2000, Hulme 1999, Meyer 2002, MicroBanking Bulletin 2001, Pagura 2004, Wright 1997). All of these factors can explain why borrowers want to leave, but not why some repay before doing so. From an economic perspective, repayment is rational only if the penalty for default involves credit rationing and if the borrower plans to return. In these circumstances repaying the loan is akin to purchasing an option for access to future loans. Thus in analyzing the determinants of exit, the question is not simply why some borrowers leave, but why some default and others repay before doing so.

This paper attempts to add to the literature on client exit by analyzing the determinants of borrower dropout using panel data from a microfinance lender in Zimbabwe. The data can contribute uniquely to the discussion of borrower behavior for several reasons. First, the MFI in question suffered a high rate of dropout over the two panel period. Fifty two percent of clients in the first survey cease to borrow by the second one, creating a sufficiently large sample of clients who exit. Second, the data set contains detailed information on every loan given to clients in the sample, making it possible to assess delinquency and default. Third, a large number of borrowers who exit do not default, making it possible to assess differences not only between dropouts and continuing clients, but also between dropouts and defaulters.

I begin with a simple theoretical framework that defines three categories of borrowers-- continuing clients, dropouts and defaulters—and the role the ability to repay and demand for subsequent microfinance loans play in categorizing each. Dropouts are identified as borrowers who are able to repay but do not demand a new loan immediately. This interruption in lending may be due to more periodic credit needs, in which case it is predictable, or due to shocks, in which case it is unanticipated. Defaulters, on other hand, either could demand future loans but be unable to repay

or they could be able to repay but not demand future loans. To assess which cases dominate I turn to the data.

I next estimate models of continued borrowing, dropout and default as well as repayment delinquency. I find that several variables linked to the ability to repay, including income, wealth, and shock incidence, are not significant in predicting default or delinquency. I also find that enterprise characteristics that might be associated with credit demand, such as firm age, size, formality and industry, are not significantly correlated with default or delinquency. On average, defaulters are not worse off at either the household or enterprise level, which suggests inability to repay is not the sole determinant of default. Meanwhile, dropouts do have lower incomes and wealth than continuing clients and are more likely to suffer a negative shock. This suggests unanticipated events, rather than predicable credit needs, are more important in explaining the cessation in borrowing.

The results also show that social networks are highly correlated with loan repayment. Membership in church groups is the most significant predictor of dropout over default, and is highly correlated with lower repayment delinquency. The channels through which church groups impact borrower behavior are multiple, and, in particular, the data do not make it possible to rule out borrower quality or skill as the underlying link between group membership and repayment behavior. It is curious, however, that this type of membership is a stronger predictor of repayment behavior than household and enterprise characteristics that, ex-ante, seem more closely linked with ability to repay and loan demand. This highlights the important role that social networks play in credit relationships and the complicated nature of formal credit for poor households.

The paper proceeds as follows. Section 2 provides a theoretical framework for borrowers' decision making. Section 3 describes the data. Section 4 estimates the determinants of borrower categories. Section 5 estimates repayment and delinquency. Section 6 concludes.

2. **Theoretical Framework**

This paper focuses on the decisions made by microfinance borrowers once their existing loan comes due. Borrowers can make one of three choices. First, they can repay the loan on time and take out another loan. Second, they can repay the loan on time and not take out another loan. Third, they can fail to repay the loan on time, thereby shutting themselves out of the possibility of any future loans. Borrowers who make the first decision are called continuing clients. Borrowers who make the second decision are called dropouts. Borrowers who make the last decision are called defaulters. While we are unable to see if the dropouts in the data return to borrow in the future, it is assumed they plan to do so, as otherwise prompt loan repayment is economically irrational.

The next question is what drives borrowers' decisions about repayment and continued borrowing. Borrowers repay if they can acquire the funds, either from themselves or others, and if the expected value of access to future loans is larger than the loan repayment. They take another loan if the additional income from the project outweighs the loan payment. Borrowers therefore are distinguished by their ability to repay and their demand for future loans. Continuing clients are able to repay their existing loan and demand a subsequent one immediately. Dropouts also are able to repay, but do not demand a subsequent loan. It is unclear if this is due to different projects and more periodic financial needs, in which case dropout is predictable, or due to shocks which interrupt the projects needing funding, in which case it is unanticipated. There also is ambiguity as to what differentiates defaulters. Defaulters could demand future loans but be unable to repay, in which case default is involuntary. Alternatively, they could be able to repay, but decide that access to

5

future microfinance loans is worth less than the repayment amount, in which case default is strategic. To determine which explanations dominate, I turn to the data.

3. **The Data**

The data used in this paper come from an impact evaluation conducted by USAID's AIMS Project of Zambuko Trust, at the time Zimbabwe's largest microfinance institution[2]. Clients from branches in Zimbabwe's three largest urban areas were surveyed in two periods-- August/September of 1997 and September/October 1999[3]. Since the survey was not designed to investigate the phenomena of dropout or default, the reasons for client exit are not included in the data. In the place of exit details, however, the data contain information on every loan taken from Zambuko by survey clients. I use this information to define borrowers who were clients of Zambuko in the first panel and appear in both years.[4] Borrowers are defined as continuing clients if they have an outstanding loan at the time of the second survey. This includes borrowers who repaid an existing loan and take a new one and borrowers whose current loan has yet to come due. Borrowers are defined as dropouts if they had a Zambuko loan as of the first survey but have not borrowed in more than a year by the second survey.[5] Borrowers are defined as defaulters if the repayment date is more than one month passed, no repayment date is given, and the borrower received no further loans from the institution[6]. Borrowers who repay more than 90 days after the due date also are defined as defaulters. While these borrowers do not default, the delinquency is such that that they likely are barred from future loans. An estimated function of delinquency, shown in figure 1, corroborates that defaulters who repay are distinct from the other groups. While sixty five percent of continuing clients and eighty percent of dropouts repay within thirty days of the deadline, no defaulters who repay do so within thirty days and eighty one percent repay more than 120 days after the deadline.

Of the 343 borrowers in the sample, 111 are classified as continuing clients, 137 as defaulters, and 95 as dropouts. The information on loan histories, presented in table 1, suggests that at the initiation of the credit relationship Zambuko did not view dropouts and defaulters as higher credit risks. There is no evidence of less favorable terms, as the size and term length of the first loans are comparable across groups. This assessment quickly changes, however, as defaulters soon reveal themselves to be low quality borrowers. Only thirty six percent pay their first loan on time and twenty one percent default.[7] Among those who repay the average number of days late is one hundred and fifty eight, a delinquency of more than five months. In comparison, dropouts do not appear to be lower quality borrowers. On the last loan they have higher on-time repayment than continuing clients and a comparable number of days late. This suggests they remain in good standing with the institution.

Table 1 also contains information on other formal loans, sources of which include banks and other MFIs[8]. The incidence of borrowing from other formal lenders is low. As of the second survey round only eight percent of continuing clients, six percent of defaulters and three percent of dropouts report borrowing from another formal source. This suggests migration to other formal lenders is low and confirms that ceasing to borrow from Zambuko constitutes an exit from formal credit markets altogether for most borrowers.

4. **The Determinants of Dropout, Default and Continued Borrowing**

4.1. The Model

Borrower categories can be modeled as choices that arise from a utility maximization model. In this framework borrowers choose the repayment and borrowing paths that maximize utility, which is a

function of observable characteristics (X_i) and an error term (ε_{ij}). The probability borrower i is in category j is the probability this option yields higher utility than the other ones.

$$p_{ij} = \Pr(U_{ij} \geq U_{ik}) = \Pr(X_i'\beta_j + \varepsilon_{ij} > X_i'\beta_k + \varepsilon_{ik}) \text{ for all } k \neq j \tag{1}$$

I estimate these probabilities using a multinomial logit model, which assumes the errors for different choices are independent and have a type I extreme value distribution. The probability of falling into

category j therefore becomes: $\quad p_{ij} = \dfrac{\exp(X_i'\beta_j)}{\sum_{l=1}^{m}\exp(X_i'\beta_l)}$ $\qquad\qquad$ (2)

There are two points to make about the multinomial logit model (MNL). First, it is non-nested. I chose a non-nested model due to the ambiguity over what type of nesting structure, if any, matches the data generation process. Nesting would occur if borrowers first decide whether or not to remain as clients and then decide on whether or not to repay the loan. In this case defaulters and dropouts are nested together. However, it could be the case that borrowers decide whether or not to repay, and then whether or not to keep borrowing. In this case continuing clients and dropouts are nested together. It seems more plausible that borrowers make repayment and repeat borrowing decisions simultaneously, and that a non-nested model is most appropriate.

The second issue is whether or not the MNL is the appropriate non-nested model to use. The main restriction of MNL is that, by assuming independence across the error terms of the different choices, it assumes the combination of alternatives is irrelevant. This translates into assuming that being given the option to continue borrowing or not does not affect the decision of whether or not to default. To assess if this independence of irrelevant alternatives (IIA) assumption holds I use a Hausman test. This test is only possible for one restricted version of the model due to the small sample size and subsequent lower level of variation in the covariates across the outcomes. The test assesses if removing the option of continued borrowing significantly changes the relative

differences between default and dropout. The results, shown at the bottom of Table 3, show this is not the case. The Hausman χ2 value is too small to reject the null that the coefficients are similar across the model that includes and excludes continuing clients. To further reduce concerns about the IIA assumption I also estimate the model with a multinomial probit, which does not assume independence across the error terms. The estimated marginal effects, included in the appendix, are almost identical to those from the MNL model, providing more evidence that specification error does not drive the results.

4.2. Covariates

The elements of X_i include individual, household and enterprise characteristics related to repayment capacity and the demand for subsequent microfinance loans. Individual and household characteristics which influence both include the gender and marital status of the borrower, the dependency ratio (the ratio of economically active household members to the total), household income per capita, and home ownership. Gender may be related to project type and funding needs, access to other types of credit, and the demand for subsequent loans, if the MFI makes a greater effort to retain female borrowers. Marital status and the dependency ratio may capture the ability of borrowers to call on resources within the household to make loan repayments in the face of liquidity shocks. Marital status also may capture access to social networks if spouses confer access to a wider network of family and friends that can called on in times of need. Negative shocks are taken from responses regarding adverse events at the household level that took place during the previous two years. Listed shocks include illness of the respondent or household member, death of a household member, departure of an income earner or arrival of new household members, asset losses due to fire or theft, and job loss. Shocks that occurred between the two surveys and prior to the first survey are considered. Finally, home ownership is used in lieu of assets to measure household

wealth since assets may be determined by the length of the microfinance relationship. This is unlikely to be the case for home ownership since microfinance loans generally are too small to be used to buy a home.

Enterprise characteristics include firm age, as measured by years in operation (duration), industry, firm size, as measured by employees, and formality. Collectively these are meant to capture differences in project types and the potential for more intermittent credit needs. For example, younger, smaller and informal firms may have different expansion possibilities, while firms in particular industries might have different demands for fixed and working capital. Employees are used rather than assets to measure firm size, as the latter is more likely to be driven by the length of the microfinance relationship.

One of the most important components of X_i is social networks, which may influence credit behavior through multiple channels. These include the provision of funds if borrowers face a negative shock (Van Tassel 2004), the mitigation of information costs and enhanced access to informal lenders (Okten and Osili 2004, Laszlo & Santor 2009, Wydick et.al 2011), and the provision of peer monitoring and sanctions, which increase the costs of default (Karlan 2007, Van Bastelaer and Leathers 2006, Cassar and Wydick 2010). Ideally to measure social networks we would have information on the quantity and quality of informal contacts. This information, however, is not available. In their place I use variables that likely are highly correlated with informal networks. The first is membership in a church group. The second is membership in another non-financial group, including a business association, women's group, or employee association. The third is membership in an informal savings group, including a ROSCA, savings club or burial society.

X_i also includes proxy variables for entrepreneurial skill and borrower quality, two unobservable characteristics that are important confounding factors in regard to the social network

measures. For example, entrepreneurs known to have low skill or borrower quality may be shunned from social groups and also have more difficulties with loan repayment. To measure skill I use a dummy variable for whether or not the entrepreneur has a sales strategy. I use this in lieu of education, as there is a high non-response rate, limiting the size of an already small sample. To measure borrower quality in addition to some degree of credit demand, I use access to supplier credit, measured by whether or not the entrepreneur reports being able to obtain items needed for the enterprise on credit from the supplier. Supplier credit is an important source of informal loans for many microenterprises and may be either a complement or substitute to microfinance depending on the terms of these loans, the projects being financed, and the degree to which borrowers are quantity rationed by either type of lender. I use supplier credit as of the first and second survey rounds, as borrower quality and access to these loans may vary during the survey period. It is important to note that these proxy variables are unlikely to completely capture the unobserved characteristics of interest, but their inclusion is the best strategy given the available data. Thus the possibility of bias from these factors remains, and the estimation results must be interpreted with caution. Finally, I include city fixed effects in case repayment problems are specific to particular bank branches.

To reduce contamination from the length of the microfinance relationship, all variables in the baseline model, except for shocks, are as of the first survey round. Summary statistics are shown in Table 2. Asset, profit and income measures have been converted to U.S. dollars for ease of interpretation. The second to last column shows the results of mean comparison tests for all three groups, while the last column shows those for comparisons between defaulters and dropouts only.

4.3. Results

The results from the estimation of the multinomial logit model are shown in table 3. The base category is dropouts. The coefficients are average marginal effects, with standard errors shown in parentheses. Each coefficient therefore represents how a one unit increase in the covariate changes the probability a borrower is a continuing client or defaulter rather than a dropout. Three models are estimated. The first model uses covariates as of the first survey round, with the exception of shocks, which is as of the second survey round. The second model also includes shocks from the first survey round, in case adverse events which cause repayment duress happen closer to the first survey. The third model uses supplier credit as of the second survey round in order to capture any changes in access to this type of informal credit. The bottom of each column also contains the chi-squared values for tests of joint significance of: the household variables (income, wealth, shocks and dependency ratio); the enterprise variables (age, size, formality and industry); and the social network variables (church groups, savings groups, and other groups).

Several conclusions emerge from the results. First, income, wealth and household shocks are significant predictors of continued borrowing, but not of default. As shown in columns one, three, and five continuing clients have higher income, are more likely to own their home, and are less likely to have been hit with a shock than dropouts. These variables are significant both individually and jointly, showing that dropouts are worse off at the household level than continuing clients. Meanwhile, the same cannot be said of defaulters with respect to dropouts. As shown in columns two, four and six, income, wealth and shocks are neither individually nor jointly significant in predicting default. This is somewhat surprising, and shows that defaulters are not noticeably worse off at the household level than dropouts. While these variables might not capture financial

strain faced by borrowers over the two year period, the results suggest the inability to repay is not the only driver of default.

Second, the majority of enterprise characteristics do not predict either continued borrowing or default relative to dropout. Firm age, size, formality, and the industry dummies are insignificant, both individually and jointly, in both equations. On average, dropouts do not have enterprises that are younger, smaller, less formal or in different industries. This implies the enterprises of dropouts do not differ in obvious ways from those of continuing clients or defaulters, and if there are differences in funding needs, they lie at a less aggregated level. Overall only one enterprise characteristic—access to supplier credit as of the first survey period—has predictive power, and only for continued borrowing. As shown in columns one and three, continuing clients are significantly more likely than dropouts to report access to supplier credit as of the first survey round. We do not know if this is because these borrowers are higher quality and thus have greater access to other lenders, or because they need more credit and are unable to obtain sufficient funding from any one source. Either way, the results highlight that credit markets are not limited to microfinance for many borrowers.

Third, lower participation in social networks, and particularly church groups, is the most important correlate with default. As shown in columns two, four, and six, the coefficient on membership in a church group is negative, significant, and large. On average, members of church groups are 30% less likely to be defaulters rather than dropouts. The particularities of this type of group make the channels through which membership impacts repayment and continued borrowing behavior unclear. Church group membership could reflect increased access to liquidity services, or reflect having a greater moral imperative to repay. It also could reflect borrower and entrepreneurial quality, although these groups should be less likely to select on these characteristics than other ones,

like informal savings or business clubs. It is clear, however, that this type of membership is highly correlated with borrower decisions regarding microfinance.

Overall, I find that dropouts are not better off than defaulters on observable household characteristics, nor do they have enterprises that differ in obvious ways from continuing clients or defaulters. They are, however, worse off and more likely to have been hit with shocks than continuing clients, and are more active participants in social networks than defaulters. These findings more strongly support a story of dropout driven by unanticipated events rather than predictable fluctuations in credit demand. The findings, however, provide a less clear picture of default. The results suggest default is not solely a story of inability to pay, and that a lack of demand for microfinance loans also plays a role. However, without more detail on the specifics of what happens to borrowers and their enterprises over the two year period, we cannot tell which story dominates. It therefore remains uncertain if default is largely voluntary or strategic in the sample. Given this ambiguity, I turn to an analysis of loan repayment to further analyze the determinants of client exit.

5. **Estimating Loan Repayment**

To estimate repayment behavior I use two models. The first model estimates the probability borrowers repay on time, defined as paying within 30 days of the due date.[9] On-time repayment can be modeled as $y_{ij} = f(X_i, \lambda_j, v_i)$, where y_{ij}=1 if borrower i in urban area j repays on time and 0 otherwise. This is a function of observable individual and enterprise characteristics (X_i), urban area fixed effects (λ_j), and an error term. It is estimated using a probit model.

The second model estimates days for repayment, as one downside of the binary outcome is that it does not allow for distinction between borrowers who pay within 40 days and those who pay

14

within 400. The number of days late is a censored variable, in which positive values are observed if borrowers pay after the due date ($y = y^*$ if $y^* > 0$) and zero values are observed if borrowers pay on time ($y=0$ if $y^* \leq 0$).[10] The observed value of days late (y) is modeled as a function of the same observable characteristics used above. Due to the censoring it is estimated using a tobit model.

The results of the probit model are shown in columns one through three of Table 4, while those from the tobit model are shown in columns four through six. Both models consider the last loan. Similar to the previous section, three versions of the model are estimated. The first version includes shocks from the second survey period. The second version also includes shocks from the first survey period. The third version uses supplier credit as of the second survey period. For the probit model the coefficients are average marginal effects. For the tobit model the coefficients show how a change in the variable impacts the latent variable of days late (y^*). Standard errors are in parentheses.

Most of the results corroborate the findings above regarding default. Income, wealth and shocks are insignificant, both separately and jointly, in predicting timely repayment. In general these measures do little to predict borrowers' repayment behavior. The same is true of the majority of firm level characteristics, including firm duration, formality, size, and industry. None of these variables is significant on their own, or jointly. The fact that almost all of the observable characteristics are insignificant in predicting timely repayment provides more evidence that the reasons for loan delinquency are not obvious in the sample.

The other main result is that social networks, as measured by church groups, are significantly correlated with repayment. As shown in columns four and five, members of church groups have dramatically lower numbers of days late in loan repayment than non-members. Indeed, this is the only significant estimate in the tobit model, and the coefficient is large, suggesting that, conditional

on other observable characteristics, church group members' average payment delinquency is almost two and half months less than non-group members. Again, we do not know if the link between these groups and loan repayments is through the provision of liquidity services that help mitigate negative shocks, an enhanced moral imperative to repay, or the chance that higher ability borrowers are more likely to join these groups (although this seems less likely given their nature).

Finally, marital status is significant in the estimation of on-time repayment. Conditional on all of the other household and enterprise characteristics, married borrowers are eleven percent more likely to pay on time than unmarried ones. The channels through which marital status operates are twofold. First, spouses may provide liquidity services or enhanced access to social networks that can provide these services in the case of repayment difficulties (Van Tassel 2004). Second, better borrowers or those with higher skill may be more attractive mates and therefore more likely to be married. Given the imperfect nature of the controls for skill, we cannot discard the second explanation. Nevertheless, it is striking that this characteristic is more highly correlated with loan repayment than more obvious measures of repayment capacity and loan demand, such as income, wealth, firm size, formality and duration. This highlights the complicated nature of formal credit relationships and the difficulty institutions face in predicting who will most benefit from the loans.

6. **Robustness Checks**

This section addresses concerns regarding the multinomial logit results stemming from particularities of credit contracts and the method of classifying borrowers. I begin by addressing concerns regarding differences between group and individual loans, and specifically the possibility that outcomes for borrowers in group loans are the result of group rather than autonomous decisions. For example, dropouts may exit because their groups decide not to keep borrowing. To ensure the

outcomes capture the confluence of individual decisions I re-estimate the multinomial logit on the sub-sample of borrowers whose last loan was individual. Given the small sample size I do not include city fixed effects in the model and only include supplier credit as of the second survey. All other covariates from the original estimation are included. The results are show in columns one and two of table 5. The main results are similar to the original ones, although the precision of the estimates falls as a result of the reduction in sample size. The sign and size of most of the coefficients, however, are similar to those estimated from the full sample. For example, continuing clients have higher income, wealth and lower shock incidence than dropouts, while the most salient feature of defaulter is less participation in social groups. Thus the main conclusions from the model are robust to the exclusion of group loan borrowers.

I next address concerns that default dynamics are driven by new borrowers. New borrowers potentially may be of lower quality than established borrowers, as they have faced fewer rounds of screening. They also may have been screened less rigorously at the outset if they entered during a period in which a microfinance lender pursued expansion policies, as is the case with Zambuko starting in 1996. To ensure the results are not driven by new borrowers I restrict the sample to borrowers who have taken more than one loan from Zambuko as of the first survey round. The results are shown in columns three and four of table 5. Again, many of the main results hold, although the coefficients are less precisely estimated due to the large decline in sample size.

Finally, I check the sensitivity of the analysis to an alternative definition of default and dropout which limits defaulters to borrowers for whom no repayment date is given. Under the alternate classification there are 127 continuing clients, 62 defaulters and 156 dropouts. Results from the multinomial logit model are included in the columns five and six of table 5. Many of the results are similar the original ones. Continuing clients have higher income and wealth than

dropouts as well as lower shock incidence, while their enterprises are not significantly different. This provides further evidence that unexpected events rather than predictable business fluctuations are more likely to prompt the cessation in borrowing.

Many of the conclusions about defaulters relative to dropouts also continue to hold. Defaulters are not significantly worse off at the household level and do not differ significantly on enterprise characteristics. Furthermore the coefficient on access to supplier credit remains positive, suggesting that microfinance defaulters do not unilaterally default on all credit. Thus even within a more restrictive definition of default, defaulters do not appear to be significantly worse off than dropouts. Defaulters also exhibit lower participation in church groups, but this variable, which was large and significant under the less restrictive definitions, ceases to be significant and the size of the coefficient falls. This suggests church groups, and social networks in general, are more strongly associated with reducing repayment delinquency than preventing default.

7. **Conclusions**

This paper attempts to add to the understanding of client exit from microfinance using panel data from a lender in Zimbabwe. It focuses on the case of dropouts, defined as borrowers who cease to take microfinance loans but do not default. The results suggest that unanticipated events are more important in explaining dropout than predictable credit needs, and that the inability to repay is not the sole determinant of default. The results also show that members of social groups are less likely to default or exhibit payment delinquency. One of the key distinguishing characteristics between borrowers who repay and those who default is membership in church groups. Meanwhile, on most observable household and enterprise characteristics that, ex-ante, seem more highly correlated with ability to repay and credit demand, dropouts and defaulters differ very little. This highlights the

important relationship between social networks and borrower behavior. It also highlights the difficulty MFIs face in identifying individuals who are most likely to benefit from the programs.

Two points are worth making regarding the results. First, they highlight the difficulty in predicting borrower types and behavior based on basic, observable characteristics. This suggests it may be difficult to identify dropouts and defaulters at the beginning of the credit relationship absent a more detailed understanding of how microfinance fits into these borrowers' lives. Second, the generalizability of the findings may be limited, as the high rates of client exit, delinquency and default in the sample raise questions about the degree to which Zambuko Trust is representative of other microfinance institutions. For example, the difficult macroeconomic situation facing Zimbabwe at the time of the survey may have created repayment difficulties beyond industry norms. Furthermore, the data does not contain information on borrower groups, which would allow for a more thorough analysis of the factors behind strategic default in a group loan setting (for example, see Kurosaki and Khan 2012). More expansive datasets, once available, will be able to further expand our understanding of microfinance dropout and default. This is important for policymakers, practitioners and researchers seeking to improve the outreach and impact of microfinance products.

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[1] A common measure of the dropout rate is the number of clients from the beginning of the year who are no longer active at the end of the year (MicroBanking Bulletin 2001).

[2] For details on Zambuko's loans at the time, see Barnes (2001). While most of the contract terms are standard, the one exception is joint liability in group loans, which was not enforced until 1999.

[3] The survey covers a period of increased hardship due to the deterioration of the economy and an aggravation of the HIV/AIDS crisis. In the case of the economy, inflation more than triples over the two year period, increasing from an annual rate of 14.4% in 1997 to 69.7% in 1999. In the case of the HIV/AIDS crisis, by the year 2000 it is estimated that one quarter of all adults aged 15 to 49 were HIV/AIDS infected (Barnes 2001).

[4] This includes 5 members of the control group who begin borrowing after the first survey round but excludes 2 clients who receive subsequent loans despite having no repayment dates.

[5] My measure differs from the survey, which defines departing clients as those who have not taken a new loan since 1997.

[6] While the absence of a repayment date could stem from surveyor or credit officer error, given the low percentage of missing data for other loan variables I assume this is not the case. This is corroborated by ensuring that defaulters do not receive subsequent loans from Zambuko.

[7] The last loan is defined as the last loan taken out for which the repayment date has passed. Outstanding loans whose repayment dates are beyond the second survey are not considered.

[8] Information on informal credit is limited in the data. One reason is because the survey asks about loans used for enterprise purposes and defines a loan as credit where interest is charged and the repayment date fixed. Thus households may not list informal loans used for household purposes or those without explicit interest rates or strict payment schedules.

[9] I use this definition as Zambuko appears to have a thirty day grace period.

[10] Days late for loans that do not have a repayment date are coded as the difference between the due date of the loan and the date of the survey.

Table 1: Credit Information

	Borrower Category			P-values for		Mean Comparisons
	Continuing	Defaulters	Dropouts	All Groups		Default/Dropout
Months as client, as of 1997	11.08	9.12	10.08	0.265		0.439
	(9.53)	(9.46)	(8.94)			
Number of loans taken out, 1997	1.68	1.43	1.54	0.066	*	0.274
	(0.99)	(0.70)	(0.76)			
Total loans Zambuko, as of 1999	3.14	1.78	1.56	0.000	***	0.047 **
	(1.11)	(0.90)	(0.74)			
First Loan						
Amount (USD)	133.62	143.41	124.10	0.124		0.047 **
	(68.44)	(81.06)	(57.69)			
Loan amount/Yearly HH income	0.10	0.16	0.17	0.207		0.966
	(0.16)	(0.35)	(0.30)			
Individual loan	59.5%	42.2%	55.9%	0.016	**	0.042 **
Term (in months)	9.39	9.56	9.55	0.881		0.970
	(2.91)	(2.91)	(2.96)			
Paid on time (< 30 days after due date)	88.3%	35.8%	81.1%	0.000	***	0.000 ***
Days late if > 30 days	12.59	104.10	21.75	0.000	***	0.000 ***
	(48.65)	(136.16)	(83.42)			
Defaulted on loan	0.0%	21.2%	0.0%	0.000	***	0.000 ***
Last Loan						
Amount (USD)	983.27	350.67	244.58	0.000	***	0.003 ***
	(708.97)	(300.25)	(192.74)			
Individual	64.0%	43.8%	58.9%	0.004	***	0.023 **
Term (in months)	11.14	10.77	10.85	0.254		0.793
	(1.87)	(2.20)	(2.32)			
Paid on time (<30 days after due date)	63.1%	0.0%	80.0%	0.000	***	0.000 ***
Days late if >30 days	13.66	157.81	12.99	0.000	***	0.000 ***
	(18.99)	(124.54)	(19.75)			
Defaulted on loan	0.0%	45.3%	0.0%	0.000	***	0.000 ***
Other Formal Loans						
Has other formal loans, 1999	7.2%	6.6%	3.2%	0.416		0.250
Amount other formal loans (USD)	622.09	117.60	5.54	0.425		0.283
	(6422.91)	(1013.35)	(31.96)			
Observations	111	137	95			
% sample	32.4%	39.9%	27.7%			

Coefficients are mean values. Standard errors in parenthesis   *** p<0.01, ** p<0.05, * p<0.1

Table 2: Individual, Household and Enterprise Characteristics

Year=1997	Borrower Category			P-values for Mean Comparisons		
	Continuing	Defaulters	Dropouts	All Groups		Default/Dropout
Individual Characteristics						
Woman	83.3%	86.4%	82.2%	0.675		0.403
Married	77.5%	68.2%	77.8%	0.165		0.119
Econ. Active HH members % total	0.39	0.38	0.41	0.553		0.308
	(0.18)	(0.21)	(0.21)			
Monthly income per capita (USD)	92.9	64.5	57.4	0.019	**	0.445
	(135.7)	(74.1)	(56.3)			
Household assets (USD)	1044.7	1034.0	1004.4	0.985		0.904
	(1371.0)	(2061.3)	(1267.5)			
Owns home	69.3%	56.5%	57.3%	0.102		0.905
Hit with shock in past 2 years (as of 1999)	66.7%	77.8%	79.8%	0.019	**	0.717
of which: death of HH member	37.4%	41.5%	34.0%	0.476		0.257
of which: ealth of self or HH member	25.3%	30.4%	33.0%	0.380		0.677
Social Networks						
Church group	11.8%	5.3%	12.2%	0.124		0.064	*
Other non-financial groups	46.1%	50.8%	54.4%	0.508		0.591
Informal savings group	61.8%	59.1%	46.7%	0.079	*	0.069	*
Enterprise Characteristics						
Duration, in years	7.89	6.47	5.84	0.095	*	0.474
	(7.44)	(6.83)	(5.51)			
Uses supplier credit						
First survey round	8.0%	6.7%	1.1%	0.070	*	0.042	**
Second survey round	4.3%	4.9%	4.6%	0.948		0.926
Formal	11.8%	11.5%	10.0%	0.915		0.720
Has a sales strategy	62.4%	56.2%	58.4%	0.634		0.740
Employees	0.60	0.63	0.69	0.852		0.693
	(1.16)	(1.11)	(1.11)			
Profit, USD	259.61	179.75	188.09	0.082	*	0.781
	(377.34)	(214.64)	(204.84)			
Business Category:						
Food Clothing Production	52.9%	51.5%	50.0%	0.921		0.826
Other Manufacturing	1.0%	1.5%	3.3%	0.451		0.372
Construciton, Transportation, Repair	2.0%	3.8%	4.4%	0.606		0.809
Retail and Wholesale	34.3%	33.3%	32.2%	0.954		0.863
Hospitality, Personal Services	9.8%	9.8%	10.0%	0.999		0.971
Observations	111	137	95			
% sample	32.4%	39.9%	27.7%			

Coefficients are mean values. Standard errors in parenthesis   *** p<0.01, ** p<0.05, * p<0.1

Table 3: Multinomial Logit: Borrower Categories

Average marginal effects	Continuing (1)	Default (2)	Continuing (3)	Default (4)	Continuing (5)	Default (6)
Woman	-0.038	0.048	-0.032	0.042	-0.023	0.005
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.10)
Married	0.066	-0.092	0.071	-0.096	0.061	-0.098
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)
Econ. Active HH members % total	0.029	-0.137	0.031	-0.138	0.009	-0.094
	(0.13)	(0.14)	(0.13)	(0.14)	(0.15)	(0.15)
Household income per capita	0.099**	-0.032	0.103**	-0.036	0.102**	-0.019
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Owns home	0.110*	-0.073	0.111*	-0.074	0.084	-0.057
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Hit with shock in past 2 years	-0.115*	0.05	-0.125*	0.057	-0.139*	0.059
	(0.05)	(0.06)	(0.05)	(0.07)	(0.06)	(0.07)
Hit with shock prior to 1st survey			0.066	-0.051		
			(0.06)	(0.06)		
Member non-financial group	-0.024	0.015	-0.028	0.018	-0.026	0.001
	(0.05)	(0.06)	(0.05)	(0.06)	(0.05)	(0.06)
Member church group	0.128	-0.301**	0.127	-0.300**	0.094	-0.282**
	(0.08)	(0.11)	(0.08)	(0.11)	(0.09)	(0.11)
Member informal savings group	0.014	0.039	0.005	0.046	0.029	0.053
	(0.05)	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)
Enterprise duration, in years	0.003	-0.002	0.003	-0.002	0.004	-0.004
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)
Number of employees	-0.044	0.018	-0.044	0.018	-0.029	0.004
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Enterprise formal	-0.002	0.045	-0.006	0.049	0.007	0.03
	(0.08)	(0.09)	(0.09)	(0.09)	(0.09)	(0.10)
Has a sales strategy	0.088	-0.026	0.073	-0.015	0.072	-0.018
	(0.05)	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)
Supplier credit in first survey	0.235*	0.122	0.241*	0.115		
	(0.12)	(0.15)	(0.12)	(0.15)		
Supplier credit in past 2 years					-0.103	0.099
					(0.15)	(0.14)
Food or clothing production	0.262	-0.094	0.271	-0.1	0.217	-0.076
	(0.18)	(0.16)	(0.18)	(0.16)	(0.18)	(0.16)
Retail/Wholesale	0.29	-0.117	0.295	-0.12	0.268	-0.088
	(0.18)	(0.16)	(0.18)	(0.16)	(0.18)	(0.16)
Hospitality	0.204	-0.043	0.213	-0.048	0.193	-0.025
	(0.19)	(0.17)	(0.19)	(0.17)	(0.18)	(0.17)
Observations	316	316	316	316	293	293
Pseudo R2	0.081		0.083		0.074	
Hausman test χ2 value	0.63		0.44		0.98	
Joint test enterprise characteristics, χ2	6.04	1.09	6.12	1.10	5.53	1.47
Joint test HH characteristics, χ2	10.98**	0.60	7.86**	0.48	12.10**	1.20
Joint test of social networks, χ2	0.78	7.56*	0.65	7.57*	2.03	8.03**

Comparison group is dropouts. Standard errors in parentheses   *** p<0.01, ** p<0.05, * p<0.1

Also includes city fixed effects. Left out industries are construction/transportation and manufacturing

Table 4: Loan Repayment

Last Loan	Pay Loan On-Time, Probit			Days Late on Loan Repayment, Tobit		
	(1)	(2)	(3)	(4)	(5)	(6)
Woman	-0.0843	-0.0832	-0.0528	43.72	43.00	17.03
	(0.0955)	(0.0955)	(0.0981)	(42.65)	(42.63)	(42.55)
Married	0.116*	0.117*	0.110*	-31.37	-32.15	-30.42
	(0.0632)	(0.0631)	(0.0658)	(29.14)	(29.15)	(29.62)
Dependency ratio	0.181	0.182	0.178	-4.522	-4.692	33.19
	(0.146)	(0.146)	(0.156)	(65.88)	(65.83)	(68.57)
Income per capita	0.0188	0.0210	0.0188	-5.787	-6.862	-0.719
	(0.0347)	(0.0349)	(0.0355)	(15.18)	(15.30)	(15.06)
Owns home	0.0352	0.0357	0.0367	-30.86	-31.03	-28.74
	(0.0608)	(0.0608)	(0.0636)	(27.54)	(27.52)	(27.99)
Shock past 2 years	0.00820	0.00254	0.0185	33.74	35.82	34.38
	(0.0640)	(0.0648)	(0.0656)	(29.13)	(29.35)	(29.30)
Shock prior to 1st survey		0.0334			-15.07	
		(0.0605)			(27.45)	
Member non-financial group	0.0427	0.0414	0.0585	-19.85	-19.25	-30.10
	(0.0565)	(0.0565)	(0.0596)	(25.65)	(25.65)	(26.43)
Member church group	0.0993	0.100	0.105	-73.14*	-73.72*	-70.60
	(0.0941)	(0.0942)	(0.0996)	(42.67)	(42.65)	(44.06)
Member savings group	-0.0136	-0.0171	-0.0284	0.266	1.854	3.692
	(0.0580)	(0.0584)	(0.0608)	(26.35)	(26.49)	(26.98)
Enterprise duration, in years	0.00221	0.00221	0.00311	-0.736	-0.729	-0.314
	(0.00435)	(0.00435)	(0.00446)	(1.948)	(1.947)	(1.948)
Number of employees	-0.0142	-0.0143	-0.00837	12.78	12.78	9.756
	(0.0296)	(0.0296)	(0.0303)	(12.99)	(12.97)	(13.15)
Enterprise formal	0.0175	0.0160	0.0323	6.531	7.136	-4.068
	(0.0946)	(0.0945)	(0.0979)	(42.18)	(42.16)	(42.67)
Has a sales strategy	0.0171	0.00857	0.0253	-9.583	-5.677	-3.586
	(0.0589)	(0.0610)	(0.0617)	(26.64)	(27.56)	(27.20)
Supplier credit in first survey	0.0571	0.0603		51.73	50.38	
	(0.127)	(0.127)		(55.76)	(55.76)	
Supplier credit in past 2 years			0.0332			67.48
			(0.145)			(63.58)
Food or clothing production	-0.0118	-0.00940	-0.00377	-22.60	-23.88	-14.41
	(0.147)	(0.147)	(0.150)	(66.73)	(66.70)	(65.94)
Retail/Wholesale	0.000512	0.00169	-0.0114	-1.850	-2.345	0.966
	(0.148)	(0.148)	(0.151)	(67.61)	(67.54)	(67.05)
Hospitality	-0.0770	-0.0764	-0.0863	48.14	47.63	38.45
	(0.151)	(0.151)	(0.154)	(72.24)	(72.16)	(71.75)
Observations	316	316	293	316	316	293
Log likelihood	-208.9	-208.8	-194.4	-1733	-1733	-1603
Joint test enterprise characteristics, χ2	1.21	1.22	1.41	0.68	0.7	0.33
Joint test HH characteristics, χ2	1.86	2.15	1.68	0.66	0.42	0.67
Joint test of social networks, χ2	1.59	1.59	1.99	1.11	1.12	1.15

Average marginal effects for probit. Standard errors in parentheses   *** p<0.01, ** p<0.05, * p<0.1

Also includes city fixed effects. Left out industries are construction/transportation and manufacturing
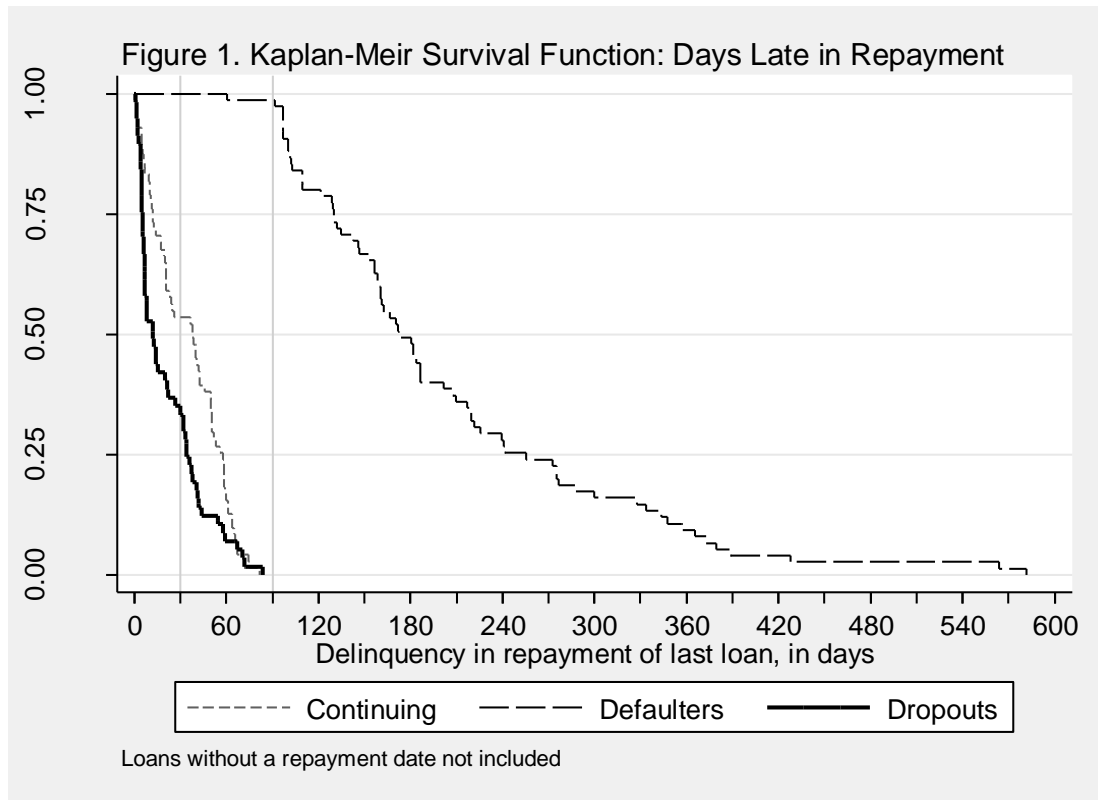
Table 5: Robustness Checks

Average marginal effects	Individual Loans Only		Repeat Borrowers Only		Alternative Classification	
	Continuing	Default	Continuing	Default	Continuing	Default
	(1)	(2)	(3)	(4)	(5)	(6)
Woman	-0.016	0.036	0.221	-0.199	-0.039	0.088
	(0.12)	(0.12)	(0.13)	(0.12)	(0.09)	(0.08)
Married	-0.024	-0.01	0.165	-0.200*	0.003	-0.05
	(0.09)	(0.09)	(0.10)	(0.09)	(0.06)	(0.05)
Econ. Active HH members % total	-0.009	-0.059	0.171	-0.142	-0.047	0.178
	(0.22)	(0.22)	(0.26)	(0.25)	(0.15)	(0.12)
Income per capita	0.104	-0.005	0.225*	-0.109	0.101**	-0.005
	(0.06)	(0.06)	(0.09)	(0.10)	(0.04)	(0.03)
Owns home	0.04	0.043	0.054	0.072	0.075	0.043
	(0.08)	(0.08)	(0.10)	(0.10)	(0.06)	(0.05)
Hit with shock in past 2 years	-0.176*	0.05	-0.152	0.051	-0.130*	0.015
	(0.08)	(0.09)	(0.10)	(0.11)	(0.06)	(0.05)
Member non-financial group	-0.017	-0.066	-0.087	-0.061	0.017	0.014
	(0.08)	(0.08)	(0.09)	(0.09)	(0.06)	(0.05)
Member church group	0.066	-0.325	-0.069	-0.151	0.037	-0.093
	(0.14)	(0.17)	(0.13)	(0.14)	(0.09)	(0.08)
Member informal savings group	0.178*	-0.084	0.157	0.026	0.024	-0.008
	(0.07)	(0.08)	(0.09)	(0.09)	(0.06)	(0.05)
Enterprise duration, in years	0.009	-0.008	0.01	-0.017*	0.003	-0.004
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Number of employees	-0.047	0.014	0.029	-0.125*	-0.011	0.017
	(0.05)	(0.04)	(0.06)	(0.06)	(0.03)	(0.02)
Enterprise formal	-0.007	0.011	0.069	0.223	0.034	-0.032
	(0.12)	(0.12)	(0.17)	(0.15)	(0.09)	(0.07)
Has a sales strategy	-0.004	0.044	-0.005	-0.025	0.034	-0.024
	(0.08)	(0.08)	(0.10)	(0.09)	(0.06)	(0.05)
Supplier credit in past 2 years	-0.197	0.109	-0.023	-0.184	-0.135	0.159
	(0.19)	(0.17)	(0.24)	(0.25)	(0.15)	(0.09)
Food or clothing production	0.089	-0.028	0.12	-0.112	0.335	-0.115
	(0.19)	(0.17)	(0.25)	(0.21)	(0.19)	(0.12)
Retail/Wholesale	0.151	-0.045	0.143	-0.15	0.354	-0.073
	(0.19)	(0.17)	(0.25)	(0.22)	(0.19)	(0.12)
Hospitality	0.132	0.033	-0.012	-0.003	0.293	0.086
	(0.20)	(0.18)	(0.27)	(0.23)	(0.20)	(0.12)
Observations	162	162	114	114	295	295
Log likelihood	-160.83		-99.03		-278.12	
Pseudo R2	0.094		0.205		0.080	

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

Left out industries are construction/transportation and manufacturing

Figure 1: Repayment Delinquency by Group

Figure 1. Kaplan-Meir Survival Function: Days Late in Repayment

Continuing — — — Defaulters ——— Dropouts

Loans without a repayment date not included

Appendix, Table 1: Multinomial Probit

Average marginal effects	Continuing (1)	Default (2)	Continuing (3)	Default (4)	Continuing (5)	Default (6)
Woman	-0.016	0.038	-0.012	0.034	-0.016	-0.001
	-0.087	-0.093	-0.087	-0.093	-0.09	-0.095
Married	0.057	-0.093	0.061	-0.096	0.052	-0.098
	-0.059	-0.063	-0.059	-0.062	-0.062	-0.065
Econ. Active HH members % total	0.029	-0.133	0.031	-0.132	0.003	-0.079
	-0.134	-0.143	-0.134	-0.143	-0.146	-0.153
Household income per capita	0.101**	-0.034	0.105**	-0.037	0.101**	-0.023
	-0.036	-0.042	-0.036	-0.042	-0.037	-0.043
Owns home	0.112*	-0.079	0.112*	-0.078	0.087	-0.062
	-0.055	-0.059	-0.055	-0.059	-0.058	-0.061
Hit with shock in past 2 years	-0.112*	0.05	-0.124*	0.057	-0.134*	0.059
	-0.056	-0.064	-0.056	-0.064	-0.058	-0.066
Hit with shock prior to 1st survey			0.072	-0.052		
			-0.054	-0.059		
Member non-financial group	-0.02	0.013	-0.023	0.015	-0.02	-0.001
	-0.051	-0.056	-0.051	-0.056	-0.055	-0.059
Member church group	0.12	-0.287**	0.121	-0.290**	0.085	-0.270**
	-0.082	-0.098	-0.082	-0.099	-0.089	-0.104
Member informal savings group	0.008	0.037	0	0.043	0.023	0.054
	-0.052	-0.057	-0.052	-0.057	-0.055	-0.059
Enterprise duration, in years	0.003	-0.002	0.003	-0.002	0.004	-0.003
	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
Number of employees	-0.043	0.016	-0.043	0.016	-0.025	0
	-0.03	-0.029	-0.03	-0.029	-0.029	-0.029
Enterprise formal	-0.006	0.044	-0.008	0.047	0.004	0.026
	-0.085	-0.092	-0.085	-0.092	-0.087	-0.095
Has a sales strategy	0.091	-0.028	0.076	-0.017	0.078	-0.018
	-0.053	-0.057	-0.054	-0.059	-0.056	-0.06
Supplier credit in first survey	0.241*	0.098	0.250*	0.09		
	-0.115	-0.137	-0.115	-0.137		
Supplier credit in past 2 years					-0.094	0.096
					-0.141	-0.141
Food or clothing production	0.225	-0.071	0.236	-0.08	0.21	-0.07
	-0.155	-0.149	-0.156	-0.15	-0.157	-0.152
Retail/Wholesale	0.256	-0.091	0.264	-0.097	0.263	-0.082
	-0.157	-0.152	-0.158	-0.152	-0.158	-0.154
Hospitality	0.166	-0.024	0.176	-0.032	0.175	-0.024
	-0.166	-0.161	-0.167	-0.161	-0.167	-0.163
Observations	316	316	316	316	293	293
Joint test enterprise characteristics, χ2	6.34	0.89	6.53	0.92	5.85	1.19
Joint test HH characteristics, χ2	12.38**	1.93	9.49**	1.84	13.25**	1.78
Joint test of social networks, χ2	0.55	7.64*	0.45	7.74*	1.69	7.94**

Comparison group is dropouts. Standard errors in parentheses   *** p<0.01, ** p<0.05, * p<0.1

Also includes city fixed effects. Left out industries are construction/transportation and manufacturing