Microcredit, Family Planning Programs and Contraceptive Behavior: Evidence from a Field Experiment in Ethiopia

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Abstract

The impact on family planning of community-based family planning programs and of access to credit has not been established conclusively in the literature. In this paper, we contribute to filling this gap by describing the results of a randomized field experiment whose main purpose was to increase the use of contraceptive methods in rural areas of Ethiopia. In this study, administrative areas of the Amhara and Oromia regions were randomly allocated to one of three intervention groups or to a fourth control group. In the first intervention group, both credit and family planning services were provided and the credit officers also provided information on family planning. Only credit or family planning services were provided in the other two intervention groups, while areas in the control group received neither type of service. Using pre and post-intervention surveys, we show that neither type of program, combined or in isolation, led to an increase in contraceptive use that is significantly greater than that observed in the control group. We conjecture that the lack of impact has much to do with the mismatch between women's preferred method (injectibles) and the contraceptives provided by community-based agents (pills and condoms).

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1. Introduction

Family planning programs have been adopted in several poor countries to increase contraceptive use, improve reproductive health, lower fertility, and reduce rates of population growth. One widely used approach has been community-based programs wherein individuals based within a community are trained to provide information on family planning and non-clinical methods like pills and condoms. The active involvement of communities is appealing but the effectiveness of these programs in increasing contraceptive use and lowering fertility has rarely been demonstrated in a convincing way (Bauman 1997, Freedman 1997).

Knowledge and availability of contraceptive methods are of course only two of the many components entering fertility decisions. At least as important are socio-economic factors such as gender-specific human capital, which can modify the cost-benefit calculus of contraceptive use and childbearing (see Schultz 1997 and Schultz 2005 for overviews). Some have argued that credit programs which encourage borrowing by women can increase the opportunity cost of women's time, potentially increase their control over household resources, and thus empower them enough to express their fertility preferences (Schuler and Hashemi 1994, Hashemi et al. 1996, Schuler et al. 1997, but see also Mayoux 1999 for an opposite argument). The actual impact of micro-finance programs on fertility behavior is, however, not well established, and from a theoretical perspective it could even be associated with increased fertility when mediated by positive income effects (Pitt et al 1999).

Yet another possibility, not addressed in the literature, is whether micro-finance programs can represent useful entry points for family planning services. The regular contact that credit officers have with their clients and the group monitoring element of micro-financing programs offer an attractive option for providing family planning information and building a support mechanism for adoption of a new practice.

In this paper, we present results of a randomized field experiment. In the study, administrative areas (peasant associations) in the Amhara and Oromia regions of Ethiopia were randomly allocated to one of three intervention groups or to a fourth control group. In the first intervention group, both credit and family planning services were provided and the credit officers also provided information on family planning. In the other two intervention groups only credit or family planning services were provided. Areas in the control group received neither type of service. The study was designed to determine whether linking micro-credit and family planning programs increases contraceptive use by more than what each program can accomplish on its own. Pre and post-intervention surveys (in 2003 and 2006) of two independent cross-sections of approximately 6400 households were used to collect data on contraceptive

use, fertility, and various other outcomes. The study areas are rural, where households are largely subsistence oriented and agriculture and livestock are the main sources of income.

Results of the study show quite clearly that, in the study areas, linking credit and family planning services did not increase contraceptive use any more than what is achieved by either program on its own. More importantly, neither type of program, linked or unlinked, led to an increase in contraceptive use that is significantly greater than that observed in the control group. The fact that family planning tied to credit provision did not lead to a measurable impact is perhaps not surprising, because the credit programs have limited reach and information does not appear to be the major constraint for adoption of family planning in the study areas. Our finding that community-based family planning programs have no measurable impact on contraceptive use is more surprising because the coverage and intensity of these programs was quite remarkable. Our conjecture is that the reason these programs did not have a demonstrable impact on contraceptive use has much to do with the mismatch between the method women want to use—injectibles—and the contraceptives provided by community-based agents (pills and condoms).

The paper is organized as follows. The next section describes the details of the intervention and the study design. Section 3 provides details on the data, outlines the methods used in the study, and provides a basic description of the study areas. Section 4 describes the results of the evaluation and section 5 discusses the findings and examines their implications. Section 6 concludes.

2. Program interventions and study design

The evaluation described in this study was conducted by Family Health International for the David and Lucille Packard Foundation's Population Program. In Ethiopia, the Packard Foundation provides grants and technical assistance to micro-credit programs and family planning programs in the Amhara and Oromia regions (see Figure 1 for a map). In Amhara region, the Program supports the credit activities of the Amhara Credit and Savings Institute (ACSI) and the community-based family planning programs of the Amhara Development Association (ADA). In Oromia, support is provided to the credit activities of the Oromia Credit and Savings and Share Company (OCSSCO) and the family planning programs of the Oromia Development Association (ODA).

The credit programs target poor households, and "emphasize" women borrowers, but no specific activities or criteria are used to seek out these target groups. Each organization has a specific criteria list that it uses to select borrowers, of which credit worthiness, viable business plan and poverty are the more salient ones. There is no collateral requirement, instead borrowers form small groups, and take on collective responsibility for repayment of loans. Loans are made for a year at interest rates that reflect market conditions. Credit officers help fill out loan applications, and also monitor the groups through

monthly and bi-weekly meetings with all clients. Borrowers are expected to make regular deposits and repayments, and in recent years the repayment rate been reported to exceed 95 percent.

The family planning programs have a community-based distribution orientation. Trained community-based reproductive health agents, who also receive uniforms and a fee for their services, make house-to-house visits. During these visits they provide information and pills and condoms to new acceptors and continuing users. They also provide referrals for clinic-based services like injectibles, which is the main method in use in these regions. The organizations also organize other events to provide information on family planning, reproductive health, sexually transmitted diseases, and HIV/AIDS.

The family planning programs have been in operation for several years and have steadily extended their coverage. In this process they have continuously sought to improve the quality of services they provide and seek new service delivery options. Given the Foundation's continued support for micro-credit in the same regions one option that has evoked recent interest is the linking of family planning programs with credit programs. The underlying rationale is that the effectiveness of family planning programs can be enhanced by having credit officers provide information on family planning during their monthly meetings with their clients.

The objective of this evaluation was to determine whether linking the credit programs of ACSI and OCSSCO with the family planning activities of ADA and ODA can lead to a measurable increase in the use of family planning methods. Specifically, would linked credit and family planning programs be able to increase contraceptive use more than what is achievable by each type of program operating on its own?

An experimental design was used to randomly allocate administrative areas to four groups with different combinations of credit and family planning services, and measure the change in contraceptive use through pre and post-intervention household surveys. In 2002, the four organizations identified a list of 133 *kebeles* or "peasant associations" (PAs) where they intended to start activities in the coming years. Fifty-five of these 133 PAs are in the Amhara region, and 78 are in the Oromia region. For administrative purposes Ethiopia is divided into regions, and each region is further divided into zones, *woredas*, *kebeles* (or peasant associations) and villages (from larger to smaller administrative unit). In Amhara region, the study was conducted in North Wollo and North Gonder zones. The *woredas* included in the study were Bugna, Gidan, Meket and Delanta in North Wollo and Metema, Chilga, Alefa Takusa and Lay Armachiho in North Gonder. In Oromia, the survey was conducted in the *woredas* Mendi, Harru, Nejo and Ayra Guliso from the West Wollega zone and Sayo, Anfilo, Metu and Chora from the Illubabor zone. Using population data from the most recent Census, the PAs were randomly allocated to one of three intervention groups or to a fourth control group. The three intervention groups consisted of (linked) credit and family planning services, only family planning services, and only credit services.

3. Data and methods

A baseline survey was conducted between the months of January and April in 2003 and preceded the start of sub-grantee programs in the study areas. The survey covered 6440 households, and was spread over 356 villages in the 133 PAs where the family planning and credit organizations intended to expand in the following years. Each PA includes a relatively small number of households, ranging from 109 to 1377. The sampling was designed to select a sample of approximately 3200 women between the ages of 15 and 49 years in each of the two regions. Within each region, PAs were randomly allocated to one of four cells, and the randomization was undertaken so as to produce 800 to 810 households in each cell in each region. In the selected PAs, interview teams obtained a complete listing of all villages along with estimates of the number of households in each village. If a PA had more than 400 households, then at random three villages were selected for interviewing. If the PA had fewer than 400 households, then two villages were selected at random. Within the selected villages, a complete enumeration of households was undertaken, and a random sample of households was selected for interviewing. The sample is not self-weighted and therefore sampling weights are required to produce unbiased estimates of population statistics.

A follow-up survey was completed during the months of April to July, 2006. The survey was conducted in the same villages as the baseline survey, but a new sample of households was drawn using the same procedures used in the baseline survey. Difficulties in accessing some areas resulted in the survey teams not being able to cover one PA and one village in another PA. As a result the follow-up sample has only 6275 households. It is important to note that the two surveys constitute a *panel of villages*, but *not* a panel of households.

During the final household survey, a community questionnaire was used to collect village-level information on demographics, income sources, infrastructure and access to facilities; similar information was collected at the time of the baseline survey. In addition to the two household surveys, monthly service statistics data were collected from the *woreda* offices of the four sub-grantee organizations. These provide detailed information on the activities of the programs in all PAs assigned to a treatment group. Since these data do not cover the PAs included in the control group, a separate data collection effort was undertaken to obtain information for all PAs covered by a *woreda* office. Together these two sets of data allow us to determine when program services were first introduced in a PA, what services were provided, how many clients were served, and whether services were available in neighboring PAs. This information is important because, as will be described more fully later, the intervention protocol was not followed perfectly.

Table 1 presents selected summary statistics from the baseline survey for the four assigned study groups along with tests of randomization. For each variable we test the null hypothesis of equal mean

across the study groups, taking into account the clustered nature of the design. These test results show that in each region the four study groups are well-balanced along most dimensions; the null hypothesis of equality among the four groups is rejected in only a few cases. In other words, randomization of PAs to the four study groups achieved the objective of ensuring a fairly even distribution of the outcomes of interest and their correlates. In Amhara, the null of equality is rejected for three variables: intention to use family planning in the future, desired number of children and proportion of households who borrowed from revolving credit associations. In Oromia the null is only rejected for the proportion of households involved in cultivation of cash crops.

The figures in Table 1 also highlight clear demographic and socio-economic differences between the two regions. Fertility was high in both regions in 2003 but considerably higher in the study areas in Amhara where women married earlier, began childbearing sooner, wanted to have more children and also had higher fertility. Contraceptive use was very low in 2003, especially in Amhara where, in comparison with women in Oromia, only half as many women were using contraceptives. In Amhara fewer non-users said they intended to use family planning in the future, but levels of awareness were actually higher than those in Oromia.

The study areas in the two regions are also substantially different in schooling levels and economic structure. Approximately 50 percent of household heads ever attended school in Oromia while only 10 percent did in Amhara. Almost all households engage in crop cultivation with the focus being on basic food crops (staples and pulses), but households in Oromia are much more likely (53 percent *vs.* 3 percent in Amhara) to cultivate cash crops like coffee, chat, and sugarcane. Households in Amhara are also more engaged in livestock maintenance and their livestock assets are, on average, around twice those of households in Oromia. Remittances and "other" income sources (such as asset sales) are also much more important in Amhara than Oromia.

These differences between the two regions present an interesting possibility for comparing the impact of essentially similar credit and family planning programs in different settings but we do not pursue this in this paper. Instead we analyze the two regions separately largely because different organizations implemented the interventions in each region, and for our results to have programmatic value it is important that they be region, and therefore, organization-specific.

To estimate the impact of the programs on different outcomes we use a difference-in-differences approach. Let y_{pit} denote an outcome for individual or household i from peasant association p at time t and let D_t denote a binary variable equal to one in the post-intervention period. Let also Cr_p, FP_p, $CrFP_p$, and $None_p$ denote binary variables equal to one for PAs where the intervention introduces micro-credit, family planning, linked or no services respectively. Then, if treatment is assigned randomly, the causal impact of each intervention is measured by the coefficients α_1, α_2 and α_3 in the following regression,

which, under the assumption of random assignment of treatment, can be estimated consistently using Ordinary Least Squares (OLS):

$$y_{pit} = \beta_0 + \beta_1 CrFP_p + \beta_2 Cr_p + \beta_3 FP_p + \alpha_0 D_t + \alpha_1(D_t \times CrFP_p) + \alpha_2(D_t \times Cr_p) + \alpha_3(D_t \times FP_p) + \varepsilon_{pit} \quad (1)$$

However, the analysis of the results is complicated by the imperfect compliance of the sub-grantees with the randomization protocol. The study protocol was followed in 72 percent of the PAs; 37 out of 55 PAs in Amhara and 59 out of 78 PAs in Oromia. Eight PAs already had functional programs at the time of randomization, of which two were interrupted at the start of the study, and two other PAs were merged by local authorities during the study period. Because the deviations from the study design cannot be assumed to be random, a simple difference-in-differences approach would not uncover the causal relationship between interventions and outcomes of interest. Such simple difference-in-differences only allows an "intent to treat" analysis, where intent to treat is interpreted, as in bio-statistical practice, as the impact of *assignment* to a given treatment group, regardless of actual exposure. Within economics, intent to treat is instead usually interpreted as the effect of the *actual offer* of treatment (see, for instance, Heckman et al. 1999, p. 1903).

In order to measure the causal impact of treatment we adopt instead an instrumental variable approach, using treatment assignment, which was random and therefore exogenous, as an instrument for actual treatment, which is endogenous due to imperfect compliance with the study design. We estimate all regressions using linear models, and we adjust standard errors for clustering in the survey design. We also estimates models with the inclusion of village fixed effects. Such estimates allow us to control for both any systematic difference in baseline means that might exist despite the randomization and for any correlation between the treatment and unobserved characteristics at the village level.

4. Results

The study areas witnessed substantial demographic and economic change during the three years of this study, though the patterns of change were different in the two regions. We briefly examine some of these changes before turning to an examination of the impact of the interventions.

In Amhara, contraceptive use increased by 9 percent, and the percentage of non-users who say they intend to use contraception (at some point in the future) increased by 19 percent (Table 2). Awareness of contraceptives, which was already high at 84 percent in 2003 increased to 97 percent and the percentage of women who have heard of pills and injectibles, the two most commonly used methods, increased from 58 percent to 80 percent. The increase in contraceptive use does not appear to have had

much affect on fertility (Total Fertility Rate) which actually went up by 0.5 births. The difference is, however, not statistically significant because, at the individual-level, there is no difference in the number of births women had in the three years before the interview. Part of the reason for little change in fertility is that family size desires are essentially unchanged, and women, on average, continue to want almost 5 children.

In the Oromia study areas demographic change is deeper as contraceptive use, fertility, and family size desires have all changed. Contraceptive use went up by 14 percent amongst all women, and even more amongst currently married women so that in 2006 almost a third were using contraceptives. There has been little change in intention to use contraception but those were already high at 71 percent in 2003. Awareness has increased and, like Amhara, is almost universal at 97 percent; awareness of pills and injectibles has also increased by 34 percent. There has been a small drop in fertility in every age group and the result is a drop in the Total Fertility Rate to 4.8. Family size desires also dropped by 0.5 births and, on average, women in the study areas in Oromia now want only 4 children.

In both regions there is underlying momentum for further change because younger cohorts, who have lower desired family size and high levels of awareness of contraceptive methods, are delaying marriage and the start of childbearing. Furthermore, there has been a large increase in schooling in recent years and as a result a substantially larger percentage of younger cohorts have attended school. As younger, better educated women, with high levels of awareness of contraception and lower family size, move into childbearing years, contraceptive use is likely to increase further and also result in lower fertility; Amhara provides less convincing evidence of this pattern.

Improvements in economic well-being are signaled by changes in credit uptake, market participation, and livestock holdings. For example, the percentage of households that took a loan increased from 18 to 43 percent in Amhara, and from 18 to 37 percent in Oromia. Even though much of the borrowing in 2006 was still being undertaken by males, borrowing by women increased from 3 to 10 percent in Amhara and from 2 to 14 percent in Oromia. There was a significant increase in the value of livestock holdings which, in real terms (2003 prices) increased by 23 percent in Amhara and 54 percent in Oromia. In Oromia, household income sources have become more diversified with larger percentages of households deriving income from services, trade, and manufacturing and production. In both regions, but particularly so in Oromia, there has been an increase in cash crop cultivation and marketing of crops. What is most striking, though, is the large increase in school enrollment. Data on older cohorts suggests that while there has been a large increase in the past 5 years, school attendance has been increasing for quite a few years, especially in Oromia.

4.1 Impact evaluation

Turning to the focus of this paper, Table 4 presents estimates of the impact of interventions on contraceptive use. Three sets of estimates are presented for each region. Columns 1 and 4 of Table 4 (OLS-ITT) displays the results from an ordinary least squares model where exposure to interventions is defined by dummy variables for the randomly *assigned* study groups. This corresponds to an "intent to treat" analysis approach in biostatistics. These figures measure the impact of "assigning" specific treatments to a given area. However, the fact that there were deviations from the study protocol in 29 out of 133 PAs means that such estimates do not measure the causal impact of the *actual* treatments. For this reason columns 2 and 5 in Table 4 (OLS-ATFE) displays results from an ordinary least squares model in which study groups are defined in terms of actual exposure to the interventions with unobserved location characteristics controlled for with a village fixed effects specification. This estimation procedure will estimate consistently the causal effect only if the correlation between the error term and actual treatment is due only by time-invariant location characteristics. However, if program placement is systematically correlated with differences in *trends* across the assigned treatment groups, OLS with fixed effects is still inconsistent for the true causal impact. For this reason we also estimate a third model using two-stage least squares (columns 3 and 6) using the assigned exposure dummies as instruments for actual exposure (column IV-FE). Such instruments are strongly correlated with actual exposure, because the research protocol was followed in 72 percent of PAs. The instruments are also arguably exogenous, because their being randomly determined implies that their only correlation with the dependent variable should be through actual treatment. Much of the following discussion is focused on this model specification. Our focus is on the two-stage least squares specification (IV-FE) because the other two models either do not lead to assessment of actual interventions (OLS-ITT) or lead to biased coefficients because intervention implementation is no longer random and exogenous (OLS-ATFE). In most cases, however, the OLS results are actually very close to those obtained using instrumental variable estimation, suggesting that deviations from the study protocol in program placement were not strongly correlated with unobserved location-specific differences in outcome trends. The results from the complete set of specifications, when not reported, are available upon request.

The sample is restricted to currently married women because in rural Ethiopia contraceptive use essentially occurs only within marital unions; in the sample 95 percent of contraceptive users are those who are currently married. Results for all eligible women (15 to 49 years of age) are no different and are available upon request. The only regressors included in all models are the study group dummies and their interactions with the "post-intervention" dummy. It should also be noted that in the fixed effects specifications the dummy variables for the baseline survey drop out. The estimated coefficient for the time dummy (2006) is significant indicating that contraceptive use increased in the control group between

2003 (baseline survey) and 2006 (follow-up survey). This is of course consistent with the results in Table 2. However, all of the coefficients for the interaction terms (intervention group dummies x time dummy) are small and not significant at standard significance levels, suggesting that no appreciable difference between the control group and any of the intervention groups. Indeed, five of the six interaction coefficients are *negative,* suggesting that, if anything, the increase in contraceptive use in the intervention groups was slightly *smaller* than in control groups. Tests for differences between the linked group and the groups with only credit or family planning services also indicate that the null hypotheses of no difference cannot be rejected.

These results suggest quite clearly that (a) exposure to linked credit and family planning programs did not increase contraceptive use any more than that observed in areas exposed to just family planning services or credit services, and (b) neither type of intervention, linked or unlinked, led to an increase in contraceptive use that is statistically different from that attributable to overall demographic and economic change between 2003 and 2006. We are currently examining whether the results also hold across different women age groups, because one may expect larger effects among younger women, who are on average better educated and may therefore be more susceptible to be impacted by the programs.

Table 5 reports only the IV-FE results for other correlates of contraceptive use. The first column report the same IV-FE results as in Table 4, while the following columns describe the results for intention to use family planning in the future (among current non-users), the number of contraceptive methods heard of, the number of births in the previous three years and the desired family size. In Oromia, none of the interactions is statistically significant, indicating again that the null of no impact of any of the programs cannot be rejected. Some of the coefficients are, however, relatively large in size. For instance, the proportion of non-current users who plan to use contraceptives in the future increases by 6 percent in PAs where family planning programs were introduced, while in control areas the fraction decreased by 2.8 percent. Desired family size decreases by .6 in control areas, while in credit-only and in FP-only areas the declines is only half as large. Still, the lack of statistical significance suggest that these figures are imprecisely estimated, so we do not comment on them further. The null of no impact of all programs is also not rejected in all but one case in Amhara. The exception is intention to use contraceptives, which in FP-only areas increases by 40 percent, while in control areas it increases only by 11 percent. The difference is significant at the 5 percent level, but not at the more conservative 1 percent. Interestingly, the same group of PAs also experienced the largest increase in the number of contraceptive methods heard of (a 1.3 increase), and the largest decline in desired family size (-.57). However, these two last changes are not statistically different from those observed in any of the other treatment groups.

5. Discussion

What explains these patterns? Since this is an experimental design-based evaluation of a program intervention it is worth taking a closer look at (a) the design of the study and (b) the coverage and content of the interventions.

5.1 Study design:

The design of the study called for randomly allocating administrative areas (the PAs) to the four study group, and for the most part the process followed protocol. Sub-grantee organizations provided the list of PAs to be randomized and this consisted of areas they intended to start programs in. Randomization was undertaken by Family Health International and the randomized list was communicated to the implementing organizations in both regions. It turns out that the list was not entirely error-free because programs were already functional in eight of the 133 PAs. Depending on the allocation, these were either continued or interrupted. We have analyzed the results excluding these areas, but all the conclusions remain essentially unchanged.

As we have already indicated, the implementation of the interventions did deviate from the study protocol in 29 PAs. This occurred either because of pressure from local authorities or due to organizational decisions related to availability of services from other organizations, or inaccessibility of PAs. However, the instrumental variables estimates should control for the endogenous program placement, and the results of this model are not very different from the "intent to treat" model so the lack of a program effect cannot be attributed to deviation from protocol – in design and implementation.

One other element of the study design that requires some attention is the possibility of "spillover" effects from neighboring PAs; this is especially relevant for the impact of family planning services, for which information was the most important component. To the extent that PAs in the two groups that did not receive family planning services from ADA or ODA (the control group and the credit only group) bordered those with family planning services from the sub-grantees, there could have been spillover of information and infusion of the idea of family limitation. This possibility cannot be discounted because the relevant *woredas*, the larger administrative areas within which the study PAs are based, were blanketed by family planning services from ADA and ODA. For example, program functioning data and maps of the study areas show that in the study *woredas*, on average, 70 to 73 percent of all PAs had family planning services from one of these two organizations. On the one hand, the personal contact and motivation provided by the community-based reproductive health (CBRH) agents was not available in non-designated PAs. Also, injectibles are the preferred method for most women in this region, and the CBRH agents only provided pills and condoms (we return to this issue later in the paper). On the other

hand, we cannot exclude that information gathered locally by residents of villages with presence of FP spread to neighboring areas.

One final design consideration is the availability of services from other sources. The four intervention groups are defined in terms of exposure to the credit and family planning services provided by sub-grantee organizations. There was no control over the health services provided by government facilities and providers, and only limited ability to influence the actions of other organizations. The expectation was that the initial randomization of PAs would yield a random distribution of government health facilities and other services from other organizations, so that the services provided by the sub-grantees could be viewed as being "additional." If services provided by other organizations, or even government facilities, are found to be distributed in a non-random fashion then we have reason to be concerned because program placement might have been based on availability of sub-grantee services or characteristics related to contraceptive use. Even if this concern were not relevant, the presence of additional programs may have contributed to attenuate any cross-group difference in the impact of the interventions implemented by the sub-grantees.

Data from the community questionnaire suggests that in about one-half of all surveyed villages family planning services were available from non-ADA/ODA sources. In Oromia villages these are primarily public sector providers like the "Health Post," "Health Center," or "Health Worker," but in Amhara non-governmental organizations play an important role. In Oromia there are no differences in the placement of these "other" (non-intervention) programs but in Amhara the association between placement of other programs and study intervention groups is significant (Table 6). However, contraceptive use is not affected by the presence or absence of other programs (see Family and Health International 2007). Also, the results of the village fixed effects model specifications discussed earlier control for the presence of village characteristics, as long as these are time-invariant.

In summary, it appears that there is little reason to believe that elements of study design are the main reason for lack of program impact. We next turn our attention to the coverage and content of the interventions.

5.2 Coverage and content of interventions

If programs did not reach sufficiently large numbers of individuals or if the types of services they provided were not consistent with what women want or what holds them back from adopting family planning then the interventions might not have any demonstrable impact on contraceptive use. We examine these issues separately for credit and family planning interventions, because the functioning of the former is relevant to the question of linking while the latter might help explain the lack of any impact of family planning programs.

The micro-credit programs operated by ACSI and OCSSCO are necessarily limited in their coverage because, like several other micro-credit programs, they employ selection criteria that restrict lending to certain types of individuals and households. Service statistics show that on average the credit-programs serve between 112 and 125 clients per PA per month, and while 60 to 70 percent of these are female, these account for no more than 20 to 25 percent of the adult population of a PA. The number of credit clients is higher in Amhara, and in both regions the number of clients (per month) increased over the two-year period covered by these data, but even at the end of this period these make up no more than 28 percent of households in the credit intervention PAs. In both regions coverage of households in the linked PAs (at 25 percent) is significantly lower than that in the unlinked, credit only, PAs (34 percent). This means that even if the linking of credit and family planning services were to lead to higher contraceptive use amongst borrowers (from the credit program) this might not get reflected in a group-wide measure of contraceptive prevalence. Of course it is an open question as to whether this type of linking even has any effect on the subset of the population that borrows from the credit program.

We next examine data on borrowing to see if there is any relationship between borrowing, awareness of family planning methods, and contraceptive use. Our intent is not to establish a causal relationship between these variables, but to see if there is any association between participation in the credit intervention, contraceptive awareness, and contraceptive use. Borrowing and contraceptive use are both individual decisions, and as such affected by individual characteristics, only some of which are observable. Factors such as "entrepreneurship", quality of schooling, risk aversion or attitudes towards modern contraceptive methods are all likely to affect both outcomes but they are all inherently hard to measure. Establishing a causal relationship between borrowing and contraceptive use requires identifying at least one variable that affects borrowing but not contraceptive us. Such a requirement does not seem to hold for any of the variables in our data. It should also be noted that even random assignment of credit programs would not identify the causal impact of borrowing on fertility-related choices. In fact, such an experiment can only identify an intent-to-treat impact, interpreted as the effect of *offering* micro-credit at the village level, rather than the effect of actual participation. Even when a program is introduced in an area following a random procedure, the actual participation to the program remains a choice variable.

Table 7 presents data on contraceptive awareness and use amongst women from households that did not take any loans in the 12 months preceding the follow up survey, those that took loans from the sub-grantee credit organizations (ACSI and OCSSCO) and those that took loans from other sources. On the whole those who take a loan are somewhat more likely to be more aware of family planning methods, but the differences are minor and not statistically significant. Here, awareness is measured by the number of family planning methods mentioned by a woman (spontaneously and on being prompted), because we found it to be most sensitive to different levels of contraceptive use. Contraceptive use displays greater

differences between the different types of households and there is some indication that contraceptive use is higher amongst women from households that are engaged in the credit market, but there is no difference between those who borrowed from ACSI/OCSSCO and those who borrowed from other sources. This suggests that the information provided by credit officers does not necessarily lead to their clients having appreciably higher levels of awareness and contraceptive use. What this means is that not only do the credit programs reach a sub-set of households, but the type of family planning service they provide (information) is largely redundant.

Turning to the coverage and content of the family planning intervention there are few concerns with coverage because most (87 percent) programs started within 12 months of the baseline survey, and were in operation for at least 24 months of the 36-month study period. We also find that program duration has little bearing on levels of contraceptive use (results not reported). Moreover, service statistics data from the *woreda* offices show that coverage was quite extensive (Family and Health International 2007). For example, these programs covered at least 50 percent of eligible households in the initial nine-month period (August 2004 to April 2005) and almost 60 percent in the later twelve-month period. Interestingly, in both regions and over both time periods, the rate of household coverage was much greater in the PAs that received both credit and family planning programs. This was not part of the study design, but is an important finding nevertheless because even with a more intensive effort in the linked group contraceptive prevalence increased by the same amount in all groups.

The content of these planning programs is more likely to be the reason for their limited impact. By all accounts the information provision activities of the community-based agents were remarkable, but these do not seem to have translated into significantly higher levels of awareness of women in intervention PAs. This might well be a reflection of the limitation of the survey instrument and the questions that we are using to measure knowledge and awareness, but it is important to remember that awareness was already quite high before these programs were introduced (Table 1), so limited awareness was not the main barrier to adoption of family planning.

A bigger shortcoming of the programs might have been the fact that the contraceptives provided by the community-based agents, that is, pills and condoms, were *not* the ones women were increasingly turning to by 2006. Figure 2 shows that in 2003 the method mix was dominated by injectibles and pills, with injectibles making up a larger share in Amhara and pills a larger share in Oromia, even if with contraceptive prevalence being only 3 percent in Amhara and 7 percent in Oromia (in 2003) these shares do not translate into large numbers of users. Over the next three years the method mix shifted towards injectibles. By 2006, almost 80 percent of women using contraceptives in Amhara were using injectibles, and in Oromia the share of injectibles was almost 62 percent. Since women have to go to a health center or clinic for an injectible, location of these facilities, more than the efforts of community-based agents,

might at least partly account for differences in contraceptive use across communities. Indeed, Figure 3 shows that there is a clear correlation between contraceptive use among currently married women and distance to the nearest health center. However, such correlation does not necessarily indicate that a causal relation exists, because women who live at different distance from health centers are also likely to differ along several other characteristics, such as attitudes towards contraceptives or schooling levels.

6. Conclusions

In conclusion, the results of this study show quite clearly that, in the study areas, linking credit and family planning services did not increase contraceptive use any more than what was achieved by either program on its own. More importantly, neither type of program, linked or unlinked, leads to an increase in contraceptive use that is significantly greater than that observed in the control group.

In interpreting these findings, and in evaluating whether they would extend to different geographical and institutional frameworks, it is important to recognize the specifics of the interventions. The linking of credit and family planning services was attempted only by the Packard Foundation sub-grantee organizations, and a very specific form of linking was attempted. This involved credit officers providing information on family planning to their clients. The results refer only to this particular type of linking, and should not be extended to other ways in which credit and family planning services may be linked. Secondly, inferences regarding the impact of family planning programs should be restricted to the type of family planning programs operated by the Packard Foundation sub-grantee organizations. These rely on using community-based reproductive health agents (CBRH) to inform and motivate potential users, and provide non-clinical contraceptives (pills and condoms) and referrals for clinical methods.

Finally it is worth exploring the implications of these results and speculating on their relevance for the design of interventions and their evaluations. First, our finding that linking credit and family planning services does not have incremental benefits for contraceptive use is quite robust. The lack of differences in change in contraceptive use is not an isolated finding but it is confirmed by lack of statistically significant differences in current fertility, contraceptive awareness, intentions to use contraception, and other relevant demographic variables. We hypothesize that the reason why linking has such a limited impact is because the credit programs reach only one-quarter of all adults, and it only provides them with information, which is important, but probably not the main constraint. If linking were to take a form that altered the incentive structure for contraceptive use, say by offering credit on better terms to women, or to contraceptive users, it might have a greater impact, even if our data are silent about this possibility. The data show higher contraceptive use in households that are engaged in the credit market, but given that such correlation cannot be interpreted causally, it is not clear whether this result should be interpreted as suggesting that an expansion of credit access would lead to an increase in

contraceptive use. Indeed, the IV-FE results reported in Table 1 show that contraceptive use in PAs where credit was expanded saw increases in contraceptive use not statistically different from those observed in other treatment groups. More analysis is needed to see if credit is a relevant intervention for contraceptive use, and what form it should take.

Our second finding, that the family planning programs of ADA and ODA have no measurable impact on contraceptive use is more puzzling, if nothing else because it is counter intuitive to those intimately familiar with these and other family planning programs in Ethiopia. For starters, it is important to be clear about what the study results mean. These results *do not* mean that contraceptive use did not increase in areas served by ADA and ODA. Instead they show that the increase in these areas is no greater than those *not* served by ADA and ODA.

There are good reasons for not expecting much difference between intervention and control PAs, and these have little to do with the depth or quality of the effort expended by these two programs. Our result needs to be viewed against the backdrop of almost blanket coverage of the study areas with ADA/ODA programs: about 70 percent of the PAs in the 16 woredas of the study area had family planning programs from ADA and ODA. In this context it is difficult to draw a sharp distinction between an intervention PA and a control PA. This blurring of study cells is furthered by the fact that the preferred method in these regions is injectibles and the main source for injectibles is not ADA/ODA's CBRHA, but a facility which can be in the same PA or in a neighboring PA. With almost 70 percent of study villages reporting a health facility outside the PA, it is easy to see how the distinction between intervention and non-intervention PAs was blurred. Unless we interview clients at a facility and determine whether they had been referred by an agent of ADA/ODA it is not possible to distinguish between injectible users impacted by ADA/ODA and those seeking direct access or through some other referral source. Given women's preference for injectibles, and the importance of location of the health center for provision of injectibles, one obvious modification of the family planning programs operated by ADA and ODA is to train their community-based reproductive health agents to provide injectibles. As it turns out, quite independently of this evaluation, the Ethiopian government has recently adopted exactly this type of approach and started placing trained village health workers in each PA.

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Figure 1

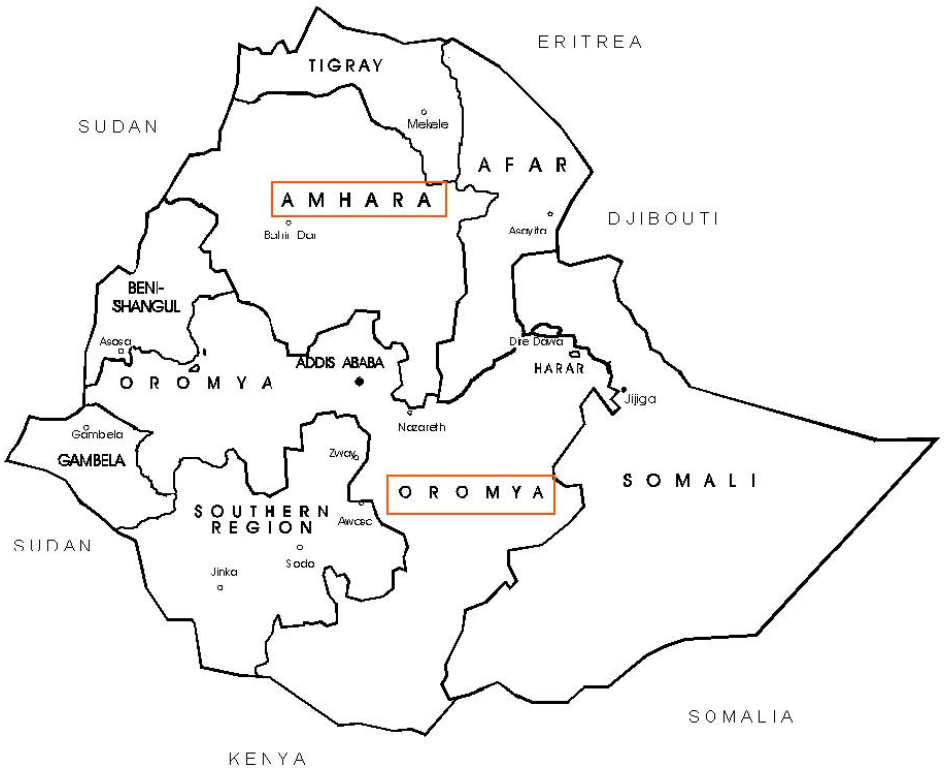

Figure 2: Contraceptives currently in use

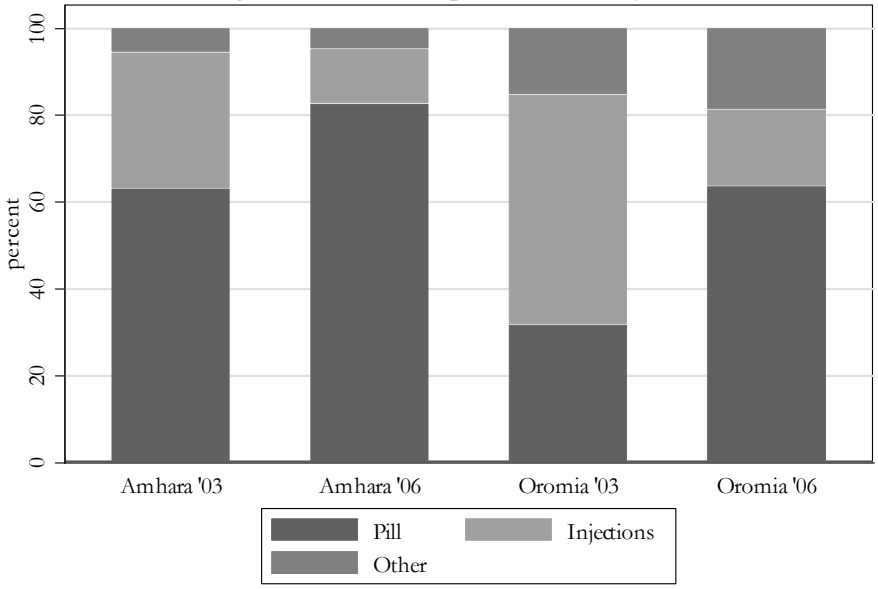

Figure 2: Contraceptive use amongst currently married women by location of nearest health center (2006)

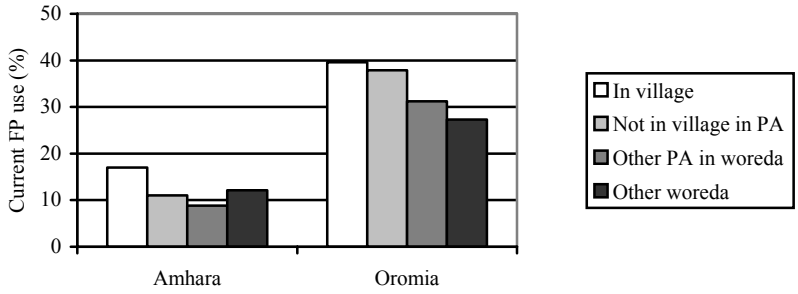

Table 1: Tests of randomization of PAs to assigned study groups (baseline surey 2003)

	Assigned groups					Assigned groups				
	Both	Credit	FP	None	p-value	Both	Credit	FP	None	p-value
	Amhara					**Oromia**				
All women 15-49 years of age										
Currently using contraception (%)	4.5	2.6	2.8	3.6	0.72	7.5	6.7	7.3	7.3	0.99
Intend to use FP in the future	46.1	48.9	41.0	50.0	**0.02**	72.8	68.9	70.6	72.0	0.55
Know of any method of FP (%)	86.5	88.3	77.7	82.6	0.36	73.5	79.7	81.2	76.6	0.37
Have heard of pills/injectibles (%)	60.6	60.3	52.6	59.3	0.71	42.0	44.4	44.0	49.8	0.61
No. of births in past 3 years (mean)	0.53	0.51	0.51	0.46	0.45	0.46	0.40	0.53	0.41	0.11
Desired number of children (mean)	4.9	4.8	5.1	4.6	0.12	4.4	4.3	4.6	4.4	0.27
Percent ever attended school	10.3	12.7	7.1	9.3	0.35	46.8	48.6	45.5	45.7	0.89
No. of women	863	925	865	871		918	1007	963	994	
Currently married women										
Currently using contraception (%)	5.1	3.4	2.7	4.5	0.62	10.3	10.4	11.0	10.3	1.00
No. of births in past 3 years (mean)	0.6	0.7	0.6	0.6	0.11	0.6	0.6	0.8	0.6	0.13
Desired number of children (mean)	5.1	5.2	5.3	4.8	**0.07**	4.7	4.7	4.9	4.7	0.49
No. of women	659	660	681	657		623	618	632	662	
Women less than 25 years old										
Ever married (%)	77.2	68.2	76.9	75.8	0.32	39.1	33.4	34.0	41.2	0.34
Begun childbearing (%)	58.4	48.7	58.8	48.0	0.11	48.7	43.7	38.1	39.0	0.54
Have heard of pills/injectibles (%)	57.0	55.0	45.9	58.0	0.42	35.8	41.2	43.3	46.7	0.44
Desired number of children (mean)	4.0	3.9	4.1	3.9	0.80	3.8	3.6	3.9	3.7	0.15
No. of women	311	362	280	271		395	450	400	440	
No. of households	800	800	799	799		810	812	810	810	
Household income sources (%)										
Crop cultivation	88.5	92.0	91.4	91.0	0.81	96.5	93.8	95.0	95.2	0.78
Cash crops	4.2	8.1	0.4	0.8	0.32	41.6	54.2	62.4	53.0	**0.06**
Livestock maintenance & fishing	75.9	76.1	81.6	79.1	0.47	53.6	46.8	51.8	50.0	0.73
Mining, Manufacturing, Production	7.2	8.8	2.6	6.4	0.11	3.5	6.9	4.5	3.8	0.43
Trade (retail, wholesale)	2.4	5.3	2.8	6.3	0.19	6.5	8.2	6.5	6.6	0.92
Services (finance, admin, public, etc)	2.7	2.0	2.7	3.0	0.84	1.9	2.0	4.8	4.8	0.17
Remittances and support (all sources)	12.7	10.1	5.8	8.8	0.35	1.1	0.7	2.1	1.8	0.30
Other sources	36.8	32.5	30.0	36.0	0.78	0.7	1.0	0.7	1.0	0.91
Value of livestock owned by household										
All animals, 2003 Birr	1314	1291	1457	1421	0.79	620	599	714	636	0.87
Mean months of food insecurity in past 12 months	3.0	3.1	3.1	3.1	0.86	3.4	3.5	3.5	3.5	0.55
Household borrowed past 12 mts (%)	16.4	25.5	16.0	14.8	0.34	13.9	17.2	14.8	23.6	0.23
Households where female borrowed (%)	2.5	4.8	2.0	2.0	0.32	1.30	0.93	1.41	4.50	0.16
Households that borrowed from revolving credit associations	4.4	1.4	4.6	3.2	**0.02**	0.63	1.58	1.38	1.82	0.30
Minutes to nearest health facility	126	108	123	97	0.82	81	68	81	61	0.47
Religion - Christian	95.4	98.0	96.0	96.9	0.65	81.8	87.8	87.0	85.9	0.81
Household head ever attended school (%)	12.3	9.7	9.1	11.0	0.63	56.8	54.7	50.7	53.7	0.53

Notes: Reported p-values refer to tests with a null of equality of means across the four treatment groups.
Tests take into account the possible presence of clustering at the PA level.

Table 2: Demographic changes between baseline survey (2003) and follow-up survey (2006)

	Amhara		Diff. in means	Oromia		Diff. in means
	2003	2006	p-value	2003	2006	p-value
Age-specific fertility rates (past 3 years)						
15-19	0.063	0.055		0.020	0.022	
20-24	0.224	0.232		0.195	0.178	
25-29	0.233	0.252		0.245	0.251	
30-34	0.208	0.249		0.232	0.226	
35-39	0.185	0.195		0.175	0.171	
40-44	0.116	0.142		0.085	0.069	
45-49	0.065	0.074		0.068	0.044	
Total fertility rate	5.47	6.00		5.10	4.80	
All women 15-49 years of age						
Currently using contraception (%)	3.4	12.2	0.00	7.2	21.2	0.00
Intend to use FP in the future	46.1	64.9	0.00	71.1	73.3	0.18
Know of any method of FP (%)	83.8	97.0	0.00	77.7	97.4	0.00
Have heard of pills/injectibles (%)	58.1	80.4	0.00	45.3	79.3	0.00
No. of births in past 3 years (mean)	0.51	0.54	0.11	0.45	0.42	0.08
Desired number of children (mean)	4.9	4.8	0.66	4.4	3.9	0.00
Women with at least 4 births who wanted last pr	85.5	73.5	0.00	78.8	74.7	0.09
Percent ever attended school	9.8	18.8	0.00	46.6	57.2	0.00
No. of women	3,524	3,452		3,882	4,047	
Currently married women						
Currently using contraception (%)	3.9	15.1	0.00	10.47	33.08	0.00
No. of births in past 3 years (mean)	0.6	0.7	0.03	0.65	0.64	0.52
Desired number of children (mean)	5.2	5.3	0.21	4.72	4.34	0.00
No. of women	2,657	2,618		2,535	2,569	
Women less than 25 years old						
Ever married (%)	74.3	63.0	0.00	37.19	29.72	0.00
Begun childbearing (%)	53.9	46.6	0.02	42.25	27.21	0.00
Have heard of pills/injectibles (%)	53.7	77.2	0.00	42.05	76.70	0.00
Desired number of children (mean)	4.0	3.4	0.00	3.72	3.21	0.00
No. of women	1,224	1,130		1,685	1,740	

Table 3: Socio-economic changes between baseline survey (2003) and follow-up survey (2006)

	Amhara		Diff. in means	Oromia		Diff. in means
	2003	2006	p-value	2003	2006	p-value
Household income sources (%)						
Crop cultivation	90.7	92.0	0.503	95.1	97.2	0.02
Livestock maintenance & fishing	78.2	84.1	0.037	50.5	73.0	0.00
Mining, Manufacturing, Production	6.1	12.3	0.006	4.6	22.1	0.00
Trade (retail, wholesale)	4.0	4.8	0.183	6.9	16.5	0.00
Services (finance, admin, public, etc)	2.6	41.9	0.000	3.4	18.6	0.00
Remittances and support (all sources)	9.4	6.3	0.102	1.4	2.1	0.19
Other sources	33.6	22.5	0.000	0.9	2.1	0.00
Value of livestock owned by household (2003 Birr)						
Large animals (cows, oxen, bullocks, etc)	1231.1	1501.9	0.01	650.3	1020.9	0.00
Small animals (goat, sheep)	239.2	328.8	0.00	36.7	136.7	0.00
Other animals (chicken, etc)	13.6	11.6	0.19	7.5	24.2	0.00
All animals	1369.4	1685.1	0.00	641.5	987.1	0.00
Number of animals owned by household						
Large animals (cows, oxen, bullocks, etc)	3.1	4.0	0.01	2.1	3.3	0.00
Percent of households who cultivated crops						
Food crops	99.4	98.7	0.07	97.9	98.0	0.81
Cash crops	3.4	6.5	0.02	52.6	72.0	0.00
Fruits and vegetables	0.9	8.0	0.00	4.3	8.0	0.00
Oil crops	11.8	26.0	0.00	7.2	11.6	0.00
Other crops	36.9	60.3	0.00	13.9	33.9	0.00
Percent who sold crops						
Food crops	46.9	49.9	0.48	11.7	12.1	0.75
Any crop	62.0	65.1	0.44	39.3	69.6	0.00
Mean months of food insecurity (past 12 months)	3.1	3.3	0.02	3.5	3.3	0.02
Households who borrowed in past 12 months (%)	18.2	42.9	0.00	17.6	37.0	0.00
Households where female borrowed (%)	2.8	10.4	0.00	2.1	13.9	0.00
Households that borrowed from revolving credit associ	3.5	18.6	0.00	1.4	18.1	0.00
Minutes to nearest health facility	115	92	0.02	72	66	0.01
Minutes to nearest food market	93	111	0.06	67	69	0.67
Religion - Christian (Orthodox, Protestant, Catholic)	96.5	97.4	0.02	85.6	85.9	0.66
Percent of household heads ever attended school	10.5	17.6	0.00	54.0	58.6	0.00
Age-specific enrollment rate (6-10 years)	17.6	41.3	0.0	35.2	44.1	0.0
Age-specific enrollment rate (11-14 years)	39.8	66.6	0.0	65.7	78.5	0.0
Age-specific enrollment rate (15-18 years)	28.1	51.3	0.0	47.6	63.3	0.0

Table 4: Impact of interventions on current use of contraception among currently married women

	(1)	(2)	(3)	(4)	(5)	(6)
	Amhara			**Oromiya**		
	OLS-ITT	OLS-ATFE	IV-FE	OLS-ITT	OLS-ATFE	IV-FE
β_0 Intercept	0.045			0.103		
	[0.013]**			[0.017]**		
β_1 Both	0.005			0		
	[0.020]			[0.030]		
β_2 Credit	-0.011			0.001		
	[0.018]			[0.033]		
β_3 FP	-0.018			0.007		
	[0.018]			[0.033]		
α_0 2006	0.119	0.124	0.115	0.235	0.234	0.241
	[0.024]**	[0.021]**	[0.033]**	[0.020]**	[0.023]**	[0.025]**
α_1 Both × 2006	0	-0.002	0.01	-0.01	0.003	-0.016
	[0.034]	[0.028]	[0.042]	[0.039]	[0.034]	[0.045]
α_2 Credit × 2006	-0.02	-0.065	-0.032	-0.003	-0.003	-0.01
	[0.033]	[0.026]*	[0.059]	[0.045]	[0.043]	[0.053]
α_3 FP × 2006	-0.005	-0.007	-0.011	-0.025	-0.043	-0.039
	[0.034]	[0.040]	[0.069]	[0.031]	[0.036]	[0.048]
Obs.	5275	5275	5275	5104	5104	5104
Village FE	no	yes	yes	no	yes	yes
Tests (p-values)						
H_0: $\alpha_1=\alpha_2=\alpha_3=0$	0.919	0.033	0.890	0.882	0.623	0.822
H_0: $\alpha_1=\alpha_2$	0.544	0.012	0.445	0.886	0.904	0.920
H_0: $\alpha_1=\alpha_3$	0.877	0.912	0.772	0.724	0.240	0.735

The standard errors in brackets are robust to intra-PA correlation

Table 5: Impact of interventions

	(1) Current FP use	(2) Intend to use FP	(3) No. of methods heard of	(4) Births past 3 years	(5) Desired family size
			Amhara		
α_0 2006	0.115	0.109	0.414	0.038	-0.169
	[0.033]**	[0.042]*	[0.329]	[0.043]	[0.163]
α_1 Both × 2006	0.01	0.035	0.654	-0.018	0.117
	[0.042]	[0.063]	[0.445]	[0.058]	[0.245]
α_2 Credit × 2006	-0.032	0.012	-0.21	0.037	0.877
	[0.059]	[0.102]	[1.035]	[0.094]	[0.473]
α_3 FP × 2006	-0.011	0.287	0.861	0.04	-0.395
	[0.069]	[0.130]*	[0.609]	[0.132]	[0.573]
Obs.	5275	4764	5275	6929	6963
Tests (p-values)					
H_0: $\alpha_1=\alpha_2=\alpha_3=0$	0.890	0.115	0.183	0.941	0.155
H_0: $\alpha_1=\alpha_2$	0.445	0.834	0.396	0.546	0.125
H_0: $\alpha_1=\alpha_3$	0.772	0.094	0.760	0.674	0.412
			Oromiya		
α_0 2006	0.241	-0.028	1.724	0.015	-0.599
	[0.025]**	[0.043]	[0.270]**	[0.040]	[0.116]**
α_1 Both × 2006	-0.016	-0.06	0.413	-0.085	0.104
	[0.045]	[0.057]	[0.343]	[0.051]	[0.173]
α_2 Credit × 2006	-0.01	0.001	-0.102	-0.008	0.236
	[0.053]	[0.056]	[0.372]	[0.051]	[0.140]
α_3 FP × 2006	-0.039	0.088	-0.44	-0.111	0.258
	[0.048]	[0.082]	[0.464]	[0.095]	[0.195]
Obs.	5104	3964	5103	7895	7739
Tests (p-values)					
H_0: $\alpha_1=\alpha_2=\alpha_3=0$	0.822	0.401	0.207	0.114	0.348
H_0: $\alpha_1=\alpha_2$	0.920	0.184	0.074	0.047	0.328
H_0: $\alpha_1=\alpha_3$	0.735	0.107	0.077	0.787	0.531

Currently married women. The standard errors in brackets are robust to intra-PA correlation

Table 6: Presence of "other" (non-ADA/ODA) family planning services in study villages (%)

	Both	FP	Credit	None	Total	Chi-square test of association (p-value)
Amhara						
Health center, Health Post, Health Extension workers	33.3	33.3	18.2	20.8	26.5	
Other sources	7.0	16.7	3.0	37.5	16.7	
No non-ADA sources	59.7	50.0	78.8	41.7	56.8	
Total	100.0	100.0	100.0	100.0	100.0	
No. of villages	57	24	33	48	162	0.000
Oromia						
Health center, Health Post, Health Extension workers	50.0	38.5	38.2	42.9	43.2	
Other sources	5.0	11.5	12.7	4.1	7.9	
No non-ODA sources	45.0	50.0	49.1	53.1	49.0	
Total	100.0	100.0	100.0	100.0	100.0	
No. of villages	60	26	55	49	190	0.535

Table 7: Number of family planning methods women are aware of and current contraceptive use

	Both		Credit		FP		None		Total	
	Awareness of FP methods									
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Amhara										
Did not borrow	3.6	603	3.4	282	4.0	334	3.8	661	3.7	1,880
Borrowed from	4.4	399	3.5	176					4.1	575
Borrowed from other	3.8	260	3.1	136	3.8	175	4.0	425	3.8	996
Total	3.9	1,262	3.3	594	3.9	509	3.9	1,086	3.8	3,451
Oromiya										
Did not borrow	4.5	779	4.2	589	4.5	446	4.3	699	4.4	2,513
Borrowed from	4.8	331	4.7	367					4.7	698
Borrowed from other	4.7	235	4.0	154	4.6	147	4.6	301	4.5	837
Total	4.6	1,345	4.3	1,110	4.6	593	4.4	1,000	4.5	4,048
	Current contraceptive use									
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Amhara										
Did not borrow	9.8	603	4.8	282	8.4	334	12.4	661	9.6	1,880
Borrowed from	15.0	399	6.6	176					12.4	575
Borrowed from other	14.2	260	6.7	136	15.7	175	23.9	425	17.2	996
Total	12.3	1,262	5.8	594	10.8	509	16.9	1,086	12.2	3,451
Oromiya										
Did not borrow	18.5	779	18.1	589	22.1	446	22.4	699	20.2	2,513
Borrowed from	24.7	331	26.0	367					25.4	698
Borrowed from other	18.1	235	25.2	154	21.2	147	19.9	301	20.6	837
Total	20.0	1,345	21.7	1,110	21.9	593	21.6	1,000	21.2	4,048