Lump-sum Transfers for Agriculture, Support Services, and Household Decision Making

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Abstract: We study the impact of one-season transfers framed for agricultural investment combined with agricultural support services on decision making among smallholder households in Senegal and Malawi using data from randomized control trials. In Senegal, we find evidence that the program increased the decision power of male household heads at the expense of other males in the household after two years. We cannot disentangle the impacts of the farm planning program and the lump sum transfer that comprised that program. In Malawi, we observe that over two years male program recipients exhibit increased decision-making power, while male non-recipients see reductions in decision-making power. These results are broadly due to both the transfers and the intensive agricultural support services. Changes in decision power seem to flow not just from control of income, but also from shifting household norms linked to program participation. Only in Malawi do we note some suggestive evidence that decision making power increases among female program recipients.

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1. Introduction

As transfer programs have gained popularity in the developing world as a tool for improving the livelihoods of poor households, interest has grown in studying the consequences of these programs for the dynamics of decision making within families. This question is important from a number of perspectives. Cash transfers can directly affect bargaining power, which in turn affects how household resources, including transfers, are used.[1] While bargaining is not directly observable, decision making has been shown to be a good proxy in a number of settings (Lundberg and Pollack 1996; Duflo 2012; Browning, Chiappori, and Weiss 2014). Additionally, women's participation in decision making is seen as an important component of increasing women's empowerment more generally, which is often a primary or secondary goal of many transfer programs. At the same time, many transfer programs are accompanied by other types of support services, and less is known about how such services may interact with transfers or operate independently to further affect household decision making. In this paper, we study the impact of one-season, lump sum transfers combined with agricultural support programming on a range of household decision-making outcomes in the context of programs for smallholder farmers in Senegal and Malawi.

A growing literature examines the link between cash transfers and household decision-making processes, and specifically how the receipt of cash transfers affects the identity of these decision makers. Such papers generally use decision making as a proxy for bargaining power, studying how increasing the unearned income controlled by a household member through a transfer affects their bargaining power. In a general collective model of the household (Chiappori 1988; 1992), bargaining power is represented by the weight on each household member's utility function, and can be conceptualized as the influence of the household member's preferences on final household decisions. Bargaining power is composed of many

[1] Examples of models that make this point include Chiappori (1988), Chiappori (1992), Lundberg and Pollack (1993), Lundberg and Pollack (1994), Manser and Brown (1980), McElroy and Horney (1981). See Doss (2013) for a review of the empirical evidence.

factors including individual unearned income, leading to the link with the transfer literature.[2] Other components of bargaining power include characteristics such as education, age, individually held assets, and cultural norms. It should also be noted that bargaining power is a relative concept, and increased bargaining power for one household member should functionally mean decreased bargaining power for some other household member.

To date, most transfer programs that have been studied focus on transfers that occur at regular intervals, in many cases without specific end dates. Theoretically, as transfers lead to a permanent increase in unearned income for the recipient, the motivation for a link to bargaining power for such transfers is that they result in a permanent stream of income controlled by them and accessible in most cases outside of any cooperative solution to household bargaining. The study of one-time transfers presents an interesting question; without the promise of long-term stream of income, such one-time transfers should not affect bargaining power in the same way. However, such transfers have the potential to impact decision making in two ways. First, norms regarding control of the transfer income may lead the recipient to make decisions regarding that income, which in the short run could be observed in answers to survey questions regarding who makes decisions. Second, if the transfers are effectively invested, sustained increases in income controlled by the transfer recipient can result. If so, we should observe a longer term increase in the recipient's bargaining power (as proxied by their decision-making power).

Support services, including different types of training programs, are often offered in conjunction with transfer programs and while their link to household decision making is less direct than transfers, there are also channels through which these effects many occur. Programs which directly address gender relations and other household decision-making dynamics can shift behavior by changing household norms. At the same time, trainings that increase an individual's skills or more directly involve them in economic activity can increase their bargaining power

[2] Specific solutions of the collective model often describe bargaining power as being driven by an outside option, either outside of marriage or a "separate spheres" solution within a marriage (Manser and Brown 1980; McElroy and Horney 1981).

by giving them more control over the income they generate. Such trainings can also shift the participant's self concept, changing their beliefs about their capabilities, which can indirectly lead to changes in bargaining power (Ambler, Jones, and O'Sullivan 2023).

The programs studied here combine transfers with support services and have the primary goal of improving farmer livelihoods by increasing agricultural production. Both are evaluated through the use of randomized control trials. The Senegal project included a comparison group that received monthly advisory visits conducted by an *animateur* (a farmer from the area trained to implement the program), a group that received those visits and a farm management plan (FMP) intended to help the farmers effectively allocate their resources over the year, and a group that received the visits, the FMP, and a one-time cash transfer worth approximately USD200. An interesting component of the Senegal program was that one of its explicit goals was to increase family participation in decision making, particularly regarding agricultural activities. We collect data over two years; support services were administered in both years, but the transfers were only given once, at the beginning of year 1. Results from the Senegal study on other household outcomes show that the transfers resulted in one-year improvements in crop production, and increased holdings of livestock and agricultural equipment that were sustained over two years. No robust impacts of the management plan alone are identified (Ambler, de Brauw, Godlonton 2020).

The Malawi project cross-randomized transfers and support services. The transfer treatment included a control group, a group that received a series of three cash transfers over one season, and a group that received a series of three transfers in a combination of inputs and cash over the same season. The cash transfers were given at planting ($36), mid-season ($22), and harvest ($26). The input transfers were given on the same schedule, were of equivalent value, and approximately 50 percent of the value was given in kind in the form of seed, hoes, inoculant, and storage sacks, while the remaining half was given in cash. The support services were administered in a cross-randomized treatment that included a control group receiving only standard services offered by our partner, and a treatment group that received intensive technical advice and an FMP from a trained extension worker. As

in Senegal, the transfers were given only in the first year, and support services continued for two years. In Malawi the allocation of support services was re-randomized in the second year.

In Ambler, de Brauw, and Godlonton (2023) we show that in Malawi the program led to large increases in crop production and household consumption over two years, driven by increased expenditures on inputs, only when farmers received both a transfer (of either type) and intensive extension in the first year. There is no robust evidence that transfers alone had a positive impact on outcomes, and receiving intensive extension by itself either had no effect or a negative effect, depending on the specification.

In this paper, we find some suggestive evidence after two years that the program solidified the decision-making power of male household heads, and reduced the decision-making power of male non-recipients in the household. In Malawi, there is some evidence that the program increased the decision-making power of female recipients after two years. The main findings from Malawi are that in both years, male recipients see their decision-power grow with program receipt (both transfers only and transfers and support services), while male non-recipients see their decision-power decline. The results are not linked only to treatments that are also associated with increased household production and consumption, and are not connected only to transfer receipt. Decision making is also impacted by receiving agricultural support services without transfers, suggesting that programming can impact decision making through multiple channels.

This work is linked to several strands of existing literature. First, several studies examine the impact of cash transfers on decision making in the household and empowerment when transfers are exclusively given to women. These papers show somewhat mixed results. De la Briére and Quisumbing (2000) find that Progresa transfers in Mexico have a small, but negative impact on the husband being the sole household decision maker. In Brazil, de Brauw et al. (2014) show Bolsa Familia transfers increase women's decision-making power in spheres related to school attendance, health expenditures, and contraception use, but these effects are much weaker in rural areas. Bergolo and Gervan (2016) find that upon receiving a conditional cash transfer in Uruguay, women take more responsibility for food

expenditures, but the transfer does not necessarily imply an increase in women's resources due to changes in informal employment. Expanding beyond measuring decision-making power, Ambler and de Brauw (forthcoming) study the impacts of receiving Pakistan's BISP transfer on a set of measures of women's agency, finding limited improvements, concentrated in measures of mobility and voting.[3] And El-Enbaby et al. (2023) find no evidence of impacts of Egypt's Takaful and Karama Program transfers on decision making power among women with any education, but find negative impacts among women with no education.

Second, as in the two programs studied here, a few other programs compare differences in impacts on women's decision-making power when transfers are given to women rather than to men. Ambler (2016) finds that pension receipt by women in South Africa leads to large increases in the recipient's decision-making power, which correlates with her increased income share. Men's decision power does not change with pension receipt, but there is also no shift in their household income share. In Macedonia, Almas et al. (2018) find that transfers given to women increased their bargaining power in a lab-based exercise, but not when examining survey-based measures of decision making. In Kenya, transfers given to women led to an increase in a female empowerment index (Haushofer and Shapiro 2016).[4]

The paper also contributes to a literature examining whether management or technical trainings can help adult women improve their decision-making power within households.[5] Management trainings are often targeted at women running non-farm businesses; for example, Bulte, Lensink, and Vu (2016) find that business skills trainings among female entrepreneurs lead to higher women's decision-making power within households in Viet Nam. However, trainings are often bundled with other services, such as in multi-faceted ultra-poor graduation programs (e.g. Bedoya et al. 2019). There appear to be few examples of agricultural trainings

[3] Agency can be thought of as the ability to make decisions for oneself (Kabeer 1999; Chang et al. 2020). Decision-making power is one component of an individual's agency.
[4] Numerous other studies do not examine transfers specifically but demonstrate the link between income, bargaining power, and decision making (Lundberg, Pollack, and Wales 1996; Duflo 2003; Qian 2008; Anderson and Eswaran 2009; Ding et al., 2024).
[5] There have been several evaluations of programs targeting different types of trainings towards adolescent girls, with quite positive results; Chang et al. (2020) provide a useful review.

targeted at women that study program impacts on women's decision-making.[6] One exception is van den Bold et al. (2015), who study a multi-component intervention, including agricultural extension, promoting homestead gardening in Burkina Faso, finding increased women's control over agricultural assets, and qualitative evidence presented suggest some changes in community norms around women's decision-making.

This paper contributes to this literature by examining the short- and medium-run impacts of a program that provides transfers tied to one agricultural season, instead of transfers given continuously over a longer time period. We also examine programs that are not necessarily targeted directly to women, as some of the transfers are given to men and some to women, so we contribute to the literature studying how the gender of the transfer recipient affects women's decision-making power. Further, the training component of the programs we study have elements intended to draw household members, both men and women, into household decision-making, and can also serve shift bargaining power for those whose skills are improved. While most research is focused on examining how transfers and income specifically attributable to women affect decision making, importantly, we also look past transfers to programs that also provide services in conjunction with the transfers. Finally, the study of partner programs in Senegal and Malawi allow us to understand how program context may affect the impacts of such a program.

2. Experimental Design

To study how one time transfers may lead to changes in household decision making, we consider the impacts of two related, but distinct, transfer and agricultural support services projects on measures of household decision making. In this section we describe the relevant elements of the design of each project. Further details can be found in Ambler, de Brauw, and Godlonton (2020 and 2023).

[6] While there is a large literature that studies the effects of receiving agricultural extension, the literature typically studies outcomes such as uptake of agricultural techniques or changes in production (e.g. Norton and Alwang, 2020).

A. Senegal

The Senegal project was conducted in partnership with the Fédération des Organisations Non-Gouvernementales du Sénégal (FONGS), an umbrella group of autonomous farmers associations with near national coverage. We work with eight associations located in central and western Senegal during the 2014/2015 and 2015/2016 agricultural seasons. The total sample is 600 households, comprising 15 villages in each association and 5 households in each village.

Project implementation largely occurred through an animateur, a farmer from the local area (but not the same village), who was trained to provide the support services the project offered. Animateurs worked in one or two villages, so randomization occurred at the animateur level to ensure that no animateurs would have to administer more than one treatment. Animateurs were mostly male and fewer than half had a high school education. Randomization was stratified by association and number of villages per animateur, in 11 distinct stratification cells.[7] A timeline of project activities can be found in Appendix Figure A1. Animateurs and their associated households were allocated into one of three groups:

Comparison group: Advisory visits only

The comparison group for our analysis received the light-touch treatment of monthly advisory visits from their animateur. These advisory visits were intended to assist farmers with issues related to their farms, principally regarding management issues. Animateurs were not trained to provide technical advice. Households in the comparison group also participated in the FONGS Basic Agricultural Assessment (BAA), which is a survey-like instrument administered three times during the project. The BAA served to measure progress, and also as a tool for households to learn about their financial situation.

FMP group: Advisory visits and farm management plan

This group received the same services as those in the comparison group, and also completed an FMP with their *animateur* in both years prior to the beginning of the agricultural season. The goal of the FMP was to improve production-related

[7] Only 11 *animateurs*, in three associations, were assigned to more than one village, meaning the randomization was close to being conducted at the village level.

measures by helping farmers to more effectively allocate their resources across their farms and over the season. Guided by the *animateur*, farmers created a schedule of activities, thought through likely challenges, and preemptively devised solutions.

FMP + Cash group: Advisory visits, farm management plan, and cash transfer

Farmers in this group received all the same services as those farmers in the FMP group, and received a one-time cash transfer of approximately USD200 timed near planting of the first year of implementation to help them carry out the FMP designed in the first year. The size of the transfer was equal to approximately 15 percent of the baseline value of crop production. The transfer was only given once, at the beginning of year one, while the support services (including the FMP) continued for two years. The transfer was unconditional, but heavily framed for agricultural investment and implementation of the FMP.[8] The transfers were distributed to household heads.

We expect that the infusion of resources in the FMP + Cash treatment could have a direct effect on household decision making. However, in this context, because the transfers were given directly to the household head (almost always male), we do not necessarily expect that the program would increase the decision-making power of women or other males in the household. However, if the transfers increase the decision-making power of the household head, we may observe reduced participation in decision making for other household members. Changes in decision making after one year only may indicate only control over the transfer itself, while changes lasting into the second year may indicate that the transfers led to lasting changes in decision making linked to the increased livestock holdings observed in Ambler, de Brauw, and Godlonton (2020). When considering the potential of the FMP alone to impact decision making we focus on the way in which it was conceptualized as a tool for promoting joint planning and decision-making among adults in the entire household. As such, the FMP alone has the potential to affect measures of decision-making.

[8] Benhassine et al. (2015) find the framed cash transfers for education can be as effective as conditioned transfers in directing funds towards their intended use.

B. Malawi

The project in Malawi was conducted in partnership with the National Smallholder Farmers Association of Malawi (NASFAM), a nationwide organization that provides farmers with both social and commercial services. NASFAM operates through self-organized farmer clubs. In this study we worked with 120 farmer clubs in the Dowa and Ntchisi districts of central Malawi. The clubs averaged ten members each, leaving us with a target sample size of approximately 1,200 smallholder farmers. Project implementation was conducted during the 2014/2015 and 2015/2016 agricultural seasons. Appendix Figure A2 details the project timeline and experimental design.

Because a large component of the project (to be detailed below) was conducted by extension agents, clubs were first assigned to extension agents. Treatment randomization was then done at the club level, and stratified by extension officer, an indicator for above the median share of females in the club, and an indicator for above the modal club size. The project involved two cross-cutting interventions: a transfer treatment and an intensive extension treatment.

Transfer treatment: Control

Farmers in the control group of the transfer treatment received only standard NASFAM services, and no additional resources. If the farmer was newly registered, they received a seed loan equal to about two-thirds of the value of the seed disbursement given in the other groups, but which was repayable with interest to NASFAM. Other farmers received no capital support.

Transfer treatment: Cash

Cash transfers were distributed during the agricultural season of the first year of implementation, in three tranches, equal to about $84 in value. As in Senegal, the total value of the transfer was equal to about 15 percent of the baseline value of crop production. Farmers were given disbursements of $36 (November 2014), $22 (February 2015), and $26 (April 2015). As in Senegal, the transfers were unconditional, but heavily framed for investment in specific agricultural inputs appropriate at the time of each transfer. Transfers in Malawi were allocated to the NASFAM club member, not the household head, who could be either male or female. 64 percent of club members in our sample are female.

Transfer treatment: Inputs

The third group of farmers received a combination of cash and inputs, timed at the same time as the cash transfers. The first disbursement was comprised of seed, inoculant (a nitrogen fixer), and hoes. The second was given in cash to pay for *ganyu* (day-labor, which was the relevant input for these farmers mid-season), and the third included improved storage sacks, strings, and cash for harvest-related activities.[9] Again, transfers are distributed to the NASFAM member.

Extension treatment: Standard services

The control treatment for the extension intervention received only standard NASFAM extension services. This is primarily a lead farmer approach, where a NASFAM member is selected by other farmers to be a lead farmer. The lead farmer then receives trainings from NASFAM extension agents and is encouraged to share that knowledge with other farmers in their area, primarily through group-based activities.

Extension treatment: Intensive extension

Farmers in this group receive the standard NASFAM services, and additionally receive individual extension support from trained, professional extension agents. As in Senegal, the support included farm management planning, but in Malawi it also included individualized technical support. Farmers received at least three one-on-one visits from extension agents over the season. A detailed FMP was completed during the first visit, and subsequent visits focused on support to complete the FMP and to help with any technical issues farmers were experiencing. These services were directly targeted to the club member, not the entire household. To support the project, NASFAM hired 15 additional extension agents. The transfer treatment was conducted only in the first year of implementation, but the extension treatment was implemented in both the first and second years.[10]

[9] Farmers in both the cash and inputs group were also required to participate in a modified version of the NASFAM seed bank that promoted transfer sustainability by requiring seed savings between the first and second season. For details see Ambler, de Brauw, and Godlonton (2023).

[10] In the second year of the project, the extension treatment was re-randomized so that ¼ of farmers never received intensive services, ¼ received them in year one only, ¼ received them in year two only, and ¼ received them in both years. However, because this paper will focus on the transfer treatment and only study the interaction of the transfers with the extension treatment, we will address only the year one randomization here.

The analysis for the Malawi data collapses the two transfer treatments. Therefore, we study the impacts of the transfers and intensive extension alone and in combination, following Ambler, de Brauw, and Godlonton (2023) who found that sustained increases in production and consumption were attributable only to the combined package, allowing us to study whether those increases are linked to changes in household decision making. A finding that the decision-making power of the recipient increased over two years for those receiving both interventions would suggest that transfer recipients were able maintain a level of control over that new income, resulting in increased bargaining power. Conversely, a finding that any kind of transfers leads to only short-term changes in decision-making power would indicate recipients controlled the transfer itself, but that those transfer did not fundamentally alter relative household bargaining power.

Though the agricultural support services offered by this program did not directly aim to increase the roles of various household members in decision making as in Senegal, this training program does have the theoretical capacity to effect this change. Club members, men and women, who receive training from extension agents may have more agency and knowledge with regards to production. They may also learn skills, both technical and management related, that result in changes in the way household decision-making is organized.

3. Data

The data used to evaluate the impact of the Senegal program on decision-making outcomes comes from data collected at project baseline, midline, and endline. Due to project timing and the preferences of FONGS, no baseline data was collected by the research team, and the only baseline data available is that collected by FONGS during the BAA. This data is limited and does not contain any decision-making outcomes, but can be used descriptively and to test for balance.[11]

[11] See Ambler, de Brauw, and Godlonton (2020) for a detailed description of balance tests demonstrating the success of the treatment randomization.

The midline and endline data are complete household surveys supervised by the research team. These instruments collected a large amount of data on agricultural outcomes and other household welfare measures. They contain a section on decision-making asking for the identity of the household decision makers in a variety of household activity categories, and additionally contain questions about decision-making over crop production on a crop-by-crop basis, and livestock decision making by animal. The livestock questions were asked at endline only, while all others were asked at both midline and endline.

Due to partner concerns about respondent fatigue, the midline survey was targeted to only 240 households out of 600. These households were randomly chosen at the village level, stratified by treatment and association. Ambler, de Brauw, and Godlonton (2020) show that the midline sample is not statistically different from the sample not selected for the midline. The endline survey was conducted with the full sample of 600 households. Attrition was minimal, 239 and 598 households were successfully interviewed at midline and endline respectively, with the missing households due to household-level refusals in all three cases.[12] The individual-level sample that will comprise the analysis sample for this paper includes 22 female household heads, 984 females who are not household heads, 217 male heads, and 809 males who are not heads at midline. At endline the analysis sample includes 73 female household heads, 2,309 females who are not household heads, 523 male heads, and 1,805 males who are not heads.

The Malawi data comes from three researcher-implemented surveys: prior to program implementation (baseline), following harvest of year 1 (follow-up 1), and following harvest of year 2 (follow-up 2). The Malawi project also included several additional rounds of data collection mid-season and following the second year of implementation, but these do not include decision-making outcomes, so are not

[12] Because FONGS wished to incorporate capacity building into the administration of the surveys, the enumerator teams were comprised of FONGS animateurs, chosen for their technical capability, one per association at midline, and two per association at endline. In only 25 cases at midline, and none at endline, were households interviewed by their assigned animateur. Animateur enumerators were closely supervised by external supervisors at a ratio of one supervisor for every two enumerators. All trainings and management were conducted by the research team.

relevant for this analysis.[13] The full sample is all farmers who were members of the selected farmer groups at baseline, and this full sample was targeted in each survey round, regardless of whether they remained in the farmer club.[14] The baseline sample was 1,187 households. 1,114 households were interviewed at follow-up 1. In these households there were 718 adult women who were NASFAM members, 735 adult women who were not NASFAM members, 425 adult men who were NASFAM members and 1,023 adult men who were not NASFAM members. 1,017 households were interviewed at follow-up 2. In these households there were 720 adult women who were NASFAM members, 757 adult women who were not NASFAM members, 399 adult men who were NASFAM members and 1,075 adult men who were not NASFAM members.

As in Senegal, the Malawi surveys contain information on a large number of outcomes related to agricultural production and other aspects of household welfare. Baseline data confirms that the treatment groups were well-balanced (see Ambler, de Brauw, and Godlonton 2023). The decision-making measures are similar to those in the Senegal surveys, covering five categories of household activities and crop- and livestock-level decision making. They also include questions regarding decision-making about the use of different agricultural inputs and the implementation of different agricultural technologies. Some, but not all, of these measures are available at baseline and in the two follow-up surveys.

Table 1 provides baseline summary statistics in both Senegal and Malawi on several baseline outcomes. The two samples have similar rates of female headed households (12 and 14 percent in Senegal and Malawi respectively), but household composition is quite different. Household heads in Senegal are much older (53) than in Malawi (44), and polygamy is more common (42 percent in Senegal compared to 10 percent in Malawi). The Senegalese households are much larger, with an average of 16.5 members, compared to 5.5 in Malawi. This difference is due in part to an expansive household definition used in the Senegal project that

[13] These additional rounds of data preclude us from using the terms "midline" and "endline" to describe the Malawi data.
[14] Follow-up 2 also included new farmers added to clubs between year 1 and year 2, but we do not consider these new farmers in our analysis as they did not receive the transfer treatments or extension treatments in year 1. Sample numbers shown here exclude new farmers.

incorporates extended families that live on family compounds, but household size is also simply much larger in the Senegalese context. These differences in family structure will be important to consider when examining household decision making across countries. Household heads are also much more educated in Malawi, where 86 percent of heads have some education, compared to only 33 percent in Senegal.

There are also differences in agricultural measures; the households in Malawi grow more crops on average than the Senegalese households, but the value of total output is almost three times higher in Senegal. Households in Senegal are also more productive: output per hectare is USD213 in Senegal and USD128 in Malawi. Livestock is also more important to household farms in Senegal, where total holdings are worth USD2,270 on average, compared to only USD196 in Malawi.

In Tables 2 and 3 we present mean values for the decision-making variables for the sample of adults that we consider in our analysis. Midline and endline means for Senegal are presented in Table 2, and follow-up 1 and follow-up 2 means for Malawi are presented in Table 3. All statistics are presented separately by gender and recipient status (household heads in Senegal and NASFAM members in Malawi). If a certain figure is missing, it was not included in that survey round in that country. Appendix B describes the construction of these variables in detail.

The decision making variables in the surveys all follow the same structure, where survey respondents are asked to identify which household members participate in decision-making across a variety of categories, and the selected household members are chosen from the household roster. For decisions about household activities respondents could list up to five decision makers in Senegal and three in Malawi.[15] Respondents were also asked to choose the decision makers for crop-related activities separately for each crop planted, for livestock related activities separately for each type of livestock owned, for agricultural inputs separately by each type (Malawi only), and implementation of agricultural technologies separately by technology (Malawi only). For decisions about activities, if more than one decision maker was selected, the respondents were asked whether

[15] At baseline this was limited to two in Malawi.

some decision makers had more say than others, and if so to list which decision makers had the most say, up to three in Senegal and two in Malawi.

The statistics presented in Tables 2 and 3 show whether each individual was indicated as a decision maker about each activity category. We also show the average proportion of the five activities for which each individual was indicated as a decision maker, and the proportion for which they had at least equal say in the decision. We additionally show the proportion of crops, livestock, agricultural inputs, and agricultural technologies for which the individual is reported to be a decision maker.

In Senegal, we find that household heads are most likely to report that they have decision making power (Table 2). For women household heads, the data suggests that they are a decision makers two thirds to three quarters of the time, across both individual activity categories and proportions of different activities, crops, etc. Male household heads are even more likely to be a decision maker, with averages mostly above 90%. Women who are not household heads are very infrequently listed as participating in decision making, generally 5% of the time or less. Men who are not household heads are only slightly more likely to participate, with rates between 5 and 10%. In general, there is also not meaningful variation between midline and endline, with the exception of female heads, however there are very few female heads in the midline data. In sum, the data show that decision making in Senegal is very concentrated among household heads, who are primarily male.

In Malawi (Table 3) there is more involvement by all family members in decision making. Women who are NASFAM members are decision makers for individual activities 70 to 80% of the time across categories in the first follow-up. They participate in 76% of decisions about activities on average, and have at least equal say in 52% of the decisions about activities. The proportion participating in other decisions (about crops etc.) is even higher, 85 to 90%. Male NASFAM members are even more likely to participate in decisions, with all measures above 90% across the board. Women who are not NASFAM members participate in decision making commonly, but at lower rates, with averages ranging from 30 to 40% in the first follow-up.

4. Empirical Strategy

In both countries we analyze the impact of the treatments on decision making outcomes, exploiting the randomized assignment to identify the causal impact of the programs.

A. Senegal

Using the Senegal data, we estimate an ordinary least squares regression of the following form, run separately at midline and endline in a sample of all adults 18 and over in the surveyed households:

$$
\begin{aligned}
&Y_{ia} \\
&= \alpha + \beta_1 FMP_a \; X \; Female_{ia} \; X \; Head_{ia} \\
&+ \beta_2 FMP\&CASH_a \; X \; Female_{ia} \; X \; Head_{ia} + \beta_3 FMP_a \; X \; Female_{ia} \; X \; Non\; Head_{ia} \\
&+ \beta_4 FMP\&CASH_a \; X \; Female_{ia} \; X \; Non\; Head_{ia} + \beta_5 FMP_a \; X \; Male_{ia} \; X \; Head_{ia} \\
&+ \beta_6 FMP\&CASH_a \; X \; Male_{ia} \; X \; Head_{ia} + \beta_7 FMP_a \; X \; Male_{ia} \; X \; Non\; Head_{ia} \\
&+ \beta_8 FMP\&CASH_a \; X \; Male_{ia} \; X \; Non\; Head_{ia} + Female_{ia} + Head_{ia} + \delta_{sc} + \mu_{ia}
\end{aligned}
$$

where *i* indexes individuals, *a* the animateurs, and *sc* the stratification cell. Y_{ia} is the outcome variable. FMP_a and $FMP\&CASH_a$ are indicator variables for the FMP group and the FMP + Cash group, respectively. $Female_{ia}$, $Male_{ia}$, $Head_{ia}$, and $Non\; Head_{ia}$ are indicator variables for each of those categories. The regression is specified in such a way that $\beta_1$through β_8 represent the treatment effect for each of the subgroups (female heads and non-heads, male heads and non-heads) relative the comparison group of males who are not household heads. δ_{sc} are the stratification cell fixed effects. Standard errors are clustered by *animateur*.

For the regression analysis we create slightly different versions of the outcomes than those presented in Tables 2 and 3. First, for the questions on activities, we want to preserve the full information collected in the question regarding the identity of the decision maker and the level of say that they have. We use a method developed in Heath et al. (2020), which involves the creation of two binary variables based on the response categories. In this case there is an indicator variable that is equal to one for all individuals who have any say in the decision, and

a second variable that is equal to one for those who have equal or more than equal say in the decision. We then create an index, standardized against the control group, of those two indicator variables. We then create an index of these activity-level indices across all five activities, using the method described in Anderson (2008) and Schwab et al. (2020). Our main outcome variables, then, are this activities index, the proportion of crop decisions engaged in, the proportion of livestock decisions engaged in (follow-up 2 only), and an aggregate index of these three variables.[16] The variable construction is also detailed in Appendix B.

B. Malawi

In Malawi, we similarly use ordinary least squares to estimate the impact of the program on decision making outcomes. We first examine the impact of the transfer treatment using the following specification, run separately at follow-up 1 and follow-up 2 in a sample of all adults 18 and over in the surveyed households:

$$
\begin{aligned}
Y_{hj} = \alpha &+ \beta_1\, Transfer\ \ Only_j\ X\ Female_{ij}\ X\ Nasfam_{ij} \\
&+ \beta_2 IntExt\ Only_j\ X\ Female_{ij}\ X\ Nasfam_{ij} \\
&+ \beta_3 Both_j\ X\ Female_{ij}\ X\ Nasfam_{ij} \\
&+ \beta_4\, Transfer\ \ Only_j\ X\ Female_{ij}\ X\ Non\ Nasfam_{ij} \\
&+ \beta_5 IntExt\ Only_j\ X\ Female_{ij}\ X\ Non\ Nasfam_{ij} \\
&+ \beta_6 Both_j\ X\ Female_{ij}\ X\ Non\ Nasfam_{ij} \\
&+ \beta_7\, Transfer\ \ Only_j\ X\ Male_{ij}\ X\ Nasfam_{ij} \\
&+ \beta_8 IntExt\ Only_j\ X\ Male_{ij}\ X\ Nasfam_{ij} + \beta_9 Both_j\ X\ Male_{ij}\ X\ Nasfam_{ij} \\
&+ \beta_{10}\, Transfer\ \ Only_j\ X\ Male_{ij}\ X\ Non\ Nasfam_{ij} \\
&+ \beta_{11} IntExt\ Only_j\ X\ Male_{ij}\ X\ Non\ Nasfam_{ij} \\
&+ \beta_{12} Both_j\ X\ Male_{ij}\ X\ Non\ Nasfam_{ij} + Female_{ia} + Nasfam_{ia} + \delta_{sc} \\
&+ \mu_{ia}
\end{aligned}
$$

where Y_{ij} is a measure of decision making for individual i in farmer group j. $Transfer\ \ Only_j$, $IntExt\ Only_j$, and $Both_j$ are indicators for households that received only a transfer, only intensive extension, or both interventions respectively. $Female_{ij}$, $Male_{ij}$, $Head_{ij}$, and $Non\ Head_{ij}$ are indicator variables for each of those

[16] Recall that we do not have information about who has the most say for the crop and livestock questions.

categories. Parallel to the regressions for Senegal, the coefficients β_1 through β_{12} represent the treatment effect for each of the subgroups (female NASFAM members and non-members, male NASFAM members and non-members) relative the comparison group of males who are not NASFAM members. δ_{sc} represents stratification cell fixed effects. Standard errors are clustered by farmer club.[17]

5. Results

A. Senegal

We begin by examining the impact of the treatments in the Senegal program on decision- making in participant households. Table 4 shows the results at midline and Table 5 shows the results at endline. The outcome variables are the standardized index of decision-making over activities, the proportion of crop decisions made by the individual, and the overall decision-making index. The regressions for each separate activity category are shown in Appendix Tables C1 (midline) and C2 (endline).

At midline (Table 4), there is no evidence that receiving the FMP only had an impact on any of the variables considered for any group of individuals considered (rows 1, 3, 5, and 7); none of the coefficients are statistically significant for the FMP group and their magnitudes are all relatively small. The coefficients in the FMP + Cash group (rows 2, 4, 6, and 8) are also statistically insignificant, with two exceptions: there are negative coefficients on the impact of the FMP + Cash treatment for non-head females on the proportion of crops for which they are decision makers, and a negative coefficient on the overall decision-making index for non-head males. However, given the overall small sample size in the midline and lack of a robust pattern, not much should be read into these results.

In the endline sample (Table 5), the sample size is larger and therefore statistical power to detect differences is improved. When considering the FMP on

[17] The intensive extension treatment indicator used here refers only to the extension treatment that was administered in year 1. Thus, the follow-up 2 regressions only additionally control for the intensive extension treatment assignment for year 2 though it is not a parameter of interest in our current analysis.

its own, we note some statistically significant coefficients. First in row 1, the impact of the FMP for female heads is negative and large, and marginally statistically significant for the activities index and the overall decision-making index. The coefficients are also negative and relatively large for the crop and livestock measures, but not statistically significant. This result suggests that in households where the FMP was administered, female heads saw their decision-making power *reduced* after two years, relative to males who were not the household head in the comparison group. However, these coefficients are only statistically significant at the 10 percent level. Conversely, we note that male heads who received the FMP (row 5) show increased decision-making power in both indices of 0.19 and 0.21 standard deviations, and an increase 6 percentage points in the proportion of livestock decisions engaged in, all significant at the five percent level. The coefficients for male and female non-heads are close to zero and not statistically significant. While these results are somewhat difficult to parse, they do suggest that a program that intended to increase joint decision making in the family had the effect of reducing the power of female heads and increasing the already substantial power of male heads.

Examining the impact of the FMP+Cash treatment shows that male heads (row 6) similarly see an increase in their decision-making power, with coefficients of 0.16 standard deviations for both indices, significant at the 10 percent level. Conversely, we note that the estimated coefficients on the same variables for male non-heads are negative and statistically significant; the decision-making indices for male non-heads in the FMP+Cash treatment fall by approximately 0.13 standard deviations, significant at the 10 percent level. There are no statistically significant results for women for the FMP+Cash treatment. Though the results are perhaps only suggestive, they suggest that males that receive the transfer (household heads) increase their decision-making power two years later, while men who do not receive the transfer lose power. However, given the pattern of results for those that receive the FMP only, it is not possible to definitively separate the effects of the two interventions.

B. Malawi

We next turn to the impact of the Malawi program on similar decision-making measures for the first follow-up (Table 6) and the second follow-up (Table 7).[18] For Malawi there are two additional outcomes: the proportion of inputs and the proportion of agricultural practices the individual participated in decisions about.

In the first follow-up, we note that there is very little impact of the any of the interventions on women, whether NASFAM members or not (rows 1 through 6). The only statistically significant coefficient estimates of note are among non-NASFAM members who received the intensive extension; the estimates are negative for the activities index, the proportion livestock variable, and the overall index, all significant at the 10 percent level. The other three coefficient estimates are also negative, though not statistically significant. The reductions may be due to decision-making power consolidating with the household member that directly participated in the intensive extension program, or alternatively may be related to the negative impact the intensive extension alone had on production and consumption (Ambler, de Brauw, and Godlonton 2023). Importantly, there is no robust evidence that women who received the transfers increased their decision-making power. The coefficients in rows 1 and 3 are positive, but if there is a true impact, there is not enough statistical power to detect it in this sample.

Examining the impact of the interventions on men in the first follow-up shows a different pattern of results pattern. NASFAM members, who directly participated in the interventions, who either only received the transfer (row 7) or both the transfer and intensive extension (row 9) increased their decision-making power as measured by the activities index, significant at the 5 percent level. Conversely, we see that men who are not NASFAM members experience the opposite pattern. For the transfer group (row 10) and the group that received both interventions (row 12), we estimate statistically significant, negative coefficients on the activities index, the proportion of livestock, the proportion of inputs, and the overall decision-making index. It should be noted that while the coefficient estimates for the intensive extension only

[18] Results for individual activity categories are presented in Appendix Tables C3 and C4.

group are not statistically significant, they are similar in size and direction for both male NASFAM members and non-members, raising the question of whether the impacts on decision making are driven by the transfers, or by general participation in the NASFAM program.

We next turn to the results from the second follow-up survey (Table 7). Recall that transfers were given out only in the first year and the intensive extension was re-randomized in year 2. These specifications use the first-year randomization as the intensive extension group. First, we note that among female NASFAM members, the results patterns are different from the first follow-up for female NASFAM members (row 1 through 3). We observe positive, statistically significant coefficient estimates for both transfer treatments (rows 1 and 3) on the proportion of livestock, proportion of inputs, and overall decision-making index variables. The intensive extension only (row 2) also has positive coefficients across the board, but is only statistically significant for the proportion of livestock variable. There is no clear pattern of results for females who are non-NASFAM members, nor is there continued evidence of reductions in decision-making power associated with the intensive extension only treatment in the second follow-up.

In contrast, the pattern for men tracks closely with the results from the first follow-up. Among male NASFAM members, we find statistically significant increases in decision-making power for the activities index, the proportion of livestock, and the overall decision-making index for all three treatment groups (rows 7, 8, and 9). For men who are not NASFAM members, we find reductions in decision-making power for both transfer groups (rows 10 and 12) for the activities index, and for the overall index for the group that received both transfers and extension (row 12). However, the coefficient in row 10 for the those the received the transfer only is also negative and similar in magnitude to the coefficient for the group receiving both interventions. For the non-NASFAM member men however there is little evidence that the intensive extension alone worked to reduce their decision-making power.

6. Summary

In this paper, we examine the impact of two linked transfer and agricultural assistance programs on household decision making, conducted in Senegal and Malawi. Departing from a growing literature that examines the impact of longer-term transfers on decision-making, we study a one season transfer at the end of the season in which it was given and again one year later. Conceptually, these transfers can impact decision-making power if the recipient has control over the transfer itself in the short term, or if the transfer results in increased income over the longer term which increases the bargaining power of the recipient. The training elements of these programs, namely farm management planning and intensive extension services, could also impact decision-making through the channels of increased income (which we do not find), increased family participation in decisions (promoted by the Senegal program), changes in family norms or roles driven by participation in the program, or increased skills that lead to higher levels of income control.

In Senegal, the results suggest that male heads, already the most powerful household members, benefitted the most from the program in terms of decision-making power, while other males in households receiving transfers experienced reductions in their decision-making power. While the heads benefitted from both the FMP only and the FMP+Cash, negative effects for other men in the household were observed only among the FMP+Cash group. Though we cannot completely differentiate the effects, these results suggest that the link between the program and decision making is not driven by the transfer only but by program participation in general, relative to the control group. However, where the program sought to increase participation in household decision making, we find that the implementation seems to have had the opposite effect, though this finding may be program specific. We find no clear effects at all among women, whether the household head or not.

In Malawi we also find most results concentrated among men. At both follow-up 1 and follow-up 2 we find evidence that decision-making power increased for

men who are NASFAM members and decreased for men who are not NASFAM members. This is true for both groups that received transfers, and suggestive for those that only received the intensive extension. The fact that these results persist to the second follow-up, more than a year after the transfers are distributed, is not consistent with our initial hypotheses, because receiving the transfers alone did not result in large changes in household production or consumption that could have shifted bargaining power. Rather these results, together with the impacts of the intensive extension alone, suggest that it is participation in the interventions that has, for men, shifted household norms towards decision making power being concentrated with the transfer recipient.

Summarizing these findings, in combination they demonstrate that the strongest impacts of these programs are concentrated among men. In general, the literature has focused on the potential of transfers and other programs to increase *women's* decision-making power. While that is undeniably important, this study shows that programs can have unintended consequences, namely reducing the decision-making power of some men in the household, while increasing the decision-making power of male recipients. While 96% of male NASFAM members are household heads, only 56% of male non-NASFAM members are heads, and most others (39%) are sons of the heads. The NASFAM members are 41 years old on average and the non-NASFAM members are 35. Essentially, the men whose decision-making power is reduced may be household heads whose wives are NASFAM members and receive the program benefits, or they are sons whose fathers (or mothers) are the NASFAM members.

This study has examined the impact of a program offering both transfers and services on decision making, across two countries. Though results are somewhat noisy we generally find that program recipients may experience increased decision-making power, while those that do not receive the program see their decision-making power fall. Despite a focus on women in most of the literature, these patterns are most pronounced for men in both countries. This suggests a larger focus on unintended gender dynamics when designing programming, so as to ensure that those who are already relatively disempowered, like younger men, are not further disempowered by the program.

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Table 1: Baseline summary statistics

	Senegal		*Malawi*	
	Mean	Number of observations	Mean	Number of observations
	(1)	(2)	(3)	(4)
Household head is female	0.12	600	0.14	1,185
Age of household head	53.09	598	44.34	1,183
Household head is polygamous	0.42	600	0.10	1,185
Household head has at least some education	0.33	600	0.86	1,185
Household size	16.54	600	5.55	1,187
Number of crops grown	3.21	600	4.54	1,187
Gross value of agricultural output (USD)	1,461.48	600	600.12	1,187
Gross value of agricultural output per hectare (USD)	212.94	599	128.28	1,182
Tropical livestock units	3.57	600	0.76	1,186
Total value of livestock owned (USD)	2,270.71	600	196.43	1,187

Notes: Authors' calculations from the Senegal baseline BAA and the Malawi baseline survey.

Table 2: Individual Level Decision-making variables, Senegal

	Women		*Men*	
	Heads	Non heads	Heads	Non heads
	(1)	(2)	(3)	(4)
Midline				
About day-to-day household needs	0.73	0.03	0.92	0.10
About large, unusual purchases	0.77	0.02	0.94	0.10
About decisions about where/if children go to schoo	0.71	0.03	0.89	0.10
About who is allowed to live/be part of household	0.82	0.02	0.92	0.07
About HH investment in agriculture and livestock	0.77	0.02	0.94	0.10
Proportion of activities	0.76	0.02	0.92	0.09
Proportion of activities with most/equal say	0.72	0.01	0.89	0.06
Proportion of crops	0.71	0.04	0.88	0.05
Proportion of livestock				
Number of observations	22	984	217	809
Endline				
About day-to-day household needs	0.68	0.05	0.96	0.10
About large, unusual purchases	0.68	0.03	0.95	0.11
About decisions about where/if children go to schoo	0.64	0.04	0.96	0.10
About who is allowed to live/be part of household	0.63	0.04	0.94	0.10
About HH investment in agriculture and livestock	0.64	0.04	0.97	0.11
Proportion of activities	0.66	0.04	0.96	0.10
Proportion of activities with most/equal say	0.62	0.01	0.94	0.05
Proportion of crops	0.71	0.05	0.90	0.09
Proportion of livestock	0.66	0.05	0.92	0.10
Number of observations	73	2,309	523	1,805

Notes: Author's calculation from Senegal midline and endline surveys.

Table 3: Individual Level Decision-making variables, Malawi

	Women		*Men*	
	Nasfam members	Non Nasfam members	Nasfam members	Non Nasfam members
	(1)	(2)	(3)	(4)
Follow-up 1				
About day-to-day household needs	0.76	0.35	0.98	0.48
About large, unusual purchases	0.71	0.29	0.98	0.50
About decisions about where/if children go to school	0.79	0.35	0.96	0.49
About who is allowed to live/be part of household	0.78	0.36	0.96	0.48
About HH investment in agriculture and livestock	0.77	0.35	0.97	0.50
Proportion of activities	0.76	0.34	0.97	0.49
Proportion of activities with most/equal say	0.52	0.20	0.96	0.48
Proportion of crops	0.89	0.40	0.97	0.49
Proportion of livestock	0.87	0.39	0.96	0.49
Proportion of ag. inputs	0.85	0.36	0.98	0.49
Proportion of ag. technologies	0.86	0.31	0.98	0.48
Number of observations	718	735	425	1,023
Follow-up 2				
About day-to-day household needs	0.63	0.21	0.98	0.46
About large, unusual purchases	0.52	0.19	0.98	0.47
About decisions about where/if children go to school	0.69	0.27	0.97	0.45
About who is allowed to live/be part of household	0.76	0.30	0.96	0.44
About HH investment in agriculture and livestock	0.73	0.27	0.98	0.45
Proportion of activities	0.66	0.25	0.97	0.45
Proportion of activities with most/equal say	0.49	0.16	0.97	0.44
Proportion of crops	0.84	0.32	0.93	0.38
Proportion of livestock	0.77	0.31	0.93	0.40
Proportion of ag. inputs	0.79	0.29	0.97	0.45
Proportion of ag. technologies	0.82	0.22	0.98	0.41
Number of observations	720	757	399	1,075

Notes: Author's calculation from the Malawi follow-up 1, and follow-2 surveys.

Table 4: Impact of FMP and Cash treatments on decision-making, Senegal midline

		(1) DM in activities index	(2) Proportion of crops	(3) Overall DM index
(1)	FMP X Female X Head	-0.1159	-0.0771	-0.0206
		(0.5077)	(0.1009)	(0.4190)
(2)	FMP + Cash X Female X Head	0.2452	-0.1384	0.5918
		(0.8839)	(0.1787)	(0.8260)
(3)	FMP X Female X Non head	-0.0232	-0.0077	-0.0145
		-0.0328	(0.0167)	(0.0345)
(4)	FMP + Cash X Female X Non head	0.0056	-0.0281**	0.0433
		(0.0312)	(0.0138)	(0.0345)
(5)	FMP X Male X Head	-0.0017	0.0327	-0.0452
		(0.1744)	(0.0507)	(0.2021)
(6)	FMP + Cash X Male X Head	-0.0316	0.0456	-0.094
		(0.1673)	(0.0460)	(0.1506)
(7)	FMP X Male X Not head	-0.0396	0.0064	-0.0504
		(0.0927)	(0.0194)	(0.0897)
(8)	FMP + Cash X Male X Not head	-0.1046	0.0091	-0.1246*
		(0.0713)	(0.0176)	(0.0725)
	Female	-0.2773***	0.0048	-0.3001***
		(0.0681)	(0.0208)	(0.0699)
	Household head	2.1737***	0.8018***	1.2387***
		(0.1573)	(0.0397)	(0.1420)
	Mean: Comparison group, male, not head	0	0.039	0
	Observations	2,032	2,025	2,032
	R-squared	0.516	0.694	0.287

Notes: Robust standard errors in parentheses are clustered by animateur. All regressions include stratification cell fixed effects. Sample is all individuals 18+ listed in survey.

Table 5: Impact of FMP and Cash treatments on decision-making, Senegal endline

		(1) DM in activities index	(2) Proportion of crops	(3) Proportion of livestock	(4) Overall DM index
(1)	FMP X Female X Head	-0.7964*	-0.1323	-0.1365	-0.6773*
		(0.4265)	(0.1042)	(0.1101)	(0.3748)
(2)	FMP + Cash X Female X Head	-0.433	-0.1087	-0.1258	-0.486
		(0.3102)	(0.0808)	(0.0917)	(0.3013)
(3)	FMP X Female X Non head	0.0123	0.0066	0.0059	0.021
		(0.0251)	(0.0121)	(0.0120)	(0.0317)
(4)	FMP + Cash X Female X Non head	-0.0041	-0.0017	-0.0008	-0.0002
		(0.0281)	(0.0090)	(0.0107)	(0.0296)
(5)	FMP X Male X Head	0.1951**	0.0369	0.0600**	0.2109**
		(0.0966)	(0.0290)	(0.0266)	(0.0899)
(6)	FMP + Cash X Male X Head	0.1675*	0.0211	0.0387	0.1602*
		(0.0885)	(0.0280)	(0.0285)	(0.0914)
(7)	FMP X Male X Not head	-0.0491	0.0092	-0.0049	-0.0469
		(0.0899)	(0.0192)	(0.0191)	(0.0829)
(8)	FMP + Cash X Male X Not head	-0.1290*	-0.0117	-0.0251	-0.1345*
		(0.0723)	(0.0166)	(0.0186)	(0.0779)
	Female	-0.3219***	-0.0448**	-0.0608***	-0.3154***
		(0.0750)	(0.0174)	(0.0209)	(0.0813)
	Household head	2.9323***	0.7790***	0.7625***	3.1411***
		(0.1141)	(0.0262)	(0.0288)	(0.1131)
	Control mean	0	0.089	0.104	0
	Observations	4710	4705	4586	4710
	R-squared	0.664	0.653	0.641	0.714

Notes: Robust standard errors in parentheses are clustered by animateur. All regressions include stratification cell fixed effects. Sample is all individuals 18+ listed in survey.

Table 6: Impact of transfer and extension reatments on decision-making, Malawi follow-up 1

		(1) DM in activities index	(2) Proportion of crops	(3) Proportion of livestock	(4) Proportion of inputs	(5) Proportion of practices	(6) Overall DM index
(1)	Transfer only X Female X Nasfam	0.0972	0.0242	0.0177	0.0375	0.0729	0.089
		(0.1071)	(0.0356)	(0.0392)	(0.0420)	(0.0457)	(0.0915)
(2)	IntExt only X Female X Nasfam	-0.1008	0.0111	0.0158	0.0297	0.0277	-0.0325
		(0.1269)	(0.0395)	(0.0426)	(0.0434)	(0.0483)	(0.0992)
(3)	Both X Female X Nasfam	0.0602	0.0466	0.0528	0.0403	0.0696	0.0884
		(0.1042)	(0.0325)	(0.0370)	(0.0411)	(0.0426)	(0.0876)
(4)	Transfer only X Female X Not Nasfam	-0.0074	0.0051	0.0132	-0.0371	-0.0232	-0.0032
		(0.0757)	(0.0528)	(0.0506)	(0.0476)	(0.0472)	(0.0851)
(5)	IntExt only X Female X Not Nasfam	-0.1446*	-0.0751	-0.0993*	-0.0591	-0.0648	-0.1592*
		(0.0799)	(0.0595)	(0.0583)	(0.0604)	(0.0522)	(0.0942)
(6)	Both X Female X Not Nasfam	0.0209	-0.0087	-0.0113	-0.0235	0.0064	0.0028
		(0.0805)	(0.0536)	(0.0512)	(0.0518)	(0.0536)	(0.0920)
(7)	Transfer only X Male X Nasfam	0.1279**	-0.0134	-0.0055	0.0025	-0.0222	0.057
		(0.0596)	(0.0339)	(0.0347)	(0.0315)	(0.0325)	(0.0609)
(8)	IntExt only X Male X Nasfam	0.1004	-0.0161	-0.0086	-0.0189	-0.0297	0.0383
		(0.0761)	(0.0433)	(0.0494)	(0.0473)	(0.0434)	(0.0806)
(9)	Both X Male X Nasfam	0.1555**	-0.0183	-0.027	0.0173	0.0051	0.0671
		(0.0673)	(0.0374)	(0.0375)	(0.0385)	(0.0349)	(0.0682)
(10)	Transfer only X Male X Not Nasfam	-0.2030*	-0.057	-0.0780*	-0.0806*	-0.0632	-0.1754*
		(0.1071)	(0.0438)	(0.0422)	(0.0472)	(0.0487)	(0.0989)
(11)	IntExt only X Male X Not Nasfam	-0.1975	-0.0865	-0.0782	-0.1161*	-0.0904	-0.1917
		(0.1403)	(0.0615)	(0.0612)	(0.0645)	(0.0657)	(0.1352)
(12)	Both X Male X Not Nasfam	-0.1972**	-0.0576	-0.0574*	-0.0647*	-0.0537	-0.1613**
		(0.0883)	(0.0352)	(0.0336)	(0.0378)	(0.0386)	(0.0799)
	Female	-0.5937***	-0.1183***	-0.1340***	-0.1634***	-0.1931***	-0.4609***
		(0.0821)	(0.0395)	(0.0365)	(0.0413)	(0.0450)	(0.0793)
	Nasfam member	0.7162***	0.4359***	0.4192***	0.4162***	0.4668***	0.8266***
		(0.0938)	(0.0360)	(0.0358)	(0.0372)	(0.0391)	(0.0830)
	Control mean	0	0.545	0.556	0.563	0.543	0
	Observations	2901	2899	2854	2899	2899	2901
	R-squared	0.263	0.268	0.25	0.264	0.311	0.284

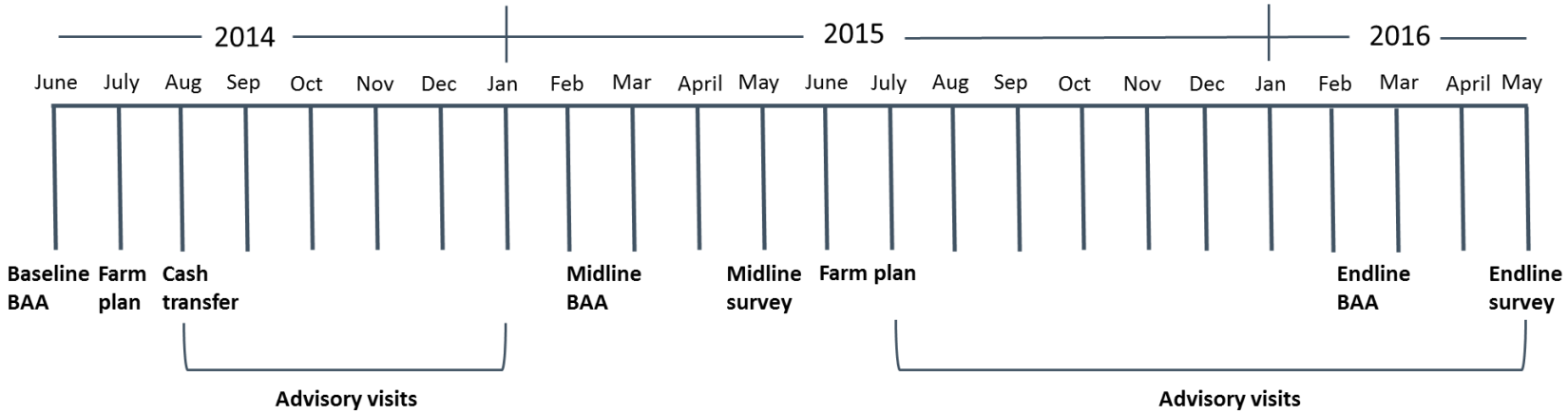
Notes: Robust standard errors in parentheses are clustered by farmer club. All regressions include stratification cell fixed effects. Sample is all individuals 18+ listed in survey.

Table 7: Impact of transfer and extension reatments on decision-making, Malawi follow-up 2

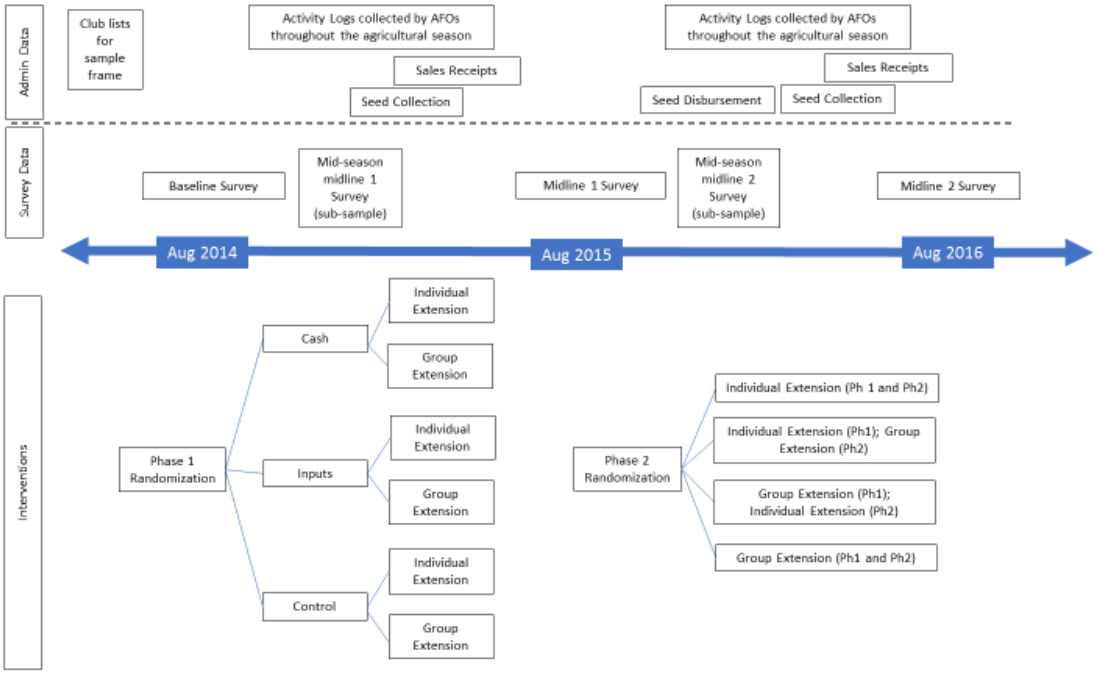
		(1) DM in activities index	(2) Proportion of crops	(3) Proportion of livestock	(4) Proportion of inputs	(5) Proportion of practices	(6) Overall DM index
(1)	Transfer only X Female X Nasfam	0.0617	0.0207	0.0866*	0.0750*	0.0327	0.1414*
		(0.0892)	(0.0385)	(0.0473)	(0.0432)	(0.0411)	(0.0852)
(2)	IntExt only X Female X Nasfam	0.0442	0.0353	0.1682***	0.0341	0.0546	0.1344
		(0.1058)	(0.0418)	(0.0625)	(0.0536)	(0.0435)	(0.1032)
(3)	Both X Female X Nasfam	0.0299	-0.0105	0.0856**	0.0661**	0.0325	0.1321*
		(0.0747)	(0.0304)	(0.0424)	(0.0331)	(0.0336)	(0.0700)
(4)	Transfer only X Female X Not Nasfam	0.0611	0.0448	0.062	0.0135	0.0395	0.0709
		(0.0787)	(0.0556)	(0.0562)	(0.0545)	(0.0467)	(0.0898)
(5)	IntExt only X Female X Not Nasfam	0.0447	-0.0036	0.0183	0.0413	-0.0091	0.0774
		(0.1055)	(0.0620)	(0.0619)	(0.0664)	(0.0494)	(0.1113)
(6)	Both X Female X Not Nasfam	-0.022	-0.0681	-0.0422	-0.0703	-0.0612	-0.0602
		(0.0855)	(0.0565)	(0.0530)	(0.0521)	(0.0463)	(0.0875)
(7)	Transfer only X Male X Nasfam	0.2040***	0.0289	0.0934**	0.0542	0.0298	0.1862**
		(0.0713)	(0.0450)	(0.0438)	(0.0411)	(0.0360)	(0.0755)
(8)	IntExt only X Male X Nasfam	0.2073***	0.0773	0.1051**	0.0556	0.0197	0.1644**
		(0.0734)	(0.0503)	(0.0523)	(0.0472)	(0.0403)	(0.0812)
(9)	Both X Male X Nasfam	0.2069***	0.0168	0.0891**	0.0304	0.0151	0.1684**
		(0.0686)	(0.0435)	(0.0399)	(0.0415)	(0.0363)	(0.0715)
(10)	Transfer only X Male X Not Nasfam	-0.1663*	-0.0086	-0.0314	-0.0537	-0.009	-0.1275
		(0.0962)	(0.0456)	(0.0466)	(0.0498)	(0.0475)	(0.0958)
(11)	IntExt only X Male X Not Nasfam	-0.0474	0.0664	-0.0116	-0.022	0.0044	-0.073
		(0.1264)	(0.0542)	(0.0603)	(0.0632)	(0.0597)	(0.1276)
(12)	Both X Male X Not Nasfam	-0.1519**	0.0038	-0.0449	-0.0445	-0.011	-0.1338*
		(0.0732)	(0.0368)	(0.0390)	(0.0361)	(0.0378)	(0.0711)
	Female	-0.6688***	-0.0464	-0.1412***	-0.1845***	-0.1818***	-0.5536***
		(0.0633)	(0.0450)	(0.0471)	(0.0428)	(0.0371)	(0.0704)
	Nasfam member	0.7912***	0.5094***	0.3962***	0.4322***	0.5414***	0.8036***
		(0.0787)	(0.0501)	(0.0512)	(0.0454)	(0.0435)	(0.0835)
	Control mean	0	0.381	0.428	0.495	0.444	0
	Observations	2682	2682	2546	2682	2682	2682
	R-squared	0.291	0.345	0.267	0.285	0.374	0.298

Notes: Robust standard errors in parentheses are clustered by farmer club. All regressions include stratification cell fixed effects. Follow-up 2 regressions control for the phase 2 extension treatment. Sample is all individuals 18+ listed in survey.

Appendix Figure A1: Project timeline: Senegal



Appendix Figure A2: Project timeline: Malawi



Appendix B: Outcome variable construction

A. Senegal

Decision making about activities:

At midline and endline respondents were asked to select, from the household roster, the household members who participated in decisions about the following activities:

- Day-to-day household needs
- Large, unusual purchases
- Decisions about where/if children go to school (asked only if household included school-age children)
- Who is allowed to live in/be part of household
- Household investment in agriculture and livestock

Respondents could list up to five household members. If more than one member was listed, respondents were asked whether all decision makers have equal say in this decision or if someone has more say than others. If someone has more say, they are asked to list up to two household members with the most say.

To preserve the full information collected in the question regarding the identity of the decision maker and the level of say that they have we use a method developed in Heath et al. (2020), which involves the creation of two binary variables based on the response categories. In this case there is an indicator variable that is equal to one for all individuals who have any say in the decision, and a second variable that is equal to one for those who have equal or more than equal say in the decision. We then create an index, standardized against the control group, of those two indicator variables.

We also then create an index of these activity-level indices across all five activities, using the method described in Anderson (2008) and Schwab et al. (2020).

Decision making about crops:

At midline and endline, respondents were asked, for each crop that they report planting, to select, from the household roster, the household members who made decisions about that crop. They could list up to two household members. The text of the questions was as follows:

> *Which household member(s) makes decisions about […]? (This includes all decisions including those related to planting, inputs, and sales).*

From these crop-level questions, we create the following variable:

1. Across all crops: the proportion of crops for which that household member is listed as a decision maker.

Decision making about livestock:

At endline only, respondents were asked, for each type of animal that they report owning, to select, from the household roster, the household members who made decisions about that type of animal. They could list up to two household members. The text of the questions was as follows:

> *Which household members makes decisions about […]? (This includes all decisions, including purchase, care, and sales).*

From these animal type-level questions, we create the following variables:

1. Across all animal types owned: the proportion of animal types for which that household member is listed as a decision maker.

B. Malawi

Decision making about activities (baseline):

At baseline respondents were asked to select, from the household roster, the household members who participated in decisions about the following activities:

- Day-to-day household needs
- Large, unusual purchases
- Decisions about where/if children go to school (asked only if household included school-age children)
- Who is allowed to live in/be part of household

Respondents could list up to two household members.

Decision making about activities (follow-up 1 and follow-up 2):

In both follow-ups respondents were asked to select, from the household roster, the household members who participated in decisions about the following activities:

- Day-to-day household needs
- Large, unusual purchases
- Decisions about where/if children go to school (asked only if household included school-age children)
- Who is allowed to live in/be part of household
- Household investment in agriculture and livestock

Respondents could list up to three household members. If more than one member was listed, respondents were asked whether all decision makers have equal say in this decision or if someone has more say than others. If someone has more say, they are asked to list up to two household members with the most say.

To preserve the full information collected in the question regarding the identity of the decision maker and the level of say that they have we use a method developed in Heath et al. (2020), which involves the creation of two binary variables based on the response categories. In this case there is an indicator variable that is equal to one for all individuals who have any say in the decision, and a second variable that is equal to one for those who have equal or more than equal say in the decision. We then create an index, standardized against the control group, of those two indicator variables.

We also then create an index of these activity-level indices across all five activities, using the method described in Anderson (2008) and Schwab et al. (2020).

Decision making about crops:

At follow-up 1 and follow-up 2 only,[1] respondents were asked, for each crop, to select, from the household roster, the household members who made decisions about that crop. They could list up to two household members. The text of the questions was as follows:

> *Which household member(s) makes decisions about […]? (This includes all decisions including those related to planting, inputs, and sales).*

From these crop-level questions, we create the following variable:

1. Across all crops: the proportion of crops for which that household member is listed as a decision maker.

Decision making about livestock:

At follow-up 1 and follow-up 2 only, respondents were asked, for each type of animal, to select, from the household roster, the household members who made decisions about that type of animal. They could list up to two household members. The text of the questions was as follows:

> *Which household members makes decisions about […]? (This includes all decisions, including purchase, care, and sales).*

From these animal type-level questions, we create the following variable:

1. Across all animal types: the proportion of animal types for which that household member is listed as a decision maker.

Decision making about agricultural inputs:

At baseline, follow-up 1, and follow-up 2, respondents were asked, for each input listed, to select, from the household roster, the household members who made

[1] These questions were asked in a different way at baseline, so we do not include them in our analyses.

decisions about that input. They could list up to two household members. The text of the questions was as follows:

Which household member(s) made decisions about using […]?

The inputs listed on the survey were: rent for horses/oxen for ploughing, seeds, fertilizer, manure, pesticides, hired labor for crop production, hired labor for livestock, and free response for other categories.

From these input-level questions, we create the following variable:

1. Across all inputs: the proportion of inputs for which that household member is listed as a decision maker.

Decision making about agricultural practices:

At follow-up 1 and follow-up 2 only,[2] respondents were asked, for each practice listed, to select, from the household roster, the household members who made decisions about that practice. They could list up to two household members. The text of the questions was as follows:

Which household member(s) made decisions about using […]?

The practices listed on the survey were: Basin planting, no till/minimum soil disturbance, crop cover/residue retention, use of box ridges, crop rotation, inter/mixed cropping with legume, one seed per station, agro-forestry, manure application, irrigation, two rows per ridge.

From these practice-level questions, we create the following variable:

1. Across all agricultural practices: the proportion of agricultural practices for which that household member is listed as a decision maker.

[2] This question was asked in a different way at baseline, so we do not use the baseline data.

Appendix Table C1: Impact of FMP and Cash treatments on decision-making, Senegal midline

	(1) Day-to-day hh expenditures	(2) Large, unusual purchases	(3) Where your children should go to school	(4) Who is allowed to live in the hh	(5) Investment in ag and livestock
FMP X Female X Head	0.2486	0.1579	0.3124	0.7819***	-0.052
	(0.4886)	(0.4833)	(0.4330)	(0.2349)	(0.4905)
FMP + Cash X Female X Head	0.0981	0.0127	-0.291	0.0088	-0.2573
	(0.6248)	(0.6233)	(0.6364)	(0.6993)	(0.6224)
FMP X Female X Non head	0.0197	-0.0267	0.0003	0.0461	0.0049
	(0.0503)	(0.0477)	(0.0384)	(0.0573)	(0.0381)
FMP + Cash X Female X Non heac	0.0017	-0.0102	0.0185	-0.015	0.0054
	(0.0461)	(0.0433)	(0.0364)	(0.0424)	(0.0346)
FMP X Male X Head	0.049	0.079	0.0176	0.0485	0.1234
	(0.2120)	(0.1842)	(0.1888)	(0.2236)	(0.1762)
FMP + Cash X Male X Head	0.092	0.0536	0.0631	0.1501	0.143
	(0.1858)	(0.1844)	(0.1888)	(0.2243)	(0.1732)
Transfer only X Male X Not head	-0.0145	-0.0165	-0.039	-0.0822	-0.0864
	(0.1122)	(0.1015)	(0.0989)	(0.1078)	(0.0872)
FMP + Cash X Male X Not head	-0.1272	-0.1337*	-0.1069	-0.0661	-0.1101
	(0.0790)	(0.0775)	(0.0749)	(0.0978)	(0.0692)
Female	-0.3002***	-0.2913***	-0.2955***	-0.2276**	-0.3257***
	(0.0905)	(0.0916)	(0.0734)	(0.1060)	(0.0774)
Household head	3.0651***	3.1370***	2.5817***	3.4625***	2.9687***
	(0.1868)	(0.1791)	(0.1702)	(0.2275)	(0.1722)
Control mean	0	0	0	0	0
Observations	2032	2032	1999	2032	2032
R-squared	0.635	0.669	0.582	0.678	0.676

Notes: Robust standard errors in parentheses are clustered by animateur. All regressions include stratification cell fixed effects. Sample is all individuals 18+ listed in survey. Dependent variables are standardized versions of continuous variables constructed as described in Appendix A.

Appendix Table C2: Impact of FMP and Cash treatments on decision-making, Senegal endline

	(1) Day-to-day hh expenditures	(2) Large, unusual purchases	(3) Where your children should go to school	(4) Who is allowed to live in the hh	(5) Investment in ag and livestock
FMP X Female X Head	-0.2782	-0.8500*	-0.4251	-0.7291	-0.8648*
	(0.3547)	(0.4340)	(0.4830)	(0.5251)	(0.4705)
FMP + Cash X Female X Head	-0.6745*	-0.3951	-0.9574**	-0.8759*	-0.7979**
	(0.3744)	(0.3286)	(0.4406)	(0.4445)	(0.3890)
FMP X Female X Non head	0.0415	0.0143	0.0343	0.0645	0.0715**
	(0.0369)	(0.0291)	(0.0325)	(0.0444)	(0.0357)
FMP + Cash X Female X Non head	0.0234	-0.0025	0.0008	0.0221	0.0317
	(0.0379)	(0.0295)	(0.0324)	(0.0392)	(0.0316)
FMP X Male X Head	0.2018	0.2000*	0.2056*	0.1411	0.1163
	(0.1225)	(0.1018)	(0.1212)	(0.1541)	(0.1130)
FMP + Cash X Male X Head	0.1569	0.1618	0.1891	0.1591	0.1582
	(0.1275)	(0.1062)	(0.1231)	(0.1476)	(0.1042)
Transfer only X Male X Not head	-0.0551	-0.0163	-0.0847	-0.0047	-0.0444
	(0.0829)	(0.0874)	(0.0832)	(0.0936)	(0.0973)
FMP + Cash X Male X Not head	-0.1015	-0.1139	-0.1007	-0.0538	-0.0935
	(0.0716)	(0.0718)	(0.0726)	(0.0806)	(0.0780)
Female	-0.2666***	-0.3031***	-0.2999***	-0.2672***	-0.3314***
	(0.0786)	(0.0771)	(0.0790)	(0.0908)	(0.0805)
Household head	3.5758***	3.2203***	3.4373***	3.8830***	3.4653***
	(0.1584)	(0.1238)	(0.1604)	(0.1765)	(0.1411)
Control mean	0	0	0	0	0
Observations	4710	4710	4669	4710	4710
R-squared	0.69	0.687	0.703	0.684	0.7

Notes: Robust standard errors in parentheses are clustered by animateur. All regressions include stratification cell fixed effects. Sample is all individuals 18+ listed in survey. Dependent variables are standardized versions of continuous variables constructed as described in Appendix A.

Appendix Table C3: Impact of transfer and extension reatments on decision-making, Malawi follow-up 1

	(1)	(2)	(3)	(4)	(5)
	Day-to-day hh expenditures	Large, unusual purchases	Where your children should go to school	Who is allowed to live in the hh	Investment in ag and livestock
Transfer only X Female X Nasfam	0.0945	0.0982	0.0803	0.0859	0.1039
	(0.1075)	(0.1018)	(0.1241)	(0.1179)	(0.1093)
IntExt only X Female X Nasfam	-0.1349	-0.0563	-0.0722	-0.113	-0.0267
	(0.1323)	(0.1157)	(0.1420)	(0.1330)	(0.1296)
Both X Female X Nasfam	0.0788	0.0181	0.0362	0.0368	0.1087
	(0.0933)	(0.1042)	(0.1224)	(0.1158)	(0.1124)
Transfer only X Female X Not Nasfam	0.0129	0.0328	-0.0598	-0.0064	-0.0302
	(0.0811)	(0.0785)	(0.0884)	(0.0861)	(0.0746)
IntExt only X Female X Not Nasfam	-0.1670**	-0.1126	-0.1411	-0.1586	-0.0279
	(0.0835)	(0.1009)	(0.0967)	(0.0985)	(0.1024)
Both X Female X Not Nasfam	0.0446	0.0531	-0.0798	0.016	0.0817
	(0.0842)	(0.0856)	(0.0960)	(0.0863)	(0.0809)
Transfer only X Male X Nasfam	0.1524**	0.1176*	0.1541**	0.0863	0.0893
	(0.0592)	(0.0656)	(0.0750)	(0.0714)	(0.0562)
IntExt only X Male X Nasfam	0.1031	0.0908	0.1988**	0.0718	0.0473
	(0.0765)	(0.0801)	(0.0771)	(0.0809)	(0.0764)
Both X Male X Nasfam	0.1863***	0.1557**	0.1279	0.1292*	0.1051
	(0.0703)	(0.0705)	(0.0830)	(0.0698)	(0.0756)
Transfer only X Male X Not Nasfam	-0.1996*	-0.1761*	-0.1741	-0.2001*	-0.2534**
	(0.1031)	(0.1048)	(0.1116)	(0.1138)	(0.1069)
IntExt only X Male X Not Nasfam	-0.1979	-0.1879	-0.1138	-0.2113	-0.2652**
	(0.1370)	(0.1381)	(0.1499)	(0.1436)	(0.1325)
Both X Male X Not Nasfam	-0.1925**	-0.2108**	-0.1883**	-0.1621*	-0.2298**
	(0.0839)	(0.0872)	(0.0934)	(0.0945)	(0.0896)
Female	-0.6001***	-0.7071***	-0.4825***	-0.5256***	-0.6447***
	(0.0775)	(0.0872)	(0.0918)	(0.0901)	(0.0849)
Nasfam member	0.6981***	0.6921***	0.6952***	0.7181***	0.6792***
	(0.0822)	(0.0914)	(0.1161)	(0.1090)	(0.0979)
Control mean	0	0	0	0	0
Observations	2901	2901	2774	2901	2901
R-squared	0.252	0.247	0.232	0.227	0.233

Notes: Robust standard errors in parentheses are clustered by farmer club. All regressions include stratification cell fixed effects. Sample is all individuals 18+ listed in survey. Dependent variables are standardized versions of continuous variables constructed as described in Appendix A.

Appendix Table C4: Impact of transfer and extension reatments on decision-making, Malawi follow-up 2

	(1)	(2)	(3)	(4)	(5)
	Day-to-day hh expenditures	Large, unusual purchases	Where your children should go to school	Who is allowed to live in the hh	Investment in ag and livestock
Transfer only X Female X Nasfam	0.0123	-0.0631	0.083	0.1057	0.1386
	(0.1133)	(0.1057)	(0.1000)	(0.0878)	(0.1000)
IntExt only X Female X Nasfam	0.2142*	0.0066	0.1038	-0.0742	-0.0047
	(0.1201)	(0.1241)	(0.1056)	(0.1203)	(0.1287)
Both X Female X Nasfam	0.0182	-0.0461	0.1052	0.0205	0.109
	(0.0953)	(0.0947)	(0.0792)	(0.0869)	(0.0796)
Transfer only X Female X Not Nasfam	-0.0058	0.0936	0.1011	0.0148	0.1063
	(0.0704)	(0.0638)	(0.0911)	(0.1102)	(0.0874)
IntExt only X Female X Not Nasfam	0.0913	0.1243	-0.0082	-0.0024	0.0439
	(0.1063)	(0.1100)	(0.1119)	(0.1345)	(0.1010)
Both X Female X Not Nasfam	0.0248	0.0787	-0.0876	-0.0808	-0.0191
	(0.0785)	(0.0793)	(0.0939)	(0.1145)	(0.0870)
Transfer only X Male X Nasfam	0.1892**	0.1866***	0.2854***	0.1426	0.1593**
	(0.0724)	(0.0648)	(0.0789)	(0.0947)	(0.0718)
IntExt only X Male X Nasfam	0.2176***	0.1988**	0.2218**	0.1640*	0.1360*
	(0.0741)	(0.0765)	(0.0954)	(0.0911)	(0.0778)
Both X Male X Nasfam	0.2112***	0.1642***	0.2488***	0.1751*	0.1630**
	(0.0646)	(0.0601)	(0.0772)	(0.0896)	(0.0670)
Transfer only X Male X Not Nasfam	-0.1746	-0.1802*	-0.0851	-0.1887**	-0.1581
	(0.1057)	(0.0957)	(0.0995)	(0.0910)	(0.0958)
IntExt only X Male X Not Nasfam	-0.128	-0.0889	-0.0081	-0.0319	-0.0219
	(0.1286)	(0.1306)	(0.1097)	(0.1270)	(0.1287)
Both X Male X Not Nasfam	-0.1590**	-0.1853**	-0.0748	-0.1382*	-0.1642**
	(0.0786)	(0.0790)	(0.0760)	(0.0709)	(0.0723)
Female	-0.7298***	-0.8744***	-0.5389***	-0.4701***	-0.6011***
	(0.0689)	(0.0723)	(0.0734)	(0.0878)	(0.0637)
Nasfam member	0.7301***	0.7196***	0.7111***	0.7619***	0.7954***
	(0.0858)	(0.0813)	(0.0860)	(0.0940)	(0.0827)
Control mean	0	0	0	0	0
Observations	2680	2682	2412	2682	2680
R-squared	0.272	0.272	0.245	0.239	0.253

Notes: Robust standard errors in parentheses are clustered by farmer club. All regressions include stratification cell fixed effects. Sample is all individuals 18+ listed in survey. Follow-up 2 regressions control for the phase 2 extension treatment. Dependent variables are standardized versions of continuous variables constructed as described in Appendix A.

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