Crowding-out or crowding-in? Effects of LEAP 1000 unconditional cash transfer program on household and community support among women in rural Ghana

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ABSTRACT

Social protection programs are not introduced in a vacuum and it is important to understand what effects such programs have on existing informal support networks of family, friends and community members. A social cash transfer may reduce receipt of informal financial support, which can water down part of the program's impact. However, cash transfers can also reduce barriers to social participation and enable participants to engage in reciprocal support systems. We use data from the quasi-experimental mixed method impact evaluation of Ghana's Livelihood Empowerment Against Poverty (LEAP) 1000 program, a social cash transfer program for pregnant women and mothers of children under one year living in poverty, to estimate program effects on social support and participation. Using a difference-in-differences approach we find that LEAP 1000 increases overall social support, as well as both emotional and instrumental support. In addition, program beneficiaries are more likely to participate in community groups. In in-depth interviews, participants confirmed increased support with descriptions of improved access to financial markets, such as borrowing money or contributing to local savings schemes, and strengthening of social participation in local groups and gatherings. Beneficiary women also highlighted reduced need for economic support and new opportunities to support others.

By creating opportunities for additional social support within the household and community, LEAP 1000 crowded-in support, rather than reducing existing sources of support or crowding-out support.

1. Introduction

Like many integrated social protection programs, LEAP 1000 is designed to decrease poverty and improve the resilience of vulnerable households (Ghana LEAP 1000 Evaluation Team, 2016). More specifically, the program focuses on the well-being of households with pregnant women and children below the age of one in order to reach children at early stages in their development. The program creates a reliable source of complementary income, alongside income from agricultural and non-agricultural livelihood activities, inter-person transfers (e.g. remittances, loans, gifts) and possibly other social protection programs. Earlier research on poor populations in rural Ghana showed that most households have an existing social network, who can help them in times of adverse events or to make ends meet on a regular basis. The majority of this social support came from family, friends, and relatives, who live inside the community. Social support networks beyond the community were considered weak and unreliable (Oxford Policy Management, 2013).

The dynamics of these social support networks and the support they provide may be affected when the government starts providing financial support. One theory (Barro, 1974; Becker, 1974) suggests that the formal organization of financial support by the government replaces or "crowds out" the informal support of friends, neighbors and acquaintances. This negative effect of a government intervention on social support may dampen the program's positive effects on individual and household wellbeing. However, cash transfers programs can also strengthen participants' social support networks by enabling them to be more cooperative

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towards community members, spend more time with people in their existing networks, provide more support to network members, and engage in new activities (Attanasio et al., 2009; Pavanello et al., 2016; Rock et al., 2016). The broadening of social support due government support is called a crowding-in effect. For cash transfers it is hypothesized to reinforce the expected program effect. The current literature is ambiguous on whether there is a crowding-out or crowding-in effect of cash transfer programs (Albarran & Attanasio, 2003; Angelucci et al., 2012). A limitation to the current literature is that few studies assess non-financial forms of support, such as instrumental or emotional support (Künemund & Rein, 1999). Lastly, to our knowledge no studies have used a mixed methods analysis to triangulate the change in women's perception of social support due to a cash transfer program.

In this study, we use a mixed-methods approach to assess the changes that occur in social support dynamics between beneficiaries and their personal and community networks as a result of the introduction of an unconditional cash transfer program. We seek to understand whether the changes indicate an overall crowding-out or crowding-in effect of social support. Moreover, we explore what kind of support is exchanged and the strength of the relationship between the participant and the support giver.

Overall, the findings show that LEAP 1000 does not decrease the access to social support, therefore refuting the crowding-out hypothesis. The increased group membership and participation in local ceremonies and activities suggests a potential crowding-in of new social support.

In the following section we present the theoretical framework of the study in which we draw upon sociological theories of social networks and support and economic theory of crowding out. Section 3 includes a description of the LEAP 1000 program. Section 4 covers the study design, sample and methods for the quantitative and qualitative analysis. Section 5 comprises the key results, followed by a discussion and concluding remarks.

2. Theoretical framework

Underlying this study is the sociological understanding of social support and the economic theory on crowding-out. Wills et al. (2012) broadly define social support as 'the extent of a person's social integration in the community (i.e., social network) and the resources provided by others that may be useful for helping to cope with problems (i.e., supportive functions).' The measurement of social support occurs often along the dimensions of functional and structural support. Examples of functional social support are informational (e.g. knowledge on nearby services), emotional (e.g. listening to someone's problems), and instrumental support (e.g. assisting with daily chores) (Taylor, 2007; Wellman & Wortley, 1990). In order to cope with a particular shock, different kinds of support might be needed. Structural social support focuses on the number of relationships and the interconnectedness among the members in the support network. Changes in social support can therefore occur by network members providing different types of support or by changing the number or type of relationships. Granovetter's 'Strength of Weak Ties' (1973) sets out the importance of having both close friends and family (strong ties) and acquaintances (weak ties) within a social network to promote social organization. Weak ties, in particular have the potential to form bridges between different networks and generate new sources of support. Following this theory, there will be a specific role for acquaintances and community members in creating new access points to social support (Pavanello et al., 2016; Vasilaky & Leonard, 2018).

The concept of crowding-out as developed though the seminal work of Becker (1974, 1988) and Barro (1974) suggests that newly introduced public transfers will replace private ones. Their theory is motivated by the assumption that the support giver does not gain any utility from their act, but the transfer takes place because it brings utility to the recipient. When a government program comes in and provides a similar transfer the support giver will lose the reason for providing support and stops doing so without changing the recipient's utility level. Alternative and more recent models, such as the exchange model (Arrondel & Masson, 2006; Cox, 1987), repeated games and investment in social capital (Ostrom & Ahn, 2009) or social norms (Cox & Jimenez, 1992; Sunstein, 1996) challenge the assumption of altruism and argue that support is given based on personal or future expectations. As an example to the exchange model, the empirical study by Bernheim et al. (1986) shows that support of children in the form of visits and phone calls to their parents can be seen as a trade for future inheritance. Accordingly, when people expect to gain from the support given, either in a tangible form or because it increases their own utility, a total crowding-out effect is unlikely to happen.

Crowding-out is a concern when it threatens to reduce or even nullify the net treatment effect of the government intervention (Amuedo-Dorantes & Juarez, 2015; Cox & Jimenez, 1992). In addition, crowding-out can have negative effects on the size of social support networks and bring already vulnerable population further into isolation (Samuel et al., 2018). However, it should be noted that crowding-out may reduce dependence on the household's direct environment (Ripstein, 2010) and may even empower the main recipient in the household (Bonilla et al., 2017).

The empirical evidence in low or middle-income countries is focused on Latin-America and mainly supports a partial crowding out effect (Albarran & Attanasio, 2003; Angelucci et al., 2012; Juarez, 2009; Teruel & Davis, 2000). Moreover, given the economic origin of crowding-out the majority of evidence concentrates on changes in monetary support. Non-monetary transfers, such as changes in emotional support, have rarely been assessed. Albarran and Attanasio (2003) find that there is a negative and significant effect on income out of private transfers for social cash transfer beneficiaries after the introduction of PROGRESA in Mexico. However, Teruel and David (2000) when evaluating PROGRESA with a broader defined treatment group, find no evidence for crowding-out of private monetary transfers and a minimal reduction in non-monetary transfers. Angelucci et al. (2012), who analyze the effect of the same program on an urban sample from 2002 to 2004, only find crowding-out of the number and value of in-kind transfers. Monetary transfers are not affected at a statistically significant level. In one of the few sub-Saharan African studies, Strobbe and Miller (2011) use a randomized experiment in Malawi and find that the unconditional cash transfer crowds out monetary and in-kind gifts and to some extent remittances but the program has no effect on informal loans. Regarding the magnitude of crowding-out, Jensen (2004) shows that an old age pension in South Africa decreases private transfers from children with 20–30 percent. However, an assessment of a monthly nutrition transfer for senior citizens in Mexico City found that total private transfers decrease with 86 cents for every peso transferred by the demogrant, suggesting a strong crowding out effect (Juarez, 2009). Lastly, Künemund and Rein (1999) find that in high-income countries with generous welfare systems old-age pension increases the instrumental support (i.e. help when ill, help with transportation, taking care of the house), elderly people received. They suggest that the additional resources received from the government created opportunities for the pensioners to give to their children, who in turn reciprocate with different types of support. While this study included only pensions in higher income countries, the findings indicate that besides (partial) crowding-out,

crowding-in is a possible outcome. It should be noted that these quantitative studies focus on the changes in transfers of support, but they are limited in scope to analyze why changes occur.

Qualitative studies have been focusing more on the crowding-in potential of cash transfer programs. Granlund and Hochfeld (2020) find that the Child Support Grant in South Africa helps to engage in reciprocal exchanges and enables occasional help to others. A multi-country study on the impact of cash transfers on livelihoods shows an increase in social cohesion, and uneven results with regards to expanding social networks (Fisher et al., 2017). The Ghana case study from this multi-country analysis, confirms an increase in self-esteem and beneficiary inclusion in the community. Beneficiaries are also able to (re-)enter contribution based social networks (Oxford Policy Management, 2013).

3. Ghana Livelihood Empowerment Against poverty (LEAP) 1000

Livelihood Empowerment Against Poverty (LEAP) Program is Ghana's flagship social protection program, which was introduced by the LEAP Management Secretariat and the Department of Social Welfare under the Ministry of Gender, Children and Social Protection (MoGCSP) in 2008. The program's objectives were twofold with a short-term goal of alleviating poverty and a long-term objective of human capital development. To achieve both objectives LEAP consisted of a bimonthly cash transfer and a health insurance fee waiver for extremely poor households in Ghana. LEAP eligibility included households in poverty with at least one household member being an orphan or vulnerable child, elderly above 65 without support, or severely disabled and unable to work. The initial design was successful in reaching these vulnerable populations, but the program missed other groups such as rural poor families with young children (de Groot et al., 2015; Ghana LEAP Evaluation Team, 2017). In 2015, the LEAP 1000 pilot was launched concentrating on a new category: pregnant women and children under the age of 12 months living in poor households. LEAP 1000 is designed to capture children at a key period of physical and mental development, namely during the first 1000 days of their lives. In alignment to the mainstream program enrolled households receive support for three years with the amount of the support depending on the number of eligible household members. The amount (GH₵76-106 per 2 months) is around 15% of pre-transfer household consumption (using self-reported amounts the distribution ranged from 30% of pre-transfer consumption for the poorest quartile to 6% for the richest quartile (Ghana LEAP 1000 Evaluation Team, 2016)).

The pilot for LEAP 1000 was rolled out in ten districts in the Northern parts of the country. Priority was given to the poorest communities which were not yet covered by mainstream LEAP. The pilot captured 6124 households after one year. By the end of 2015 LEAP 1000 was integrated into the LEAP program, whereby pregnant women and children below the age of one were considered as the fourth category in LEAP. The expanded eligibility criteria for LEAP was used in its nationwide scale up (Ghana LEAP 1000 Evaluation Team, n.d.).

4. Data and methodology

4.1. Study design

The impact evaluation of the Ghana LEAP 1000 used a longitudinal mixed methods design. The evaluation was carried out by UNICEF Office of Research in collaboration with the University of North Carolina at Chapel Hill and two local partners. The quantitative data collection was supported by the Institute of Statistical, Social and Economic Research (ISSER) and the qualitative evaluation was conducted in collaboration with the Navrongo Health Research Centre (NHRC). Ethical approval for the evaluation was granted by the Ethics Committee for the Humanities of the University of Ghana for the quantitative study and Institutional Review Boards of UNC and NHRC for the qualitative component. Baseline data was collected between July and October 2015 and was followed by a midline (September 2016) and endline evaluation (August 2017) for the qualitative component, and an endline survey (July-September 2017) for the quantitative data (Ghana LEAP 1000 Evaluation Team, n.d.). The panel data structure is essential to this study because it allows observation of changes in social support over time (Ruspini, 1999).

We integrate the quantitative and qualitative components using the dimensions of purpose, timing and weighting as described by Guest and Fleming (2014). The purpose of the mixed methods approach was to triangulate and deepen the interpretation and explanatory power of findings on the impact of the social cash transfer on social support (Johnson et al., 2007). With regards to timing, the data collection was conducted sequentially at baseline. Since the qualitative sample is embedded in the quantitative sample, the latter sample had to be confirmed before the participants for the in-depth interviews could be selected. At the endline survey the data collection occurred simultaneously. The mixed methods evaluation design weighted the qualitative and quantitative components equally, meaning that the methodological orientation did not prioritize on component over the other. Instead each approach concentrates on topics where there is a comparative advantage. The quantitative survey included measures of expenditures, livelihood activities, education and health, while the qualitative in-depth interviews gathered information on for instance recent experiences with social support in a household and community environment.

4.2. Quantitative sample

The quantitative sample (n = 2497) included five of the 10 program pilot districts, including Yendi, Karaga and East Mamprusi in the Northern Region and Bongo and Garu Tempane in the Upper East Region. Treatment and control groups were identified using a regression discontinuity design. The discontinuity is the cut-off score on the proxy-means test (PMT) for eligibility of the LEAP 1000 program, which was set by the MoGCSP, with the treatment group being selected from just below the threshold and the control group from just above. The original sample frame comprised of 8,058 households who applied to the LEAP 1000 from 189 communities over the five selected districts. Following the PMT cut-off score 55.1 percent were eligible for the program. To achieve the 2,500 households as estimated by the power calculations, the first 1,250 households on either side of the PMT thresholds were selected. For logistical reasons only communities with at least three households were included in the sample. This resulted in a treatment group consisting of 1,262 households at baseline and a comparison group of 1,235 households (see further details Ghana LEAP 1000 Baseline report (2016). Table 1 assesses balance between the two groups at baseline on a range of indicators at the individual[1] and household levels. The two groups are compared while controlling for the level of the PMT scores, acknowledging that differences between households further from the treatment cut-off might be larger. With exception of female household head the differences between the treatment and control group are statistically insignificant at the 5% level. Extensive testing on the differences in mean between the treatment and comparison group for over 500

[1] The individual level variables are characteristics of the woman eligible for interviewing, meaning pregnant women or mothers with a child below the age of one.

Table 1
Household and Individual characteristics of the sample at baseline (with covariate).

	Full Panel sample		Control (C)		Treatment (T)		T-C	Diff	
Variables	Mean	*N*	Mean	*N1*	Mean	*N2*	Diff	SE	*p-value*
Household level characteristics									
Household size	6.61	2,497	6.30	1,235	6.91	1,262	0.33	0.19	0.09
# of pregnant women	0.16	2,497	0.17	1,235	0.14	1,262	0.00	0.03	0.90
# of children 0–11 mths	0.59	2,497	0.57	1,235	0.61	1,262	0.06	0.04	0.12
# of children 1–12 yrs	2.76	2,497	2.52	1,235	2.99	1,262	0.22	0.13	0.09
# of children 13–17 yrs	0.45	2,497	0.41	1,235	0.50	1,262	0.02	0.06	0.72
# of adults 18–54 yrs	2.38	2,497	2.40	1,235	2.36	1,262	0.00	0.07	0.97
# of adults 55+ yrs	0.42	2,497	0.40	1,235	0.45	1,262	0.02	0.05	0.76
district: East Mamprusi	0.32	2,497	0.33	1,235	0.32	1,262	−0.03	0.04	0.36
district: Karaga	0.19	2,497	0.21	1,235	0.18	1,262	0.02	0.03	0.44
district: Yendi	0.16	2,497	0.15	1,235	0.16	1,262	0.03	0.03	0.32
district: Bongo	0.17	2,497	0.16	1,235	0.18	1,262	0.03	0.03	0.40
district: Garu-Tempane	0.16	2,497	0.16	1,235	0.16	1,262	−0.04	0.03	0.11
Age of head	39.33	2,497	38.26	1,235	40.37	1,262	0.22	0.98	0.82
Head is female	0.09	2,497	0.08	1,235	0.10	1,262	0.05	0.02	0.04
Head is married	0.95	2,497	0.96	1,235	0.95	1,262	−0.01	0.02	0.66
Head no formal schooling	0.80	2,497	0.78	1,235	0.82	1,262	0.02	0.03	0.59
Food security: Never worried about food (4wks)	0.12	2,497	0.13	1,235	0.12	1,262	−0.02	0.03	0.36
Poverty status: Extremely Poor	0.62	2,497	0.60	1,235	0.64	1,262	−0.03	0.04	0.47
Per capita monthly expenditure (Gh₵)	95.02	2,497	97.73	1,235	92.43	1,262	4.18	5.26	0.43
Per capita monthly food expenditure (Gh₵)	73.08	2,497	75.29	1,235	70.91	1,262	−0.08	4.22	0.98
Any outstanding debts	0.36	2,497	0.35	1,235	0.38	1,262	0.06	0.04	0.15
Bought food or goods on credit	0.26	2,497	0.26	1,235	0.26	1,262	−0.01	0.03	0.85
Could buy food or goods on credit	0.10	2,497	0.10	1,235	0.11	1,262	−0.00	0.02	0.97
Individual level characteristics (female respondent)									
Age (years)	29.31	2,497	28.47	1,235	30.13	1,262	0.37	0.53	0.49
Marital status: Monogamous marriage	0.63	2,497	0.64	1,235	0.62	1,262	−0.02	0.04	0.66
Marital status: Polygamous marriage	0.33	2,497	0.32	1,235	0.33	1,262	0.01	0.04	0.79
Marital status: Separated/Widowed/Never married	0.05	2,497	0.04	1,235	0.05	1,262	0.01	0.02	0.66
Education: Less than primary	0.79	2,497	0.78	1,235	0.80	1,262	−0.03	0.03	0.39
Education: Some primary	0.08	2,497	0.08	1,235	0.08	1,262	0.02	0.02	0.43
Education: Completed primary	0.03	2,497	0.03	1,235	0.02	1,262	0.00	0.01	0.96
Education: Some secondary or higher	0.09	2,497	0.10	1,235	0.09	1,262	0.01	0.02	0.73
Outcome Variables									
MOS- Social Support score (0–100)	52.78	2,497	53.46	1,235	52.12	1,262	−3.43	1.80	0.06
MOS- Instrumental Social Support score (0–100)	56.55	2,497	56.98	1,235	56.13	1,262	−3.22	2.02	0.11
MOS- Emotional Social Support score (0–100)	49.01	2,497	49.93	1,235	48.11	1,262	−3.64	1.94	0.06

Notes: Expenditure per month is expressed as adult equivalent constant prices for Greater Accra in September 2015 with GH₵ 1 = approximately US$ 0.245. Diff is coefficient when regressed over treatment and proxy means test score, and SE is the standard error of the difference clustered at community level.

variables, which was conducted as part of the program evaluation, showed similar results, and suggested that the design was successful at creating an equivalent control group (Ghana LEAP 1000 Evaluation Team, 2016).

At endline, 2,331 households (93.4%) of the initial 2,497 households were re-interviewed, of these 2,247 households (90.0%) included an interview with the same LEAP 1000 eligible woman from baseline. We used an individual balanced panel for the analysis, including 1,144 women in the LEAP 1000 treatment group and 1,103 women in the control group (see Table 2) from 162 communities. After 24-months the attrition rate at the individual level was 10.0 percent. Attrition was non-differential, meaning the baseline balance was the same between the original and attrited sample, and only the proportion of female headed households was significantly different between the two groups (see Annex Table 1A).

4.3. Qualitative sample

The qualitative sample was embedded in the treatment arm of the quantitative sample, using the quantitative data to identify communities and households to be interviewed. The qualitative sample was stratified across two districts with 10 households each in Bongo (Upper East Region) and Karaga (Northern Region). Bongo is in an area with higher population density and closer access to markets and basic services, and Karaga has a sparser population and communities are located further away from markets and economic activity. The interest in these two districts was to understand the possible differences in the productive prospects of program participants. The samples were further stratified covering 10 households with beneficiary women who were first-time mothers and 10 households where mothers had three or more children (including five in each district). Using parity as a stratification variable was based on the idea that both the number of children and the level of parenting experience may determine spending patterns and therefore program outcomes (Dako-Gyeke & Oduro, 2013; Haddad et al., 1997).

Table 3 indicates the number of interviews with eligible women and their male partners over the three waves. Male partners of the beneficiary women were interviewed from the midline evaluation onwards to give more insight into household and spending dynamics. There is some attrition, because the field team was unable to locate one first-time mother for both follow-up interviews, and two women were traveling for work during the endline interview. From the male partners, four men were not present during the midline interviews, because they had temporarily migrated for work. Two women widowed in the course of the evaluation.

In-depth interviews were conducted by the field team of the NHRC in two local languages, Dagbani and Frafra. For the baseline interviews there were two female interviewers per district. In the follow-up interviews there was one female and one male interviewer per district to conduct interviews with respectively beneficiary women and their male partners. Where possible we

Table 2
Attrition in quantitative sample at household and individual level.

	Households			Individuals		
Groups	2015 Baseline	Balanced sample	Attrition Rate (%)	2015 Baseline	Balanced sample	Attrition Rate (%)
Treatment	1,262	1,185	6.1	1,262	1,144	9.4
Comparison	1,235	1,146	7.2	1,235	1,103	10.7
Total	2,497	2,331	6.6	2,497	2,247	10.0

Table 3
Qualitative sample at baseline (2015), midline (2016) and endline (2017) in-depth interviews (IDIs).

	Women			Men		
District	Baseline	Midline	Endline	Baseline	Midline	Endline
Bongo (UER)	10	9	9	0	5	8
Karaga (NR)	10	10	8	0	8	7
Total	20	19	17	0	13	15

maintained the composition of the field teams throughout the evaluation to provoke recognition and build report with the participants. In addition, the interviewers came from the districts in which the interviews took place increasing familiarity for the participants. At the start of each interview, participants were asked for their verbal consent, and they were explained that the interview was voluntary and could be stopped at any time. In addition, the field team identified themselves as part of the NHRC and being unrelated to the government or administration of the LEAP 1000 program. If needed, this was repeated throughout the interview to ensure that participants felt that they could give sincere responses even if this meant sharing experiences which might be considered less socially desirable. However, since we are using impact evaluation data, we acknowledge that it is difficult to eliminate complete association with the program implementation. Based on the varied responses including both positive and negative experiences regarding the program as a whole we believe that we were fairly successful in achieving this objective.

4.4. Quantitative measures and analysis

In order to assess the effect of the LEAP 1000 on social support we use the following difference-in-differences (DiD) estimator:

$$\text{SOC.SUPPORT}_{igt} = \alpha + \beta_1 \text{TIME}_t + \beta_2 \text{TRANSFER}_g + \beta_3 \text{TRANSFER}_g * \text{TIME}_t + X_i \beta_4 + \varepsilon_{igt} \quad (1)$$

In the equation TIME is the moment of evaluation with t = 0 representing the baseline and t = 1 the endline. TRANSFER is a binary variable whether a household is in the treatment or control group *g*. Social support (SOC.SUPPORT) was measured for each of the women *i* in three different ways, i.e. overall social support, instrumental support and emotional support, whereby the latter two are subgroups of overall social support. The three measures were derived from a modified version of the Medical Outcomes Study Social Support Survey (mMOS-SS), a measure of social support in the context of basic health care needs (Moser et al., 2012). The mMOS-SS includes eight items measured on a 5-point scale. Included items capture elements of instrumental support (i.e. help if you are confined to bed, help with preparing meals and with daily chores when you are sick, help to take you to the doctor if needed), emotional support (i.e. having people around who understand your problems, or who can give you advice), companionship (having someone to share good times with) and affection (having someone who makes you feel loved) (Moser et al., 2012). Moser and colleagues found that of the original four domains there are two distinguishable subscales consisting of instrumental and emotional support, with the latter combining the domains of emotional support, companionship and affection. Overall social support combines all eight items. The three measures of social support (i.e. overall, instrumental and emotional) were standardized ranging from 0 to 100 to facilitate easy comparison. The breakdown in the measure of social support allows for some differentiation in functionality of the support. The eight-item MOS-SS scale is a thoroughly tested (Gómez-Campelo et al., 2014; Moser et al., 2012; Togari & Yokoyama, 2016) and widely used in research among others low-income adults in South Africa (Geffen et al., 2019), Syrian refugee mothers in Lebanon (Sim et al., 2019), and people coping with HIV (Earnshaw et al., 2015).

Even though program design and therefore eligibility were determined by a cutoff point on the running variable, we use DiD as our estimation strategy and make use of the available baseline and endline values for both groups. Since we use DiD rather than regression discontinuity we focus on the parallel trend or constant bias assumption rather than exchangeability. A key assumption for using a DiD approach is the parallel trend assumption, but given that we do not have any pre-baseline data available trends cannot be (visually) observed. The treatment and control group got tested extensively as part of the impact evaluation with over 500 tests (Ghana LEAP 1000 Evaluation Team, 2016) and we analyzed baseline differences in the mean levels of treatment and control variables for over 35 indicators showing no statistical significant differences except for female household head (see Table 1 and Table A1). Based on the results of these analyses we suggest that the design created a valid comparison group, which is equivalent to the treatment group at baseline once controlled for the proxy-means test score and female household head. Both covariates are included in vector X and included in all the estimation models. We acknowledge that while there is balance at baseline this is no guarantee of parallel trends. To account for any unobservable time invariant differences such as environmental characteristics (e.g. ethnical differences, cultural preferences on social interaction and support) we present the findings using community level fixed effects. While we include the DiD estimates with and without fixed effects, the Hausman test confirms that they are different and suggests the use of community fixed effects for all three social support measures. Following the sample design, we ran all estimations with sample weights adjusted for household attrition and robust standard errors clustered at the household level[2]. Lastly, due to the regression discontinuity design most communities had both beneficiary and non-beneficiary households in the sample, which may lead to concerns regarding externalities. The existing literature on

[2] Clustered standard errors at the community level provide results with similar significant results.

spillover effects due to cash transfer programs shows mostly positive effects such as within the household (Egger et al., 2019; Mostert & Vall Castello, 2020), in the local retail market (Thome et al., 2013) and on health behaviors within the household (Shei et al., 2014). A positive spill-over with regards to social support, would mean higher perceived access to support for ineligible households. In other words, in case there is any bias the results in this study are likely to underestimate the treatment effect and should be considered as lower bound estimates. A few studies have indicated negative externalities on specific outcomes such as increasing tensions in the community due to targeting (Pavanello et al., 2016) or increasing local prices of protein-rich foods (Filmer et al., 2018). Especially, in case of reducing social cohesion the cash transfer would reduce the social support with non-beneficiaries. Nevertheless, we want to emphasize that while the existing studies focus on programs with broad eligibility, the LEAP 1000 is a cash transfer program targeted only at pregnant women and women with a child under the age of one living in poverty. Due to these stricter criteria the proportion of treatment women is small, and unlikely to have an effect on the whole community. Using self-reported numbers of households per community[3] we find that treatment households are on average only 5 percent of the total community (median: 0.043, standard deviation: 0.036), which is why we do not expect meaningful spill-over effects.

In addition to the measures of social support, and in line with the focus of the qualitative interviews, we use a measure on financial support, i.e. whether any gift or goods are given or received from someone outside the household, and social participation, i.e. variables on membership of various community groups. These variables are only measured at endline and are therefore only estimated as the difference between the treatment and control group without controlling for possible baseline differences.

4.5. Qualitative analysis

Regarding the qualitative data, the interviews were audio-recorded, translated, and transcribed in English. In addition, the field team prepared community descriptions and field notes, describing the context of the interview. From the transcripts and field notes, we created narrative summaries; one for each household including baseline, midline and endline information on the female participant, her partner, and the overall context of the household (Sandelowski, 1995). In the summaries we described social support and social participation, and the changes participants had experienced over time. These summaries were the basis for the development of a codebook. We used Atlas.ti 8 software to systematically code all transcripts using a topical codebook focused on who gives support, what type of support is given, and what changes were experienced in support over time. The output of the coding was used to construct analytical matrices on frequency and type of community support experienced by the participants and to highlight the changes that had been experienced in support throughout the evaluation.

5. Results

5.1. Social support context and description of the sample

The baseline qualitative interviews elicited a detailed inventory of women's social support networks, while the subsequent interviews concentrated more on the changes in the type of support given and the number of people involved. At baseline the women were asked to describe one by one the people who gave them support starting with household members and then moving to people outside the house. In addition, women were asked separately to whom they could turn for specific types of support, such as financial assistance, help with farming, food, or help with household chores or child care. In general, women described their support networks as being composed of members of their household and sometimes a few people from outside the house, who were often relatives and some friends and people in the community. The networks ranged from three to twenty-four people with somewhat larger networks in Karaga compared to Bongo. In Karaga households were in general larger, and often polygamous (see Annex Table A2).

Within the household almost everyone provided support to other members, but there were differences in the type of support depending on age and role in the household. Children assisted with small tasks such as fetching water, making errands or playing with smaller children while sisters, sisters-in-law or co-wives, helped with household chores, taking care of the children and cooking of food. In terms of financial contributions, the adult women in the household sometimes farmed, took care of the ingredients (food items or spices beyond the staple grains) and gave small amounts of money to the children to buy school supplies or food. The men mainly provided financial support by contributing farm produce or money. The household head, which in most cases was one of the older, actively working males in the household, was responsible for providing maize or another staple food. In all but two households, women described specific people outside their household to whom they could turn for support.

Most of the support from people outside the household was financial support to help to buy food or pay for hospital bills. Besides support in the form of money, instrumental support was given by people from outside the household. Most of the instrumental support was an extension of household work, such as cooking, washing clothes, doing dishes, but women also talked about help with transportation, farming or assistance when one of the household members fell sick. A mother of seven children in Karaga described how her husband's younger brother brought her to the hospital on his motorbike in the week before the interview. She was suffering from headaches and the brother helped her with transportation and to cover some costs of the medicine. The vast majority of women described a friend or older person (e.g. uncles or aunts, a senior person in the community, an older sister) from outside their household who gave them advice. Elders were associated with providing *'advice'* or *'wisdom'*, while friends provided a wider range of support and companionship, which was generally considered more mutual. A mother of three children in Karaga explained the kind of support she received from a friend:

> *"Like if I give birth and I don't have a cloth to wear she can give me one, or if I give birth, she is the one who goes around to inform people about it, and she can also advise me. If I am bored at home and I don't know what to do I go to her to keep me in company."*

Even though most women mentioned at least one person who gave them advice, emotional support was far less frequently discussed than financial or instrumental support and usually only came up after probing by the interviewer.

This finding is consistent with the perception of the availability of social support in the quantitative measure as presented in the bottom panel of Table A1. The averages in the social support scales are lower for emotional support than instrumental support for both the LEAP 1000 participants as the comparison group. Instrumental social support, which included among others access to help with regards to transportation, chores and preparing meals, was on average 56.1 and 57.3 (out of 100) for the LEAP 1000 beneficiaries

[3] From the community survey we were able to obtain the number of households for 130 of the 162 communities in the sample, which are used to estimate the average proportion of treatment households.

and comparison group respectively at baseline. Emotional social support with questions on having people with to give advice, have a good time with or make you feel loved, scores 48.6 and 50.0 for treatment and control group respectively at baseline. Figs. 1-a to 1-c show the distribution of the social support scales by proxy-means test scores with the treatment group on the left-side of the cut-off and the comparison group on the right. While the comparison group has somewhat higher values around the cut-off the difference is not statistically significant.

Another finding from the baseline interviews was that most of the support was reciprocal to some extent, with more binding agreements between more distant relationships. Within the household, exchange of support was often mutual, but was not described as bounded within an exact time, type or amount of support that was expected in return. For example, the support between this first-time mother and her nephew who lived in her household, was that they would exchange farm work for small financial support without calculating an exact remuneration:

> *"He works for me, when we farm rice he assists us and when he also wants to buy something, like books or whatever, I also support him. I buy soap for him to wash his clothes*".

When discussing support from more distant family or community members, women frequently described direct reciprocity or a clear promise of payback in the future. A common example was when the food stocks ran low during the lean season, they borrowed food or money, which they returned later. One of the first-time mothers in Karaga described at the baseline interview:

> *"When the food stock finishes and we have money we buy from the market and if we don't have money we borrow from other people and pay back after harvest in the next farming season.*"

The specification that support was part of an exchange, regardless of the level of detail of the reciprocity, gives an initial suggestion that the crowding-out theory is unlikely to hold. The only relationships which seemed more altruistic in nature were those with people closest to the beneficiary, such as parents or a husband. A first-time mother in Karaga gave the following description about the support received from her mother, suggesting that there were no rules to the support given, nor was there a direct promise of returning support later:

> *"Whatever challenge I have, whether in terms of money or whatever will give me peace, she is able to support me with it.*"

While the support given in this relationship seemed selfless, and therefore subject to possible crowding-out, the support given or received from strong ties might be subject to social norms. The next section will show the effect on social support after LEAP 1000 is introduced.

5.2. Effects of LEAP1000 on social support

Table 4 shows the results of the difference-in-differences estimates on social support. We detected positive and significant effects of the cash transfer program on overall social support with a 2.9 point increase and emotional social support with a 3.5 point increase (both $p < 0.05$). On average instrumental social support increased by 2.4 points, although this result was only weakly significant ($p < 0.1$). When adjusting for the influence of possible community fixed effects the coefficients change slightly reinforcing the improvement in social support.

The trends over time show that perceived instrumental social support increased for program beneficiaries and the control group, albeit with a larger increase for the former. Emotional social support significantly decreased for the control group, while it increased for beneficiary women. Given that the in-depth interviews were only held with women receiving the transfer we are unable to triangulate these findings with the qualitative data.

Regarding financial social support, we only have indicators available from the endline survey, which do not allow to control for baseline difference (see Table 5). The variables on whether any goods or gifts were given or received from people outside the household show a slightly higher percentage for the treatment

a: *Descriptive depiction of overall social support (0-100) at baseline*

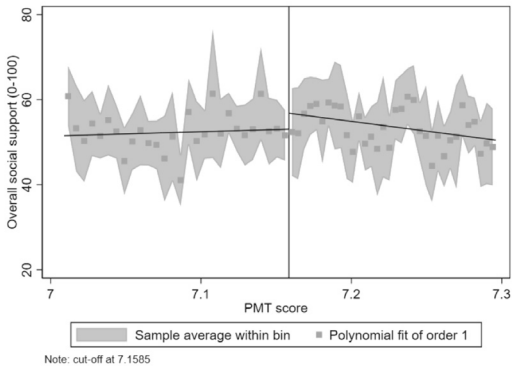


Fig. 1a. Descriptive depiction of overall social support (0–100) at baseline.

b: *Descriptive depiction of instrumental social support (0-100) at baseline*

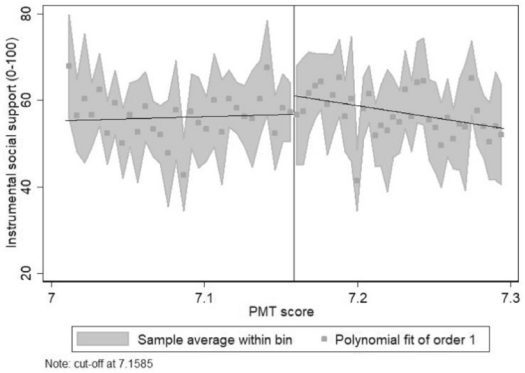


Fig. 1b. Descriptive depiction of instrumental social support (0–100) at baseline.

c: *Descriptive depiction of emotional social support (0-100) at baseline*

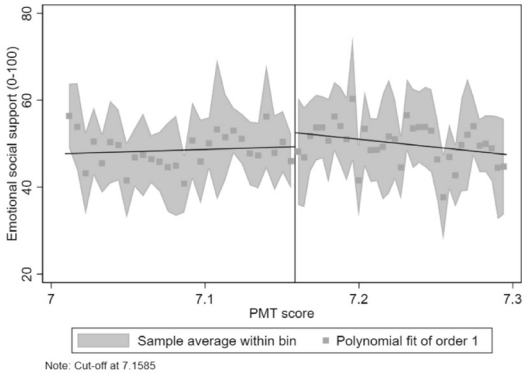


Fig. 1c. Descriptive depiction of emotional social support (0–100) at baseline.

Table 4
Difference-in-differences estimate with and without community fixed effects.

	(1) Social support	(2) Instrumental social support	(3) Emotional social support	(4) Social support	(5) Instrumental social support	(6) Emotional social support
Treatment (LEAP 1000)	−3.07	−3.16	−2.98	−2.03	−1.96	−2.09
	(1.49)**	(1.70)*	(1.58)*	(1.45)	(1.67)	(1.54)
Endline	−0.58	1.54	−2.70	−0.43	1.65	−2.51
	(0.84)	(0.99)	(0.88)***	(0.86)	(1.01)	(0.90)**
Treatment*Endline	2.92	2.35	3.48	3.01	2.49	3.53
	(1.19)**	(1.39)*	(1.26)***	(1.22)**	(1.42)*	(1.29)***
Head is female	−4.23	−2.76	−5.69	−5.11	−3.91	−6.31
	(1.39)***	(1.54)*	(1.45)***	(1.35)***	(1.49)***	(1.44)***
PMT score	−13.21	−14.74	−11.67	−4.69	−4.01	−5.38
	(7.95)*	(9.20)	(8.29)	(7.73)	(9.01)	(8.06)
Community fixed effects	No	No	No	Yes	Yes	Yes
Constant	149.36	164.00	134.72			
	(57.51)***	(66.51)**	(59.99)**			
R^2	0.01	0.01	0.01	0.12	0.11	0.11
N	4,494	4,494	4,494	4,494	4,494	4,494

Notes: Standard errors in parenthesis clustered at the household level. * $p < 0.1$ ** $p < 0.05$; *** $p < 0.01$.

group, but the difference with the comparison group is not statistically significant at the 5% level.

The findings from the in-depth interviews support the quantitative results on the increase in overall social support, but are at odds with the lack of significant differences on the financial support indicators. The interviews show opportunities to establish new or renew relationships. Several women mentioned that the promise of money coming to their household improved their position to buy items on credit or to borrow money creating new financial resources for these women. In addition, at the endline interview, six women were making contributions to local village saving and loans groups, called susu, or other small-scale microfinance schemes. A mother of three children described the support she got after her husband's death when LEAP 1000 had helped her to make contributions to a local insurance group.

> *"Respondent: I was in a self-help group where we contribute money to support each other in case a member gets a problem. I was the organizer for that group and later promoted to be the president of the group. Later I left the group because I couldn't contribute, but when the LEAP 1000 support started I joined the group again and I was made the group leader again. When my husband died they came to support me with food including rice, cooking oil, tomatoes, bread and cash, and all came from the contributions we do.*
> *Interviewer: So how has this benefited you?*
> *Respondent: A lot because when my husband died my co-wives' family members came to support them to perform the funeral but my family came and didn't have anything to support me. It was the group support that saved me from disgrace. I had to buy some food on credit and I am waiting for the LEAP money to come so I can pay that debt.*"

The self-help group gave financial support when her close relatives could not contribute. In addition, the group members provided companionship and helped to prevent emotional issues, such as shame if she would be unable to contribute to her husband's funeral. The example highlights the complex relationship between financial, instrumental and emotional social support. In this situation the financial certainty and food contributions from her group members also provided emotional support. Besides, when it came to changes in the access to support interview participants did not differentiate by function of social support, but had a tendency to focus on more tangible examples directly related to the use of the transfer money.

While the results on the modified MOS social support scales are focused on perceived access to social support, the participants in the in-depth interviews also mentioned program effects which went beyond this. The women described a change in their needs for social support and changes in direction of the exchange of social support. First, there was a decrease in need for financial or instrumental support from the informal support network. The LEAP money enabled women to purchase food ingredients without 'bothering' their male partners. A mother of six children talked about the reduction in the financial support needed from her husband, and the increase in opportunities to assist him:

> *"Ok, it also helps just that I don't worry him [husband] like before. The collecting of the money has made me not to bother him again about ingredients. Also if he needs some money, I can take it and remove some for him to help himself. If it gets finished he won't say that I had money and didn't help him.*"

In addition, the increase in self-sufficiency strengthened the control the women have over decision-making in the household. This first-time mother in Bongo described, she no longer had to ask to use the household money:

Table 5
Financial support given or received at the endline evaluation.

	Control (C)		Treatment (T)		(T)-(D)	Diff	*p-value*
Variables	Mean	*N*	Mean	*N*	Diff	SE	
Any goods or gifts given to people outside the household	0.10	1,103	0.12	1,142	0.03	0.03	0.24
Value of goods or gifts given to people outside the household	190.06	110	137.45	133	83.86	71.23	0.24
Any goods or gifts received from people outside the household	0.10	1,103	0.17	1,142	0.04	0.03	0.12
Value of goods or gifts received from people outside the household	118.85	108	145.04	192	24.76	34.63	0.48

Notes: The proxy means test score and female household head are used as covariates. Diff is the coefficient when regressed over treatment variable and covariates, and SE is the standard error of this difference clustered at the household level.

"The difference is that when I was not receiving the money I could not just go and buy something like underwear myself unless I inform my mother but now if I don't have underwear or something I can use some of the money to buy."

Increased self-sufficiency also changed relationships outside of the household. A number of participants, especially in Karaga, reported that one of the advantages of LEAP 1000 was that they no longer had to go around asking for food or borrowing money. As one mother described she used to borrow money for basic needs such as food and health care, but since the start of LEAP she can pay for it herself:

"It is very good to me because I have done nothing for the government and yet it gives me that money to take care of myself and my children's health, school and feeding. This support has been very helpful in such areas so there is no point borrowing money from people to take care of such needs."

The reduced need of financial and instrumental social support suggests crowding out of some informal social support. The same respondent elaborated on the relationship with the person who was previously providing her loans. She indicated that she did not borrow money out of her own choice, and not because the opportunity was not available to her. The consequences for her support network were therefore uncertain.

"There is no problem between us because I have explained to them that I have a source of income now. Hence, once I earn that little there would be no need to borrow money from them and they understood me."

Regarding the need for emotional social support, the women discussed having less worries about financial uncertainty, better protection against shocks and less tension in the household; all of which can be considered potential causes of emotional stress. Apart from individual level shocks, the average need for emotional support among beneficiary women might therefore have decreased.

On the second change, some women reported that they could give financial and/or instrumental support when close relatives ask for help. A mother of three children in Karaga explained the change she experienced:

"I wasn't able to provide for the family neither talking of helping others and now I can boast of helping the household and others just because of your support from the office."

Another woman reported that she supported her husband's sister training as a tailor. At the endline interview the sister-in-law was still an apprentice, but the respondent spoke out the hope that in the future she can support them with her new trade. The increase in giving support to others to buy food or to go to the hospital was often accompanied with a positive change in mindset. The participant above referred to 'boasting' of help, while another woman described an increase in self-esteem, because she no longer experienced *'embarrassment when someone asks for support and [she was] unable to help'.*

5.3. Community support and social participation

Seeking more context for the changes in social support we included measures of social participation by looking at group membership (Table 6). For women's and religious groups there was a positive difference between group membership of LEAP beneficiaries and the control group (with $p < 0.1$) at the endline. Combining all community groups, program beneficiaries were 4.4 percent points more likely to be part of at least one group in the community ($p < 0.05$). The in-depth interviews included a similar question, which echoed these results. In the interviews women gave examples how LEAP 1000 enabled them to make the expected contributions to the membership in susu (village savings and loans) or church groups.

Even outside established groups, contributions were considered an obstacle to social participation. One mother in Karaga explained in the baseline interview, how important it is to her to contribute to ceremonies when a baby is born in the community ('*outdooring*'), and how it could be a source of shame if you cannot.

"Yes, if for example, someone has an outdooring that I know, whatever you can afford, you don't belittle, you give it out in support so that the person would appreciate that. In those circumstances, you would love to give more and in the event that you get an occasion she will take her turn to honor to the same extent. Failure to contribute becomes a worrying situation whenever you run into the person."

Lastly, besides LEAP 1000 facilitating the payment of contributions, a few women described that the cash transfer lowered other barriers of social participation. Two women said that previously they were unable to join other women to go to the market, because they did not have money or appropriate clothes. One of the women said that it even helped her children to fit in with their peers:

"I couldn't mingle with my colleagues but with the coming of LEAP I can now raise myself and be part of my colleagues (the other women). If I get to the market, I can buy salt or buy a few clothes for my children to wear. Even if don't dress well myself I have been able to dress my children well so they can mix with their peers."

5.4. Heterogenous effects

As an extension to the quantitative analysis, we explored heterogeneous effects to assess whether the effect on social support differs for various subgroups in the population using variables arising from the qualitative analysis and previous literature (Adato et al., 2000; Bonilla et al., 2017; Haddad et al., 1997). We examined the effects of LEAP 1000 on social support by parity (one child versus multiple children), type of marriage (monogamous versus polygamous), level of education (no or less than primary versus primary school and higher) and feeling of empowerment (having power to decide over one's life-course versus no power to decide). While the selection of these four variables is only illustrative, household dynamics, including bargaining and decision-making power, communication and opportunities for relationships with people outside the household are likely affected by the number of children (Haddad et al., 1997), polygamy (Baland & Ziparo, 2017), lower education (Adato et al., 2000) and lower decision-making power (Bonilla et al., 2017). See Figs. 2-a to 2-c for overall, instrumental and emotional social support respectively.

Looking across the various functions of social support, the effect of the cash transfer on overall and instrumental social support is statistically significant at the 5% level for women with multiple children, women in polygamous relationships, women with less than primary education and women, who feel less empowered to make decisions about their own life-course. Women with these characteristics were having lower social support at baseline, suggesting that LEAP 1000 makes a larger difference for those with less social support.

6. Discussion and conclusion

We found that the LEAP 1000 in general did not negatively influence informal sources of support, such as help with chores, providing food, lending money or providing companionship. The

Table 6
Group membership among LEAP 1000 beneficiary and comparison women at the endline evaluation.

Variables	Control (C) Mean	Treatment (T) Mean	(T)-(D) Diff	Diff SE	*p-value*
Member of agricultural/livestock/fishery group	0.101	0.122	0.008	0.026	0.764
Member of credit or microfinance group	0.176	0.217	−0.023	0.032	0.483
Member of other women's group	0.327	0.404	0.076	0.040	0.057
Member of religious group	0.304	0.314	0.071	0.038	0.063
Member of mutual help or insurance group	0.111	0.125	0.026	0.027	0.327
Member of trade or business groups	0.013	0.024	0.015	0.011	0.157
Member of civic groups or charity	0.011	0.010	0.009	0.007	0.183
Member of local government group	0.000	0.001	0.002	0.002	0.318
Number of groups of which one is a member	1.04	1.22	0.18	0.091	0.042
Member of at least one local group	0.605	0.690	0.123	0.039	0.002
N	1,103	1,144			

Notes: The proxy means test score and female household head are used as covariates. Diff is the coefficient when regressed over treatment variable and covariates, and SE is the standard error of this difference clustered at the household level.

a. *Heterogeneous treatment effects of LEAP 1000 on overall social support (with confidence interval at 95%)*

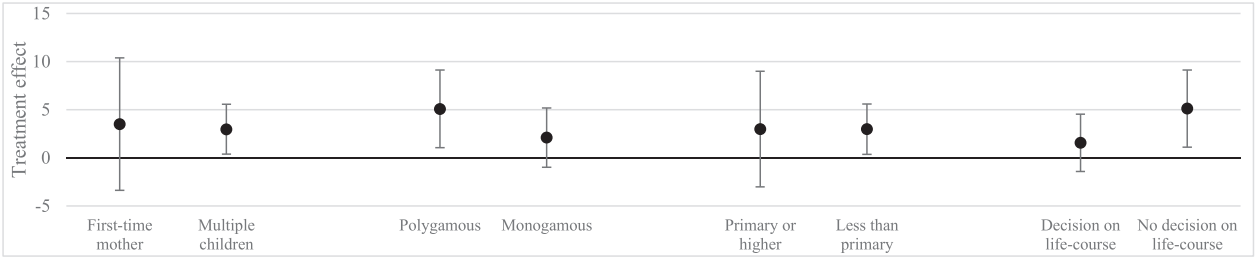


Fig. 2a. Heterogeneous treatment effects of LEAP 1000 on overall social support (with confidence interval at 95%).

b. *Heterogeneous treatment effects of LEAP 1000 on instrumental social support (with confidence interval at 95%)*

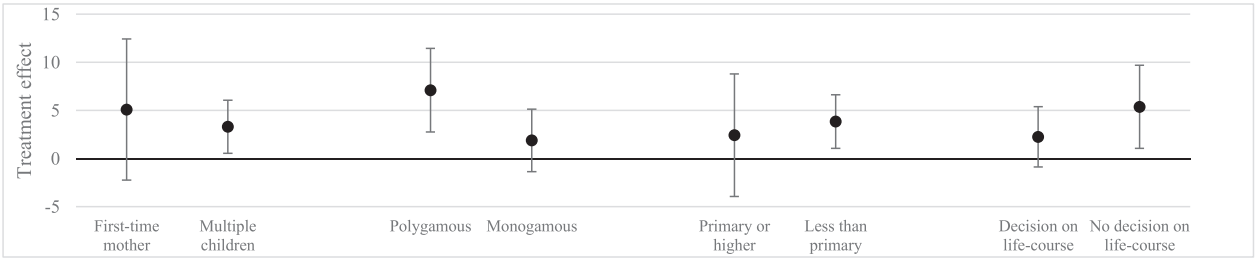
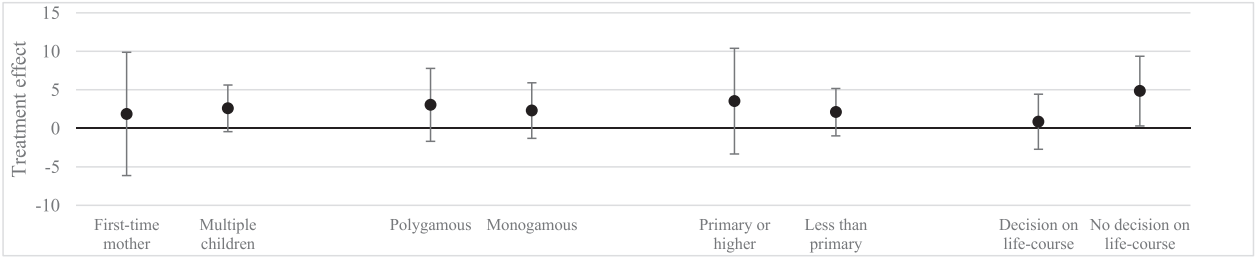


Fig. 2b. Heterogeneous treatment effects of LEAP 1000 on instrumental social support (with confidence interval at 95%).

c. *Heterogeneous treatment effects of LEAP 1000 on emotional social support (with confidence interval at 95%)*



Notes: Treatment effect is the interaction between treatment and time. The estimations are controlled for PMT score and female household head and use community fixed effects. The standard error is clustered at household level.

Fig. 2c. Heterogeneous treatment effects of LEAP 1000 on emotional social support (with confidence interval at 95%). Notes: Treatment effect is the interaction between treatment and time. The estimations are controlled for PMT score and female household head and use community fixed effects. The standard error is clustered at the household level. Annex A3-a-A3-c show these results in tables.

quantitative measures showed an increase in perceived overall, instrumental and emotional social support, and no difference between financial social support for beneficiaries and non-beneficiaries. The in-depth qualitative interviews confirmed these findings with women experiencing a growth in the access to financial markets and increased opportunities to mingle with peers in the markets, at social gatherings and in community groups. The program even had an enabling role in stimulating changes that led to women creating new relationships and strengthening existing ones. In other words, with the LEAP 1000 program, crowding-out did not outweigh the crowding-in of new opportunities for support.

In comparison to most existing literature, which find partial crowding-out effects (Albarran & Attanasio, 2003; Angelucci et al., 2012; Strobbe & Miller, 2011; Teruel & Davis, 2000), our findings indicate a more positive picture, since we find opportunities for crowding-in support. The research in Mexico and Malawi (Albarran & Attanasio, 2003; Angelucci et al., 2012; Teruel & Davis, 2000) concentrates mainly on the changes in financial support, while we assessed both instrumental and emotional support. Financial support is a narrower type of instrumental support, including the direct exchange or borrowing of money or goods, but not covering the exchange of services such as help with transportation or chores (Wellman & Wortley, 1990). As suggested by the lack of significant difference at endline on the financial social support indicators, the discrepancy in findings might be attributed to the use of a different type of social support. In our in-depth interviews we observed some crowding-out of financial social support, when women were describing that they no longer needed to borrow money, or ask friends and relatives for food or other basic goods. Aspects of social support in which we find opportunities of crowding-in such as increased social participation in community groups and greater access to new financial markets, such as self-help groups and susu are in line with qualitative findings in the From Protection to Production project (Fisher et al., 2017). In the qualitative analysis some respondents also described increased comfort to engage with community members due to better appearance or their ability to make small contributions when needed, these findings are consistent with research regarding women's empowerment and self-esteem (Adato et al., 2000; Duflo, 2012).

While the overall interaction between the cash transfer and informal social support from family, friends and community members seemed positive, the analysis highlighted some complexities in the relationship. Firstly, women described that there was no longer a need to take up assistance with regards to food or money leading to crowding-out of previously received support. It remains unclear whether this type of 'crowding-out by choice' resulted in connections being removed from their network on the long-term. Secondly, some women indicated that with the cash transfer they started giving support. It is uncertain whether by giving support they alter their future prospects of support. In addition, giving some of the support to non-beneficiary community members might extend the cash transfer to other poor and vulnerable households creating a small spillover effect.

Combining quantitative and qualitative methods strengthened the overall results by being able to confirm findings and by providing more in-depth explanations. However, the use of a mixed methods approach also underlined the gaps in existing measures. For instance, with the qualitative data it was more difficult to distinguish changes in social support by type than in the quantitative measure. In addition, the quantitative data did not capture the change in the need for social support and from who support was received or to whom support given by the LEAP 1000 beneficiaries. While the findings in the qualitative analysis complemented the quantitative results there is room for improvement by developing more inclusive measures on the exchange of social support. The quantitative mMOS-SS scale focuses on perceived access to social support, in particular in the event of illness, and contributed to the program evaluation as a highly-tested, but relatively short measure of social support. For instance using, broader applications such as measured in the Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) would allow for analysis of the sources of support. In addition, quantitative measures sensitive to the change in demand for support and whether the support is given as part of mutual help (such as the two-way social support scale (Shakespeare-Finch & Obst, 2011) would give further insight in how the various components of social support are changing.

With this paper we assessed the effects of a government-led unconditional cash transfer program on existing social networks, composed of family, friends and community members in the context of rural Ghana. We show that overall the unconditional cash transfer program had an overall positive effect on the use and development of social support networks. We found that the concern of crowding-out and diluting the positive effects of cash transfer programs did not occur beyond a reduction in in-kind and financial loans. However, in these instances the decrease in the use of the social support network came with a gain in self-sufficiency. Crowding-in occurred by strengthening of existing connections and the creating of new economic and social opportunities. Within this context our findings on the impact of unconditional cash transfers on social support networks strengthens the overall positive evidence of the use of cash transfers as a government policy to improve the wellbeing of vulnerable individuals and households in low-income settings (Daidone et al., 2019; Fisher et al., 2017).

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CRediT authorship contribution statement

Marlous de Milliano: Conceptualization, Methodology, Formal analysis. **Clare Barrington:** Conceptualization, Methodology. **Gustavo Angeles:** Conceptualization, Methodology. **Christiana Gbedemah:** Validation.

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Annex

Table A1
Differential attrition on household and individual characteristics (with covariates).

	Full Panel sample		Control (C)		Treatment (T)		T-C	Diff	***p-value***
Variables	Mean	***N***	Mean	***N1***	Mean	***N2***	Mean	SE	
Household level characteristics									
Household size	6.70	2,247	6.37	1,103	7.02	1,144	0.31	0.21	0.13
# of pregnant women	0.13	2,190	0.18	1,103	0.14	1,144	−0.00	0.03	0.95
# of children 0–11 mths	0.58	2,247	0.56	1,103	0.60	1,144	0.06	0.04	0.14
# of children 1–12 yrs	2.84	2,247	2.59	1,103	3.08	1,144	0.17	0.14	0.22
# of children 13–17yrs	0.46	2,247	0.41	1,103	0.51	1,144	0.02	0.06	0.81
# of adults 18–54 yrs	2.41	2,247	2.42	1,103	2.39	1,144	0.04	0.08	0.62
# of adults 55+ yrs	0.41	2,247	0.38	1,103	0.43	1,144	0.02	0.06	0.76
district: East Mamprusi	0.33	2,247	0.34	1,103	0.33	1,144	−0.03	0.04	0.44
district: Karaga	0.20	2,247	0.21	1,103	0.19	1,144	0.02	0.03	0.61
district: Yendi	0.16	2,247	0.16	1,103	0.16	1,144	0.03	0.03	0.35
district: Bongo	0.16	2,247	0.15	1,103	0.17	1,144	0.03	0.03	0.35
district: Garu-Tempane	0.15	2,247	0.14	1,103	0.16	1,144	−0.04	0.03	0.12
Age of head	39.13	2,247	37.92	1,103	40.29	1,144	0.34	0.99	0.74
Head is female	0.07	2,247	0.06	1,103	0.08	1,144	0.05	0.02	0.02
Head is married	0.96	2,247	0.97	1,103	0.96	1,144	−0.01	0.02	0.39
Head no formal schooling	0.80	2,247	0.78	1,103	0.82	1,144	0.02	0.03	0.58
Food security: Never worried about food (4wks)	0.12	2,247	0.12	1,103	0.12	1,144	−0.02	0.03	0.57
Poverty status: Extremely Poor	0.62	2,247	0.60	1,103	0.64	1,144	−0.02	0.04	0.56
Per capita monthly expenditure (Gh₵)	120.65	2,247	97.30	1,103	93.05	1,144	6.72	5.47	0.22
Per capita monthly food expenditure (Gh₵)	72.94	2,247	74.53	1,103	71.41	1,144	2.46	4.30	0.57
Any outstanding debts	0.36	2,247	0.35	1,103	0.37	1,144	0.04	0.04	0.31
Bought food or goods on credit	0.26	2,247	0.26	1,103	0.26	1,144	−0.01	0.04	0.85
Could buy food or goods on credit	0.11	2,247	0.10	1,103	0.11	1,144	0.01	0.03	0.84
Individual level characteristics (female respondent)									
Age (years)	29.58	2,247	28.69	1,103	30.44	1,144	0.13	0.55	0.81
Marital status: Monogamous marriage	0.63	2,247	0.64	1,103	0.62	1,144	−0.01	0.04	0.76
Marital status: Polygamous marriage	0.34	2,247	0.33	1,103	0.34	1,144	−0.00	0.04	0.98
Marital status: Separated/Widowed/Never married	0.04	2,247	0.03	1,103	0.04	1,144	0.01	0.02	0.39
Education: Less than primary	0.80	2,247	0.79	1,103	0.81	1,144	−0.04	0.03	0.28
Education: Some primary	0.07	2,247	0.07	1,103	0.07	1,144	0.01	0.02	0.74
Education: Completed primary	0.03	2,247	0.03	1,103	0.02	1,144	0.01	0.01	0.65
Education: Some secondary or higher	0.08	2,247	0.09	1,103	0.08	1,144	0.03	0.02	0.24
Outcome Variables									
MOS- Social Support score (0–100)	52.98	2,247	53.65	1,103	52.33	1,144	−3.39	1.90	0.07
MOS- Instrumental Social Support score (0–100)	56.67	2,247	57.26	1,103	56.10	1,144	−3.84	2.13	0.07
MOS- Emotional Social Support score (0–100)	49.28	2,247	50.03	1,103	48.56	1,144	−2.93	2.06	0.15

Notes: The proxy means test score is used as a covariate. Expenditure per month is expressed as adult equivalent constant prices for Greater Accra in September 2015 with GH₵ 1 = approximately US$ 0.245. Diff is the coefficient when regressed over treatment variable and covariates, and SE is the clustered standard error of this difference.

Table A2
Overview of the size and types of support based on social support inventories from qualitative interviews.

		Woman living with: parents (husband)	Size of network within the household		Key network members	Size of network outside household		Key network members
			Min	Max		Min	Max	
Karaga, Northern Region	**Total**	**5 (5)**	**2**	**19**		**1**	**8**	
	1st time mothers	4 (1)	2	9	Parents, parents-in-law, husband, siblings	2	7	Husband, brothers-in-law, uncles
	3 + children	1 (4)	2	19	Husband, co-wives, brothers-in-law	1	8	Siblings, uncles/aunts
Bongo, Upper East Region	**Total**	**3 (7)**	**3**	**13**		**1**	**6**	
	1st time mothers	3 (2)	4	7	Husband, parents, siblings, brothers-in-law	2	6	Fathers,[a] mothers,[b] uncles/aunts, neighbors
	3+ children	0 (5)	3	13	Husband, children, mother-in-law, sister/brother-in-law	1	2	Husband, brothers-in-law

[a] Term father often included the woman's father-in-law or other senior male to whom she is close
[b] Term mother often included the woman's mother-in-law

Table A3-a
Heterogeneity effects for overall social support (0–100).

	No. of children		Marriage		Level of education		Life-course decisions	
	First-time mother	Multiple children	Polygamous	Monogamous	Primary or higher	Less than primary	Decision-making power	No decision-making power
Treatment (LEAP household)	1.43	−2.60	−3.11	−1.12	−6.95	−1.60	−0.61	−3.29
	(4.50)	(1.56)*	(2.26)	(1.87)	(4.00)*	(1.56)	(1.82)	(2.41)
Endline	−1.35	−0.05	−1.18	−0.07	−2.58	0.12	−2.68	2.76
	(2.30)	(0.95)	(1.47)	(1.11)	(2.13)	(0.96)	(1.08)**	(1.46)*
TreatmentXendline	3.49	2.96	5.08	2.10	2.98	2.97	1.56	5.11
	(3.51)	(1.32)**	(2.06)**	(1.57)	(3.07)	(1.34)**	(1.52)	(2.05)**
Head is female	−1.89	−6.79	−0.92	−6.29	−4.42	−4.47	−3.72	−6.93
	(3.34)	(1.61)***	(2.70)	(1.95)***	(2.58)*	(1.60)***	(1.60)**	(2.51)***
PMT score	10.79	−7.56	−6.72	−2.42	−32.65	−2.31	−4.99	−3.28
	(23.27)	(8.23)	(12.13)	(10.01)	(20.72)	(8.43)	(9.70)	(13.36)
R^2	0.26	0.13	0.17	0.15	0.19	0.14	0.17	0.16
N	712	3,714	1,510	2,818	894	3,600	2,630	1,864

Notes: The estimations are controlled for PMT score and female household head and use community fixed effects. The standard error is clustered at household level.

Table A3-b
Heterogeneity effects for instrumental social support (0–100).

	No. of children		Marriage		Level of education		Life-course decisions	
	First-time mother	Multiple children	Polygamous	Monogamous	Primary or higher	Less than primary	Decision-making power	No decision-making power
Treatment (LEAP household)	1.19	−2.83	−3.38	−1.31	−6.04	−2.17	−1.46	−2.15
	(4.75)	(1.67)*	(2.43)	(1.97)	(4.14)	(1.66)	(1.97)	(2.51)
Endline	−3.68	−2.10	−4.38	−1.76	−1.29	−2.88	−4.66	0.54
	(2.33)	(1.01)**	(1.62)***	(1.13)	(2.19)	(1.01)***	(1.13)***	(1.54)
TreatmentXendline	5.10	3.31	7.11	1.89	2.43	3.84	2.26	5.38
	(3.74)	(1.41)**	(2.21)***	(1.66)	(3.25)	(1.42)***	(1.60)	(2.20)**
Head is female	−3.74	−7.79	−1.64	−7.00	−5.75	−5.52	−4.89	−8.09
	(3.78)	(1.68)***	(2.73)	(2.12)***	(2.89)**	(1.68)***	(1.70)***	(2.58)***
PMT score	26.04	−11.64	−5.07	−5.83	−27.71	−4.91	−11.37	4.28
	(23.45)	(8.60)	(12.98)	(10.31)	(21.30)	(8.77)	(10.19)	(13.71)
R^2	0.22	0.13	0.18	0.14	0.18	0.14	0.16	0.17
N	712	3,714	1,510	2,818	894	3,600	2,630	1,864

Notes: The estimations are controlled for PMT score and female household head and use community fixed effects. The standard error is clustered at household level.

Table A3-c
Heterogeneity effects for emotional social support (0–100).

	No. of children		Marriage		Level of education		Life-course decisions	
	First-time mother	Multiple children	Polygamous	Monogamous	Primary or higher	Less than primary	Decision-making power	No decision-making power
Treatment (LEAP household)	1.67	−2.37	−2.84	−0.92	−7.86	−1.04	0.24	−4.43
	(4.96)	(1.80)	(2.72)	(2.16)	(4.42)*	(1.82)	(2.05)	(2.82)
Endline	0.97	2.00	2.03	1.62	−3.87	3.11	−0.70	4.98
	(2.68)	(1.12)*	(1.73)	(1.31)	(2.47)	(1.12)***	(1.30)	(1.66)***
TreatmentXendline	1.87	2.60	3.05	2.31	3.53	2.11	0.86	4.84
	(4.09)	(1.55)*	(2.42)	(1.84)	(3.50)	(1.57)	(1.83)	(2.31)**
Head is female	−0.04	−5.79	−0.19	−5.58	−3.09	−3.42	−2.56	−5.77
	(3.41)	(1.82)***	(3.19)	(2.15)***	(2.80)	(1.79)*	(1.78)	(2.79)**
PMT score	−4.45	−3.48	−8.36	0.99	−37.58	0.30	1.39	−10.83
	(27.23)	(9.63)	(14.86)	(11.62)	(23.51)	(9.96)	(11.20)	(15.77)
R^2	0.28	0.12	0.15	0.14	0.18	0.13	0.15	0.15
N	712	3,714	1,510	2,818	894	3,600	2,630	1,864

Notes: The estimations are controlled for PMT score and female household head and use community fixed effects. The standard error is clustered at household level.

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