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School of Economics and Management

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Impact Evaluation of Malawi Social Cash Transfer: Assessing Heterogeneity of Results According to Gender of Household Head

Ricardo Meilman Lomaz Cohn
ricardo_meilman.cohn.421@student.lu.se

Abstract:
Malawi Social Cash Transfer scheme is a social protection program designed to alleviate poverty, reduce malnutrition and improve school enrolment by delivering a regular cash grant targeting ultra-poor and labour-constrained households. In contrast to many experiences in Latin America in which the woman is necessarily, or preferably, the beneficiary of the household who gets the program grant, in Malawi, the cash transfer goes to the head of household regardless of gender. This paper assesses the impact of SCT in Malawi from the gender perspective, assessing to which extent the effect of the program changes if the cash transfer is received by a female head of household in comparison to a male head. Using a longitudinal data from 2007 and 2008, results indicate particularly strong impacts on food consumption and spending when placed in hands of female household heads. Also, the cash transfer had positive effects in reducing vulnerability of households to shocks and improving productive capacity of subsistence-oriented households.

Key words: cash transfers, impact evaluation, gender, sub-Saharan Africa, Malawi.

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1. Introduction

Malawi is one of the poorest countries in the world and it suffers from chronic lack of food security[1], which undermines efforts to improve health and development, and fuels poverty. Following the groundbreaking conditional cash transfer programs in Latin America, many Sub-Saharan countries are adopting social cash transfer (SCT) schemes as part of their strategy for social protection[2] and poverty alleviation. This paper analyses the Malawi Social Cash Transfer scheme implemented in 2006.

Malawi is primarily an agricultural country dependent on smallholder farming and fishing. Most of the 15 million-population live from subsistence farming supplemented by small-scale income-generating opportunities that are typically more available to men than they are to women. According to a UNDP Human Development Report, around 80 percent of the population lived in rural areas in 2011. The country also has high fertility (5.6 births per woman), high infant mortality (89 per 1000 births), high gender inequality[3], and low life expectancy (54 years). About 10 percent of all Malawian households (250,000) are incapable of work and extremely poor. Malawi ranks 171 out of 187 countries in the 2011 Human Development Index.

From 1996 to 2006 the extreme poverty rate remained steady and high in Malawi. Some officials suggested that if 10 percent of households received cash transfers, the country's extreme poverty rate would decrease from 22 percent to 12 percent at a cost of US$41 million per year. This analysis encouraged the decision to start a pilot program in the area of Mchinji, targeting 10 percent of households who are extremely poor and labor-constrained. Mchinji was chosen for the pilot because of its average poverty levels, strong district assembly, and relatively close location to the capital of Lilongwe (Schubert and Huijbregts, 2006).

In 2006, the SCT program was initiated by the Government of Malawi. The program was designed to alleviate poverty, reduce malnutrition and improve school enrolment by delivering a regular cash grant targeting ultra-poor and labour-constrained households. The SCT program is an unconditional cash transfer among the poorest 10 percent of households in

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[1] Food security is defined as having physical and economic access to sufficient safe and nutritious food.

[2] Social Protection can be defined as public actions taken in response to levels of vulnerability, risks, and deprivation, which are deemed socially unacceptable within a given polity and society. There are two general categories for those public actions: social insurance and social assistance (Conway, de Haan, & Norton, 2000).

[3] Population with at least secondary education, female/male ratio is 0.51 and maternal mortality ratio (deaths of women per100,000 live births) is 510, according to 2011 UNDP Human Development Report.

Malawi. In 2010, the program was operational in seven districts in Malawi, reaching more than 83,000 households. It is expected to serve 300,000 households with 910,000 children by 2015. One-person households receive MK[4] 600 (about US$4.00), two-person households receive MK 1,000 (US$6.67), three-person households receive MK 1,400 (US$9.33), and four-person households (or larger) receive MK 1,800 (US$12.00). There is also a schooling attendance[5] bonus of US$1.30 per month for primary-school-age children and US$2.60 per month for secondary-school-age children. The cash transfer represents about 30 percent of beneficiary households' income per capita corresponding to US$14 per month. Transfers are given at local paypoints, such as schools, on a monthly basis. (Miller et al, 2008; Covarrubias et al, 2012)

There are many papers that have evaluated the impact of the SCT scheme in Malawi in respect to various aspects including production, time-use, risk-coping behaviour, child labor, consumption, expenditures, nutrition, health and schooling (see i.e.: Miller et al, 2011; Miller et al, 2008; Miller, 2009; Boone et al, 2012; Covarrubias et al, 2012). However, the heterogeneity of the impacts of Malawi SCT was not fully explored for different household types, particularly in the case of varying impacts according to the gender of the household head.

In contrast to many experiences in Latin America in which the woman is necessarily, or preferably, the beneficiary of the household who gets the program grant, in Malawi, regardless of gender, the cash transfer goes to the head of household. This paper intends to evaluate the impact of SCT in Malawi from the gender perspective, assessing to which extent the effect of the program changes if the cash transfer is received by a female head of household in comparison to a male head. The gendered inputs to livelihood of the household will be determined through an analysis of the impact of SCT in encouraging agricultural activities and in the types of food consumed. This analysis indicates the extent to which expenditure is directed towards collective household needs in comparison to other interests. The paper also presents a critical review on recent literature on cash transfers and gender in the context of poverty.

The present paper is organized as follows. After this introduction, section 2 reviews conditional and social cash transfer programs. Section 3 discusses the literature and theoretical framework on poor women and their role in cash transfer programs. Sections 4

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[4] Malawi Kwacha.
[5] This bonus is simply given when school-age children reside in the household, thus, it is not tied to school attendance.

and 5 describe the methodology and data, respectively. Section 6 presents the results and comments on their implication. Finally, the last section concludes the paper.

2. Cash Transfer Programs

Prior to the implementation of social (or unconditional) cash transfers (SCT), conditional cash transfers (CCTs) have become a widely used means of addressing aspects of poverty and social protection in developing countries, starting in the mid-1990s. The popularity of these programs can be attributed to the success of the *Bolsa Escola* (in 2003 merged into *Bolsa Família*) and *Progresa* (in 2001 renamed *Oportunidades*) programs in Brazil and Mexico, respectively. CCTs programs are cash grants provided to poor and disadvantaged people on the condition that they make specific, pre-defined commitments. CCTs are designed: a) to alleviate poverty in the short-term, especially meeting the needs of the poorest household through improved consumption and nutrition; and b) to increase the human capital of beneficiaries by making transfers conditional on certain requirements, such as school attendance, visits to health clinics and renewals of immunization, which can improve health and education. The rapid introduction of social protection programs based on income transfers resulted in a steep increase in coverage. In the last fifteen years, new forms of social assistance programs have been adopted reaching more than 150 million poor households in developing countries (Barrientos and Hulme, 2009).

Past CCTs have ranged and include the following: giving poor households cash and nutritional supplements on the condition of sending their children to school and having their health checked in clinics (e.g. *Progresa/Oportunidades* in Mexico); giving poor households cash on the condition that their children attend school (e.g. *Bolsa Escola/Bolsa Família* in Brazil); employing poor adults on the condition that they make labour contributions towards public infrastructure construction and basic community work (e.g. Maharashtra Employment Guarantee Scheme in India and *Trabajar* in Agentina); and giving poor households in-kind food grain conditioned upon sending their children to school (e.g. Food for Education Programme in Bangladesh).

Almost all programs in this new generation of social programs were accompanied by experimental or non-experimental impact evaluations with increasing level or rigor and sophistication. An impact evaluation is a report which is written upon the completion of, or

throughout, the CCTs. Studying impact evaluations enhances the ability to understand the mechanisms, functioning and specific details of CCTs. This leads to future programs benefiting from improvements in implementation, methodology, targeting method, design, sampling and analysis of impact evaluation data on their respective countries. Given such advances in the state of knowledge of these programs and their successful results, Latin American success with impact evaluations may soon be rivalled by Sub-Saharan Africa. African countries have followed a similar pattern of rigorous impact evaluations and are now proceeding with their own cash transfer (CT) revolution[6]. No fewer than 14 countries in the last few years have started CT programs involving a variety of characteristics and funding. (Davis et al., 2012)

The extension of social protection in the sub-Saharan Africa region is diverse and financing remains a great challenge. There are two main general patterns of programs. In Southern Africa, grant-based social protection has emerged as a domestic initiative, and is largely tax funded. In Eastern, Western, and Central sub-Saharan Africa, the cash transfer programs are almost entirely funded from international aid and as such, the design reflects the influence of international organizations. Additionally, the reluctance of political elites in select countries to embrace social protection has resulted in short term pilot projects with limited reach and weak institutionalization (Niño-Zarazúa et al., 2011).

Social protection in Africa could be described as informal systems composed of the following: a patchwork of colonial schemes and aid-financed social assistance programs, NGO initiatives, and under-funded fragmented social insurance institutions for civil servants. Emergency food aid, famine relief, and humanitarian assistance have been central to social protection for many countries since the 1970s. A desire to shift from an emergency aid focus into more permanent social protection programs has led to the spread of aid-financed pilot cash transfers schemes. However, these schemes are heavily dependent on donor design and financing, which limits the capacity of African intelligentsias to debate policy choices and implementation options. Cash transfer programs are underway in Zambia, Kenya, Malawi, Uganda, Ghana, Nigeria, and Tanzania (Barrientos and Hulme, 2009).

More recently, the Livingstone Process has been an important step in expressing the commitment of the national governments within the region to move forward with the extension of social protection (Niño-Zarazúa et al., 2011). 'Livingstone 2'[7] (2008) is the

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[6] For further details on comparison of cash transfer programs in Sub-Saharan Africa and information on all programs implemented, see Garcia and Moore (2012).
[7] See website of UNDP South-South Learning for further information: http://south-south.ipc-undp.org/

follow-up meeting on the Conferences of Livingstone, Zambia and on Yaoundé, Cameroon in 2006. On both occasions a number of African governments made commitments to further basic social protection in support of their most disadvantaged citizens. Special emphasis was placed on implementing cash transfer schemes, including social pensions and child grants. Although there is still many steps to establish solid social protection in Africa[8], the continent saw a fast expansion of social protection in last decade.

The impact evaluation of CT programs in sub-Saharan Africa is marked by a diversity of designs. Although experimental design[9] remains the goal of most evaluation frameworks in the region, non-experimental methods are often required instead, since the majority of the program designs have community-based targeting (including Malawi SCT), which make it more difficult to have a perfect counterfactual control group. The focus of the first generation of impact evaluations reflects concerns surrounding vulnerable populations in the context of HIV/AIDS and its context in the household. Thus, people who are ultra-poor, labour-constrained and/or caring for orphans and vulnerable children (OVC) are targeted, with aims to focus on food security, health, and nutritional and educational status, particularly of children. The accompanying impact evaluations measure these dimensions of program impact (Davis et al., 2012).

While most cash transfer programs in Latin America are conditional, the majority[10] of the cash transfer programs in sub-Saharan Africa are unconditional or 'social'. In many of the Latin American countries, anecdotal evidence suggests that the conditionality in the design of the programs was more accepted by ruling classes since the cash transfer is not solely a handout as it also involves investing in human capital. In the African case, international donors play a more central role with a stronger emphasis on human rights. In these cases, cash transfers are a means to ensure individuals have the rights to an adequate standard of living and food security. Although CCTs can reduce poverty in terms of income, past

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[8] Hailu at al. (2008) discusses the importance of legal protection framework to supporting cash transfer sustainability and continuity.

[9] "*Experimental designs, also known as randomization, are generally considered the most robust of the evaluation methodologies. By randomly allocating the intervention among eligible beneficiaries, the assignment process itself creates comparable treatment and control groups that are statistically equivalent to one another, given appropriate sample sizes. This is a very powerful outcome because, in theory, the control groups generated through random assignment serve as a perfect counterfactual, free from the troublesome selection bias issues that exist in all evaluations.*" Non experimental or "*Quasi-experimental (nonrandom) methods can be used to carry out an evaluation when it is not possible to construct treatment and comparison groups through experimental design. These techniques generate comparison groups that resemble the treatment group, at least in observed characteristics, through econometric methodologies, which include matching methods, double difference methods, instrumental variables methods, and reflexive comparisons*"(Baker, 2000, p. 2-3)

[10] UNDP (2012) also mentions the experience of cash transfer with soft conditions, in which recipients are informed about school enrolment and attendance responsibilities but are not excluded from the program if the conditions are not met.

programs have struggled with limitations. One key limitation is the barrier which prevents the programs from including the poorest and most vulnerable populations, mainly due to the lack of services (i.e. schools, health clinics, etc) in the areas where these populations live, which would be necessary in implementing the conditionalities. Consequently, the lack of public services in poor areas in several African countries has been an argument for adopting the social rather than the conditional approach (Gaarder, 2012).

In fact, the Zomba CT program, implemented in Malawi's southern region in 2008, had an experimental evaluation design aimed to test the extent to which unconditional cash transfers and conditional cash transfers affect outcomes. The experiment included both conditional and unconditional cash transfers provided to families with school-age girls. It was found that the treatment arm providing conditional cash transfer programs had higher enrolment rates and selected test scores, while the unconditional arm had a lower incidence of pregnancy and marriage among school-age girls. These results highlight the ability of the CCT to achieve condition-related goals while it risked excluding vulnerable girls (those vulnerable to early marriage and pregnancy who would not remain in school with either type of transfer). Thus, although the unconditional cash transfer in Zomba was not as effective in improving education compared to the conditional arm, the former assisted vulnerable girls to delay early marriage[11] and pregnancy with the monthly unconditional transfer. (Baird et al. 2010).

Although standard economic theory would argue that the source of income is irrelevant in terms of how it is spent, there is evidence that suggests that income from cash transfer may be used differently than earned income, particularly if families behave as if the transfer income is earmarked for children (Alviar et al., 2012). It is not clear to which extent beneficiaries' behaviour in Malawi changed with the SCT program.

A noteworthy distinction between the conditional cash transfer programs in Latin America and the social cash transfers in Africa is the incorporation in the latter of a substantial role for the community in the overall selection of the beneficiaries, whereas in Latin America, means testing is more popular as a targeting method. In Africa, most of the programs use 'community-based' targeting (CBT), but follow other targeting criteria (geographic, demographic and proxy means testing). Malawi SCT is not an exception, since is designed without conditionalities and communities have an active role in the selection of

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[11] In Malawi, more than 51.2% of Malawian women are married by age 18 and the fertility rate among women ages 15-19 in 2007 was 135 births per 1,000. Both early marriage and early pregnancy have a direct bearing on schooling decisions.

participant households, as it will be further detailed in the data section of this paper. Coady et al. (2002) describe community-based targeting thoroughly, in addition to discussing other targeting methods. The study suggests that community-based should work best when criteria are well defined, budget constraint is hard and the community is asked to choose only a few members for program receipt, such as the poorest 10 percent which was used in the case of the Malawi SCT[12]. It remains ambiguous as to the extent that community participation leads to peer monitoring and thereby can act in a similar way as a condition.

Theoretically, cash transfers improve food security by improving access through regular income that increases purchasing power or agricultural production. The expectation is that cash alone will yield positive impacts. The underlying assumptions are that food is available in local markets for purchase; agricultural yields will improve with greater inputs; and that by raising income in ultra poor households, recipients will choose to purchase or grow more food with a portion of their monthly income (Miller et al, 2011).

3. Women in a Context of Poverty and Ruralism

Women experience a higher incidence of poverty than men which shows that women bear a disproportionate burden of the world's poverty. According to UN-Women, around 70 percent of the world's poor are female. Assuming poverty as a multidimensional condition involving exclusion and deprivation, women are poorer than men as they lack more assets and have fewer capabilities[13]. In other words, women own fewer productive assets, access productive inputs with more difficulty, and face wage discrimination (see i.e. Quisumbing and Maluccio, 2000; World Bank, 2012, UNDP, 2012). Women are also more vulnerable in economic terms, *inter alia*, because their labor market situation is precarious and interrupted by periods of childbearing and demands of care giving.

The growing awareness of the feminisation of poverty led to feminisation of anti-poverty programs, namely initiatives to increase women's literacy, vocational skills and education, to recruit them as volunteer in self-help schemes, to facilitate their access to credit, and to provide targeted support to the female head of the household. On the macro-level, studies and conferences identify gender as a key issue in poverty alleviation strategies. In

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[12] However, the targeting evaluation of the Malawi SCT in Mchinji district concluded that almost one-third of the community members thought targeting was unfair. It suggested that targeting should be more objective, standardized, and transparent (Miller et al., 2008).

[13] For definition of capabilities approach on poverty see Sen (1999).

addition, the Millennium Development Goals (MDG), issued by the UN[14] in 2000, reflect an agenda that contemplates gender equality, woman's human rights and maternal health, as central goals in two out of the eight MDGs[15] (Chant, 2007).

In a rural context, substitutability of female and male labor in farm household activities is limited. The engagement of women in productive activities is constrained by the rigidity of their commitment to reproductive activities. *"Activities including childbearing, early nurturing of infants, upbringing, are referred as generational reproduction. Cooking, cleaning, washing, mending clothes, firewood collection, water carrying, house building and repairs are referred as daily reproduction. Together, generational and daily reproduction are reproductive activities."* As a result of such rigidity, there is an unequal distribution of time for cash income earning activities (regardless of returns to labor and relative market prices) which has implications on economic dependence of women in peasant societies (Ellis, 1993, p. 174-180).

Although gender equality has become a more prevalent topic in public policy, Chant (2007) observed that there is still conformity with gender differentiated division of labour and resources in the household, based on fieldwork research in The Gambia, Philippines and Costa Rica. In addition, the author argues that women seem to be making greater inputs of time and labor in the household survival relative to men. And men in male-headed households, in turn, seem to be more likely to enjoy the advantages of free domestic work avoiding expenditures otherwise associated with maintaining the household.

An example of gender differentiated division of labour and its impact on women's economic dependence is illustrated by the gender sequential agricultural production, in which women and men work on the same land, but there is a seasonal or task specific division of labor which men may do the ploughing, participate on the harvesting, and market the production; whereas women may do the weeding and spraying, participate in the harvesting, but have no hand in the marketing. Here, women's work is likely to be cash unremunerated which restricts economic independence. (Ellis, 1993, p. 186)

New home economics[16] and comparative advantage in the household partly explains the division of labour and resources in the household, but it ignores the unequal power in household decisions. In peasant farm household, there are many aspects of economic behaviour that cannot be exclusively explained by a single utility function, comparative

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[14] The disadvantages faced by the women in the processes of economic development have been recognized by the UN since 1972, at least, when the General Assembly proclaimed 1974 as the International Women's Year.
[15] See MDG 3: promote gender equality and empower women and MDG 5: improve maternal health.
[16] See Becker (1991) for further details on New Home Economics.

advantages and market prices. These include the fact that there is social rigidity in task allocation, differing commands over family labor time and money for cash inputs and, men enjoy greater economic freedom (including freedom in disposal of cash) (Ellis, 1993, p. 184-86).

Given the inequalities within the household and in the labor market, women are more vulnerable and economically dependent in traditional societies. Thus, in many cases, the increase of incidence of poverty among women is associated with female headship in the household. This creates a problem for the women as well as their children when they are unable to ensure the family's well-being. Nevertheless, female headship can also be a medium through which women can enhance their own and their children's well-being. There are many studies on conditional cash transfer that indicate that children in female headed households may be better off than their counterparts in male headed households with respect to nutrition, health and educational attainment. The following section discusses the role of women in cash transfer programs.

3.1.   The Role of Women in Cash Transfer Programs

There are many examples that illustrate the important role women can play in cash transfer programs. The deliberate decision to give transfers directly or preferably to women is motivated by the growing evidence that resources controlled by women are more likely to manifest greater improvements in child nutrition, education and health, than resources placed in the hands of men. This section tries to connect the theoretical framework to empirical evidence on how cash transfers can influence household behaviour when the head is a woman compared to when the head is a man.

According to the theoretical perspective of the bargaining approach, individuals have separate preferences and many possible cooperative outcomes exist, since the resolution of the conflict of preferences depends on each person's bargaining power. However, bargaining strengths of individuals are not steady and can change over time. In the case when women receive a cash transfer and have a separate source of income, it improves their status within the family and their ability to influence household decisions through enhancing their bargaining strength (Ellis, 1993, p. 185).

In this theoretical framework, Quisumbing and Maluccio (2000), using household data sets from Bangladesh, Indonesia, Ethiopia, and South Africa, indicate that higher relative resources controlled by women tend to increase the shares spent on education. The authors argue that since women are younger at marriage and expect to live longer, they may invest more in their children's education because they are more likely to rely on them for old age support. They also highlight that in societies in which key assets that assure lifetime consumption-smoothing are controlled by men (land, pensions and social security in countries with low female participation in the formal labor market), women may attempt to meet the same long-term needs with other instruments, such as investment in the human capital of healthy and educated children.

Based on the framework presented above, as women are more likely to invest in their children than men, making women the representative beneficiary of cash transfer can have positive impacts on their bargain in the household and in turn, could have greater impacts on health, nutrition and education of household's children.

In the case of Mexican CCT *Progresa*, women are central in the strategy for improving the well-being of women and children from an early age, through maternal and child health care, nutritional supplements, health and nutrition education, and incentives for keeping boys and girls in school through the primary and secondary levels. By making women the program beneficiary on behalf of the family, *Progresa* increases women's control over resources and their bargaining power within the family, which aims to empower women (Skoufias et al., 2001), (Adato et al., 2000). The Mexican program contrasts with the Malawi SCT, in which the head of the household is the one who receives the transfer in the latter, regardless of gender.

The report of Adato et al. (2000), *Progresa*'s women support the women as the beneficiaries because are more responsible and family orientated with money and thus more will be spent on the family and on the welfare of their children, which is the primary goal of the program. In most of women's responses, they mentioned that men are likely to spend money they receive on alcohol and other self-oriented interests.

As a secondary goal of *Progresa*, the program aims to improve mothers' capacities, empowerment and citizen participation. In order to achieve this, the responsible participants (mothers) receive their stipend conditional on fulfilling the conditionalities laid out by the program managers which includes: taking children for regular health checks, meeting targets for ensuring their children's attendance at school, attending workshops on health and program coordinators' meetings, and contributing a set amount of hours of work to the

program, typically cleaning buildings or clearing rubbish. As such, women's empowerment is aimed not just through providing additional resources under their control, but also giving women more opportunities to leave the house; educating them on nutrition and health issues; providing spaces to communicate with other women; and educating girls to improve their position in the future. Those aspects of the program have successfully impacted 'personal empowerment' (or self-esteem) of women, but cannot be necessarily translated a direct link to increased empowerment, since the impact on intra-household relationships was modest and empowerment depends on more factors than control over a share of money income. In other words, *Progresa* creates a dependency on a subsidy which confirms reproductive activities as women's primary social role, one which may enhance their social status and self respect, but puts them in risk of remaining in intergenerational poverty, doing little to secure sustainable livelihoods (Molyneux, 2006).

The Brazilian CCT *Bolsa Família* also designated women as the preferable recipient of the benefit provided. Here, it also argued by female beneficiaries that women care for and administrate the grant better than men because, as they are mothers, they have more contact with the children and thus are more informed regarding what to do with the extra income. Although results related to poverty alleviation called more attention because they refer to the primary goals of the program, Suárez and Libardoni (2008) discuss the extent to which the program affected women's social status. The first impact of social status of women refers to the visibility of the female beneficiaries as consumers. Since beneficiaries carry a card and receive a fixed monthly income, there is an increase in purchasing power, which enables them to contribute to household expenses, and gives them the opportunity to make choices and negotiations with their husbands. Next, the requirement of obtaining the identity cards in order to receive the grant made women feel included as part of the society and, thus, they started to become aware of the meaning of citizenship[17]. The documentation required to obtain the card caused a radical change in the consciousness of female beneficiaries and broadened their aspiration of social space in which they can belong (Suárez and Libardoni, 2008).

A reoccurring criticism of *Bolsa Família* and *Progresa* is that these types of programs reproduce the roles traditionally attributed to women and do not effectively approach gender equality and empowerment.

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[17] Most of the beneficiaries did not have ID before the start of the program and many of them lived in isolated rural zones (Suárez and Libardoni, 2008).

Chant (2007) argues that it is not on best women's interests when policies intensify already heavy burdens of household survival, and entrenches subordinate familial roles. Although many anti-poverty programs nominally claim to foment female empowerment, more attention is paid on women's poorer condition than to their inferior position and rarely men's position is challenged. The author claims that interventions may be more successful where attempts to promote male participation in a portfolio of family activities which extends beyond the income generation, but also to emotional and practical care. Therefore, exposing men to family legislation and children's rights, and how these can be safe-guarded in gender egalitarian ways is alternative policy that can be successful in empowering women.

However, in response to this criticism, it is important to note that the women beneficiaries of cash transfers use the money received to look after the home and, particularly, their children, because they have always done so and not because the cash transfer program establishes it as a behavioral norm. In addition, mitigating hunger is arguably an urgent issue that has to be approached in the most efficient way. The decision to make women the direct beneficiaries seems to be the best means of achieving these program goals. On the other hand, such criticism has strength when taking into account the dynamics of the program over time and how it can affect intra-household relation.

Cash transfers can have an impact not just on investment in children's education and household consumption, but also on household production. According to Singh et al. (1986), agricultural households are profit-maximizing producers of agricultural goods and utility-maximizing consumers of those goods. The decisions of producing and consuming are separable and, if markets functions perfectly, households solve profit and utility maximization recursively. In essence, agricultural households firstly maximise profits and, given their profit, they then maximise utility. Thus, if markets work perfectly, levels of investment and input spending in agriculture are already optimal and cash transfers would only affect consumption. However, agricultural households in developing countries face many barriers and markets do not function perfectly. Transaction costs such as high transportation, information gathering, and monitoring worker effort costs put high constraints on agricultural production. Also, failure in credit and insurance markets encourages households to adopt low-risk low-return strategies. Thus, households make decisions to ensure that they have enough food to eat, without prioritizing the most profitable decision in terms of cash. Even if cash crops are more profitable, for fear of high prices for staple food, households may decide to produce more staple food. Facing such barriers, production and consumption seem to be not separable, but jointly determined. Therefore, a steady and regular

income from a cash transfer can: a) allow households to adopt riskier strategies with higher returns and b) encourage productive investment by providing liquidity (Boone et al., 2012).

In addition to the different pattern of spending and consumption of beneficiary households headed by women, another expectation is that female household heads would react differently to a SCT in terms of production decisions, given the existing differences in asset endowment, access to productive inputs and intra-household allocation of activities between men and women. Accordingly, because the barrier of production for single women are greater, a cash transfer could mean providing a greater relief to female headed households while having a less strong effect on investment in productive outcomes.

The hypothesis this paper intends to test is whether or not the Malawi SCT affects differently male and female headed households in terms of: a) food spending/consumption, b) production decisions (i.e.: investment in agricultural assets, shift in labor towards agricultural activities instead of risk-coping causal labor, and increase in food production) and c) poverty coping mechanisms (i.e.: begging for food or money, having children work, selling household items)

4. Data

4.1. Description of Data and Program Design

This sub-section is based on Miller et al. (2008), Miller et al. (2011), Covarrubias et al. (2012) and Boone et al. (2012).

The Malawian SCT included a rigorous evaluation with assignment of control and treatment groups, and data collection rounds before and after the treatment. Researchers from Boston University's School of Public Health and Centre for Social Research of University of Malawi generated the data used in this paper.

In the Mchinji District in central Malawi, a one-year pilot of the SCT program was implemented together with an impact evaluation. In 2008, Mchinji had population[18] of 456,558 people and average household size[17] of 4.7 members.

The household assessment undertaken in order to define eligibility to the program was community based-targeting, in which elected Community Social Protection Committees (CSPCs) selected the poorest 10% of households that are also labor constrained to receive the

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18 According to 2008 Population and Housing Census of the National Statistical Office of Malawi.

SCTS. The eligibility criteria were being both ultra poor and labour constrained. Ultra poor households are the ones within the lowest economic quintile, without assets, or consuming only one meal per day. Labour constrained households are defined as having a dependency ratio[19] of higher than 3 or undefined, which means that either there is one adult cares for more than three children, elderly, disabled or chronically ill members or there is no able-bodied adult age 19 to 64, respectively.

Eight Village Development Groups (VDG), totalling 23 villages, were randomly assigned to 4 control and 4 treatment VDGs. Thus, approximately 100 households per VDG or 800 households in total were targeted as cash recipients and enrolled in the study. There were 365 treatment and 386 control households present in all three rounds of data collection, excluding the attrition[20] households.

Data was collected in three rounds of surveys: the baseline survey before the program (March 2007), the midline survey six months after the first payment (September 2007), and the endline[21] survey six months after midline (April 2008). This schedule of data collection was designed so that the evaluation could capture the impact of the cash transfer in periods of low and high food insecurity for the ultra-poor households. The 'hunger season' is typically between November and March, while the main harvest is from April to August or September.

Among these 751 households, 488 have female heads and 263 have male heads, and they contain 1,850 children (below 18 years of age).

The data used constitute a panel that follows 751 households for one year and has detailed information at the household level as well as adult and child level on demographics, anthropometrics, employment, time use, health and healthcare, disabilities and migration. In this paper, the Household-level module is explored in greater detail, in order for the different impacts on male and female head of the households to be disentangled. This module focuses on dwelling characteristics, assets, food and non-food expenditures, income, credit, literacy, shocks, and the access/use of other social safety nets and support programs.

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[19] Dependency ratio was calculated as follows:

$$\frac{Children <19\ yrs + elderly >64\ yrs + chronically\ ill\ and\ disabled\ adults\ 19\text{--}64\ yrs}{All\ able\ bodied\ adults\ aged\ 18\text{--}64}$$

[20] Covarrubias et al. (2012) performed tests and concluded that the households did not dropped out in a systematic way and, therefore, attrition should not be a concern.
[21] After this survey, the control households also began receiving transfers.

4.2.   Descriptive Statistics

Initially, it is necessary to confirm whether control and treatment groups are similar so that the counterfactual used for comparison is adequate. The results should show no differences between control and treatment groups given that the 8 village groups were randomly assigned into treatment and control groups after eligible households were selected. Table 1 describes baseline characteristics of households as well as reports descriptive statistics for variables related to the eligibility criteria and to general household characteristics. The first and second columns correspond to the mean values for control and treatment groups, respectively. The third column reports the difference between those means while the fourth column shows the *P*-value for the hypothesis that the difference between the means of control and treatment groups is equal to zero. Statistically significant differences are indicated in bold.

The results of Table 1 show that almost all households in the database used for this paper are very poor with approximate expenditure per capita of 192 Malawi Kwacha (or US$1.37[22]). Approximately half of the households consume one or less meals a day and have a maximum of one asset (durable item). Most of household heads are women (65%) and single (72%). And 74 percent percent of households were labour constrained, defined as either having no able-bodied adult age 19 to 64 or having a dependency ratio worse than three, so that one adult cares for more than three children, elderly, disabled or chronically ill members. More than half of household heads had no education with more than 80% having not completed 4 standard years of schooling. The average household has 4 members, in which more than 2 members are children. Around 55% of the children are single or double orphans.

Although control and treatment groups share the same characteristics in respect to many variables, Table 1 reports significant differences between control and treatment groups for many other variables. Households in the treatment group are more likely to beg for money/food and to have experienced a natural shock between the period from 2005 to 2007 (drought/flood). In addition, on average they have one more child in the household, more orphans and a higher dependency ration. The head of the households in the treatment group is younger and has more years of schooling, in comparison to the average head in the control group.

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[22] In 2007, US$1 was equivalent to 139.96 Malawi Kwacha, according to annual exchange rate from the World Bank Development Indicators.

Another test to check whether the experimental design created a valid counterfactual was performed, in which treatment status was regressed on variables of eligibility and household characteristics. If treatment and control groups were randomly assigned, no variable is suppose to significantly predict treatment status at baseline. However, the regression results show that there are some variables that can jointly predict treatment status, which violates the validity of the counterfactual. Risk of begging for food/money, number of orphans, number of children in the household, age of the head and years of schooling of the head presented positive and significant coefficients.

In conclusion to the series of *T*-tests and regressions performed, the data does not provide a true control group so it is not clear whether the impact of the transfer would be the same if the controlled households received the transfer, instead of the treated households. This outcome can be explained by the following two reasons: firstly, the small sample size of households in the survey cannot provide a perfect counterfactual in the randomisation design; secondly, the Community Social Protection Committees (CSPCs) were not consistent in the targeting performed as it seems they have prioritized elderly households in the control group and households with more children in the treatment group. Since every community had its own committee, although they had the same orientation for the eligibility criteria, each committee gave different weights to the criteria when selecting eligible households. The selection process ends with a committee meeting in which the committee determines if the pre-screened household, visited and ranked by the committee and community members is eligible. If the number of communities was sufficiently large, the expectation would be that, on average, committees would select eligible households in similar ways for control and treatment groups. However, with only 8 VDGs differences emerge even with randomization. Such differences indicate that adjustments should be incorporated in the estimated of the impact of the program in order to have unbiased estimates, which will be discussed further in the methodology section (Boone et al., 2012).

Although there are no clear comparison group obtained by the randomisation design, there is an advantage in using villages as a unit for randomisation instead of households. If households were randomised, it is likely that the control and treatment groups would, on average, share the same characteristics and an almost perfect counterfactual could be used in a double difference approach. However, there are many studies[23] that suggest that cash transfers indirectly affect non-participant households in the same village. Thus, using control

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[23] Miller (2009) observes that the Malawi SCT had a positive impact on demand for local goods and services in participant villages.

households from the same village of treatment households for comparison would bias results. There are many examples of positive externalities of cash transfer programs that affect non-participant households. These externalities can vary their impact on economic, educational, social and health issues. Given that there are positive indirect effects not only for participant households, but often to the entire village in which the program is implemented, these results cannot be neglected. There is an important implication on the design of impact evaluation experiments which requires using randomization of individuals in different villages, having a control group with similar characteristics in a different village, or randomisation of villages. Failing to do so would bias the results on the policy impact and lead to an underestimation of its poverty alleviation achievements.

Angelucci & De Giorgi (2009), using data for *Progresa* in Mexico, analyse how cash transfers to eligible households indirectly affect the consumption of ineligible ones living in the same villages. The authors found that the exposure to natural disasters, the absence of formal credit and insurance institutions, and extensive within-village kinship relationships create incentives to engage in informal risk-sharing activities, in which participant households share part of their higher income with members of their social network through gifts or loans. Non-participant households in treatment villages consume more by borrowing more money (mainly from family and friends). Thus, the entire village could benefit from the program.

Next, in columns 4 to 8, Table 1 reports means and t-tests for households headed by men and women in the same fashion as the first four columns. Here, the results illustrate how, on average, the household characteristics differ depending on the gender of the head of the household. Columns 4 to 8 show that, on average, household headed by women have a higher dependency ratio, with a smaller family size and lower number of productive assets/livestock (hoes, axes, sickles, chicken) in comparison to household headed by men. Female heads are mostly single (97%), have one year of schooling and work 5 days in *ganyu*[24] per month. In contrast, the male heads are mostly married (73%), have 2.5 year of schooling and work 4 days in *ganyu*. Children in household headed by women are more likely to work for food/money. By and large, women seem to be in more vulnerable conditions among the ultra-poor selected in SCT in Malawi.

The next session discusses the econometrical techniques to overcome the caveats of the data in order to produce unbiased estimates.

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[24] *Ganyu* labor is a low-wage informal activity used as coping strategy in response to hunger and shocks.

5. Methodology

This paper explores the causal effect of the program, common in impact evaluation studies. This causal effect involves asking the following questions. How would individuals who participated in the program have fared in the absence of the program? How would those who were not exposed to the program have fared in the presence of the program? In other words, were any improvements a direct result of the project, or would they have improved anyway? It is very difficult to answer these questions, since an individual either participated or not in the program. Comparing result of the same individual over time is problematic, due to the presence of many other variables which may have changed during the program operation. Thus, instead of finding the effect of the program on individuals, researchers try to obtain the average impact of the program by comparing a group of individuals who participated to the program with another similar group which was not exposed to it. However, it is challenging to find two groups with very similar characteristics, and with only one group having participated in the program under analysis. If correctly designed and implemented, randomization of control and treatment groups guarantees that there is no selection bias. By and large, if there is not a good comparison group, differences between control and treatment groups can be attributable to both pre-existing differences (selection bias) and the impact of the program (Duflo and Kremer, 2005).

It is common practice in evaluation literature to define 'impact' as the difference between the outcome indicator for households who receive the cash transfer and its counterfactual value for eligible households in the absence of the program. In the case of Malawi SCT there are pre-existing differences between control and treatment groups; however there are quasi-experimental methods that can carry out evaluation using industrious techniques that can offset problems of selection bias: difference-in-difference, propensity score matching, instrumental variables and regression discontinuity. The decision of which is the best method depends on the characteristics of the data and the assumptions that each method relies on.

Given that the data was collected before and after the program for treated and control groups, impact estimator is obtained with a double difference (or difference-in-difference) method, which eliminates any time-invariant selection bias due to unobserved heterogeneity between treatment and control groups. Since there are differences between treatment and control groups caused by random sampling, a regression of double difference with control

variables is estimated. Including controls reduces residual variance, which in turn lowers the standard error of regression estimates and consequently allows tighter confidence intervals. The selection of control variables is very important in order to choose controls that are uncorrelated to treatment status and, therefore, have no effect on the impact estimate but only on its accuracy and on the likelihood of having a causal interpretation. Choosing outcome variables as control variables may lead to the 'bad control problem' which would bias the impact estimate. (Angrist and Pischke, 2009).

The impact of the cash transfer can be estimated with the double difference (DD) expressed by the equation below:

Equation 1:
$$Y_i = \beta_0 + \beta_1 SCT_i + \beta_2 Round + \beta_3 (Round * SCT_i) + BX + \varepsilon_i$$

Here,

Y_i: outcome variable

SCT_i: dummy variable for treatment status (equal to one if treated)

$Round$: dummy equal to zero for baseline round and to one for follow-up round

$Round * SCT_i$: interaction between treatment status and round dummies

BX: vector of household characteristics to control for observable characteristics

ε_i: error term

β_0: constant term

β_1: represents invariant differences between treatment and control groups

β_2: represents the effect of going from baseline to follow-up survey for control group

β_3: represents the impact of the program on treatment group (double difference estimator)

Although different papers presented heterogeneity effects of the program isolating the impact of the program for different groups (see Covarrubias et al. ,2012; Boone et al., 2012; Romeo et al., 2012), there remains a gap in the analysis. Tests of significance were not performed to access whether the different effects across groups were significantly different and the heterogeneity of results were not explored in detail. This paper focus on the different impacts on men and women, assesses whether they are significantly different and attempts to detail and disentangle these results in a comprehensible fashion. First, a difference-in-difference model with dummy for gender of household head is estimated. It can also be seen as a triple difference model (or difference-in-difference-in difference).

In essence, the triple difference model (DDD) here entails: double difference (DD) estimate for female headed households minus DD estimate for male headed households. Such DDD estimator allows comparisons on the impact of the program depending on the gender of the head of the household. DDD is given by:

$$DDD = (\Delta Y_{Treat,Fem} - \Delta Y_{Control,Fem)} - (\Delta Y_{Treat,Male} - \Delta Y_{Control,Male)}$$

Here, '*Treat*' denotes treatment group; '*Control*' denotes control group, '*Fem*' denotes female headed households and '*Male*' denotes male headed households. The triple difference can be obtained with the following formula:

Equation 2:

$$Y_i = \beta_0 + \beta_1 SCT_i + \beta_2 Round + \beta_3(Round * SCT_i) + \beta_4 Fem_i + \beta_5(Fem_i * SCT_i) \\ + \beta_6(Fem * Round) + \beta_7(Fem * Round * SCT_i) + BX + \varepsilon_i$$

Here,

Fem: dummy variable for gender of the head of the household (equal to one if woman)

β_0: constant term for households headed by men

β_1: represents invariant differences between treatment and control groups for households headed by men

β_2: represents the effect of going from baseline to follow-up survey for control group for households headed by men

β_3: represents the impact of the program on treatment group for households headed by men (double difference)

β_4: constant term for households headed by women

β_5: represents the additional invariant differences between treatment and control groups for households headed by women

β_6: represents the additional effect of going from baseline to follow-up survey for control group for households headed by women

β_7: represents the additional impact of the program on treatment group for households headed by women (triple difference)

Therefore, the effect of the program on households headed by women is *β₃ + β₇*. If *β₃* is significant and *β₇* is not significant, it means that the impact of the program is the same for

households headed by women and men. If β_3 is not significant and β_7 is significant, it means that the impact of the program is only present in households headed by women. If both β_3 and β_7 are significant, then β_7 shows how stronger/weaker the impact of the program is on household headed by women compared to the impact on male headed households.

In the vector of control variables X, variables that differ in control and treatment groups that can affect outcome variables were included such as: characteristics of the head of the household (age, marital status, year of educational, disability, presence of HIV/AIDS, religion) and household composition (size, dependency ratio, number of household member in varied cohort groups). Also, since the model identifies the different outcomes depending on the gender of the head, some of the control variables mentioned also interacted with the dummy of gender of the head of the household *Fem.*

The model with double differences with control variables can produce unbiased estimates and also allows for testing the significance of the impact coefficient for male and female headed households. In addition to this method, a Propensity Score Matching (PSM)[25] is undertaken so it is possible to see the sensitivity of the results to a change in the methodology.

In the PSM approach, the impact of the program is calculated separately[26] for households with male and female heads applying matching method (Propensity Score Matching) and then, calculating difference-in-difference. The key idea of matching is to find two identical individuals in the data (with the same propensity score or probability to belong to treatment group), with the only variation being that one is treated and the other individual is untreated. Any difference in the outcomes of treated and untreated individuals are then attributed to the treatment.

The propensity score is the estimated probability of participating in a treatment, given observed characteristics. In other words, matching methods used here estimate the outcome without the SCT by taking weighted averages over outcomes for individuals who did not participate and who are observationally similar to the participants in terms of their propensity scores. This means that households from control and treatment groups are matched on their

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[25] See Rosenbaun and Rubin (1983) for further information on Propensity Score Matching.

[26] Since the effect of the program is calculated separately for households headed by men and the ones headed by women, no significance test for the difference of these coefficients is presented. In addition, the interpretation of the impact coefficient estimated in the Difference-in-Difference with Propensity Score Matching represent the total effect of the program for households headed by men and households headed by women separately, whereas, in OLS, the effect of the program on households headed by women is $\beta3 + \beta7$.

propensity score, which greatly reduces the curse of dimensionality[27] problem. Intuitively, it is desirable to find that for each treated individual there is at least, an untreated counterpart who has the same propensity score but remains untreated.

The propensity score matching estimators are estimated in two stages. In the first stage, the propensity score is estimated using a Probit model and a set of variables consisting on baseline household characteristics. In the second stage, the matched outcomes are constructed for the difference-in-difference estimator.

Conditional on the propensity score, treatment is as good as if individuals have been randomly assigned into control and treatment groups. This is the conditional independence assumption, which is similar to the OLS zero conditional mean assumption. Both matching and OLS are control strategies and both methods try to use observed variables to control for all differences between the treatment and control group. In OLS, the differences between control and treatment that can affect the outcome have to be controlled, whereas in PSM the difference between treatment and control that affect assignation to treatment group should be controlled. If these methods are so similar, how can one be preferable to the other? "*A philosophical argument is that the propensity score rightly focuses researchers attention on models for treatment assignments, something about which we may have reasonably good information, instead of typically more complex and mysterious process determining outcomes*" (Angrist and Pischke, 2009, p. 84).

Another assumption of PSM is that there is common support, so all treated agents have a counterpart on the non-treated population. The common support assumption is testable, but the conditional independence assumption (as well as the OLS's zero conditional mean assumption) is an identifying assumption and, therefore, is not testable.

Table 5 reports the Probit model which includes variables that could be correlated to treatment status. Figure 1 shows the frequency of propensity score in control and treatment groups in a histogram. In order to meet the common support requirement, the data was trimmed and 7 household were excluded in this methodology. Table 6 reports distribution of treatment and control households across matching blocks. The nearest five neighbours matching procedure is used with calliper[28] 0.1, which avoids possible poor matches. Matching is performed with replacement and with the imposition of common support (which

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[27] Problem that arises when it is not possible to find individuals with exactly the same characteristics and, therefore, cannot meet the common support assumption required for matching control and treatment groups.
[28] The caliper of 0.1 means that matches take place within the range of 1 percentage point of each treated household's propensity score.

restricts to include only observations that overlap in the treatment and control propensity score distribution).

In the next section, the results of the estimations are provided as well as interpretation of them.

6. Results: The Impact of SCT

The results of the analysis on the impact of SCT are presented in Table 3. The structure of the table separates impact indicators in different categories: a) assets and livestock ownership, b) participation in income activities, c) risk-coping behaviour, and d) food expenditure, production and consumption. The first model reported is Difference-in-Difference (Diff-in-Diff) without control variables and the second model is Diff-in-Diff with control variables (*BX*). Each of these models estimates impact indicators for male and female headed households in the same standard least square regression with robust standard errors. Next, the results of a Propensity Score Matching (PSM) combined with Difference-in-Difference are reported with bootstrapped standard errors. The focus of the analysis is on the different impacts across gender lines, thus, interpretation of results centre attention on the model of Diff-in-Diff with control variables that follows equation 2. Results of a PSM with Diff-in-Diff are used to assess the sensitivity of the main model of equation 2.

Results indicate a positive effect of SCT on investments in assets and livestock. Ownership of axes and sickles were homogeneous across male and female headed households with increase of 30 percent and 23 percent, respectively. In contrast, ownership of hoes increased 18 percent, only for households headed by women, while male headed households saw no significant change. Ownership of beerdrum, used for brewing beer, augmented 5 percent for treated households with women as head and was not significantly impacted when transfer recipients are men. In respect to ownership of livestock, there was no significant change for cattle, a homogeneous increase of 52 per cent for ownership of chicken, and an increase of 46 percent for goats in households headed by men with an even greater increase of 56 percent in women headed households. As shown in Table 2, prior to the SCT, women headed households owned significantly less agricultural assets and livestock, but the impact of the SCT on them was limited to an increase of ownership of hoes and goats. According to Covarrubias et al. (2012), the absence of impact on ownership of cattle is related to its high

price, relative rarity of cattle culture in Malawian smallholders, and the fear of compromising eligibility to the program.

The positive impact on investment in agricultural assets is an interesting result, because it shows that the SCT may have an impact that goes beyond protection, but can also affect production decisions. Households often rely on selling assets as a short-term low-risk low-return solution to ensure procurement of enough food, but with a regular cash transfer, this type of strategy is minimized, with the focus shifting to investment in productive assets.

Next, results on participation on income activities show a sharp reduction on agricultural wage labor of 56 percent and not significant change on self-employment on-farm for beneficiaries of the program. According to Covarrubias et al. (2012), it does not necessarily mean that the agricultural tools and livestock are not being used by households on their own farm. Given that those variables are dummies that only capture income-generating activities (with non-zero income), it might be the case that self-employment on-farm is increasing for transfer recipients but only for household subsistence consumption rather than for cash sales. Results on change in income participation were homogeneous for household headed by men and women.

The impact of the SCT on risk coping behaviour outcomes was also homogeneous for male and female headed households. Not surprisingly, the SCT impacted negatively the private transfers and gifts[29] from family and friends in 29 and 30 percent, respectively. SCT non-participant friends and relatives reduced their transfer and gifts after the SCT started, given that beneficiaries began to have another source of income from the cash transfer.

Next, there was a significant decrease in average *ganyu* labour days of work by head (3.5 days) and household members (8 days). Table 2 reports that average *ganyu* days worked by head per month is 4.7 days and for all household members is 8 days. It indicates how relevant the SCT is to reducing low-skilled *ganyu* labour and increasing availability of households for other activities such as on-farm work. Additionally, treated households seem to have reduced the adoption of short-term risk-coping solutions. Begging for food and/or money dropped 34 percent and pulling children out of school in order to work for food and money dropped 37 percent. These results highlight the protective nature of the SCT in reducing vulnerability to shocks. Those risk coping mechanisms have long-term impact on productive capacity of the household and on children's education. Again, the impact of SCT is homogeneous across male and female headed households.

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[29] Gifts were often food, soap, clothing and firewood. (Miller, 2009)

As seen above, impact of the SCT on change in labor allocation as well as change in risk coping strategies seems to be homogenous across male and female headed households. In the case of impact on ownership of agricultural assets and livestock, the larger effect on female headed households is probably explained by smaller asset base of this group on baseline, as reported in Table 2. Heterogeneous results from previous studies of the SCT commented on considerable differences in productive impacts of the program on male and female households, but those results were estimated by separate regressions and, therefore, it is not possible to assess if the difference in the impact for male head and female head is statistically different than zero. In contrast to the results presented in the model Diff-in-Diff with controls, those separate regressions with sub-samples of male and female head seem to overstate the difference in the impacts on production decisions of the SCT between male and female heads, as the results of the Diff-in-Diff combined with Propensity Score Matching[30] in Table 3 corroborate for many outcome variables (i.e.: ownership of axes and chicken, participation in agricultural wage labor, in private transfer income, in private transfer: gifts, number of *ganyu* days worked, etc). Although PSM with Diff-in-Diff model overstate the difference in the impact of the program for male and female household heads, most of the times this model provides results on impact of the program that are in-line (without high discrepancies) with the results of Diff-in-Diff with control variables.

In respect to expenditure, production and consumption of food[31], the results corroborate the hypothesis that in unconditional cash transfers produce better results if directly handed over to females rather than males in terms of nutrition. Females improved the household diet by purchasing more and better food, containing better sources of sustenance such as pulses, vegetables, dairy products, fruits and sugar. In a year period, probability of consumption significantly increases more on meat and fish as well as fruit and sugar for female headed households compared to households with male heads. In terms of own production of food, the SCT seems to have homogeneous effects across gender of heads, except for own production of meat and fish and dairy products, in which male headed households have stronger impact in the increase of the probability to produce. This higher impact on production of animal derivatives for male headed households might be explained by the *a priori* higher livestock base of this group on baseline.

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[30] Results of PSM with Diff-in-Diff report the average treatment effect for separate subsamples with male and female headed households.

[31] Results on food expenditure are expressed in Malawi Kwacha. Results on food consumption and food production are expressed as change in the probability to consume and produce.

Positive results on food expenditure and consumption consequently affect household's children nutrition. Such impacts are very relevant given the importance of early development of children and the impact it can have on contributing to interrupting intergenerational transmission of poverty through cognitive skills, productivity and employability later in life.

The SCT also impacted positively households own food production. Cereals, tubers, pulses, meat/fish, dairy products, fruit and sugar had their production increased as a result of the SCT. Female headed households had a higher production of pulses compared to the male headed ones. These results confirm the hypothesis that SCT influenced household labor allocation towards on-farm self-employment and show consistency of the data.

In addition to the results reported here, the child-level outcomes of Covarrubias et al. (2012) indicate that children in female-headed households are impacted by the SCT through a reduction in the participation and time spent in non-household labour activities and in terms of greater participation and time spent on household chores in comparison to the impact on male headed households. These results highlight important constraints facing single female headed households in order to meet domestic tasks and subsistence agricultural production.

The results illustrate that female headed households respond differently to the SCT, particularly in respect to how to spend the money and what to consume. This arises from the fact that in most of these households, women are the head and single, so they are free to decide what to do with the money. As highlighted previously, evidence shows that women invest more in household survival. If money is given to women in a household with men, the outcome could be different than the one described in this paper, since, in this case, changing household behaviour would require change in the capacity of women to negotiate gendered obligations and entitlements in the household. Receiving the transfer does not necessarily empower or enable women to negotiate in the household. Free of a male patriarch, female headed households can become enabling spaces for distribution of household tasks and resources more equitably.

6.1. Seasonality

The results of the previous section correspond to changes after one year of the start of the monthly cash transfer. Here, Table 4 shows that most of the results hold when focusing on

the impact of SCT six months after its start. Since the first follow-up survey corresponds to harvest season in Malawi only six months after baseline, it can have different results compared to results on the impact of SCT one year after its start. The short duration of the program as well as the different context of supply and demand of labor due to harvest might have an impact on outcomes of the program.

Noteworthy, the impact of the SCT after six months is less strong with respect to minimising poverty coping mechanisms: reducing *ganyu* days worked, begging and pulling children to work for food and money. Also, change in participation in agricultural wage labor is -35% after six months of the implementation of the SCT, in contrast to -56% reported after one year. In terms of investment in agricultural assets and livestock, the impact of the SCT after six months is less strong than after one year. The increased labor demand at the harvest season might have delayed the impact of the SCT on reducing participation in agricultural wage labor and on increasing ownership of productive assets. Both effects together might signify the shift towards increase in participation in on-farm work observer one year after the start of the program.

7. Conclusion

This paper analysed the impact of Malawi SCT using data from Mchinji district in the period from 20007 to 2008, and explored whether female headed households were impacted differently than male headed households in terms of production, consumption and risk coping strategies.

Malawi SCT affected differently male and female headed households in terms of food spending and food consumption. Production decisions and poverty coping mechanisms presented more homogeneous impact patterns for male and female headed households.

The impact of SCT was stronger on female headed households in terms of food consumption and food spending, which confirms the hypothesis resources controlled by women are more likely to manifest greater improvements in household's and child's nutrition. Female headed households, beneficiaries of SCT program, seem to have improved the quality and quantity of household diet, which can have significant impact on early development of children.

As a result of SCT, there was a high increase in ownership of agricultural assets and livestock that was reflected on an increase of on-farm food production of treated households. The productive impacts were similar to male and female headed households in terms of on-farm food production, except from own production items directly related to larger asset base of male headed households. Female heads had a greater increase of ownership of productive asset and livestock. Although results show an investment in agricultural activities, there was no indication of significant increase in participation in income agricultural activities, which means that resources and time were oriented towards on-farm subsistence agriculture, as on-farm food production results also confirm. Thus, this paper indicates that Malawi SCT should not be seen exclusively as a welfare program. There are significant impacts that show that the cash transfers not just increased food consumption, but also allowed improvement of productive capacity of the participant households.

Although the results on risk coping strategies were homogeneous across gender of head of the household, they show the strong presence of protective effects of SCT on reducing vulnerability of households to shock. In other words, after the SCT, a reduced number of treated households who adopt short-term solutions such as pulling children out of school and selling assets.

This paper shows that woman can contribute to unconditional cash transfer programs with disposition and skills and inclination towards involvement in household survival. However, poor women need a reliable income source and sustainable routes out of poverty. Although it is still not clear to each extent Malawi SCT is sustainable in the long run, the short term impacts on food consumption and spending show that impacts are particularly robust when placed in hands of female household heads. More research using new follow-up surveys and child-level data should be performed before suggesting a change in the policy of cash recipient. Although this paper indicates that female headed households had greater impacts in many variables, in comparison to men, there are still effects to be understood, particularly on children in the long-term.

8. References

ADATO, M., DE LA BRIÉRE, B., MINDEK, D. & QUISUMBING, A. 2000. The impact of PROGRESA on women's status and intrahousehold relations. *Final Report, International Food Policy Research Institute, Washington DC*.

ALVIAR, C., DAVIS, B., HANDA, S., HURRELL, A., HUSSEIN, A., MUSEMBI, D., OCHIENG, S., PALERMO, T., PEARSON, R., PELLERANO, L., VISAM, A. & WARD, P. 2012. The impact of the Kenya Cash Transfer Program for Orphans and Vulnerable Children on household spending. *Journal of Development Effectiveness,* 4**,** 9-37.

ANGELUCCI, M. & DE GIORGI, G. 2009. Indirect Effects of an Aid Program: How Do Cash Transfers Affect Ineligibles' Consumption? *The American Economic Review,* 99**,** 486-508.

ANGRIST, J. D. & PISCHKE, J. S. 2009. *Mostly harmless econometrics: An empiricist's companion*, Princeton Univ Pr.

BAIRD, S., MCINTOSH, C. & ÖZLER, B. 2011. Cash or Condition? Evidence from a Cash Transfer Experiment. *The Quarterly Journal of Economics,* 126**,** 1709-1753.

BAKER, J. L. (2000). *Evaluating the impact of development projects on poverty: a handbook for practitioners*. World Bank.

BARRIENTOS, A. & HULME, D. 2009. Social Protection for the Poor and Poorest in Developing Countries: Reflections on a quiet revolution. *Oxford Development Studies,* 37**,** 439-456.

BECKER, G. S. 1991. A Treatise on the Family, Harvard Univ Pr.

BOONE, R., COVARRUBIAS, K., DAVIS, B. & WINTERS, P. 2012. Cash Transfer Programs and Agricultural Production: The Case of Malawi.

CHANT, S. H. 2007. *Gender, generation and poverty: exploring the'feminisation of poverty'in Africa, Asia and Latin America*, Edward Elgar Publishing.

CONWAY, T., DE HAAN, A. & NORTON, A. 2000. Social protection: new directions of donor agencies. London: DfID.

COVARRUBIAS, K., DAVIS, B. & WINTERS, P. 2012. From protection to production: productive impacts of the Malawi Social Cash Transfer scheme. *Journal of Development Effectiveness,* 4**,** 50-77.

DAVIS, B., GAARDER, M., HANDA, S. & YABLONSKI, J. 2012. Evaluating the impact of cash transfer programmes in sub-Saharan Africa: an introduction to the special issue. *Journal of development effectiveness,* 4**,** 1-8.

DUFLO, E.& KREMER, M. (2005). Use of Randomization in the Evaluation of Development Effectiveness. In:World Bank (2005), Evaluating Development Effectiveness, Chapter 10.

ELLIS, F. 1993. Peasant economics: farm households and agrarian development, Cambridge Univ Pr.

GAARDER, M. 2012. Conditional versus unconditional cash: a commentary. *Journal of Development Effectiveness,* 4**,** 130-133.

GARCIA, M. & MOORE, C. G. 2011. *The Cash Dividend: The Rise of Cash Transfer Programs in Sub-Saharan Africa.* The World Bank.

HAILU, D., MEDEIROS, M. & NONAKA, P. 2008. Legal protection for cash transfers: why we need it. *Cash transfers: Lessons from Africa and Latin America***,** 28-29.

MILLER, C. 2009. Economic Impact Report of the Mchinji Social Cash Transfer Pilot. Boston University School of Public Health. *Center for Global Health and Development, Boston, MA. Available online at http://childresearchpolicy.org.*

MILLER, C. M., TSOKA, M. & REICHERT, K. 2011. The impact of the Social Cash Transfer Scheme on food security in Malawi. *Food Policy,* 36**,** 230-238.

MILLER, C. M., TSOKA, M. & REICHERT, K. 2008. Targeting Report: External Evaluation of the Mchinji Social Cash Transfer Pilot. Center for International Health and Development, Boston University, Boston, and Centre for Social Research, University of Malawi, Zomba.

MOLYNEUX, M. 2006. Mothers at the service of the new poverty agenda: Progresa/Oportunidades, Mexico's conditional transfer programme. *Social Policy & Administration,* 40**,** 425-449.

NIÑO-ZARAZÚA, M., BARRIENTOS, A., HICKEY, S. & HULME, D. 2011. Social Protection in Sub-Saharan Africa: Getting the Politics Right. *World Development*.

QUISUMBING, A. R. & MALUCCIO, J. A. 2000. *Intrahousehold allocation and gender relations: New empirical evidence from four developing countries*, International Food Policy Research Institute Washington, DC.

ROSENBAUM, P. R. & RUBIN, D. B. 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70, 41-55.

ROMEO, A., DAVIS, B. & WINTERS, P. 2012. Reassessing the Unmatched: A Rigorous Impact Evaluation of the Mchinji Social Cash Transfer Program. *(mimeo)*

SCHUBERT, B. & HUIJBREGTS, M. 2006. The Malawi Social Cash Transfer Pilot Scheme: Preliminary lessons learned. *conference on "Social Protection Initiatives for Children, Women and Families: An Analysis of Recent Experiences".* New York.

SEN, A. K. 1999. *Development as freedom*, Oxford University Press.

SKOUFIAS, E., MCCLAFFERTY, B. & INTERNATIONAL FOOD POLICY RESEARCH
INSTITUTE. FOOD CONSUMPTION AND NUTRITION, D. 2001. *Is Progresa Working:
Summary of the Results of an Evaluation by IFPRI*, International Food Policy Research
Institute Washington, DC.

SUÁREZ, M. & LIBARDONI, M. 2008. The impact of the Bolsa Família Program: changes and
continuities in the social status of women. *Evaluation of MDS Policies and Programs.
Results,* 2.

UNDP 2012. *Africa Human Development Report 2012: Towards a Food Secure Future.*

WORLD BANK, 2011. *World Development Report: gender, equality and development*. Washington,
DC: World Bank.

9. Tables

Table 1 - Household Characteristics at Baseline

	Mean Control	Mean Treatment	Mean Diff	P-value[a]	Mean Male	Mean Female	Mean Diff	P-value[a]
Eligibility Criteria								
Consume one or less meals a day	0.508	0.548	-0.040	0.271	0.487	0.549	-0.062	0.102
Beg for food/money	0.329	0.438	-0.109	**0.002**	0.354	0.398	-0.044	0.238
Household is poor	0.990	0.992	-0.002	0.760	0.996	0.988	0.008	0.249
Per capita monthly expenditure (MK)	193.304	191.513	1.791	0.938	207.601	184.260	23.341	0.335
Household owns 0-1 assets	0.523	0.482	0.041	0.261	0.300	0.613	-0.312	**0.000**
Dependency ratio over 3	0.723	0.718	0.005	0.879	0.635	0.766	-0.131	**0.000**
Number of orphans	0.383	0.729	-0.345	**0.000**	0.502	0.578	-0.076	0.419
Number of children	1.979	2.975	-0.996	**0.000**	2.361	2.518	-0.157	0.313
Household Head Characteristics								
Age of household head	63.051	59.965	3.086	**0.016**	61.998	61.309	0.689	0.608
Head is single	0.732	0.717	0.015	0.647	0.273	0.967	-0.694	**0.000**
Head is female	0.668	0.630	0.038	0.273	0.000	1.000	-1.000	.
Head has HIV/AIDS	0.023	0.005	0.018	**0.042**	0.015	0.014	0.001	0.925
Head is disabled	0.215	0.205	0.010	0.749	0.232	0.199	0.033	0.288
Years of schooling of head	1.205	1.992	-0.787	**0.000**	2.471	1.111	1.361	**0.000**
Head is not Catholic	0.475	0.571	-0.095	**0.009**	0.554	0.504	0.050	0.196
Household Composition								
Household size	3.541	4.671	-1.130	**0.000**	4.460	3.891	0.569	**0.001**
Dependency ratio	2.678	3.380	-0.703	**0.000**	2.831	3.121	-0.290	**0.041**
Under 5 years	0.376	0.477	-0.101	**0.062**	0.441	0.416	0.025	0.658
Between 5 and 10 years	0.630	0.981	-0.351	**0.000**	0.719	0.844	-0.126	**0.074**
Between 11 and 15 years	0.759	1.153	-0.394	**0.000**	0.920	0.967	-0.047	0.550
Between 15 and 59 years	0.933	1.351	-0.418	**0.000**	1.388	1.000	0.388	**0.000**
Over 60 years	0.845	0.710	0.135	**0.005**	0.992	0.664	0.328	**0.000**
Number of Households	386	365	751		263	488	751	

[a] *P*-value of the *t*-test of significance of the difference between means. Significant differences are in bold.

Table 2 – Impact Variables at Baseline

	Mean Control	Mean Treatment	Mean Diff	P-value[a]	Mean Male	Mean Female	Mean Diff	P-value[a]
Assets and livestock ownership (%)								
Hoes	0.883	0.879	0.004	0.867	0.954	0.842	0.112	**0.000**
Axes	0.282	0.329	-0.046	0.168	0.559	0.168	0.391	**0.000**
Sickles	0.174	0.271	-0.098	**0.001**	0.369	0.141	0.227	**0.000**
Beerdrum	0.003	0.011	-0.008	0.159	0.011	0.004	0.007	0.241
Cattle	0.003	0.000	0.003	0.331	0.004	0.000	0.004	0.173
Goats	0.018	0.014	0.004	0.629	0.015	0.016	-0.001	0.902
Chicken	0.101	0.132	-0.030	0.193	0.144	0.100	0.044	**0.072**
Participation in income activities (%)								
Agricultural wage labour	0.044	0.107	-0.063	**0.001**	0.072	0.076	-0.004	0.859
On-farm self employment	0.313	0.329	-0.015	0.654	0.342	0.309	0.033	0.359
Rental income	0.026	0.036	-0.010	0.441	0.038	0.027	0.011	0.388
Non-farm self employment	0.425	0.515	-0.090	**0.013**	0.483	0.461	0.022	0.568
Private transfer income	0.363	0.419	-0.056	0.113	0.380	0.395	-0.015	0.683
Private transfers: remittances	0.080	0.071	0.009	0.639	0.084	0.072	0.012	0.557
Private transfers: gifts from family/friends	0.311	0.395	-0.084	**0.016**	0.335	0.361	-0.026	0.476
Risk-coping behaviour								
Days of ganyu labour worked by all household members	6.940	8.121	-1.180	0.174	8.905	6.764	2.141	**0.019**
Number of ganyu days worked per adult in household	4.757	4.694	0.063	0.903	4.037	5.095	-1.058	**0.052**
HH members beg for food/money	0.329	0.438	-0.109	**0.002**	0.354	0.398	-0.044	0.238
Child hh members work to get food/money	0.386	0.518	-0.132	**0.000**	0.392	0.482	-0.090	**0.018**
Other risky behaviour for food/money (prostitution, theft, other)	0.018	0.016	0.002	0.859	0.019	0.016	0.003	0.793
Children								
Currently attending school	0.849	0.891	-0.043	**0.023**	0.874	0.873	0.001	0.939
Work outside home	0.300	0.277	0.023	0.319	0.266	0.299	-0.033	0.170
Hours worked outside home	3.010	2.745	0.265	0.346	2.479	3.042	-0.563	**0.061**
Leisure activities	0.715	0.739	-0.025	0.278	0.689	0.750	-0.061	**0.009**
Hours spent in leisure activities	3.267	2.979	0.288	0.141	3.040	3.130	-0.090	0.661
Days missed in school	3.116	2.806	0.310	0.221	2.865	2.963	-0.098	0.710
Number of households	386	365	751		263	488	751	
Number of children	673	907	1,580		549	1031	1,580	

[a] *P*-value of the *t*-test of significance of the difference between means. Significant differences are in bold

Table 3 – Impact of the Program (after 1 year)

Round 3	Diff-in-Diff[a]		Diff-in-Diff with Controls[a]		Diff in-Diff with PSM[b]	
	Male Head ($\beta3$)	Female Head ($\beta7$)	Male Head ($\beta3$)	Female Head ($\beta7$)	Male Head	Female Head
Assets and livestock ownership (%)						
Hoes	-0.029	0.255***	0.011	0.184***	0.072	0.230***
	(0.441)	(0.000)	(0.801)	(0.002)	(0.224)	(0.000)
Axes	0.041	0.372***	0.302***	-0.023	0.281**	0.355***
	(0.586)	(0.000)	(0.000)	(0.805)	(0.024)	(0.000)
Sickles	0.089	0.305***	0.229***	0.088	0.137	0.436***
	(0.239)	(0.000)	(0.006)	(0.361)	(0.126)	(0.000)
Beerdrum	-0.036**	0.061***	-0.030	0.053**	-0.022	0.024
	(0.038)	(0.008)	(0.102)	(0.027)	(0.196)	(0.138)
Cattle	0.010	0.001	0.016	-0.008	0.029	0.009*
	(0.204)	(0.925)	(0.144)	(0.510)	(0.275)	(0.085)
Goats	0.468***	0.089	0.456***	0.105*	0.467***	0.520***
	(0.000)	(0.124)	(0.000)	(0.075)	(0.000)	(0.000)
Chicken	0.520***	0.092	0.521***	0.084	0.571***	0.612***
	(0.000)	(0.203)	(0.000)	(0.289)	(0.000)	(0.000)
Participation in income activities (%)						
Agricultural wage labour	-0.520***	0.025	-0.562***	0.086	-0.602***	-0.610***
	(0.000)	(0.747)	(0.000)	(0.268)	(0.000)	(0.000)
On-farm self employment	0.130*	-0.092	0.113	-0.075	0.100	0.078
	(0.092)	(0.307)	(0.181)	(0.469)	(0.243)	(0.299)
Rental income	0.004	0.031	0.020	0.010	-0.009	0.008
	(0.872)	(0.301)	(0.471)	(0.780)	(0.714)	(0.846)
Non-farm self employment	-0.032	-0.087	0.014	-0.145	0.074	-0.019
	(0.658)	(0.280)	(0.859)	(0.134)	(0.480)	(0.761)
Private transfer income	-0.320***	-0.054	-0.288***	-0.102	-0.309**	-0.364***
	(0.000)	(0.521)	(0.000)	(0.301)	(0.003)	(0.000)
Private transfers: remittances	-0.018	-0.008	-0.002	-0.035	-0.025	-0.063*
	(0.587)	(0.828)	(0.967)	(0.475)	(0.104)	(0.021)
Private transfers: gifts from family/friends	-0.318***	-0.049	-0.297***	-0.077	-0.304***	-0.337***
	(0.000)	(0.537)	(0.000)	(0.413)	(0.000)	(0.000)
Risk-coping behaviour						
Days of ganyu labour worked by all household members	-8.209***	3.584*	-8.078***	2.992	-5.37**	-5.493***
	(0.000)	(0.071)	(0.000)	(0.187)	(0.016)	(0.000)
Number of ganyu days worked per adult in household	-2.290**	-1.212	-3.397***	0.491	-2.752**	-3.216**
	(0.012)	(0.234)	(0.000)	(0.671)	(0.017)	(0.002)
HH members beg for food/money (%)	-0.294***	-0.012	-0.343***	0.046	-0.169*	-0.156
	(0.000)	(0.878)	(0.000)	(0.608)	(0.098)	(0.010)
Child hh members work to get food/money (%)	-0.315***	-0.147*	-0.374***	-0.029	-0.355***	-0.415***
	(0.000)	(0.079)	(0.000)	(0.744)	(0.000)	(0.000)
Other risky behaviour for food/money (%)	0.011	-0.018	0.008	-0.017	0.044	-0.007
	(0.560)	(0.373)	(0.725)	(0.487)	(0.251)	(0.605)

Round 3	Diff-in-Diff[a]		Diff in-Diff with Controls[a]		Diff in-Diff with PSM[b]	
	Male Head (β3)	Female Head (β7)	Male Head (β3)	Female Head (β7)	Male Head	Female Head
Food Expenditure (MK); Production and Consumption (change in probability)						
Monthly food purchases (MK)[c]	3,206.683***	437.257	3,275.745***	381.795	3075.114***	3762.314***
	(0.000)	(0.278)	(0.000)	(0.348)	(0.000)	(0.000)
Cereals, Purchased (MK)	281.246***	94.437	266.353***	111.862	3075.114***	391.076***
	(0.000)	(0.191)	(0.000)	(0.139)	(0.000)	(0.000)
Cereals, Own Production	0.131**	0.025	0.179**	-0.032	0.209*	0.1793**
	(0.038)	(0.740)	(0.012)	(0.714)	(0.06)	(0.007)
Cereals, Consumption	0.005	0.000	0.000	0.008	0.017	0.005
	(0.521)	(0.979)	(0.963)	(0.492)	(0.388)	(0.336)
Tubers, Purchased (MK)	23.966***	13.420	24.116***	12.528	22.58**	40.098***
	(0.003)	(0.290)	(0.003)	(0.271)	(0.031)	(0.000)
Tubers, Own Production	0.186***	-0.088	0.173***	-0.069	0.162*	0.056
	(0.002)	(0.209)	(0.006)	(0.361)	(0.036)	(0.348)
Tubers, Consumption	0.155*	0.205**	0.189**	0.160	0.091	0.3645***
	(0.050)	(0.026)	(0.030)	(0.134)	(0.426)	(0.000)
Pulses, Purchased (MK)	9.387	28.624***	5.027	34.013***	8.993	38.925***
	(0.164)	(0.001)	(0.415)	(0.000)	(0.195)	(0.000)
Pulses, Own Production	0.379***	0.083	0.345***	0.134*	0.332**	0.480***
	(0.000)	(0.277)	(0.000)	(0.098)	(0.001)	(0.000)
Pulses, Consumption	0.368***	0.080	0.400***	0.022	0.393***	0.469***
	(0.000)	(0.319)	(0.000)	(0.819)	(0.000)	(0.000)
Vegetables, Purchased (MK)	17.260***	31.907***	19.190***	27.639***	24.956***	47.312***
	(0.002)	(0.001)	(0.000)	(0.004)	(0.000)	(0.000)
Vegetables, Own Production	-0.003	0.089	0.016	0.061	0.086	0.042
	(0.945)	(0.142)	(0.778)	(0.388)	(0.365)	(0.472)
Vegetables, Consumption	-0.002	0.005	0.006	-0.007	0.023	-0.031
	(0.798)	(0.668)	(0.414)	(0.583)	(0.105)	(0.315)
Meat/Fish, Purchased (MK)	194.788***	15.956	208.903***	-4.300	204.561***	219.802***
	(0.000)	(0.665)	(0.000)	(0.910)	(0.000)	(0.000)
Meat/Fish, Own Production	0.173***	-0.060	0.225***	-0.136**	0.182	0.091**
	(0.000)	(0.274)	(0.000)	(0.031)	(0.010)	(0.024)
Meat/Fish, Consumption	0.406***	0.281***	0.481***	0.179**	0.490***	0.635***
	(0.000)	(0.000)	(0.000)	(0.042)	(0.000)	(0.000)

(*Continued*)

Round 3	Diff-in-Diff[a]		Diff-in-Diff with Controls[a]		Diff-in-Diff with PSM[b]	
	Male Head ($\beta 3$)	Female Head ($\beta 7$)	Male Head ($\beta 3$)	Female Head ($\beta 7$)	Male Head	Female Head
Dairy, Purchased (MK)	46.595***	24.406*	45.885***	24.141*	53.166***	71.175***
	(0.000)	(0.089)	(0.000)	(0.077)	(0.000)	(0.000)
Dairy, Own Production	0.119***	-0.046	0.146***	-0.080*	0.131**	0.070**
	(0.002)	(0.275)	(0.000)	(0.075)	(0.007)	(0.002)
Dairy, Consumption	0.333***	0.099	0.350***	0.080	0.374***	0.450***
	(0.000)	(0.132)	(0.000)	(0.242)	(0.000)	(0.000)
Fruit, Purchased (MK)	4.302	14.952**	3.928	14.493**	8.147	18.617***
	(0.353)	(0.010)	(0.426)	(0.018)	(0.014)	(0.000)
Fruit, Own Production	0.252***	0.016	0.280***	-0.023	0.3371914***	0.256***
	(0.000)	(0.843)	(0.000)	(0.789)	(0.001)	(0.000)
Fruit, Consumption	0.185***	0.243***	0.198**	0.230**	0.109	0.453***
	(0.009)	(0.004)	(0.012)	(0.018)	(0.168)	(0.000)
Sugar, Purchased (MK)	-0.345	4.115**	-0.804	4.636***	-0.001	4.247**
	(0.752)	(0.015)	(0.481)	(0.004)	(0.999)	(0.003)
Sugar, Own Production	0.151***	0.067	0.151**	0.071	0.157*	0.222***
	(0.009)	(0.329)	(0.011)	(0.326)	(0.059)	(0.000)
Sugar, Consumption	0.276***	0.286***	0.225***	0.353***	0.252*	0.567***
	(0.000)	(0.001)	(0.007)	(0.000)	(0.022)	(0.000)
Cooking Oil, Purchased (MK)	56.451***	-11.720	54.891***	-10.429	56.517***	45.226***
	(0.000)	(0.276)	(0.000)	(0.292)	(0.000)	(0.000)
Cooking Oil, Own Production	-0.059**	0.052	-0.048	0.038	-0.044	-0.010
	(0.048)	(0.109)	(0.149)	(0.321)	(0.357)	(0.662)
Cooking Oil, Consumption	0.585***	0.038	0.604***	0.015	0.583***	0.614***
	(0.000)	(0.571)	(0.000)	(0.831)	(0.000)	(0.000)
Salt, Purchased (MK)	28.267***	6.482	35.337***	-5.337	34.173***	34.339***
	(0.000)	(0.445)	(0.000)	(0.594)	(0.000)	(0.000)
Salt, Own Production	-0.086*	0.070	-0.005	-0.048	0.027	-0.003
	(0.074)	(0.183)	(0.927)	(0.507)	(0.704)	(0.966)
Salt, Consumption	-0.057*	0.056	-0.031	0.013	0.006	0.004
	(0.053)	(0.121)	(0.362)	(0.777)	(0.889)	(0.907)
N	751		751		258	485

[a] Difference-in-Difference model, robust standard errors, *P-values* are in parentheses.

[b] Propensity Score Matching combined with Difference-in-Difference, bootstrapped standard error with 50 repetitions

[c] Malawi Kwacha

Note: Significant impacts are indicated as follows: *** p<0.01, ** p<0.05, * p<0.1

Table 4 – Impact of the Program (after six months)

Round 2	Diff-in-Diff[a]		Diff-in-Diff with Controls[a]		Diff in-Diff with PSM[b]	
	Male Head (β3)	Female Head (β7)	Male Head (β3)	Female Head (β7)	Male Head	Female Head
Assets and livestock ownership (%)						
Hoes	-0.089***	0.268***	-0.040	0.184***	-0.061	0.216***
	(0.005)	(0.000)	(0.256)	(0.001)	(0.113)	(0.000)
Axes	0.006	0.376***	0.263***	-0.006	0.215*	0.306***
	(0.934)	(0.000)	(0.001)	(0.948)	(0.016)	(0.000)
Sickles	0.161**	0.239***	0.308***	0.015	0.201*	0.407***
	(0.028)	(0.004)	(0.000)	(0.874)	(0.033)	(0.000)
Beerdrum	-0.013	0.048**	-0.009	0.041*	-0.0204	0.016
	(0.383)	(0.027)	(0.602)	(0.073)	(0.322)	(0.441)
Cattle	0.001	0.002	0.009	-0.010	0.009*	0.002
	(0.896)	(0.886)	(0.509)	(0.512)	(0.071)	(0.790)
Goats	0.452***	-0.026	0.455***	-0.031	0.422***	0.437***
	(0.000)	(0.645)	(0.000)	(0.592)	(0.000)	(0.000)
Chicken	0.468***	0.041	0.466***	0.043	0.493***	0.528***
	(0.000)	(0.578)	(0.000)	(0.593)	(0.000)	(0.000)
Participation in income activities (%)						
Agricultural wage labour	-0.331***	-0.143*	-0.354***	-0.106	-0.494***	-0.448***
	(0.000)	(0.074)	(0.000)	(0.190)	(0.000)	(0.000)
On-farm self employment	-0.040	-0.020	-0.025	-0.040	-0.125	-0.067
	(0.611)	(0.828)	(0.765)	(0.696)	(0.154)	(0.421)
Rental income	-0.024	0.019	-0.007	-0.005	-0.046	-0.028
	(0.415)	(0.573)	(0.819)	(0.889)	(0.241)	(0.419)
Non-farm self employment	-0.107	-0.019	-0.066	-0.068	0.002	-0.073
	(0.163)	(0.832)	(0.423)	(0.500)	(0.985)	(0.299)
Private transfer income	-0.295***	-0.002	-0.266***	-0.047	-0.205*	-0.328***
	(0.000)	(0.979)	(0.001)	(0.639)	(0.060)	(0.000)
Private transfers: remittances	-0.009	-0.011	0.010	-0.038	-0.017	-0.106*
	(0.818)	(0.795)	(0.821)	(0.465)	(0.612)	(0.014)
Private transfers: gifts from family/friends	-0.302***	0.005	-0.289***	-0.017	-0.208*	-0.258***
	(0.000)	(0.944)	(0.000)	(0.850)	(0.039)	(0.000)
Risk-coping behaviour						
Days of ganyu labour worked by all household members	-6.572***	2.709	-6.423***	2.297	-5.781*	-3.136*
	(0.000)	(0.166)	(0.001)	(0.305)	(0.032)	(0.039)
Number of ganyu days worked per adult in household	-1.597*	-1.419	-2.791***	0.373	-3.258*	-1.933*
	(0.071)	(0.155)	(0.001)	(0.745)	(0.008)	(0.084)
HH members beg for food/money (%)	-0.232***	-0.041	-0.268***	-0.002	-0.072	-0.172*
	(0.001)	(0.622)	(0.001)	(0.980)	(0.520)	(0.029)
Child hh members work to get food/money (%)	-0.218***	-0.204**	-0.286***	-0.088	-0.344***	-0.336***
	(0.003)	(0.018)	(0.000)	(0.328)	(0.000)	(0.000)
Other risky behaviour for food/money (prostitution, theft, other) (%)	0.002	-0.011	0.005	-0.017	0.041	-0.008
	(0.894)	(0.573)	(0.826)	(0.521)	(0.245)	(0.572)

Round 2	Diff-in-Diff[a]		Diff-in-Diff with Controls[a]		Diff in-Diff with PSM[b]	
	Male Head ($\beta3$)	Female Head ($\beta7$)	Male Head ($\beta3$)	Female Head ($\beta7$)	Male Head	Female Head
Food Expenditure (MK); Production and Consumption (change in probability)						
Monthly food purchases	3,062.531***	-291.162	3,121.782***	-373.248	3012.231***	2817.354***
	(0.000)	(0.395)	(0.000)	(0.283)	(0.000)	(0.000)
Cereals, Purchased (MK)[c]	381.422**	-89.439	386.347**	-92.184	433.186*	294.632***
	(0.010)	(0.556)	(0.016)	(0.572)	(0.043)	(0.000)
Cereals, Own Production	0.211***	-0.020	0.267***	-0.096	0.290*	0.208*
	(0.004)	(0.821)	(0.001)	(0.330)	(0.014)	(0.008)
Cereals, Consumption	-0.003	0.004	-0.006	0.010	-0.006	0.005
	(0.318)	(0.318)	(0.317)	(0.164)	(0.464)	(0.144)
Tubers, Purchased (MK)	10.713**	13.039**	12.082***	11.803*	6.657	24.473***
	(0.012)	(0.030)	(0.005)	(0.050)	(0.302)	(0.000)
Tubers, Own Production	0.202***	-0.103	0.222***	-0.128	0.246**	0.071***
	(0.002)	(0.187)	(0.001)	(0.123)	(0.003)	(0.000)
Tubers, Consumption	0.180**	0.235***	0.214***	0.193*	0.214*	0.341***
	(0.017)	(0.007)	(0.010)	(0.056)	(0.010)	(0.000)
Pulses, Purchased (MK)	61.540***	7.818	57.939***	12.341	56.991**	71.643***
	(0.000)	(0.617)	(0.000)	(0.421)	(0.001)	(0.000)
Pulses, Own Production	0.314***	-0.002	0.275***	0.044	0.268**	0.317***
	(0.000)	(0.978)	(0.000)	(0.599)	(0.002)	(0.000)
Pulses, Consumption	0.220***	-0.005	0.237***	-0.040	0.320***	0.197
	(0.001)	(0.947)	(0.001)	-0.66	(0.000)	(0.010)
Vegetables, Purchased (MK)	56.216***	-3.183	62.573***	-11.141	51.004***	52.516***
	(0.000)	(0.738)	(0.000)	(0.248)	(0.000)	(0.000)
Vegetables, Own Production	0.171**	-0.034	0.177**	-0.054	0.201*	0.123*
	(0.017)	(0.691)	(0.021)	(0.562)	(0.047)	(0.084)
Vegetables, Consumption	-0.010**	0.016**	-0.001	0.003		-0.026
	(0.045)	(0.046)	(0.586)	(0.817)		(0.321)
Meat/Fish, Purchased (MK)	176.043***	-27.128	191.735***	-48.433*	209.252***	144.863***
	(0.000)	(0.292)	(0.000)	(0.056)	(0.000)	(0.000)
Meat/Fish, Own Production	0.033	0.072	0.081	0.002	0.041	0.086*
	(0.477)	(0.160)	(0.121)	(0.970)	(0.642)	(0.017)
Meat/Fish, Consumption	0.440***	0.279***	0.535***	0.146*	0.485***	0.697***
	(0.000)	(0.000)	(0.000)	(0.090)	(0.000)	(0.000)

(Continued)

Round 2	Diff-in-Diff[a]		Diff-in-Diff with Controls[a]		Diff in-Diff with PSM[b]	
	Male Head ($\beta3$)	Female Head ($\beta7$)	Male Head ($\beta3$)	Female Head ($\beta7$)	Male Head	Female Head
Dairy, Purchased (MK)	24.133***	9.826	26.258***	6.628	28.336***	33.596***
	(0.000)	(0.233)	(0.000)	(0.431)	(0.000)	(0.000)
Dairy, Own Production	0.110***	-0.030	0.124***	-0.055	0.142**	0.073**
	(0.002)	(0.456)	(0.001)	(0.193)	(0.001)	(0.001)
Dairy, Consumption	0.355***	0.002	0.356***	-0.004	0.379***	0.383***
	(0.000)	(0.976)	(0.000)	(0.955)	(0.000)	(0.000)
Fruit, Purchased (MK)	11.084***	-2.322	12.563***	-4.962	11.311**	9.418***
	(0.000)	(0.474)	(0.000)	(0.166)	(0.001)	(0.000)
Fruit, Own Production	0.201***	-0.012	0.259***	-0.091	0.305**	0.171**
	(0.002)	(0.876)	(0.000)	(0.276)	(0.001)	(0.003)
Fruit, Consumption	0.298***	0.169**	0.317***	0.146	0.331**	0.527***
	(0.000)	(0.047)	(0.000)	(0.132)	(0.004)	(0.000)
Sugar, Purchased (MK)	4.175***	2.268	4.349***	2.160	2.669*	7.586***
	(0.002)	(0.244)	(0.001)	(0.271)	(0.086)	(0.000)
Sugar, Own Production	0.041	0.060	0.027	0.078	0.075	0.023
	(0.429)	(0.319)	(0.605)	(0.222)	(0.244)	(0.740)
Sugar, Consumption	0.159**	0.050	0.112	0.114	0.070	0.232**
	(0.041)	(0.582)	(0.170)	(0.262)	(0.479)	(0.004)
Cooking Oil, Purchased (MK)	31.520***	-2.956	31.757***	-3.009	32.941***	28.730***
	(0.000)	(0.610)	(0.000)	(0.585)	(0.000)	(0.000)
Cooking Oil, Own Production	-0.053*	0.049	-0.044	0.038	-0.026	-0.011
	(0.086)	(0.134)	(0.196)	(0.332)	(0.531)	(0.647)
Cooking Oil, Consumption	0.489***	0.189***	0.512***	0.161**	0.510***	0.661***
	(0.000)	(0.006)	(0.000)	(0.025)	(0.000)	(0.000)
Salt, Purchased (MK)	24.658***	2.005	34.091***	-11.608	26.098*	25.023***
	(0.000)	(0.789)	(0.000)	(0.194)	(0.002)	(0.000)
Salt, Own Production	-0.102**	0.085	-0.021	-0.036	0.016	-0.003
	(0.035)	(0.102)	(0.708)	(0.613)	(0.814)	(0.962)
Salt, Consumption	-0.049	0.064	-0.023	0.019	0.033	0.036
	(0.172)	(0.130)	(0.564)	(0.706)	(0.582)	(0.453)
	751		751		258	485

[a] Difference-in-Difference model, robust standard errors, *P-values* are in parentheses.

[b] Propensity Score Matching combined with Difference-in-Difference, bootstrapped standard error with 50 repetitions

Note: Significant impacts are indicated as follows: *** p<0.01, ** p<0.05, * p<0.1

[c] Malawi Kwacha

Table 5 – Probit Results for Propensity Score

Probit	Intervention[b]	P-Value[a]
Consume one or less meals a day	0.116	(0.097)
Beg for food/money	0.322*	(0.172)
poor_ultra3	0.247	(0.626)
Per capita monthly expenditure	0.000	(0.000)
Household owns 0-1 assets	-0.071	(0.102)
Dependency ratio over 3	-0.119	(0.179)
Number of orphans	0.064	(0.045)
Number of children	0.046	(0.132)
Number of household members under 5 years	0.110	(0.155)
Number of household members between 5 and 10 years	0.322**	(0.161)
Number of household members between 11 and 15 years	0.289*	(0.161)
Number of household members between 15 and 59 years	0.338***	(0.107)
Number of household members over 60 years	0.214	(0.217)
Elderly head * Number of household members over 60 years	-0.124	(0.259)
Log of household size	-0.696***	(0.266)
Log of dependency ratio	0.099	(0.069)
Years of education of the head	0.018	(0.026)
Elderly head * Years of education of the head	0.126**	(0.049)
Elderly head	-0.089	(0.248)
Natural shock*risk of begging	-0.048	(0.211)
Household suffered natural shock	0.079	(0.124)
Constant	-1.017	(0.692)
Observations	751	

[a] Probit estimated with robust standard error

[b] *** p<0.01, ** p<0.05, * p<0.1

Table 6 - Distribution of Treatment and Control Households across Blocks

	1	2	3	4	Total
Control	30	242	95	11	378
Treatment	12	134	167	52	365
Total	42	376	262	63	743

Figure 1 – Histogram for Common Support of Propensity Score in Control and Treatment Group

Graphs by Intervention: 1=beneficiary; 0=control