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Private Intergenerational Transfers, Family Structure, and Health in a sub-Saharan African Context

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Introduction

During the last two decades, the increase in surveys aimed at quantifying monetary and non-monetary exchanges has fostered remarkable advances in measuring, modeling, and assessing the implications of intergenerational transfers at both the micro- and the macro level. This expansion in data availability, together with the conceptual development of the National Transfer Accounts (NTA) framework (Lee and Mason 2011), has led to a flourishing body of research aimed at understanding the functioning of the generational economy and the role of private and public transfers in shaping life-cycle economic flows. Extensive research from high-income contexts has shown that private transfers typically flow from members of the older generations to their children and grandchildren, while public transfers tend to flow in the opposite direction (Lee and Donehower 2011; Kluge and Vogt 2015).

Though these macro-level life-cycle patterns are well understood in high-income contexts, there are reasons to believe the dynamics of intergenerational transfers may be substantially different in low-income countries. In the absence of well-functioning public transfer systems, families act as key providers of income support, largely through the redistribution of resources from productive middle-aged adults to dependent relatives at both younger and older ages (Ben-Porath 1980; Frankenberg, Lillard, and Willis 2002). Yet, in contrast to public transfers, the reallocation of resources within the family is dependent on several dynamic household characteristics, including the health status of its members and the size and composition of the household. Exposure to frequent economic and demographic shocks is also common in low-income contexts, but our understanding of how external shocks, changes in health and well-being, and shifting household composition affect intergenerational transfers at the micro level continues to be limited, largely due to a dearth of available data from longitudinal surveys measuring intergenerational transfers.

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In this paper, we use data from the Malawi Longitudinal Survey of Families and Health (MLSFH) to fill this gap by making three contributions to the literature on intergenerational transfers. First, we investigate patterns of financial and non-financial transfers by drawing on rich longitudinal data from rural Malawi that include information on intergenerational transfers across three generations living in a context characterized by high poverty and morbidity. Very few studies of intergenerational transfers exist from similar low-income contexts, despite the centrality of intergenerational transfers as a key function of families, and no other studies exist from such contexts that include the breadth of longitudinal information utilized in our analyses. For instance, few other datasets provide information on both monetary and non-monetary (i.e., in kind) exchanges, which can be equally important in contexts of high vulnerability. Second, our analyses adopt a multi-state life table approach to estimate duration of life in various transfer states—namely provider, neutral, and recipient—with both younger and older generations. This approach allows us to describe life-course trajectories of intergenerational relations in ways that have not previously been documented. As family members in rural Malawi tend to rely on each other in times of financial hardship (I. Kohler et al. 2012; Myroniuk, Prell, and Kohler 2017), we are able to show how transfer patterns evolve across the life-course, with individuals cycling through periods of time being net recipients and net providers of transfers, and how transfer patterns adapt to predictable changes in family contexts and unexpected socioeconomic shocks. Third, our analyses contribute to the literature by documenting the links between household composition, middle-aged adults' physical and mental health, external stressors such as household-level shocks, and intergenerational transfer patterns using fixed-effects regression models. These analyses utilize *within*-family variation to investigate the substantial heterogeneity underlying intergenerational transfer patterns in sub-Saharan Africa (SSA), hence providing important insights into the micro-level dynamics of intergenerational economics in a low-resource setting.

Background

SSA is undergoing rapid economic and demographic changes, making it a particularly interesting and policy-relevant area to investigate intergenerational transfers. While rapid population growth continues to be a major social and policy issue (Cleland et al. 2006; H.-P. Kohler 2013), demographic and epidemiological trends of falling fertility and increasing life expectancy foreshadow the coming challenge of a growing elderly population (Aboderin 2009; Aboderin and Beard 2015). In addition, Malawi and much of Southern and Eastern SSA face the challenge of combining the potential benefits arising from the demographic dividend with high shares of middle-aged adults affected by functional disability and/or HIV (Narayana 2015; Payne, Mkandawire, and Kohler 2013). Countries across SSA are projected to experience very substantial gains in their support ratios, with increases of 36 percent in Nigeria and 25 percent in Kenya between 2010 and 2050 (Gerland et al. 2014; Lee and Mason 2011).

A prominent framework to analyze intergenerational transfer patterns in changing demographic contexts such as SSA is the NTA project, which currently covers more than 60 countries across the world, including 16 in SSA (Benin, Burkina Faso, Chad, Côte d'Ivoire, Ethiopia, Ghana, Guinea, Kenya, Mali, Mauritania, Mozambique, Niger, Nigeria, São Tomé

and Principe, Senegal, and South Africa). The NTA framework formalizes the idea that as individuals pass through their life-cycle (from young to youth, youth to working, and working to old age), both production and consumption changes create deficits (consumption exceeding production) and surpluses (production exceeding consumption) in resources. Integrating a life-cycle perspective with demographic modeling, the NTA project provides a useful framework to describe the macro-level trends in aggregate economic production and consumption as population age structures and composition change.

However, the NTA model has limited applicability to understanding the complex determinants of household economics and intergenerational transfers at the micro level, and it does not capture the potential significant variation in transfer patterns within populations and/or in response to shocks. The NTA age profiles rely on aggregate and cross-sectional analyses of individuals of various ages at a certain point in time. These cross-sectional age-patterns may not represent the behavior of actual individuals over their life-course, as individuals' actions are influenced by both period and cohort effects. Hence, while the NTA age patterns can be used to construct pseudo-cohort datasets, they do not trace the same individuals throughout their lives, and are therefore limited in their utility to understand the drivers and consequences of micro-level changes in transfer patterns (see d'Albis and Moosa 2015).

The limitations of the NTA framework are particularly pertinent in contexts such as SSA, where social protection schemes and public transfers are limited. Understanding the drivers of intergenerational transfers at the micro level is thus of key importance. In Malawi and other low-income SSA contexts, family members (both immediate and extended) are often seen as the leading source of support for individuals in private transactions such as mutual insurance or emergency aid (Aboderin 2011; Hogan, Eggebeen, and Clogg 1993; Mitchell 1956; Silverstein and Bengtson 1997). Research on transfers within kinship networks has a long history in SSA, and the existence and functionality of these networks has been extensively discussed in prior ethnographic research in Malawi and across SSA (Hirschmann and Vaughan 1984; Mitchell 1956). Kinship networks encompass a broad definition beyond the vertical kinship ties (parents, children, and grandchildren) commonly described in research on higher-income settings (Weinreb 2002). In SSA, the lateral components of kin networks (uncles, aunts, parents-in-law; nieces, nephews, step-parents, and step-children) are just as important in constituting an individual's support network (Weinreb 2007). These well-established kinship networks act to reduce the costs of resource exchange through familiarity and mutually shared norms of reciprocity (Mollenhorst, Völker, and Flap 2008; Reagans and McEvily 2003). This preference for drawing on support from kin persists even if non-kin sources could provide different or possibly better resource access (Burt 2000; Rosenzweig 1988). Kinship support networks also expand beyond resource exchanges—child fosterage is common in rural Malawi (due both to the effects of the HIV/AIDS crisis and other economic and social drivers) and largely practiced within kinship networks (Bachan 2014; Grant and Yeatman 2014). As such, using a conceptual framework centered on a vertical notion of household structure may be less meaningful. Our analyses will primarily utilize models incorporating broader definitions of kin networks (i.e., combined downward transfers to own children and step-children as well as nieces and nephews, and combined upward transfers to own parents, parents-in-law, as well as uncles and aunts).

Motivations and Drivers of Private Intergenerational Transfers in Rural Malawi

In low-income contexts, the motivations for intergenerational transfers are largely captured by four broad hypotheses (Frankenberg, Lillard, and Willis 2002; Lillard and Willis 1997). First, family members may have altruistic feelings (*altruism* hypothesis) toward one another, and the head of the household may choose to transfer resources to needier family members—with no expectation of repayment—in an effort to maximize the weighted sum of the utility functions of all members (Becker and Tomes 1976). Second, transfers among kin may provide a source of insurance against risk (*risk and insurance* hypothesis), whereby family members transfer resources to help one another in times of need, hence smoothing consumption in times of uncertainty. Common to both hypotheses, the altruism and insurance models predict that transfers to and from an individual should fluctuate with short-term income and/or income-related shocks (Frankenberg, Lillard, and Willis 2002). Alternatively, the *exchange* hypothesis states that intra-family transfers are based on exchange and reciprocity (in terms of both money and time)—rather than on consumption-smoothing motives (Cox 1987). Lastly, couples might see children as the primary long-term mechanism of saving for old age, and rear them with the expectation that they will provide for them later in life in the form of upward transfers (*old-age security* hypothesis) (Caldwell 1976; Leibenstein 1957; Neher 1971; Willis 1979).

Our analyses focus on prime-aged adults—those aged 20–59—to understand how individuals in their key years of economic productivity expand, contract, and shift their patterns of private intergenerational transfers in response to changing micro-level conditions. This focus on prime-aged adults is meaningful because previous studies have shown that these individuals tend to be net providers of financial resources to dependent relatives at younger and older ages, i.e. they are the so-called “sandwich generation” (Grundy and Henretta 2006; I. Kohler et al. 2012). In addition, the focus on prime-aged adults allows us to address several research themes, elaborated below, on the determinants of intergenerational transfers in low-income SSA contexts:

Health and transfers—Our study population in Malawi faces a heavy disease burden, characterized by high levels of child and adult mortality, high prevalence of tuberculosis, malaria, and HIV/AIDS, and a growing burden of non-communicable diseases (Crampin et al. 2016; Msyamboza, Mvula, and Kathyola 2014; Msyamboza et al. 2011). Recent WHO statistics show that 10.6 percent of Malawians aged 15–49 are currently living with HIV/AIDS, with around 55,000 new HIV infections occurring every year (WHO 2014). In Malawi and elsewhere in SSA, working-age adults bear the highest health and economic consequences from the epidemic (H.-P. Kohler et al. 2015). While the rollout of no-cost antiretroviral therapy has begun to successfully reduce mortality in prime adult ages in Malawi (Floyd et al. 2010; Payne and Kohler 2017), the broader health conditions are still poor. Within the MLSFH sample, Payne et al. (2013) identify high rates of functional limitations and clear gradients in economic activity by physical health status among mature adults; I. Kohler et al. (2017) provide evidence that the prevalence of poor mental health (particularly depression and anxiety) rises rapidly with age in this population; and Payne et al. (2017) find that cognitive impairment affects many older adults in this population, and is often co-morbid with physical and mental health problems.

Given the relative lack of institutionalized support systems, functional limitations and poor mental health in late midlife and older adulthood may have tremendous impacts on individual and household economic well-being in a subsistence-agriculture economy. There are multiple channels by which poor health may affect transfer patterns. Most directly, individuals experiencing poor physical or mental health may be unable to complete their daily tasks, resulting in a loss of labor output and economic productivity, and thereby constraining the resource pool available for providing transfers. In Malawi, as in most other Sub-Saharan low-income countries, labor force participation is virtually universal into old age. In addition to these direct effects on household resources, individuals experiencing poor health are likely to be a drain on the scarce time and material resources of younger generations, and may contribute less and require more time and money from both younger and older individuals in the household (I. Kohler et al. 2012).

Shocks and transfers—Households in rural Malawi are frequently exposed to sources of vulnerability that pose challenges to their organizational and financial needs (H.-P. Kohler et al. 2015). Economic vulnerability—defined as the risk of future monetary poverty—is especially high due to the heavy concentration of Malawians clustered around the poverty line and the frequency and severity of shocks such as droughts, floods, and food price fluctuations, as well as idiosyncratic shocks such as accidents, illnesses, and deaths of family members. These shocks differ from persistent poverty to the extent that they are unpredictable and transitory in both their nature and effects (Stroud and Anglewicz 2015). Using data from the 2004/2005 Integrated Household Survey, Devereux et al. (2006) claim that many Malawians are even more vulnerable today than in the past: rainfall and food production are more erratic, HIV/AIDS is still pervasive, markets are weak and prices are volatile; and their ability to cope has declined. Livelihoods are dangerously undiversified, repeated shocks have eroded assets and savings, and established networks are less willing or able to provide assistance. These external events may interact with health conditions in ways that exacerbate their effects on financial well-being and intergenerational transfer dynamics.

How unexpected shocks influence patterns of intergenerational transfers, however, is far from clear. In low-income contexts with poor public social support structures, intergenerational transfers may operate similarly to an insurance system, with transfers acting to smooth consumption and support individuals most affected by income losses (Lillard and Willis 1997; Platteau 1997; Davies 2010; Stroud and Anglewicz 2015). In such a case, we would expect a shift in transfer flows in reaction to an external shock. However, in the case of rural Malawi, the effect of external shocks may be more complex—the limited availability of savings and low rates of employment outside of subsistence and/or cash crop farming could make the connection between household-level shocks and financial transfers less direct, as this lack of diversification in income sources could leave family members with limited recourse to change financial transfer patterns in response to major events. In-kind or time transfers may be more responsive to external shocks. Our analysis incorporates these external forces into our understanding of micro-level variation in life-course patterns of transfers, distinguishing between individual health conditions and household composition versus volatile determinants—such as shocks—as drivers of intergenerational transfers.

Household structure and transfers—In rural Malawi, households are often large and complex, encompassing many more members than simply children, parents, and grandparents. The demographic composition of households is a significant, though often overlooked determinant of intergenerational transfer flows. Most obviously, flows of downward and upward transfers are constrained and determined by the availability of transfer partners within the household. Relatedly, transfers also vary as a function of household size. A higher number of living younger relatives (including own children, step-children, nieces, and nephews) is generally associated with higher levels of financial transfers given and received. Evidence from Malawi suggests that this relationship is not straightforward, and transfers may be concentrated on a relatively small subset of children (I. Kohler et al. 2012). The sex-composition of the household interacts with transfer patterns. Prior research suggests a son preference in this context, whereby both male and female respondents provide more financial transfers to their sons than to their daughters (I. Kohler et al. 2012; Lesthaeghe 1989). We expect sex to play a role for both transfer providers—where women tend to provide lower transfers than men (Lesthaeghe 1989)—and transfer recipients, with elderly women receiving higher net transfers. These kinship networks may also operate on the principle of generalized exchange across generations and specific familial roles, and short-term changes in the net flow of resources between individuals are assumed to even out in the long run (Weinreb 2007, 2002).

Social protection programs and transfers—In recent years, Malawi has pursued an ambitious agenda to implement and extend social protection schemes. The Malawi National Social Support Policy 2012–2016 (NSSP) serves as an overarching framework for social protection covering the current five key programs of social cash transfers (SCT), public works, school meals, village savings and loans, and microfinance (ILO 2016). The SCT, which is the most important aspect of these social protection programs from the perspective of our analyses, was first promoted in 2006, when the Government of Malawi joined the wave of African nations setting up cash transfer programs and initiated its own Social Cash Transfer scheme. The SCT program was implemented as an unconditional cash transfer providing cash to ultra-poor (poorest 10 percent) and labor-constrained households, and aims at reducing poverty and hunger, and promoting child education, health, and nutrition (Covarrubias, Davis, and Winters 2012). It began as a pilot in Mchinji, one of the MLSFH study regions, and subsequently expanded to reach 18 of the 28 Malawian districts, reaching over 163,000 individuals by 2015 (UNICEF 2016). In consumption terms, SCT transfers comprise about 20 percent of pre-program per capita consumption for the average household (Kilburn et al. 2017).¹

Despite advantages incurred by beneficiaries of this program (Ellis and Maliro 2013; Ellis and Manda 2012; Kilburn et al. 2017; Miller et al. 2010; Nanivazo 2013),² on a societal

¹The SCT value ranges from US\$4 per month for a household with one eligible member to US\$13 per month for households with four or more eligible members.

²The SCT program has been found to affect several dimensions of family life (Ellis and Maliro 2013; Ellis and Manda 2012; Kilburn et al. 2017; Miller et al. 2010; Nanivazo 2013). In a series of focus groups with 163 children (Miller, Tsoka, and Reichert 2010), SCT beneficiaries often stated that the extra cash allowed them to gain access to goods and materials, including food, healthcare, school supplies, clothing, blankets, housing, and livestock. Fisher et al. (2017) found that the SCT program improved strategic livelihood choices and stimulated productive investments, including through positive effects on beneficiary entry into risk-sharing arrangements and networks for economic collaboration.

level, the implications of the SCT program on transfer patterns and within-family income pooling and/or insurance provision are limited, as coverage rates of the SCT and related programs remain low (ILO 2016). Specifically, the SCT program covers only the small portion of households lacking labor capacity, while a large majority of children, disabled, chronically ill, and elderly live outside of labor-constrained households (ILO 2016) and hence do not receive adequate support. Combined with rapid population growth and continued widespread poverty, large sections of the Malawian population remain without adequate social protection even after the recent expansion of SCT and related programs by the government. Private intergenerational exchanges thus remain the primary source of support for many households in Malawi, and the centrality of the family for insurance provision, income pooling, and life-cycle consumption smoothing has not fundamentally changed.

Data and Methodology—Data for these analyses come from the Malawi Longitudinal Survey of Families and Health (MLSFH). A “*Cohort Profile*” of the MLSFH providing a detailed discussion of the MLSFH study context, sampling procedures, survey methods, survey instruments, and analyses of attrition has been published in the *International Journal of Epidemiology* (H.-P. Kohler et al. 2015). The study is based in three districts in rural Malawi: Rumphi in the north, Mchinji in the center, and Balaka in the south. MLSFH respondents (N ≈ 3,800) are evenly split among the three study locations and clustered in 121 villages. Our analyses use data from MLSFH rounds collected in 2006, 2008, 2010, and 2012. In 2008, the MLSFH added a sample of about 550 parents of original MLSFH respondents, substantially increasing the population of mature adults (aged 45+ years) in the study.

Transfers are parameterized based on a household roster collected in each wave. In this, individuals were asked to report all financial and non-financial assistance they had given to and/or received from members of their household age 15 or over in the past two years. The MLSFH household and family roster includes all individuals who currently live in the household, and asked information about all parents and children independent of their survival and resident status, including their demographic, socioeconomic, and health characteristics and transfers received and given from the respondent’s perspective.

Since the quantitative measurement of transfers in contexts such as Malawi is inherently difficult, the MLSFH did not attempt to monetize the financial transfers between respondents and the older and younger generations in their household. Instead, MLSFH respondents were asked a set of questions about financial assistance during the last two years, including the two questions from which we derive our measures of intergenerational transfers: “Have you given (NAME) any money or financial assistance?” and “Has (NAME) given you any money or financial assistance?” with response categories of “No,” “Yes, a little,” “Yes, some,” and “Yes, a lot.” To generate a metric of net financial transfers received and provided, we weighted these transfers by respondent’s categorization—“Yes, a little” counts as 1 unit of transfers, “Yes, some” counts as 2 units, and “Yes, a lot” counts as 3 units of transfers. These transfers are then aggregated across household members to generate a continuous measure of total net transfers. Our analyses focus on transfers across three generations—respondents, who we denote as generation 2 (G2); parents, in-laws, aunts, and

uncles, denoted as generation 1 (G1); and children, step-children, nieces, and nephews, denoted as generation 3 (G3). We adopt this inclusive definition of generations due to the extended/complex nature of households in contexts such as rural Malawi (see our discussion above). In the online Appendix, we provide complementary analyses restricting the set of transfer respondents to biological parents as G1 members, and biological children as G3 members. Own children, step-children, nieces, and nephews under the age of 15, for whom no direct measures of transfers are asked in the MLSFH, are assumed to receive 3 units (“a lot”) of financial transfers.

We additionally investigate intergenerational patterns of non-financial transfers between MLSFH respondents and their kin. Respondents were asked whether they had received or provided any non-financial assistance to each member of the household roster in the past two years, with response categories of “No,” “Yes, a little,” “Yes, some,” and “Yes, a lot.” Non-financial assistance was defined as providing or receiving material goods and/or help in terms of time or labor (such as assistance collecting firewood, cooking, taking care of people, or helping with farming). We use the same parameterization of these response categories as with financial transfers—“Yes, a little” counts as 1 unit of transfers, “Yes, some” counts as 2 units, and “Yes, a lot” counts as 3 units of transfers, and aggregated these transfers across household members in G1 and G3 (the older and younger generations, respectively). Own children, step-children, nieces, and nephews under the age of 15 are assumed to receive 3 units (“a lot”) of non-financial transfers.³

Previous MLSFH studies have investigated financial transfers with non-kin members of individuals’ social networks. Specifically, in the 2008 and 2010 waves, respondents were also asked a series of questions listing individuals (both family members and non-kin) on whom they would rely for financial or non-financial assistance in times of crisis. Overall, respondents were substantially more likely to list kin as potential sources of transfers, on average listing 1.4 family members for every non-kin source (Myroniuk, Prell, and Kohler 2017). Respondents were also substantially more likely to actually receive transfers from kin than non-kin, and more likely to receive a higher amount of financial support (“some” or “a lot” of financial help) from kin than from non-kin (Myroniuk, Prell, and Kohler 2017). These analyses thus confirm that intergenerational transfers, on which we focus in the analyses presented here, are the primary source of resource flows in the lives of MLSFH respondents.

As a first step to better understand the dynamic nature of transfers across the life course, we analyze the transition probabilities between different transfer states in this population over

³We recognize that more detailed information on the monetary value of transfers would be desirable, but such information exists neither in the MLSFH nor in other longitudinal data in sub-Saharan Africa. For our purpose, however, the limitation might be less severe than it initially seems. Specifically, by relying on the subjective assessment of respondents about the value of transfers (“a little,” “some,” and “a lot” of financial and non-financial assistance), we reduce concerns about measurement error in respondents’ reports about the monetary value of transfers. Even if monetary measures were available, their interpretation would be difficult as income is volatile and inherently difficult to measure in subsistence agriculture contexts such as rural Malawi, and even small monetary or non-monetary transfers might be “very important” to respondents if they come during a period of crises. By relying on respondents’ assessments about the value of transfers, our approach normalizes intergenerational transfers with respect to how important these exchanges are in respondents’ lived experience, and how the respondent compares the transfers given and received to other resources that are available to the household. This is arguably a more important metric than the actual amount of money or goods/labor transferred.

age and use these transition probabilities to construct a multi-state life table (MSLT) model to estimate the duration of life spent in different transfer states. For the multi-state analyses, individuals are grouped into three transfer states depending on the number of net financial and non-financial transfers they have provided to/received from G1 and G3: individuals providing +2 or more net transfers to their children or parents are classified as *providers*, individuals with +1 to -1 net transfers are classified as *neutral*, and individuals with -2 or less net transfers are classified as *recipients*.⁴ Analyses are conducted separately for both financial and non-financial transfers.

We estimate the conditional probabilities of experiencing a transition between these three transfer states (provider, neutral, and recipient), a state for individuals with no living parents/children, and death as function of age and gender, using a logistic discrete-time hazard model of the form:

$$\log \frac{p_{ij}(age, t)}{p_{ii}(age, t)} = \beta_{0ij} + \beta_{1ij} * age_t + \beta_{2ij} * age_t^2 + \beta_{3ij} * male$$

where $p_{ij}(age, t)$ is the transition probability from current state i (i = provider, neutral, recipient, no parents/children, deceased) to state j (j = provider, neutral, recipient, no parents/children, deceased⁵) over the interval from time $t - 1$ to t , β_{0ij} is the intercept, β_{1ij} and β_{2ij} are the coefficients for age and age squared, and β_{3ij} is the coefficient for male.

Transition probability estimates were obtained using PROC SURVEYLOGISTIC in SAS v9.4, accounting for variation at the region, village, and individual level. We then obtain life expectancies in these states using a multi-state life table model estimated from the MLSFH data. Our estimation method is based on an adapted version of the Stochastic Population Analysis for Complex Events (SPACE) program (Cai et al. 2010). Specifically, to calculate MSLT functions we use micro-simulation to create synthetic cohorts of 100,000 individuals with the same initial sex- and transfer state distributions as the study population. We “age” these individuals forward year by year using age- and sex-specific mortality rates and probabilities of transitioning in and out of transfer states estimated from the data. This process is then repeated at each age until death. The resulting synthetic cohort is analyzed to estimate partial life expectancy in each transfer state.

In addition to generating estimates of proportion of individuals in each transfer grouping by age- and partial life expectancies in transfer states, we use fixed-effects regression to explore how changes in household composition and health—both health of the respondent and health of the transfer partner—and household-level shocks relate to the amount of transfers given and received by middle-aged respondents to/from the younger (G3) and older (G1) generations in their household. To establish the linear relationship between transfers and health, we utilize the Mental (MCS) and Physical (PCS) Health Composite Scores from the

⁴We conducted a sensitivity analysis testing thresholds of +3/-3 and +4/-4 for provider/recipient classification; results for transfers to/from children were largely similar but duration of life in the neutral transfer state increased fairly substantially for transfers to/from parents (particularly for the +4/-4 classification schema). These analyses are available on request.

⁵Our models do take into account the fact that individuals can move from having living children to having no living children, though these transition rates are extremely low and are thus not shown in our analyses.

SF-12 health questionnaire (Ware, Kosinski, and Keller 1996). The MCS and PCS are widely used measures of subjective self-assessment of overall mental and physical health, respectively, that have been validated in several different contexts (Fischer and Corcoran 2013; Jenkinson et al. 2001; Macran, Weatherly, and Kind 2003). SF-12 results are normalized to a mean of 50, and higher scores reflect better health. In addition to the MCS and PCS composites, we are interested in understanding how passing certain thresholds of physical and mental health may affect transfer patterns. We thus complement these continuous measures with two categorical variables: one measuring mental health through a combined depression and anxiety index (DAX, parameterized as in I. Kohler et al. (2017),⁶ and physical health through limitations on daily activities (parameterized as in Payne, Mkandawire, and Kohler 2013).⁷ Response categories for both variables range from “1” (no) to “3” (severe).

Lastly, data on social and economic shocks are collected by asking respondents if the household experienced any of the following stressors in the preceding two years: (1) death or serious illness of an adult member who provides support the household; (2) poor crop yields or loss of livestock; (3) loss of a significant source of income; (4) a breakup or divorce within the household; and (5) a damage to the house due to flood or fire. For each of these shocks, we constructed a dummy that equals one if the event occurred in the previous two years, together with a new variable tallying the number of shocks each respondent reported experiencing over the previous two years.

Table 1 reports descriptive statistics on the variables of interest defined above, by survey wave. The sample includes approximately 3,500 respondents in 2006, 2008, and 2010, after which it decreases to around 1,300 in 2012, as only individuals 45+ were re-surveyed. The average age of respondents is 35 in the first wave and women make up more than half of the sample (~0.55). Respondents experience declines in physical and mental health with increasing age, as confirmed by the change in mean SF-12 scores and the increasing prevalence of physical limitation and DAX as the sample aged between 2006 and 2012. Descriptive statistics on transfers suggest that middle-aged respondents provide far more (five to six units, on average) transfers to the younger generation (G3) than they receive from it, and that non-financial transfers given and received exceed financial transfers by approximately two units. The same pattern holds for transfers to/from G1, yet there is a lesser imbalance between the volume of transfers given and received (one unit, on average). Looking at G1, G2, and G3 together, we observe that G2 respondents provide more transfers—of any kind—to G3 than to G1. The number of external shocks decreases across waves, from around 1.7 in 2008 (note that shocks were not recorded in 2006) to 1.3 in 2012.

⁶Our categorical measure of mental health is a combined depression/anxiety index (DAX) derived from two questions from the SF12: “Q1: How much time of the time during the past 4 weeks have you felt calm and peaceful?” and “Q2: How much of the time during the past 4 weeks have you felt downhearted and depressed?” The response categories range from 1 = “All of the time” to 5 = “None of the time.” The DAX is then computed as follows: DAX = 0 (no depression/anxiety) when Q1 ≤ 2 and Q2 ≥ 4; DAX = 2 (moderate/severe depression/anxiety) if Q1 ≥ 4 and Q2 ≤ 2; and DAX = 1 (mild depression/anxiety) otherwise.

⁷Disability classification is based on two questions from the SF12 “Q1: Do you have any health problems that limit you in carrying out moderate activities?” and “Q2: Do you have any health problems that limit you in carrying out strenuous activities?” with each question providing a list of moderately/strenuous activities and response categories of “not limited,” “limited a little,” and “limited a lot.” Individuals with no limitations in either set of activities are classified as healthy, those who respond “somewhat limited” on either question are classified as moderately limited, and individuals who respond “limited a lot” on either question are classified as severely limited.

Specifically, the likelihood of respondents experiencing the death or illness of a household member or poor crop yields decreases over time, while income losses show higher volatility. Overall, the shocks sub-panel suggests that these shocks occur frequently for rural populations in Malawi—at least 35 percent of respondents experienced a death or serious illness of a household member, poor crop yields, or the loss of a significant source of income.

Results

Life-cycle transfer patterns

Figure 1 provides an overview of life-cycle intergenerational transfers between respondents and G3 (children, step-children, nieces, and nephews) in the MLSFH sample (see online Appendix Figure A-1 for complementary analyses including only own children in G3). These panels show total and net financial (top row, panels A–D) and non-financial (bottom row: panels E–H) transfers to/from the younger generation by five-year age groups (estimated via OLS) pooled across the 2006, 2008, 2010, and 2012 MLSFH waves. Positive numbers on the Y-axis denote a net outflow of transfers, while negative numbers denote a net inflow of transfers. Panels A and E show graphs of total provided, received, and net financial and non-financial transfers with children, by age. The magnitude of both financial and non-financial transfers with G3 is quite high—respondents report substantial transfer activity with G3, though this is in large part a function of the large family sizes present in the sample. Respondents are almost exclusively providers of financial transfers until about age 40; but with increasing age, transfers provided decline substantially and reported transfers received increase to the point where individuals are on average net recipients of financial transfers after about age 60. Patterns are similar for non-financial transfers (Panel E), though receipt of non-financial transfers increases more rapidly with age. Panel B shows net financial transfers to/from children by sex. Women provide fewer financial transfers than men, and reach the peak of their distribution of transfers earlier in life than men—at around age 35, versus a peak in the mid-40s for men. Women also become net recipients of transfers at a much younger age than men—at about age 55, versus 67 for men. Women's net provision of non-financial transfers is similar to that of males (Panel F), though on average it occurs at younger ages. Panel C shows net transfers to/from children by the reported physical health of the respondent. Individuals with moderate or severe limitations on their physical activities have lower net transfers than individuals with no limitations, a difference that widens with increasing age. Individuals with limitations on their activities report becoming net recipients at fairly young ages—approximately 54 for severely limited individuals, and 57 for moderately limited individuals. Panel D shows the commensurate analysis for our mental health indicator and provides evidence of a similar health gradient. Panels G and H, showing these health-related patterns for non-financial transfers, closely mirror the findings from financial transfers. These graphs suggest that health significantly shapes transfer patterns in a low-income country like Malawi, hence contributing to a better understanding of the heterogeneity underlying these dynamics. These descriptive findings are also confirmed by our random-effects regressions (Table A-1) reported in the Appendix.

Figure 2 shows the corresponding age patterns of financial and non-financial transfers to/from G1 (parents, in-laws, aunts, and uncles). For transfers to the older generations, we limit our analyses to ages 20–59, as the proportion of individuals with living parents diminishes rapidly beyond age 60. Panel A shows the graph for financial transfers provided, received, and net financial transfers to the older generation (parents, in-laws, aunts, and uncles). In line with summary statistics reported in Table 1, we see that the overall magnitude of transfers with G1 is substantially smaller than for transfers with G3. Individuals report receiving more transfers from their older household members in early life, but are net providers of transfers after their early 20s—a finding in contrast with much other research from higher-income contexts (Lee and Donehower 2011). Panel E provides these patterns for non-financial transfers. Here, we see that the overall volume of non-financial transfers with G1 is substantially higher compared to financial transfers, and that particularly at younger ages, individuals both receive and provide a substantial amount of transfers from/to the older generation. In Panel B, we note that there are substantial sex differences in net financial transfers, with men providing more financial assistance to their parents than women. This pattern is reversed for non-financial transfers (Panel F), where across all ages women provide more non-financial transfers to G1 than do men, a finding in keeping with the highly gendered household roles and caretaking preferences in rural SSA (Aboderin 2011; Freeman 2016; Mitchell 1956). Panels C, D, G, and H show that financial and non-financial transfers with G1 vary modestly by respondent's health status (both physical and mental), but the differentials across health status are relatively small and confidence intervals are largely due to the small number of older individuals with surviving household members of G1. See Appendix Figure A-2 for corresponding age profiles of transfers only with respondent's parents.

Transfer state transitions

A major advantage of the MLSFH data is the availability of data on intergenerational transfers covering a period of eight years (beginning two years prior to the 2006 survey until 2012), which allows us to study the dynamics of transfers in a longitudinal perspective. Our analyses of the 2006–2012 MLSFH reveal that individuals in this population experience a relatively large number of transitions between transfer states over their life course—that is, although the overall patterns of transfers shown above suggest fairly regular age profiles, within the life-course of an individual, these patterns are far less consistent. Table 2 shows the distribution of all wave-to-wave transitions between financial (Panel A) and non-financial (Panel B) transfer states for transfers to the younger generation (G3) that are observed in the population during the 2006–2012 study period. Individuals can contribute multiple transitions, i.e. an individual interviewed in each of the 2006, 2008, 2010, and 2012 waves would contribute three periods of observation (2006–2008, 2008–2010, and 2010–2012). At younger ages (the 20–39 age group), individuals are likely to be, and to remain, net providers of financial (Panel A) and non-financial (Panel B) transfers to G3—in almost 80 percent of observation periods, the respondent was a net provider to the younger generation in both waves. With increasing age, however, heterogeneity in wave-to-wave transitions increases—in the 40–59 year-olds, over 10 percent of transitions for financial and non-financial transfers are from net provider to net neutral or recipient, and individuals are increasingly likely to transition from net neutral to net recipient of financial or non-financial

transfers. By ages 60+, about a third of wave-to-wave transitions end in individuals being net recipients for both financial and non-financial transfers, compared with only about 30 percent who continue to be net providers of transfers.

Table 3 shows the commensurate wave-to-wave transition patterns for transfers with G1 (parents, in-laws, aunts, and uncles) aggregated across 2006–2012. In both the younger and older age ranges, there is a substantial amount of movement between transfer states—about half of 20–39 year-olds and 40–59 year-olds with living older relatives move to a different transfer state between successive waves of interviews, for both financial and non-financial transfers. With increasing age, individuals are less likely to become financial transfer recipients, with the proportion of wave-to-wave transitions ending in receipt of financial transfers falling from 13 percent for 20–39 year-olds to 4 percent for 40–59 year-olds. Non-financial patterns follow a less distinct age gradient, with relatively high rates of transition across all states in each age group.

Partial life expectancies

To gain insight into the life-course dynamics of transfers in this population, we generate multi-state life table estimates to investigate the aggregate patterns of transfers over age and estimate life expectancies (LE) in different transfer states. Table 4 presents partial life expectancies in the three transfer states for financial (Panel A) and non-financial (Panel B) transfers to G3, by age group. These estimates represent the length of time the average individual will spend in net provider, neutral, and net recipient states between the ages of, for instance, 20 and 29 (as well as his/her life expectancy in this age range). For these partial life expectancies, we condition on an individual having living members of G3 at the initial age—so, the partial LE estimates for ages 20–29 are conditional on having a child, step-child, niece, or nephew at age 20—and exclude the small number of individuals who experience the death of all biological members of G3. Panel A presents partial life expectancies in each financial transfer state with G3. Partial life expectancies in the financial recipient state increase with age, and partial life expectancies in net financial provider status decline as a portion of total life expectancy. These general trends are also evident in non-financial transfers (Panel B), where with increasing age, respondents spend less time as net providers of non-financial assistance to G3, and more time receiving non-financial transfers. These changes are most evident in the 50–59 and 60+ age groups, where a rapid shift occurs in transfer patterns to/from G3. Appendix Tables A-2 and A-3 provide these partial life expectancies for transfers to/from G3 conditional on initial transfer state (provider, neutral, recipient) for financial (A-2) and non-financial transfers (A-3). There is some evidence of path dependence in transfer states—that is, individuals who start out in one transfer state have a higher partial life expectancy in that state. However, there is still quite a bit of heterogeneity within each initial transfer state group, resulting from the high transition rates in and out of provider, neutral, and recipient states seen in Table 3.

Table 5 presents partial life expectancies in transfer states with G1. Again, these figures are contingent on having at least one living parent, parent in-law, uncle, or aunt at the initial age (so, 20, 30, 40, and 50). Younger individuals aged 20–29 can expect to spend a substantial fraction of these years as net recipients of financial transfers from G3, and to a lesser extent

as recipients of non-financial transfers. After the age of 30, however, being a net recipient of financial or non-financial transfers from G1 is quite rare. Individuals can expect to spend a large portion of their middle and older adulthood as net providers of transfers to the older generation, though the form of these transfers is substantially gendered—men spend almost half of their years from ages 30–59 as net providers of financial transfers to G3, while women are much more likely to be net providers of non-financial support. With increasing age, individuals are less likely to have living members of G1 for the full age interval (diminishing steadily from an average of about 0.5 years with no members of G1 among the 20–29 year-olds to about three years for 50–59 year-olds. Appendix Tables A-4 and A-5 provide the corresponding partial life expectancies for transfers to/from G1 conditional on initial transfer state (provider, neutral, recipient) for financial (A-4) and non-financial transfers (A-5).

Multivariate fixed-effects regressions

The MLSFH also allows us to explore how intergenerational transfers are affected by different sources of life-course variability, such as changes in household composition, health conditions, and household-level shocks. Our aim in this section is not to identify which of the several mechanisms discussed in the relevant literature conforms best to the transfer patterns observed in rural Malawi (e.g. old-age security, parental repayment, risk and insurance, altruism, exchange, etc.) (Lillard and Willis 1997). Rather, we explore how changes in three of the most relevant sources of life-course heterogeneity—health, household composition, and external shocks—may explain the dynamic patterns of intergenerational transfers in this context.

We acknowledge that multivariate regressions on transfers, health, and shocks are likely affected by endogenous characteristics that influence these measures simultaneously. Covariates help control for some important factors that might affect them; yet there are likely several sources of unobserved characteristics that we cannot control for, such as genetic composition, risk-taking propensity, altruism, or other traits that may affect why some individuals transfer and other do not. To partly address the possibility of unobserved characteristics affecting transfers, health, and shocks, we use individual-level fixed-effects models to control for unobserved time-invariant characteristics that may enter these relationships. We estimate separate regressions for financial and non-financial transfers, hence we report two columns per model (“F” for financial and “NF” for non-financial transfers). Model 1 accounts for household size and composition measures that incorporate information on the health status of transfer partners. Models 2 and 3 include measures of health of the respondent, with the MCS and the PCS scores in the former, and their categorical counterparts in the latter. Models 4 and 5 focus on shocks, measured as total count and shock-specific dummies, respectively. Finally, Model 6 combines all previous predictors (henceforth, full specification).

Across all these fixed-effects models, the estimated coefficients are identified by the within-individual variation in transfers and socioeconomic/health characteristics observed during MLSFH longitudinal follow-up, covering transfer patterns occurring from 2004–2012. As a result, our estimates capture the extent to which changes in family contexts, economic

shocks, and mental/physical health are associated with changes in intergenerational transfers net of persistent, unobserved individual and family characteristics that shape such intergenerational relations.⁸ Arguably, drawing on the MLSFH longitudinal data makes possible closer estimation of the causal determinants of transfer patterns and their variation over time. A limitation of this fixed-effects approach is that measured time-invariant (and perhaps important)—across-individual (or family)—differences in transfer patterns are absorbed in the fixed effects, limiting our ability to identify how persistent characteristics are associated with transfer patterns across families.

Net transfers to the younger generation (G3)

Table 6 reports coefficients from fixed-effects regressions of changes in household composition, physical and mental health, and external shocks on net financial and non-financial transfers to G3. Parallel analyses limited to biological children as transfer recipients are reported in Appendix Table A-6, and show virtually analogous patterns.⁹ The total number of G3 members alive is a strong and statistically significant determinant, confirming the descriptive evidence that the higher level of transfer activity with G3 (versus G1) is in large part a function of the large family sizes observed in Malawi. Additional analyses indicate that transfers to G3 increase if there are more G3 members alive, and that middle-aged respondents receive more transfers from G3 in households with more living G3 members.¹⁰ Taken together, findings from Model 1 suggest that financial transfers to children are a stable characteristic of the family, rather than a response to worsening health conditions of children, while non-financial transfers—likely in the form of time and practical assistance—intensify as the number of unhealthy G3 members increases. Though the health status of children has little bearing on downward financial transfers, in Models 2 and 3, we find that the physical health of the respondent is positively related to net transfers to G3 in any form. Respondents experiencing moderate and severe physical limitations provide .5 (financial) to 1.5 (non-financial) units of transfers less to G3 as compared to those with no limitations.¹¹ Estimates from model 6 suggest that once all other variables are controlled for, physical health remains a strong and statistically significant predictor of non-financial transfers only. Both net and total transfers with G3 peak in the early/middle adult ages (30–45, see Figure 1 Panel A), where changes in physical health can have large income effects (Blackledge-Foughali 2016; Leppert 2016). These health shocks thus likely constrain the pool of available resources and reduce transfers to G3. Conversely, we find no association between mental health and net transfers to G3. Declines in mental health happen primarily at older ages in Malawi (I. Kohler et al. 2017), and the age profile of transfers to G3 by mental health (Figure 1 Panels D and H) suggests that the association between mental

⁸Individual-level fixed effects capture both individual-level and family-level time-invariant unobserved factors (with the exception of families that change over time through divorce or widowhood, where only fixed respondent-level unobservables are controlled). In principle, one might want to test if individual-level or family-level unobservables are more important determinants of transfer pattern, but these analyses require careful reconstruction of family dynamics in the MLSFH and are beyond the scope of the present paper.

⁹Note that the sizeable coefficient on the 2012 dummy is driven by the shift from a broad age distribution of respondents in 2006, 2008, and 2010 to a narrow set of ages in 2012, where only respondents 40+ were re-interviewed.

¹⁰These analyses on single transfer components (transfers to G3, transfers from G3, transfer to G1, transfers from G1) are not shown, though they are available upon request.

¹¹This is in line with the age profile reported in Figure 2 (Panel C), showing lower net transfers to G3 across all ages on the part of individuals with limitations. However, as we operationalized the transfer metric drawing on categorical responses, we suggest an ordinal interpretation of the coefficients, rather than interval, and believe the magnitude of the effects is in these models less meaningful than their sign and statistical significance.

health and transfers is small in the age range where downward intergenerational transfers are at their peak.

The total count of shocks experienced by the household (model 4) shows a positive and significant association with net financial transfers, while the association with non-financial transfers is non-significant. Although we might expect transfers to decline with the number of shocks, the observed positive association suggests that prime-aged adults see providing for children as their first priority, and rely on transfers to protect them from the adverse effects of these shocks. Model 5 suggests that each type of shock in isolation plays a smaller role in driving transfer patterns (model 5), yet experiencing an income loss is associated with a statistically significant increase of 0.28 units in net financial transfers. On the whole, however, external shocks play a fairly small role in driving net transfers to G3, particularly non-financial transfers, as compared to less volatile determinants such as household composition and respondents' physical health.

Net transfers to the older generation (G1)

Table 7 reports fixed-effects estimates of changes in household composition, health, and external shocks on net transfers to G1. Parallel analyses limited to biological parents as transfer recipients are reported in Appendix Table A-7 and show analogous patterns. Differently from net transfers to G3, both the number of G1 members and the number of unhealthy G1 members alive positively affect net transfers to G1, with stronger and more robust coefficients observed for non-financial transfers. This finding suggests that transfers upwards are a significant source of support for elderly in the household, especially if they are in poor health.¹² These transfers appear to be compensating for the lack of a pension system, an argument which fits within the general conceptualization of an old-age security hypothesis. The underlying transfer mechanism is hence one of direct reciprocity, where older generations give first and younger generations give back later.

Moving to Models 2 and 3, we find that while mental health is not associated with net transfers to G3, it plays a stronger role in shaping net financial transfers to G1, as evidenced by the SF-12 mental health score (model 2) and the categorical DAX index (models 3 and 6). This association emerges even more clearly in Appendix Table A-7 restricted to biological parents as transfer recipients. In resource-poor contexts, mental health has been widely recognized as having important implications for individual productivity, individual/family-level well-being, and overall economic development (Bloom et al. 2011; Canavan et al. 2013; Cornwell et al. 2009; Sorsdahl et al. 2011; Tampubolon and Hanandita 2014; The Lancet 2011). In the MLSFH sample, recent research has shown that mental health has substantial negative repercussions for earnings and work efforts (I. V. Kohler et al. 2017), and that mental health declines rapidly in the older adult ages (45–60) where net transfers to parents peak (see Figure 2, Panel A). Mental health plays a role for net financial transfers only, while physical health remains a stronger predictor of net non-financial transfers to G1.

¹²Additional analyses (not shown) reveal that the effect of the number of unhealthy G1 members on net transfers is driven by an increase in upward transfers to G1, rather than by a decrease of downward transfers from the reportedly unhealthy members.

In line with Table 6, household-level shocks have little explanatory power. However, differently from net transfers to G3, the total count of shocks experienced by the household is positively and significantly associated with net non-financial transfers only, and is mostly driven by variations in household composition, such as a household breakup or divorce. Taken together, these findings suggest that health and household-composition variables—or shocks that are closely tied to variation in household size and composition—are among the strongest determinants of net transfers to G1. At a broader level, this analysis provides additional bearing that the insurance argument might not be central to transfer motives in rural Malawi, where exchange, reciprocity, and old-age motives play a more prominent role.

Public and Non-Governmental Transfers in the MLSFH Sample

In interpreting these results on overall life-cycle intergenerational wealth flows, it is useful to put the scope of these transfers in the context of other public transfers that may be simultaneously occurring in households. In the 2008 and 2010 rounds of MLSFH data collection (the second and third waves in this study), respondents were asked whether any member of the household had received financial or non-financial aid or assistance from governmental or non-governmental organizations over the past two years. We utilized these data to conduct a supplemental examination of the interactions between public and private transfers in the MLSFH sample, using the same fixed-effect approach as in our analyses in Table 6 and 7. Appendix Table A-8 reports the results of these analyses examining whether the receipt of public support—in the form of direct cash transfer, agricultural supplies, or free food distribution—is associated with changes in private intergenerational transfer patterns, after controlling for individual fixed effects. Our results show that, despite minor exceptions (such as non-financial transfers to G1 increasing for those receiving direct cash transfers), receipt of public support is not associated with substantial changes in financial and non-financial transfers to G3, nor to G1. In addition, household-level receipt of direct cash transfers from governmental, donor, and non-governmental sources is low in the MLSFH sample—in 2008, only 2 percent of respondents reported any household member receiving public cash transfers in the past two years, which increased to 7 percent of households in 2010. In 2008, 38 percent of households reported receipt of free food distribution in the past two years, likely due to the effects of the 2005–2006 drought crisis. This figure declined to 14 percent in 2010. The most widespread public transfer received by MLSFH sample households came from Malawi's Agricultural Input Supply Program (which provides vouchers for seed and/or fertilizer); 87 percent of households in 2008, and 65 percent in 2010, reported receipt of these vouchers. However, though receiving this public support may have resulted in higher agricultural productivity and increased incomes in the MLSFH sample (Dorward and Chirwa 2011), it appears to have limited effect in disrupting patterns of intergenerational transfers. Overall, there is limited evidence to support that changes in the receipt of public transfers is a substantial predictor of changes in the intergenerational household economy, supporting our conclusion that other household-level variables are stronger determinants of these transfer patterns.

Discussion

This paper investigates patterns of intergenerational financial and non-financial transfers in a rural Malawian population, a context where formal public transfers are limited and the family is the central provider of assistance and support. The aggregate life-cycle pattern of transfers among MLSFH respondents conforms to the expected pattern seen in high-income countries: with increasing age, respondents provide fewer transfers to younger generations and more transfers to older ones. However, underneath this well-established age-pattern, our longitudinal analyses document significant heterogeneity and fluidity: intergenerational transfers are variable and reverse their direction, with individuals moving between the provider and recipient states repeatedly across their life-course and within each major stage of the life-cycle. These micro-level patterns are in stark contrast to the more regular patterns of consumption and production seen in many developed-country populations (Lee and Mason 2011). We also find that prime-aged adults (those aged 40–59) bear an especially heavy burden and expect to spend a significant portion of their adult years providing financial and non-financial support to both their younger and older relatives.

Our focus on the micro-level determinants of intergenerational transfers allows us to gain a deeper understanding of how individual and family-level factors influence the movement of financial resources within the household. We find that transfers are contingent upon health status in this rural SSA context but are uniquely affected by different facets of health—transfers to G1 decline substantially when the respondent is in poor physical health, while transfers to G3 are more strongly affected by respondents' mental health. As both poor mental and poor physical health lead to productivity shortfalls, this differentiation is somewhat puzzling. A possible explanation lies in the differential age patterns of transfers to younger and older generations. Both net and total transfers with G3 peak in the early/middle adult ages (30–45; see Figure 1, Panel A), where changes in physical health can have outsized effects on productivity. Declines in mental health primarily occur at mature and older ages 45+ in this population (I. Kohler et al. 2017)—that is, at respondent's ages when transfers to G1 start to diminish (Figure 1, Panel A) but transfers to G3 are increasing (Figure 2, Panel A).

As one of the first research efforts studying the micro-level dynamics of intergenerational transfers in a resource-deprived setting, our research is not without limitations – though many of these set the ground for subsequent research. First, as the quantitative measurement of transfers in contexts such as Malawi is inherently difficult, the MLSFH did not attempt to monetize financial or non-financial transfers between respondents and their children/parents. While the chosen metric for measuring the intensity of transfer exchanges is simple and intuitive, we do not rule out the possibility of alternative specifications that might be better suited to our research question. MLSFH data do not enable us to discriminate between in-kind (food or other resources) and time (labor or caretaking) non-financial transfers, limiting our ability to understand how the composition of these non-financial transfers may differ by age and sex. The MLSFH transfer questions are also retrospective in nature, which may risk overlooking the more frequent and smaller transfers that take place on a nearly daily basis in low-income settings (Platteau 1997; Weinreb 2007). Second, although our paper is among the first to study micro-macro intergenerational transfer dynamics in a sub-Saharan country,

we acknowledge the potential weaknesses introduced by pooling four waves of data, including the different sampling frame for respondents in 2012 (only the 45+ population) and the lack of fully harmonized variables of interest such as shocks (not collected in 2006). Third, in common with other life-table-based measures, our estimates of life expectancy in each transfer state are derived from a synthetic cohort where the age-specific rates of transition remain constant for the foreseeable future, and thus will not exactly match the lived experience of any single cohort. Fourth, the MLSFH has been subject to attrition, and although analyses here and elsewhere do not suggest biases resulting from selective loss-to-follow-up,¹³ we acknowledge that not all aspects of attrition bias can be explored given the available data. Fifth, while fixed-effects regression provides a powerful tool to address unobserved factors associated with health, shocks, and transfers affecting individuals and/or families, it does not rule out the possibility that, for instance, lower transfers could cause worse mental and physical health. We believe that our interpretation that the direction of the effect is primarily from physical and mental health to transfers is the most likely in this context, but endogeneity remains an issue of concern and causality cannot be claimed. Lastly, although we provide a comprehensive account of some of the factors that are most likely to affect transfer patterns, we do not set out to systematically test the theories of intergenerational transfers in developing countries (Becker and Tomes 1976; Frankenberg, Lillard, and Willis 2002; Lillard and Willis 1997). We nonetheless regard our findings as novel and informative about the motivations for transfers in the SSA context.

In summary, the micro-data-based analyses in this article represent a substantial methodological shift from previous measures of life-course intergenerational transfers estimated in SSA. We have described the differences between macro-level life-cycle patterns and the highly fluid individual-level transfer dynamics and showed how these individual-level patterns are related to factors such as household composition, health, mortality, and wealth. Our findings show the flexibility and utility of using longitudinal micro-level data to investigate patterns of household transfers. Relying only on cross-sectional analyses to understand household economics may overlook many of the most important correlates of financial transfers. Many other existing models of characterizing life-cycle patterns of transfers—such as the National Transfer Accounts project—rely on cross-sectional data and are hence blind to the influences of individual factors such as physical and mental health. Some of our most important findings—the interrelations between changes in household composition and health and changes in net transfers—are not estimable using cross-sectional data. These micro-level insights into household economics are key for developing effective and targeted interventions.

Contrary to common perceptions about family transfers ameliorating short-term economic shocks, transfers in this rural Malawian sample are driven primarily by demographic factors such as changes in health, household size, and household composition. Short-term external

¹³Though a more detailed description of attrition in the MLSFH cohort is contained in H.-P. Kohler et al. (2015), including a summary of the common reasons for attrition in this rural Malawian context, we undertake a brief evaluation of whether this attrition may introduce bias into estimates of our key outcomes. Table A9 in the Appendix presents the mean number of transfers to/from G1 and G3 among individuals who attrited from the sample during the 2008–2012 period, and those who did not. The raw means show that attriters provided more transfers to their G3, and fewer transfer to G1 than non-attriters. Controlling for basic demographic characteristics (age, age2, sex, and region) reduces this bias to the point that differences are no longer significant for both transfers to/from G1 and G3 and we are confident that the bias introduced into our estimates is minimal.

shocks are associated with abrupt changes in income and household wealth; yet they do little to explain changes in intergenerational transfer patterns. Hence, though previous studies have inferred that intergenerational transfers primarily function as a mode of insurance in SSA low-income contexts, our findings from longitudinal data demonstrate that their role is more complex, encapsulating a mix of functions ranging from direct exchange to old-age support, in a way that compensates for the absence of a public pension system.

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FIGURE 1.

Age profiles of net transfers (financial top row, non-financial bottom row) to G3 (=children, step-children, nieces, and nephews; see appendix for complementary analyses including only children in G3)

FIGURE 2.

Age profiles of net transfers (financial top row, non-financial bottom row) to G1 (= parents, in-laws, aunts, and uncles; see appendix for complementary analyses including only parents in G1)

TABLE 1

Descriptive statistics for MLSFH respondents, 2006–2012 survey waves

	Wave			
	2006	2008	2010	2012
Socio-Demographic				
Female (prop.)	0.55	0.58	0.59	0.57
Age (mean)	35.2	41.1	42.6	59.5
Age (prop.)				
<20	0.15	0.08	0.03	.
20–40	0.50	0.47	0.49	.
40–60	0.29	0.30	0.32	0.60
60+	0.05	0.15	0.17	0.40
Region (prop.)				
North	0.33	0.33	0.33	0.30
Central	0.34	0.35	0.34	0.37
South	0.33	0.31	0.34	0.33
Years of Education (mean)	3.73	4.50	3.98	4.42
Level of Education (prop.)				
None	0.24	0.25	0.22	0.36
Primary	0.63	0.62	0.64	0.57
Secondary+	0.14	0.13	0.15	0.06
Health				
Survival (mean number of persons reported in each category)				
# G3 (children, step-children, nieces, nephews) Alive	5.43	6.23	6.15	8.77
# Unhealthy G3 Alive	0.24	0.22	0.24	0.28
# G1 (parents, in-laws, aunts, uncles) Alive	3.9	4.0	4.0	4.0
# Unhealthy G1 Alive	0.6	0.5	0.4	0.7
Physical Health				
SF-12 PH Score (mean)	52.5	51.8	49.3	47.7
Physical Limitations (prop.)				
No	0.81	0.78	0.69	0.59
Moderate	0.16	0.18	0.23	0.30
Severe	0.03	0.04	0.08	0.11
Mental Health				
SF-12 MH Score (mean)	55.6	54.1	52.2	53.0
Depression (prop.)				
No	0.70	0.50	0.48	0.51
Mild	0.23	0.41	0.36	0.41
Moderate/Severe	0.08	0.09	0.16	0.09
Transfers				
Financial To/From G3 (mean units transferred)				
To	9.3	8.6	8.9	7.6

	Wave			
	2006	2008	2010	2012
From	1.3	2.4	2.7	5.8
Non-Financial To/From G3 (mean units transferred)				
To	11.1	10.3	10.8	11.3
From	3.7	4.6	5.2	10.2
Financial To/From G1 (mean units transferred)				
To	2.3	2.8	3.0	2.2
From	1.8	1.6	1.7	0.4
Non-Financial To/From G1 (mean units transferred)				
To	5.4	4.6	5.1	3.1
From	3.6	3.0	3.3	1.0
Shocks				
Number of Shocks (mean)	.	1.71	1.68	1.34
Type of Shock (prop.)				
Death/Illness of a HH Member	.	0.43	0.37	0.30
Poor Crop Yields	.	0.74	0.65	0.66
Loss of Source of Income	.	0.35	0.45	0.25
HH Breakup or Divorce	.	0.08	0.09	0.04
Damage to the House	.	0.12	0.14	0.10
Observations (N)	3,392	3,872	3,764	1,262

TABLE 2

Distribution of observed transitions between financial and non-financial transfer states (provider/neutral/recipient) with G3 (children, step-children, nieces, and nephews) during 2006–2012 (4 MLSFH waves)

Observed distribution among transfer states and death	Number of transitions	% of all transitions	Number of transitions	% of all trans.	Number of transitions	% of all trans.
A) Financial Transfers to/from G3						
Age	20–39		40–59		60+	
Provider at both interviews	2306	78.0	2063	74.6	403	29.5
Provider to neutral	54	1.8	187	6.8	119	8.7
Provider to recipient	15	0.5	119	4.3	168	12.3
Provider to dead	42	1.4	53	1.9	31	2.3
Neutral to provider	12	0.4	117	4.2	90	6.6
Neutral at both interviews	6	0.2	30	1.1	57	4.2
Neutral to recipient	1	0.0	34	1.2	88	6.4
Neutral to dead	1	0.0	5	0.2	15	1.1
Recipient to provider	36	1.2	48	1.7	98	7.2
Recipient to neutral	10	0.3	32	1.2	51	3.7
Recipient at both interviews	4	0.1	50	1.8	197	14.4
Recipient to dead	1	0.0	3	0.1	35	2.6
No G3 to provider	230	7.8	9	0.3	2	0.1
No G3 to neutral	7	0.2	2	0.1	2	0.1
No G3 to recipient	8	0.3	1	0.0	3	0.2
No G3 at both interviews	218	7.4	10	0.4	4	0.3
No G3 to dead	6	0.2	2	0.1	2	0.1
B) Non-financial Transfers to/from G3						
Provider at both interviews	2295	77.6	1959	70.8	382	28.0
Provider to neutral	51	1.7	203	7.3	123	9.0
Provider to recipient	20	0.7	150	5.4	185	13.6
Provider to dead	42	1.4	51	1.8	30	2.2
Neutral to provider	19	0.6	120	4.3	82	6.0
Neutral at both interviews	4	0.1	60	2.2	65	4.8
Neutral to recipient	1	0.0	34	1.2	99	7.3
Neutral to dead	0	0.0	7	0.3	16	1.2
Recipient to provider	34	1.1	80	2.9	101	7.4
Recipient to neutral	14	0.5	39	1.4	77	5.6
Recipient at both interviews	6	0.2	35	1.3	157	11.5
Recipient to dead	2	0.1	3	0.1	35	2.6
No G3 to provider	225	7.6	8	0.3	3	0.2
No G3 to neutral	11	0.4	2	0.1	2	0.1
No G3 to recipient	9	0.3	2	0.1	2	0.1
No G3 at both interviews	218	7.4	10	0.4	4	0.3
No G3 to dead	6	0.2	2	0.1	2	0.1

TABLE 3

Distribution of observed transitions between financial and non-financial transfer states (provider/neutral/recipient) with G1 (parents, in-laws, aunts, and uncles) during 2006–2012 (4 MLSFH waves)

Observed distribution among transfer states and death	Number of transitions	% of all trans.	Number of transitions	% of all trans.
Age	20–39		40–59	
A) Financial Transfers to/from G1				
Provider at both interviews	517	17.5	522	18.9
Provider to neutral	340	11.5	304	11.0
Provider to recipient	73	2.5	29	1.0
Provider to no G1	16	0.5	60	2.2
Provider to dead	13	0.4	26	0.9
Neutral to provider	442	14.9	376	13.6
Neutral at both interviews	675	22.8	571	20.7
Neutral to recipient	152	5.1	45	1.6
Neutral to no G1	35	1.2	114	4.1
Neutral to dead	22	0.7	22	0.8
Recipient to provider	126	4.3	34	1.2
Recipient to neutral	269	9.1	69	2.5
Recipient at both interviews	145	4.9	16	0.6
Recipient to no G1	9	0.3	15	0.5
Recipient to dead	12	0.4	2	0.1
No G1 to provider	11	0.4	11	0.4
No G1 to neutral	20	0.7	52	1.9
No G1 to recipient	9	0.3	8	0.3
No G1 at both interviews	68	2.3	476	17.2
No G1 to dead	3	0.1	13	0.5
Age	20–39		40–59	
B) Non-financial Transfers to/from G1				
Provider at both interviews	657	22.2	509	18.4
Provider to neutral	508	17.2	369	13.3
Provider to recipient	85	2.9	52	1.9
Provider to no G1	16	0.5	83	3.0
Provider to dead	22	0.7	21	0.8
Neutral to provider	473	16.0	400	14.5
Neutral at both interviews	609	20.6	447	16.2
Neutral to recipient	122	4.1	58	2.1
Neutral to no G1	40	1.4	90	3.3
Neutral to dead	20	0.7	26	0.9
Recipient to provider	121	4.1	56	2.0
Recipient to neutral	128	4.3	63	2.3
Recipient at both interviews	36	1.2	12	0.4

Observed distribution among transfer states and death	Number of transitions	% of all trans.	Number of transitions	% of all trans.
Recipient to no G1	4	0.1	16	0.6
Recipient to dead	5	0.2	3	0.1
No G1 to provider	5	0.2	20	0.7
No G1 to neutral	31	1.0	45	1.6
No G1 to recipient	4	0.1	6	0.2
No G1 at both interviews	68	2.3	476	17.2
No G1 to dead	3	0.1	13	0.5

TABLE 4

Partial Life Expectancy in transfer states with G3 (children, step-children, nieces, and nephews): Financial (Panel A) and non-financial (Panel B) transfers

A) Financial transfers to/from G3										
Age	20–29		30–39		40–49		50–59		60+	
	Estimate	%	Estimate	%	Estimate	%	Estimate	%	Estimate	%
<i>Female</i>										
Life expectancy	9.7		9.7		9.6		9.5		12.8	
Provider	9.4	97	9.0	93	7.5	78	4.1	43	2.1	16
Neutral	0.2	2	0.4	4	1.0	10	1.9	20	2.4	19
Recipient	0.2	2	0.3	3	1.1	12	3.5	37	8.3	65
<i>Male</i>										
Life expectancy	9.6		9.5		9.4		9.2		12.5	
Provider	9.3	97	9.2	97	8.5	90	6.8	74	4.1	33
Neutral	0.1	1	0.2	2	0.5	5	1.1	12	2.7	22
Recipient	0.2	2	0.1	1	0.4	5	1.2	13	5.7	46
B) Non-financial transfers to/from G3										
Age	20–29		30–39		40–49		50–59		60+	
	Estimate	%	Estimate	%	Estimate	%	Estimate	%	Estimate	%
Female										
Life expectancy	9.7		9.7		9.6		9.5		12.8	
Provider	9.4	97	9.4	97	7.6	80	4.8	50	2.9	23
Neutral	0.2	2	0.2	2	1.1	11	2.7	28	3.4	27
Recipient	0.2	2	0.2	2	0.9	9	2.0	21	6.5	51
Male										
Life expectancy	9.6		9.5		9.4		9.2		12.6	
Provider	9.1	95	9.0	95	7.9	84	5.6	61	3.3	26
Neutral	0.2	2	0.2	2	0.8	8	1.9	21	2.9	23
Recipient	0.3	3	0.3	3	0.7	8	1.7	19	6.3	50

TABLE 5

Partial Life Expectancy in transfer states with G1 (parents, in-laws, aunts, and uncles): Financial (Panel A) and non-financial (Panel B) transfers

A) Financial transfers to/from G1								
Age	20–29		30–39		40–49		50–59	
	Estimate	%	Estimate	%	Estimate	%	Estimate	%
<i>Female</i>								
Life expectancy	9.7		9.7		9.6		9.5	
Provider	2.5	26	3.1	32	2.8	29	2.2	24
Neutral	4.7	49	5.0	52	4.7	49	4.2	44
Recipient	2.1	21	0.8	8	0.6	6	0.4	4
No Parents	0.4	4	0.8	8	1.5	15	2.7	28
<i>Male</i>								
Life expectancy	9.6		9.5		9.4		9.2	
Provider	4.3	44	5.1	52	4.5	47	3.5	38
Neutral	3.5	36	3.3	34	3.3	34	3.0	32
Recipient	1.4	14	0.4	4	0.3	3	0.2	2
No Parents	0.4	4	0.8	8	1.5	15	2.7	28
B) Non-financial transfers to/from G1								
Age	20–29		30–39		40–49		50–59	
	Estimate	%	Estimate	%	Estimate	%	Estimate	%
Female								
Life expectancy	9.7		9.7		9.6		9.5	
Provider	4.5	47	4.7	48	4.5	47	3.9	41
Neutral	4.1	43	3.8	39	3.3	35	2.6	28
Recipient	0.6	6	0.5	5	0.3	4	0.3	3
No Parents	0.5	5	0.7	8	1.4	15	2.7	29
Male								
Life expectancy	9.6		9.5		9.4		9.2	
Provider	3.1	32	3.4	35	3.5	36	3.0	31
Neutral	4.8	50	4.4	45	4.0	41	3.2	34
Recipient	1.2	12	1.0	10	0.7	7	0.5	5
No Parents	0.5	5	0.7	8	1.4	15	2.7	29

TABLE 6

Fixed-effects regressions of household, health, and shocks variables on net financial and non-financial transfers to G3 (=children, step-children, nieces, and nephews)

	HH Composition			Health			Shocks			All		
	F	NF		F	NF		F	NF		F	NF	
Net Downward Transfers (G3)	(1)			(2)			(4)			(6)		
# of G3 Members Alive in the HH	0.875*** (0.059)	0.720*** (0.057)								0.743*** (0.082)	0.604*** (0.086)	
# of Reported G3 Unhealthy Members in the HH	0.127 (0.122)	0.279** (0.141)								0.254 (0.164)	0.221 (0.164)	
SF12 Mental Health Score				0.002 (0.007)	0.010 (0.007)							
SF12 Physical Health Score				0.018** (0.008)	0.040*** (0.009)							
Depression (ref. No)												
Mild						0.106 (0.122)			-0.059 (0.130)	-0.035 (0.156)	-0.031 (0.169)	
Moderate/Severe						0.279 (0.198)			-0.100 (0.212)	-0.039 (0.236)	-0.390 (0.264)	
Physical Limitations (ref. No)												
Moderate						-0.527*** (0.168)			-0.476*** (0.172)	-0.194 (0.212)	-0.361* (0.216)	
Severe						-0.621* (0.336)			-1.405*** (0.362)	-0.606 (0.407)	-1.606*** (0.423)	
Total # of Shocks								0.149** (0.072)				
Type of Shock												
Death/Illness of a HH Member										-0.006	-0.109	-0.251

Net Downward Transfers (G3)	HH Composition			Health			Shocks			All		
	(1)		F	(2)		F	(3)		F	(4)		F
	NF			NF			NF			NF		
Poor Crop Yields												
Loss of Source of Income												
HH Breakup or Divorce												
Damage to the House												
Wave (ref. 2006)												
2008	-0.414 *** (0.104)	-0.428 *** (0.112)	0.101 (0.115)	-0.016 (0.123)	0.075 (0.115)	-0.020 (0.124)						
2010	-0.602 *** (0.119)	-0.787 *** (0.124)	0.039 (0.130)	-0.233 * (0.136)	0.005 (0.129)	-0.285 ** (0.135)	-0.039 (0.103)	-0.244 ** (0.115)	-0.079 (0.108)	-0.201 * (0.116)	-0.344 *** (0.129)	
2012	-3.088 *** (0.185)	-3.247 *** (0.188)	-2.321 *** (0.192)	-2.641 *** (0.199)	-2.331 *** (0.192)	-2.653 *** (0.199)	-1.991 *** (0.176)	-2.212 *** (0.178)	-2.029 *** (0.177)	-2.241 *** (0.181)	-2.473 *** (0.188)	
Constant	1.245 *** (0.352)	1.717 *** (0.348)	5.394 *** (0.566)	3.511 *** (0.627)	6.605 *** (0.098)	6.345 *** (0.101)	5.575 *** (0.136)	5.313 *** (0.146)	5.604 *** (0.156)	0.972 * (0.563)	1.732 *** (0.595)	
Observations	11,246	11,243	9,762	9,759	9,789	9,786	8,160	8,160	8,011	7,079	7,079	
R-squared	0.126	0.097	0.053	0.059	0.054	0.057	0.051	0.048	0.054	0.105	0.090	
Number of Groups	4,962	4,963	4,335	4,335	4,274	4,275	4,331	4,332	4,295	3,786	3,787	

NOTES: Robust standard errors in parentheses. F: financial; NF: non-financial.

p<0.01,

**
p<0.05,

*
p<0.1

TABLE 7

Fixed-effects regressions of household, health, and shocks variables on net financial and non-financial transfers to G1 (=parents, in-laws, aunts, and uncles)

	HH Composition			Health			Shocks			All		
	(1)			(2)			(3)			(4)		
	F	NF		F	NF		F	NF		F	NF	
Net Upward Transfers (G1)												
# of G1 Members Alive in the HH	0.450 *** (0.064)	0.445 *** (0.072)								0.162 * (0.093)	0.532 *** (0.137)	
# of Reported G1 Unhealthy Members in the HH	0.109 ** (0.045)	0.240 *** (0.063)								0.173 ** (0.072)	0.255 *** (0.098)	
SF12 Mental Health Score				0.010 *** (0.004)	0.007 (0.005)							
SF12 Physical Health Score				-0.002 *** (0.005)	0.018 *** (0.006)							
Depression (ref. No)												
Mild							-0.088 * (0.051)	0.073 (0.089)		-0.169 * (0.095)	-0.070 (0.119)	
Moderate/Severe							-0.169 (0.111)	-0.041 (0.147)		-0.226 (0.148)	-0.091 (0.206)	
Physical Limitations (ref. No)												
Moderate							-0.155 (0.095)	-0.246 ** (0.112)		-0.094 (0.116)	-0.056 (0.160)	
Severe							-0.026 (0.184)	-0.663 *** (0.223)		-0.102 (0.264)	-0.222 (0.311)	
Total # of Shocks										-0.019 (0.042)	0.103 * (0.055)	
Type of Shock												
Death/Illness of a HH Member										-0.050	0.076	0.067

Net Upward Transfers (GI)	HH Composition			Health			Shocks			All		
	(1)			(2)			(3)			(4)		
	F	NF		F	NF		F	NF		F	NF	
Poor Crop Yields												
Loss of Source of Income												
HH Breakup or Divorce												
Damage to the House												
Wave (ref. 2006)												
2008	0.595*** (0.063)	-0.215*** (0.077)	0.608*** (0.069)	-0.194** (0.084)	0.606*** (0.069)	-0.199** (0.086)						
2010	0.673*** (0.063)	0.030 (0.082)	0.683*** (0.068)	0.069 (0.088)	0.691*** (0.067)	0.065 (0.086)	0.036 (0.063)	0.247*** (0.080)	0.029 (0.066)	0.244*** (0.083)	0.104 (0.075)	0.270*** (0.098)
2012	0.691*** (0.093)	0.233* (0.123)	0.669*** (0.094)	0.219* (0.123)	0.694*** (0.094)	0.214* (0.124)	0.118 (0.092)	0.510*** (0.120)	0.128 (0.093)	0.495*** (0.120)	0.170* (0.104)	0.554*** (0.131)
Constant	-1.224*** (0.253)	-0.097 (0.284)	0.169 (0.341)	0.470 (0.414)	0.684*** (0.046)	1.808*** (0.056)	1.287*** (0.078)	1.411*** (0.103)	1.264*** (0.087)	1.403*** (0.111)	0.578 (0.389)	-0.836 (0.568)
Observations	9,500	9,495	8,353	8,348	8,431	8,426	6,462	6,456	6,331	6,325	5,421	5,413
R-squared	0.048	0.016	0.029	0.005	0.029	0.005	0.001	0.008	0.001	0.009	0.010	0.025
Number of Groups	4,353	4,352	3,840	3,837	3,830	3,827	3,682	3,681	3,649	3,648	3,161	3,158

NOTES: Robust standard errors in parentheses. F: financial; NF: non-financial.

p<0.01,

**
p<0.05,

*
p<0.1