

# Happiness and Alleviation of Income Poverty

## Impacts of an unconditional cash transfer programme using a subjective well-being approach

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Kelly Kilburn, Sudhanshu Handa, Gustavo Angeles,  
Peter Mvula and Maxton Tsoka, on behalf of  
the Malawi Social Cash Transfer Evaluation Team

Office of Research - Innocenti Working Paper

WP-2016-23 | August 2016

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For readers wishing to cite this document we suggest the following form:

Kilburn, K., S. Handa, G. Angeles, P. Mvula and M. Tsoka, on behalf of the Malawi Social Cash Transfer Evaluation Team (2016). Happiness and Alleviation of Income Poverty: Impacts of an unconditional cash transfer programme using a subjective well-being approach, *Innocenti Working Paper* No.2016-23, UNICEF Office of Research, Florence.

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ISSN: 1014-7837

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# HAPPINESS AND ALLEVIATION OF INCOME POVERTY: IMPACTS OF AN UNCONDITIONAL CASH TRANSFER PROGRAMME USING A SUBJECTIVE WELL-BEING APPROACH

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**Abstract:** This study analyzes the impact of an exogenous, positive income shock on caregivers' subjective well-being in Malawi using panel data from 3,365 households targeted to receive Malawi's Social Cash Transfer Programme that provides unconditional cash to ultra-poor, labour-constrained households. The study consists of a cluster-randomized, longitudinal design. After the baseline survey, half of these village clusters were randomly selected to receive the transfer and a follow-up survey was conducted 17 months later. Utilizing econometric analysis and panel data methods, we find that household income increases from the cash transfer can have substantial subjective well-being gains among caregivers. Households use the cash to improve their families' livelihoods, ensuring provision of their basic needs including food, shelter, and clothing. Reduction of these daily stresses makes caregivers happier about their current situations and gives them hope that the future will continue to get better.

**Keywords:** well-being, happiness, cash transfers, income poverty, Malawi

**Acknowledgements:** The impact evaluation of the Malawi Social Cash Transfer Programme (SCTP) is commissioned by the Ministry of Gender, Children, Disability and Social Welfare (MoGCDSW) and UNICEF Malawi and implemented by the Carolina Population Center at the University of North Carolina and the Center for Social Research at the University of Malawi. Funding for the evaluation is provided by UNICEF, KfW, European Union, Food and Agriculture Organization (FAO)-Rome and 3IE. Members of the evaluation team, listed by affiliation and then alphabetically within affiliation are: Carolina Population Center (Sara Abdoulayi, Gustavo Angeles, Kristen Brugh, Sudhanshu Handa, Kelly Kilburn, Adria Molotsky, and Frank Otchere), Center for Social Research (Peter Mvula, Maxton Tsoka), FAO-Rome (Solomon Asfaw, Benjamin Davis), MoGCDSW (Charles Chabuka, Gideon Kachingwe, Esmie Kainja, Laurent Kansinjiro), UNICEF Malawi (Edward Archibald, Maki Kato, Lisa-Marie Ouedraogo, Sophie Shawa, Tayllor Spadafora), UNICEF Office of Research (Sudhanshu Handa, Bruno Martorano, Tia Palermo, Amber Peterman). The corresponding author for this paper is Kelly Kilburn (kkilburn@live.unc.edu), Department of Public Policy, University of North Carolina, Chapel Hill, North Carolina. The team expresses gratitude to Chantal Elmont of Ayala Consulting and Harry Mwamlima of the Ministry of Finance and Economic Planning and Development for valuable discussions and information about the SCTP.

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## 1. INTRODUCTION

While much has been written about and debated on the impact of income on subjective well-being, often described as “happiness” or “life satisfaction” (Easterlin, 1974; Frijters, Haisken-DeNew & Shields, 2004; Stevenson & Wolfers, 2008; Easterlin et al., 2010), little is known about the impacts of income increases by means of specific policy (e.g. poverty alleviation programmes).

Most evidence comes from cross-sectional data, examining correlations between average subjective well-being and national income. In richer, more developed countries income is positively correlated with happiness but with diminishing returns (Frey & Stutzer, 2002). However, at lower levels of income and in low-income, developing countries there is a stronger, more linear relationship suggesting that income is an important determinant of happiness when it corresponds to a better quality of life in the sense of satisfying basic needs (Deaton, 2008; Graham & Behrman, 2010). In both the developed and developing world though, income does not reliably predict happiness over the long term (Easterlin, 2015). Nevertheless, the relationship between income and happiness for those in deprivation suggests that poverty alleviation programmes that have direct impacts on income have the potential to increase subjective well-being.

This paper revisits the relationship between income and happiness and estimates the impact of a social cash transfer programme on individual subjective well-being. Social cash transfer programmes provide consistent, non-contributory income to targeted, poor households. In Latin America, they are usually conditioned on measurable behaviours, but in sub-Saharan Africa they tend to be unconditional. Limited evidence exists on the relationship between cash transfers and happiness, but a recent study found a dissonance on objective and subjective welfare; the reduction of income poverty for households in the Mexican Oportunidades programme did not translate into a greater sense of well-being (Rojas, 2008). While an interesting relationship to explore on its own, there is increasing attention in the measurement and use of subjective well-being as a means of informing policy design (Dolan & Peasgood, 2008). As evidence mounts that subjective well-being metrics can capture individual emotional states and predict other measures of individual well-being such as health outcomes, they are becoming a valid subject of study (Kahneman & Kruger, 2006). They also have the potential to predict behaviour across other domains such as work life, relationships, and health (Lyubomirsky, King, & Diener, 2005). Incorporating subjective welfare indicators into social policy evaluations can thus complement existing objective measures and provide a deeper understanding of how policies affect livelihoods across more dimensions than the economic one.

Our paper uses data from a national poverty alleviation programme, Malawi’s Social Cash Transfer Programme, to explore measures of subjective well-being that capture concepts of life satisfaction, relative wealth, and future expectations amongst household caregivers. This study uses a longitudinal, experimental design with pre-programme baseline data collected in 2013 and 17-month follow-up data collected at the end of 2014. While income is generally taken to be endogenous to both individual well-being and determinants such as health status and personality, the random assignment to treatment and control status provides exogenous variation in income changes that allows us to identify the impact of such changes on subjective well-being. As a starting

point, our empirical specification models subjective well-being traditionally as an additive function of individual determinants. We then use panel data methods to control for time trends and unobserved individual characteristics to elicit a casual impact of income.

This investigation finds that increases in household income from the cash transfer can have substantial subjective well-being gains among caregivers. Two measures, life satisfaction and future outlooks, are statistically significant and robust across empirical specifications and additional controls.

## 2. BACKGROUND

Subjective well-being is a broad concept and thus has different dimensions. Diener, Oishi and Lucas (2009) define subjective well-being as an individual's evaluation of his or her life from both emotional and cognitive perspectives. Therefore, high subjective well-being can include the recurrent experience of positive affect (and low negative affect) as well as high life satisfaction.

Traditionally, economists have been critical of self-reported data like quality of life measures for analysis of well-being. Self-reports of well-being are assumed to be unreliable signals for individuals' underlying preferences and constraints that affect actual behaviour.

Therefore, economists have relied on revealed preference analysis by examining individuals' real choices. Conventionally, consumption and investment behaviour data is used with the belief that these measurable choices better reflect the set of unobservable expenditure trade-offs of preferences and constraints (Graham & Behrman, 2010).

Often, however, people's choices are not aligned with their own happiness. Literature from behavioural economics and psychology finds that people often make inconsistent choices, departing from the standard model of the rational economic agent (Kahneman, 2003). Evidence from developing country contexts finds that people repeat the same mistakes, fail to participate in market opportunities, and make short-run decisions that fail to take account of their long-term welfare (Anderson & Stamoulis, 2006; Banerjee & Duflo, 2012). The poor are also known to be myopic, for example, borrowing at very high interest rates or spending on festivals and assets when they do not have enough to eat (Banerjee & Mullainathan, 2010). Revealed preference analysis is therefore limited in providing explanation of other factors influencing important choices, such as self-control problems and constraints like poverty that might result in perverse choices (Graham & Behrman, 2010). Moreover, personal psychological states have been clearly linked to individual economic and social behaviours. Decision makers with positive life outlooks are expected to make better choices for themselves and their household, for example seeking preventive care and investing in human capital, because happiness increases their cognitive flexibility and self-control to carefully assess their future (Isen 2008; Lyubomirsky, King, & Diener, 2005). For families in poverty, good mental health and positive life outlooks may be an important factor in overcoming or remaining in poverty.

Despite the traditional objection, evaluating measures of subjective well-being has become increasingly more popular among economists and policy analysts for the purpose of measuring individual and social welfare (e.g. Kahneman & Kruger, 2006; Gruber & Mullainathan, 2006;

Rojas, 2008; Rojas, 2009; Fafchamps & Shilpi, 2009; Di Tella & MacCulloch, 2006). In theory, collecting subjective data allows researchers to test fundamental economic assumptions because subjective data directly captures well-being (Frey & Stutzer, 2002). In particular, the literature has tested and affirmed the assumption that income is a basic determinant of well-being. However, supporters of the subjective approach do not condone using income to exclusively evaluate welfare for the risk of overvaluing policy impacts. There are other human needs and values that cannot be directly bought or enriched with income such as emotional support and personal relationships as well as autonomy and human development. Moreover, focusing solely on income neglects the fact that income may not be used efficiently and that well-being could depend more on relative consumption rather than absolute consumption (Rojas, 2007). Alleviation of income poverty might not be enough to increase an individual's overall sense of well-being if other dimensions of their life are going poorly (Rojas, 2009). As Rojas (2009, 2015) describes in his 'subjective well-being approach', the goals of poverty alleviation programmes may be compromised if dissonances emerge between subjective and objective measures. Policies that cannot improve people's lives across more dimensions than absolute income may limit people's long-term prospects of getting out of poverty because well-being involves other aspects of people's lives such as their work, relationships, and communities – important factors in the successful transition out of intergenerational poverty. Thus, including subjective well-being measures within evaluations of social programmes can complement objective measures to provide a better picture about the effect of such policies on livelihoods across more dimensions than the economic one.

Though analysis of subjective well-being may be useful in analyzing policy impacts, it is necessary to point out that subjective well-being measures individuals' perceptions of their experiences which are not easily comparable between people. Even if subjective questions can aptly capture individual well-being, researchers expect that individuals have different interpretations of subjective questions and that these will bias interpersonal comparisons of results (Beegle, Himelein, & Ravallion, 2012). However, econometric techniques that allow for control of unobserved heterogeneity among individual responses have opened the way for subjective survey data to become a more acceptable tool to estimate policy effects (Graham & Behrman, 2010). Additionally, recent findings indicate that individual diverse views present little bias in relative well-being data (Beegle et al., 2012), and measures of life satisfaction have been validated as a good correlate across other measures of well-being including economic, psychological, physiological (Dolan, Peasgood, & White, 2008; Kahneman & Kruger, 2006).

Despite the growing use and acceptance of subjective well-being data, literature on well-being and income is limited in establishing causality because survey data usually misses the exact timing of change in income and happiness, raising concerns about reverse causality. Endogeneity could also be a problem with respect to income and omitted variables because data sets rarely have all the important determinants or baseline subjective data to establish a reference point for happiness (Clark, Frijters, and Shields, 2008).

Some studies have been able to utilize exogenous variations in income through natural experiments to establish a causal effect of income on well-being. Using the reunification of



Germany, Frijters, Haisken-DeNew, and Shields (2004) show that income gains for East Germans resulted in lasting gains on individual life satisfaction while Gardner and Oswald (2007) show that in Britain, mid-size lottery wins result in better psychosocial health for winners compared to those with no wins and smaller wins. Experimental data, however, is missing because as Gardner and Oswald (2007) point out "...it is not possible to run giant experiments where, in the name of science, different amounts of government-funded research cash are randomly allocated to treatment and control groups (p 50)."

This study fills this important gap by exploiting the randomized design to measure the causal impact of changes in income on subjective well-being. Survey data is comprehensive and longitudinal so we are able to control for all of the individual and household determinants. Detailed consumption data also allows us to control for baseline consumption and map income increases into consumption. Assessments of unconditional cash transfer programmes have recently begun to measure subjective well-being. A working paper by Handa et al. (2014) describes the use and performance of subjective well-being questions from the impact assessment of Kenya's CT-OVC programme. Overall, measures performed well and correlated to expected material well-being and demographic measures. This literature is so far limited by having cross-section results, and therefore this study adds value by using longitudinal data from Malawi to control for ex-ante well-being and any unobserved individual heterogeneity in survey responses.

### 3. THE MALAWI SCTP PROGRAMME

The Government of Malawi's (GoM's) Social Cash Transfer Programme (SCTP) is an unconditional cash transfer programme targeted to ultra-poor, labour-constrained households in Malawi. Unconditional cash transfers distribute payments regardless of recipient behaviours as opposed to conditional transfers that tie receipt to certain conditions. They are seen as an alternative way to support poor and vulnerable families because, by allowing households to spend money as they wish, it permits them to allocate resources to their most pressing needs, whether it be food, education, or economic activity (Handa, Devereux, & Webb, 2010). The main objectives of the Malawi SCTP programme are to alleviate hunger and poverty among households and to improve children's well-being and human capital through education, nutrition, health, and household productivity. The programme began as a pilot in the Mchinji district in 2006 and since that time, has expanded to 18 districts reaching over 100,000 households by March 2015. The GoM expects to have enrolled over 175,000 households by the end of 2015 (Malawi SCTP Evaluation Team, 2015).

SCTP beneficiary selection is made using a community-based approach with oversight provided by local and national government. Appointed community members are responsible for identifying households that meet the eligibility criteria of being ultra-poor and labour constrained (Malawi SCTP Evaluation Team, 2015). Ultra-poor households are unable to take care of members' most basic needs including food and essential non-food items such as clothing. Labour-constrained households have a large dependency ratio, meaning that they have more dependent members than wage earners or those able to work. Household members are dependent if they are below 18 or above 64 years old, or if they are between age 18 and 64 but have any illness, disability, or other

condition making them unable to work (Malawi SCTP Evaluation Team, 2014). After further screening of households identified by the GoM, including a proxy means test to meet the ultra-poor eligibility condition, the recipient list is generated. The programme's goal is that these lists target the bottom 10 per cent of each community (Malawi SCTP Evaluation Team, 2015).

An early evaluation of the Malawi SCTP in Mchinji confirms that recipient households live in extreme poverty and have higher dependency ratios than other poor households (Miller, Tsoka, & Reichert, 2010). Additionally, household heads tend to be older (above 60) and upwards of 80 per cent of households are missing at least one prime-age adult, highlighting their particular vulnerability to the impacts of HIV/AIDS (Malawi SCTP Evaluation Team, 2013).

The SCTP provides a monthly unconditional cash transfer to eligible households, which vary depending upon the number and school status of members in the household. Table 1 shows transfer amounts in Malawi Kwacha (MWK) that were in use at time of follow-up data collection (first column, 'Prior to May 2015') and the new transfer levels that were increased in May 2015. The 'rule of thumb' among policy experts is that the cash transfer should amount to at least 20 per cent of baseline consumption in order to have measurable impacts (Davis & Handa, 2015).

**Table 1 – Structure and Level of Transfers (Current MWK)**

	Prior to May 2015	After May 2015
1 Member	1,000	1,700
2 Members	1,500	2,200
3 Members	1,950	2,900
4+ Members	2,400	3,700
Each primary school child <sup>a</sup>	300	500
Each secondary school member <sup>b</sup>	600	1,000

<sup>a</sup>Provided for household residents age 21 or below in primary school. <sup>b</sup> Provided for household residents age 30 or below in secondary school. Source: Malawi Social Cash Transfer Programme Midline Impact Evaluation Report (2015)

Before the increase in transfer amounts in May 2015, the majority of beneficiaries in this study's sample had a share below this 20 per cent threshold. The average share was 18 per cent and 50 per cent of beneficiaries had a share below 15 per cent. However, the increase in transfer amounts is projected to increase transfer share substantially; the average share should be 28 per cent and only 40 per cent should fall below the 20 per cent threshold (Malawi SCTP Evaluation Team, 2015). This increase was implemented only after follow-up data was collected and so does not affect the results in this paper.

#### 4. DATA

Data comes from the impact evaluation of Malawi's SCTP undertaken by UNC-Chapel Hill's Carolina Population Center and University of Malawi's Center for Social Research. The design consists of a cluster-randomized longitudinal study with a baseline survey and two follow-up surveys. This study only uses the baseline survey conducted mid-2013 and the first follow-up survey conducted in late

2014 through early 2015. The household survey is the main survey instrument covering household composition, consumption, economic activity, education, health, time use, and subjective welfare, among others. A qualitative component also includes in-depth individual interviews with the caregiver and one youth from 16 treatment households selected using a stratified sampling approach. This study has IRB approval from both the University of North Carolina (IRB Study No. 14-1933) and Malawi's National Commission for Science and Technology (IRB Study No. RTT/2/20).

The evaluation was designed around the GoM's plans to extend and expand coverage of the SCTP within 18 out of the 28 total districts in Malawi over three years starting in 2013. The programme would be extended to full-scale in districts where implementation had started, and then expand to 9 additional districts. In order to integrate the impact evaluation with early expansion plans in 2013, two districts, Salima and Mangochi, were chosen for this study. Random selection was included at all possible levels, including the two smaller levels within these districts: Traditional Authorities (TAs) and Village Clusters (VCs). First, two TAs in each district were randomly selected to participate in the evaluation study and then eligible beneficiary lists from each VC within these four TAs were generated following normal programme operating guidelines described above. In the second stage, VCs were randomly selected to arrive at a necessary sample size of 3,500 based on power calculations for key programme outcomes. In Salima, all eligible households were selected in the VCs. In Mangochi, 125 eligible households per VC were randomly selected in each VC chosen. Precise numbers of the selection at each stage are presented in the Sampling Note of the baseline report, in Appendix D (Malawi SCTP Evaluation Team, 2014). The final sample for the study was drawn from 29 VCs and comprises 3,531 households, approximately 47 per cent of all eligible households from the four TAs.

The quantitative baseline survey was administered over several months from June to September 2013 to the study sample of 3,531 households (1,678 treatment and 1,853 control). Households were not assigned to treatment (T) and control (C) status until after the baseline survey in order to maintain objectivity during data collection. Half of the VCs in each TA were randomly assigned the treatment group to start receiving the cash transfer right away. The other half of the VCs was assigned to the delayed-entry control group and will enter the programme at a later date. This cluster randomization approach is preferable to household randomization in this study because it reduces concerns that treatment effects could become contaminated due to households living in close proximity with other study participants (Malawi SCTP Evaluation Team, 2013). This experimental design is one of the strongest approaches in evaluation literature with elements of both random selection (at the TA and VC level) and random assignment (VC level) (Shadish, Cook, & Campbell, 2002). The design is also more feasible administratively and ethically because the programme did not have the financial resources to reach all households immediately.

The first follow-up occurred at the end of 2014 and concluded in February 2015. Overall attrition was low; the study retained 95 per cent of the baseline sample and detailed attrition analysis finds no evidence of selective attrition. Beneficiary households had received five or six cash payments at the time of follow-up data collection. Each payment accounted for two months so results can be interpreted as one-year impacts of the programme (Malawi SCTP Evaluation Team, 2015).

This survey was conducted in Malawi's lean season while baseline was conducted after the harvest. There was a significant decline in consumption of around 25 per cent for both study arms at follow-up, on par with regional consumption fluctuations between the same time periods in Malawi's 2010 Integrated Household Survey. However, the SCTP appears to be protective for beneficiary households during these seasonal changes as evidenced by greater average consumption across a number of food and non-food categories (Malawi SCTP Evaluation Team, 2015).

## 5. SAMPLE

The sample for this study comes from main respondents who gave their individual responses to subjective well-being questions in both waves. Main respondents are typically the main caregiver in the household but not necessarily the household head. They are chosen because they are available and able to provide the best information about all household members. We use two panels in this study, the full household panel of 3,365 households (1,605 treatment and 1,760 control) consisting of all households that responded to subjective welfare questions in both waves, and the individual panel of 2,919 (1,520 treatment and 1,399 control) that consists of all households that had the same respondent in both waves.

## 6. MEASURES

To measure subjective well-being this study includes constructs of quality of life, relative well-being, and future expectations. Subjective well-being measures are based on a person's own judgments and thus the researcher does not externally impose any reference for comparison.

Quality of life measures are constructed from a series of questions gauging people's perceptions of life satisfaction (Douthitt, MacDonald, & Mullis, 1992). Life satisfaction refers to a person's global assessment of their life such as whether they find life pleasant or fulfilling. This is considered a cognitive, judgmental process, where a person's judgments are dependent upon a comparison of one's present circumstances with a standard which each individual sets for him or herself (Diener, Emmons, Larsen, & Griffin, 1985).

To measure the quality of life, respondents were asked how much they agree with the following statements from strongly agree (5) to strongly disagree (1):

1. In most ways my life is close to ideal.
2. The conditions in my life are excellent.
3. I am satisfied with my life.
4. So far I have gotten the important things I want in life.
5. If I could live my life over, I would change almost nothing.
6. I feel positive about my future.
7. I generally feel happy.
8. I am satisfied with my health.

These questions are drawn from the Satisfaction with Life Scale (SWLS) (Diener et al., 1985) and the WHO Quality of Life Scale (WHOQOLS) (WHO, 1998). The first five questions comprise the SWLS, which is narrowly focused on an individual's overall life satisfaction. The SWLS has shown good internal consistency and construct validity (Kobau, Snizek, Zack, Lucas, & Burns, 2010). The last three questions come from the WHOQOLS and covers positive affect as well as overall quality of life. Quality of Life (QoL) is a continuous measure generated by summing the responses from each item of the scale. The resulting scale ranges from 8 to 40 with higher scores reflecting greater quality of life.

This study also examines the impact of the cash transfer on perceptions of relative wealth. Literature has confirmed that income evaluated relative to others has a significant effect on individuals' perception of well-being at least among developed societies (Clark et al., 2008). Evidence from developing societies where the poor live at subsistence levels is more inconsistent. For example, Ravallion and Lokshin (2010) find that among the poor in Malawi, subjective well-being is not correlated with mean income in one's neighbourhood. However, Fafchamps and Shilpi (2009) find that relative consumption is an important predictor of subjective well-being among the poor even in isolated villages in Nepal.

In this study, relative well-being is measured using a visual stepladder with six choices from poor (1) to rich (6). Respondents place themselves on one of these ladder steps and also place their neighbours and friends. Two binary variables were generated, one that measures relative well-being in comparison to friends and the other in comparison to neighbours. The variables are coded 1 if individuals perceive themselves either the same or better off compared to worse off than their friends and neighbours.

The last construct, future outlooks, is measured by asking respondents for their perception of how they feel their life will go (either better, same, or worse) in one, two and three years from now. Binary indicators measure whether individuals feel their life will be better, the same or worse in the future. As compared to life satisfaction, which is an assessment of one's current circumstances, these questions on future well-being have respondents gauge the unknown future and tap into concepts of expectation and optimism. Psychological theory proposes that optimism as a personality trait would affect subjective well-being through expectations about the future (Scheier & Carver 1985). Some literature has found that dispositional optimism correlates well with other measures of subjective well-being such as life satisfaction and positive affect (Lucas Diener, & Suh, 1996). Optimism may also be a latent sentiment too, as researchers found that an experiment targeting the impacts of gratitude could cultivate optimism about the near future in participants exposed to a self-guided reflection of their blessings (Emmons & McCullough, 2003).

The independent variable of interest is treatment status, a binary measure for households randomly chosen to receive the cash transfer. Individual correlates of subjective well-being will be controlled for including age, age-squared, gender, marital status, education, and health status (Dolan et al., 2008; Wiemann et al., 2015). Baseline values of household correlates will be controlled for including household size and total members in age groups (0-5, 6-11, 12-17, 18-65, and 65+). Household composition could be endogenous to the income shock so we only control for baseline values of these measures.

If increases in income are supposed to increase happiness, shocks that would reduce income such as death of an income earner should analogously have a negative impact on happiness. By testing the relationship between negative shocks and subjective well-being, we can ensure that our measures are sensitive to negative shocks and respond appropriately. Respondents were asked about negative shocks that occurred within the previous 12 months such as floods and droughts, high food prices, death and serious illness of household members, and conflict or violence. Total number of shocks and an indicator for the death of income earner are tested. In addition, respondents were asked to assess their future risk of experiencing negative shocks in the next year, a food shortage and needing financial assistance. Future shocks are measured on a 5-point scale with greater scores indicating higher chance of shocks occurring. An indicator for future shocks is coded 1 if the respondent believes there is probably a chance the event will occur (score of 4 or 5) and 0 otherwise.

## 7. METHODS

In most studies investigating the determinants of well-being, self-reported measures of subjective well-being (*SWB*) are modeled empirically as an additive function of the social, economic, and environmental factors (*Xs*) involved:

$$SWB_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \dots + \varepsilon_{it}$$

where the error term ( $\varepsilon_{it}$ ) captures individual differences in reporting (Dolan et al., 2008).

In this paper we run three models. The first model is an OLS linear regression model on the wave 2 cross-section data.

$$(1) Y_i = \alpha + \beta_1 T_i + \beta_2 X_i + e_i$$

where  $Y_i$  is the individual measure of subjective well-being,  $T_i$  is an indicator variable for being in a treatment household, and  $X_i$  is a vector of individual control variables.

The second model is a Difference-in-Differences (DiD) regression model, which uses panel data to account for group level differences across the two study arms that may not have been swept away in randomization. Equation 2 shows the basic empirical specification where  $Y_{it}$  is an individual, time specific measure of subjective well-being,  $T_i * P_t$  is an indicator for cash transfer receipt in the second wave and represents the DiD estimate of the treatment effect since it is the product of treatment status ( $T_i$ ) and second time period ( $P_t$ ).

$$(2) Y_{it} = \alpha + \beta_1 T_i * P_t + \beta_2 T_i + \beta_3 P_t + \beta_4 X_{it} + e_{it}$$

The final specification is a fixed effects model to control for individual reporting differences and unobserved characteristics such as personality that might bias the treatment effects. These show up in the unobserved error term,  $V_{it}$ , and are assumed fixed over time. Individual fixed effects will also wipe out any stable control variables such as gender and treatment status.

$$(3) Y_{it} = \alpha_i + \beta_1 T_i * P_t + \beta_2 P_{it} + \beta_3 X_{it} + e_{it} + v_i$$

Regressions include household probability weights and standard errors are clustered at the Traditional Authority level, the primary sampling unit.



## 8. RESULTS

### 8.1 Randomization and summary statistics

The data for this study come from a carefully designed, randomized experiment and thus in theory, second round results should be enough to find a treatment effect if randomization was successful at balancing T and C groups. However, in a field experiment that is part of a larger governmental intervention, successful randomization is more difficult to achieve than experiments designed and implemented by the same research team. For example, we might find bureaucrats affecting randomization (intentionally or not), resulting in imperfect implementation. Randomization may also be imperfect and where randomization results in unevenness between groups, it is important to control for those baseline characteristics. Bruhn & McKenzie (2009) even recommend balancing on baseline variables that are thought to influence future outcomes, whether or not their means are statistically different, because including variables that are good predictors of Y soak up residual variance, increasing power.

Additionally, conducting a baseline and examining balance in this particular evaluation is important because the randomization of the programme was done at the cluster level, while the outcomes of interest are at the individual level.

The main evaluation concentrates on answering six questions that incorporate the main objectives of the programme. Key areas that are evaluated include 1) consumption, food insecurity, and diet diversity; 2) economic productivity and wealth accumulation; 3) health and nutrition of young children; 4) schooling and child labour among older children; 5) safe transition into adulthood among youth; and 6) the health and well-being of caregivers. Primary outcomes in these areas and all variables in this study were tested for statistical differences between the two groups at baseline using OLS regression and accounting for the survey design to adjust standard errors. Table 2 (page 16) shows that randomization was successful for both the full and panel samples in a few key programme objectives and all variables used in this paper. All mean characteristics between the treatment and comparison groups are balanced across these domains; there are no significant differences ( $p\text{-value} < 0.1$ ).

Table 3 (page 17) displays summary statistics for respondents at baseline and follow-up (Waves 1 and 2). The respondent caregiver was the same in both surveys for 85 per cent of sample households as illustrated by the similarities across waves in the demographic data in Table 3. In both waves, the vast majority of caregivers are females (over 80 per cent) with an average age of 58. Approximately a third of the sample has attended school at some point in their life and another third is currently married. As stated earlier, per capita consumption expenditure is much lower at follow-up due to data collection occurring during the lean season. Therefore, the control group is key to our estimation strategy as it accounts for this seasonality. Despite the consumption decline, there were some positive changes for households at follow-up. Negative shocks experienced by households decreased from an average of 2.5 to 1.8 between waves 1 and 2. Additionally, all of the subjective well-being indicators have increased across the data collection time period, for example, the per cent of caregivers that believe the future will be better in one year increased from 53 to 65 per cent.

**Table 2 – Success of Randomization: Key Indicators (full sample) and Control Variables (household panel) at Baseline by Treatment Status**

	Full Sample		Panel	
	Treatment	Control	Treatment	Control
<b>Observations</b>	<b>1,678</b>	<b>1,853</b>	<b>1,608</b>	<b>1,761</b>
<b>• KEY PROGRAMME INDICATORS</b>				
<b>Poverty and Food Security</b>				
Poverty rate, individuals (%)	90.1	92.8	90.3	92.8
Eat only one meal per day (%)	21.3	19.4	21.3	19.1
<b>Economic Activity &amp; Productive Assets (households)</b>				
Operate an enterprise (%)	23.8	22.5	24.1	22.6
Cultivate land (%)	95.2	96.0	95.6	96.0
Selling any crops (%)	21.4	24.0	21.6	23.9
<b>Adult Health (age 50+)</b>				
Morbidity (%)	56.2	50.3	55.9	49.9
Any disability (%)	16.0	16.3	13.9	14.9
<b>Adolescent Schooling &amp; Labour</b>				
Ganyu work for pay (age 10-17)	42.4	39.3	41.1	38.9
School enrollment (14-17)	66.7	74.3	64.3	71.3
<b>Safe Transitions to Adulthood</b>				
Ever had sex (age 13-19)	34.3	30.5	34.8	31.6
Depressive symptoms (age 13-19)	43.7	50.0	44.9	50.6
<b>Young Child Health &amp; Nutrition</b>				
Underweight (age 0-5)	17.7	17.0	19.3	16.9
Consumed vit A-rich foods previous day (6-59 months)	69.3	61.6	67.4	60.9
<b>• DEMOGRAPHIC AND HOUSEHOLD CHARACTERISTICS</b>				
Per Capita Consumption (mean annual MWK)	44,258	41,446	43,891	41,357
Age (mean)	58.9	56.7	58.7	56.8
Female (%)	83.1	84.1	83.2	84.8
Chronic illness (%)	47.6	40.9	47.2	40.5
Ever attended school (%)	27.6	30.5	27.8	30.4
Married (%)	29.5	29.0	29.8	29.2
Household size (mean)	4.5	4.5	4.5	4.5
Number of shocks in past 12 months (mean)	2.5	2.5	2.5	2.5
Death in past 12 months (%)	3.8	3.3	3.8	3.2
<b>• SUBJECTIVE WELL-BEING</b>				
Better in year (%)	52.4	53.2	51.9	53.0
Better 2 years (%)	46.9	43.2	43.5	47.3
Better 3 years (%)	40.2	45.7	40.5	46.1
Same or better off than neighbour (%)	42.8	48.9	42.6	49.0
Same or better off than friends (%)	48.5	51.4	48.3	51.5
Quality of Life scale (mean)	17.2	18.3	17.3	18.2
Believes will have future financial or food shock in next 12 months (%)	53.8	53.4	53.5	53.3

Notes: No significant differences between baseline T and C groups at (p-value<0.1)



**Table 3 – Summary Statistics at Baseline (Wave 1) and Follow-up (Wave 2)**

	Wave 1 Mean (SD)	Wave 2 Mean (SD)
Female (%)	84.0	86.3
Age	57.7 (19.8)	57.6 (19.1)
Ever attended school (%)	29.1	29.0
Chronic illness (%)	43.8	44.7
Married (%)	29.5	31.2
Per capita yearly expenditure	42,606 (28,598)	34,016 (16,507)
Number of household members	4.5 (2.3)	4.5 (2.3)
Death in past 12 months (%)	3.5	3.3
Number of shocks in past 12 months	2.5 (1.3)	1.8 (1.3)
Believes will have future shock (need food or financial assistance) (%)	53.4	39.4
Better in year (%)	52.5	65.1
Better in 2 years (%)	45.4	60.0
Better in 3 years (%)	43.3	55.8
Better or same relative to neighbor (%)	45.8	46.7
Better or same relative to friends (%)	49.9	54.4
Quality of Life scale	17.8 (6.7)	20.9 (6.5)

N = 3,365

## 8.2 Quality of life

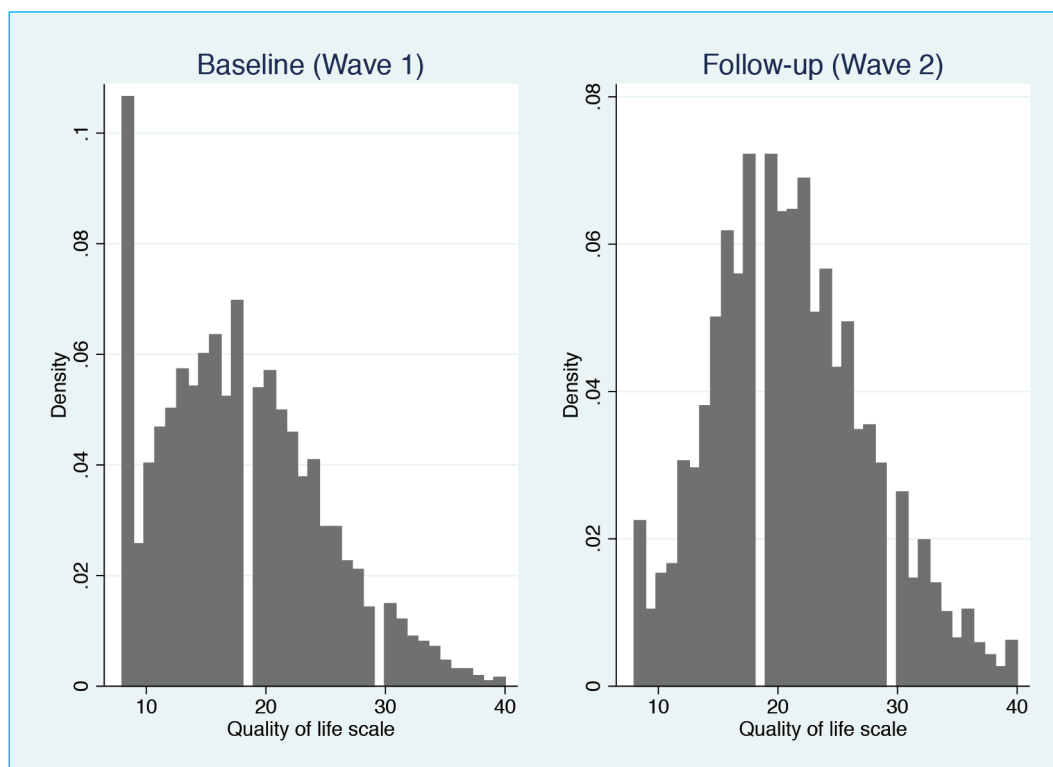
The internal consistency of the QoL scale is respectably high with a Cronbach Alpha score of 0.83 (using both waves). Factor analysis reveals a single construct aligning with the literature on life satisfaction scales and supporting its validity in this sample (Frey & Stutzer, 2002).

Figure 1 (page 18) shows graphically the distribution of scores for the full sample at baseline and follow-up. At baseline, about 10 per cent of eligible respondents report the lowest value (8) on the QoL scale, while only 0.1 per cent report the highest value (40) and 99 per cent of respondents have a value lower than 35. This distribution changes at follow-up and only 2 per cent report the lowest while 0.6 per cent of respondents report the highest value. Table 4 (page 19) shows that average QoL scores increase for both T and C respondents between baseline and follow-up, but the increase is larger for T respondents. The mean value at baseline for T respondents is 17.5 and 18.2 for C respondents, while at follow-up T scores increase to a mean of 22.5 but C scores only increase to 19.9.

Also shown in Table 4 are mean values for individual QoL items. At baseline, mean scores are similar across T and C groups. Each mean item value is on the lower end (below 3) on the 5-point Likert scale where higher scores reflect greater agreement with the statement. Health satisfaction has the highest scores at baseline with mean values around 2.5 for both groups. At follow-up, mean values of items for both groups increase to mid-range scale values (around 3). However, the effect is stronger for T respondents. Four of the eight scale items including life and health satisfaction are

at or above 3 for the T group whereas only health satisfaction reaches a mean value of 3 for the C group. Moreover, the lowest scoring item at baseline “So far I have gotten the important things I want in life” only increases among T caregivers at follow-up.

**Figure 1 – Histogram of Quality of Life Scale Scores at Baseline and Follow-up**



### 8.3 Relative well-being

Table 4 also displays results of respondents’ perception of their own placement on the economic wealth stepladder. At baseline, both T and C respondents consider themselves to be at the bottom. On a 1 (poor) to 6 (rich) scale, respondents have a mean score of 1.2 or ‘poor’. In comparison, respondents placed their friends and neighbours higher on the scale with means around 1.9, almost a step above themselves. At follow-up, T respondents report that their households are still poor but the mean has increased slightly to 1.4 while C respondents report that they are at the same wealth level. Despite some rise in self-placement on the wealth ladder, T respondents still rate themselves below their friends on the ladder, but the gap is smaller than at baseline.

### 8.4 Future well-being

Future well-being is reflected in Table 4 with three binary indicators that measure whether respondents believe their life be better in one, two, and three years. In both waves, respondents are generally more hopeful about the near future than farther down the road. At baseline, 53 per cent of both T and C respondents believed their life would be better in one year, but at follow-up 73 per cent of T respondents believe in a better future compared to only 59 per cent of C respondents. This same

pattern emerges for 2 and 3 years ahead; baseline rates amongst T and C groups are very similar but at follow-up T respondents are more likely to believe in a better future in 2 years and in 3 years. Nevertheless, both groups show an increase in hopefulness about the future at follow-up at each future time frame.

**Table 4 – Subjective Well-being Summary Data by Wave and Treatment Status**

	Treatment		Control	
	Wave 1	Wave 2	Wave 1	Wave 2
QOL scale score	17.5 (6.6)	22.5 (6.6)	18.2 (6.9)	19.9 (6.2)
<b>• SCALE ITEMS</b>				
In most ways my life is close to ideal	1.95 (1.1)	2.61 (1.2)	2.02 (1.2)	2.22 (1.2)
The conditions in my life are excellent	2.05 (1.2)	2.70 (1.3)	2.19 (1.3)	2.37 (1.3)
I am satisfied with my life	2.36 (1.3)	3.19 (1.3)	2.50 (1.4)	2.87 (1.4)
So far I have gotten the important things I want in life	1.76 (1.1)	2.14 (1.2)	1.77 (1.0)	1.78 (1.0)
If I could live my life over, I would change almost nothing	2.29 (1.3)	2.56 (1.3)	2.34 (1.4)	2.52 (1.3)
I feel positive about my future	2.20 (1.2)	3.00 (1.2)	2.30 (1.2)	2.50 (1.2)
I generally feel happy	2.33 (1.2)	3.04 (1.1)	2.40 (1.2)	2.63 (1.2)
I am satisfied with my health	2.52 (1.3)	3.27 (1.3)	2.62 (1.4)	3.02 (1.3)
<b>• RELATIVE WELL-BEING</b>				
Self	1.19 (0.5)	1.36 (0.6)	1.20 (0.5)	1.23 (0.5)
Neighbours	1.90 (0.8)	1.95 (0.9)	1.87 (0.9)	1.97 (0.9)
Friends	1.94 (1.0)	1.94 (1.0)	1.89 (1.0)	1.84 (1.0)
<b>• FUTURE WELL-BEING</b>				
Better in a year	0.53	0.73	0.53	0.59
Better in 2 years	0.45	0.70	0.47	0.52
Better in 3 years	0.42	0.66	0.46	0.49
<i>Observations</i>	<i>1,678</i>	<i>1,605</i>	<i>1,853</i>	<i>1,760</i>

Notes: QOL has a range of 8-40 from the sum of scale item questions scored 1-5; higher values means greater agreement to statements. Relative well-being items are on a scale from 1-6 (from poor to rich). Future well-being are binary, 1- agrees life will be better.

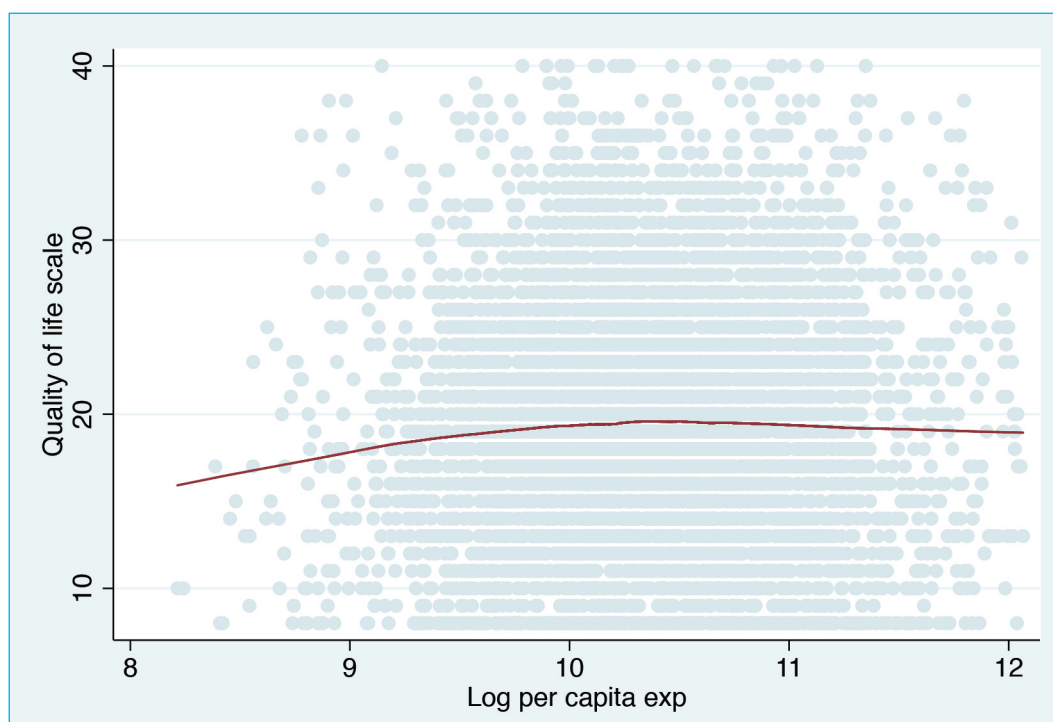
## 9. ANALYSIS

This paper focuses analysis on three subjective well-being measures that represent each area discussed above. The Quality of Life (QoL) scale is a continuous measure used to measure life satisfaction while binary indicators are used for future well-being (life will be better in 2 years) and relative well-being (relative wealth is the same as or above neighbours). Eighty-five per cent of households have the same respondents at baseline and follow-up, but some households have different main respondents in the two waves. We use both the household and individual panels albeit for some different purposes. We use the household panel to measure the impact of determinants on subjective well-being and to test for sensitivity of our specifications. We also report results of the income shock using the household panel, but the individual panel is used to control for personality and individual reporting differences that could affect subjective well-being responses. Using both samples we will be able to show whether there is any apparent bias within the results using household panel data when we cannot completely control for those individual, personality differences.

## 9.1 Determinants

In the first step of analysis, we look at the impact of individual and household determinants on our subjective well-being outcomes. Since the expectation is that a positive income shock can increase happiness, it is important to understand how consumption impacts subjective well-being. Figure 2 graphically represents the relationship between consumption (in logarithms) and QoL scores (range of 8-40) using a local linear regression (Lowess) model. There is a slight rise in scores as per capita expenditure increases at lower levels of consumption, but the relationship flattens at higher levels of consumption.

**Figure 2 – Lowess Graph of Quality of Life Scale on Household Consumption at Wave 1**



Although the Lowess graph in Figure 1 does not display a strong relationship, Table 5 (page 21) shows that log per capita consumption expenditure is a strongly significant determinant of QoL at baseline. In addition to consumption, there are many other determinants of subjective well-being so each of the three outcomes were tested on the full baseline sample using a linear regression and controlling for individual and household covariates. According to qualitative evidence from baseline, poor health is also a significant cause of stress and anxiety for caregivers and therefore could be an important contributing factor to low subjective well-being. Table 5 shows that chronic illness (proxy for poor health) is an important determinant of QoL, lowering scores by 1.6 points for sufferers of chronic illnesses. In contrast to conventional wisdom that schooling improves individual quality of life, ever attending school has a significant, negative impact on QoL scores. Other strong determinants of QoL at baseline include age, being married, and household composition variables.

**Table 5 – Baseline Determinants of Subjective Well-being among Caregivers (OLS)**

	Life will be better in 2 years	Quality of life scale	Relative wealth: same or better off than neighbours
Treatment	-0.03 (0.03)	-0.87 (0.72)	-0.06 (0.05)
Female	-0.04 (0.03)	-0.15 (0.46)	-0.05 (0.02)*
Age	-0.00 (0.00)	-0.09 (0.04)*	0.00 (0.00)
Age squared	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Ever attended school	0.05 (0.03)	-0.18 (0.05)**	0.03 (0.02)
Chronic illness	-0.05 (0.02)*	-1.59 (0.50)**	-0.02 (0.01)
Married	0.05 (0.01)**	1.16 (0.30)**	0.06 (0.02)*
Log per capita expenditure	0.06 (0.00)***	1.22 (0.21)**	0.03 (0.02)
Numbers of persons in household	0.01 (0.01)	0.33 (0.03)***	0.01 (0.01)
Household members 0-5 years	-0.01 (0.03)	-0.29 (0.11)*	-0.03 (0.02)
Household members 6-11 years	-0.00 (0.01)	-0.43 (0.04)***	-0.01 (0.01)
Household members 12-17 years	0.02 (0.02)	-0.08 (0.08)	-0.01 (0.01)
Household members 65 and over	-0.04 (0.02)	-0.46 (0.17)*	-0.01 (0.02)
Constant	0.12 (0.10)	8.52 (2.98)*	0.16 (0.16)
<i>R</i> <sup>2</sup>	0.06	0.06	0.02
<i>N</i>	3,369	3,369	3,369

Notes: Standard errors in parenthesis clustered at the TA level, \*p<0.1; \*\* p<0.05 \*\*\*p<0.01.

The other subjective well-being outcomes, future and relative well-being, show some similar relationships with individual and household determinants but have fewer significant ones. Log per capita expenditure is a strong, positive predictor of future well-being (p-value<0.01) but it is not predictive of relative well-being. Chronic illness is also a significant, negative predictor of future but not relative well-being. Notably, gender is only predictive of relative wealth. The heavy saturation of female caregivers in the sample, however, means there is not much gender variation to test. The only significant determinant across all outcomes is being married, which has a positive association with subjective well-being.

In addition to the baseline sample, we use the panel of control group respondents to measure determinants – these are households that never receive the cash transfer during the study period.

Table 6 shows the impacts of determinants using a fixed effects model to control for any unobserved differences fixed overtime. We use the household panel to pull out some impacts for variables that could change between members of households but that are fixed within individuals, such as gender and whether they ever attended school. Compared to the baseline sample, the impact of log per capita expenditure is much smaller and less significant for future well-being ( $p$ -value $<0.1$ ) and no longer predictive of QoL. However, there are still a number of other significant predictors of QoL including positive ones such as ever attending school and being married. In contrast to the baseline sample, school attendance has a large, positive effect (significant at the 5% level) on QoL and future well-being for this panel of control households. Female gender is still a negative determinant of relative well-being.

**Table 6 – Determinants of Subjective Well-being among Control Group using Household Fixed Effects**

	Life will be better in 2 years	Quality of life scale	Relative wealth: same or better off than neighbours
Time	0.05 (0.05)	1.62 (0.38)**	-0.05 (0.03)
Female	0.07 (0.07)	0.84 (0.75)	-0.10 (0.03)*
Age	0.00 (0.01)	-0.16 (0.03)***	0.01 (0.00)
Age squared	-0.00 (0.00)	0.00 (0.00)**	-0.00 (0.00)**
Ever attended school	0.12 (0.04)**	2.32 (0.47)**	-0.09 (0.08)
Chronic illness	-0.01 (0.04)	-1.06 (0.37)*	0.03 (0.09)
Married	0.10 (0.04)*	2.52 (0.56)**	0.06 (0.07)
Log per capita expenditure	0.08 (0.03)*	0.56 (0.63)	0.04 (0.03)
Constant	-0.38 (0.38)	15.78 (7.09)	0.09 (0.26)
$R^2$	0.03	0.07	0.01
$N$	3,197	3,444	3,438

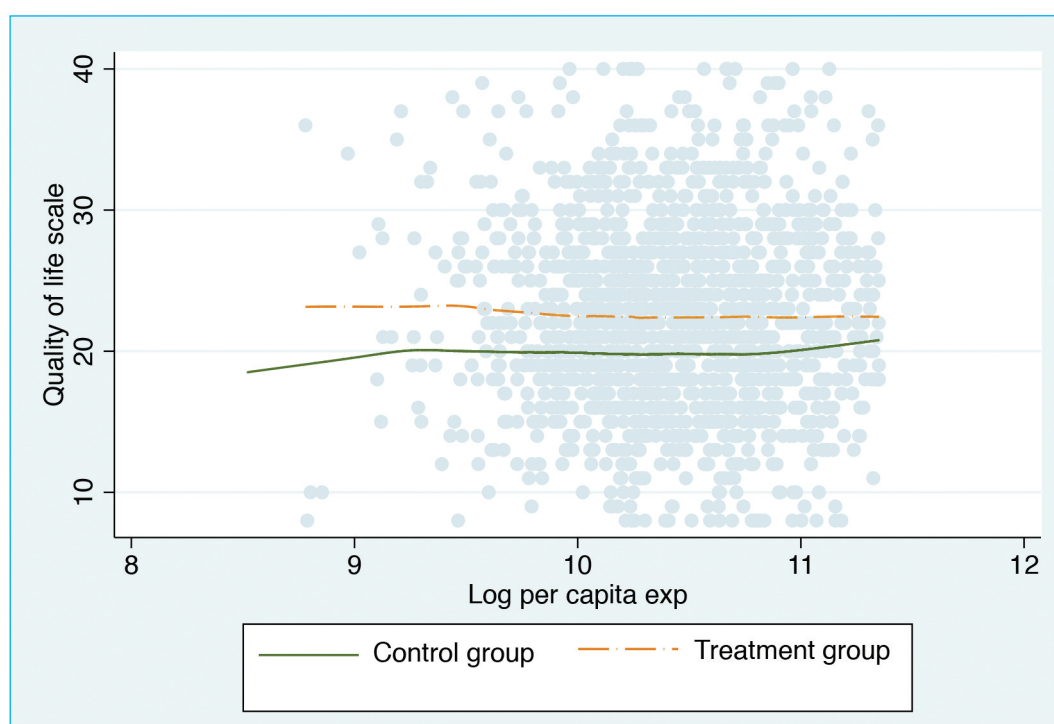
Notes: Standard errors in parenthesis clustered at the TA level, \* $p<0.1$ ; \*\*  $p<0.05$  \*\*\* $p<0.01$ .

Taken together, determinant analysis for these two groups reveals that our measure of life satisfaction, QoL scale, is more strongly predicted by individual and household variables than future outlooks or relative well-being. Consumption and poor health have stronger relationships to subjective well-being at baseline than among the control group panel. Additionally, being married is the only determinant of all of the subjective well-being variables at baseline. In general, determinants appear to be related to subjective well-being in the expected directions except between QoL and ever attending school at baseline, however, this relationship becomes positive in Table 6 among the control group panel.

## 9.2 Causal effect of the cash transfer on subjective well-being

In the next step of analysis, we estimated the impact of the cash transfer (treatment) on subjective well-being. Figure 3 shows that in Wave 2, after receiving the cash transfer, the relationship between log per capita expenditure and QoL is slightly different for T and C groups. The lines for both treatment and control households show little relationship between quality of life and consumption, however, the treatment group clearly has higher QoL scores across all levels of consumption. This divide is largest at lower levels of consumption and weakens at the highest levels of consumption.

**Figure 3 – Lowess Graph of Quality of Life Scale on Household Consumption for T and C at Wave 2**



The impact of treatment on each of the subjective well-being outcomes is estimated with our three specifications in Tables 7-9. For each outcome, we start with the unadjusted model using the household panel and then sequentially add individual and household controls. The last model uses only the individual panel.

Table 7 (page 25) shows the results of cash transfer running the OLS specification on the Wave 2 data. The cash transfer treatment effect has a positive impact on caregivers' subjective well-being for all measures but is only consistently significant for future well-being and QoL. The largest impacts for these outcomes are seen in the last models, which include all controls and keep only the individual panel (the same caregivers in both waves). Caregivers in treatment households are 18 percentage points more likely to believe in a better future and score 2.57 points greater on the



QoL scale, which represents 18 per cent of the mean. The impact of the cash transfer is strongly robust across all measures; point estimates are only slightly larger for QoL with additional controls. Furthermore, the treatment impact for QoL and future well-being maintains strong significance ( $p\text{-value}<0.05$ ) across all models.

The second specification is a DiD model that uses panel data to control for baseline scores and time trends. Table 8 (page 25) shows that controlling for baseline scores is important and makes a difference for both the magnitude and significance of treatment outcomes. In comparison to the OLS results, future well-being estimates are slightly larger but less significant ( $p\text{-value}<0.1$ ). The individual panel now shows that caregivers in treatment are 22 percentage points more likely to believe in a better future. Relative well-being point estimates are also larger; respondents from treatment are twice as likely (a 6 percentage point increase) to believe they are the same or better off than their neighbours, but results are not significant for all models. QoL estimates are larger and more significant across all models ( $p\text{-value}<0.01$ ). The magnitude of point estimates has increased by almost one point from 2.57 to 3.42 for the individual panel. QoL scores appear to increase by about 1.5 points over time as well. Despite this trend, the impact of the cash transfer is larger once we control for time and baseline scores. Controlling for baseline differences and time trends increases internal validity and leads to slightly larger treatment effects than those observed in the cross-sectional models in Table 7.

The final specification, a fixed effect model, adds to the last model by introducing a respondent-level fixed effect to control for any unobserved, individual heterogeneity in responses. Table 9 (page 26) shows that the addition of fixed effects does little to change results suggesting that unobserved heterogeneity such as personality and different reporting scales is not a concern for this sample. Point estimates are robust for each outcome and are still significant at the 5 per cent level for future well-being and the 1 per cent level for QoL in the individual panel. The addition of fixed effects also slightly increases the treatment impact on QoL scores amongst the individual panel to 3.45 points, the largest point estimate of all models.

### *Additional analysis*

The results from these three specifications make a strong case that receipt of the cash transfer is strongly related to greater quality of life and belief in a better future. While relative well-being is not impacted by the income increase, happiness literature suggests that relative well-being could actually work as a determinant of happiness instead of a measure of well-being on its own (Weimann et al., 2015). Therefore, in Table 10 (page 27) we add baseline values of relative well-being as an additional control to test whether perceptions of relative standing directly impacts the two other outcomes. We only compare OLS and DiD specifications because baseline covariates drop out with fixed effects. Compared to estimates in Tables 7 and 9, Table 10 shows that there is no change to the treatment estimate (both significance and magnitude) by adding a control for relative well-being at baseline. There is a small positive effect of relative well-being on QoL in the DiD model though; caregivers score half a point more on the scale if they believe they are the same or better off than their neighbour, which suggests that relative well-being is a determinant of life satisfaction.



**Table 7 – OLS Analysis of Cash Transfer on Measures of Subjective Well-being in Wave 2**

	Life will be better in 2 years				Quality of life scale				Relative wealth: same or better off than neighbours			
Treatment	0.17 (0.04)**	0.18 (0.04)**	0.17 (0.04)**	0.182.26 (0.04)**	2.41 (0.67)**	2.40 (0.62)**	2.57 (0.61)**	0.05 (0.59)**	0.05 (0.02)	0.05 (0.02)*	0.06 (0.02)*	(0.03)
Demographics		X	X	X		X	X	X		X	X	X
Household Characteristics			X	X			X	X			X	X
Individual panel				X				X				X
Constant	0.52 (0.04)***	0.55 (0.08)***	0.28 (0.32)	0.34 (0.33)	19.80 (0.30)***	20.36 (2.10)***	15.61 (2.67)***	13.57 (3.07)**	0.44 (0.03)***	0.41 (0.17)*	0.32 (0.22)	0.33 (0.22)
R <sup>2</sup>	0.03	0.10	0.11	0.11	0.03	0.07	0.08	0.07	0.00	0.01	0.02	0.02
N	2,839	2,838	2,838	2,455	3,365	3,364	3,364	2,919	3,353	3,352	3,352	2,907

Notes: Standard errors in parenthesis clustered at the TA level, \*p<0.1; \*\* p<0.05 \*\*\*p<0.01. Controls include Demographics (female, age, age squared, ever attended school, chronic illness, married;) Household characteristics (Baseline values of log per capita expenditure, household size, total age group categories,(0-5, 6-11, 12-17, 65+))

**Table 8 – Difference-in-Differences (DiD) Analysis of Cash transfer on Measures of Subjective Well-being**

	Life will be better in 2 years				Quality of life scale				Relative wealth: same or better off than neighbours			
Treatment*Time	0.20 (0.07)*	0.20 (0.06)*	0.20 (0.07)*	0.22 (0.07)*	3.31 (0.49)***	3.28 (0.52)***	3.18 (0.47)***	3.42 (0.54)***	0.11 (0.05)*	0.11 (0.05)	0.12 (0.05)*	0.12 (0.05)
Time	0.05 (0.06)	0.04 (0.06)	0.04 (0.06)	0.03 (0.06)	1.54 (0.28)**	1.53 (0.27)**	1.56 (0.27)**	1.42 (0.32)**	-0.05 (0.03)	-0.05 (0.03)	-0.05 (0.04)	-0.05 (0.04)
Treatment	-0.04 (0.03)	-0.02 (0.02)	-0.03 (0.03)	-0.04 (0.04)	-1.05 (0.92)	-0.89 (0.83)	-0.84 (0.75)	-0.90 (0.85)	-0.06 (0.05)	-0.06 (0.05)	-0.06 (0.05)	-0.06 (0.05)
Demographics		X	X	X		X	X	X		X	X	X
Household Characteristics			X	X			X	X			X	X
Individual panel				X				X				X
Constant	0.47 (0.03)***	0.63 (0.06)***	0.17 (0.19)	0.23 (0.17)	18.26 (0.40)***	19.99 (0.47)***	11.37 (1.79)***	10.46 (2.10)**	0.49 (0.03)***	0.43 (0.09)**	0.26 (0.10)*	0.24 (0.10)
R <sup>2</sup>	0.03	0.09	0.10	0.09	0.07	0.11	0.11	0.10	0.00	0.01	0.01	0.01
N	6,370	6,369	6,207	5,374	6,896	6,895	6,733	5,838	6,884	6,883	6,721	5,826

Notes: Standard errors in parenthesis clustered at the TA level, \*p<0.1; \*\* p<0.05 \*\*\*p<0.01. Controls include Demographics (female, age, age squared, ever attended school, chronic illness, married;) Household characteristics (Baseline values of log per capita expenditure, household size, total age group categories,(0-5, 6-11, 12-17, 65+))

**Table 9 – Fixed Effects Analysis of Cash transfer on Measures of Subjective Well-being**

	Life will be better in 2 years			Quality of life			Relative wealth: same or better off than neighbours		
Treatment*Time	0.19 (0.06)*	0.19 (0.06)*	0.21 (0.06)**	3.20 (0.42)***	3.23 (0.47)***	3.45 (0.52)***	0.12 (0.04)*	0.12 (0.05)*	0.13 (0.06)
Time	0.05 (0.05)	0.04 (0.05)	0.03 (0.06)	1.56 (0.29)**	1.53 (0.26)***	1.48 (0.28)**	-0.05 (0.04)	-0.05 (0.04)	-0.04 (0.04)
Demographics		<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>		<b>X</b>	<b>X</b>
Individual panel			<b>X</b>			<b>X</b>			<b>X</b>
Constant	0.45 (0.02)***	0.58 (0.07)***	0.67 (0.40)	17.76 (0.18)***	21.95 (0.89)***	32.17 (3.32)***	0.46 (0.03)***	0.61 (0.17)**	0.73 (0.19)**
R <sup>2</sup>	0.06	0.08	0.06	0.13	0.15	0.15	0.01	0.01	0.01
N	6,370	6,369	5,374	6,896	6,895	5,838	6,884	6,883	5,826

Notes: Standard errors in parenthesis clustered at the TA level, \*p<0.1; \*\* p<0.05 \*\*\*p<0.01. Controls include Demographics (female, age, age squared, ever attended school, chronic illness, married;) Household characteristics are defined at the baseline and drop out of fixed effects models.

**Table 10 – Effect of Cash Transfer on Quality of Life Scale and Future Well-being Controlling for Baseline Subjective Well-being (Individual Panel) Using OLS and DiD**

	QoL Scale		Life will be better in 2 years	
	OLS	DiD	OLS	DiD
Treatment*time		3.42 (0.94)***		0.22 (0.07)*
Treatment	2.57 (0.52)***	-0.94 (0.92)	0.18 (0.04)**	-0.04 (0.06)
Time		1.42 (0.61)**		0.03 (0.04)
Female	0.08 (0.56)	-0.00 (0.26)	-0.04 (0.03)	-0.05 (0.04)
Age	0.03 (0.05)	-0.03 (0.00)***	0.00 (0.00)	-0.00 (0.00)
Age squared	-0.00 (0.00)	0.00 (0.00)**	-0.00 (0.00)*	-0.00 (0.00)
Ever attended school	1.23 (0.73)	0.49 (0.36)	0.04 (0.02)	0.04 (0.01)*
Chronic illness	-0.68 (0.29)*	-1.12 (0.23)**	-0.06 (0.03)	-0.05 (0.02)*
Married	0.64 (0.32)	1.00 (0.18)**	-0.03 (0.03)	0.01 (0.01)
Log per capita expenditure	0.48 (0.07)***	0.86 (0.15)**	0.02 (0.02)	0.04 (0.01)**
Numbers of persons in household	0.16 (0.08)	0.25 (0.02)***	0.03 (0.01)*	0.02 (0.01)
Household members 0-5 years	-0.26 (0.20)	-0.33 (0.06)**	-0.01 (0.02)	-0.02 (0.02)
Household members 6-11 years	0.05 (0.18)	-0.18 (0.09)	-0.03 (0.02)	-0.02 (0.01)
Household members 12-17 years	0.19 (0.23)	0.08 (0.14)	-0.00 (0.02)	0.01 (0.02)
Household members 65 and over	-0.34 (0.10)**	-0.44 (0.10)**	-0.00 (0.02)	-0.02 (0.02)
Baseline-relative wealth same or better off than neighbours	-0.15 (0.16)	-0.53 (0.21)*	-0.01 (0.02)	-0.01 (0.02)
Constant	13.57 (3.20)**	10.49 (3.00)**	0.34 (0.25)	0.23 (0.20)
R <sup>2</sup>	0.07	0.11	0.11	0.09
N	2,919	5,838	2,455	5,374

Notes: Standard errors in parenthesis clustered at the TA level, \*p<0.1; \*\* p<0.05 \*\*\*p<0.01.

## 10. SENSITIVITY ANALYSIS

The analysis so far has represented the QoL scale with high internal validity, as it is reliable and robust across specifications. Internal validity, however, is also dependent on the ability of the QoL scale to correctly represent the concept it defines, life satisfaction. We test the construct validity of the QoL scale by examining whether it predicts negative shocks in the expected opposite direction and therefore incorporates appropriate emotional affect in response to one's experiences. Using the individual panel, we test a fixed effects specification on three measures of shocks: the number of shocks in the previous 12 months, household death in the previous 12 months, and anticipation of a future shock (either financial or food) in the next 12 months. Additionally, we include treatment as a control in a second model to further see whether the cash transfer is protective of life satisfaction above these negative shocks. Table 3 shows that the total number of shocks in the previous year decreased from a mean of 2.5 to 1.8, but the per cent of the sample that experienced a death stayed steady around 3 per cent. The sample was also 14 per cent less likely to believe in future shocks at follow-up, declining from 53 to 39 per cent.

**Table 11 – Effect of Negative Shocks and Anticipated Future Shocks on Quality of Life Scale Using Fixed Effects (Individual panel)**

	Number of shocks in last 12 months		Death in household in last 12 months		Believes will have future shocks	
	(1)	(2)	(1)	(2)	(1)	(2)
Effect of shock	-0.86 (0.18)***	-0.86 (0.19)**	-1.41 (0.67)	-1.11 (0.73)	-2.33 (0.47)***	-2.13 (0.41)***
Treatment*time		3.46 (0.82)**		3.43 (0.93)***		3.20 (0.92)***
Time	2.55 (0.60)***	0.83 (0.58)**	3.18 (0.61)***	1.47 (0.64)**	2.86 (0.58)***	1.30 (0.64)**
Age	-0.47 (0.08)***	-0.47 (0.10)**	-0.47 (0.08)**	-0.47 (0.09)**	-0.42 (0.09)**	-0.42 (0.09)**
Age squared	0.00 (0.00)***	0.00 (0.00)**	0.00 (0.00)***	0.00 (0.00)**	0.00 (0.00)***	0.00 (0.00)**
Chronic illness	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Married	-0.84 (0.45)	-0.70 (0.38)	-0.88 (0.38)	-0.75 (0.30)*	-0.95 (0.32)*	-0.81 (0.25)**
Constant	34.95 (5.95)***	34.80 (5.25)***	32.57 (6.04)***	32.37 (5.36)***	32.15 (5.80)***	32.03 (5.21)***
R <sup>2</sup>	0.14	0.17	0.12	0.15	0.14	0.17
N	5,838	5,838	5,838	5,838	5,838	5,838

Notes: Standard errors in parenthesis clustered at the TA level, \*p<0.1; \*\* p<0.05 \*\*\*p<0.01. Household characteristics are defined at the baseline and drop out of fixed effects models.

Table 11 shows that each of these shocks has a negative relationship with QoL, helping to defend its construct validity. Each additional shock a household experienced in the previous 12 months decreases QoL scores by almost one point, significant at the 1% level. Likewise, the shock of a household member's death decreases scores by 1.4 point but is not significant. Belief of future shocks

decreases scores by 2.3 points and is also significant at the 1% level. With the addition of the treatment variable (treatment\*time), both total shocks and future negative shocks still have a significant impact on QoL scores and point estimates are in the same order of magnitude. Moreover, adding treatment into each of second models does not change the impact of the cash transfer found in Tables 8 and 9. Treatment impacts are strongly significant (p-value <0.01) and magnitudes are the same, validating the robustness of the income impact on beneficiary households. Negative shocks and the positive income shock, therefore, appear to be orthogonal to each other and life satisfaction is an experience that can respond to multiple external events at the same time.

## 11. DISCUSSION

This study reveals that in just about a year's time, Malawi's cash transfer can have a profound effect on the subjective well-being of caregivers in beneficiary households. We find a strong, positive impact of the income shock on individuals' life satisfaction and perception of future well-being but do not find any impact on their perception of relative well-being. This finding lines up with evidence of positive impacts on objective measures of well-being at the household-level including food consumption, economic productivity, school enrollment, and morbidity (Malawi SCTP Evaluation Team, 2015). Additionally this evidence is substantiated by qualitative evidence from in-depth caregiver interviews collected at follow-up. Caregivers in beneficiary households describe how the cash has been crucial for them to afford to eat regular meals, make home improvements, buy livestock, and send their children to school. Many of their stresses are alleviated, making them happier. Asked about personal changes since her baseline interview, one caregiver says,

*"There has been an improvement in my health and also my heart condition. I used to be very worried and stressed in the past because I had too much responsibility yet there wasn't enough money to take care of all those responsibilities. But since we started receiving money from the cash transfer programme I have been able to take care of some responsibilities that I couldn't then. As a result I worry less and am usually happy which also has contributed to the improvements in my health and heart condition."*

This statement highlights the importance of income to improve livelihoods for the very poor populations this programme targets as well as the connection between health and happiness. Additionally, caregivers admit that they are hopeful for the future. General feelings are that they believe their lives will continue to get better and their children's future will be more promising as they are able to continue with their education. For example, another caregiver explains that she is happier and less worried now about the future because of the transfer,

*"As I have said I am a happy person now, I no longer have stress and am not worried because I know that when the time comes to receive the money, I will be able to buy things the household lacks now."*

Moreover, she is also grateful to the government throughout the interview suggesting that gratitude and future outlooks may go hand in hand,

*"[I] am just thankful because my household was very poor, in a rain season like this, sleep could not come because the house was leaking. We were really very poor, today my children have sleeping mats, are able to wash and bath using soap, and there is food in the household, so I say, thank you."*

In addition to the connection to the quantitative and qualitative evidence, we find that the results of the cash transfer on subjective well-being are very robust. Both QoL and future well-being are strongly significant across all specifications and models. The cross-section OLS specification is predictably the least precise because it does not control for the strong time trend or baseline scores. In the other two specifications that use panel data, effects of the cash transfer are larger and change little with the addition of the controls. Even introducing treatment into regressions of negative shocks on subjective well-being does not reduce the strong, positive impact of the cash transfer. Moreover, results from Table 11 show that negative and positive shocks together can have strong, independent impacts on quality of life, possibly reflecting how positive and negative psychological states can exist simultaneously (Diener and Emmons, 1984; Watson, 1988). Literature has even found that in times of severe stress, such as the death of a family member, co-occurrence of aversive psychological states is common and is part of the coping process (Folkman, 1997).

The positive time trend, however, is an anomaly. It is unclear why control households reported higher life satisfaction and future outlooks at the second wave. There was no concurrent rise in external economic circumstances, and in fact follow-up data collection occurred during the lean season when consumption was much lower for all households, a decline of around 25 per cent from baseline (Malawi SCTP Evaluation Team, 2015). While it was the lean season, it was also the rainy season during follow-up data collection, and a possible connection could exist between the rains and subjective well-being if the rains signal that the growing season is under way and bounty is to come. There are other possible external reasons for the time trend too – maybe an external social or political change or maybe control households are anticipating receipt of the cash transfer (although not officially informed of future receipt). However, some recent literature has rejected the use of intrapersonal comparisons (Wiemann et al., 2015). According to Rayo and Becker (2007), people develop internal references in response to life circumstances as an evolutionary response in order to sustain a minimum level of satisfaction. Therefore, individuals' criteria for a satisfactory life can change overtime depending on context. It is impossible to say for sure that individuals interpret questions the same between time periods. Differences in reference points at the time of survey could change the interpretation of subjective well-being questions such that an individual's 20 on the QoL scale in 2013 does not correspond to the same level of happiness that a 20 does in 2015. While this could create noise in our estimates, the large sample size and experimental design help validate our results – the noise would randomly be assigned. Even withstanding this interference, we are not making conclusions about the values reported but instead are concerned about trends in the data overtime as an effect of an exogenous income shock.

Interestingly, while results are strongly positive for measures of quality of life and future well-being, we find no impacts on relative well-being. According to the literature, people's happiness is judged relative to an internal reference point, which is determined by their past experiences and environments.

Therefore, the perception of low relative economic standing in a community reflects lower happiness because compared to others, there is potential to be happier. As reported here in the section on data, transfer size as a share of pre-programme household consumption is lower than the generally accepted 20 per cent threshold for most households. It might be that this modest increase in income is not enough for households to consume as much as their friends and neighbours and so relative to their community, they are still worse off. Therefore, the absolute income effect is probably driving the positive results we see for life satisfaction and future well-being. The null effect seems to align with prior work in Malawi that found no impact of income on relative well-being among the poorest communities (Ravallion & Lokshin, 2010).

### Limitations

As discussed throughout this paper, the limitations of this study mainly concern the reliability of subjective well-being measures. For one, they might suffer from measurement error because of personality bias or affect at the time of survey. Additionally, behavioural economics literature has pointed to issues that could confound results like biases of “reference points” and “habituation” (Kahneman, Diener, & Schwarz, 1999) even amongst individuals overtime (Rayo & Becker, 2007). While we cannot rule out that this is a concern for the time trend observed amongst the control group, the focus of this study is to investigate changes in trends and not the actual value of subjective well-being measures, the main concern expressed in the literature reporting subjective well-being results. This study’s large sample size and randomization of participants into treatment reduces the concern that the reliability of measures is an issue and results are very strong and robust.

Individual heterogeneities could also present a problem when making interpersonal comparisons of welfare as we do with the household panel. This study is strengthened by its use of experimental, panel data and methods that control for individual heterogeneities. We use fixed effects among the individual panel to wipe away personality biases and differences in interpretations. However, in accordance with recent evidence from Beegle et al. (2012) which finds that biases have only a minor impact, we also find trivial differences between the household and individual panels so personality biases are not problematic in this sample.

Finally, there is concern that subjective well-being measures are not a good marker for understanding how poor people in particular are doing. People habituate and adapt to their situations and so the chronically poor may have lower thresholds for defining their well-being. The poor in India, for instance, are quick to say that they have high life satisfaction even though this does not line up with objective measures of health and productivity (Clark, 2012). Thus, their responses to subjective well-being questions could be impractical as a means of understanding how poverty affects overall welfare because their responses inadequately reflect their deprivation in areas such as health, material essentials, and education (Sen, 1990). While this would confound estimation of the relationships between poverty and subjective-well-being, making it harder to understand the impact of cash transfers on this aspect, the purpose of using subjective well-being data in this study is to compare welfare impacts of a programme given to a homogenous group of poor households. We focus on data trends and do not interpret the meaning of reported values of



subjective well-being metrics. Moreover, we do not suggest solely relying on subjective well-being to assess overall well-being and the capability of someone to rise out of poverty. We are suggesting that it could be an additional component and illustrate well-being on a more holistic level since it can incorporate other elements important to human flourishing.

## 12. CONCLUSION

This study shows that a positive income shock from a large-scale cash transfer programme in Malawi has a strong positive impact on beneficiary caregivers' subjective well-being both in terms of life satisfaction and future outlooks. The randomized, longitudinal study design combined with strong, robust impacts allows us to defend a causal relationship between income and subjective well-being. Objective and qualitative evidence from the Malawi SCTP evaluation further substantiate this evidence. Even small income increases are immensely valuable to the very poor. Caregivers use the money to improve their families' livelihoods, ensuring provision of their basic needs including food, shelter, and clothing. The reduction of these daily stresses makes caregivers happier about their current situations and gives them hope that the future will continue to improve.

Self-reports of indicators like life satisfaction capture an important dimension of well-being that is missed by objective measures. The subjective approach is a broader concept and can include other important dimensions of a person's well-being such as social connectedness, pleasurable experiences, and life meaning (Rojas, 2015). It also is an end goal for many of the other things people seek such as income – it is not desired for itself but because it can help people to achieve happiness. Nevertheless, self-reports of well-being are limited when it comes to public policy, especially given that the poor's reported happiness may minimize their deprivation. Governments could potentially justify a lack of progress towards greater social equality by stating that the poor are nevertheless happy. Ultimately, governments should not rely exclusively on either objective or subjective measures to judge welfare but used together they can more accurately reflect well-being.

Future research will be needed to understand if the absolute income effect will continue to have an impact on subjective well-being or if happiness will flatten out as people adapt to their new circumstances. It will also be important to investigate how greater life satisfaction can influence spending decisions and future outcomes. Cash transfer and other poverty alleviation programme evaluations should continue to include subjective well-being metrics to add to this evidence base. With the growth of cash transfer programmes across Africa, it will be important to find out whether there is an association between growth in these metrics and successful transition out of the poverty cycle. This critical knowledge can be used to enhance the effectiveness of social protection policy for the poor across Africa.



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