Is Your Gain My Pain? Effects of Relative Income and Inequality on Psychological Well-being

Johannes Haushofer, James Reisinger, Jeremy Shapiro*

May 2019

Abstract

We test the causal effect of changes in own wealth, relative wealth, and inequality on psychological well-being and consumption by leveraging exogenous changes in household wealth, village mean wealth, and village inequality resulting from a randomized controlled trial of unconditional cash transfers in Kenya. We find that increases in own wealth lead to large and robust increases in well-being. Increases in neighbors' wealth, proxied by the mean wealth of a village, have a negative effect on an index of psychological well-being variables. This effect is driven by a negative effect on life satisfaction; we find no effect of relative wealth on measures of happiness, depression, or stress. We also find suggestive evidence of a negative consumption response to increases in village mean wealth, though it is imprecisely estimated. Finally, we are able to speak to the casual effect of changes in overall comparison group inequality, holding constant an individual's rank within the group. We find that such changes in inequality have no effect on well-being or consumption.

*Haushofer: Department of Psychology and Woodrow Wilson School of Public and International Affairs, Princeton University, 427 Peretsman-Scully Hall, Princeton, NJ 08540, NBER, and Busara Center for Behavioral Economics, Nairobi, Kenya (email: haushofer@princeton.edu). Reisinger: Harvard University Kennedy School of Government, 79 John F. Kennedy St, Cambridge, MA 02138 (reisinger@g.harvard.edu). Shapiro: Busara Center for Behavioral Economics, Daykio Plaza, Nairobi, Kenya (jeremypshapiro@gmail.com). We thank Justin Abraham, Nava Ashraf, Victoria Baranov, Michela Carlana, Kevin Carney, Janet Currie, Holly Dykstra, Ilyana Kuziemko, Alexis Grigorieff, Michala Iben Riis-Vestergaard, Chaning Jang, Dean Karlan, Paul Niehaus, Matthew Rabin, Chris Roth, Dan Sacks, Catherine Thomas, and Tom Vogl for comments and discussion. All errors are our own. This research was supported by NIH Grant R01AG039297 and Cogito Foundation Grant R-116/10 to Johannes Haushofer.

Significance statement

We test how changes in own wealth, wealth relative to one's peers, and inequality affect psychological well-being and consumption. We use a field experiment in Kenya in which poor individuals received unconditional cash transfers. We find that increases in own wealth lead to large and robust increases in well-being. Increases in neighbors' wealth have a negative effect on psychological well-being. We also find suggestive evidence of a negative consumption response to increases in village mean wealth, though it is imprecisely estimated. Finally, we find no effect of changes in inequality have on well-being or consumption.

1 Introduction

The idea that relative wealth affects consumption and well-being has a long tradition in economics. Thorstein Veblen famously argued that increases in neighbors' consumption could lead to increases in own consumption (Veblen, 1899). Similarly, James Duesenberry suggested that individual utility is negatively affected by the wealth and consumption of others (Duesenberry, 1949). More recently, popular concern has mounted over increasing levels of societal inequality (Piketty, 2014) and the effect such inequality may have on well-being (Wilkinson and Pickett, 2010). Other work suggests individuals have have strong preferences over the distribution of wealth or inequality in a comparison group, even when holding their rank in the distribution constant (Alesina et al., 2004). In this paper, we separately test the causal effect of changes in an individual's own wealth, relative wealth, and of changes in inequality on psychological well-being and consumption.[1]

To do this, we leverage exogenous variation resulting from a randomized controlled trial (RCT) of unconditional cash transfers in Kenya (Haushofer and Shapiro, 2016), in which households and villages were randomly selected to receive unconditional cash transfers of varying sizes. In the first paper reporting the results from this experiment, a comparison of non-recipients in treatment vs. control villages revealed little evidence of within-village spillover effects on either psychological well-being or consumption (Haushofer and Shapiro, 2016). In the present paper, we take a different analysis approach: we compare (only) treatment villages to each other. Three features of the RCT allow us to use these comparisons to test the effect of changes in an individual's own wealth, relative wealth, and comparison group inequality. First, both recipients and non-recipients were surveyed, allowing us to estimate the effect of changes in own wealth. Second, the experiment induced random variation in the average transfer size at the village level, such that we can compare outcomes of individuals in villages where the average transfer was large vs. small. This proxies for a change in each individual's relative wealth or rank within the village. Note that this analysis asks a slightly different question than the comparison of non-recipients in treatment vs. control villages, namely whether outcomes are differentially affected when many vs. few other households in the *same* village receive transfers. It thus considers the intensive rather than the extensive margin, and includes both treated and untreated households. In contrast, the comparison of untreated households in treatment and control villages is at the extensive margin and considers only non-recipients. Third, the random assignment of cash transfers meant that there was some variation in whether the households that received transfers in a given village happened to be relatively poor or relatively wealthy compared to the rest of the village. The study therefore induced exogenous variation in village-level inequality, holding constant the change in an individual's own and relative wealth. Together, these elements allow us to separate and causally identify the effect of changes in own wealth, relative wealth, and inequality on an individual's psychological well-being and consumption.

Our first contribution is in providing clear causal evidence on the link between relative wealth and psychological well-being. Empirically, establishing a causal relationship has been difficult, and even the correlational evidence is somewhat contradictory. Easterlin's

[1]For theory and laboratory evidence on these questions, see Fehr and Schmidt (1999) and Charness and Rabin (2002).

work found that the correlation between income and happiness is high within countries but low across countries, raising the possibility that relative considerations may affect well-being (Easterlin, 1974, 1995, 2001). However, work by Stevenson and Wolfers (2008) and Sacks, Stevenson and Wolfers (2012) demonstrate that a strong correlation exists across countries, suggesting that absolute wealth levels may matter more. Nonetheless, several careful correlational studies using within-country panel-data maintain a strong relationship between relative wealth and happiness (Clark and Oswald, 1996; Blanchflower and Oswald, 2004; Ferrer-i Carbonell, 2005).

We find a negative causal effect of increases in neighbors' wealth on psychological well-being, about half as large as the positive effect of changes in own wealth on well-being. This result is largely in agreement with the handful of studies able to furnish causal evidence on this question. Luttmer (2005) develops an instrumental variable that isolates only the variation in an occupation's wages in a local labor market that results from national-level factors, arguing this variation is orthogonal to local conditions. He uses this instrument to show that relative increases in neighbors' income negatively impact life satisfaction in the United States. Card et al. (2012) provide information on how to access a website revealing the distribution of wages in the University of California system to a random subset of its employees, finding a decrease in job satisfaction for those below but not above the median wage. Perez-Truglia (2019) finds a widening of the gap in happiness between rich and poor after a 2001 Norwegian law made salary information public. Baird et al. (2014) examine the effect of cash transfers in Malawi on school-age girls; comparing eligible girls in treatment areas to those in non-treatment areas, they find an increase in psychological distress among untreated girls in treatment areas relative to those in untreated areas.

Our second contribution is in testing the link between relative wealth and consumption. A number of previous studies find evidence of a positive effect of increases in neighbors' wealth on consumption (Angelucci and De Giorgi, 2009; Roth, 2015; Bertrand and Morse, 2016). For example, Kuhn et al. (2011) leverage the fact that in the Dutch postcode lottery, all participating households in a winning postcode receive a payment. They find an increase in conspicuous consumption among households whose neighbors received a payment. In contrast, we find suggestive evidence of a negative consumption response to increase in neighbors' wealth, though the effect is imprecisely estimated.

Our third contribution is in estimating the causal effect of changes in village-level inequality on psychological well-being and consumption, holding constant changes in own and relative wealth. We find that there is no effect. Our result contrasts with existing correlational evidence that suggests a negative relationship between inequality and well-being. Alesina et al. (2004) report a negative correlation between income inequality and happiness in Europe and the United States; Wu and Li (2017) find a negative correlation between local income inequality and life satisfaction in China; and Oishi et al. (2011) report a similar finding for happiness in the US. One explanation for the discrepancy in the results may be the difficulty of isolating exogenous variation in inequality levels. Inequality correlates both with measures of absolute deprivation (i.e., there are more poor individuals in more unequal places) and with measures of relative wealth or status. We are able to study this question causally, as differences in the baseline wealth of transfer recipients across villages induced quasi-random changes in village-level inequality independent of changes in own and relative wealth.

Finally, we are also able to distinguish the effect of own and relative wealth and inequality on different facets of psychological well-being. In particular, we find a large negative effect of relative income on a measure of life satisfaction, but not on measures of happiness, depression, or stress. This finding contributes to a prominent literature in psychology which distinguishes between evaluative and hedonic well-being. Evaluative well-being, measured as life satisfaction, reflects a bird's-eye, "cognitive" assessment of one's life. Hedonic well-being, measured as happiness, reflects the frequency and intensity of positive and negative experiences and thus a more "emotional" assessment of one's life (Diener, 1984, 2000; Diener et al., 2010; Kahneman and Deaton, 2010). Our findings therefore suggest that relative wealth affects evaluative, but not hedonic well-being. This result is intuitive: the wealth of one's neighbors may plausibly affect one's overall assessment of life, but have little effect on how many positive emotional experiences one encounters in everyday life. This result complements existing distinctions between these different facets of well-being, e.g. the finding that hedonic well-being has a "satiation point" in income, whereas evaluative well-being may not (Kahneman and Deaton, 2010).

The remainder of the paper is structured as follows. Section 2 describes our data and empirical approach. Section 3 reports our results. Section 4 concludes.

2 Data and Econometric Approach

2.1 RCT Evaluation of the *GiveDirectly* Unconditional Cash Transfer Program

The data used in this study are from a randomized controlled trial conducted in collaboration with *GiveDirectly*, Inc. (www.givedirectly.org), a not-for-profit organization that makes unconditional cash transfers to poor households in East Africa. First results were reported by Haushofer and Shapiro (2016). In this section, we discuss the details of GiveDirectly's protocol for making cash transfers, design of the experiment, and data collection methods. Further details are in Haushofer and Shapiro (2016).

The evaluation of the *GD* unconditional cash transfer program was a two-level cluster-randomized controlled trial.[2] *GD* selected eligible villages and households by first identifying poor regions of Kenya according to census data. In the case of the present study, the region chosen was Rarieda, a peninsula in Lake Victoria west of Kisumu in western Kenya. *GD* next identified target villages. In the case of Rarieda, this was achieved through an estimation of the population of villages and the proportion of households lacking a metal roof, which is *GD*'s targeting criterion. The criterion was established in prior work as an objective and highly predictive indicator of poverty. Villages with a high proportion of households living in thatched roof homes (rather than metal) were prioritized.

In collaboration with *GD*, we identified 120 villages from a list of villages in Rarieda. In the first stage of randomization, 60 of these villages were randomly chosen to be treatment villages and 60 were chosen to be control villages. Within all villages, we conducted a census with the support of the village elder, which identified all eligible households within the village.

[2]For a graphical depiction of the experimental design, see Figure 1.

In treatment villages, we performed a second stage of randomization, in which we randomly assigned 50 percent of the eligible households in each treatment village to the treatment condition, and 50 percent to the control condition. This process resulted in 503 treatment households and 505 control ("spillover") households in treatment villages at baseline. At endline, we additionally surveyed 432 households in control villages that would have met the eligibility criterion (thatched roof). We refer to these households as "pure control" households.

Within the treatment group, three additional cross-randomizations occurred: randomization of the gender of the transfer recipient; the temporal structure of the transfers (monthly vs. lump-sum transfers); and the size of the transfer. The randomization of magnitude resulted in exogenous variation across treatment villages that we exploit in the present study.

Each selected household was then visited by a representative of *GD*. The representative asked to speak to the member of the household that had been chosen as the transfer recipient ex ante. The recipient was randomly chosen to be either the husband or the wife, with equal probability. A conversation in private was requested from this household member, in which they were asked a few questions about demographics, and informed that they had been chosen to receive a cash transfer of KES 25,200 (USD 404). The recipient was informed that this transfer came without conditions; that they were free to spend it however they chose; and that the transfer would not be repeated. The control group were told that they would not receive any transfers, even in the future.

Recipients were also informed about the timing of this transfer; 50 percent of recipients were told that they would receive the transfer as one lump-sum payment, and the remaining 50 percent were told that they would receive the transfer as a stream of nine monthly installments. Finally, 137 treatment households were randomly selected to receive a large transfer. These households were informed they would receive an additional transfer of KES 70,000 (USD 1121), paid in seven monthly installments. The total transfer amount received by these households was KES 95,200 (USD 1,525)

For receipt of the transfer, recipients were provided with a SIM card from Kenya's largest mobile service provider, *Safaricom*, and asked to activate it and register for *Safaricom's* mobile money service *M-Pesa*. *M-Pesa* is, in essence, a bank account on the SIM card, protected by a four-digit PIN code, and enables the holder to send and receive money to and from other *M-Pesa* clients and to make cash withdrawals at numerous agents around the country. Prior to receiving any transfer, recipients were required to register for *M-Pesa*. For lump sum recipients, a small initial transfer of KES 1,200 was sent on the first of the month following the initial *GD* visit to incentivize prompt registration. Registration had to occur in the name of the designated transfer recipient, rather than any other person. The *M-Pesa* system allows *GD* to observe the name in which the account is registered in advance of the transfer, and transfers were not sent unless the registered name had been confirmed to match the intended recipient within the household. In this sample, all but 18 treatment households complied with these instructions. These households are considered to be treated for analysis purposes (thus we use an intent-to-treat approach).

In treatment villages, we surveyed both treatment and control households both at baseline and endline. In each surveyed household, we collected two distinct modules: a household module that included sections on household assets and consumption; and an individual module that included a section on psychological well-being. The two surveys were administered on different days. The household survey was administered to any household member who could answer for the entire household; usually one of the primary members. The individual survey was administered to both primary members of the household for double-headed households; and to the single household head otherwise. During individual surveys, particular care was taken to ensure privacy; respondents were interviewed by themselves without the interference of other household members.

Control villages were only surveyed at endline. Because our approach requires baseline covariates, and because we are interested in studying the effect of relative wealth and inequality at the intensive margin and with the inclusion of treatment households, the present study focuses on the within-village randomization (excluding "pure control" households).

2.2 Sample Characteristics

As noted above, we restrict our analysis to households in treatment villages. Pure control households were not surveyed at baseline, so we do not have baseline measures of several village and household characteristics that are necessary for the analysis described below. Thus, our sample include a total of 60 treatment villages with 503 households that received transfers and 505 households that did not. This includes approximately 1474 individuals for whom psychological well-being measures were collected.

Table 1 reports individual, household, and village characteristics of households in treatment villages measured at baseline. Panel 1 shows that the mean age among respondents was 35 years; 55 percent were female; 85 percent were married or cohabitating; and the average education was 8 years. In Panel 2 we report household characteristics. The average household had 5 members, including only individuals who made that household their primary residence. This includes an average of 3 children under the age of 18.

Households held assets of approximately USD 398 at baseline, excluding the value of land. Total monthly expenditures averaged USD 184. Approximately 25 percent of households relied on wage labor as their primary income; 36 percent on production from a family farm; and 17 percent on a non-agricultural business. Thirty-nine percent of households owned some form of non-agricultural business. Other income sources included casual (non-wage) labor, the sale of livestock, remittances from family, and rents.

In Panel 3 we report treatment village characteristics. On average, villages had 98 households. Of these, 19 percent had thatched roofs at baseline and were thus eligible for transfers. Half of thatched households received transfers – roughly 10 percent of the village on average. 27 percent of treated households received large transfers.

2.3 Pre-analysis Plan

The following analyses were pre-specified in a Pre-Analysis Plan (PAP) written and published before analysis began available at https://www.socialscienceregistry.org/trials/17; deviations from the analysis plan are indicated below.

2.4 Outcome Measures

Our primary outcomes of interest are an index variable constructed from five psychological well-being measures and a measure of total household consumption. The constituent variables of the psychological well-being index include four subjective measures. We include the happiness and life satisfaction questions from the World Values Survey. Happiness is measured on a 4 point scale as a response to the question "Taking all things together, would you say you are: very happy, quite happy, not very happy, or not at all happy?" Life satisfaction is measured on a 10 point scale in response to the question "All things considered, how satisfied are you with your life as a whole these days?"

Participants were also administered the Center for Epidemiologic Studies Depression (CESD) scale (Radloff, 1977). The CESD scale is a 20 question inventory asking respondents how many times in the last week they had experienced a number of symptoms; e.g., "I felt sad"; "My sleep was restless"; and "I felt hopeless about the future." Respondents answer using a 4 point scale: ranging from 0 points for "rarely or none of the time" to 3 points for "all of the time." Positive measures like "I was happy" were reverse coded so that 3 points corresponds to "some or little of the time." The total possible score is 60 points. The established cutoff for depression in Western populations is 16. Participants also answered 5 items from the Perceived Stress Scale (PSS) (Cohen et al., 1983), which asked about experiences of stress in the preceding month, such as "How often have you felt that you were unable to control the important things in your life?" Responses were recorded using a 5 point scale ranging from "Never" to "Very often." Positive questions were reverse coded. The measure is the total score across the 5 items. Finally, we measured levels of salivary cortisol, a bio-marker of stress. Two samples were taken from each participant, and the result was transformed to adjust for confounding factors using the method described in Haushofer and Shapiro (2016).

Each of these outcome variables is standardized by subtracting the baseline mean and dividing by the baseline standard deviation. We then construct a standardized, weighted-average index of these 5 measures using the approach described in Anderson (2008). This method weights variables based on the inverse of their covariance with the other components of the index. Highly correlated variables are thus weighted less, and variables that are uncorrelated with others are weighted more. This allows us to maximize the information included in the index without "double counting."

Table 1 reports baseline values for each psychological well-being measure. Overall, measures of psychological well-being were relatively low in the sample population, likely reflecting high levels of poverty. The mean score on the WVS Happiness scale was 2.94 on a scale ranging from 1 to 4. The mean score on the WVS life satisfaction scale was 3.89 on a scale ranging from 1 to 10. As a comparison, Kahneman and Deaton (2010) find an average of 6.76 on the life satisfaction scale among individuals in the US. The mean score on the depression scale was 22. The established cutoff in Western populations for classifying an individual as depressed is 16. The mean score on the Cohen stress scale was 15 out of 20.

The measure of total household consumption includes all consumption in the previous month and is constructed as outlined in Haushofer and Shapiro (2016) using a detailed questionnaire administered to one primary household member. At baseline, the average monthly household consumption was USD 184.39, with a standard deviation (SD) of 124.66.

2.5 Exogenous Variation in Own Wealth, Relative Wealth, and Inequality

2.5.1 Own Wealth

To isolate exogenous variation in own wealth, we use the total amount of the transfer received by each household. Since households were randomly assigned to a control condition or to receive small or large transfers, this variable takes a value of USD 0, USD 404, or USD 1525. Approximately 50 percent of households in the sample received USD 0, 36 percent received a USD 404 transfer, and 14 percent received USD 1525. We divide this value by the standard deviation of baseline household wealth, so we report all effect sizes in units of standard deviations of household assets. When both the primary male and primary female were surveyed, we consider both of them transfer recipients, even though only one was designated as the primary recipient of the transfer. Haushofer and Shapiro (2016) find few differences in expenditure when transfers go to the primary male vs. the primary female. This suggests that transfers are likely shared on average, so it is reasonable to consider both household members recipients.

2.5.2 Relative Wealth

To isolate exogenous variation in relative wealth, we create a measure of the change in village mean wealth induced by the transfers. Random variation in this measure stems from two sources: first, the proportion of households receiving large as opposed to small transfers varied randomly across villages. After being selected to receive a transfer, 137 households were then randomly designated to receive a large transfer, without enforcing a constant split by village. Second, the proportion of treated households varied around the targeted 50 percent across villages, leading to differences in the average transfer amount across villages. This is largely due to the fact that many villages were small and only a small number of households were eligible, and often the number of eligible households was odd, precluding a clean split. Thus the proportion of eligible households receiving a transfer ranges from 40 percent to 75 percent.

Our primary specification analyzes the mean treatment amount disbursed to eligible (thatched roof) households at the village level. For each household h, we calculate this value as a leave-one-out mean over the transfers assigned to all other household's in the village:

$$\Delta \bar{W}_{hv} = \frac{\sum_{k \neq h} \triangle W_{kv}}{H_v - 1}$$

where $\triangle W_{kv}$ is the assigned treatment amount for household k in village v; and H is the number of thatched households in the village. We divide this value by the standard deviation of mean village wealth at baseline, so again we report all effects sizes in units of standard deviations of mean village wealth. Note that we calculate levels based on an intent-to-treat approach, so that all transfers are included in this measure, whether or not they were actually delivered. As mentioned above, 18 treatment households did not receive transfers because they failed to sign up for *M-Pesa* in time.

As a result of the two sources of variation described above, the change in village mean wealth varied significantly across villages, as documented in Table 1. The full distribution of changes is depicted in Figure 2. Village mean wealth increased by an average of USD 358 relative to a baseline mean of USD 356 (i.e., a 101 percent increase). The increase in village mean wealth ranges from USD 101 to USD 493. In 12 villages, the increase in mean wealth was greater than 125 percent of the baseline average. In 22 villages, the increase in mean wealth was less than 75 percent of the baseline average.

To ensure robustness, we confirm the results using several alternate measures. First, in the above measure, transfers to the focal household are excluded when calculating the village mean wealth. In the Appendix, we report results using a measure of the change in village mean wealth that includes these own transfers.

Second, since only thatched-roof households were included in the study, the above measure leaves out a significant proportion of the population of each village. We have limited information about the wealth of non-surveyed households; however, we know their number. We therefore also calculate the same average using an estimate of the total population of the village in the denominator, and report results using this measure in the appendix. This measure is the product of an exogenous measure $\Delta\bar{W}_{hv}$ and the proportion of households in the village that are thatched roofs $\frac{H_v-1}{P_v-1}$ (where P_v is the total number of households in village v), an endogenous variable. Thus, we must also control for $\frac{H_v-1}{P_v-1}$ when using this treatment variable. Note that we neglected to specify this control variable in the PAP.

We have no prima facie reason to believe the reference group for economic comparisons for individuals in the study is more likely to be the entire population of the village than just the thatched-roof subset, and thus no reason to prefer one measure over the other, but reporting both ensures robustness. However, note that the total village figures are provided by village elders at the time of the baseline survey and therefore may not be exact.

Third, we calculate an estimated measure of the change in village mean wealth by exploiting only the variation across villages that is due to differences in the proportion of treated households receiving large transfers. As discussed above, in theory the cash transfer program was designed to treat exactly half of eligible households in each village. Thus, if execution had been perfect, all variation between villages would stem from differences in the proportion of large transfers, which was chosen at random across all treatment households. However, in practice, the proportion of eligible households treated varied from 40 percent to 75 percent, explaining a significant part of the difference in average transfer amount across villages. The main specification outlined above uses both sources of variation, while the robustness check isolates the variation from the proportion of households in the village receiving large transfers. The motivation to include this robustness check is that large transfers are likely to have been more visible (or at least more difficult to conceal) than small transfers. As an example, note the large increase in metal roof ownership among households receiving large compared to small transfers observed by Haushofer and Shapiro 2016. This variation may thus have a stronger impact on our outcome measures than the variation induced by differences in the proportion of treatment households across villages. To preserve the same unit of measurement as above, we estimate the mean change in village wealth based only on the variation from large vs. small transfers as

$$\triangle\hat{\bar{T}}_v = \frac{1}{2}\left[\gamma_v \cdot 1525 + (1-\gamma_v) \cdot 404\right]$$

where γ_v is the proportion of households within village v assigned to the large transfer condition (USD 1525), and $1 - \gamma_v$ is the proportion of households within village assigned to the small transfer condition (USD 404). This method enforces proportions of exactly 50 percent of eligible households within each village in the treatment and control conditions. Thus, all variation in village mean wealth will result from randomly induced differences across villages in the proportion of households assigned to receive large transfers.

2.5.3 Inequality

Individuals might also have preferences over the dispersion of wealth or inequality level of their comparison group, independent of their standing in that group. This may reflect a a concern for overall social welfare like that found in the laboratory by Charness and Rabin (2002), especially for the individuals who are worst off. It may also reflect a general distaste for inequality.

To isolate exogenous variation in village inequality, we calculate the change in the village inequality level induced by the transfers. The variation in inequality arises from the fact that significant variation exists in the baseline wealth, measured by total assets, of households selected to receive a transfer by village. Due to random assignment of treatment among these households, in some villages treated households will tend to have relatively low baseline wealth, while in other villages, treated households will tend to have relatively high baseline wealth. Table 1 shows that the mean baseline assets of treated households were USD 384, but ranged from USD 191 to USD 826, with a standard deviation of USD 113. When more of the relatively poor households in a village receive transfers, inequality within the sample population is likely to decrease. Conversely, if the mean baseline wealth level of treated households in a village is relatively high, then inequality in the sample population is likely to increase.

Nonetheless, our primary measure of inequality, the change in the village Gini coefficient, does not simply reflect heterogeneous effects for villages where the average recipient household was of low vs. high baseline wealth. Rather, the Gini coefficient is a function of every pairwise difference in wealth between households in the village. The Gini coefficient is measured on a 0 to 1 scale, where 0 represents complete equality, and 1 represents complete inequality. We calculate the Gini coefficient using total household assets among thatched roof households in each village. Adapting Sen (1997), the Gini coefficient can be represented as:

$$G_{hvt} = \frac{\sum_{j \neq h} \sum_{k \neq h} |Y_{jvt} - Y_{kvt}|}{2\bar{Y}_{vt}(H-1)^2}$$

where G_{hvt} is the Gini coefficient for village v excluding household h before transfers ($t = B$) or after transfers ($t = B + \tau$). Likewise, $\bar{Y}_{vt}$ is the mean wealth of village v, excluding household h before or after transfers. Our primary measure of inequality is the change in village-level Gini, calculated as $\triangle G_v = G_{v(B+\tau)} - G_{vB}$.

To improve the ease of interpretation of our results, we scale the change in Gini coefficient by dividing it by the standard deviation of the baseline Gini coefficient across villages. Thus, results are reported in units of standard deviations of the village-level Gini coefficient.

Because the change in Gini coefficient is a function of the village's baseline Gini coefficient, which does not vary exogenously, it is important to condition on each village's baseline

Gini coefficient to ensure identification. Since we did not explicitly pre-specify this control in our PAP, we also report results without controls. A village-level regression of the change in Gini on baseline Gini results in an R^2 of 0.41, suggesting that most of the variation remains even after controlling for this value.

As shown in Table 1, the average baseline Gini coefficient was 0.44, and the average absolute magnitude of the change in Gini was 0.075, ranging from a decrease of 0.16 to an increase of 0.25. Some villages may have relatively extreme values due to the small number of households included in the sample.

As a secondary measure of inequality to ensure robustness, we calculate the coefficient of variation for the village. The coefficient of variation is a function of the standard deviation of wealth within a group and is calculated as:

$$C_{hvt} = \frac{\sqrt{\frac{1}{H-2}\sum_{i\neq h}(Y_{ivt} - \bar{Y}_{vt})^2}}{\bar{Y}_{vt}}$$

where C_{hvt} is the coefficient of variation for village v excluding household h before transfers ($t = B$) or after transfers ($t = B + \tau$). We then calculate the change in village-level coefficient of variation as $\triangle C_{hv} = C_{hv(B+\tau)} - C_{hvB}$.

2.5.4 Tests of the Exogeneity of Treatment Variables using Baseline Measures

Although the randomization of the unconditional cash transfers ensures that our regressors of interest will be uncorrelated with observable and unobservable characteristics on average, to determine whether spurious correlations still exist, in Table 2 we report the correlation between these regressors and various individual and household characteristics measured at baseline. The regression specification is

$$T_{hv} = \beta_0 + \boldsymbol{X}'_{ihvB}\boldsymbol{\delta} + u_{ihv} \tag{1}$$

where T_{hv} is the change in household wealth in column 1; mean change in village mean wealth in column 2; and change in village Gini coefficient in column 3. $\boldsymbol{X}_{ihvB}$ is a vector of individual, household, and village characteristics measured at baseline, including baseline values of our outcomes of interest.

Promisingly, few of the these relationships are statistically significant. They also explain relatively little of the variance in the change in own wealth and village mean wealth, with an R^2 of 0.02 and 0.06, respectively. Nonetheless, there are some significant relationships. A 1 SD increase in happiness is correlated with a USD 27 larger increase in own wealth, significant at the 5 percent level. A 1 year increase in age is correlated with a USD 1 increase in the change in mean village wealth, significant at the 5 percent level. Having a household farm that serves as a primary income source correlates with a USD 38 higher change in village mean wealth, or about one-tenth of the average of this variable across villages. This value is significant at the 1 percent level.

As discussed in Section 2.5, by construction, our measure of the change in village Gini is highly correlated with baseline village Gini. When adding this variables to the regression in Column 3 of Table 2, the R^2 increases from 0.13 to 0.63. The coefficient on baseline Gini is large and significant at the 1 percent level. Nonetheless, a significant part of the variation in village Gini change remains.

These relationships highlight the importance of controlling for both baseline outcome variables and other covariates, due to the possibility of spurious correlation, especially given that we rely on village-level variation in treatment. We discuss how we control for such correlation in the next section.

2.6 Primary Econometric Specifications

Our primary regression specification is

$$Y_{ihvE} = \beta_0 + \beta_1 \Delta W_{hv} + \beta_2 \Delta \bar{W}_v + \beta_3 \Delta G_v + \beta_4 Y_{ihvB} + \beta_5 M_{ihvB} + \boldsymbol{X}'_{ihvB} \boldsymbol{\delta} + u_{ihvE} \qquad (2)$$

where Y_{ihvE} is outcome of interest for individual i in household h of village v at time $t =$ endline; ΔW_{hv} is the total transfer received by household h; $\Delta \bar{W}_v$ is the average transfer received by thatched-roof households in the village; ΔG_v is the change in the Gini coefficient calculated over thatched-roof households in the village due to transfers; and $\boldsymbol{X}_{ihvB}$ is a vector of individual, household, and village characteristics discussed below. Following McKenzie (2012), we condition on baseline values of our outcome of interest Y_{ihvB} to improve statistical precision. We code missing baseline values as zero, and include an indicator variable, M_{ihvB}, taking the value of 1 if the baseline measure is missing and 0 otherwise. We report standard errors clustered at the village level.

In this specification, β_1 identifies the average effect of a 1 SD increase in own household wealth on the outcome of interest; β_2 identifies the average effect of a 1 SD increase in the mean wealth of thatched-roof households in the village; and β_3 identifies the effect of a 1 SD increase in the Gini coefficient, calculated among thatched roof households in the village. The coefficients capture the causal effect of changes in own wealth, relative wealth, and inequality, respectively.

Individual-level control variables include a quadratic in age, gender, an indicator for marital status, and years of education. Household-level control variables include number of household members, number of children in the household, value of non-land household asset at baseline, total household consumption at baseline, an indicator for whether wage labor was the household's primary income source at baseline, an indicator for whether a farm owned by the household was the primary income source at baseline, an indicator for whether a non-agricultural business was the primary income source at baseline, and an indicator for whether the household owned a non-agricultural business at baseline. Village-level controls include mean baseline assets, mean baseline consumption, baseline Gini coefficient, an indicator for the presence of a primary school, an indicator for the presence of a secondary school, and the distance to Kisumu (the nearest urban area). In our pre-analysis plan, we indicate we will include individual, household, and village-level controls, but we did not specify specific variables at that time. While we believe these controls are the most natural given the existing literature, we also report our results without any controls.

We also report the results for specifications that include sublocation and endline date fixed effects. A sublocation is an official Kenyan administrative unit that consists of multiple villages. Endline date is available for most, but not all observations in the data, so we do not include these fixed effects in all specifications. These specifications were not specified in our pre-analysis plan, but we believe that such controls provide important checks on the validity of our findings. While they increase precision by eliminating some spurious or small sample correlation, they do not meaningfully change our results.

2.7 Testing for Heterogeneous Effects

Finally, we test for heterogeneous effects along two dimensions: households that did not receive transfers, and households that are below the median baseline wealth level of their village. These comparisons were not included in our pre-analysis plan, but we believe they are of interest in understanding our results. These specifications take the following form:

$$\begin{aligned} Y_{ihvE} &= \beta_0 + \beta_1 \Delta W_{hv} + \beta_2 \Delta \bar{W}_v + \beta_3 \Delta G_v \\ &+ \beta_4 \Delta \bar{W}_v \times I_{hv} + \beta_5 \Delta G_v \times I_{hv} + \beta_5 I_{hv} \\ &+ \beta_6 Y_{ihvB} + \beta_7 M_{ihvB} + \mathbf{X}'_{ihvB} \boldsymbol{\delta} + u_{ihvE} \end{aligned} \tag{3}$$

where I_{hv} is an indicator taking the value of one for households in the group of interest and zero otherwise. Thus β_4 identifies the difference in the effect of a change in village mean wealth for members of that group, and β_5 identifies the difference in the effect of a change in village inequality for members of that group.

3 Results

3.1 Primary Specification

In Table 3 we report regression results using the specification in Equation 2 for the psychological well-being index, and in Table 4 we report the results for total household consumption. Our preferred specification is that in column 3, i.e. the regression including household and village controls and sublocation fixed effects but not endline date fixed effects, as they are not available for all observations.

As mentioned in Section 2.5, we standardize each of the treatment variables to improve comparability between them. Changes in own wealth are scaled by dividing by the standard deviation of baseline household assets, so effects are per 1 SD increase in household wealth. Changes in village mean wealth are scaled by dividing by the standard deviation of mean village wealth, so effects are per 1 SD increase in village mean wealth. Changes in inequality are scaled by dividing by the standard deviation of village Gini coefficient, so effects are per 1 SD increase in Gini coefficient. The psychological outcome variables are also in standard deviation units.

Psychological Well-being Index

Using our preferred specification in column 3, the effect of a 1 SD increase in own wealth is a 0.129 SD increase in the psychological well-being index, significant at the 1 percent level. At the average change in own wealth in our sample of USD 354, this translates into an increase in 0.09 SD. The average transfer among households receiving any transfer is USD 709, which translates into an effect of 0.18 SD. This is somewhat smaller than the 0.26 SD average treatment effect reported in Haushofer and Shapiro (2016), which is due to differences in the variables pre-specified to be included in the index.[3]

The effect of a 1 SD increase in village mean wealth is a decrease of 0.064 SD in the psychological well-being index, only significant at the 10 percent level. At the cross-village average change in mean wealth of USD 357, this translates into a decrease of 0.2 SD in the psychological well-being index. Although we highlight the importance of including controls above, we note this value is not statistically significant when excluding all controls. It is robust to including controls, and sublocation and survey date fixed effects. The effect size is consistent across these specifications.

We do not find a statistically significant effect of an increase in the Gini coefficient calculated among thatched-roof households on psychological well-being. The point estimate of a 1 SD increase in village Gini is a 0.043 SD increase in psychological well-being, but the confidence interval includes zero.

To evaluate the magnitude of this effect at the value of the changes in inequality generated by the cash transfers, we cannot use the average change in the Gini coefficient because there were both increases and decreases. Instead, we use the average of the absolute values of the experimentally induced changes in the Gini coefficient, which is 7 percentage points. In a villages at the average magnitude of Gini change of 7 percentage points, we estimate an increase or decrease in the psychological well-being index of 0.03 SD. The 95 percent CI at this value ranges from -0.05 SD to 0.12 SD. This suggests a quantitatively and statistically negligible effect.

Total Consumption

In our preferred specification, we find that a 1 SD increase in household wealth causes a USD 22.02 increase in monthly household consumption, significant at the 1 percent level in all specifications. This is 12 percent of the average monthly household consumption at baseline of USD 181. At the average change in own wealth in our sample of USD 354, this translates into a monthly increase of USD 15.58 or 8.5 percent of baseline consumption. At the average transfer among households receiving any transfer of USD 709, this translates into an effect of USD 31.21 or 17 percent of baseline consumption. This effect is consistent with Haushofer and Shapiro (2016), who find an average treatment effect of USD 35.66 on monthly consumption.

We find that a 1 SD increase in village mean wealth causes a USD 9.38 decrease in consumption, or 5 percent of average monthly consumption at baseline. For individuals in villages at the average change in mean wealth of USD 357, this translates into a decrease of USD 25.27, or 14 percent of average baseline consumption. The effect is significant at the 10 percent level in the specification including controls and no fixed effects, but not in the other specifications.

[3]The index used in Haushofer and Shapiro (2016) also includes a custom worries scale that had been constructed ad hoc and not psychometrically evaluated; we therefore exclude it here. In both papers, the variables included in the well-being index were pre-specified in the respective pre-analysis plans.

We find that a 1 SD increase in village the Gini coefficient causes a USD 3.69 decrease in monthly consumption, not statistically significant. For households in a villages at the average magnitude of Gini change of 7 percentage points, this translates into a increase or decrease of USD 3.15 with a 95 percent CI that ranges from USD −11.94 to USD 5.64. This pattern of results suggests that inequality has small effects on consumption, although lack of precision makes moderately sized effects not impossible.

3.2 Detailed Findings on Psychological Well-being

In Table 5 we report regression results using the specification in Equation 2 for each of five measures of psychological well-being. The need to perform these analyses separately is suggested by a substantial body of literature that finds differences in evaluative and hedonic measures of well-being (Kahneman and Deaton, 2010). Since our psychological well-being index includes both types of variables, this analysis is important for determining the mechanisms behind the effect reported in Section 3.1. The measures we include are described in Section 2.4 and include happiness, life satisfaction, depression, stress, and salivary cortisol.

Consistent with the result reported in Section 3.1, a 1 SD increase in own wealth translates into a 0.08 SD increase in happiness, a 0.05 SD increase in life satisfaction, and 0.06 SD decrease in depression, a 0.12 SD decrease in stress, and a negligible change in salivary cortisol levels. Each effect is significant at least at the 5 percent level, except for cortisol, which is not significant in any specification.

A 1 SD increase in village mean wealth leads to a decrease of 0.14 SD in life satisfaction, significant at the 1 percent level and robust to the inclusion of various controls and fixed effects. At the average change in mean wealth of USD 357, this effect translates into a decrease of 0.4 SD in life satisfaction. While this is quite large in comparison to the 0.04 SD increase associated with the average change in own wealth of USD 354, it is less precisely estimated. We find no other statistically significant effects of the change in village mean wealth, or for a change in the Gini coefficient.

3.3 Heterogeneous Effects

We now ask whether the negative effect of changes in relative wealth on psychological well-being differ by treatment status: is psychological well-being particularly affected when people to observe their neighbors getting transfers when they themselves receive nothing? Conversely, can transfers to the focal individual "undo" the negative psychological spillovers of transfers to their neighbors? In addition, we ask whether changes in relative wealth affect poor households more than rich ones: psychological well-being may be more affected for poorer individuals who witness their neighbors moving up the wealth distribution than for relatively wealthier individuals whose neighbors are "catching up."

To answer these questions, in Table 6, we report regression results using the specification in Equation 2 with psychological well-being index and total household consumption as outcome measures. This specification allows us to test for treatment effect heterogeneity along two dimensions. First, we test whether the effects vary for individuals in households that did not receive transfers. Second, we test whether the effects vary for individuals in households that were below the median household wealth of their village at baseline.

Psychological Well-being Index

We find no statistically significant difference in the psychological well-being index between households that received transfers and those that did not in the effect of either a change in village mean wealth or village Gini. The point estimates of the differences for households not receiving transfers (the coefficients on the interaction terms) are −0.08 SD and 0.0005 SD respectively. These estimates are not statistically significant with any set of controls tested.

Likewise, we find no statistically significant difference in psychological well-being between households that were below the median wealth of their village at baseline and those above the median in the effect of either a change in village mean wealth or village Gini. The point estimates of the differences are 0.01 and −0.0076, respectively. These estimates are not statistically significant with any set of controls tested.

Total Consumption

We find no statistically significant difference between households that received transfers and those that did not in the effect of a change in village mean wealth on total consumption. The point estimate of the difference for a change in mean wealth is USD −1.66, which is not statistically significant with any set of controls. However, we find a significant difference in the effect of a change in village Gini coefficient. The point estimate of the effect of a 1 SD increase in Gini coefficient for recipient households is USD −19.68, significant at the 1 percent level and robust to multiple sets of controls. The effect for non-recipient households is not statistically significant. This suggests households that received transfers consumed less in villages where inequality increased. The results in Table A6 suggests that this effect is primarily driven by a decrease in spending on food of USD −9.99 among recipient households.

Finally, we find no statistically significant difference between households that were below the median wealth of their village at baseline and those above the median in the effect of either a change in village mean wealth or village Gini. The point estimates of the differences are USD 0.01 and USD −0.008 respectively, but they are not statistically significant with any set of controls.

3.4 Other Economic Measures

In Appendix Tables A2, A3, and A4, we report effects for a detailed set of consumption variables, measures of household assets, and measures of remittances, labor, and enterprise. As discussed above, we observe a general trend towards lower levels of consumption as village mean wealth increases, reported in Table A2, and no discernible impact of an increase in inequality. The effect appears to be driven by a reduction in spending on food by USD 5.94 resulting from a 1 SD increase in village mean wealth, significant at the 10 percent level.

One possibility may be that as mean village wealth rises, households substitute away from consumption and towards investment. However, we also observe a decrease in overall asset levels, as reported in columns (2) of Table A3, though this effect is not statistically significant with some sets of controls. We find no statistically significant effect of a change in inequality on total household assets.

A change in overall wealth may also affect economic activity in the village. One channel through which such activity could occur is remittances. We find that a 1 SD increase in village mean wealth results in a decrease in the remittances sent of USD 0.83, significant at the 5 percent level, but we find no significant effect on remittances received. A second channel could be through employing neighbors in wage labor. However, we find no effects on measures of employment in wage labor. We also consider whether individuals try to "keep up" with their neighbors by investing more in entrepreneurial activity. However, we find that a 1 SD increase in village mean wealth results in a decrease in total monthly business expenses of USD 6.13, significant at the 10 percent level. We find no effect on total revenue or profit. Finally, we find virtually no effect of a change in inequality on these measures.

3.5 Alternative Measures of Relative Wealth and Inequality

In Appendix Tables A9, A10, A11, A12, A13, and A14, we report our results using the three alternative measures of the change in village mean wealth described in Section 2.5.2. Overall the pattern of results is similar to that reported above.

The magnitudes of the decrease in both the psychological well-being index and life-satisfaction are similar to that described above when the change in mean wealth is calculated including each household's own transfer (Table A9) or over the full village (Table A11). However, the results are no longer statistically significant with every set of controls. When using the measure based only on the percentage of households receiving a large transfer, the effect is larger and more robust (Table A13).

The decrease in total household consumption is larger and more robust when the change in village mean wealth includes each household's own transfer (Table A10). In our preferred specification, a 1 SD increase in village mean wealth causes a decrease in total consumption of USD 12.04, significant at the 5 percent level. Similarly, the effect is larger and more robust when using the measure based only on the percentage of household receiving a large transfer, with an estimated decrease in total consumption of USD 15.07, significant at the 5 percent level. The effect is not statistically significant when using the measure calculated over the full village (Table A12).

In Tables A15 and A16 we report results using the village coefficient of variation rather than the Gini coefficient as the measure of inequality. As above, we do not detect a statistically significant effect of a change in this variable on either psychological well-being or consumption.

3.6 External Validity

One caveat about the measures described above is that they are not fully reflective of changes for the full village population, due to the fact that the sample was restricted to households with thatched roofs at baseline. It is important, then, to consider the results reported here as reflecting only the effects of changes within a particular comparison group – other thatched households. To the extent that individuals consider the entire village to be their comparison group, the external validity of this study may be limited. However, in economic terms, households with thatched roofs are likely more similar to one another than to other village households.

Nonetheless, we address the possibility that the full village population is the more appropriate comparison group in two ways. First, as described in Section 2.5.2, we report an alternate measure of the change in village mean wealth calculated over the full population of the village. As reported above, Tables A11 and A12 show the estimated effect is largely consistent with that of our preferred measure.

Second, in Appendix A.7, we describe a simulation exercise to determine the relationship between changes in the Gini coefficient calculated among thatched roof households and changes in the Gini coefficient calculated among all households. Although we do not observe most metal roof households, in each village, we randomly selected about 2 metal roof households to be surveyed at baseline. We therefore have measures of assets at baseline for 260 metal roof households. Since we also have an estimate of the total number of metal roof households in each village, we simulate the full village by drawing a corresponding number of samples with replacement from the 260 metal roof households. We then calculate the change in Gini over the simulated village, including both the thatched-roof households and the bootstrap sample. The full simulation procedure is described in Appendix A.7.

As depicted in Figure A2, we find a positive relationship between the change calculated from thatched roof households and the change calculated from the simulated full village. Note that the simulated change in Gini for the full village is always negative. This reflects the fact thatched households are typically poorer than metal roof households, and providing transfers to the poorest households in a village decreases inequality. In our view, thatched-roof households are the more appropriate comparison group, in which case our results can be read as the effect of an increase or decrease in inequality on psychological well-being and consumption. However, based on these simulations, an alternative interpretation is that we compare large to small reductions in village-level inequality.

3.7 Relationship to Results in Haushofer and Shapiro (2016)

As mentioned in the introduction, another approach for analyzing the effect of changes in neighbors' wealth on well-being and consumption is to compare non-recipients in treatment villages to non-recipients in control villages. This is the approach taken by Haushofer and Shapiro (2016). In that analysis, we find no statistically significant difference in psychological well-being between spillover households (control households in treatment villages) and pure control households (control households in control villages). If changes in the mean wealth of a village affect psychological well-being, we might expect those change to be evident when comparing households in villages where the mean wealth increased to those in which it did not change.

The difference in the findings in the two studies is explained by two factors. First, the present paper includes treatment households, increasing the sensitivity of our analysis. Holding constant the change in own wealth, these households are also negatively affected by increases in mean wealth, as shown in Table 6, though the net effect can still be positive given a large enough increase in own wealth.

Second, the present study compares (only) treatment villages with large vs. small average wealth changes to each other, and thus focuses on the intensive margin. In contrast, the comparison of non-recipient household in treatment and control villages in Haushofer and Shapiro (2016) focuses on the extensive margin. If the effect on the intensive margin is centered around zero, it would not be visible in an analysis that focuses on the extensive margin. Put differently, if villages with small increases in mean wealth experience an increase in well-being, whereas villages with larger increases in mean wealth experience a decrease, these effects might average each other out when pooled together in an across-village analysis. Indeed, we find suggestive evidence of this. In the first column of Figure A2, we present binned scatterplots and best fit lines of the well-being index and life satisfaction variables, plotted against the change in village mean wealth, restricting the sample to spillover households. We plot a vertical line at the cross-village average of changes in mean wealth (USD 358). At this point, the predicted value of both the index and life satisfaction are close to zero. In the second column, we present a residualized version of this relationship, in which we control for changes in own wealth, village Gini, and other variables like in our main specification 2. The slope of the fitted line is the same as the coefficient on the change in village mean wealth reported in those regressions. The vertical black lines depict the cross-village mean of the residualized change in village mean wealth. Again, the predicted values are close to zero at the cross-village mean. Thus, again an across-village comparison of spillover and pure control households is unlikely to uncover a difference, even with the inclusion of controls. In contrast, a comparison of spillovers households in villages where the mean change in wealth was large to spillover households in which the change was small – as we conduct here – is able to detect this effect.

4 Conclusion

The goal of this study was to dissociate the effects of three changes in economic circumstances on psychological well-being and consumption. In particular, we distinguish between the effects of changes in own wealth, relative wealth, and inequality. We study an unconditional cash transfer program in Kenya that made large, one-time transfers to a subset of poor households in a village. Our identification strategy capitalizes on three sources of exogenous variation: first, the magnitude of the transfers varied randomly across recipients, allowing us to identify the effect of transfers on the recipients themselves. Second, the mean transfer amount to the village as a whole varied randomly as a consequence of random variation across villages in the proportion of households treated, and the proportion receiving large rather than small transfers. This variation allows us to identify the effect of changes in village mean wealth on recipients and their peers. Third, differences in the baseline wealth of the recipients across villages induces random variation in the change of the village-level Gini coefficient as a result of transfers, allowing us to identify the effect of changes in inequality on well-being above and beyond absolute and relative income.

We find that changes in both own and relative wealth have effects on psychological well-being, in particular life satisfaction. Individuals are generally more satisfied with their life when their own wealth increases. They become, however, somewhat less satisfied when the average wealth of others in their village increases. We do not observe an additional impact of changes in inequality on life satisfaction above and beyond the impacts of changes in one's own wealth or the average wealth of the village. Likewise, we find suggestive evidence a decrease in household consumption resulting from an increase in mean wealth of the village, but this effect is imprecisely estimated.

We hasten to point out that these findings are not an indictment of cash transfers as a poverty alleviation intervention. First, our original paper, Haushofer and Shapiro (2016), reports a large number of beneficial effects of cash transfers. Second, similar negative externalities might be expected from any program that confers benefits to a group of recipients while not treating others; there is little reason to think that cash is unique in generating externalities. Third, we find negative externalities only for a small number of psychological outcome variables, while others show little movement. Fourth, cash transfers also have significant positive externalities; for instance, the program studied here resulted in large positive spillovers on female empowerment, driven mainly by reductions in physical and sexual domestic violence. Fifth, it is possible that losing a lottery is uniquely disappointing for households; while our analysis of changes in village mean wealth holds constant whether or not (and how many) comparison households won a lottery, losing the lottery may be differentially disappointing depending on the average transfer magnitude of recipient households. Thus, we might expect weaker negative externalities for changes in relative income that are not windfalls. Finally, we point out that *GiveDirectly* has now moved to a model in which all eligible households in a village receive transfers, rather than only a subset. Together, these considerations suggest that the negative psychological externalities of cash transfers we report here do not detract from the overall positive effects of GiveDirectly's model, or cash transfers as a whole.

These findings contribute to several strands of literature. First, by exploiting fully exogenous changes in absolute wealth, relative wealth, and inequality, this study achieves good identification in establishing the causal link between wealth changes and psychological well-being, a relationship that has been the subject of many prior, often correlational, studies. In addition, in light of the random changes in the income distribution induced by the cash transfers, we are able to contribute similarly causal evidence to literature surrounding the causes and consequences of income and wealth inequality.

Finally, our findings also have implications for social policy. As concern about increasing inequality grows around the world, we find that individuals do not appear to be harmed by increased inequality in terms of psychological well-being, above and beyond the impact of changes in their own wealth and the average wealth of their peers. Therefore, policies aiming to rectify consequences of increased inequality might do better to focus on broad-based approaches that shift mean wealth instead.

References

Alesina, A., R. Di Tella, and R. MacCulloch (2004). Inequality and Happiness: are Europeans and Americans different? *Journal of Public Economics 88*(9-10), 2009–2042.

Anderson, M. L. (2008, December). Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects. *Journal of the American Statistical Association 103*(484), 1481–1495.

Angelucci, M. and G. De Giorgi (2009, March). Indirect Effects of an Aid Program: How Do Cash Transfers Affect Ineligibles' Consumption? *American Economic Review 99*(1), 486–508.

Baird, S., E. Chirwa, J. de Hoop, and B. Özler (2014). Girl Power: Cash Transfers and

Adolescent Welfare: Evidence from a Cluster-Randomized Experiment in Malawi. NBER Chapters, National Bureau of Economic Research, Inc.

Bertrand, M. and A. Morse (2016, June). Trickle-Down Consumption. *The Review of Economics and Statistics 98*(5), 863–879.

Blanchflower, D. G. and A. J. Oswald (2004). Well-being over Time in Britain and the USA. *Journal of Public Economics 88*(7), 1359–1386.

Card, D., A. Mas, E. Moretti, and E. Saez (2012, May). Inequality at Work: The Effect of Peer Salaries on Job Satisfaction. *American Economic Review 102*(6), 2981–3003.

Charness, G. and M. Rabin (2002, August). Understanding Social Preferences with Simple Tests. *The Quarterly Journal of Economics 117*(3), 817–869.

Clark, A. E. and A. J. Oswald (1996, September). Satisfaction and comparison income. *Journal of Public Economics 61*(3), 359–381.

Cohen, S., T. Kamarck, and R. Mermelstein (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior 24*(4), 385–396.

Diener, E. (1984). Subjective well-being. *Psychological Bulletin 95*(3), 542–575.

Diener, E. (2000). Subjective Well-being: The Science of Happiness and a Proposal for a National Index. *American Psychologist 55*(1), 34–43.

Diener, E., W. Ng, J. Harter, and R. Arora (2010, July). Wealth and happiness across the world: material prosperity predicts life evaluation, whereas psychosocial prosperity predicts positive feeling. *Journal of Personality and Social Psychology 99*(1), 52–61.

Duesenberry, J. S. (1949). *Income, Saving and the Theory of Consumer Behavior.* Cambridge, MA: Harvard University Press.

Easterlin, R. A. (1974, January). Does Economic Growth Improve the Human Lot? Some Empirical Evidence. In P. A. David and M. W. Reder (Eds.), *Nations and Households in Economic Growth*, pp. 89–125. Academic Press.

Easterlin, R. A. (1995, June). Will raising the incomes of all increase the happiness of all? *Journal of Economic Behavior & Organization 27*(1), 35–47.

Easterlin, R. A. (2001). Income and Happiness: Towards a Unified Theory. *The Economic Journal 111*(473), 465–484.

Fehr, E. and K. M. Schmidt (1999). A Theory of Fairness, Competition, and Cooperation. *The Quarterly Journal of Economics 114*(3), 817–868.

Ferrer-i Carbonell, A. (2005). Income and Well-being: an Empirical Analysis of the Comparison Income Effect. *Journal of Public Economics 89*(5-6), 997–1019.

Haushofer, J. and J. Shapiro (2016, November). The Short-term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya. *The Quarterly Journal of Economics 131*(4), 1973–2042.

Kahneman, D. and A. Deaton (2010). High Income Improves Evaluation of Life but Not Emotional Well-being. *Proceedings of the National Academy of Sciences 107*(38), 16489–16493.

Kuhn, P., P. Kooreman, A. Soetevent, and A. Kapteyn (2011, August). The Effects of Lottery Prizes on Winners and Their Neighbors: Evidence from the Dutch Postcode Lottery. *American Economic Review 101*(5), 2226–2247.

Luttmer, E. F. P. (2005). Neighbors as Negatives: Relative Earnings and Well-Being. *The Quarterly Journal of Economics 120*(3), 963–1002.

McKenzie, D. (2012). Beyond baseline and follow-up: The case for more T in experiments. *Journal of Development Economics 99*(2), 210–221.

Oishi, S., S. Kesebir, and E. Diener (2011). Income Inequality and Happiness. *Psychological Science 22*(9), 1095–1100.

Perez-Truglia, R. (2019, February). The Effects of Income Transparency on Well-Being: Evidence from a Natural Experiment. SSRN Scholarly Paper ID 2657808, Social Science Research Network, Rochester, NY.

Piketty, T. (2014). *Capital in the twenty-first century.* Cambridge Massachusetts: The Belknap Press of Harvard University Press.

Radloff, L. S. (1977, June). The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement 1*(3), 385–401.

Roth, C. (2015, June). Conspicuous Consumption and Peer Effects: Evidence from a Randomized Field Experiment. SSRN Scholarly Paper ID 2586716, Social Science Research Network, Rochester, NY.

Sacks, D. W., B. Stevenson, and J. Wolfers (2012). The New Stylized Facts About Income and Subjective Well-Being. *Emotion 12*(6), 1181–1187.

Stevenson, B. and J. Wolfers (2008). Economic Growth and Subjective Well-being: Reassessing the Easterlin Paradox. *Brookings Papers on Economic Activity*, 1.

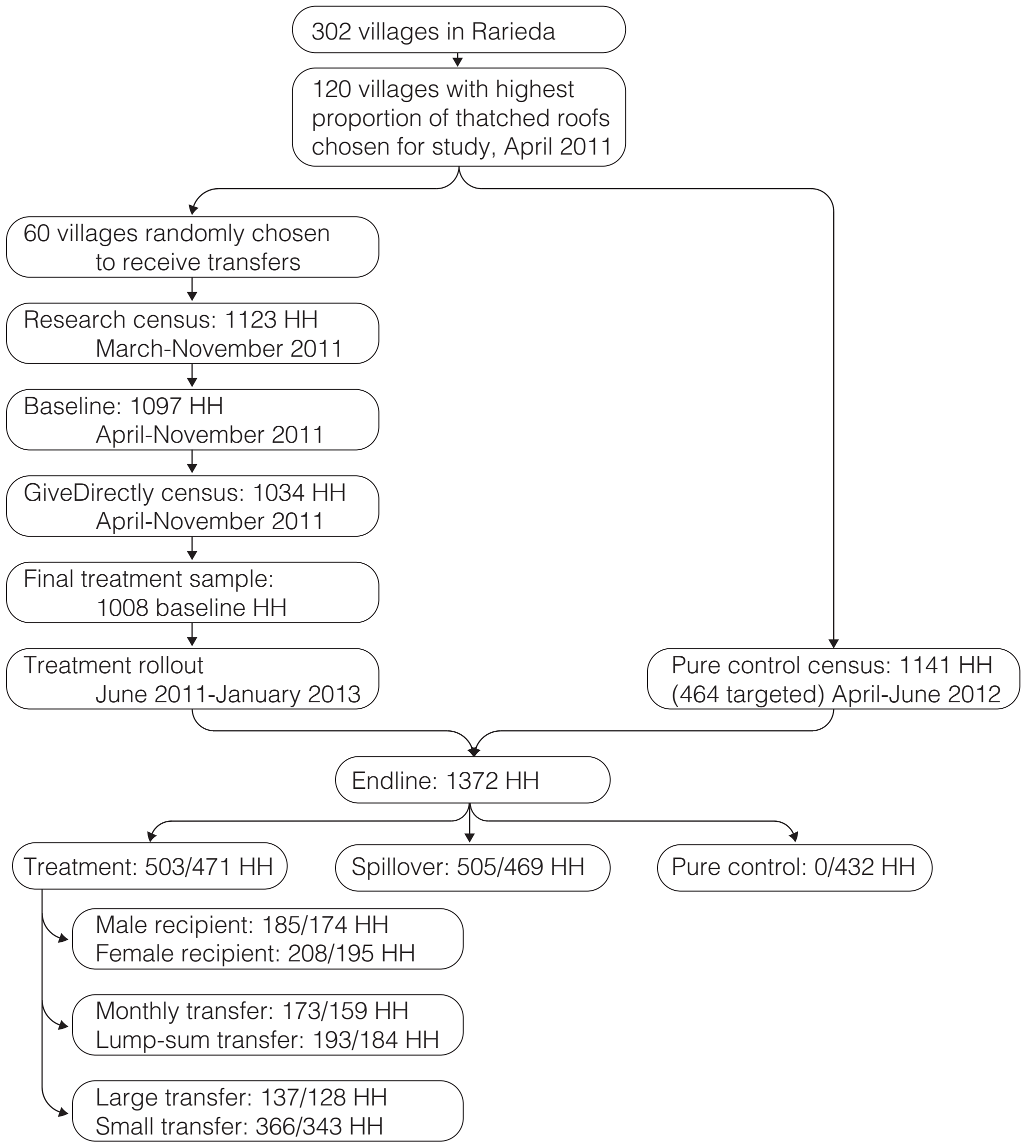
Veblen, T. (1899). *The theory of the leisure class: an economic study in the evolution of institutions.* New York : London: The Macmillan Co; Macmillan & Co, ltd.

Wilkinson, R. G. and K. Pickett (2010). *The spirit level: why greater equality makes societies stronger.* New York: Bloomsbury Press. OCLC: ocn401149670.

Wu, X. and J. Li (2017, December). Income inequality, economic growth, and subjective well-being: Evidence from China. *Research in Social Stratification and Mobility 52*, 49–58.

Tables and Figures

Figure 1: Timeline of RCT



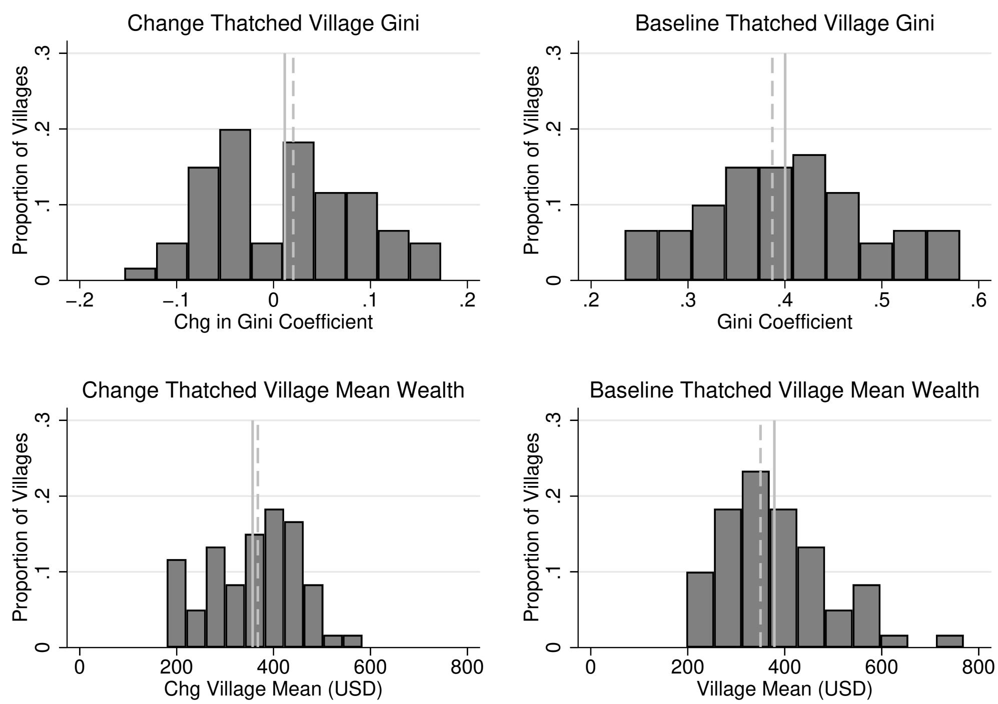
Note: Timeline and treatment arms. Numbers with slashes designate baseline/endline number of households in each treatment arm. Male versus female recipient was randomized only for households with cohabitating couples. Large transfers were administered by making additional transfers to households that had previously been assigned to treatment. The lump-sum versus monthly comparison is restricted to small transfer recipient households.

Table 1: Baseline Summary Statistics

	Mean	SD	Median	Min	Max
Panel 1: Individual Characteristics					
Age	35.32	12.8	32	18	100
Years of Education	7.84	2.76	8	0	18
Female respondent	.55	.5	1	0	1
Marital status (respondent)	.85	.36	1	0	1
Happiness (WVS)	2.94	.71	3	1	4
Life satisfaction (WVS)	3.89	2.66	3	1	10
Depression (CESD)	26.13	9.89	26	0	55
Stress (Cohen)	15	3.03	15	4	20
Log cortisol (with controls)	.04	.95	-.12	-2.57	3.9
Panel 2: Household Characteristics					
Household size	5.14	2.04	5	1	12
Number of children	3.03	1.82	3	0	9
Δ Own wealth (USD)	353.62	500.1	0	0	1525
Value of non-land assets (USD)	398.3	401.69	281.29	4.13	4424.28
Total expenditure (USD)	184.39	124.66	159.09	0	1039.39
Wage labor primary income (dummy)	.25	.43	0	0	1
Own farm primary income (dummy)	.36	.48	0	0	1
Non-ag business primary income (dummy)	.17	.37	0	0	1
Non-agricultural business owner (dummy)	.39	.49	0	0	1
Panel 3: Village Characteristics					
Estimated Number of HHs	98.18	40.23	90	33	244
Proportion Surveyed	.19	.11	.17	.06	.56
Proportion Receiving Transfers	.1	.05	.08	.02	.28
Proportion Large Transfers	.27	.14	.3	0	.57
Mean Baseline Assets (USD)	380.04	108.43	355.63	181.17	625.16
Mean Baseline Consumption (USD)	182.74	42.31	186.15	86.3	301.12
Δ Village Mean (USD)	356.79	93.98	367.54	179.56	583.25
Δ Mean, full village	68.14	43.77	58.09	19.71	225.22
Mean Baseline Assets of Treated HHs	383.17	163.65	349.42	136.33	1027.13
Mean Baseline Consumption of Treated HHs	180.76	54.69	168.78	103.57	350.89
Δ Village Gini	1.35	8.6	2.16	-16.93	20.75
Baseline Village Gini	43.67	8.59	42.28	24.77	66.38

Note: Each rows reports summary statistics for the given baseline variable. Panel 1 reports variables measured at the individual level. Panel 2 reports variables measured at the household level. Panel 3 reports variables measured at the village level. The sample is restricted to households living in treatment villages in the original Haushofer and Shapiro (2016) dataset.

Figure 2: Village-level Changes in Mean Wealth and Gini



Note: Each observation reflects 1 village. Mean wealth at baseline is calculated as the average of household assets. Gini coefficient is calculated from household assets. The change in mean wealth and Gini are calculated using the methods described in Section 2.5.

Table 2: Test of Treatment Variable Exogeneity using Baseline Covariates

	(1) ΔOwn	(2) ΔMean	(3) ΔGini
Age	−0.01	−0.01	−0.00
	(0.01)	(0.00)**	(0.02)
Years of Education	0.04	−0.00	0.02
	(0.06)	(0.01)	(0.08)
Marital status (respondent)	−0.25	0.02	0.13
	(0.51)	(0.07)	(0.50)
Happiness (WVS)	0.27	0.01	−0.07
	(0.13)**	(0.03)	(0.18)
Life satisfaction (WVS)	0.05	0.00	0.12
	(0.10)	(0.03)	(0.18)
Depression (CESD)	−0.21	−0.05	0.18
	(0.12)*	(0.03)	(0.18)
Stress (Cohen)	−0.13	−0.01	0.04
	(0.13)	(0.03)	(0.18)
Log cortisol (with controls)	0.21	−0.02	−0.23
	(0.14)	(0.03)	(0.17)
Value of non-land assets (USD)	0.00	−0.00	−0.00
	(0.00)	(0.00)	(0.00)
Total expenditure (USD)	−0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Wage labor primary income (dummy)	−0.23	0.16	0.81
	(0.44)	(0.12)	(0.79)
Own farm primary income (dummy)	−0.48	0.38	0.63
	(0.46)	(0.11)***	(0.61)
Non-ag business primary income (dummy)	−0.91	0.10	0.05
	(0.58)	(0.10)	(0.60)
Non-agricultural business owner (dummy)	−0.15	0.03	0.80
	(0.44)	(0.07)	(0.51)
Mean Baseline Assets (USD)	0.00	0.00	−0.00
	(0.00)	(0.00)	(0.01)
Mean Baseline Consumption (USD)	−0.00	−0.00	0.01
	(0.00)	(0.00)	(0.02)
Village Baseline Gini (1-100)	−0.04	−0.02	−0.71
	(0.02)**	(0.01)	(0.06)***
Observations	1459	1459	1459
R-squared	0.02	0.06	0.63

Note: Each column is a separate OLS regression of the indicated treatment variables on the covariates measured at baseline listed on the left. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Effect of Change in Own Wealth, Village Wealth, and Village Inequality on Psychological Well-being

	Psych Index			
	(1)	(2)	(3)	(4)
Δ Own	0.129***	0.122***	0.128***	0.136***
	(0.030)	(0.027)	(0.024)	(0.025)
Δ Mean	−0.044	−0.073*	−0.064*	−0.070*
	(0.048)	(0.042)	(0.038)	(0.041)
Δ Gini	−0.026	0.032	0.043	0.067
	(0.037)	(0.045)	(0.049)	(0.052)
Controls		Yes	Yes	Yes
Sublocations FEs			Yes	Yes
Survey Day FEs				Yes
Observations	1474	1474	1474	1474

Note: Each column is an OLS regression with indicated LHS variable with the specification in Equation 2. In the indicated columns, we include individual, household and village controls, sublocation fixed effects, and survey date fixed effects in the indicated regressions. The unit of observation is the individual. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Effect of Change in Own Wealth, Village Wealth, and Village Inequality on Household Consumption

	Total Consumption			
	(1)	(2)	(3)	(4)
Δ Own	22.44***	21.98***	22.02***	22.84***
	(3.63)	(3.56)	(3.67)	(4.02)
Δ Mean	−7.49	−8.71*	−8.14	−3.62
	(5.04)	(4.91)	(5.46)	(4.85)
Δ Gini	4.43	−0.67	−3.69	−5.66
	(3.73)	(5.78)	(5.14)	(7.13)
Controls		Yes	Yes	Yes
Sublocations FEs			Yes	Yes
Survey Day FEs				Yes
Observations	1008	1008	1008	940

Note: Each column is an OLS regression with indicated LHS variable with the specification in Equation 2. In the indicated columns, we include individual, household and village controls, sublocation fixed effects, and survey date fixed effects in the indicated regressions. The unit of observation is the household. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: All Psychological Well-being Variables

	(1) Happiness (WVS)	(2) Life-Sat (WVS)	(3) Depression (CESD)	(4) Stress (Cohen)	(5) Salivary Cortiosl
Δ Own	0.08***	0.05**	−0.06**	−0.12***	−0.02
	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
Δ Mean	0.03	−0.13***	0.00	0.04	0.02
	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)
Δ Gini	0.01	0.02	−0.04	−0.04	−0.03
	(0.03)	(0.06)	(0.06)	(0.05)	(0.04)
Controls	Yes	Yes	Yes	Yes	Yes
Sublocations FEs	Yes	Yes	Yes	Yes	Yes
Survey Day FEs	No	No	No	No	No
Observations	1474	1474	1474	1474	1456

Note: Each column is an OLS regression with indicated LHS variable with the specification in Equation 2. In the indicated columns, we include individual, household and village controls, sublocation fixed effects, and survey date fixed effects in the indicated regressions. The unit of observation is the individual. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Heterogeneous Treatment Effects

	Psych Index		Total Consumption	
	(1)	(2)	(3)	(4)
Δ Own	0.11***	0.13***	12.68***	21.94***
	(0.04)	(0.02)	(4.65)	(3.68)
Δ Mean	−0.08	−0.07	−6.88	−8.33
	(0.06)	(0.05)	(7.41)	(8.57)
Δ Gini	0.03	0.07	−15.54***	−2.36
	(0.06)	(0.06)	(5.12)	(7.08)
Δ Mean × No Own	0.06		−1.90	
	(0.09)		(9.85)	
ΔGini × No Own	0.00		19.68***	
	(0.05)		(6.18)	
No Own Transfer	−0.26		−20.80	
	(0.33)		(34.20)	
Δ Mean × Below Median		0.03		−0.30
		(0.06)		(9.93)
Δ Gini × Below Median		−0.06		−3.81
		(0.06)		(7.56)
Below Median Wealth		−0.19		−17.53
		(0.18)		(32.92)
Controls	Yes	Yes	Yes	Yes
Sublocations FEs	Yes	Yes	Yes	Yes
Survey Day FEs	No	No	No	No
Observations	1474	1474	1008	1008

Note: Each column is an OLS regression with indicated LHS variable with the specification in Equation 3. In the indicated columns, we include individual, household and village controls, sublocation fixed effects, and survey date fixed effects in the indicated regressions. When psychological well-being is the LHS variable, the unit of observation is the individual. When consumption is the LHS variable, the unit of observation is the household. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Appendix

A.1 All Specifications

Table A1: Detailed Psychological Well-being Results

		(1)	(2)	(3)	(4)	N
Happiness	ΔOwn	0.07	0.07	0.08	0.09	1474
		(0.02)***	(0.02)***	(0.02)***	(0.03)***	
	ΔMean	−0.01	−0.01	0.03	0.01	
		(0.04)	(0.04)	(0.04)	(0.04)	
	ΔGini	−0.02	−0.03	0.01	0.07	
		(0.03)	(0.04)	(0.03)	(0.04)**	
Satisfaction	ΔOwn	0.07	0.06	0.05	0.05	1474
		(0.02)***	(0.02)**	(0.02)**	(0.03)*	
	ΔMean	−0.08	−0.10	−0.13	−0.11	
		(0.05)	(0.05)**	(0.04)***	(0.04)**	
	ΔGini	0.02	0.01	0.02	0.01	
		(0.04)	(0.06)	(0.06)	(0.05)	
Depression	ΔOwn	−0.07	−0.06	−0.06	−0.06	1474
		(0.03)**	(0.03)**	(0.03)**	(0.03)**	
	ΔMean	−0.01	0.01	0.00	0.03	
		(0.04)	(0.04)	(0.04)	(0.04)	
	ΔGini	0.02	−0.06	−0.04	−0.05	
		(0.03)	(0.06)	(0.06)	(0.06)	
Stress	ΔOwn	−0.12	−0.11	−0.12	−0.14	1474
		(0.03)***	(0.03)***	(0.03)***	(0.03)***	
	ΔMean	0.03	0.07	0.04	0.04	
		(0.04)	(0.05)	(0.05)	(0.04)	
	ΔGini	0.02	−0.04	−0.04	−0.09	
		(0.03)	(0.05)	(0.05)	(0.05)*	
Cortisol	ΔOwn	−0.02	−0.03	−0.02	−0.02	1456
		(0.03)	(0.03)	(0.03)	(0.02)	
	ΔMean	0.00	0.00	0.02	0.02	
		(0.04)	(0.04)	(0.04)	(0.03)	
	ΔGini	0.03	−0.02	−0.03	0.04	
		(0.03)	(0.04)	(0.04)	(0.04)	
Index	ΔOwn	0.13	0.12	0.13	0.14	1474
		(0.03)***	(0.03)***	(0.02)***	(0.02)***	
	ΔMean	−0.04	−0.07	−0.06	−0.07	
		(0.05)	(0.04)*	(0.04)*	(0.04)*	
	ΔGini	−0.03	0.03	0.04	0.07	
		(0.04)	(0.04)	(0.05)	(0.05)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A2: Detailed Consumption Results

		(1)	(2)	(3)	(4)	N
Food	ΔOwn	7.18	6.96	6.85	6.61	1008
		(2.29)***	(2.20)***	(2.21)***	(2.58)**	
	ΔMean	−4.87	−5.78	−5.94	−3.43	
		(3.47)	(3.33)*	(3.47)*	(3.52)	
	ΔGini	1.84	−2.04	−3.14	−4.80	
		(2.51)	(3.59)	(3.19)	(5.02)	
Education	ΔOwn	0.53	0.44	0.53	0.64	1008
		(0.28)*	(0.25)*	(0.27)*	(0.29)**	
	ΔMean	−0.39	−0.59	−0.28	0.25	
		(0.28)	(0.27)**	(0.37)	(0.39)	
	ΔGini	0.11	−0.14	−0.03	0.11	
		(0.28)	(0.40)	(0.44)	(0.48)	
Social	ΔOwn	0.83	0.84	0.87	0.70	1008
		(0.27)***	(0.28)***	(0.28)***	(0.33)**	
	ΔMean	−0.40	−0.44	−0.27	−0.35	
		(0.24)	(0.25)*	(0.29)	(0.41)	
	ΔGini	−0.06	0.21	0.02	−0.37	
		(0.24)	(0.44)	(0.49)	(0.71)	
House	ΔOwn	6.61	6.59	6.49	7.23	1008
		(0.89)***	(0.88)***	(0.93)***	(1.01)***	
	ΔMean	−0.88	−0.98	−1.21	−0.56	
		(0.86)	(0.89)	(0.89)	(1.00)	
	ΔGini	0.81	0.28	−0.45	−1.28	
		(0.63)	(1.24)	(1.31)	(1.57)	
Total	ΔOwn	22.44	21.98	22.02	22.84	1008
		(3.63)***	(3.56)***	(3.67)***	(4.02)***	
	ΔMean	−7.49	−8.71	−8.14	−3.62	
		(5.04)	(4.91)*	(5.46)	(4.85)	
	ΔGini	4.43	−0.67	−3.69	−5.66	
		(3.73)	(5.78)	(5.14)	(7.13)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A.2 Additional Outcomes

Table A3: Household Assets

		(1)	(2)	(3)	(4)	N
Livestock value (USD)	ΔOwn	39.33	38.16	40.17	47.89	1008
		(8.46)***	(8.40)***	(8.79)***	(9.98)***	
	ΔMean	−9.54	−15.67	−9.96	−5.87	
		(8.99)	(9.81)	(10.12)	(12.35)	
	ΔGini	4.19	3.00	15.83	27.99	
		(7.50)	(11.93)	(16.38)	(17.93)	
Durable assets (USD)	ΔOwn	29.47	29.36	32.04	30.05	1008
		(5.48)***	(5.31)***	(5.24)***	(5.75)***	
	ΔMean	−5.72	−8.31	1.72	−2.75	
		(6.17)	(6.28)	(5.02)	(5.36)	
	ΔGini	2.24	2.96	5.95	15.32	
		(4.38)	(5.84)	(6.90)	(8.54)*	
Savings (USD)	ΔOwn	5.50	5.67	6.30	6.26	1008
		(1.39)***	(1.35)***	(1.44)***	(1.58)***	
	ΔMean	−0.46	−0.35	1.74	2.27	
		(1.68)	(1.68)	(2.02)	(2.43)	
	ΔGini	1.31	1.80	2.95	2.45	
		(1.24)	(2.03)	(1.95)	(2.22)	
Land (acres)	ΔOwn	0.10	0.09	0.06	0.03	1008
		(0.11)	(0.11)	(0.10)	(0.12)	
	ΔMean	0.06	0.07	−0.02	−0.16	
		(0.10)	(0.10)	(0.10)	(0.09)*	
	ΔGini	−0.09	−0.22	−0.34	−0.35	
		(0.07)	(0.12)*	(0.14)**	(0.12)***	
Metal Roof = 1	ΔOwn	0.12	0.12	0.12	0.14	1008
		(0.02)***	(0.02)***	(0.02)***	(0.02)***	
	ΔMean	−0.02	−0.03	−0.02	−0.01	
		(0.02)	(0.02)	(0.02)	(0.03)	
	ΔGini	−0.01	0.02	0.03	0.04	
		(0.02)	(0.02)	(0.02)	(0.03)	
Total assets (USD)	ΔOwn	150.22	150.06	156.83	172.47	1008
		(17.82)***	(17.75)***	(18.79)***	(17.81)***	
	ΔMean	−33.36	−46.97	−25.05	−16.94	
		(19.20)*	(19.48)**	(16.70)	(19.18)	
	ΔGini	−1.19	20.09	47.17	70.33	
		(16.52)	(25.73)	(29.81)	(31.55)**	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A4: Remittances, Labor, and Enterprise

		(1)	(2)	(3)	(4)	N
Remittances received (USD)	ΔOwn	3.89	3.90	4.05	4.41	1008
		(1.28)***	(1.26)***	(1.27)***	(1.40)***	
	ΔMean	−1.43	−1.70	−1.05	−1.09	
		(0.73)*	(0.77)**	(0.88)	(0.93)	
	ΔGini	0.35	1.46	0.87	0.38	
		(0.80)	(1.54)	(1.33)	(1.75)	
Remittances sent (USD)	ΔOwn	1.28	1.29	1.29	1.52	1008
		(0.36)***	(0.35)***	(0.36)***	(0.38)***	
	ΔMean	−0.70	−0.86	−0.83	−0.42	
		(0.38)*	(0.38)**	(0.38)**	(0.38)	
	ΔGini	0.06	0.18	−0.12	−0.46	
		(0.29)	(0.55)	(0.55)	(0.66)	
Wage labor = 1	ΔOwn	0.00	0.00	−0.00	−0.01	1008
		(0.01)	(0.01)	(0.01)	(0.01)	
	ΔMean	0.01	0.01	−0.00	0.00	
		(0.02)	(0.02)	(0.01)	(0.02)	
	ΔGini	−0.04	−0.03	−0.04	−0.05	
		(0.02)**	(0.02)	(0.02)*	(0.03)	
Enterprise revenue (USD)	ΔOwn	3.16	3.45	4.00	4.33	1008
		(2.59)	(2.53)	(2.65)	(3.03)	
	ΔMean	−7.46	−6.75	−5.71	−1.16	
		(4.24)*	(4.36)	(4.22)	(5.18)	
	ΔGini	3.20	−3.47	−0.09	−0.26	
		(3.13)	(4.40)	(4.08)	(4.84)	
Enterprise costs (USD)	ΔOwn	2.51	2.76	3.06	2.89	1008
		(1.86)	(1.80)	(1.82)*	(2.19)	
	ΔMean	−6.84	−6.52	−6.13	−6.17	
		(2.99)**	(2.89)**	(3.10)*	(3.73)	
	ΔGini	3.74	−2.62	−0.09	3.15	
		(2.03)*	(2.86)	(3.17)	(4.50)	
Enterprise profits (USD)	ΔOwn	−0.71	−0.48	−0.28	0.04	1008
		(1.35)	(1.40)	(1.38)	(1.81)	
	ΔMean	−0.85	−0.16	0.38	4.74	
		(2.24)	(2.51)	(2.27)	(2.55)*	
	ΔGini	0.13	−0.71	0.16	−3.28	
		(1.77)	(2.60)	(2.03)	(2.26)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A.3 Detailed Heterogeneous Effect Results

Table A5: Heterogenous Effects for Untreated Households: Psychological Well-being

		(1)	(2)	(3)	(4)	N
Happiness	ΔMean	−0.05	−0.04	−0.00	0.00	1474
		(0.04)	(0.04)	(0.05)	(0.05)	
	ΔMean × No own	0.09	0.08	0.09	0.03	
		(0.07)	(0.08)	(0.07)	(0.07)	
	ΔGini	−0.00	−0.03	0.01	0.07	
		(0.03)	(0.04)	(0.04)	(0.04)	
	ΔGini × No own	−0.04	−0.03	−0.03	−0.03	
		(0.06)	(0.06)	(0.05)	(0.06)	
Satisfaction	ΔMean	−0.04	−0.05	−0.08	−0.06	1474
		(0.05)	(0.05)	(0.05)*	(0.05)	
	ΔMean × No own	−0.07	−0.09	−0.09	−0.11	
		(0.06)	(0.06)	(0.05)	(0.06)*	
	ΔGini	0.02	0.01	0.02	0.01	
		(0.04)	(0.06)	(0.06)	(0.05)	
	ΔGini × No own	−0.00	−0.00	0.00	−0.00	
		(0.04)	(0.03)	(0.03)	(0.05)	
Depression	ΔMean	−0.01	0.02	0.01	0.04	1474
		(0.05)	(0.06)	(0.05)	(0.06)	
	ΔMean × No own	−0.01	−0.02	−0.03	−0.03	
		(0.09)	(0.08)	(0.08)	(0.09)	
	ΔGini	0.01	−0.08	−0.05	−0.09	
		(0.04)	(0.07)	(0.07)	(0.07)	
	ΔGini × No own	0.03	0.04	0.05	0.10	
		(0.06)	(0.06)	(0.06)	(0.06)	
Stress	ΔMean	0.06	0.09	0.07	0.06	1474
		(0.06)	(0.06)	(0.07)	(0.06)	
	ΔMean × No own	−0.06	−0.05	−0.06	−0.07	
		(0.08)	(0.08)	(0.07)	(0.07)	
	ΔGini	0.04	−0.00	−0.00	−0.06	
		(0.04)	(0.05)	(0.06)	(0.06)	
	ΔGini × No own	−0.04	−0.06	−0.06	−0.05	
		(0.04)	(0.04)	(0.04)	(0.05)	
Cortisol	ΔMean	0.07	0.07	0.09	0.09	1456
		(0.04)*	(0.04)*	(0.04)**	(0.04)**	
	ΔMean × No own	−0.12	−0.13	−0.12	−0.11	
		(0.07)*	(0.07)*	(0.07)*	(0.08)	
	ΔGini	0.05	−0.01	−0.03	0.03	
		(0.04)	(0.04)	(0.04)	(0.04)	
	ΔGini × No own	−0.05	−0.03	−0.03	−0.03	
		(0.05)	(0.05)	(0.05)	(0.05)	
Index	ΔMean	−0.07	−0.09	−0.09	−0.08	1474
		(0.05)	(0.06)	(0.06)	(0.06)	
	ΔMean × No own	0.05	0.05	0.06	0.03	
		(0.09)	(0.09)	(0.09)	(0.09)	
	ΔGini	−0.03	0.02	0.03	0.07	
		(0.04)	(0.06)	(0.06)	(0.06)	
	ΔGini × No own	−0.00	0.00	0.00	−0.03	
		(0.05)	(0.05)	(0.05)	(0.06)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 3. Some RHS coefficients are omitted to save space. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Heterogenous Effects for Untreated Households: Consumption

		(1)	(2)	(3)	(4)	N
Food	ΔMean	−5.51	−5.11	−5.56	−2.80	1008
		(4.69)	(4.43)	(4.34)	(4.11)	
	ΔMean × No own	1.93	−0.44	−0.20	0.16	
		(5.81)	(5.94)	(5.97)	(6.76)	
	ΔGini	−3.79	−7.98	−9.99	−12.55	
		(3.58)	(4.04)*	(3.38)***	(5.81)**	
	ΔGini × No own	10.86	10.48	10.94	13.27	
		(3.63)***	(3.95)**	(4.03)***	(5.01)**	
Education	ΔMean	−0.43	−0.35	−0.04	0.44	1008
		(0.41)	(0.38)	(0.45)	(0.53)	
	ΔMean × No own	0.11	−0.46	−0.48	−0.36	
		(0.54)	(0.50)	(0.50)	(0.61)	
	ΔGini	−0.00	−0.35	−0.25	−0.09	
		(0.35)	(0.47)	(0.56)	(0.59)	
	ΔGini × No own	0.20	0.43	0.41	0.37	
		(0.36)	(0.34)	(0.35)	(0.49)	
Social	ΔMean	−0.59	−0.51	−0.38	−0.37	1008
		(0.48)	(0.45)	(0.48)	(0.55)	
	ΔMean × No own	0.56	0.33	0.35	0.33	
		(0.64)	(0.64)	(0.63)	(0.64)	
	ΔGini	−0.52	−0.37	−0.66	−1.07	
		(0.41)	(0.53)	(0.58)	(0.76)	
	ΔGini × No own	0.80	0.87	0.92	0.83	
		(0.47)*	(0.47)*	(0.46)*	(0.53)	
House	ΔMean	−1.56	−1.43	−1.54	−1.02	1008
		(1.47)	(1.52)	(1.33)	(1.37)	
	ΔMean × No own	1.41	1.01	0.79	1.05	
		(1.72)	(1.77)	(1.80)	(2.08)	
	ΔGini	0.58	0.05	−0.74	−1.21	
		(1.03)	(1.37)	(1.39)	(1.66)	
	ΔGini × No own	0.38	0.22	0.21	−0.42	
		(1.18)	(1.24)	(1.25)	(1.55)	
Total	ΔMean	−7.65	−6.95	−6.88	−1.82	1008
		(7.61)	(7.37)	(7.41)	(6.57)	
	ΔMean × No own	1.26	−2.29	−1.90	−1.61	
		(9.35)	(9.69)	(9.85)	(10.26)	
	ΔGini	−5.85	−11.17	−15.54	−18.82	
		(5.32)	(6.39)*	(5.12)***	(8.32)**	
	ΔGini × No own	20.10	19.12	19.68	23.43	
		(5.56)***	(6.04)***	(6.18)***	(7.75)***	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 3. Some RHS coefficients are omitted to save space. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A7: Heterogenous Effects for Households below Median Baseline Wealth: Psychological Well-being

		(1)	(2)	(3)	(4)	N
Happiness	ΔMean	0.01	0.00	0.04	0.01	1474
		(0.04)	(0.04)	(0.04)	(0.05)	
	ΔMean × Below median	−0.03	−0.03	−0.02	−0.01	
		(0.06)	(0.06)	(0.06)	(0.06)	
	ΔGini	−0.02	−0.03	0.01	0.09	
		(0.04)	(0.05)	(0.04)	(0.05)*	
	ΔGini × Below median	−0.00	−0.00	−0.01	−0.04	
		(0.05)	(0.05)	(0.05)	(0.06)	
Satisfaction	ΔMean	−0.08	−0.10	−0.12	−0.11	1474
		(0.06)	(0.05)*	(0.05)**	(0.05)**	
	ΔMean × Below median	−0.01	−0.01	−0.02	−0.01	
		(0.04)	(0.04)	(0.04)	(0.05)	
	ΔGini	0.03	0.03	0.04	0.02	
		(0.04)	(0.07)	(0.06)	(0.06)	
	ΔGini × Below median	−0.02	−0.03	−0.02	−0.02	
		(0.03)	(0.03)	(0.03)	(0.04)	
Depression	ΔMean	0.02	0.04	0.03	0.05	1474
		(0.06)	(0.06)	(0.06)	(0.06)	
	ΔMean × Below median	−0.06	−0.06	−0.06	−0.06	
		(0.06)	(0.06)	(0.06)	(0.07)	
	ΔGini	−0.00	−0.08	−0.06	−0.06	
		(0.05)	(0.07)	(0.07)	(0.07)	
	ΔGini × Below median	0.04	0.05	0.05	0.03	
		(0.05)	(0.05)	(0.05)	(0.05)	
Stress	ΔMean	0.09	0.11	0.09	0.07	1474
		(0.06)	(0.06)*	(0.06)	(0.06)	
	ΔMean × Below median	−0.11	−0.10	−0.10	−0.08	
		(0.06)*	(0.06)	(0.06)	(0.07)	
	ΔGini	−0.03	−0.10	−0.09	−0.15	
		(0.05)	(0.06)	(0.07)	(0.06)**	
	ΔGini × Below median	0.10	0.11	0.10	0.11	
		(0.06)*	(0.06)*	(0.06)*	(0.06)*	
Cortisol	ΔMean	−0.04	−0.04	−0.01	−0.02	1456
		(0.05)	(0.05)	(0.05)	(0.04)	
	ΔMean × Below median	0.09	0.08	0.08	0.09	
		(0.06)	(0.06)	(0.06)	(0.06)	
	ΔGini	0.05	−0.01	−0.01	0.05	
		(0.05)	(0.05)	(0.05)	(0.05)	
	ΔGini × Below median	−0.03	−0.02	−0.02	−0.01	
		(0.05)	(0.06)	(0.06)	(0.06)	
Index	ΔMean	−0.05	−0.08	−0.07	−0.07	1474
		(0.06)	(0.05)	(0.05)	(0.05)	
	ΔMean × Below median	0.02	0.02	0.02	0.01	
		(0.06)	(0.06)	(0.06)	(0.06)	
	ΔGini	0.00	0.07	0.07	0.10	
		(0.06)	(0.06)	(0.06)	(0.06)*	
	ΔGini × Below median	−0.06	−0.07	−0.06	−0.07	
		(0.06)	(0.06)	(0.06)	(0.05)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 3. Some RHS coefficients are omitted to save space. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Heterogenous Effects for Households below Median Baseline Wealth: Consumption

		(1)	(2)	(3)	(4)	N
Food	ΔMean	−4.05	−4.71	−5.06	−2.79	1008
		(5.58)	(5.27)	(5.60)	(5.58)	
	ΔMean × Below median	−1.26	−2.16	−2.36	−0.65	
		(6.35)	(6.61)	(6.73)	(6.76)	
	ΔGini	2.56	−1.44	−2.95	−6.40	
		(4.26)	(4.95)	(4.52)	(6.11)	
	ΔGini × Below median	−1.53	−1.93	−1.71	0.15	
		(4.99)	(4.95)	(4.99)	(5.02)	
Education	ΔMean	−0.72	−0.85	−0.55	−0.08	1008
		(0.46)	(0.43)*	(0.45)	(0.47)	
	ΔMean × Below median	0.67	0.53	0.54	0.74	
		(0.55)	(0.53)	(0.55)	(0.66)	
	ΔGini	0.35	0.11	0.22	0.39	
		(0.48)	(0.59)	(0.62)	(0.62)	
	ΔGini × Below median	−0.47	−0.49	−0.47	−0.62	
		(0.46)	(0.47)	(0.46)	(0.51)	
Social	ΔMean	−0.78	−0.78	−0.63	−0.83	1008
		(0.37)**	(0.38)**	(0.37)*	(0.51)	
	ΔMean × Below median	0.81	0.72	0.75	1.05	
		(0.54)	(0.54)	(0.55)	(0.59)*	
	ΔGini	−0.41	−0.15	−0.32	−0.67	
		(0.33)	(0.51)	(0.55)	(0.74)	
	ΔGini × Below median	0.66	0.61	0.58	0.47	
		(0.39)*	(0.39)	(0.39)	(0.47)	
House	ΔMean	−1.04	−1.06	−1.27	−1.05	1008
		(1.41)	(1.43)	(1.42)	(1.49)	
	ΔMean × Below median	0.37	0.15	0.13	1.04	
		(1.62)	(1.64)	(1.63)	(1.94)	
	ΔGini	1.18	0.56	−0.13	−0.80	
		(1.10)	(1.57)	(1.65)	(2.03)	
	ΔGini × Below median	−0.71	−0.49	−0.52	−0.87	
		(1.55)	(1.51)	(1.54)	(1.78)	
Total	ΔMean	−7.81	−8.69	−8.33	−5.41	1008
		(8.23)	(7.91)	(8.57)	(7.88)	
	ΔMean × Below median	1.14	−0.05	−0.30	4.61	
		(9.41)	(9.73)	(9.93)	(10.10)	
	ΔGini	6.41	0.98	−2.36	−6.23	
		(6.38)	(7.72)	(7.08)	(8.56)	
	ΔGini × Below median	−3.72	−3.98	−3.81	−1.90	
		(7.60)	(7.48)	(7.56)	(7.68)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 3. Some RHS coefficients are omitted to save space. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A.4 Alternate Measures of Village Mean Wealth

Table A9: Village Mean Change including Own Transfer: Psychological Well-being

		(1)	(2)	(3)	(4)	N
Happiness	ΔOwn	0.07	0.07	0.07	0.08	1474
		(0.02)***	(0.02)***	(0.02)***	(0.02)***	
	ΔMean	−0.00	−0.01	0.05	0.03	
		(0.04)	(0.04)	(0.04)	(0.04)	
	ΔGini	−0.02	−0.03	0.01	0.07	
		(0.03)	(0.04)	(0.03)	(0.03)**	
Satisfaction	ΔOwn	0.09	0.09	0.09	0.08	1474
		(0.02)***	(0.02)***	(0.02)***	(0.02)***	
	ΔMean	−0.09	−0.12	−0.15	−0.13	
		(0.05)*	(0.05)**	(0.05)***	(0.05)***	
	ΔGini	0.02	0.01	0.01	−0.00	
		(0.04)	(0.06)	(0.06)	(0.06)	
Depression	ΔOwn	−0.06	−0.06	−0.06	−0.07	1474
		(0.03)**	(0.02)**	(0.03)**	(0.03)***	
	ΔMean	−0.01	0.01	−0.00	0.02	
		(0.04)	(0.04)	(0.04)	(0.05)	
	ΔGini	0.02	−0.06	−0.04	−0.04	
		(0.03)	(0.06)	(0.06)	(0.06)	
Stress	ΔOwn	−0.13	−0.13	−0.14	−0.15	1474
		(0.03)***	(0.03)***	(0.03)***	(0.03)***	
	ΔMean	0.04	0.07	0.05	0.03	
		(0.05)	(0.05)	(0.05)	(0.05)	
	ΔGini	0.02	−0.03	−0.03	−0.08	
		(0.03)	(0.05)	(0.05)	(0.05)*	
Cortisol	ΔOwn	−0.02	−0.03	−0.03	−0.03	1456
		(0.03)	(0.03)	(0.03)	(0.02)	
	ΔMean	0.00	−0.01	0.02	0.01	
		(0.04)	(0.04)	(0.04)	(0.03)	
	ΔGini	0.03	−0.02	−0.03	0.04	
		(0.03)	(0.04)	(0.04)	(0.04)	
Index	ΔOwn	0.14	0.14	0.15	0.15	1474
		(0.02)***	(0.03)***	(0.02)***	(0.02)***	
	ΔMean	−0.05	−0.08	−0.06	−0.06	
		(0.05)	(0.05)	(0.04)	(0.05)	
	ΔGini	−0.03	0.03	0.04	0.06	
		(0.04)	(0.05)	(0.05)	(0.05)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A10: Village Mean Change including Own Transfer: Consumption

		(1)	(2)	(3)	(4)	N
Food	ΔOwn	8.71	8.76	8.70	7.78	1008
		(2.27)***	(2.24)***	(2.25)***	(2.52)***	
	ΔMean	−6.52	−7.67	−8.75	−6.80	
		(3.49)*	(3.28)**	(3.25)***	(3.39)**	
	ΔGini	1.93	−2.13	−3.64	−4.97	
		(2.50)	(3.53)	(3.17)	(4.89)	
Education	ΔOwn	0.65	0.62	0.62	0.58	1008
		(0.27)**	(0.24)**	(0.24)**	(0.28)**	
	ΔMean	−0.50	−0.73	−0.42	0.18	
		(0.31)	(0.29)**	(0.43)	(0.45)	
	ΔGini	0.11	−0.16	−0.05	0.15	
		(0.28)	(0.40)	(0.45)	(0.49)	
Social	ΔOwn	0.96	0.97	0.96	0.81	1008
		(0.27)***	(0.27)***	(0.27)***	(0.31)**	
	ΔMean	−0.55	−0.58	−0.46	−0.54	
		(0.26)**	(0.26)**	(0.30)	(0.44)	
	ΔGini	−0.04	0.20	0.00	−0.40	
		(0.25)	(0.44)	(0.50)	(0.71)	
House	ΔOwn	6.83	6.84	6.81	7.34	1008
		(0.89)***	(0.88)***	(0.89)***	(1.00)***	
	ΔMean	−0.67	−0.82	−1.04	0.09	
		(0.92)	(0.95)	(0.86)	(1.08)	
	ΔGini	0.75	0.17	−0.57	−1.41	
		(0.65)	(1.26)	(1.36)	(1.63)	
Total	ΔOwn	24.78	24.68	24.55	24.11	1008
		(3.72)***	(3.68)***	(3.72)***	(4.02)***	
	ΔMean	−9.87	−11.36	−12.04	−7.72	
		(5.13)*	(4.94)**	(5.36)**	(5.07)	
	ΔGini	4.55	−0.85	−4.37	−5.79	
		(3.68)	(5.66)	(5.12)	(6.95)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A11: Full Village Mean Change: Psychological Well-being

		(1)	(2)	(3)	(4)	N
Happiness	ΔOwn	0.07	0.07	0.07	0.08	1474
		(0.02)***	(0.02)***	(0.02)***	(0.02)***	
	ΔMean	0.04	0.07	0.10	0.02	
		(0.05)	(0.06)	(0.08)	(0.08)	
	ΔGini	−0.02	−0.03	0.02	0.08	
		(0.02)	(0.04)	(0.04)	(0.04)**	
Satisfaction	ΔOwn	0.08	0.07	0.08	0.07	1474
		(0.02)***	(0.02)***	(0.02)***	(0.02)***	
	ΔMean	−0.01	0.01	−0.22	−0.16	
		(0.09)	(0.08)	(0.09)**	(0.09)*	
	ΔGini	0.01	−0.01	−0.01	−0.02	
		(0.04)	(0.06)	(0.06)	(0.06)	
Depression	ΔOwn	−0.07	−0.06	−0.07	−0.07	1474
		(0.03)**	(0.02)**	(0.02)**	(0.02)***	
	ΔMean	0.09	0.06	0.06	0.13	
		(0.10)	(0.07)	(0.07)	(0.09)	
	ΔGini	0.01	−0.06	−0.03	−0.03	
		(0.03)	(0.06)	(0.06)	(0.06)	
Stress	ΔOwn	−0.12	−0.13	−0.13	−0.15	1474
		(0.03)***	(0.03)***	(0.03)***	(0.03)***	
	ΔMean	0.05	0.01	0.09	0.10	
		(0.10)	(0.09)	(0.06)	(0.08)	
	ΔGini	0.02	−0.02	−0.02	−0.07	
		(0.03)	(0.04)	(0.05)	(0.04)	
Cortisol	ΔOwn	−0.02	−0.03	−0.03	−0.03	1456
		(0.03)	(0.03)	(0.03)	(0.02)	
	ΔMean	0.02	0.01	0.06	−0.02	
		(0.06)	(0.05)	(0.06)	(0.05)	
	ΔGini	0.03	−0.02	−0.02	0.04	
		(0.03)	(0.04)	(0.04)	(0.04)	
Index	ΔOwn	0.14	0.13	0.14	0.15	1474
		(0.03)***	(0.03)***	(0.02)***	(0.02)***	
	ΔMean	−0.05	−0.01	−0.13	−0.14	
		(0.08)	(0.05)	(0.08)	(0.09)	
	ΔGini	−0.03	0.01	0.02	0.04	
		(0.04)	(0.04)	(0.05)	(0.05)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A12: Full Village Mean Change: Consumption

		(1)	(2)	(3)	(4)	N
Food	ΔOwn	7.90	7.85	8.17	7.26	1008
		(2.24)***	(2.20)***	(2.21)***	(2.52)***	
	ΔMean	1.80	0.91	−8.40	3.07	
		(11.52)	(9.13)	(6.23)	(7.39)	
	ΔGini	0.73	−3.57	−4.64	−5.29	
		(2.62)	(3.51)	(3.20)	(4.84)	
Education	ΔOwn	0.60	0.55	0.58	0.57	1008
		(0.27)**	(0.25)**	(0.25)**	(0.27)**	
	ΔMean	−0.62	−0.55	0.36	0.85	
		(0.58)	(0.53)	(0.67)	(0.84)	
	ΔGini	0.09	−0.31	−0.02	0.23	
		(0.30)	(0.39)	(0.47)	(0.52)	
Social	ΔOwn	0.88	0.89	0.94	0.77	1008
		(0.27)***	(0.27)***	(0.27)***	(0.31)**	
	ΔMean	0.54	0.56	−0.56	−0.03	
		(0.71)	(0.68)	(0.54)	(0.88)	
	ΔGini	−0.18	0.10	−0.06	−0.44	
		(0.26)	(0.43)	(0.52)	(0.72)	
House	ΔOwn	6.80	6.80	6.79	7.37	1008
		(0.88)***	(0.86)***	(0.89)***	(1.00)***	
	ΔMean	−2.09	−2.19	−3.40	−1.87	
		(1.49)	(1.38)	(1.61)**	(2.26)	
	ΔGini	0.84	−0.03	−0.93	−1.55	
		(0.62)	(1.23)	(1.41)	(1.67)	
Total	ΔOwn	23.56	23.31	23.82	23.46	1008
		(3.66)***	(3.61)***	(3.65)***	(3.98)***	
	ΔMean	2.55	1.74	−11.31	6.74	
		(15.59)	(13.09)	(8.74)	(10.78)	
	ΔGini	2.75	−2.97	−5.72	−5.90	
		(4.07)	(5.61)	(5.13)	(6.87)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A13: Mean Change based on Percent Large Transfer: Psychological Well-being

		(1)	(2)	(3)	(4)	N
Happiness	ΔOwn	0.07	0.07	0.07	0.08	1474
		(0.02)***	(0.02)***	(0.02)***	(0.02)***	
	ΔMean	−0.01	−0.01	0.05	0.01	
		(0.05)	(0.05)	(0.05)	(0.05)	
	ΔGini	−0.02	−0.03	0.00	0.07	
		(0.03)	(0.04)	(0.03)	(0.04)**	
Satisfaction	ΔOwn	0.09	0.09	0.09	0.08	1474
		(0.02)***	(0.02)***	(0.02)***	(0.02)***	
	ΔMean	−0.11	−0.14	−0.20	−0.17	
		(0.06)*	(0.05)**	(0.05)***	(0.05)***	
	ΔGini	0.03	0.02	0.05	0.03	
		(0.04)	(0.06)	(0.06)	(0.05)	
Depression	ΔOwn	−0.06	−0.06	−0.07	−0.07	1474
		(0.03)**	(0.02)**	(0.03)**	(0.03)***	
	ΔMean	0.01	0.04	0.03	0.04	
		(0.05)	(0.04)	(0.05)	(0.06)	
	ΔGini	0.02	−0.07	−0.04	−0.05	
		(0.03)	(0.06)	(0.06)	(0.06)	
Stress	ΔOwn	−0.13	−0.13	−0.14	−0.15	1474
		(0.03)***	(0.03)***	(0.03)***	(0.03)***	
	ΔMean	0.04	0.09	0.08	0.05	
		(0.05)	(0.05)*	(0.06)	(0.06)	
	ΔGini	0.02	−0.04	−0.05	−0.09	
		(0.03)	(0.05)	(0.05)	(0.05)*	
Cortisol	ΔOwn	−0.02	−0.02	−0.03	−0.02	1456
		(0.03)	(0.03)	(0.03)	(0.02)	
	ΔMean	−0.03	−0.04	−0.02	−0.02	
		(0.05)	(0.04)	(0.04)	(0.04)	
	ΔGini	0.04	−0.01	−0.02	0.05	
		(0.03)	(0.04)	(0.04)	(0.04)	
Index	ΔOwn	0.14	0.14	0.15	0.16	1474
		(0.02)***	(0.03)***	(0.03)***	(0.02)***	
	ΔMean	−0.06	−0.09	−0.10	−0.09	
		(0.05)	(0.05)*	(0.05)**	(0.06)	
	ΔGini	−0.02	0.04	0.05	0.07	
		(0.04)	(0.05)	(0.05)	(0.05)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A14: Mean Change based on Percent Large Transfer: Consumption

		(1)	(2)	(3)	(4)	N
Food	ΔOwn	8.44	8.57	8.74	7.76	1008
		(2.23)***	(2.23)***	(2.24)***	(2.53)***	
	ΔMean	−4.95	−6.99	−10.43	−6.94	
		(3.95)	(3.66)*	(3.79)***	(4.35)	
	ΔGini	1.84	−1.47	−1.89	−4.01	
		(2.63)	(3.65)	(3.18)	(5.11)	
Education	ΔOwn	0.63	0.61	0.61	0.57	1008
		(0.27)**	(0.24)**	(0.25)**	(0.28)**	
	ΔMean	−0.40	−0.75	−0.43	0.28	
		(0.40)	(0.35)**	(0.52)	(0.56)	
	ΔGini	0.11	−0.07	0.02	0.10	
		(0.27)	(0.40)	(0.42)	(0.47)	
Social	ΔOwn	0.94	0.97	0.97	0.81	1008
		(0.27)***	(0.27)***	(0.27)***	(0.31)**	
	ΔMean	−0.50	−0.64	−0.57	−0.64	
		(0.33)	(0.33)*	(0.41)	(0.57)	
	ΔGini	−0.04	0.29	0.10	−0.30	
		(0.25)	(0.45)	(0.50)	(0.72)	
House	ΔOwn	6.87	6.88	6.85	7.34	1008
		(0.89)***	(0.88)***	(0.89)***	(1.00)***	
	ΔMean	−1.25	−1.31	−1.66	0.01	
		(1.05)	(1.12)	(1.05)	(1.32)	
	ΔGini	0.88	0.41	−0.28	−1.40	
		(0.67)	(1.31)	(1.39)	(1.67)	
Total	ΔOwn	24.48	24.53	24.65	24.09	1008
		(3.68)***	(3.68)***	(3.71)***	(4.03)***	
	ΔMean	−8.69	−11.63	−15.07	−7.90	
		(5.98)	(5.45)**	(6.11)**	(6.43)	
	ΔGini	4.64	0.51	−1.83	−4.69	
		(3.79)	(5.68)	(5.09)	(7.22)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

A.5 Alternate Measures of Village Inequality

Table A15: Inequality measured with Coefficient of Variation: Psychological Well-being

		(1)	(2)	(3)	(4)	N
Happiness	ΔOwn	0.07	0.07	0.08	0.09	1474
		(0.02)***	(0.02)***	(0.02)***	(0.03)***	
	ΔMean	−0.01	−0.01	0.03	0.02	
		(0.04)	(0.03)	(0.04)	(0.04)	
	ΔCoV	−0.02	−0.03	0.01	0.06	
		(0.03)	(0.05)	(0.05)	(0.05)	
Satisfaction	ΔOwn	0.07	0.06	0.05	0.05	1474
		(0.02)***	(0.02)**	(0.02)**	(0.02)*	
	ΔMean	−0.08	−0.10	−0.12	−0.11	
		(0.05)	(0.04)**	(0.04)***	(0.04)**	
	ΔCoV	0.04	0.07	0.07	0.09	
		(0.04)	(0.08)	(0.06)	(0.07)	
Depression	ΔOwn	−0.07	−0.06	−0.06	−0.06	1474
		(0.03)**	(0.03)**	(0.03)**	(0.03)**	
	ΔMean	−0.01	0.00	−0.00	0.02	
		(0.04)	(0.04)	(0.04)	(0.04)	
	ΔCoV	0.03	−0.08	−0.08	−0.12	
		(0.04)	(0.08)	(0.09)	(0.09)	
Stress	ΔOwn	−0.12	−0.11	−0.12	−0.14	1474
		(0.03)***	(0.03)***	(0.03)***	(0.03)***	
	ΔMean	0.04	0.06	0.04	0.02	
		(0.04)	(0.05)	(0.05)	(0.04)	
	ΔCoV	0.03	−0.03	−0.02	−0.11	
		(0.04)	(0.06)	(0.07)	(0.06)	
Cortisol	ΔOwn	−0.02	−0.03	−0.02	−0.02	1456
		(0.03)	(0.03)	(0.03)	(0.02)	
	ΔMean	0.01	−0.00	0.02	0.03	
		(0.04)	(0.03)	(0.03)	(0.03)	
	ΔCoV	0.03	−0.06	−0.07	0.00	
		(0.04)	(0.05)	(0.05)	(0.05)	
Index	ΔOwn	0.13	0.12	0.13	0.14	1474
		(0.03)***	(0.03)***	(0.02)***	(0.02)***	
	ΔMean	−0.05	−0.07	−0.06	−0.06	
		(0.05)	(0.04)*	(0.04)	(0.04)	
	ΔCoV	−0.02	0.07	0.08	0.14	
		(0.04)	(0.06)	(0.07)	(0.08)*	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

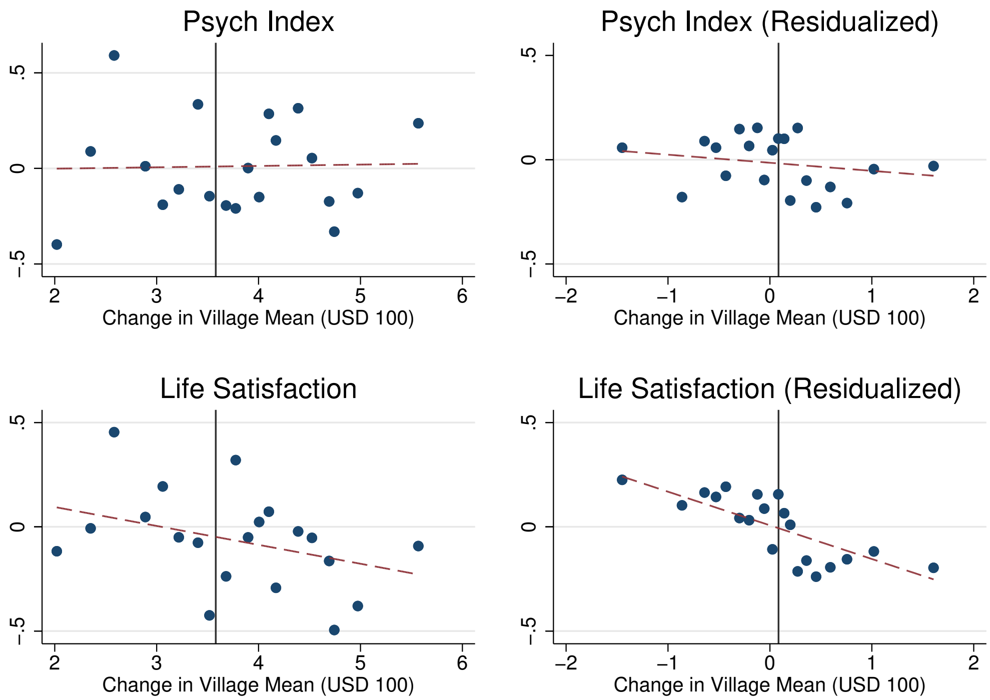
Table A16: Inequality measured with Coefficient of Variation: Consumption

		(1)	(2)	(3)	(4)	N
Food	ΔOwn	7.17	6.94	6.91	6.62	1008
		(2.28)***	(2.21)***	(2.22)***	(2.58)**	
	ΔMean	−4.67	−6.10	−6.12	−4.11	
		(3.45)	(3.27)*	(3.47)*	(3.48)	
	ΔCoV	2.37	−2.37	0.90	−4.68	
		(2.66)	(4.60)	(4.88)	(6.72)	
Education	ΔOwn	0.53	0.44	0.53	0.64	1008
		(0.28)*	(0.25)*	(0.27)*	(0.29)**	
	ΔMean	−0.36	−0.60	−0.27	0.26	
		(0.28)	(0.26)**	(0.39)	(0.40)	
	ΔCoV	0.05	−0.40	0.19	0.40	
		(0.29)	(0.55)	(0.64)	(0.73)	
Social	ΔOwn	0.83	0.84	0.87	0.70	1008
		(0.28)***	(0.27)***	(0.28)***	(0.33)**	
	ΔMean	−0.39	−0.40	−0.27	−0.40	
		(0.26)	(0.26)	(0.30)	(0.42)	
	ΔCoV	−0.14	0.10	−0.02	−0.60	
		(0.25)	(0.46)	(0.53)	(0.79)	
House	ΔOwn	6.61	6.59	6.50	7.23	1008
		(0.88)***	(0.87)***	(0.93)***	(1.01)***	
	ΔMean	−0.79	−0.94	−1.22	−0.75	
		(0.83)	(0.88)	(0.97)	(1.07)	
	ΔCoV	1.08	0.98	0.28	−0.97	
		(0.66)	(1.59)	(1.84)	(2.31)	
Total	ΔOwn	22.41	21.97	22.13	22.85	1008
		(3.61)***	(3.56)***	(3.67)***	(4.02)***	
	ΔMean	−7.05	−8.84	−8.25	−4.42	
		(5.04)	(4.84)*	(5.47)	(4.81)	
	ΔCoV	5.98	1.70	3.09	−4.48	
		(4.02)	(7.28)	(7.51)	(9.47)	
Controls			Yes	Yes	Yes	
Sublocation FEs				Yes	Yes	
Survey Date FEs					Yes	

Note: Each panel is a set of OLS regressions with the indicated LHS variable using the specification in equation 2. Each column is a separate regression with the controls indicated at the bottom. The unit of observation is the individual for psychological well-being, and the household for all other variables. Standard errors are clustered at the village level. * p < 0.1, ** p < 0.05, *** p < 0.01.

A.6 Relationship to Spillover Analysis in Haushofer and Shapiro (2016)

Figure A1: Plots of Spillover Household Psychological Well-being and Village Mean Change



Note: Bin scatterplots plotting the psychological well-being of individuals in spillover households against changes in village mean wealth. The vertical lines represent the cross-village average of changes in mean wealth and its residualized counterpart.

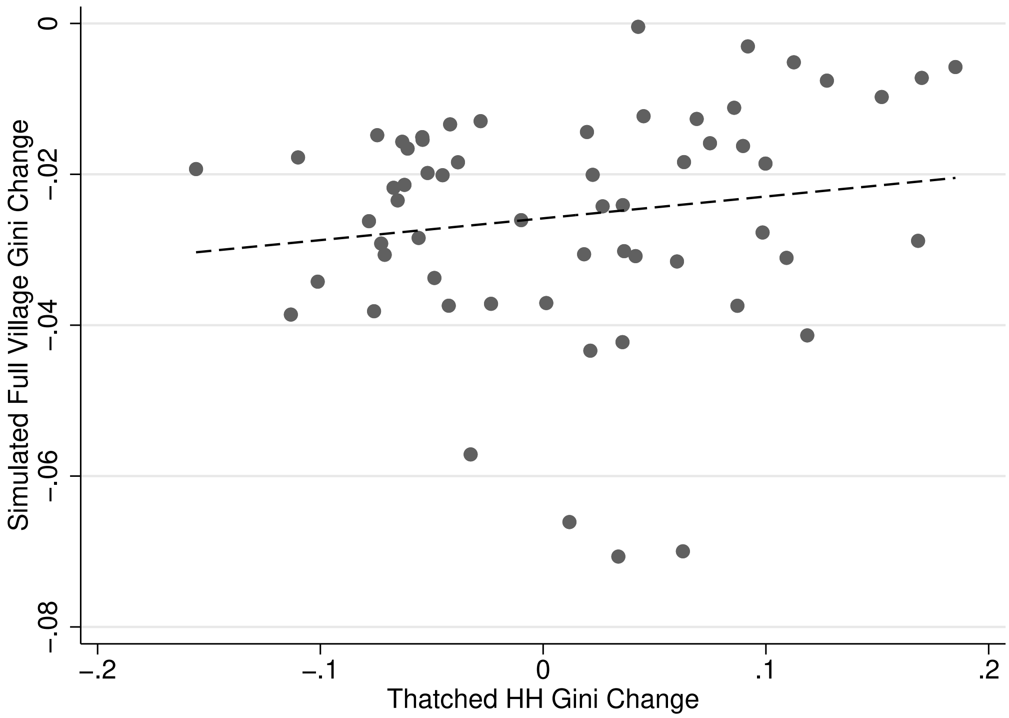
A.7 Full Village Gini Coefficient Simulations

In this section, we present a simulation exercise to approximate the relationship between the change in the Gini coefficient calculated from thatched roof households and that calculated from all village households. Although the majority of households with metal roofs (those ineligible for transfers) were not surveyed, we did randomly select two from each village to survey at baseline. We use the data collected from these households in the simulation as follows:

1. For each village, calculate the number of households not surveyed as the difference between the census estimate of total households in the village and the number of households included in the study. Denote this value M_v.
2. For each village, randomly draw M_v observations with replacement from the sample of all metal roof households surveyed at baseline (regardless of village).
3. Estimate the baseline Gini coefficient using the baseline assets of the combination of this bootstrap sample and the thatched household sample in the village.
4. Estimate the Gini coefficient after transfers by adding the treatment amount to the baseline assets of the thatched household sample and recalculating the Gini coefficient over the combination of bootstrap sample and thatched household sample.
5. Calculate the difference between the estimated Gini after transfers and the estimated baseline Gini.

For each village, we repeat this calculation 1000 times and take the average over all estimates of the change in the Gini coefficient. In Figure A2, we plot the simulated change in Gini against the change calculated among thatched roof households for each village.

Figure A2: Plots of Thatched Household Gini Change against Simulated value of Full Village Gini Change



Note: Each observation is one village. The x-axis is the change in Gini coefficient calculated using the method described in 2.5. The y-axis is the simulated change in the full village Gini coefficient calculated as described above.