High Frequency Engel and Supply Curves in General Equilibrium: Experimental Evidence from Large Universal Cash Transfers in Malawi[1]

Dennis Egger, Philipp Kastrau, Bilal Siddiqi, Daniel Stein

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Summary: This document outlines outcomes and regression specifications for estimating the high-frequency reduced-form expenditure, price and market activity effects of a universal cash transfer of USD 416 (MWK 701,000) to every adult in the Khongoni Traditional Authority (TA) in Malawi. The rollout of around USD 35 million in cash transfers by the NGO *GiveDirectly* is randomized across 34 Group Village Headman clusters (GVHs), an administrative unit corresponding approximately to a market catchment area, and will reach around 70,000 individuals over the course of 12 months. In this document, we specify the regression equations and primary outcomes that we intend to study. We anticipate conducting analyses beyond those pre-specified here, and this document is not meant to preclude additional analyses.

Appendix A.1: List of products for price data
Appendix A.2: Power calculations for market prices
Appendix A.3: Expenditure survey instrument
Appendix A.4: Price survey instrument
Appendix A.5: Market seller survey instrument
Appendix A.6: GD census survey instrument for 'research sample'

1. Background and experimental design

This document outlines the analysis plan for the high-frequency short- and medium-run impacts of universal cash transfers rolled out to every adult individual in the Khongoni District in Malawi by the NGO *GiveDirectly* (GD). The Khongoni TAin Malawi is divided into 34 Group Village Headman (GVH) administrative units (see map below). Each GVH has an average of 9 villages (ranging between 1 and 17), and an average population of around 2,000 adults, or approximately 800 households on average. Prior to the start of this project (September 2023), GD had worked in 9 GVHs already. These 9 GVHs were chosen based on their relative poverty – with GD starting transfers in the poorest GVHs first (see distribution of transfer dates below). The order of the remaining 25 GVHs (which we will call the experimental GVHs) was then determined randomly by the research team, and GD would thereafter (starting from September 2023) follow this randomized order. The exact timing for when each GVH will be enrolled and receive transfers depends on the speed at which operations (listing and enrolment) will proceed in practice, though it is anticipated that all 25 GVHs will be reached within 8-12 months.

The process for enrolling beneficiaries is as follows:

Stage	Description
Pre Census + Baraza	GiveDirectly reaches out to the village chief to introduce the program. They conduct a visit and create a village list to estimate population GD then hosts a baraza (full village meeting) to announce the program
Census[2]	1st visit to households within the target geography (e.g. village or group of villages) to collect basic demographic information from households. ● Recipients are informed of the transfer amount and transfer schedule. ● Phones are distributed to recipients who do not have them. ● SIM cards are distributed to those who do not have them or prefer to have their mobile money on a new sim. ● 15% of households are selected for a baseline survey – the 'research sample'.
National ID Drives	GD has partnered with the National Registration Bureau (NRB) to run ID drives in parallel with the enrollment process. During these drives, NRB representatives bring their mobile enrollment kit to register individuals with national IDs if they don't have them. They collect biodata (photos and fingerprints) as well as name, birthdate, and family information.
Registration	SIM cards are linked to national ID numbers and recipients self-enrol via USSD in the program. Recipients are provided with brochures and information to facilitate the self-enrolment process during SIM registration events. Staff conduct in-person support during and following registration events for individuals who struggle to self-enrol.
Pre Pay Audit	The household/recipients are audited to detect any safeguarding/fraud-related issues. This only applies to 10% of the eligible households.
Case management[3]	Clear any cases blocking recipients from advancing to **'pay ready stage'** e.g difference between the collected account number provided by the recipients and the account number that popped up during name verification.

[2] GD issues phones to recipients at this stage > ~80% of them sign up for GD issued phones.
[3] <1% of recipients have blocking cases in any given month

	Blockers to move to "stage pay" include: - No ID ("pending identity verification") - Unsuccessful SIM registration - Pending audit - an audit flag has not been resolved
Payment 1	First tranche of payments ($50)
Follow Up	Validate cash receipt and monitor resulting risks
Payment 2	Second tranche of payments: $500 (typically 2 months after payment 1) (At this stage, the costs of the mobile phone are deducted for those who opted to receive a phone)

The transfer is universal, and large – both for individual households as well as relative to the economy overall. At baseline, households had on average 2.1 eligible adults, and reported a monthly consumption value (including both expenditure and home production) of 73 USD, 65% W2 (47 USD) of which are purchased at local markets. Since the transfer is universal, this implies that overall transfers represent 132% of local consumption (a proxy for local GDP), and 205% of total annual cash expenditures.

Figure 1 contains a map of the study area. The left panel shows Malawi's Central Region, including TA Khongoni as well as official markets that make up the control group for the estimation of area-wide impacts described in section 3.2.2. The right panel has a detailed view of TA Khongoni, including both official and unofficial markets in Khongoni and the 34 GVHs in Khongoni colour-coded by their position in the randomized order in which cash transfers are rolled out.

Figure 1: Study Area and Experimental Design
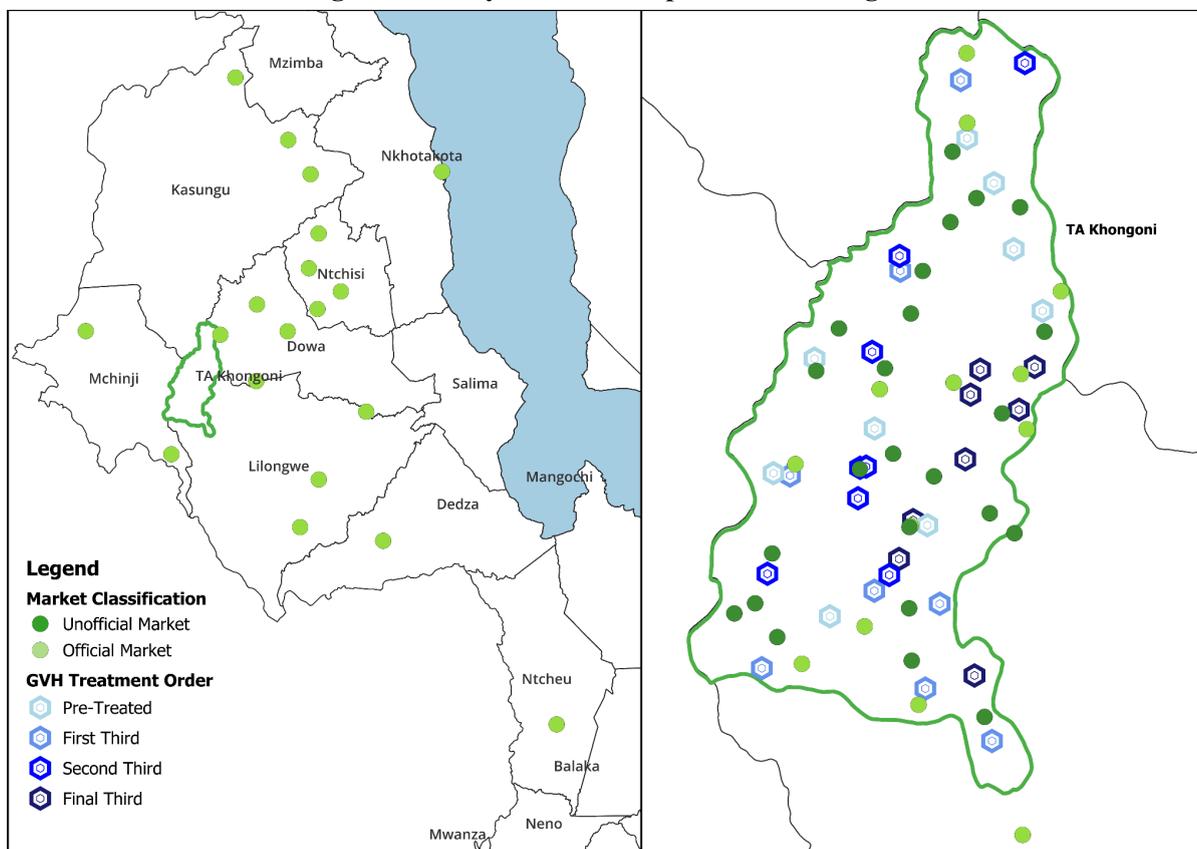
2. Data

We will collect monthly high-frequency data on expenditure and consumption (including shopping patterns) from a representative 100 eligible households in each GVH, and 2500 households overall. All households are eligible, since eligibility is universal. We will also collect data on market seller activity (revenues, profits, and input purchases) and market prices in all weekly markets within the study area, and a matched sample of markets outside the study area.

2.1. Expenditure Data

We collect basic demographic and socio-economic variables at baseline during GDs census activity when households are first enrolled into the program. During the GD census, 15% of households are randomly sampled to be included in the GD 'research sample'. These households receive an additional in-person survey module during the census, collecting basic demographics and socio-economic variables (see Appendix A.6). The same households will be targeted for two similar in-person endline surveys approximately 3 and 12 months after they receive the payment 2 transfer.
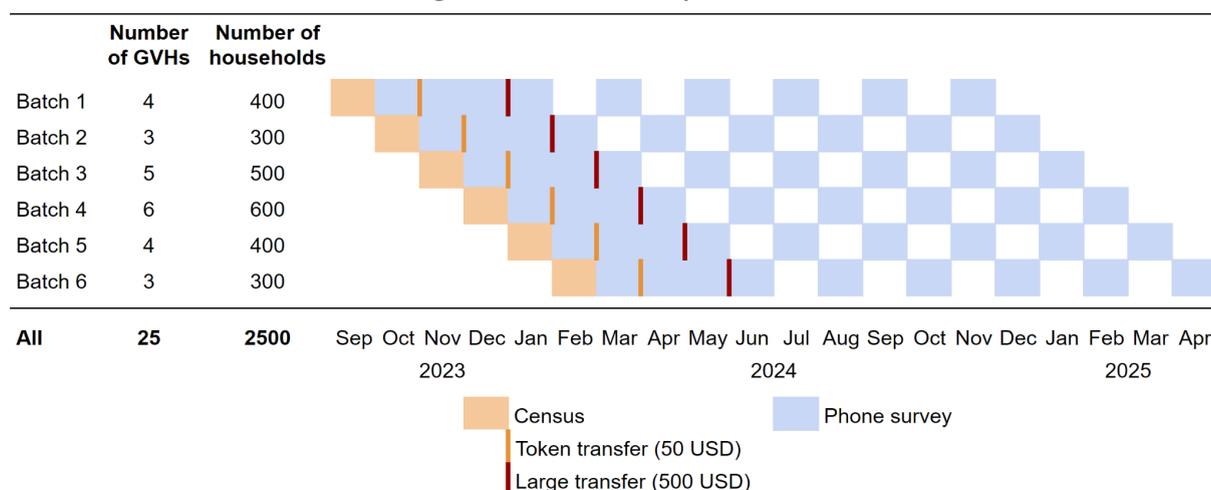
Thereafter, we collect high-frequency expenditure and consumption data, including from home production, as well as data on the geographic location of purchases, and inflation perception before, during, and up to 12 months after transfers roll out (see Figure 2).

Sampling: GVHs that are censused in the same month form one 'batch'. Within each of these batches, we sample an average of 100 households per GVH with the actual sample size proportional to the number of households in each GVH. Within each GVH, sampling is stratified by village, and the village-level sample size is again proportional to the size of the village. This yields a representative sample stratified at the village level. The 'research sample' is prioritised in this procedure in order to make optimal use of the baseline and endline data.

Each sample household is then contacted (see Figure 2):
 a) Once after the census, and before the token transfer (baseline)
 b) Monthly (twice) between the token transfer and the large transfer
 c) Once every two months, up to 12 months after the large transfer

Figure 2: Phone survey timeline

	Number of GVHs	Number of households
Batch 1	4	400
Batch 2	3	300
Batch 3	5	500
Batch 4	6	600
Batch 5	4	400
Batch 6	3	300
All	**25**	**2500**

Legend: Census — Phone survey — Token transfer (50 USD) — Large transfer (500 USD)

Protocol: We will attempt to contact each household at least 8 times, at least twice during different times of the day (morning, lunchtime, afternoon, evening), using phone numbers of all household

members, as well as additional phone numbers collected at the end of each successful survey. If we cannot reach a household, we replace it with a randomly chosen household from the same village. The sample remains constant over time.

Target respondent: Target respondents within each household are chosen among male and female household heads in each household as captured during the census. When there are both male and female household heads within a household, we randomly select between them in order to test for differences in expenditure reporting by gender.

2.2.   Price Data

We have been collecting bi-monthly (twice per month) market price data starting in October 2023 and will continue until all planned cash transfers in Khongoni are completed (currently anticipated in May 2024). After all cash transfers are completed, we will continue to collect monthly market price data for another six months (currently anticipated until November 2024). We collect price data from 13 official markets in Khongoni, 24 unofficial markets in Khongoni, and 19 official markets outside Khongoni.[4] In each market, we collect prices for up to 82 common and fairly homogeneous items. For each item and market, an enumerator must find two sellers who are selling the item and record the prices they quote. Enumerators are instructed to source items from pre-specified brands (if applicable) and in pre-specified units of measurement.[5] See Appendix A.4 for the detailed instrument.

2.3.   Market activity / seller data

We will commence collecting data on market activity and specific sellers in January 2024. In each of the 56 markets in which we collect price data, we will conduct a census counting all sellers in the market on the main market day and record what type of items each seller is selling (see appendix A.1 for an overview of groups of items we record). Enumerators will conduct the census during peak hours in each market to ensure that we measure the maximum number of sellers who operate in each market on the day of data collection. After the census, enumerators will conduct a random walk through the market and interview 20 sellers. Enumerators will start from a predetermined landmark in each market and interview each $(20/n)^{th}$ seller where n is the total number of sellers found in the census of each market. Enumerators will record the route they took during their random walk the first time they conduct a census in each market and the same route will be followed during subsequent censuses. The questionnaire enumerators will administer to sellers is attached in Appendix A.5. We currently plan to conduct the census and seller survey on a monthly basis for six months starting in January 2024, but may increase the frequency or duration of data collection pending funding decisions for this research component.

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[4] Both Khongoni and the 19 official markets outside Khongoni are located in Malawi's Central Region, see Figure 1. In the initial baseline data collection round, we collected prices from 41 markets outside Khongoni. Of the 19 official markets outside Khongoni, two markets are fairly close to the border of Khongoni. Based on information from the field team, we currently expect that one of these two markets is frequented by Khongoni residents whereas the other one is not. The ultimate determination of the treatment status of these two markets will depend on empirical data on the baseline shopping pattern of Khongoni residents as measured in the expenditure survey. The markets outside Khongoni we have continued to collect market price data from have been selected using a matching algorithm. More details about the matching algorithm can be found in section 3.

[5] If an item is only available from another brand or in another unit of measurement, enumerators still collect the price of the item and indicate the available brand or unit of measurement.

2.4. Analysis and data examined to date

As we submit this pre-analysis plan, we have collected three rounds of both expenditure data and price data. While some team members have looked at overall summary statistics to ensure data quality throughout the data collection process, no treatment indicators have been merged to the data, nor have any data been analysed in relation to treatment.

3. Empirical Strategy

3.1. Effects on household outcomes

In our primary specification, we will estimate impacts on household outcomes (primarily consumption, expenditure, labour supply, and inflation perceptions) using a two-way-fixed-effects estimator.

$$c_{igt} = \alpha_i + \delta_t + \sum_{l=-1}^{13} \beta_l 1[t = t^0_g + l] + \varepsilon_{igt} \qquad (1)$$

where c_{igt} is the consumption (or other outcome) of household i from GVH g at time t, and t^0_g is the month in which households in GVH g received their first (token) transfer. $1[t = t_0 + l]$ is then an indicator for consumption l months after the first (token) transfer. (We omit the period one month before this transfer as the 'baseline' category.) In primary analyses, we will use this experimental timing for all households in the GVH, even those whose transfers were delayed to avoid issues of biased delays. In secondary analyses, we may use the actual treatment date as well. Our parameters of interest are β_l which trace out the full consumption IRF. We will calculate IRFs at the monthly, bi-monthly, and quarterly levels, and will also pool all periods into an overall average treatment effect.

We will cluster standard errors here (and everywhere below) at the GVH-by-market level – the level of treatment variation. Because we may have small numbers of clusters, we will also report wild bootstrap standard errors (Cameron et al 2008), and we will report exact p-values (see below).

As several papers have pointed out recently, estimates two-way fixed effects estimators (TWFE) can be biased when treatment timing is heterogeneous as in our study.[6] Yet, there is also emerging research showing that this bias may not be an issue in design-based specifications like ours (Borusyak & Hull 2024). We will follow the emerging and fast-changing consensus in the literature generally. Currently, this would imply that we will therefore also test the robustness of the two-way fixed effects estimator by using an estimator that allows for heterogeneous treatment timing with a continuous treatment variable such as the ones proposed in Callaway, Goodman-Bacon, and Sant'Anna (2021), de Chaisemartin & d'Haultfoeuille (2023), or de Chaisemartin et al. (2023). Note: For our household surveys (but not for our price surveys), the panel is unbalanced, and we only have one baseline (pre-transfer) period for each household. Moreover, as all GVHs will be treated at some point, estimators relying on comparisons only with untreated (or later treated) observations are not feasible. In our setting, however, randomization of treatment order overcomes some of the issues with the

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[6] See the recent review in Roth et al. (2023) for an overview of the recent literature on estimating treatment effects when treatment timing is heterogenous.

TWFE, as the average dynamic treatment effects in each period for each cohort of GVHs will be the same in expectation. We will therefore also be able to use earlier-treated GVHs as valid comparisons.[7]

Since this literature is rapidly evolving and has not yet settled on the best estimator for settings as ours, the ultimate choice of the estimator will be guided by the latest developments in the literature at the time of analysis. Should the estimates from the two-way fixed effects estimator and the robust estimator differ, the latter will take precedent and be the primary estimates we report. These considerations apply also to specifications below, in particular in sections 3.1.2, and 3.2.

3.1.1. Testing for reporting differences by respondent gender

Our consumption module – as is standard – asks for consumption and expenditure of the household as a whole. Thus, it should not depend on the identity of the respondent within a household. In households where there are both primary males, and primary females present, we randomly selected the target respondent. In a contribution to the consumption measurement literature, we will test causally whether responses for *household* expenditure vary systematically by respondent gender using the following ITT specification:

$$c_{igt} = \alpha_{gt} + \gamma female_i + \varepsilon_{igt} \qquad (2)$$

where we use the gender of the assigned target respondent (rather than the actual gender), and only include households that have both primary males and females. We will test this for all household level outcomes, but in particular for consumption and expenditures, and investigate whether responses may differ by type of product. Our parameter of interest is γ which tests for differences in reporting by gender.

We will also test whether estimated treatment effects (rather than overall levels of consumption) vary by respondent gender, focusing on the same restricted set of households:

$$c_{igt} = \alpha_i + \delta_t + \sum_{\_l=-1}^{13} \beta_l 1[t = t^0_g + l] + \sum_{\_l=-1}^{13} \gamma_l 1[t = t^0_g + l] * female_i + \varepsilon_{igt} \qquad (3)$$

Our parameters of interest are γ_l which test for differences reporting by respondent gender along the entire IRF.

3.1.2. Expenditure switching

We are interested in understanding whether households change their spending geographically after receiving transfers. As a first way to answer this question, we will estimate equation (1) for different product categories, and different product locations (within GVH, within Khongoni, outside Khongoni) as further specified in Section 4. We will also look at spending by product.

Another key question is whether households' shopping patterns respond in general equilibrium, to the potential inflation stemming from cash transfers. To investigate this in reduced-form, we will run:

$$s_{igmt} = \alpha_i + \delta_{gt} + \sum_{\_l} \beta_l Amt_{m,t-l} + \varepsilon_{igmt} \qquad (4)$$

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[7] Intuitively, we can directly estimate average treatment effects up to 5 months by comparing observations to baseline GVHs that have not yet been treated. Since treatment is randomized, these treatment effects are representative of average treatment effects across all GVHs. Now, for example, to get the 11 month ahead treatment effects, we compare GVHs treated 11 months to those treated 5 months ago (net of month fixed effects), and add the ATE up to 5 months. This yields a consistent estimator.

where s_{igmt} is the share of expenditure that household i from GVH g spends at market m in month t. $Amt_{m,t-l}$ is the per-capita transfer amount going into the catchment area of market m, in month t-l (further specified in section 3.2.1). Our parameters of interest are β_l – conditional on the GVH-by-month fixed effects δ_{gt} (within which all households were treated equally long ago – they measure whether households switch expenditure away from markets which – by chance – were more exposed to treatment.

Should we find substantial inflationary, expenditure switching, or other GE effects, these reduced-form regressions may only serve as the starting point for the experimental/causal estimation of a fully fledged spatial general equilibrium model. If we do go down this route in the future, we envisage also estimating model-consistent versions of the above regressions, pinning down key parameters of these models. Our approach to this will be guided by Borusyak & Hull (2022, 2023), or developments in this literature after filing of this PAP.

3.2.   Effects on market prices and market activity

3.2.1.   Main analysis

In our main specification we focus on all Khongoni markets as well as official markets outside Khongoni which we matched to the official Khongoni markets from a larger set of outside markets using five different baseline variables (see section 3.4 for more details on the matching algorithm). We will estimate the following two-way fixed effects model:

$$y_{mt} = \alpha_m + \delta_t + \sum_l \beta_l Amt_{m,t-l} + \varepsilon_{mt} \qquad (5)$$

where y_{mt} is the price index or market activity measure in market m at time t, and Amt_{t-l} is the amount of money transferred per capita into the market catchment area of market m at time t - l. Our primary measure of $Amt_{m,t-l}$ will use baseline expenditure data from each village to map total expenditure from each village at each market. The market-level per capita-amount transferred is then defined as the baseline expenditure-weighted per-capita amount going to each village. To get the weights, and magnitude of the overall variation in treatment right, we will also need information on how much money people from Khongoni GVHs not part of our study (which do not receive money) spend at each market.

We will use two complementary approaches for this: For the 9 GVHs in Khongoni, which are not part of the random rollout, we collect expenditure data at endline (the last month in which we collect any data). Second, we use the total revenue at each market from our market seller survey, which encompasses both spending from households in Khongoni as well as those outside, to rescale the overall size market catchment area. To illustrate: if market A has 100% more revenue than market B, but only 50% higher expenditure from within Khongoni, then another 50% of extra expenditure must come from the (untreated) villages outside Khongoni. As a secondary strategy, we will follow the methodology in Egger et al. (2019), which defines treatment amounts in terms of 2km buffers based on geographic distance around each market, and selects the set of buffers to be included (up to 20km) by minimizing the Schwartz BIC in a set of nested models including increasingly more buffers.

There are two key assumptions we need to obtain unbiased estimates of the treatment effect using the specification in equation 5: first, we rely on a parallel trends assumption that ensures that the outcomes of not-yet-treated and never-treated markets are valid counterfactuals of the outcomes of

treated markets. This assumption will hold true for Khongoni markets since the order of cash transfers in Khongoni was randomized. While we matched outside markets to official Khongoni markets using baseline covariates, we do not have a time-series of pre-treatment outcomes and therefore cannot establish parallel pre-trends between Khongoni and outside markets. In section 3.2.2 we restrict the sample to only Khongoni markets. We will compare the results between the estimates from the two samples to shed light on whether there is a likely violation of parallel trends in our main specification.

Second, we need to assume that transfers attributed to a market only affect outcomes in that market and not any other markets. However, we cannot rule out that transfers to treated markets affect outcomes in not-yet-treated (within-Khongoni) markets, either because expenditure shares change from the baseline distribution due to the treatment or sellers, who may operate in multiple markets, change prices in other markets beyond the ones that were treated. In section 3.2.3 we focus on just the comparison of official Khongoni markets with outside markets for which there should not be any spillovers given the substantial distance between the two sets of markets.

3.2.2. Within-Khongoni analysis

We will estimate within-study area impacts on market prices and market activity by limiting the sample to only Khongoni markets since for them the order of cash transfers was randomized across GVHs in Khongoni. The resulting analysis therefore does not require a parallel trends assumption for identification. We will use the specification in equation 5 for the analysis.

3.2.3. Khongoni-vs-Outside analysis

We will estimate area-wide impacts on market prices and market activity by limiting the sample to only official markets, including both Khongoni and outside markets, and only look at effects within matched pairs of Khongoni and outside markets within each time period. We will also graphically explore the difference in outcome trajectories between Khongoni and outside markets over time.

Table 1: Balance of Matched Markets

Covariate	Treatment Coefficient	Standard Error	p-value
CPI	-0.007	0.012	0.572
Maize Price	0.010	0.013	0.446
No. Commodities	-3.154	4.425	0.483
No. Maize Vendors	-0.154	1.509	0.920
Distance to Main Road (in km)	-1.231	3.251	0.708

3.3. Matching

In this section we briefly describe how the matched markets outside Khongoni were selected. For the 13 official Khongoni markets we matched 13 outside Khongoni markets on five covariates measured at baseline: a consumer price index, the price of maize (Malawi's staple food item that accounts for the largest expenditure share among all items we measure prices for), the number of commodities available at the market, the number of maize vendors at the market, and the market's distance to the nearest main road.[8] We used the genetic matching method described in Diamond and Sekhon (2013)

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[8] We also ran an alternative matching algorithm that only matches markets on the CPI (resulting in slightly better balance on the CPI but worse balance on the other covariates) which we plan to use for robustness checks. Out of the 13 markets matched with the CPI-only algorithm, seven were already included in the set of matches

and achieved balance on all five covariates. Table 1 shows the results from a regression of the five covariates on a binary treatment indicator that is equal to 1 if a market is an official market within Khongoni and 0 if a market is a matched official market outside Khongoni.

3.4. Exact test of treatment effects

In addition to the large-sample approach outlined in Section 3.1, we perform Monte Carlo approximations of exact tests of the treatment effect (Fisher 1935) as in Egger et al. (2019). We calculate exact p-values for our main effects under the null hypothesis using a Fisher permutation test, taking 2,000 permutations of treatment assignment and roll-out as it was implemented in the actual intervention, i.e. we take all pre-period transfers as given, and re-randomize only the order in which transfers were assigned (holding the overall roll-out speed of the total amount of transfers constant and). We hold fixed household location and eligibility, and calculate the exact p-value as the share of Wald Statistics for each main parameter of interest that exceeds the one we find in our sample in absolute value.

3.5. Heterogeneous impacts

We conduct several analyses to study heterogeneous impacts in treatment effects. We pre-specify the following dimensions of heterogeneity (all measured at baseline/during the census): i) female household head, ii) household head above/below median age, iii) married, iv) completed primary school, v) has at least one child in the household, vi) operates non-agricultural business, vii) earns income from employment, and viii) whether the household is above / below median wealth as determined by a PMT / asset score. We may also run analyses for other sources of heterogeneity in a more exploratory manner.

4. Primary outcomes of interest

The variables detailed in this section are our primary outcomes of interest. As a general point, we will present monetary values in USD PPP, and winsorize at the 99% level within each month when variables are truncated at 0, and at the 1% and 99% level when both positive and negative values are possible.

Expenditure and consumption

Total consumption (primary): Total consumption is the total consumption from home production, market purchases and gifts of all products in Section 2 and all expenditure in Section 3.

Total expenditure (primary): Total expenditure is total market purchases from Section 2 and 3.

Secondary outcomes: We will analyse consumption and expenditure split into the following groups (see Appendix A.1. for definitions and details):

- Food vs. non-food
- Tradable vs. non-tradable
- by sector
- by expenditure group

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from the algorithm matching on five covariates described in this section. Thus, the total number of matched control markets is 19 as mentioned in section 2.2.

We will also analyse the *location* of where expenditure takes place. In particular, we will look at imports vs. local purchases (using information on the location of purchases). Imports will either be defined as purchases at markets outside Khongoni, or outside the respondent's own GVH. We will also analyse expenditure switching in more detail as outlined in the empirical strategy section.

Labor Supply

Total labor supply (primary): Number of days worked in the last 7 days

Labor supply by sector (secondary): Days worked in the last 7 days on a) for a wage, b) on own farm, c) in non-ag self employment

Prices

Consumer price index (primary): Our main outcome variable for measuring inflation will be a consumer price index we construct from our price data. Each item is weighted by households' baseline expenditure share for each item. Since the expenditure survey is only conducted for broader expenditure groups, we first assign all items for which we collect prices to an expenditure group (see appendix A.1). We then calculate the overall weight for each expenditure group by calculating the share of total expenditures households report spending on the group at baseline.[9] Finally, we divide the weight for each expenditure group by the number of items included in the price survey for the group and assign this weight to each item in the group. We take the natural logarithm of all prices included in the consumer price index before calculating the weighted index.

As secondary outcomes, we will also present impacts on separate price indices analogously constructed by a) sector (food, non-food non-durables, durables, manufacturing, services), b) by tradability, and c) by expenditure product group (see Appendix A.1). Where exact expenditure weights within a group are not available, we will use expenditure weights as in Egger et al. (2019) where available, or use equal weights where not. When presenting results across groups or sectors, we will additionally correct for multiple hypothesis testing using the FDR q-value procedure by Benjamini et al. (2006). In more exploratory analyses, we will also estimate price effects for each product separately.

On the household side, we will also look at the following outcomes:

Inflation perceptions (secondary): measured by a likert scale (Section 4, Question 1).

Supply disruptions (secondary): The the share of households reporting difficulties purchasing products (Section 4, Question 2)

Market Activity

Total number of market sellers (primary): Our main measure of the extensive margin of market activity is the total number of sellers in each market. We collect this data through a census of all sellers in each market and data collection round of the market activity survey.

Seller revenue (primary): Our first main measure of the intensive margin of market activity is seller revenue. We will calculate the average revenue across sellers interviewed for the market activity

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[9] For the weight construction, we only consider expenditure groups which contain at least one item that is included in the price survey. The relevant expenditure groups are in appendix A.1. We will exclude items which exhibit a combination of high missingness due to unavailability, having a low expenditure share at baseline, and are unlikely to experience large increases in expenditure due to the cash transfers.

survey for each market and data collection round. We ask sellers about the total revenue generated in the seven days prior to each interview.

Seller profits (secondary): A secondary measure of the intensive margin of market activity is seller profit.We will calculate the average profit across sellers interviewed for the market activity survey for each market and data collection round. We ask sellers about the total profit generated in the seven days prior to each interview.

Total number of commodities (secondary): A secondary measure of the extensive margin of market activity is the total number of items sold in each market. We collect this data by counting all items for which enumerators recorded at least one price for each market and data collection round of the price survey.

Customers per seller (secondary): Another secondary measure of the intensive margin of market activity is the number of customers sellers have, which we ask sellers about in the market activity survey for each market and data collection round. We ask sellers about the number of customers they had in the seven days prior to each interview.

Employees per seller (secondary): Another secondary measure of the intensive margin of market activity is the number of employees sellers have, which we ask sellers about in the market activity survey for each market and data collection round. We ask sellers about the number of employees they have at the time of the interview.

Operating hours (secondary): The last secondary measure of the intensive margin of market activity we consider is the number of hours sellers operated in the 7 days prior to the interview, which we ask sellers about in the market activity survey for each market and data collection round.

Intermediate inputs (secondary): We will look at impacts on total materials and supplies purchased in the last seven days as a measure of enterprise investment into inventories.

Imported intermediate inputs (secondary): We will look at imported intermediates as a measure of imports.

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Appendix

A1. List of products for price data

BY EXPENDITURE GROUP
Agricultural Inputs: NPK Fertilizer, UREA Fertilizer, Improved Seeds (Maize)
Alcohol and Tobacco: Cigarettes
Building: Red (Burnt) Bricks, 1 Corrugated Iron Sheet (32 Gauge), Water Paint, Large Padlock, Cement, Roofing Nails, Timber (2x2), Nails (3 Inch)
Cereals: Rice (Polished), Wheat Flour, Bread
Clothes and Services: Tailor (Small Patch/Hole), Shoe Repair Shop (Pair), Bicycle Repair/Mechanic (Puncture Repair), Milling, Plastic Shoes (Gwaladi), Carpenter (Single Size Bed), Mobile Phone Charging
Dairy and Eggs: Eggs, Milk (Fermented), Milk Powder
Drinks: Drinks (Fanta/Coke)
Fish: Fish (Dry)
Fruits: Watermelon, Papaya, Banana, Pineapple, Avocado
Fuel: Batteries (3 Volt), Firewood, Charcoal
Household durables: Cattle (Large), Goat (Large), Sheep (Large), Chicken (Large), Mosquito Net, Small Sufuria, 3/4 Mattress (4 Inch), 20L Pail/Bucket, Broom (Indoor), Broom (Outdoor), Bicycle (Large), Panga Knife, Large Hoe
Household Items: Bar Soap (U-Fresh, etc), Washing Powder, Matches, Candles, Notebooks (80 pages Softcover), Ball Pen
Legumes: Beans, Groundnuts (Shelled), Soya Beans
Maize: Maize (grain), Maize Flour (Unpackaged)
Meat: Beef, Goat meat, Pork
Medical: Panadol
Personal Items: Barber Shop (Adult Basic Haircut), Beauty Salon (Full Hair Blow), Toothpaste (Colgate), Body Lotion, Vaseline
Recreation and Entertainment: Video Room (Movie)
Spices: Salt, Soya Pieces
Sugar, Fat and Oil: Sugar, Cooking Oil
Tubers and Roots: Cassava, Sweet Potato, Irish Potato
Vegetables: Onions, Cabbage, Mpiru/Chinese, Tomatoes, Peas
Wages: Farm Labour Wages

BY SECTOR
Food: Rice (Polished), Wheat Flour, Bread, Eggs, Milk (Fermented), Milk Powder, Drinks (Fanta/Coke), Fish (Dry), Watermelon, Papaya, Banana, Pineapple, Avocado, Beans, Groundnuts (Shelled), Soya Beans, Maize (grain), Maize Flour (Unpackaged), Beef, Goat meat, Pork, Salt, Soya Pieces, Sugar, Cooking Oil, Cassava, Sweet Potato, Irish Potato, Onions, Cabbage, Mpiru/Chinese, Tomatoes, Peas
Non-food non-durables: Batteries (3 Volt), Firewood, Charcoal, Bar Soap (U-Fresh, etc), Washing Powder, Matches, Candles, Panadol, Toothpaste (Colgate), Body Lotion, Vaseline, Cigarettes, Notebooks (80 pages Softcover), Ball Pen
Durables: Plastic Shoes (Gwaladi), Cattle (Large), Goat (Large), Sheep (Large), Chicken (Large), Mosquito Net, Small Sufuria, 3/4 Mattress (4 Inch), 20L Pail/Bucket, Broom (Indoor), Broom (Outdoor), Bicycle (Large), Panga Knife, Large Hoe

Manufacturing: Red (Burnt) Bricks, 1 Corrugated Iron Sheet (32 Gauge), Water Paint, Large Padlock, Cement, Roofing Nails, Timber (2x2), Nails (3 Inch), NPK Fertilizer, UREA Fertilizer, Improved Seeds (Maize), Carpenter (Single Size Bed)
Services: Tailor (Small Patch/Hole), Shoe Repair Shop (Pair), Bicycle Repair/Mechanic (Puncture Repair), Milling, Barber Shop (Adult Basic Haircut), Beauty Salon (Full Hair Blow), Video Room (Movie), Farm Labour Wages

BY TRADABILITY
Tradable: Non-food non-durables, durables, manufacturing
Non-Tradable: Food and services.
Note: We may also define tradability based on the observed shopping geography from expenditure surveys, and the share of intermediate inputs in each product that is imported from outside the study area from our market seller surveys.

A2. Power calculations for price effects

In this section we describe power calculations we conducted to understand the statistical power of our study design under different inflation scenarios. Our starting point is the following two-way fixed effects empirical specification, adopted from [Egger et al. (2022)](#),

$$p_{mt} = \alpha_m + \delta_t + \beta Amt_{m,t-l} + \varepsilon_{mt}$$

where p_{mt} is the natural logarithm of the price of a commodity in market m at time t, β is the key coefficient we want to estimate, $Amt_{m,t-l}$ is the transfer amount in market m at time t as a share of GDP, α_m is a market fixed effect, δ_t is a time fixed effect, ε_{mt} and is the error term.

For our power calculations we consider a two period model where all markets are untreated in period $t=0$ and some markets become treated with varying intensity in period $t=1$. Therefore, we need to simulate realistic distributions of the price and transfer variables in each of the two time periods. Here we focus on our eventual main outcome, an expenditure-share-weighted price index, and three food and non-food items widely available across Khongoni markets at baseline: maize, three inch nails, and notebooks.

For period $t=0$, we use the actual baseline price distribution for maize across the 38 markets inside Khongoni as our base scenario. Since all markets remain untreated in period $t=0$, the transfer variable is equal to 0 for all markets.

For period $t=1$, we simulate price distributions for both untreated and treated markets, as follows:

1. First, we randomly assign markets to treatment and control. Based on data shared by GiveDirectly about cash transfer disbursement in November, we assume that half of the markets in Khongoni experience an inflow of cash transfers.
2. Second, we simulate the transfer variable based on actual cash transfers disbursed to recipients in November. We estimate that transfers to Khongoni amount to 2.8% of Khongoni's annual GDP.[10] Since we assume that transfers are concentrated across half of Khongoni's markets and implicitly that there are no differences in GDP across markets, the average treated market

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[10] The total transfer amount for the November 13 disbursement was directly provided by GiveDirectly. We estimate GDP for Khongoni by multiplying our population estimate for Khongoni with the [IMF's 2023 estimate](#) of Malawi's GDP per capita, converted to MWK at the official exchange rate on November 9. Our population estimate is based on GiveDirectly's data on the total number of adults in Khongoni, scaled by the share of Malawi's population 18 years or older from the [2018 Census](#).

experiences a transfer of 5.6% of its annual GDP. Therefore, we simulate the transfer variable using the beta distribution parameterized with a=0.5 and b=8, yielding a random variable with values between 0 and 1 with the desired mean in expectation.[11]

3. Third, we estimate the autocorrelation of prices across periods. We use historic price data from the World Food Programme and find a one month autocorrelation of 0.74 for maize prices. The only other two items for which rich historic price data is available are rice and beans and their autocorrelations are similar, at 0.78 for beans and 0.81 for rice.

4. Fourth, we simulate treatment effects for treated markets, for which we consider scenarios with month-to-month inflation rates from 0.1% to 10.1% in intervals of 1% which we add to the simulated prices generated in the third step for treated markets. We simulate treatment effects for treated markets that are proportional to the transfer variable generated in the second step and have an expected mean equal to the month-to-month inflation rate for each scenario. We run 100 simulations for each inflation rate scenario and run a one-sided t-test with a significance level of 0.05 on the resulting beta coefficient in the equation above. We believe that a one-sided t-test is appropriate for testing for short-term inflation effects with the goal of informing GiveDirectly's transfer rollout speed, because it yields higher power than a two-sided test and the possibility that cash transfers cause price decreases seems negligible.

Figure 1: Power Curve for the Price Index
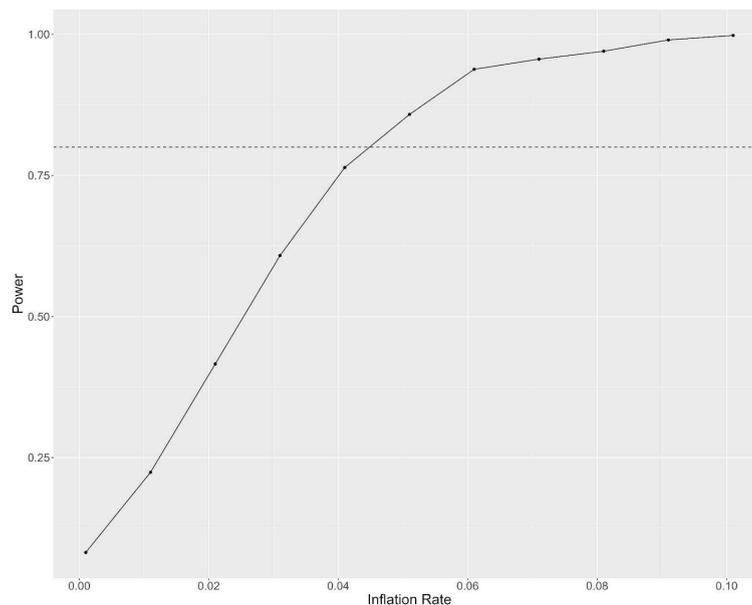
Figure 1 shows the power we have for each of the ten inflation scenarios for the price index. As the graph shows, we are well-powered at around 80% to detect a 4% inflation effect month-to-month.

Overall, we are confident that even looking at short-term month-to-month data, we will be able to flag inflation around 4% or higher for the price index and most individual commodities to GiveDirectly and enable the program team to potentially delay further transfers to markets experiencing unusually high inflation episodes following previous cash transfers.

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[11] The mean of the beta distribution is calculated as a/(a+b). Therefore, a parameterization of a=0.5 and b=8 yields an expected mean of 0.0588, which is close to the empirically observed transfer as a share of GDP which is 0.056. While there are other combinations of a and b which yield the same expected mean, we chose this parameterization based on the approximate distribution of transfers across official markets when assigning transfers to the official market closest to the recipient GVH.

Protocol for Targeting / Scheduling:

○ Each FO receives a tracking sheet of households. Households are ordered by a random order called sample_order. The target is to complete 10-15 households each day. At the minimum, each FO should reach 10 households.

○ The order of households is randomized, and FOs should start with the first, then work down the list (to the extent possible). This order should (to the extent possible/practicable) be followed throughout the month. For example, you could start with 1st attempts in that order, then proceed to 2nd attempts in the same order, etc.

○ The target respondent (TR) will be indicated on your tracking sheet. We are trying to get information on ALL EXPENDITURE of the entire household, not just of the respondent. It is very important that you try to reach that target respondent.

○ For each household, there may be multiple phone numbers. Please try the phone numbers in the order listed. If you cannot reach any, you may also try phone numbers of other household members listed on the tracking sheet.

○ We attempt to reach each household at least 10 times before giving up, and SurveyCTO should log each of these attempts. We will try to call households at least 1 hour apart, over multiple days, and at least twice in each of the following slots:
  i. Morning (9 - 11.30) - 2 times
  ii. Midday (11.30 - 14.00) - 2 times
  iii. Afternoon (14.00 - 17.00) - 2 times
  iv. Evening (17.00 - 20.00) - 2 times
  v. Weekends -- If we cannot reach them after 8 attempts, we try at least 2 times on the weekend.
  All attempts should be logged and documented by a suitable case-management system.

○ If you cannot reach the Target Respondent (TR) FOUR TIMES, you can try to continue the interview with another knowledgeable household adult (e.g. their spouse). But only do so if this is at least the FIFTH attempt for calling this household. Otherwise try to ask them to fetch the TR, or reschedule for a time when the TR is available.

<u>Enter pre Call</u>

1. What is the respondent's GDID?
2. What is the respondent's name?

Call the number

3. Is the respondent available?
   yes |___| no |___|

<u>Introduction and Consent (5min):</u>

4. Hello, I'm trying to reach ${name}, is that who I am speaking with?
   yes |___| no |___|
   If no, ask if they are available. Do not continue unless you confirm you are speaking with the correct respondent.

Read: Hello, I am [name] from GiveDirectly. We're conducting research to identify how cash transfer beneficiaries utilize the money they receive from GiveDirectly. Therefore, I would like to invite you to participate in a phone survey that will take approximately 30 minutes of your time. If you agree, I will ask you questions about how your household spent money in the past week/month, regardless of which person made the purchase.Participation is voluntary, and you may choose to exit at any time. Please note that while there's no direct benefit to you for participating, your cooperation will greatly contribute to our study. There's also minimal risk attached to your involvement. All information shared will be aggregated, so it won't be possible to identify the source. If you have any questions or concerns about this study, you may contact the GD Hotline at 634

If you agree, I will start asking you some questions about yourself

5. Consent given?   yes |___| no |___|
6. Gender: |___| m/f
7. Year born: |__|__|__|__|

Read: Now I would like to start asking you questions about how your household spent money in the past month, regardless of which person made the purchase. Please exclude from your answer any food purchased for processing, livestock consumption, or resale in a household enterprise.

First, I would like to ask you some questions about your household's consumption on different food types in the last week

Section 1: Food Expenditure (10min)

	PURCHASES IN LAST 7 DAYS	**HOME PRODUCTION**	**GIFTS**	**SHOPPING PATTERNS**
Consumption/Expenditure **Code:** *Enter 0 if none. DK=-99*	**Q1:** In the past 7 days, how much have the members of your household spent on [FOOD] ?	**Q2.** In the past 7 days, how much [FOOD] did your household consume from your own production? *Could you please estimate how much MWK it would have cost if you had bought it from the market?*	**Q3.** In the past 7 days, how much [FOOD] did your household receive as a gift from someone outside of the household? -If they received, what was the total amount MWK of those gifts *Enter 0 if none.*	**Q4.** From which village or market center did members of your household purchase [FOOD] in the last 7 days? *If multiple markets / villages, pick the main three where you spent most* **Include "DK=-99" option**
	MWK	**MWK**	**MWK**	**VILLAGE or MARKET CENTRE**
Maize *Maize ufa mgaiwa / Maize flour* *Ufa woyera /Refined maize flour* *Chimanga / Maize grain (not as ufa)* *Chimanga chachiwisi / Green maize* *????/Maize porridge*				
Other cereals				

Mpunga / Rice *Ufa wa madeya / Bran flour* *Mawere / Finger millet* *Mapira / Sorghum* *Mchewere / Pearl millet* *Fulawa, Buledi, mabanzi, maskono, mabisiketi / Wheat flour/Bread/Buns/Scones /Biscuits* *Mapira, mpunga, tirigu zakudya mammawa / Breakfast cereal, porridge* *Mapira, mpunga, tirigu zakudya ana mammawa / Infant feeding cereals* *Include grains used for food or alcohol.*				
Spent on grinding of maize, cereals, and any other products **(Only include price of GRINDING service, not of the product itself. If purchased already ground, (e.g. maize flour), include in the product category (e.g. maize).**		██████████	██████████	██████████
Tubers and Roots chinangwa / Cassava tubers Ufa wa chinangwa / Cassava flour Kachewere woyera / Irish Potato Mbatata yoyela/ White sweet potao Mbatata yofiira mkati / Orange sweet potato Mbatatesi tchipisi / Potato chips Nthochi yophika / Plantain, cooking banana				
Legumes, Nuts & Seed Nyemba zoyera ndi zofiira / Beans, white and brown nandolo / Pigeon peas Mtedza / Groundnut Ufa wa mtedza / Groundnut flour Ufa wa soya / Soyabean flour Nzama / Ground bean				

Khobwe / Cowpea				
All vegetables Anyezi / Onions Kabichi / Cabbage Tanapozi/Repu / Tanaposi/Rape Tchainizi / Chinese cabbage Masamba ena olimidwa / Other cultivated green leafy vegetables Masamba ena a mthengo / Gathered wild green leaves Tomato Nkhaka / Cucumber Dzungu, Nkhwani / Pumpkin, Pumpkin leaves Therere / Okra Bowa / Mushroom Masamba ena Chisoso Mamunaaligone Denje/local vegetables Chigwada/Cassava leaves				
Dairy and Eggs Mazira / Eggs Mkaka wauwisi / Fresh milk Mkaka waufa / Powdered milk Majarini / Margarine - Blue band Chiponde / Butter Chambiko / Chambiko - soured milk Yoghurt Mkaka wa ana wa m'botolo / Infant feeding formula (for bottle)				
Fish Nsomba zouma / Dried fish Nsomba zaziwisi / Fresh fish Nsomba za mchitini / Tinned fish Nsomba zowamba/ Smoked fish				
Meat Nyama ya ng'ombe / Beef Nyama ya mbuzi / Goat Nyama ya nkhumba/ Pork Nkhuku / Chicken Nyama zina-nkhanga, nkhunda ndi zina / Other poultry-guinea fowl, doves, etc				

Nyama zing'ono zing'ono-kalulu, mbewa / Small animal-rabbit, mice, etc Ngumbi, mafulufute / Termites, other insects (eg: caterpillar) Nyama za mchitini / Tinned meat				
Food from vendors Chimanga chophika/Chootcha cha mavenda / Maize - boiled or roasted Tchipisi cha mavenda / Chips Chinangwa chophika cha mavenda / Cassava - boiled Mazira ophika a mavenda / Eggs - boiled Nkhuku zapachiwaya / Chicken Nyama zapachiwaya / Meat Nsomba zapachiwaya / Fish Mandazi, madonasi / Mandazi, doughnut Samusa / Samosa Zakudya za ku resitiranti / Meal eaten at restaurant		■■■■■■■		
Sugar fat oils Shuga / Sugar Nzimbe / Sugar Cane Mafuta ophikira / Cooking oil				
All fruits Mango Nthochi / Banana Nachesi, oranje, ndimu / Citrus- tangerines, orange, lemons, etc Chinanadzi / Pineapple Papaya Pichesi/ Peach Gwafa / Guava Peyala / Avocado Zipatso za chilengedwe (masau, malambe, etc) / Wild fruit Majambula/ Berries Apples Strawberries Mavwende/watermelon				
All non-alcoholic drinks Tiyi / Tea				

Khofi / Coffee Koko, millo / Cocoa, millo Sobo / Squash (Sobo drink concentrate) Juwisi wa zipatso / Fruit juice Freezes (flavoured ice) Soft drinks (Coca-cola, Fanta, Sprite, etc.) Madzi ogulitsa a Thobwa m'botolo / Bottled water or a plastic tubes			
Alcoholic drinks / tobacco Chibuku / Chibuku (commercial traditional-style beer) Maheu Mowa wa mmabotolo / Bottled/canned beer (Carlsberg, etc.) Masese / Traditional beer Waini / Wine or commercial liquor Kachasu / Locally brewed liquor (kachasu) Fodya/Tobacco			
Spices and Miscellaneous Mchere / Salt Zokometsera ndiwo / Spices Onga, Rajah,Kale Yeast, baking powder,soda / Yeast, baking powder, bicarbonate of soda Tomato sauce (bottle) Soya Pieces Tsabola (Nali, etc.) Jam, jelly Sweets, candy, chocolates Uchi / Honey			

Section 2: Food Security (2min)
Q1. How many meals did your household eat yesterday? |___|

Q2. In the last 7 days, did you worry that your household would not have enough food? |__| (Yes/No)

Section 3: Non-food expenditure (10min)

Read: Now I would like to ask you about items / services purchased by your household. Please include all purchases made, regardless of which household member made them. Please exclude from your answers any items purchased for processing or resale in a household enterprise.

FO NOTE: The following questions ask about spending in the past 30 days

Frequent non-food items	Q11. In the past 30 days, how much did your household spend on [ITEM] in total? (MWK) *Enter zero if none are consumed. DK=-99*	Q12. From which village or market center did members of your household purchase [ITEM] in the last 30 days? *If multiple markets / villages, pick the main three where you spent most* **Include "DK=-99" option**
	MWK	**VILLAGE or MARKET CENTRE**
a. Airtime, other phone expenses	|_____|	
b. Internet services, internet usage outside home	|_____|	
c. Petrol, diesel, toll gates, transport such as bicycle, cart, car, truck, lorry, van, buses, taxis, flight or train tickets, donkey, etc, excluding transport for medical reasons	|_____|	
d. Lottery tickets, sports bets, gambling, etc.	|_____|	
e. Clothing and shoes	|_____|	
f. Services paid for fixing, tailoring, ironing, cleaning clothes, etc.	|_____|	
g. Recreation/entertainment such as books/magazines, music/CDs, videos, tickets to any entertainment	|_____|	
h. Personal items (hair cuts, toiletries (shampoo, tooth paste, razor blades, cosmetics etc, combs)	|_____|	
i. Other household items (soap, detergent, cleaning agents, toilet paper/tissues, air freshener, shoe polish, insecticide, matches, candles)	|_____|	
j. Household fuel (such as firewood, charcoal, kerosene, gas, rechargeable and non-rechargeable batteries)	|_____|	
k. Electricity or solar	|_____|	
l. Water	|_____|	
m. Mail, postal, or delivery services	|_____|	
n. Insurance (health or other)	|_____|	
o. Wages paid for domestic services (servants, cooking, watchman, gardener)	|_____|	

FO NOTE: The following questions ask about spending in the past 30 days.

Less frequent non-food items	Q11. In the past 30 days, how much did your household spend on [ITEM] in total? (MWK) *Enter zero if none are consumed. DK=-99*	Q12. (if non-zero purchases) From which village or market center did members of your household purchase [ITEM] in the last 30 days? *If multiple markets / villages, pick the main one, where you spent the most.*

		MWK	Include "DK=99" option
			VILLAGE or MARKET CENTRE
p.	House rent/mortgage, land/property rent	|____|	███████
q.	Building/construction supplies (e.g. cement, bricks, metal sheets, doors, timber, labour, etc.)	|____|	
r.	School devotement/contribution, and fees (such as printing fees for primary school)	|____|	███████
s.	Religious expenses or other cultural ceremony services (e.g. initiation ceremonies, circumcision, dances, excluding weddings and funerals)	|____|	███████
t.	Charitable donations (church, charity, beggar, etc)	|____|	███████
u.	Weddings, Funerals (including outside their household if contributed to their costs)	|____|	███████
v.	Medical expenses (including consultation fees, medicines, hospital costs, lab test costs, ambulance costs, and related transport)	|____|	
w.	Household durables FO: Read list below, calculate total. 1 Vehicles (car, boat, bike, motorbike, handcarts, etc.) 2 Furniture (bed, chair, vases, mirror, etc.) 3 Carpets, linen, mattresses, mosquito nets 3 Kitchen and other equipment (cutlery, pots, pans, plates, etc.) 4 Electronic equipment, (lamps, mobile phone, television, etc.) 5 Agricultural tools and equipment/ repairs (including Wellington boots) 6 Livestock related expenses	|____|	
x.	Business-related expenditure FO: Read list below, and calculate total 1 Costs to set up a new business 2 Purchases or repairs of machines, tools, equipment for your business (excluding those already mentioned above) 3 Purchases of supplies, merchandise and raw materials for your business 4 Wages of employees for your business (not already mentioned) 5 Any other business related expenses (electricity, market fees, insurance, etc.)		
y.	Lobola (bridewealth) cost	|____|	███████

Q13. In the last 30 days, did you make any other significant expenditure (above MWK 2000) that we did not mention yet?
|___| Yes / No

a. **(if yes)** On what? _____
b. **(if yes)** How much did you spend additionally in total? |_____| MWK
c. **(if yes)** At which markets? *Select multiple.*

Q14. In the last 7 days, how many days did you:
a. Work for a wage / pay?
b. Work on your own farm / agriculture / pastoral activities ?
c. Work in your own non-ag business?

Section 4: Inflation perceptions and supply disruptions

1. In the last month, do you feel like prices for goods and services in your village or market have changed *more than or faster than usually / previously?*
   |____| a lot more
   |____| somewhat more
   |____| same as usually
   |____| somewhat less
   |____| much less

   a. **(if yes)** Which types of goods?
   1 Maize
   2 Meat
   3 Fruits/Veggies
   4 Other food
   5 Farming materials
   6 Household items
   7 Home building materials
   8 Other durable (non-food) items
   9 Services (e.g. hair salon, tailoring, fixing a bike, etc.)

   b. **(if yes)** What were your strategies for coping with these price increases? *Select multiple.*
   |___| buy less
   |___| buy in bulk
   |___| go to a different market
   |___| buy another, cheaper item (lower quality)

2. In the last month, did you have any issues sourcing goods and services that you would have liked to purchase? For example, these goods were not available from sellers as usual?
   |____| Yes / No

   a. **(if yes)** Which types of goods were less available than usual?
   1 Maize
   2 Meat
   3 Fruits/Veggies
   4 Other food
   5 Farming materials
   6 Household items
   7 Home building materials
   8 Other durable (non-food) items
   9 Services (e.g. hair salon, tailoring, fixing a bike, etc.)

SECTION 5: Additional Contact module:

1. Thank you so much for your participation today. We would like to contact you a few more times to ask more questions about your spending in the next few months, would that be ok?

   |____| Yes / No

2. **(if yes)** In order to contact you in the future, we'd like to collect a few additional phone numbers we can use to reach you. Please share with us any other numbers we might be able to use to contact you.

   a. Alternative phone contact:
   b. Your spouse's phone number:
   c. A friend's phone number:
   d. Another phone number we can use (and who it is for/their relationship to you)

A4. Market price survey instrument

Field	Question	Answer
intronote	Welcome to the Malawi Price Inflation Study survey form. Please, follow all the instructions carefully.	
consent (required)	Would you like to continue?	Yes
		No
enumerator_name (required)	Select your name.	
district_name (required)	Select district name for this market.	1 Dedza
		2 Dowa
		3 Kasungu
		4 Lilongwe
		5 Mchinji
		6 Nkhotakota
		7 Ntcheu
		8 Ntchisi
		9 Salima
market_name (required)	Select market name.	|____|____|____|
note	Instructions a) Record the purchase price for each of the items indicated in this questionnaire. b) Record prices from two sellers on each of the items. c) For goods that come in different brands, only record the price for the specific brand that has been indicated in this questionnaire. d) For goods that have specific brands selected for follow-up, please ask the sellers what the price was, three weeks ago, for that specific brand and record the same on the separate answer sheet of this questionnaire for this specific question. e) Ask each seller to approximate how many 'other' sellers are selling the item that particular seller (respondent) is selling. f) For the revised market survey, ask the questions to each trader you meet when collecting price data and record your answers in the tables appended at the end of the questionnaire.	
selected_commodities (required)	Select item(s).	1 Maize (grain)
		2 Rice (Polished)
		3 Sweet potato
		4 Cassava
		5 Irish potato
		6 Groundnuts (Shelled)
		7 Beans
		8 Soya Beans
		9 Peas
		10 Mpiru/Chinese

			11 Tomatoes
			12 Onions
			13 Cabbage
			14 Beef
			15 Goat meat
			16 Fish (Dry)
			17 Pork
			18 Water Melon
			19 Papaya
			20 Banana-sweet
			21 Pineapple
			22 Avocado
			23 Soya Pieces
			24 Eggs
			25 Salt (Kitchen)
			26 Sugar
			27 Bread
			28 Drinks (Fanta/Coke)
			29 Maize Flour (Unpackaged)
			30 Wheat Flour
			31 Milk (fermented)
			32 Milk Powder
			33 Cooking Oil
			34 Cattle (Large)
			35 Goat (Large)
			36 Sheep (Large)
			37 Chicken (Large)
			38 1 corrugated iron sheet (32 gauge)
			39 Water Paint
			40 Large Padlock
			41 Cement
			42 Roofing nails
			43 Timber (2x2)
			44 Nails (3 inch)
			45 Red (burnt) bricks
			46 Bar Soap (U-fresh, etc)
			47 Washing Powder
			48 Matches
			49 Cigarettes
			50 Toothpaste (Colgate)
			51 Vaseline
			52 Batteries (1.5 volt)
			53 Candles
			54 Body Lotion
			55 Firewood

		56	Charcoal
		57	Panadol
		58	Mosquito Net
		59	Small Sufuria
		60	3/4 Mattress (4in)
		61	20L Pail/Bucket
		62	Broom (indoor)
		63	Broom (Outdoor)
		64	Improved Seeds (maize)
		65	UREA Fertiliser
		66	NPK Fertiliser
		67	Farm labour wages
		68	Notebooks (80 pgs Softcover)
		69	Ballpen
		70	Plastic Shoes (Gwaladi)
		71	Bicycle (Large)
		72	Panga knife
		73	Large Hoe
		74	Barber shop (adult basic haircut)
		75	Beauty Salon (full hair blow)
		76	Bicycle repair/mechanic (puncture repair)
		77	Carpenter (single size bed)
		78	Video room (movie)
		79	Mobile phone charging
		80	Tailor (Small patch/hole)
		81	Shoe repair shop (pair)
		82	Milling
unit_of_measure_1 (required)	Select [commodity_name]'s unit of measure for seller 1.	2	1 kg
		0	Other
		33	Six
		5	Per piece (medium)
		11	5 lt bucket
		34	Small Bunch
		17	Four (Medium)
		18	Head (Medium)
		35	Small Heap
		22	One (Medium)
		4	1 Packet
		20	Loaf
		29	Per bottle (330ml)
		115	250ml
		15	500ml
		8	100 g
		37	1 Lt

		36	Whole
		6	10 Ft
		12	5 lts
		21	One
		13	50 kg
		101	9 Ft
		1	1 Ft
		38	Whole (140g)
		14	500 g
		23	One box
		25	One stick
		16	70 g
		118	50 g
		26	Pair
		24	One candle
		10	400ml
		119	3 Piece (Medium)
		19	Heap (Medium)
		3	1 kg pack
		9	2 kg
		28	Per acre
		32	Per puncture
		31	Per movie
		30	Per hole
		27	Per 20l tin
other_unit_of_ma sure_1 (required)	Please specify other unit of measure provided by seller 1		
targeted_brand_1 (required)	Is [commodity_name]'s brand found at this market (for seller 1) different from the one being targeted in this survey?	Yes	
		No	
brand_name_1 (required)	Enter [commodity_name]'s brand found at this market. Ensure you enter a correct brand name and, if applicable, type. E.g, if the brand is Clere, what type of Clere.		
number_of_ sellers_1 (required)	According to Seller 1, how many other sellers are there in this market that are selling [commodity_name]? Enter 888 for 'Dont Know' and 999 for 'Refused to Answer'		
state_of_sellers_1 (required)	According to seller 1, what is the state of the number of sellers for [commodity_name] at this market for the past two weeks?	1	Increasing
		2	Decreasing
		3	Stayed the same
		888	Dont know
		999	Refused
price_1 (required)	Enter [commodity_name]'s price - Seller 1.		
price_1_reentered (required)	Re-enter [commodity_name]'s price - Seller 1.		

confirmnote1	Please confirm that MWK [price_1] is the Seller 1 price for [commodity_name].		
seller2_availability (required)	Proceed to enter Seller 2 prices for [commodity_name]?	Yes	
		No	
unit_of_measure_2 (required)	Select [commodity_name]'s unit of measure for seller 2.		
other_unit_of_measure_2 (required)	Please specify other unit of measure provided by seller 2		
targeted_brand_2 (required)	Is [commodity_name]'s brand found at this market (for seller 2) different from the one being targeted in this survey?	Yes	
		No	
brand_name_2 (required)	Enter [commodity_name]'s brand found at this market. Ensure you enter a correct brand name and, if applicable, type. E.g, if the brand is Clere, what type of Clere.		
number_of_sellers_2 (required)	According to Seller 2, how many other sellers are there in this market that are selling [commodity_name]? Enter 888 for 'Dont Know' and 999 for 'Refused to Answer'		
state_of_sellers_2 (required)	According to seller 2, what is the state of the number of sellers for [commodity_name] at this market for the past two weeks?	1	Increasing
		2	Decreasing
		3	Stayed the same
		888	Dont know
		999	Refused
price_2 (required)	Enter [commodity_name]'s price - Seller 2.		
price_2_reentered (required)	Re-enter [commodity_name]'s price - Seller 2.		
confirmnote2	Please confirm that MWK [price_2] is the Seller 2 price for [commodity_name].		
conclusionnote	You have finished entering prices for 0 items on the hardcopy questionnaire. If you have remaining items on the hardcopy whose prices are not yet entered, it means you have entered prices for some items more than once. If so, please, do not mark this form as finalised. Kindly save it as not finalised and reopen it to follow through all the items you entered. Correct the mistake once found. If you still have problems, kindly consult your supervisor. Swipe forward to continue.		
add_comments (required)	Do you wish to add any comments about your observations at this market?	Yes	
		No	
comments (required)	Enter your comments.		
confirmnote	End of form. Thank you.		

Sampling
Note: Enumerators need to be clear about the perimeter/definition of where the market begins and ends. This should not change across iterations. The enumerator or supervisor walks once through the entire market. Row-by-row until they have walked past everything stall.

1. What type of business is this?
    a. Agricultural Inputs
    b. Alcohol and Tobacco
    c. Building Materials
    d. Cereals
    e. Clothes and Services
    f. Dairy and Eggs
    g. Drinks
    h. Fish
    i. Fruits
    j. Fuel
    k. Household Durables
    l. Household Items
    m. Legumes
    n. Maize
    o. Meat
    p. Medical
    q. Personal Items
    r. Recreation and Entertainment
    s. Spices
    t. Sugar, Fat and Oil
    u. Tubers and Roots
    v. Vegetables
    w. Wages
    x. Others

2. Collect GPS: Latitude, Longitude, Accuracy
SurveyCTO calculates the total number of traders in the market and divides this by 20 to find out the nth person who the enumerator must interview. If the total number of traders is less than 20, the enumerator is total to interview every trader in the market.

<u>Main Interview</u>
Note: Please confirm the person you are talking to is the owner of the business. If not, please ask to talk to the owner, even if it is on the phone. Only interview the employee if the owner is not available at all.
1. Are you the owner of this business?
    a. Yes
    b. No
    c. Refused to answer

2. Do you consent to being interviewed?
    a. Yes
    b. No
    c. Refused to answer

3. How many stalls/stores do you operate either in this market or other markets?
    _____

4. What types of goods do you primarily sell?
    a. Agricultural Inputs
    b. Alcohol and Tobacco
    c. Building Materials
    d. Cereals
    e. Clothes and Services
    f. Dairy and Eggs
    g. Drinks
    h. Fish
    i. Fruits
    j. Fuel
    k. Household Durables
    l. Household Items
    m. Legumes
    n. Maize
    o. Meat
    p. Medical
    q. Personal Items
    r. Recreation and Entertainment
    s. Spices
    t. Sugar, Fat and Oil
    u. Tubers and Roots
    v. Vegetables
    w. Wages
    x. Others

5. Please specify other type of goods sold by this trader.

    _____

7. How many stalls/stores were operational on Monday?

    _____

8. Please tell us in which markets you operated in on Monday?

9. Please specify what other market the trader operated in. [Format: District – TA- market Name]

    _____

10. How many stalls/stores were operational on Tuesday?

    _____

11. Please tell us in which markets you operated in on Tuesday? |____|

12. Please specify what other market the trader operated in. [Format: District – TA- market Name]

    _____

13. How many stalls/stores were operational on Wednesday?

    _____

14. Please tell us in which markets you operated in on Wednesday? |____|

15. Please specify what other market the trader operated in. [Format: District – TA- market Name]

    _____

16. How many stalls/stores were operational on Thursday?

    _____

17. Please tell us in which markets you operated in on Thursday? |____|

18. Please specify what other market the trader operated in.
[Format: District – TA- market Name]

_____

19. How many stalls/stores were operational on Friday?

_____

20. Please tell us in which markets you operated in on Friday? |____|

21. Please specify what other market the trader operated in.
 [Format: District – TA- market Name]

_____

22. How many stalls/stores were operational on Saturday?

_____

23. Please tell us in which markets you operated in on Saturday? |____|

24. Please specify what other market the trader operated in.
[Format: District – TA- market Name]

_____

25. How many stalls/stores were operational on Sunday?

_____

26. Please tell us in which markets you operated in on Sunday? |____|

27. Please specify what other market the trader operated in.
[Format: District – TA- market Name]

_____

28. How many DAYS was this enterprise/activity open for customers in the last 7 days?
 [Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

_____

29. How many HOURS was this enterprise/activity open for customers in the last 7 days?
[Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

_____

30. In the last 7 days, how many HOURS did you (owner) work in total in this business/activity?
[Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

_____

Note: For all subsequent questions, please ask about the specific stall/store instead of the whole business. If the respondent is unable to recall about the specific stall you can ask about the business as a whole.

31. How many paid employees (formal or informal) worked in this enterprise/activity in the last 7 days? Do not include yourself (owner).
[Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

_____

32. How many customers did this enterprise have in the last 7 days?
[Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

33. What were the total earnings (money in only - do not subtract any expenses) of this enterprise/activity in the last 7 days?
[Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

34. What was the total profit of this enterprise/activity in the last 7 days?
[Here we mean the amount THE BUSINESS/ALL OWNERS TOGETHER received after paying for expenses for this business, including hired workers, money for household members who helped, purchase of goods for sale or for inputs, such as raw materials, fuel, and electricity, but before purchasing personal items for yourself or your household. If the business is co-owned, please report the TOTAL profit of the business, not only your share. Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

35. Do you have any STOCK/INVENTORY/MATERIALS/SUPPLIES for this enterprise/activity today?
[STOCK/INVENTORY are final; goods that you produced or purchased and plan to sell exactly as is. MATERIALS/SUPPLIES are items that you buy from suppliers and use to make your final products or services. Please consider both stock/inventory and materials/supplies. Enter 888 if "Dont Know" or 999 if "Refused to Answer"]
    a. Yes
    b. No
    c. Refused to answer

36. How much is ALL of your STOCK/INVENTORY/MATERIALS/SUPPLIES worth as of the start of the market day today?
[We mean if you had to replace all of it (in the same condition it is in now), how much would that cost? Cost for all inventory - intermediate and final goods. Please give your best guess for the total amount. Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

37. What was your total expenditure on STOCK/INVENTORY/MATERIALS/SUPPLIES purchased In the last 7 days?
[Enter 888 if "Dont Know" or 999 if "Refused to Answer"]

38. Where did you source your STOCK/INVENTORY/MATERIALS/SUPPLIES?
    a. From my own household
    b. From other households
    c. From other enterprises
    d. Ordered from wholesaler shops
    e. Other
    f. Dont know
    g. Refused to answer

39. Please specify other source of inventory.

40. Was the data collected at the firm-level or the plant-level?
    a. Firm-Level
    b. Plant-Level

A6. GD census survey instrument for the 'research sample'

Question	Options
Household Id	
Record the GPS at the doorstep of the house.	- -
Is it possible for you to find the primary male or female of this household?	- Yes - No
Are you currently talking to the household head?	- Yes - No
Is there a member of the household who is 18 years and above who you can speak to?	- Yes - No
Where is the primary male / primary female?	
Is the household made of only one person who is not mentally fit to receive the transfer, and who does not have a trustee?	- Yes - No
State other reason why recipient is refusing census	
In this section, I am going to ask a few questions about your household: Enter the full name of the respondent	
Marital status of the household	- Single - Couple - Polygamous - Widow/Widower - Separated/Divorced
Is this an orphan headed household?	- True - False
Who lives in this household?	- Primary Female - Primary Male - Children - Grandchildren - Other relatives - Non-family members
Of the children living in this household, how many are enrolled in school?	
What type of school are they enrolled in?	- Primary - Secondary - Training College - University - Other
How many household members are 18 years and above?	

What is this household's main occupation?	- Brick Making - Carpentry - Casual Labour - Forestry - Hairdressing - House construction - Motorcycle/Bicycle taxi - Raising livestock - Shopkeeper - Small business - Student - Subsistence farming - Tailoring - Teaching - Other
Specify the household's main occupation	
Is the recipient available to respond to the survey?	- True - False
For how long has this household been living in the village?	- Under 3 months - 3-6 months - 6-12 months - 1-3 years - Over 3 years
Is the recipient or their trustee currently registered for mobile money with TNM or AIRTEL? Only click ""yes"" if you have confirmed that the recipient or trustee is registered for mobile money in the correct name that you verified today!	- Yes - No
Did the recipient get a phone?	- True - False
Why did they not want a phone from GiveDirectly ?	- They already have a phone - They believe they can get a phone some other way for less money - They can use someone else's phone
Is the recipient illiterate and/or unable to sign the consent?	- True - False
Does the recipient have any fears about receiving the transfer?	- Yes - No
Indicate which fears the recipient has:	- Theft or violence pertaining to the transfer - Community conflict over transfer - Domestic conflict over transfer - They'll have to pay back money or give something in return - They will not be notified when the money is sent - They may not be able to withdraw/collect the money

	- They may not be able to buy what they want/need with the money
Does the recipient have an ID?	- Yes - ID is accessible - Yes - ID not accessible but respondent knows ID number - Yes - But ID is expired - No - Respondent has ID but it is not accessible and they do not know ID number - No - Respondent has no ID
What is the recipient's gender?	- Male - Female - Other - Prefer not to answer
What is the recipient's date of birth?	
Please re-enter the recipient's date of birth	
Does the recipient identify to having any disability?	- Vision Impairment - Deaf or hard of hearing - Speech Impairment - Physical disability - Mental health conditions - Intellectual disability - Acquired brain disability - Other - None of the Above
Does the recipient have any chronic illness?	- Chronic Malaria - TB - HIV/AIDS - Asthma - Epilepsy - Cancer - Other - None
Is the recipient enrolled in school?	- Yes - No
What type of school?	- Primary - Secondary - Training College - University - Other
What is the recipient's most common nickname?	
What is the recipient's marital status?	- Single - Couple - Polygamous - Widow/Widower - Separated/Divorced

Who is he/she within this household?	- Primary Male - Primary Female - Son - Daughter - Parent - Brother/Sister - Other relative
What is this person's main occupation?	- Brick Making - Carpentry - Casual Labor - Forestry (e.g rubber tapping, coal production) - Hairdressing - House construction - Motorcycle or bicycle taxi - Raising livestock - Shopkeeper - Small business - Student - Subsistence farming - Tailoring - Teaching - Other
Specify the main occupation	
Is the individual a fulltime resident of the Village?	- Yes - No
How long has the individual stayed in the village?	- Under 3 months - 3-6 months - 6-12 months - Between 1-3 years - Over 3 years
Is this person a vulnerable case, in need of very close follow up?	- True - False
In what way is the recipient vulnerable?	- Physically disabled/blind/deaf/sick - Mentally unwell - Child headed household - Very old - Untrustworthy helper/trustee
How many TOTAL members does this household have? Include children	
How many members ages 5 and over (5+) does this household have?	
What is your household's main source of income?	- Casual labour (informal, including ganyu) - Regular labour (regular full-time or part-time work for a business) - Self-employment (operating your own trade)

	- Financial support from family or friends outside of the household - No source of income - Other: // Open response
What is your household's other main source of income?	
Does anyone in your household own a business? If yes, what is it?	Open response, 1 sentence max
Does anyone in your household own another business? If yes, what is it?	Open response, 1 sentence max
Over the past one week (7 days), roughly how much money did you earn in total?	
Did anyone else in your household earn money in the last week? If so, roughly how much?	
Did anyone else in your household earn money in the last week? If so, roughly how much?	
Did anyone else in your household earn money in the last week? If so, roughly how much?	
Over the past one week (7 days), roughly how much money did your household spend in total?	
Does your household have any money saved or put aside?	- Yes - No - Don't know
If yes, would these savings be enough to cover household expenses for at least:	1 day 1 week 1 month or longer Don't know / refuse to answer
How many rooms does the household have?	
The roof of the house is predominantly made of what material?	Grass Concrete Plastic sheeting Iron sheets Clay tiles Other
The floor of the house is predominantly made of what material?	Sand Smoothed mud Smoothed cement Wood Tiles Other
The external walls of the house are predominantly made of what material?	Grass, mud or compacted earth Mud brick (unfired) Exposed burnt bricks Plastered burnt bricks Concrete Wood Iron sheets Other

Do you have a latrine in your household?	- Yes - No - Don't know
How many of the following do you have in your household?	Bedframe Mattress Table Iron (for pressing clothes) Radio Bicycle Motorbike Solar panel Ox-cart
Does your household have electricity? Select the main source:	Yes, it's connected to the main electricity grid Yes, from solar power Yes, from a generator Yes, from a car battery Yes, other: // Open response, few words max No
What other main source of electricity does your household have?	
What is the main source of cooking fuel in your household?	Collected firewood Purchased firewood Paraffin Electricity Gas Charcoal Crop residue Saw dust Animal waste Other
How many mobile phones does your household own?	
How many SIM cards does your household own?	
How many of the following does your household own?	Goats Sheep Cows Pigs Chicken Ducks Pigeons Rabbits
How many meals did you eat yesterday?	-1 to 5
Over the past one week (7 days), have you gone hungry so others could eat?	- No - Yes, one time - Yes, more than once
Over the past one week (7 days), did you or anyone in your household consume any sugar?	- Yes - No - Don't know

Over the past one week (7 days), what was your household's main source of drinking water?	Water from a river/stream/pond/lake/spring (with chlorine tablets) Water from a river/stream/pond/lake/spring (without chlorine tablets) Water from a borehole or well (with chlorine tablets) Water from a borehole or well (without chlorine tablets) Rainwater Piped water Bottled water Other
What is the other main source of drinking water for your household?	
How many school-age children are in your household?	
During term time, how many of them miss school most days?	
If some miss school: Why do they miss school?	Can't afford fees/costs (books, uniform) School is too far Travel to school isn't safe They don't like school They work to earn money instead They help at home with household chores They are sick They are disabled Other: // Open response, 1 sentence max
What are the other reason(s) for missing school?	
Is the household head able to read and write in English?	- Yes - No