Smallholder Financial Diaries Datasets User Guide

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CGAP

Contents

1. INTRODUCTION

CGAP launched the year-long Financial Diaries with Smallholder Families (the "Smallholder Diaries") to elucidate the financial lives of smallholder households and build the evidence base on this important client group. The study, conducted between June 2014 and June 2015, captured the financial and in-kind transactions of about 270 households in impoverished northern Mozambique, the fertile farmlands of western Tanzania, and the Punjab province, the breadbasket of Pakistan. CGAP retained the services of Bankable Frontier Associates (BFA) to manage the project. For in-country data collection, BFA worked with International Capital Corporation in Mozambique, Digital Divide Data in Tanzania, and RCons in Pakistan.

The Diaries methodology combines in-depth quantitative and qualitative research. Research teams met participating families about every two weeks to collect granular data on cash flows in and out of the household, their financial tools, assets, major life events, and attitudes toward agriculture and financial services.

The purpose of this guide is to provide researchers direction in using and interpreting the data produced by this project.

2. FINANCIAL DIARIES METHODOLOGY

2.1 Positioning of the Diaries Methodology as a Research Tool

Financial Diaries collect in-depth data on the financial lives of households. While qualitative data are also collected and used to offer perspective to individual stories, the bulk of the effort resides in gathering quantitative data about transactions at the household and household member level.

Figure 1. Financial Diaries positioning
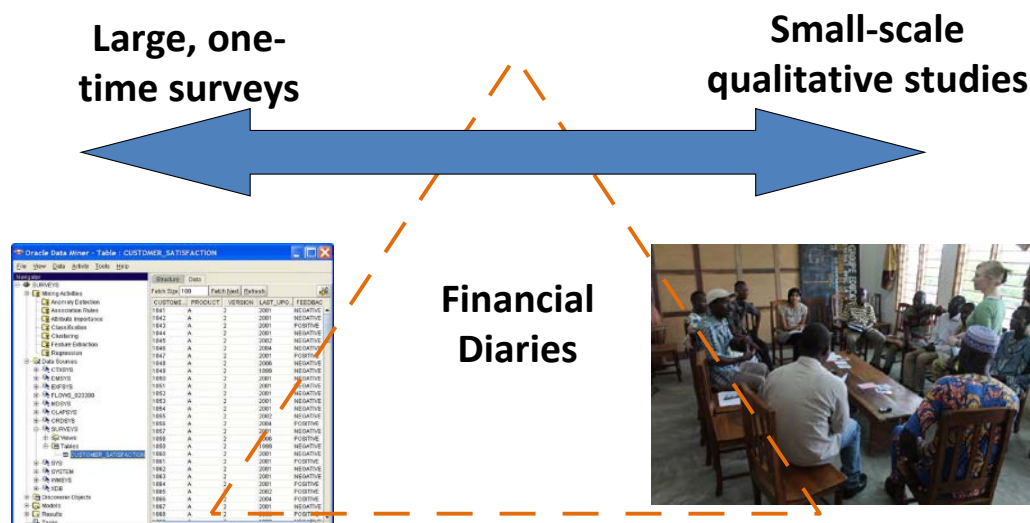
2.2 What Makes Diaries Stand Apart and What New Insights They Can Bring

The cash flows collected through Financial Diaries are completely disaggregated at the transaction level and, thus, have the potential to offer a much better understanding of financial behavior. For example, in a standard one-off survey, the respondents would typically be required to recall how much their household spent in total on food over a certain period (e.g., a typical month). Financial Diaries do not record the total value spent on food over a two-week period (the typical time between consecutive interviews), but rather capture each individual purchase. The benefit is not only that the data are more accurate, but also that the researchers can glean insights about the size and number of transactions, the format of payment used, which household members are most likely to initiate certain transactions, etc.

2.3 Limitations

Financial Diaries focus on gathering in-depth information about transactions that have to do with money management. The Smallholder Diaries were conducted over a long period of time (approximately one year), thus it was possible to have only a small sample of households. These households were selected purposefully without the aim of ensuring their representability. The samples are also geographically concentrated, covering two to three neighboring villages in each country only. Furthermore, to minimize attrition issues, the study tried to include only households willing to commit to a year-long study and likely to stay in the community.

During the year-long Smallholder Diaries, researchers often developed close relationships and in-depth knowledge of the households they worked with. However, the data were self-reported. As is the case with any other survey, the reporting household members may purposefully hide certain incomes or expenses from the interviewers, or from other household members, or they may incorrectly remember certain transactions.

The Smallholder Diaries produced a tremendous amount of data points that are quantifiable. However, the user should always be aware that these data points are generated by a very small and nonrepresentative sample of households. Findings from the Smallholders Diaries are not and should not be treated as statistically representative of smallholder farmers in the study areas or in the three countries. All findings should be interpreted as indicative only and presented as such.

3. OVERVIEW OF DIARIES METHODOLOGY

3.1 The Data Collection Process

The research teams in each country first identified the villages for the study and recruited the participating households. Following recruitment, the interviewers visited each household and completed three initial questionnaires they (1) collected a household roster and demographic information about household members, (2) captured a register of physical assets and income sources for each household member, and (3) registered the unique financial instruments used by each household member. This

baseline information was then used to generate a custom cash flows questionnaire for each household (see Figure 2), built to collect income, expenditure, and financial transactions for each individual. This customized cash flows questionnaire was then used for the collection of cash flows data. During regular visits about every two weeks, interviewers captured a complete set of daily, individual transactions from the preceding two-week period. Households were asked only about transactions using financial instruments and income sources that they actually have, rather than going through a generic list of questions. However, the cash flows questionnaire was continuously updated as new members joined the household, members acquired new financial instruments or income sources, or as the interviewers became aware of previously undisclosed ones.

Figure 2. The process of setting up the main Financial Diaries data collection questionnaire
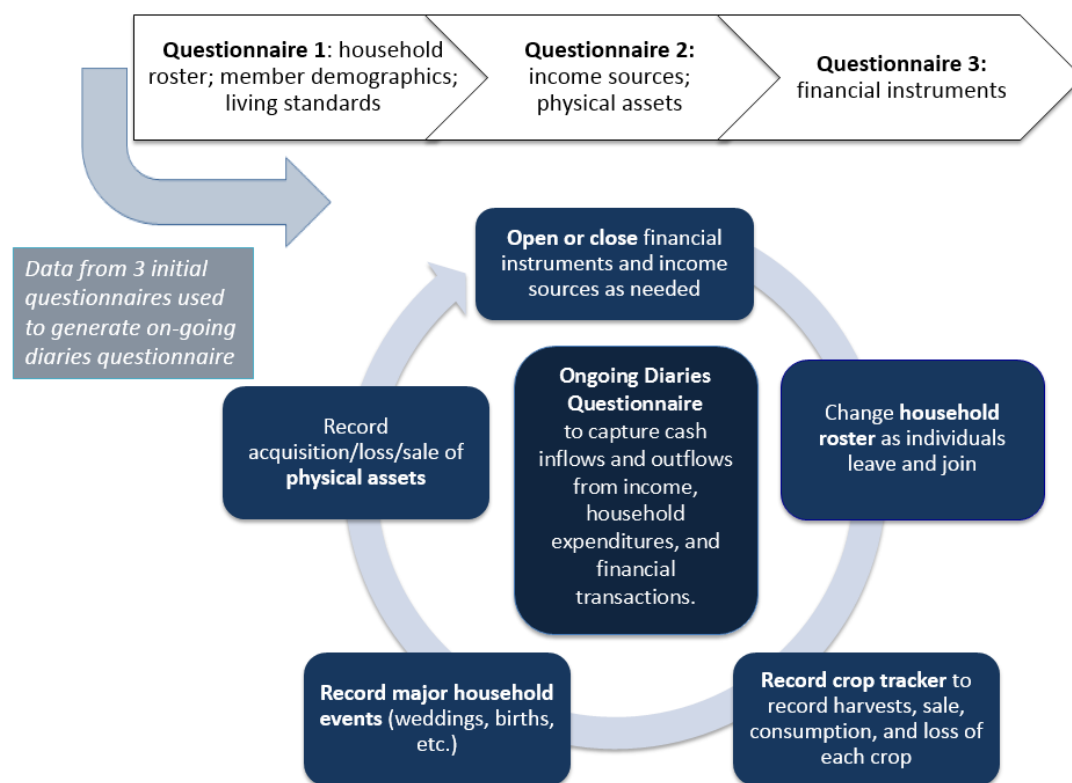
3.2 The Respondents

The interviewers usually interviewed one main respondent from the household during each visit. In many cases the respondent was the head of the household, but not always. When possible, the interviewers discussed transactions with more than one household member, either at the same time or separately.

4. COVERAGE

4.1 Countries Included in the Study

CGAP chose to implement the Smallholder Diaries in Mozambique, Tanzania, and Pakistan because of the variation in their agricultural sectors and the potential to work with smallholder households with different mixes of crops and livestock, degrees of engagement in agriculture, and market relationships, all within the varied mobile financial services ecosystems across the three countries.

The specific sites selected for the Smallholder Diaries within each country also broadly reflect CGAP's global segmentation of smallholder households: noncommercial smallholders, commercial smallholders in loose value chains, and commercial smallholders in tight value chains. Nampula Province in Mozambique is the least developed of the three study regions in terms of agriculture, with almost no use of agricultural inputs and limited access to irrigation and markets, unlike the Mbeya region in Tanzania. Southern Punjab, Pakistan, has the most robust agricultural market, even in the relatively less-developed (compared with the north of the province) Smallholder Diaries site.

4.2 Geographic Coverage and Brief Description of the Villages Included in the Study

In Mozambique, three villages in Rapale district of northern Nampula Province were selected based on strong recommendations from local stakeholders. While some large companies buy cash crops in the province, smallholders tend to practice the subsistence, rain-fed agriculture that is more commonly found throughout Mozambique.

In Tanzania, the Smallholder Diaries sites included two villages located in the region of Mbeya, home to one of the largest farming populations in Tanzania. Mbeya sits within the Southern Agricultural Growth Corridor of Tanzania (SAGCOT), a region known for a productive agroecological climate and an array of crops and livestock. To explore the diversity within this region, Smallholder Diaries sites were selected in two different districts. The two selected villages exhibit important differences in available economic activities, climate, harvest seasons, crops, and use of agricultural inputs.

In Pakistan, the Smallholder Diaries were conducted in the Bahawalnagar district, in the south of Punjab Province, within the country's breadbasket. Rice, wheat, and cotton are commonly grown and typically sold through a network of local commission agents and village traders. Given the dominance of agricultural middlemen in Pakistan, two villages in the district of Bahawalnagar were selected as representative of an area with relatively looser connections to agricultural value chains and middlemen.

5. UNIT OF ANALYSIS

The main unit for data collection was the household. However, each income source and financial instrument was ascribed to a specific household member during the initial questionnaire. Thus all transactions associated with that instrument or income source are registered under its owner. Similarly, transactions related to expenses were individually attributed to the member who initiated the respective transaction. There were a small number of cash flows for which the interviewer was not able

to unambiguously identify the initiating household member. In these cases, the cash flow was recorded as belonging to the entire household (in the dataset the member ID field would be blank).

Analysis can be performed at two different levels of aggregation:

1. The household itself
2. Individual household members

Definition: In our study the household is defined as including those who consistently share financial resources, live together, share the same cooking arrangement, and report to the same household head. This includes people who travel for work or school during the week and consider the household to be their main residence. However, the definition does not include people who spent an extended period of time away from the household, for example, college students, students away at boarding school, military personnel, people in prison, and people who live in the house but maintain completely separate expenses, such as roommates or other families.

6. SAMPLING PROCEDURE

The sample of households included in the Smallholder Diaries data collection is not random and it is not representative of smallholders in general. The Smallholder Diaries is an expensive, intensive, year-long study that requires highly trained interviewers and research teams. The geographical area where the research took place in each country had to be restricted to a maximum of two or three villages per country to allow teams to easily travel between locations. When selecting the specific research sites in each of the three Smallholder Diaries countries, the goal was to locate at least two villages no more than 40 kilometers apart. The villages needed to be accessible by a passable road so interviewers could reach them throughout the year, and they also needed to present distinctions in at least a few important aspects, such as prevalent varieties of crops and livestock, access to irrigation, and average household income levels. Moreover, given the difficult methodology and long-term nature of the research, the interviewers had to be in frequent contact with the research managers and each other. The households included in the sample had to be willing to participate in a long study that would take them approximately one hour every two weeks, for an entire year, and disclose intimate details of their financial lives. The sampling method used is best described as purposeful qualitative sampling with elements of convenience sampling.

6.1 sample size

Table 1. Sample size

Country	Number of sites (villages)	Number of households in the final sample
Mozambique	3	93
Tanzania	2	86
Pakistan	2	94

6.2 Brief Description of Selection Method for Households Included in the Research

Once the villages for the Smallholder Diaries were selected, the research teams used a screening process to help identify a range of families with five acres of land or less, diverse income sources, access to agricultural inputs, wealth levels, and crops to participate in the research.

In Tanzania and Mozambique, these eligible households were identified using a participatory rural appraisal wealth-ranking technique. Working with committees of village representatives, the research teams conducted wealth-ranking exercises to assess the relative wealth of households in village hamlets or subareas. In Pakistan, the sample was selected using a traditional screener survey with questions related to household demographics, crops and livestock, main income sources, and wealth indicators administered to all households in the selected villages. As a supplement to this process, village leaders and community representatives were consulted to help ensure local participation and eliminate households with large landholdings.

6.3 Attrition Rates

The sample initially included 286 households in all three countries, and the study ended with 273 households in total—an attrition rate similar to what has been observed in the past in other Financial Diaries exercises. Households left the study due to moving from the study villages, seasonal migration, and occasionally by the prompting of the research team due to concerns about the household's willingness to be forthcoming about important sources of income.

7. FIELD WORK

7.1 Data Collection Periods

Data collection on household cash flows started in June 2014 and ended in June 2015. The timeframes for observations are not exactly the same for every sample and household. In some areas and with some households, the Smallholder Diaries started slightly earlier than others.

7.2 Data Collection Mode

Data were collected through face-to-face interviews, using a computer tablet preloaded with the data collection software and all previously recorded data. The tablets were synchronized each day so that all collected data were uploaded to the server and the tablet would receive the latest version of the database.

7.3 Data Collection Language

In Mozambique, interviews were conducted in Portuguese and recorded in Portuguese in the database. In Tanzania, interviews were conducted in Swahili and recorded in English translation in the database. In Pakistan, interviews were conducted in Punjabi and recorded in Urdu in the database. All questions and answer options were translated into English, when applicable.

7.4 Data Collectors

BFA managed the Smallholder Diaries project for CGAP. For in-country data collection, BFA worked with International Capital Corporation in Mozambique, Digital Divide Data in Tanzania, and RCons in Pakistan. The core team included a project manager to manage the overall study and a country project manager for each specific country. The in-country data collection teams included a research manager, data analyst, and field interviewers. The main responsibility of the research manager was to manage the field interviewers and the data analyst to ensure high-quality data throughout the course of the Financial Diaries project.

The data analyst's primary role was to manage the Smallholder Diaries database, including set-up and quality control through the data collection process. This included the following:

- Testing the database on tablet computers.
- Helping to train field researchers on how to input data on the tablets.
- Checking and verifying data throughout the project.
- Downloading data from the database and analyzing it, either in Excel, Stata, or another program.
- Supporting field researchers when they have questions about data entry.
- Providing feedback and solving problems to enable the work of the researchers.

The primary responsibility of the field interviewers (three to five per country) was to interview households about their spending, income, and financial behavior approximately every two weeks over the course of 12 months. Beyond simply conducting an interview, the interviewers needed to manage relationships with these households, whom they saw on a regular basis. The interviewers entered data into tablet computers and verified that these data were accurate. Specific duties included the following:

- Attending three trainings on the Financial Diaries methodology.
- Helping to recruit smallholder families to participate in the year-long study.
- Carrying out three initial questionnaires with the selected households.
- Visiting the households approximately every 14 days to carry out a 45 minute to 1 hour 15 minute survey about the cash flows of the household.
- Imputing data into the database through the tablet computer. Syncing data to be stored to the database server daily.
- Carefully checking and verifying data and work with the data analyst and making corrections.
- Encouraging households to continue to participate in the research for the duration of the project.
- Discretely administering monetary gifts to be given to the households for their participation.
- Treating the households with respect and empathy, while not intervening in ways that would change their financial behavior.
- Participating in regularly scheduled team calls to share experiences and update on findings.

7.5 Training

In-country teams took part in a number of training sessions led by BFA staff. Prior to the start of the Smallholder Diaries, in-country teams took part in a week-long training on the Financial Diaries methodology, including an introduction to the initial questionnaires, the biweekly questionnaire,

exercises to identify sources and uses and the various financial cash flow categories, and cultural sensitivity. After completing the initial questionnaires, the teams then took part in an in-depth training on the biweekly diaries questionnaire.

8. DATA CLEANING AND EDITING

8.1 In-Field Data Reconciliation

The database has built-in systems to flag certain data quality issues. For each interview, the money coming into the household (inflows or "sources") needs to match the money going out of the household (outflows or "uses") from an accounting perspective. For more on sources and uses, see Appendix 1. At the end of the interview, the interviewer can see a report of the "sources" and "uses." If the "sources" exceed "uses" it means that either an amount was entered incorrectly or that the household forgot to declare one or more ways in which it used its money. The converse is true if the "uses" exceed "sources." In such cases, the interviewers are trained to probe more, while not sacrificing the accuracy of the data. The interviewers are instructed to view such discrepancies as possible red flags and causes for additional probing, but perfectly matching sources and uses is not seen as a target in itself. The gaps between sources and uses were monitored on a monthly basis, with an aim to keep them below 5 percent.

Figure 3. Reported sources and uses need to balance out for the period
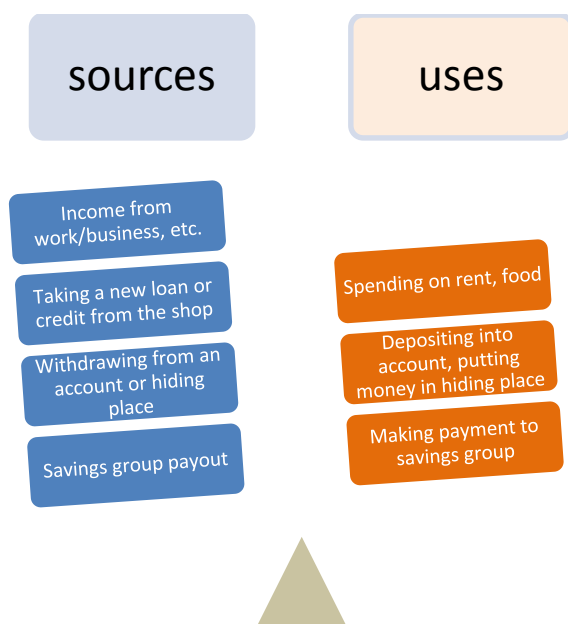
A second built-in system to detect potential errors is a calculated balance in various financial instruments. At any time, the interviewer is able to see the balance in financial instruments such as savings in the house, credit at the store, bank account, etc. When based on the initial balance and subsequent transactions, the current balance becomes unrealistic (e.g., negative savings) the interviewer is instructed to try to discuss where the error might be coming from and correct it. Such

errors could arise from incorrect data entries or missing past transactions. As with the sources–uses flag, this task requires diplomacy and tact.

8.2 Office Data Cleaning During Field Work

Field managers periodically looked at the data to detect possible errors. In addition to monitoring the gaps between sources and uses managers identified missing or unrealistic cross-sectional information (e.g., missing age for household members or an age that does not correspond with cash flows), cash flows that include unlikely values, and missing accounting correspondences (e.g., if a household reports buying a good on credit, there should be a corresponding financial transaction indicating the same amount as a loan). Some of these errors can be corrected on the spot by the research manager with or without the help of the interviewer, while others are resolved during the following interview after discussing the discrepancy with the respondents.

8.3 Post Collection Data Anonymization, Standardization, Etc.

Certain data errors can be observed only in later stages during the analysis phase. When found and if it was possible to triangulate, such corrections were made directly in the database post data collection.

The public datasets were anonymized by removing the names and birth dates of the respondents, as well as other information that could have been revealing. For example, financial instrument and income source contained free entries that made them easier for the respondent and interviewer to identify them (e.g., an account related to borrowing from friends and family may have had a free entry such as "Sister Jane"). Such potentially exposing information about the respondents, their employers, their financial institutions, or their acquaintances was removed.

The majority of financial diaries data are standardized by construction. However, several variables where the interviewers were able to freely enter information were standardized before publication. Examples include the agricultural production type variable.

9. WORKING WITH THE DATASETS

The **cash flows** datasets represent the bulk of the data collected and the main purpose of the financial diaries. During the diaries interview, the interviewer would ask about and record information about (1) flows related to income, (2) flows related to operational expenses (purchasing goods and services), (3) flows related to expenditures on physical assets (durable goods), (4) flows related to financial instruments (such as savings or credit), and (5) cash on hand.

The member **demographics** dataset was collected at the onset of the research, and it offers basic demographic information about household members: gender, age, and education. Since this information was collected about each household member, the dataset can also be used to count how many members (adults and/or children) live in the household.

Across the three countries, the datasets have a very similar structure, therefore it will be presented only once.

9.1 Datasets Overview

Two main datasets for each country will be made public:

1. Cash flows
2. Demographic information about household members

Cash flows

Dataset Name	Moz. cash flows. dta
	Tanz. cash flows. dta
	Pak. cash flows. dta
Description	All transactions associated with operational income, operational expenses, financial, and assets, captured over the duration of the study, in Mozambique, Tanzania, and Pakistan.
Number of Variables	15
Number of Observations	Mozambique: 21,163
	Tanzania: 71,016
	Pakistan: 136,826

Demographics

Dataset Name	Moz. member data. dta
	Tanz. member data. dta
	Pak. member data. dta
Description	Basic demographic information about each household member in Mozambique, Tanzania, and Pakistan
Number of Variables	12 (13 for Mozambique)
Number of Observations	Mozambique: 508
	Tanzania: 420
	Pakistan: 602

9.2 General Datasets Structure

The **Demographics** datasets are cross-sectional, with each household member being observed once. Each household was visited once at the beginning of the project, and demographic information about each household member was collected. These data were updated when new members joined the household (e.g., through birth).

Table 2. Fictional example of the demographics dataset structure

member_id	household_id	age	gender
1	A	57	F
2	A	3	F
3	A	49	M
4	B	23	M

The **Cash flows** datasets are unbalanced panel datasets. Each line of the matrix represents a cash flow. Each transaction is attributed to a household, and in most cases also to a household member. However, some transactions belong to the entire household (or the initiating member could not be identified) and in this case the member_id variable is blank. The date of each transaction is the actual date of the transaction. Therefore, there are dates with no transactions and dates with multiple transactions. Similarly, some household members are responsible for multiple transactions, while others do only a few (or none).

Table 3. Fictional example of the cash flows dataset structure

member_id	household_id	date	transaction type	Value
1	A	1/1/2015	Expense	$50
1	A	1/1/2015	Income	$106
2	A	2/1/2015	Financial	$15
	A	2/1/2015	Expense	$2
2	A	10/1/2015	Income	$20
4	B	3/1/2015	Income	$123

9.3 Merging the Datasets

The cash flows and the demographics datasets can be merged using the unique member_id variable as key. Since the cash flows dataset is panel and the demographics dataset has only one observation per member, the merge would be many to one. Please note that some flows from the cash flows dataset are not assigned to any member, they belong to the entire household. Conversely, not all household members have initiated at least one flow.

If the researcher needs household-level demographic information (e.g., number of household members) the merging of aggregated household-level demographic data with the cash flows dataset can be done using household_code as the key.

9.4 Variables

The variables included in the Demographics and Cash flows datasets are as follows.

Demographics

Variable name	Variable label	Description
id_member	Member ID	Unique ID for individual household members
household_code	Household code	Unique code for households
M1age	Member age	Household member's age in years at the time of interview
M1gender	Member gender	Member's gender
M1maritalstatus	Marital status	Member's marital status at the time of interview
M1enrolled	Currently enrolled in school	Whether the household member was enrolled in school at the time of the interview
M1level	Level of school where currently enrolled	Level of school where member is enrolled (at the time of interview)
M1highesteduc	Highest educational attainment	Highest level of education completed at the time of the interview
M1language	Native language	Respondent's native language
M1read	Can read	If the respondent can read
M1write	Can write	If the respondent can write
M1speak	Can speak Portuguese	If the respondent if able to speak Portuguese (only for Mozambique)

Cash flows

Variable name	Variable label	Description
household_code	Household code	Unique code for households
id_member	Member ID	Unique ID for individual household members
interview_date	Interview date and time	Date and time of day when the interview was realized
cashflow_date	Cash flow date	Date when transaction was realized
account_name	Account name	Identifier of income source or financial instrument. Unique at the household level.
root_category	Root category	Classification of transaction into the following classes: • Operational Income • Operational Expense • Financial • Cash • Physical Asset

cf_category	Cash flow category	Finer classification of financial transaction categories.

For example, for the root category "Operation Income," the cash flow categories are the possible types of income earned:

- Agricultural Income
- Casual employment
- Nonemployment
- Other income generating activity
- Regular employment
- Rental income
- Resources given outside the household
- Resources received from outside the household
- Self-employment

cf_type	Cash flow type	The cash flow type offers more information about the transaction type. It is designed to be used in conjunction with the cash flow category, as they are customized for each category.

For example, for the category "Agricultural Income," there are five possible cash flow types:

1. Agricultural revenues (sales)
2. Labor (workers on fields)
3. Expenses: Seed/fertilizer/etc.
4. Long-term expenses (plow, tools, etc.)
5. Loses due to theft

cf_direction	Cash flow direction	Cash flow direction indicates whether the cash flow is an inflow, an outflow, or neither. Inflows are indicated by an "In." Outflows are indicated by an "Out." Certain records, such as starting balances or end balances in financial instruments, are neither inflows nor outflows. They are simply collected but are not true cash flows.
cf_bsheet_direction	Balance sheet direction	In the case of Physical Assets and Financial flows, an additional variable indicates how a transaction affects (increase or decrease) the balance of that particular physical asset or financial instrument. For example, a deposit into "Keeping Money (Cash) at Home" would have an increasing effect on the balance of that instrument, while a withdrawal would have a decreasing effect.
agrprodtype	Agricultural production type	For flows related to the category "Agricultural income," an additional variable indicates what type of agricultural production the account is referring to. This is specific to each agricultural income source (identified by account_name), although a household could have multiple income sources from the same agricultural production type. For example, a household could have two agricultural income sources that belongs to two different household members, but both these sources are from maize. In addition, one of the members may also earn income from cassava.
value	Transaction value	The monetary value of the flow, in local currency. If the transaction was done in kind, this value would be zero.

cashflow_mode	Cash flow mode	The mode in which the transaction took place. Most often transactions are in cash, but checks, credit cards, in kind etc. are also possible. Transactions from the root category "Cash" do not have a defined mode.
unitsgoodservice	Units of good or service if in kind	For transactions that took place in kind, an additional variable indicates what goods or services were transacted. This is a free entry.
valueifinkind	Transaction value if in kind	For in kind transactions, the respondents with help from interviewers estimated the monetary value of the goods or services involved in the transaction.

Figure 4. Main classes and categories of cash flows
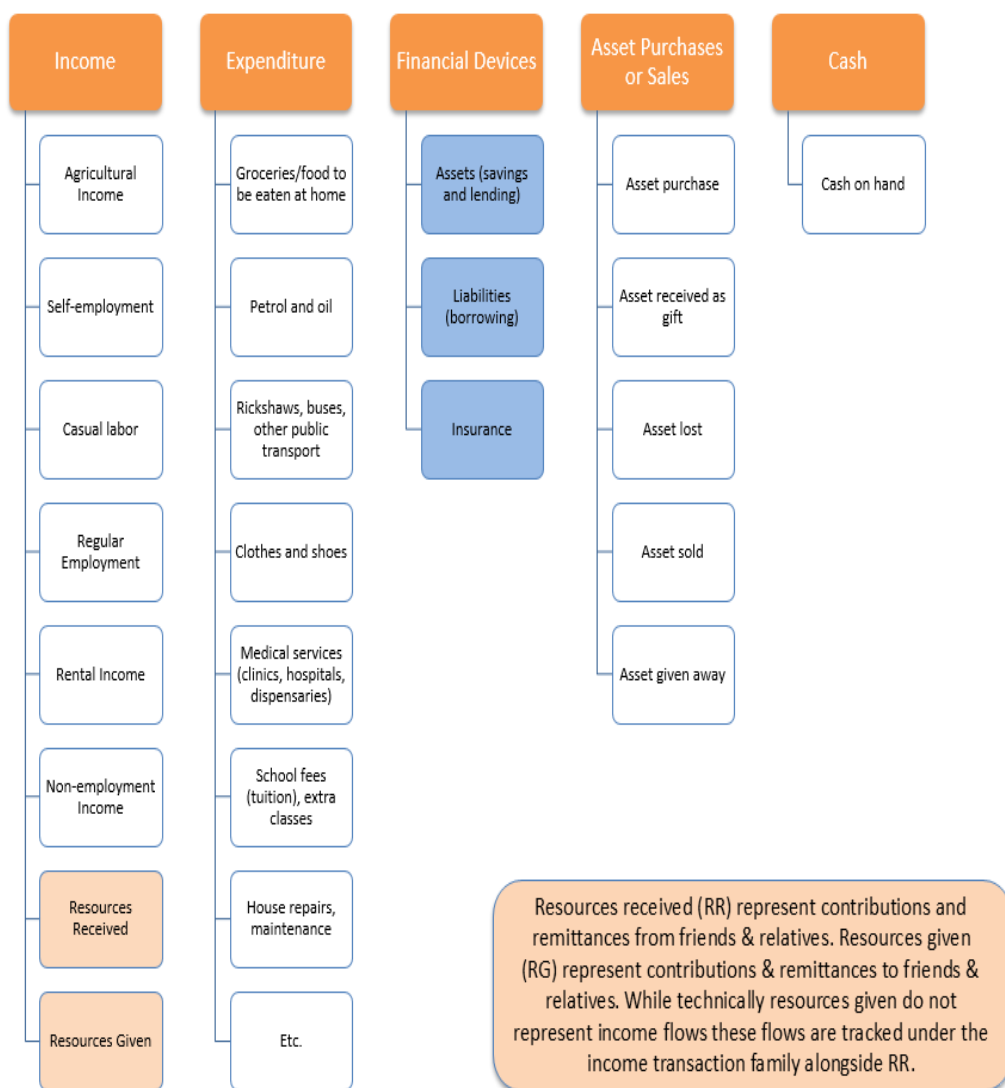
Reference: "Kenya Financial Diaries: Datasets User Guide," available at http://fsdkenya.org/wp-content/uploads/2015/12/README-Financial-Diaries-Datasets-User-Guide-v1.1.pdf

9.5 Definitions for Main Classes of Data Collected in the Cash Flows Portion of the Interviews

The major classes of transactions in the Cash Flows dataset are defined as follows:

Operational income. Monetary flows associated with all households' members income sources. These could include both revenues and expenses related to the income sources (e.g., buying stock for a self-employment type of business is an income outflow).

Operational expenses. Flows associated with expenses on goods and services (e.g., buying food).

Physical assets. Flows associated with changes in physical assets, such as buying, selling, losing, etc. (e.g., eating a chicken).

Financial. All flows associated with saving, borrowing, insurance, through financial instruments.

Cash. The amount of cash on hand at the date of the interview, or amount of cash that was lost, stolen, or is otherwise missing.

9.6 Definitions for Main Categories of Operational Income and Financial Instruments

The categories of operational income, financial instruments are defined as follows.

	Operational Income
Regular Employment Income	Income earned from a job done on a regular basis with pay earned regularly. The pay may involve contingent earnings, such as bonuses, tips, commissions, etc.
Casual Employment Income	Income earned from jobs done for various clients, as needed, not on a regular basis. There are minimal expenses associated with the job, it mainly consists of providing labor.
Self-Employment Income	Income earned from a job consisting of running own business, with no boss to report to. In most cases there is more than one client. The job could be formal or informal, part or full-time, or occasional. Typically there are expenditures associated with the business and it has more than one client.
Nonemployment Income	Income earned from an institution (such as government, church, charitable organization, etc.), without any work expected in return.
Agricultural Income	Income earned from selling crops, vegetables, fruits, eggs, and milk from self-production. The person may also have costs associated with this production (fertilizer, labor, seed, etc.). Selling animals or land is not considered agricultural income—it represents an asset sale.
Rental Income	Income earned from renting property.

Other Income	Income earned from other income-generating activities. It includes compensation for participating in surveys, lottery winnings, gambling winnings, etc. The research firms provided small cash gifts at surprise times throughout the study to thank respondents for their participation. These gifts were tracked as income and recorded as an income source under "other income."
Resources Received from Outside the Household	Resources (money or goods or services) received from nonhousehold members who do not expect payback.
Resources Given Outside the Household	Resources (money or goods or services) given to nonhousehold members who do not expect payback. This category, does not truly represent an income earned, but rather a use of money.

Financial Instruments

Savings

Checking/ Savings account	Account at a bank, MFI, cooperative.
Long-term investment	Retirement pension fund, provident fund, annuity.
Savings in the House	Money kept at home or in a hiding place (e.g., under the mattress, buried, in a piggy bank, etc.).
Money Guard	Keeping money with someone outside the household (e.g., neighbor, employer, etc.).
Rotating Savings Group (ROSCA)	Committee or other informal savings group in which everyone contributes the same amount each time, and one member takes the pot in a rotating fashion. Note that ROSCAs are treated as a financial asset in this dataset; however, the balances are allowed to be negative (when the person takes the pot they actually owe the group until the end of the cycle).
Accumulating Savings Group (ASCA)	Group in which members contribute regularly and the pot is shared at the end of the cycle. Borrowing from the group is sometimes possible.
Other Financial Investments	Investments such as stocks, bonds, etc.
Private Investment in Someone Else's Business	A private investment in some else's business.
Layaway	Paying for an item on layaway (paying in advance, in instalments, before taking the item).
Prepaid/Stored Value Card	A prepaid voucher or card for a particular store.

Borrowing

Credit Card or Store Card	A card on which a purchase can be charged and paid later.
Informal Credit at the Store	Credit from small shops or stores that allow talking the item with the promise to repay later.
Pawning	Pawning goods (e.g., gold, phones, etc.) with a shop or moneylender.
Friends and Family Borrowing	Loan from friends, neighbors, or family members. Different from a moneylender loan.
Borrowing from an Informal Group	Loan from a savings group, group of merchants, or other group (not MFI).
Mortgage	Loan given by bank to buy a house. The house title is transferred only after the loan is fully paid.
Individual Loan from Institution	Loan for which the borrower alone is responsible.
Joint Liability Loan	Loan (e.g., from an MFI) for which group members (outside the household) are responsible to pay for others.
Wage Advance from Employer	A loan taken from employer against the next salary.
Supplier Credit	Arrangement made with a supplier to receive goods on credit and pay later. This is usually for business' stock.
Installment Purchases	Goods that are paid over time, in a series of installments. Unlike layaway, the good is taken home before the full price is paid.

<div align="center">**Insurance**</div>

Health Insurance	Health insurance that requires a premium to be paid.
Life Insurance	A plan that pays out in case of death of the policyholder.
Vehicle Insurance	Insurance to cover a car, tractor, motorbike etc.
Home or Rental Insurance	
Crop Insurance	
Livestock Insurance	
Funeral Insurance	

<div align="center">**Providing Financial Services/Money Owed to Household Member**</div>

Wage or Rental Arrears	The respondent if owed money by an employer or renters, who are late.
Lending to Friends and Family	Lending money to friends or family (outside the household).
Credit Given to Clients	Giving clients goods or services on credit.
Acting as a Money Guard	Keep money safe for someone outside the household.

Financial Diaries use the double-entry method to record transactions performed through financial devices. For more explanations on double entry, see Appendix C.

9.7 Examples of Data Aggregation Levels

The granularity of the Financial Diaries methodology is one of its biggest strengths. Nonetheless, depending on the research objective, aggregation is often required. There are many ways this this type of data can be filtered and aggregated. Some examples of how the data were aggregated for past research include the following:

- Over units of analysis. Various indicators can be calculated for the individual household member, or for the household.
- Over time. Income, expenses, financial transactions, etc., can be expressed on a monthly, weekly, daily, etc., basis.
- By cash flow category.

9.8 Note on Time Periods

Each interviewer was responsible for interviewing approximately 25 households, and the collection of cash flows data did not start on the first of the first month and did not end on the last day of the last month. If the user is interested in aggregating data at the month (or even week) level, he or she needs to keep in mind that for some of the households, the first and last periods may be incomplete, and their cash flows may be only partially captured. It may be advisable to either drop such incomplete periods for the respective households, or simply truncate the data for all households to ensure only complete periods.

9.9 Examples of How Transactions Are Recorded

Table 4. Example of how transactions related to income are recorded

Household code	Member ID	Interview date and time	Cash flow date	Account name	Root category	Cash flow category	Cash flow type	Cash flow direction	Balance sheet direction	Agricultural production type	Transaction value	Cash flow mode	Units of good or service if in kind	Transaction value if in kind
TZFIL10	2	1/18/2015 18:45	1/1/2015	SEI01	Operational Income	Self-employment	1. Revenue or Sales	In			200	01=Cash		
TZFIL10	1	1/18/2015 18:45	1/1/2015	RR01	Operational Income	Resources received from outside the household	Resources received	In			10000	01=Cash		
TZFIL10	4	1/18/2015 18:45	1/13/2015	AGRI05	Operational Income	Agricultural Income	1. Agricultural Revenues (Sales)	In		01=Rice (Paddy)	100000	01=Cash		
TZFIL10	2	1/18/2015 18:45	1/15/2015	RG09	Operational Income	Resources given outside the household	Resources given	Out			20000	01=Cash		
TZFIL10	2	2/1/2015 15:11	1/20/2015	RR08	Operational Income	Resources received from outside the household	Resources received	In			0	06=In-kind (trade, good, service—NOT MONEY)	A mobile phone	50000
TZFIL10	4	2/1/2015 15:11	1/22/2015	AGRI05	Operational Income	Agricultural Income	2. Labor (workers on fields)	Out		01=Rice (Paddy)	80000	01=Cash		
TZFIL10	2	2/1/2015 15:11	1/31/2015	RI01	Operational Income	Rental Income	1. Income from rental	In			40000	01=Cash		
TZFIL10	2	1/18/2015 18:45	1/4/2015	SEI01	Operational Income	Self-employment	1. Revenue or Sales	In			500	01=Cash		
TZFIL10	1	10/15/2014 14:21	10/1/2014	RR04	Operational Income	Resources received from outside the household	Resources received	In			0	06=In-kind (trade, good, service—NOT MONEY)	Tomatoes	500

In Table 4, note that the variable "balance sheet direction" is blank as it only pertains to financial transactions. Similarly, the variable "agricultural production type" is filled in only when the cash flow category is "agricultural income." "Units of good or service" and "transaction value if in-kind" are filled in only when "cash flow mode" is "06=In-kind (trade, good, service—NOT MONEY)."

Table 5. Example of how transactions related to expenses were recorded

Household code	Member ID	Interview date and time	Cash flow date	Account name	Root category	Cash flow category	Cash flow type	Cash flow direction	Balance sheet direction	Agricultural production type	Transaction value	Cash flow mode	Units of good or service if in-kind	Transaction value if in kind
TZILF04	18	7/22/2014 12:46	7/18/2014		Operational Expenses	Contributions to community police or neighborhood association	Payments	Out			1000	01=Cash		
TZILF04	18	7/22/2014 12:46	7/19/2014		Operational Expenses	Electricity, phone charging	Payments	Out			200	01=Cash		
TZILF04	18	7/22/2014 12:46	7/20/2014		Operational Expenses	Clothes and shoes	Purchases	Out			2000	02=Purchase on credit/arrears		
TZILF04	18	12/14/2014 13:22	7/29/2014		Operational Expenses	Groceries/food to be eaten at home (include baby food)	Purchases	Out			2500	01=Cash		
TZILF04	18	7/7/2014 11:22	7/5/2014		Operational Expenses	Posho mill/Grinding machine	Payment	Out			1000	01=Cash		
TZILF04	18	7/7/2014 11:22	7/5/2014		Operational Expenses	Groceries/food to be eaten at home (include baby food)	Purchases	Out			0	06=In-kind (trade, good, service—NOT MONEY)	2 kg rice	3000
TZILF04	18	12/14/2014 13:22	8/20/2014		Operational Expenses	Housekeeping supplies (soap, Omo, etc.)	Purchases	Out			1000	01=Cash		
TZILF04	18	12/14/2014 13:22	8/20/2014		Operational Expenses	Food from restaurants, take-aways, delivery, street food	Purchases	Out			600	01=Cash		

In Table 5, variables "account name," "balance sheet direction," and "agricultural production type" are empty as the y only refers to other types of transactions. Note that when the mode ifs "06=In-kind (trade, good, service—NOT MONEY)," "transaction value" is zero

Table 6. Example of how financial transactions were recorded

Household code	Member ID	Interview date and time	Cash flow date	Account name	Root category	Cash flow category	Cash flow type	Cash flow direction	Balance sheet direction	Agricultural production type	Transaction value	Cash flow mode	Units of good or service if in kind	Transaction value if in kind
TZKIML14	243	8/13/2014 13:02	7/14/2014	CRLS01	Financial	Informal Credit at a Store/Service Provider (e.g., boda boda)	3. Payments	Out	Decrease		300	01=Cash		
TZKIML14	243	8/13/2014 13:02	8/10/2014	BFIG04	Financial	Borrowing from an Informal Group	6. Debt written off		Decrease		1000	16=Automatic (including fees, penalties and interest earned)		
TZKIML14	244	8/13/2014 13:02	8/10/2014	OOB03	Financial	Friends and Family: Borrowing	2. New borrowing	In	Increase		0	06=In-kind (trade, good, service—NOT MONEY)	1kg maize	1500
TZKIML14	243	8/13/2014 13:02	8/10/2014	BFIG04	Financial	Borrowing from an Informal Group	3. Payments	Out	Decrease		10000	01=Cash		
TZKIML14	243	8/13/2014 13:02	8/10/2014	ASCA02	Financial	Saving in an ASCA	3. Withdrawals	In	Decrease		10000	01=Cash		
TZKIML14	243	8/13/2014 13:02	2/22/2015	SIH01	Financial	Keeping Money (Cash) at Home	3. Withdrawals	In	Decrease		1000	01=Cash		

In Table 6, "agricultural production type" is empty because it does not apply to financial transactions.

APPENDIX A. CASH FLOW CATEGORIES

Cash flow categories were tailored by country, especially in the case of physical assets and operational expenses. Table 7 shows the answers that were actually chosen by respondents.

Table 7. Cash flow categories, by class

Root category	Cash flow category
Cash	Cash lost, stolen, missing
	Cash on hand now
Financial	Act as Moneyguard
	Agent credit (Pak. Tanz.)
	Arrears Owed by Respondent (Tanz.)
	Borrowing from an Informal Group
	Checking or Savings Account
	Credit Given to Clients
	Friends and Family: Borrowing
	Friends and Family: Lending
	Health Insurance (Tanz.)
	Hire/Installment Purchase
	Individual Loan from Institution
	Informal Credit at a Store/Service Provider
	Joint Liability Loan (Pak.)
	Keeping Money (Cash) at Home
	Layaway
	Long-Term Investment Account (Moz.)
	Mortgage
	Mobile Money (Tanz.)
	Loan from Employer (Pak.)
	Moneylender Borrowing
	Pawning (Moz., Pak.)
	Private Investment in Someone Else's Business (Moz., Pak.)
	Rent Arrears (Pak.)
	Saving in a Rotating Savings Group
	Saving in an ASCA
	Supplier Credit
	Tafu airtime credit (Tanz.)
	Use Moneyguard
	Wage Advance from Employer (Moz., Pak.)
	Wage or Rental Arrears Owed to Respondent
	Welfare Group (Moz., Tanz.)

Operational Expenses	Accessories: bags, belts, jewelry
	Alcohol Purchased (either in home or at pub/bar/club) (Moz., Tanz.)
	Batteries (Moz.)
	Body Soap, Shampoos, Cosmetics, Toothpaste (Moz.)
	Books, Newspapers, and Magazines (Pak., Tanz.)
	Books, Notebooks, Pens, etc.
	Building Labor (Moz.)
	Buses, Other Public Transport (Tanz.)
	Cell Phone Charging, All Other Charging, Pay to Use Another Phone (Moz.)
	Cigarettes and Smoking Supplies
	Cleaning Supplies (Pak.)
	Clothes and Shoes
	Coffin, Burial Service for Household Member (Moz.)
	Contributions to Community Police or Neighborhood Association (Moz., Tanz.)
	DVDs, Video Games
	Diapers and Other Baby Supplies
	Donations to Church or Mosque, or to a Charity
	Electricity, Phone Charging
	Food from Restaurants, Take Aways, Delivery, Street Food (Tanz.)
	Donations to a House of Worship, or to a Charity (Pak.)
	Gas (for cooking), Firewood, Paraffin, Charcoal, etc. (Tanz.)
	Groceries/Food to Be Eaten at Home (includes baby food)
	Fees for Permits, Licenses, etc. (Pak.)
	Haircut, Barber (Pak.)
	Hakim/Traditional/Informal Healer (Pak.)
	Home Maintenance or Repairs (painting, construction, etc.)
	House Girls and Cleaning Help
	Housekeeping Supplies (soap, Omo, etc.)
	Informal Payments (bribe, protection, etc.) (Moz., Pak.)
	Internet Service, Cyber Cafes
	Legal/Lawyer Fees
	Lottery Tickets, Betting, Gambling, etc. (Pak.)
	Medical Services (clinics, hospitals, dispensaries)
	Medicines
	Milling (Moz.)
	Multi-Item Shopping Trips (Tanz.)
	Other Education-Related Expenses (room, board, lunches, uniforms, pocket money)
	Other Entertainment
	Penalties, Fines, Fees (including parking tickets)
	Personal Care Services (saloon, hair, barber, etc.) (Tanz.)
	Personal Care, Toiletries, Beauty Products
	Pet Supplies, Animal Feeds (Tanz.)

	Petrol and Oil
	Posho Mil/Grinding Machine (Tanz.)
	Prepaid Phone Credit and Data Bundles
	Public TV and Movies (Tanz.)
	Purchase of Gifts for Other Household Members
	Recreation, Trips, Outings, Special Events, Religious Events
	Recreational Drugs (like marijuana, etc.) (Moz., Pak.)
	Rent
	School Fees (tuition), Extra Classes
	Services (tailor, shoe repair, etc.)
	Rickshaws, Buses, Other Public Transportation (Pak.)
	Satellite (Pak.)
	Soap, Laundry Soap, Dish Soap (Moz.)
	Taxes
	Taxi Service
	Toys and Games
	Traditional Healers (Moz., Tanz.)
	Vehicle Hire (Pak., Tanz.)
	Vehicle, Bicycle Maintenance and Repairs
	Water (for drinking, washing, bathing) (Moz., Tanz.)
	Wood/Gas (for cooking), Paraffin, Charcoal (Pak.)
Operational Income	Agricultural Income
	Broker Income
	Casual Employment
	Nonemployment
	Other Income-Generating Activity
	Pass-Through Income
	Regular Employment
	Rental Income
	Resources Given outside the Household
	Resources Received from outside the Household
	Self-Employment

Physical Asset	Animal-Drawn Plow (Pak.)
	Bed Nets (Moz.)
	Bedroom Furniture, Including Carpets
	Bicycles (Moz., Pak.)
	Blankets, Sheets, and Other Linens
	Building Materials (bricks, cement, etc.) (Moz., Tanz.)
	Buffalos (Pak.)
	Cell Phone, Smart Phone
	Chicken and Other Poultry
	Computers, Laptops, Hardware, Accessories, etc. (Pak.)
	Commercial (for work or business) (Moz.)
	Crops Storage Detached from the House (Moz., Pak.)
	Dining Room and Kitchen Furniture
	Donkeys (Pak.)
	DVD Players, VCRs, etc. (Moz.)
	Electric Fan (Moz., Pak.)
	Electronic Gadgets (iPads, iPods, camera)
	Exotic or Improved Cows (Tanz.)
	Expensive Items of Clothing (Tanz.)
	Farming Tool
	Farmland
	Goats
	Gold/Precious Jewelry (Pak.)
	Iron (Pak.)
	Kettle, Blender, Other Electric Kitchen Appliances (Pak.)
	Land or Plot (no building on it) (Moz., Tanz.)
	Lantern (Moz.)
	Local Cows (Moz. Tanz.)
	Manual Plow (Pak.)
	Motorbike, Motorcycle
	Other Appliances
	Other Livestock
	Other Valuable
	Other Tools or Equipment (Tanz.)
	Outdoor Furniture
	Pigs (Moz., Tanz.)
	Primary Residence (Pak.)
	Radio (Moz.)
	Refrigerator/Freezer (Pak.)
	Rental Rooms or Houses (residential) (Pak.)
	Sewing Machine
	Sheep (Tanz.)

	Stereos, Speakers (Moz., Pak.)
	Stove (Moz., Pak.)
	Television (Moz., Tanz.)
	Tractor (Pak.)
	Utensils
	Washing Machine or Clothes Dryer (Pak.)
	Water Pump/Tube Well/Submersible (Pak.)
	Water Tanks (Moz., Pak.)
	Wheelbarrow or Cart

APPENDIX B. SOURCES AND USES OF FUNDS

During a regular diaries interview, the interviewers try to comprehensively capture all the sources and uses of funds that the household had in the period since the previous interview.

All operational expenses represent uses of funds, even when done on credit. Operational income is a source of funds; however, there are exceptions. Certain types of income such as self-employment and agricultural income may involve associated expenses, such as paying for labor, stock, seeds, etc. Such expenses, although associated with income, are uses of funds. Another exception are resources given outside the household. These are technically classified as operational income, but they are in fact uses of funds. In the case of financial transactions, whether a transaction represents a source or a use of funds depends on whether the financial instrument is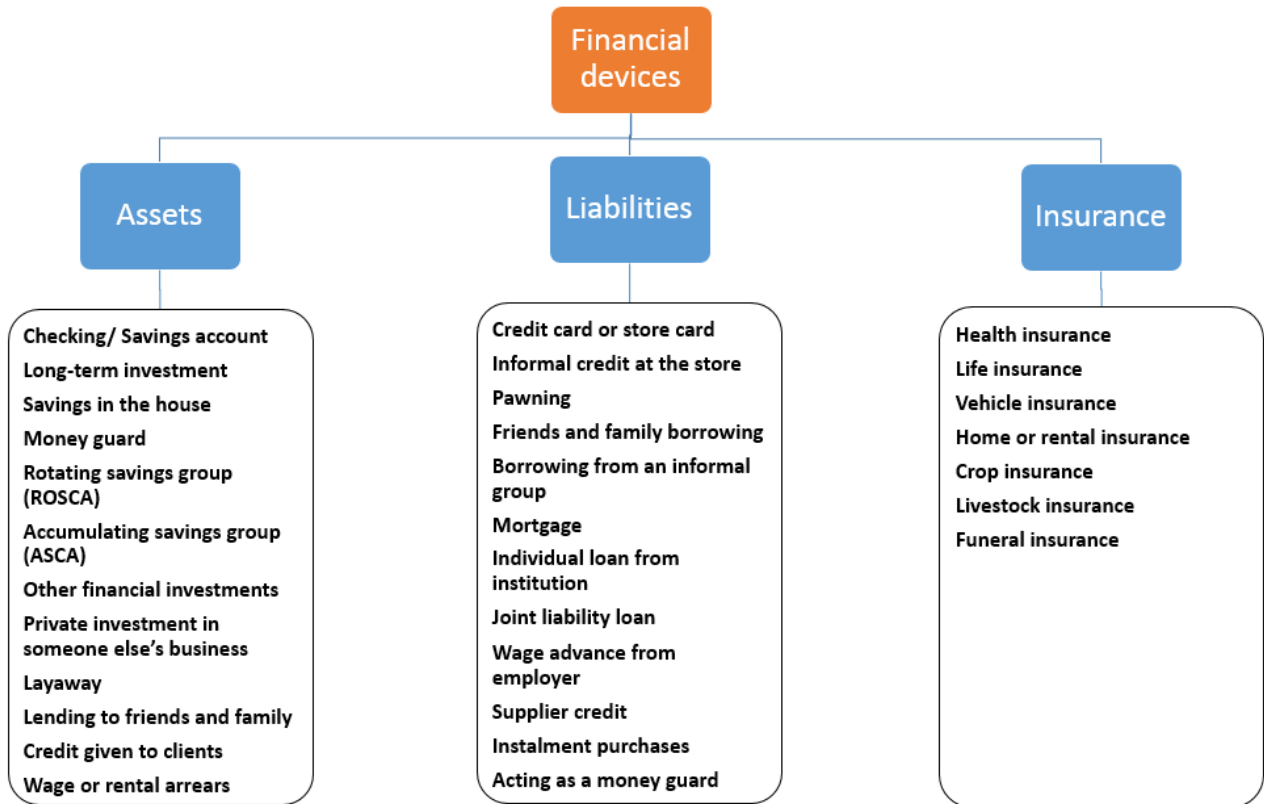 a financial asset or a financial liability. Withdrawals from financial assets represent sources of funds, while deposits represent uses of funds. Conversely, new borrowing represents a source of funds, while repaying a loan is a use of funds.

Table 8. Example of sources and uses of funds

Sources	USD		Uses	USD
Selling beans	$5.5		Clothes and shoes	$5.8
Self-employment selling chips - income	$71.4		Housekeeping supplies	$1.2
Resources Received from brother	$14.4		Posho mill/grinding machine	$3.5
Cash at home (withdrawal)	$34.5		Public TV/movies	$1.7
Supplier credit (borrowing)	$5.2		Groceries	$1.4
			Personal care	$1.2
			Prepaid phone credit	$0.3
			Self-employment selling chips— expenses	$58.7
			Cash at home (deposits)	$51.8
			Supplier credit (repayment)	$5.2
TOTAL SOURCES	**$131**		**TOTAL USES**	**$131**

Figure 5. Financial devices classification as assets or liabilities

Financial devices

Assets
- Checking/ Savings account
- Long-term investment
- Savings in the house
- Money guard
- Rotating savings group (ROSCA)
- Accumulating savings group (ASCA)
- Other financial investments
- Private investment in someone else's business
- Layaway
- Lending to friends and family
- Credit given to clients
- Wage or rental arrears

Liabilities
- Credit card or store card
- Informal credit at the store
- Pawning
- Friends and family borrowing
- Borrowing from an informal group
- Mortgage
- Individual loan from institution
- Joint liability loan
- Wage advance from employer
- Supplier credit
- Instalment purchases
- Acting as a money guard

Insurance
- Health insurance
- Life insurance
- Vehicle insurance
- Home or rental insurance
- Crop insurance
- Livestock insurance
- Funeral insurance

APPENDIX C. DOUBLE ENTRY OF FINANCIAL TRANSACTIONS

A characteristic of Financial Diaries is the double entry of certain financial transactions. When an income- or expense-related transaction is done via a financial device, it needs to be double recorded as both an income/expense and as a financial flow. The following are some examples:

- Income that is directly deposited into an account
- Income received over mobile money or purchases made with mobile money
- Buying goods on credit
- Expenses done with a credit card
- Expenses done with a debit card

Figure 6 gives an example of a person who receives a remittance of TZS 5000 over mobile money and then uses it to pay for school fees.

Figure 6. Example of double entry of financial transactions