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Master's Thesis of Science in Agriculture

**Determinants of Subjective and
Consumption Poverty in Malawi:
Evidence from the Fifth Integrated
Household Survey 2019-2020**

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Determinants of Subjective and Consumption Poverty in Malawi: Evidence from the Fifth Integrated Household Survey 2019-2020

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Abstract

This thesis analyzes the poverty determinants in Malawi by using the 2019 Malawi Fifth Integrated Household Survey (IHPS) data. Regarding the diversity of poverty measurement, the study analyzed households' both subjective and consumption poverty. The study set Malawian households' subjective assessment of poverty and annual consumption value as a response variable, and selected socio-economic characteristics of households as explanatory variables based on main determinants of general, subjective, and consumption poverty. The study adopted an ordered probit model and marginal effects for efficient and precise comprehension of the ordinal data, and also used a multinomial logit model in order to compare subjective and consumption poverty. The results of the analysis indicate that Living in the Northern Region decreased the probabilities of being subjective non-poor by an average of 4.51%, and Friend's poverty status, Financial inclusion, and Access to Electricity increased the probability of being higher poverty step by average of 4.71%, 3.6%, and 3.7%. Similarly, Access to Electricity (485,624 MWK), Living in the Urban area (334,519 MWK), Transaction with Financial institutions (258,344 MWK), Living in Northern Region (-163,755 MWK), Food Consumption Adequacy (145,767 MWK) were the main determinants of consumption poverty. Further, by comparing subjective and consumption poverty, property own, neighbor's poverty step, friend's poverty step, bank account, electricity, food consumption, age, education level are more associated with subjective poor while the household size was more associated with being consumption poor.

Keyword : Malawi, Ordered Probit model, Proportional Odds model, Partial Proportional Odds model, Marginal effects, Multinomial logit model, Subjective poverty, Consumption poverty

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1. Introduction

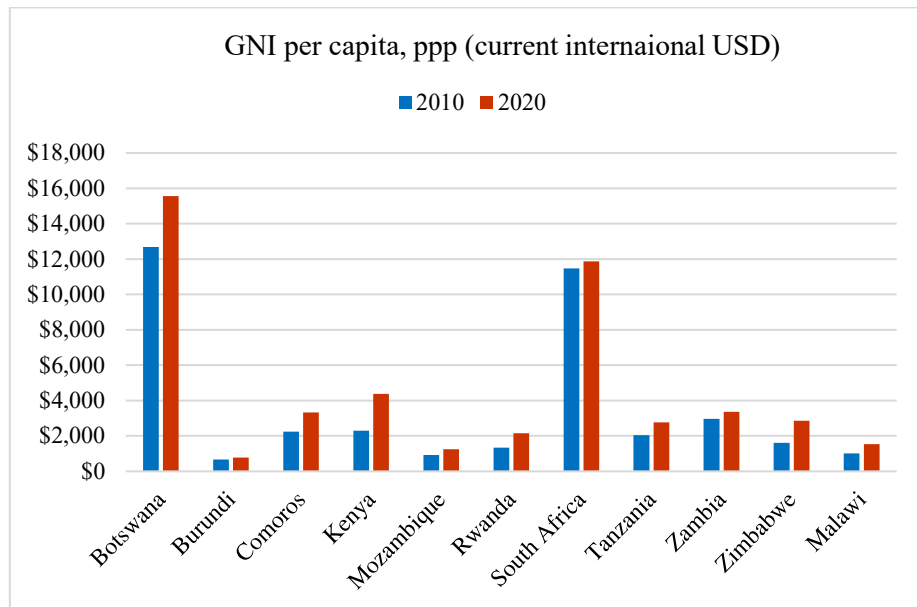
1.1. Research Background

Poverty in Sub-Saharan Africa

Sub-Saharan Africa (SSA), where countries full of diverse cultures and resources, predicted to be the slowest growing region in the world. Despite SSA is one of the leading places where expect to eradicate poverty along with its remarkable economic growth due to the establishment of world's biggest trade zone, higher commodity prices, and a resumption of capital inflows, Sub-Saharan Africa is expected to have a cumulative GDP growth rate of 3.6% per capita from 2020 to 25 period, significantly lower than that of the rest of the world (14%) (IMF, 2021). Moreover, poverty eradication is still the top priority in most SSA countries, since the majority (62%) of the population of sub-Saharan Africa is rural and more than 85% of the poor live in rural areas. SSA is also a region where at greatest food security risk by 2050 since its rapid population growth exceeds the global food demands (Worldbank, 2018). According to 2020 Gross National Income (GNI) per capita of Sub-Saharan Africa from World Bank, countries like Mauritania and Senegal have developed remarkably, SSA has increasing trends through recent decade. **Figure 1** depicts changes of GNI per capita of neighboring countries located within 1,500km from Lilongwe (Capital of Malawi), based on purchasing power parity (ppp) of 2010 and 2020.

However, there are some countries relatively struggles. One of the countries is Malawi, where ranked as 183rd of GDP per capita (USD) among 185 countries worldwide (FCDO, 2021). The economy is largely dependent on agriculture, employing nearly 80% of the population, and it is vulnerable to external shocks, particularly climatic shocks. Since Malawi is land-locked country, surrounded by Tanzania, Mozambique and Zambia, limited market access delayed country's economic development and food supply.

Figure 1. GNI per capita, ppp of Sub-Saharan Africa



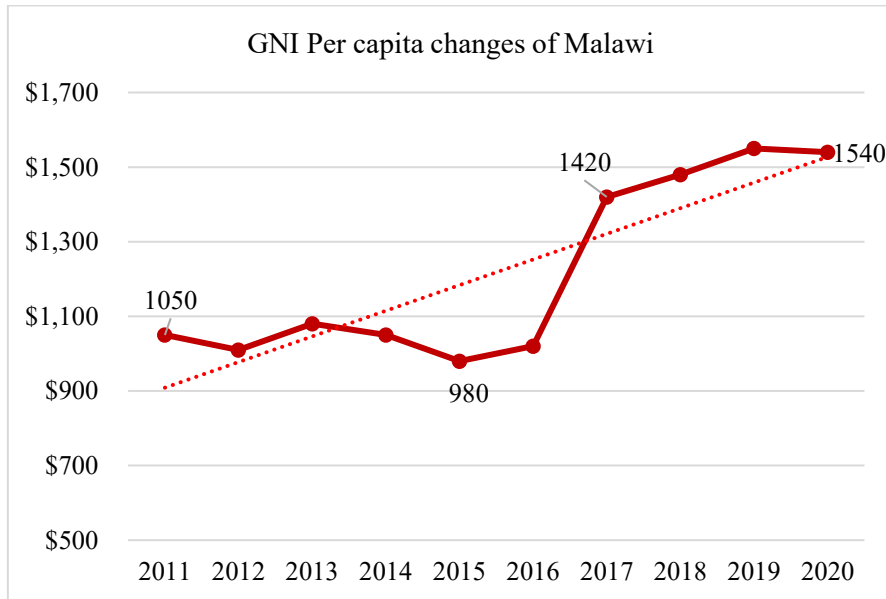
Source: Authors' Computation using World Bank Data (2020)

Poverty in Malawi

Malawi is a small open economy in Sub-Saharan Africa with a per capita GNI of just \$1,540 in 2020, one of the lowest in the world. Per capita income has grown at an average of little more than 1.5 percent between 1995 and 2014, below the average of 2.8 percent for non-resource-rich African economies. **Figure 2** describes GNI per capita changes of Malawi from 2011 to 2020.

Malawi remains geographically and demographically unique compared to other countries that were in a similar stage of development in 1995. Agriculture, which accounts for one-third of GDP, dominates the economy and is responsible for the livelihood of two-thirds of the population. Over the past decades, the country's development progress has been negatively affected by various shocks. Both climate-related external shocks and domestic political and governance shocks contributed to the economic downturn and slow poverty reduction (IFPRI, 2019).

Figure 2. GNI per capita changes of Malawi



Source: Authors' Computation using World Bank Data (2020)

According to explanations of Mkandawire, Malawi caused an increase in poverty or only a slight decrease in poverty despite the economic prosperity. In other words, if growth increases by 1% due to the low "growth elasticity of poverty", poverty does not decrease by 1%. A study by the World Bank argues that Malawi, like most African countries, has lower growth momentum than Asian countries (Mkandawire, International Labour Office. and ILO Southern Africa Multidisciplinary Advisory Team., 1999).

Like in many developing countries, poverty reduction in Malawi is a major development goal. Above all, Malawi is committed to the both Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) which pursued to eradicate extreme poverty and hunger. For years, the Malawi government has pursued poverty eradication through various strategies emphasizing economic growth, infrastructure development, and provision of basic social services. These strategies have included: The Poverty Alleviation Program (1994); the Malawi Poverty Reduction Strategy (2002–2005); and, more recently, the Malawi Growth and Development Strategy (MGDS) (2011–2016 and 2017-2022). Despite these various policies and measures, poverty

remains widespread in Malawi. In this respect, appropriate policy suggestions are needed based on practical analyzation of the factors affecting poverty in Malawi.

Measuring poverty in Africa

Since majority of developing countries in Africa are heavily rely on agricultural production, the income of people is susceptible to natural disasters by year. Most people (especially farmers) do not know their amount of income exactly, because it is difficult to identify certain profit without transaction with financial institutions. Thus, identifying income in developing countries requires long-term and close surveys, which are time-consuming and expensive (Klasen and Blades, 2013). More specifically, there are two main difficulties in national statistics in Africa, (1) Hard to collect, organize, and transmit data and (2) Insufficient funding (Devarajan, 2013). Many developing countries rely heavily on external help to conduct poverty assessments. Even when local analysts are heavily involved, the irregular frequency of thorough household expenditure surveys, combined with the difficulty of the research, creates new challenges. In many societies, the number of income and consumption surveys is limited, and surveys are generally difficult. Also, if efforts are made to raise the number of surveys or censuses, money becomes a big obstacle. Long-term investments in statistic employee training are also scarce. Thus, multifaceted, non-monetary indices are now commonly recognized as significant of being directly related to policy agendas and are easily accessible through censuses and household surveys. (Arndt and Tarp, 2017).

1.2. Purpose of study

The purpose of the thesis is to discover the determinants of poverty based on subjective and consumption measure in Malawi and to suggest practical implications for poverty reduction in the aspects of international development strategy. The study contributes the better understanding of poverty in Malawi by considering socio-economic characteristics of Malawian households and discovers its relationships with both subjective and consumption poverty. Unlike previous studies, this thesis analyzes both subjective and consumption poverty to complement the existing development cooperation strategies. This approach is expected to give more practical policy implication for developing countries.

The following questions are expected to address: 1) What are the determinants of subjective poverty in Malawi? 2) What are the determinants of consumption poverty in Malawi? 3) What is the difference of the determinants of subjective and consumption poverty?

In order to address the research questions above, the study uses 2019-2020 The Fifth Malawi Integrated Household Panel Survey (IHPS5) data to analyze socio-economic characteristics of Malawian household and identify its relationships with subjective poverty by using ordered probit model, one of the well-known regression analysis models for ordinal dependent variable. In addition, the consumption poverty has been analyzed through ordinary least squares (OLS) and subjective poverty and consumption poverty has been compared through multinomial logit model. Detailed information of theoretical models is on chapter 4. Also, the description of the survey data is on chapter 4, along with brief introduction of data and comprehensive explanations of variables used. Chapter 6 explains the result of the analysis and the final conclusions of study is shown in Chapter 7.

2. Literature Review

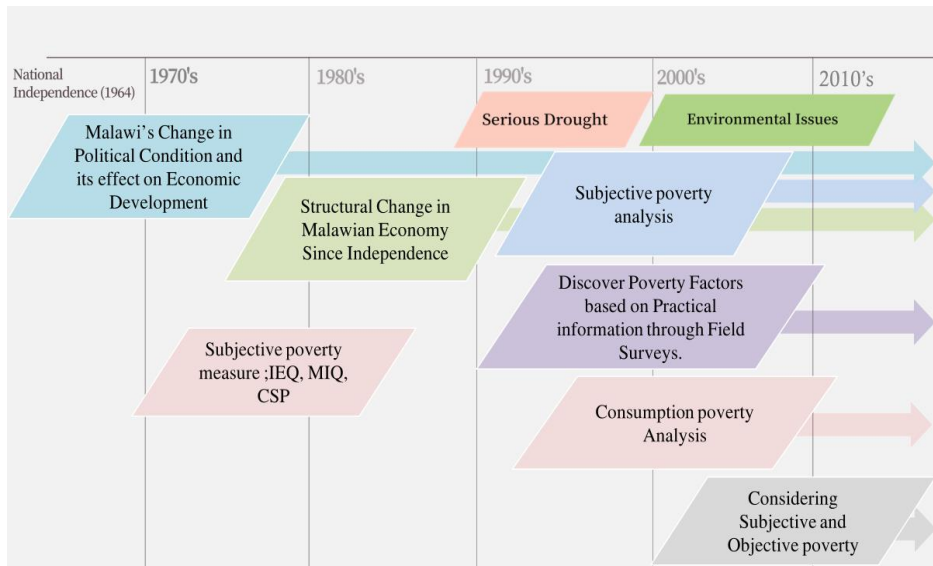
Poverty in Malawi

Studies on Malawi's poverty began in earnest at late 20th century, focusing on land territory issues and farm production strategy. This reflects the era in which a more aggressive national movement took place in the Central African Federation until the late 1950s and tried to mobilize dissatisfied farmers. Also, due to the independence of Malawi on July 1964 after British colonial rule, several researchers were focused on Malawi's change in political condition and its effect on economic development. For example, Simon Thomas examined the effect of government intervention along with Malawi's first republic prime minister Hastings Banda's objectives after country's independence to identify the effect of national independence on economic development and evaluate the impact of these policies on Malawi's economy and society (Thomas, 1975). In addition, Kydd and Christiansen analyzed the structural change in the Malawian economy since independence and identified key policy measures. According to their research, a remarkable characteristic of structural change was found to be related to the rapid growth of large-scale agriculture, the shift of the labor force to wage employment and the decrease in the importance of farmers' production, (Kydd and Christiansen, 1982).

From the beginning of 1990's, studies on poverty in Malawi have mainly focused on poverty factors based on practical information through field surveys until recent years. Since food insecurity and rural poverty became more serious problems in Malawi in 1990's because of low maize production caused by serious drought, examined household survey data in Lilongwe and Blantyre to discover household expenditure efficiency and incidence of food insecurity with child malnutrition (Chilowa, 1991). Likewise, Mukherjee and Benson investigated the determinants of poverty in Malawian households by conducting an empirical multivariate analysis of household welfare primarily using data from the 1997–98 Malawi Integrated Household Survey (Mukherjee and Benson, 2003).

Furthermore, As environmental issues began to emerge, researchers were focused on the relationship between poverty and natural environments in Malawi, due to serious deforestation (Bandyopadhyay, Shyamsundar and Baccini, 2011).

Figure 3. Timeline of the Literature



Studies on Consumption poverty

In order to analyze poverty, studies used income or income-related data to determine household's economic condition. The consumption poverty, or expenditure poverty, often describes as an objective poverty, since per capita consumption contains both food and non-food consumption which strongly connected to individual income. Studies stresses out that the consumption-based poverty measure, is preferable for determining who is the most disadvantaged by presenting the loopholes in the income analyzation. Specifically, Deaton argued that the poverty measurements should be based on consumption rather than income, and that the concept of 'money metric utility' was a suitable basis for integrating theory and measurement. Thus, multiple studies used consumption data to assess poverty (Deaton, 2003). Pendakur

examined consumption poverty of Canada. He analyzed individual consumption under absolute poverty line and estimate consumption poverty through opportunity cost approach, using equivalence scales and price deflators (Pendakur, 2001). Sumarto, Suryadarma and Suryahadi attempted to predict consumption poverty of Indonesia by using non-consumption indicators. The study used the National Socio-economic Survey data of Indonesia, observation of 58,456 households. To create non-consumption predictors, study estimated a model of consumption correlates, and estimated a limited dependent variable model of poverty, then calculated a wealth index (Sumarto, Suryadarma and Suryahadi, 2020). In addition, Orkoh, Blaauw and Claassen examined the relationship between time poverty and income/consumption poverty among households in Ghana, by using third Ghana Living Standard Survey data. Through logistic and probit regression model, study has successfully analyzed the socioeconomic correlates of time poverty (Orkoh, Blaauw and Claassen, 2020).

Studies on Subjective poverty

Meanwhile, use of subjective assessment to measure poverty goes back to Van Praag's research (Van Praag, 1968). He addressed the idea of subjective poverty measure called Income Evaluation Question (IEQ) by asking people whether they see themselves poor in ordinal options to develop the subjective poverty lines. Also, Deleeck draw the concept of CSP (Subjective Poverty Line). Beyond the subjective poverty line, there are key concepts of poverty categorized by Spéder, which is displayed in **Table 1** (Spéder, 2002). In addition, Goedhart introduced Minimum Income Question (MIQ), to ask households the amount of minimum income "to make ends meet". However, such idea often criticized because of the validity of income as a poverty measure (Goedhart *et al.*, 1977).

Table 1. Concepts of Poverty

Concept of poverty	Income	Living conditions
Absolute	Subsistence level Regional minimum	Not processing certain items
Relative	Living below the 50 or 60 percent of mean or median income	Deprivation index
Subjective	Lower decile, quintile Subjective poverty	Minimal living conditions

Source: (Spéder, 2002)

By applying this concept, studies which measures subjective poverty has been increasing in various research areas, especially in developing countries. Herrera and Razafindrakoto performed comparative analysis on subjective poverty in Madagascar and Peru based on panel survey data. Their analyzation is performed through grouping objective variables (socioeconomic characteristics of the households, environment and individual scope of living provided by the panel studies of the two surveys) and identical questions on subjective well-being for both countries (Herrera and Razafindrakoto, 2006). Nándori analyzed subjective poverty in Hungary and compares with the concept of objective poverty through systematic data collection method. He tested the hypothesis of objective and subjective poverty assessment by comparing the subjective poverty line found in data collection with absolute and relative poverty lines (Nándori, 2011). Knight, Song and Gunatilaka also evaluated the subjective poverty in rural China based on 2002 national survey data. They deduced that the subjective well-being are correlated with relative income in the past, present and future, yet current income has shown to be less important (KNIGHT, SONG and GUNATILAKA, 2009). The poverty analysis results based on subjective assessment of developing countries implies that the subjective assessment of poverty sufficiently provides more diverse aspects of household poverty. Therefore, multiple studies argue that poverty can be

measured through subjective assessment from households when it is not easy to obtain objective income data, especially in developing countries. However, according to 'Easterlin Paradox' addressed by Eastelin, there is no correlation between a society's economic development and its subjective well-being in a long run where in income comparison is pervasive, because economic growth motivates overall income growth. Thus, both subjective and objective poverty should be considered to investigate more precise conditions of households. Following studies considered different poverty measures to assess economic condition (Easterlin and Connor, 2020),.

Studies on Subjective and Objective poverty

Carletto and Zezza analyzed poverty in Albania through combining subjective and objective measures of welfare and discovers the factors driving the differences between subjective poor and objective poor. While subjective and objective measures of poverty are obviously associated and provide extremely similar poverty headcounts, study discovered that there is less overlap between the two definitions in terms of individuals who are classified as poor (Carletto and Zezza, 2006). Similarly, Mahmood, Yu and Klasen elaborate his research on Pakistan by comparing objective poverty with subjective poverty. To analyze objective poverty, per capita consumptions under poverty line (1.25\$/1.50\$/1.90\$ per day) were used. Other than finding determinants of both objective and subjective poverty, study added multinomial probit model to figure out the relationship between objective and subjective poverty, (Mahmood, Yu and Klasen, 2019). Both studies concluded that objective and subjective poverty measure presents similar determinants of poverty while subjective poverty covers more diverse contents. Therefore, multiple aspects towards poverty are essential for more accurate investigation.

The Ordered probit model

As seen above, the ordered probit model often applied to utilize ordered variables in economic analysis. Adebayo and his research team used ordered probit model in order to analyze the effect of 'Boko Haram'(BH), the terrorist sect, in multiple sector and discovered how BH have negatively impact on food security based on 2010 Nigerian Living Standard Survey (NLSS) data (Adebayo *et al.*, 2016). More recently, Cho and Kim examined the determinants of poverty in Rwanda by using ordered probit model, based on 2010–11 Integrated Household Living Conditions Survey data (Cho and Kim, 2017).

Recent studies

Studies on Malawi's poverty determinants with the concept of subjective and consumption poverty (or objective poverty) are scarce until now. Besides, previous studies on the poverty in Malawi have limited comprehensive understanding and handling of the poverty issues with recent data. Though Kavuli investigated the poor and the non-poor welfare inequalities in Malawi based on fourth Integrated Household Survey, there are still some limitations since he only focused on a number of variables other than certain household characteristics (Kavuli, 2021). This study will consider various socio-economic characteristics of Malawian households with latest Household survey data.

3. Conceptual Framework

Poverty

In its broad definition, poverty refers to a lack of basic essentials. Basic food, shelter, medical care, and safety are all considered essential based on shared human dignity ideals. What is a necessary for one individual may not be a requirement for another. Needs are socially defined and based on previous experience, and they may be relative to what is feasible (Sen, 1999). According to Valentine, inequality is an essence of poverty, that is, the poverty is defined as a state of relative deprivation. (Valentine, 1968). Although objective definitions allow tracking progress and comparing one place to another, a social (relative) definition of poverty allows communities to be more flexible in addressing pressing local needs. The most prevalent "objective" definition of poverty is the federal government's statistical calculation of the annual income required for a family to live (Bradshaw, 2007). The United States Department of Agriculture first devised the "poverty line" in 1963, based on three times of estimate of what a family would have to spend on a sufficient but far from extravagant meal. According to Michael Darby, the basic definition of poverty was political, with the goal of measuring the effectiveness of poverty-reduction measures in the War on Poverty. (Darby, 1973). Many difficulties with this definition have been identified by most poverty academics, including family conceptions, cash income, tax treatment, particular work-related expenses, and regional variances in the cost of living (Legido-Quigley, 2003).

There are a variety of poverty measurements that can be used to quantify societal economic well-being. The most prevalent metric of poverty is income. They mainly entail comparing a family's or household's income to a poverty level in order to establish whether or not they are poor. Poverty, with its multidimensional concept, can be conceptualized and quantified from a variety of aspects, including monetary, material, social, and subjective. Also, many scholars found that the many characteristics of poverty are interconnected (Bradshaw and Finch, 2003);(Bellani and D'Ambrosio, 2011).

Subjective poverty

Diverse and dynamic nature of poverty is now fully recognized, but in countries where this problem is pervasive, poverty reduction policies do not take into account such diverse nature of poverty. Poverty is usually studied only in terms of accountancy by comparing income or consumption levels with given limitations (Herrera and Razafindrakoto, 2006). In many developing countries, especially southern Africa, when current income or expenditure is not strongly connected with the various factors of a household's living conditions, money-metric indicators often mislead the level of poverty. If these measurements are not susceptible to differences in household size and composition, or if data about income and expenditure is hard to collect, they may misrepresent the levels of poverty (Posel and Rogan, 2016). Such thresholds could be explained by the fact that there are not enough surveys embracing the different dimensions of poverty, especially its subjective dimension (Ferrer-i-Carbonell, 2002).

Subjective poverty assessment let individuals to make self-evaluations on whether they feel poor or not in the instance of subjective poverty (Ravallion, 1998). It considers an individual's opinion of his or her own well-being or poverty status is influenced by others' perceptions of their own well-being (Statistics South Africa, 2020). Given that measuring objective poverty is challenging in and of itself, and may overlook significant causes of long-term poverty dynamics, but subjective poverty is multidimensional, and it gives valuable information about poverty because it catches deprivation in various aspects of one's life. Furthermore, subjective poverty assessment gives reliable data because it is hardly affected by instant damages (such as natural disasters, physical illness of household that is only effecting single year or two), and also, it does not take much funding since it does not require multiple surveys through decades (Pradhan and Ravallion, 2011). Therefore, considering both subjective and objective poverty is an efficient way to analyze poverty by minimizing the limitations of existing poverty measurements.

Consumption poverty

Income is used as a measure of sources in both the official poverty measure^① and the Supplemental Poverty Measure^②, as an objective concept. However, individuals who regulate consumption by drawing on savings, will not have their level of life captured by annual income. Furthermore, income-based well-being measurements will fail to capture economic conditions over time or between households (Cutler and Katz, 1992). Financial difficulty and other harsh household conditions are more serious for those with low consumption than for those with low income (Meyer and Sullivan, 2012). Thus, in terms of distinguishing the disadvantaged, a consumption-based poverty measure is appropriate for both the official income-based poverty measure and the Supplemental Poverty Measure.

This thesis considers the concept of consumption poverty, as an objective measure, which states that poverty is a condition whereby household consumption is below the level needed to maintain a basic living standard in terms of food, shelter, housing, healthcare, and education. The cost of meeting one's basic living standard differs from country to country and as a result poverty lines vary. The Malawi Government set the national poverty line at MWK^③ 70,899, MWK 109,797, and MWK 164,191 per person annually for 2004, 2010, and 2016 respectively (in January 2017 values). Households consuming less than these national poverty lines in the respective years are classified as living in poverty. Extreme poverty, also known as food poverty, describes a more severe form of poverty in which a person or household has insufficient consumption to meet their daily nutritional requirements. The national extreme poverty lines for 2004, 2010, and 2016 were respectively MWK 43,987, MWK 68,120, and MWK 101,864 per person annually (IMF, 2021).

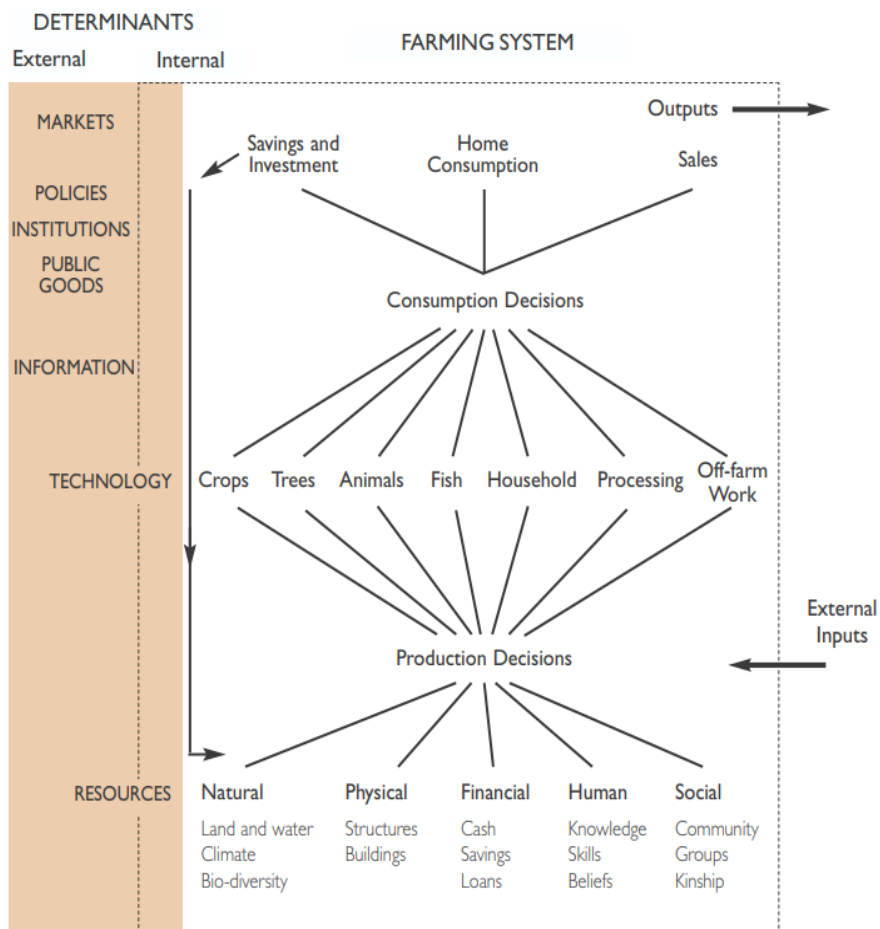
① Pretax money income is compared to poverty measures and standards.

② Takes into account not just monetary incomes, but also tax credits and the value of other non-cash benefits.

③ Malawian Kwacha (MWK): Official currency of Malawi

In order to apply the concept of consumption poverty, especially in rural Africa, study investigated the determinants of farmer's decision. **Figure 4** represents the farming systems and the main determinants of farmer's consumption, both external and internal. Based on the information of the figure, the rural Africa are less likely to have the main determinants of farmer's consumption. There are external determinants of farmer's consumption; Markets, Policies, Institutions, Public goods, Information and Technology, which are the factors that are particularly lacking in developing countries. The internal determinants; Savings and Investment, Home consumption, and Sales, which are factors that are also weak in the developing countries, especially in Sub-Saharan Africa.

Figure 4. Schematic Representation of Farming Systems



Source: (FAO, 2001)

4. Model

4.1. Ordered Probit Model

The assumption that is the basis of the multivariate linear model requires measurement of the interval level of the dependent variable. For this reason, linear models are not suitable for many social science fields. In general, even if the dependent variable of theoretical interest is properly conceptualized at the interval level, the measurement theory of social science is not refined enough to produce the interval level computation of this variable. The best that can be desired in most cases is a rather crude order scale representing this actual underlying variable (McKelvey and Zavoina, 1975). Ordered probit model, as a concept of probability, can be used to polytomous choices and overcomes the limitations of the multivariate linear model. The ordered probit model involves a qualitative dependent variable for which the categories have a natural order or ranking that reflects the magnitude of some underlying continuous variable.

The model is built around a latent regression as follows:

$$y^* = x' \beta + \varepsilon \quad (1)$$

y^* is unobservable response variable, and it provides a criterion for respondents to select observable response y . If a respondent has a selectable response y , the criterion inherent in the respondent to choose from 1 to J , that is, y^* , becomes an unobservable criterion that allows j to be selected within a certain range (Brant, 1990). ε is a normal distribution with $E(\varepsilon)=0$, and PDF (Probability Density Function) = $F(\varepsilon)$. Following formula depicts the relationship between y^* and observable response y :

$$\begin{aligned} y &= 0 \text{ if } y^* \leq 0 \\ &= 1 \text{ if } 0 < y^* \leq \mu_1 \\ &= 2 \text{ if } \mu_1 < y^* \leq \mu_2 \\ &\dots \\ &= J \text{ if } \mu_{J-1} \leq y^* \end{aligned} \quad (2)$$

The μ_1 to μ_{j-1} represents the threshold of y^* , which is the criteria for selecting j for a total of J observable responses.

In general, μ_j normalizes to $\mu_1 = 0$ for ease of regression analysis. Through this, μ_1 has the category of $y=1$ and $y=2$, and μ_{j-1} makes it possible to distinguish the categories of $y=j-1$ and $y=j$ at the same time, resulting in $j-2$ μ values:

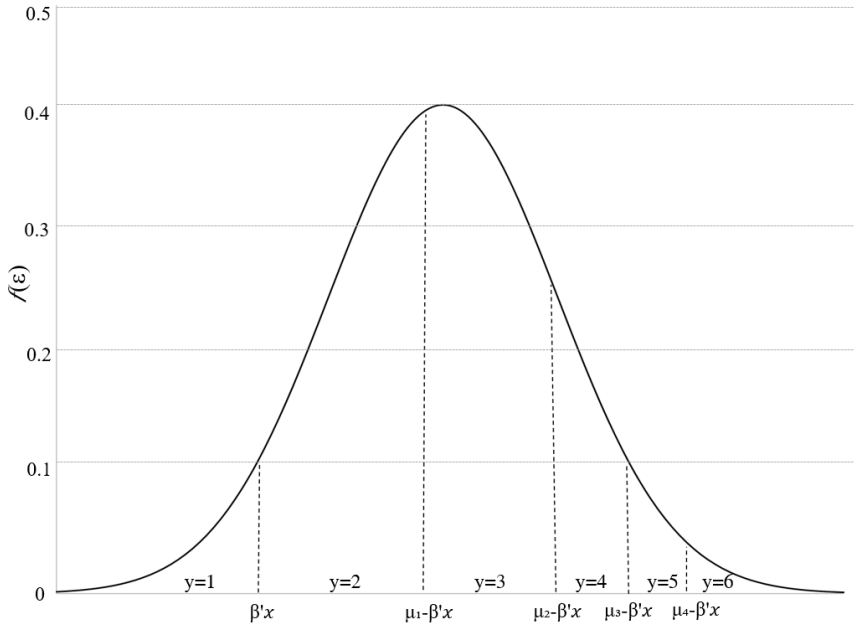
$$0 < \mu_1 < \mu_2 < \dots < \mu_{j-1}. \quad (3)$$

Then, normalized mean and variance of ε to zero and one brings following probabilities:

$$\begin{aligned} \text{Prob}(y = 0 | x) &= \Phi(-x' \beta), \\ \text{Prob}(y = 1 | x) &= \Phi(\mu_1 - x' \beta) - \Phi(-x' \beta), \\ \text{Prob}(y = 2 | x) &= \Phi(\mu_2 - x' \beta) - \Phi(\mu_1 - x' \beta), \\ &\dots \\ \text{Prob}(y = J | x) &= 1 - \Phi(\mu_{j-2} - x' \beta). \end{aligned} \quad (4)$$

Figure 5 shows the probabilities in the Ordered probit model, which is a key concept of Ordered probit model. According to Green, the log-likelihood function and its subordinates are obtained easily, optimization can be obtained in general way. Also, the partial effects of the regressors x on the probabilities are not equal to the coefficients (Greene, 2012).

Figure 5. Probabilities in the Ordered Probit Model



For example, the model has J categories with $J-2$ parameters. The probabilities are as follows:

$$\begin{aligned}
 \text{Prob}(y = 0 | x) &= 1 - \Phi(x'\beta), \\
 \text{Prob}(y = 1 | x) &= \Phi(\mu_1 - x'\beta) - \Phi(-x'\beta), \\
 &\dots \\
 \text{Prob}(y = J | x) &= 1 - \Phi(\mu_{J-2} - x'\beta).
 \end{aligned} \tag{5}$$

For J probabilities, the partial effects of changes in the regressors are as follows:

$$\begin{aligned}
 \frac{\partial \text{Prob}(y = 0 | x)}{\partial x} &= -\phi(-x'\beta)\beta \\
 \frac{\partial \text{Prob}(y = 1 | x)}{\partial x} &= [\phi(-x'\beta) - \phi(\mu_1 - x'\beta)]\beta \\
 &\dots \\
 \frac{\partial \text{Prob}(y = J | x)}{\partial x} &= \phi(\mu_{J-2} - x'\beta)\beta
 \end{aligned} \tag{6}$$

In the probability distributions of y and y^* , increasing one of the x 's while holding β and μ constant is equivalent to shifting the distribution slightly to the right. The effect of shift is clear in moving some masses in the leftmost cells. Interpreting the ordered outcome as a censorship of a continuously measured underlying preference or other measure will be a reliable guide to the suitability of the model (Greene and Hensher, 2010).

4.2. Proportional Odds Model

In the ordinal response model, it is important to clearly distinguish between response variables and explanatory factors or covariates (Brant, 1990). The 'Proportional Odds' Model is widely used to logistic model for ordinal dependent variables. McCullagh addressed a Proportional Odds Model to deal with ordered dependent variables within the logistic regression framework. To avoid assigning random scores to categories, it is assumed that the thresholds between categories is unknown in the Proportional Odds Model (McCullagh, 1980). The equation for the Proportional Odds Model is as follows:

$$\log \frac{\Pr(y \leq m|x)}{\Pr(y > m|x)} = T_m - x\beta \quad (1 \leq m < M) \quad (7)$$

where m is a category, x is a vector of independent variables, T is a threshold, and β is a vector of logit coefficients. The negative sign in the vector of the logit coefficient can easily interpret the Ordinary Least Squares (OLS) regression type of coefficient. If the coefficient is positive, it means that the y level increases as the x unit increases. The ordering of thresholds is limited as $T_1 < T_2 \dots < T_{M-1}$. In the Proportional Odds Model, the probability for an outcome category (m) is depicted as follows:

$$\Pr(y \leq m|x) = \begin{matrix} F(T_1 - x\beta) & m=1 \\ F(T_m - x\beta) - F(T_{m-1} - x\beta) & 1 < m \leq M - 1 \\ 1 - F(T_{m-1} - x\beta) & m=M \end{matrix} \quad (8)$$

where F is the logistic Cumulative Density Function (CDF), T is a threshold, x is a vector of independent variables, β is a vector of logit coefficients that does not depend on the equation, and m is the category and its equivalent logit formula. The Proportional Odds model is nonlinear in the probability but linear in the log of odds. For an outcome with N categories, the proportional odds model calculates $N-1$ binary logit models which coincides with the following marginal probabilities for each category:

$$\begin{aligned}
 P_1 &= \Pr(y = 1), \\
 P_2 &= \Pr(y \leq 2) - \Pr(y = 1), \\
 P_3 &= \Pr(y \leq 3) - \Pr(y \leq 2), \\
 &\dots \\
 P_n &= 1 - \Pr(y \leq n-1)
 \end{aligned}
 \tag{9}$$

Note that an important assumption in the Proportional Odds Model is the assumption that the same β applies to logit equations for different thresholds, which is called, Proportional Odds Assumption. Since there are no subscripts accorded to certain thresholds, the effect of each independent variable on the log odds is the same regardless of the comparison.

4.3. Partial Proportional Odds Model

The Partial Proportional Odds model is an extended model of the Proportional Odds Model (Peterson and Harrell Jr, 1990). It allows β to change in accordance with logit formula, when β in proportional odds assumption is violated. In the Partial Proportional Odds Model, the probability for an outcome category (m) is depicted as follows:

$$\begin{aligned}
 &\Pr(y = m|x) \\
 &= F(T_1 - x_1\beta_1 - x_2\beta_2) && m=1 \\
 &= F(T_m - x_1\beta_1 - x_2\beta_2) - F(T_{m-1} - x_1\beta_{1m-1} - x_2\beta_2) && 1 < m \leq M - 1 \\
 &= 1 - F(T_{m-1} - x_1\beta_{1M-1} - x_2\beta_2) && m=M
 \end{aligned}
 \tag{10}$$

The meaning of indices is identical as the equation of Proportional Odds Model, other than β_2 , which is a vector of logit coefficients set to be equal in the equation. The Proportional Odds Model is a special case of the Partial Proportional Odds Model where the Proportional Odds Assumption holds for every independent variable (Fullerton, 2009).

Limitations

Partial proportional Odds model, or Parallel regression assumption model as an alternative, still leaves 2 problems; (1) it does not constrain the probability to be positive, (2) and it is internally inconsistent. Consider the recommended latent regression as an example of (2), $y^* = x' \beta + \varepsilon$. If the β is different for each j , it is impossible to build a data generating mechanism for y ; the realized value of y cannot be defined without knowing y , because the applicable depends on j , but y is supposed to be determined from y . There is no parametric restriction other than the one we seek to avoid that will preserve the ordering of the probabilities for all values of the data and maintain the coherency of the model. This still leaves the question of what specification failure would logically explain the finding. Some suggestions include (1) misspecification of the latent regression, $x \beta$; (2) heteroscedasticity of ε ; and (3) misspecification of the distributional form for the latent variable, that is, “non-logistic link function.”(Brant, 1990)

4.4. Marginal Effects

The marginal effect is expressed as a change in the probability of occurrence of the outcome by one unit of the risk factor. Unlike odds ratios, it is easier to compare the surrounding effects in several studies because it is not easily affected by statistical model conditions affecting the reported odds ratios. The marginal effect depends on the value of other explanatory variables and is not the same for all components of the group. In nonlinear models such as logistic regression, the marginal effect of risk factors can more effectively answer

research questions such as how changes in risk factors affect the probability of outcome occurring.

We need the standard normal density assessed at $-\bar{x}'\beta$ and $\hat{\mu}_i - \bar{x}'\beta$ to get the marginal effects of the continuous variables. The following are the expected probabilities:

$$\begin{aligned}
 \text{ME}(y = 1 \mid x) &= -\phi(-\bar{x}'\beta) \\
 \text{ME}(y = 2 \mid x) &= \phi(\hat{\mu}_1 - \bar{x}'\beta) - \phi(-\bar{x}'\beta) \\
 &\dots \\
 \text{ME}(y = N \mid x) &= 1 - \phi(\hat{\mu}_{n-2} - \bar{x}'\beta)
 \end{aligned} \tag{11}$$

The marginal effects summation to zero, given to the condition that the probabilities add up to one. However, such method is inappropriate for binary variables (dummy variables). We can examine a binary variable by comparing the probability that occur when it takes its two different values to the probabilities that exist when the other variables are held at their sample averages:

$$\begin{aligned}
 \text{ME}(y = 1 \mid x) &= [\{1 - \Phi(x'\beta^*1)\} - \{1 - \Phi(x'\beta^*0)\}] \\
 \text{ME}(y = 2 \mid x) &= [\{\Phi(\mu - x'\beta^*1) - \Phi(-x'\beta^*1)\} \\
 &\quad - \{\Phi(\mu - x'\beta^*0) - \Phi(-x'\beta^*0)\}] \\
 &\dots \\
 \text{ME}(y = J \mid x) &= [\{1 - \Phi(\mu - x'\beta^*1)\} - \{1 - \Phi(\mu - x'\beta^*0)\}]
 \end{aligned} \tag{12}$$

Furthermore, when the probability of the result is close to the extreme (0 or 1), the marginal effect is fairly large, however when the value is small and close to the median far from the extreme, the marginal effect is relatively small (0.5). The marginal effect of all covariates is dependent on the values of the other covariates in the model since the values of different covariates vary the predictive probability. Because of the differences in the outcome of the risk factor effect, which is expected to have varied effects on the risk factor and other explanatory variable values, the variety of the marginal effect permits intuitive interpretation. (Norton, Dowd and Maciejewski, 2018).

4.5. Multinomial Logit model

The individual selects one of more than two options, once again deciding on the option that delivers the most usefulness. The model for occupational choice is as follows:

$$\text{Prob}(Y_i = j \mid w_i) = \frac{\exp(w_i' \alpha_j)}{\sum_{j=0}^n \exp(w_i' \alpha_j)} \quad (j=0,1,\dots,n) \quad (13)$$

The estimated equations provide a set of probabilities for the $j + 1$ choices for a decision maker with characteristics w_i . Before proceeding, we must remove an indeterminacy in the model. If we define $\alpha_j^* = \alpha_j + q$ for any vector q , then recomputing the probabilities in (13) using α_j^* instead of α_j produces the identical set of probabilities because all the terms involving q drop out. A convenient normalization that solves the problem is $\alpha_0 = 0$. (This arises because the probabilities sum to one, so only j parameter vectors are needed to determine the $J + 1$ probabilities.) Therefore, the probabilities are:

$$\text{Prob}(Y_i = j \mid w_i) = P_{ij} = \frac{\exp(w_i' \alpha_j)}{1 + \sum_{j=0}^n \exp(w_i' \alpha_k)} \quad (j=0,1,\dots,n) \quad (14)$$

The partial effects give a similarly unclear picture, though in some case, the effect can be associated with a particular outcome. However, we note that the implication of a test of significance of a partial effect in this model is itself ambiguous. This is an aspect of modeling with multinomial choice models that calls for careful interpretation by the model builder (Greene, 2012).

5. Data and procedure

5.1. Data

The analysis is based on the Malawi Integrated Household Panel Survey (IHPS) in 2019, operated by Government of Malawi's National Statistical Office (NSO) as part of the World Bank Living Standards Measurement Study – Integrated Surveys on Agriculture (LSMS-ISA) initiative. The sample size is 3178 households covering 51 provinces of which 2355 are rural and 823 urban households, total of 2,688 households were observed excluding data that were missing from the original data. The IHPS covers a wide range of issues, including education, health, housing, food security and well-being. 2019 IHPS is the fifth round of survey, since it started its first round in 2010.

5.2. Variables

As for the subjective poverty, the following question asked from the head of the household for dependent variable, “Imagine six steps, where on the bottom, the first step, stand the poorest people, and on the highest step, the sixth, stand the rich. On which step are you today?”. Such subjective assessment of poverty is converted to numeric data from 1 to 6. As for the consumption poverty, study combined annual food and non-food data for dependent variable. Consumption data is depicted by Malawian Kwacha (MWK), which is official currency of Malawi. In order to deduce the determinants of both subjective and consumption poverty, study considered socio-economic characteristics of Malawian households in terms of multiple-facets of poverty for unbiased variable selection. As for the subjective dimension, Benfield suggests that (1) the gender influence, (2) union status of the household head, (3) dependency ratios (mainly child dependencies), (4) household size, (5) region of residence on the probability of being objectively poor, (6) the likelihood that households

classify themselves as subjectively poor; are key determinants of subjective poverty (Benfield, 2016). In consumption dimension, study included the influential factors of consumption poverty used by Maharjan and Piya; (1) gender of the household head, (2) Household head age, (3) Education, (4) household size, (5) ratio of dependent household members (mostly children), (6) seasonality of agriculture, (7) urban/rural status, (8) Household Assets. Finally, study also considered the factors of general poverty presented by Haughton and Khandker, which is commonly used to discover determinants of poverty overall (Haughton and Khandker, 2009); (1) regional, (2) community, (3) household, (4) individual (Maharjan and Piya, 2012). **Table 2** depicts the main determinants of poverty addressed by Haughton and Khandker.

Table 2. Determinants of Poverty

Characteristics	Contents
Regional	<ul style="list-style-type: none"> • Isolation or remoteness, including less infrastructure and poorer access to markets and services • Resource base, including land availability and quality • Weather (e.g., whether typhoons or droughts are common) and environmental conditions (e.g., frequency of earthquakes) • Regional governance and management
Community	<ul style="list-style-type: none"> • Infrastructure (e.g., piped water, access to a tarred road) • Land distribution • Access to public goods and services • Social structure and social capital
Household	<ul style="list-style-type: none"> • Size of household • Dependency ratio (unemployed old and young

relative to working-age adults)

- Gender of household head, or of household adults on average
 - Assets (typically include land, tools, and other means of production; housing; Jewelry)
 - Employment and income structure (i.e., proportion of adults employed; type of work-wage labor or self-employment; remittances inflows)
 - Health and education of household members on average Individual
- Individual**
- Age
 - Education
 - Employment status
 - Health status Ethnicity

Source: (Haughton and Khandker, 2009)

Finally, **Table 3** organized the determinants of multiple facets of poverty, which includes General poverty, Subjective poverty, and Consumption poverty. Study collected variables based on the contents in **Table 3**.

Table 3. Determinants of multiple facets of Poverty

Poverty	Subjective Poverty	Consumption Poverty
Regional /	• Region of residence	• Urban/Rural status
Community		• Farming seasonality
Household	• Household Size	• Household Size
	• Dependency ratios	• Dependency ratios
	• Likelihood of being Subjective poor	• Household Assets
Individual	• Gender influence	• Gender of HH
	• Union status	• Age of HH

- Education
- Marital status
- Employment status
- Farmer status

Source: Organized by author based on (Benfield, 2016), (Maharjan and Piya, 2012), (Haughton and Khandker, 2009)

Ultimately, study included socio-economic characteristics of Malawian households as variables based on above categories; (1) gender of the household head, (2) marital status, employment status, farmer status of household head, (3) child status (whether they live in elsewhere for work), (4) household size, (5) urban/rural status, (6) log of Total Consumption per year (per capita consumption is the main measure of consumption poverty), and subjective poverty measure of friends & neighbors. The ‘Community’, which refers infrastructure, land distribution, access to public goods and services, social structure and social capital. Study added appropriate variables to meet the criteria. Detailed information of variables is addressed on ‘Descriptive Statistics’ chapter.

5.3. Descriptive Statistics

Table 4 informs the definition of socio-economic variables of Malawian households included in the analysis. Variables are selected based on Determinants of poverty represented in previous chapter (Subjective poverty determinants, Consumption poverty determinants, and General Poverty determinants. To be more precise and objective, study added more variables that satisfies every category.

Table 4. Definition of Variables

<i>Variables</i>	Definition
<i>Outcome variables</i>	
Poverty status	Imagine six steps, where on the

(1-6) bottom, the first step, stand the poorest people, and on the highest step, the sixth, stand the rich. On which step are you today?

Total consumption (MWK) The amount of annual food and non-food consumption

Compared poverty (1-4) Class variables of different characteristics of poverty; (Overall non-poor=1/Subjective poor=2/ Consumption poor=3/ Overall poor=4)

Explanatory variables

Regional

Urban Urban: 1 / Rural: 0

Province Northern province (Yes:1/No:0)
Central province (Yes:1/No:0)
Southern province (Yes:1/No:0)

Own property Do you own or are purchasing this property, is it provided to you by an employer, do you use it for free, or do you rent this property? (OWNED, BEING PURCHASED:1 / FREE, AUTHORIZED, FREE, NOT AUTHORIZED, EMPLOYER PROVIDES, RENTED: 0)

Irregular rain During the last 3 years, was your household affected negatively by Irregular rain? (Yes: 1/No: 0)

Crop Disease During the last 3 years, was your household affected negatively by Unusually High Level of Crop Pests or Disease? (Yes: 1/No: 0)

Landslide During the last 3 years, was your household affected negatively by Landslide? (Yes: 1/No: 0)

Lvstk_disease (Livestock Disease) During the last 3 years, was your household affected negatively by

		Unusually High Level of Livestock Disease? (Yes: 1/No: 0)
Community	Lowpr_output (Low prices of agricultural output)	During the last 3 years, was your household affected negatively by Unusually Low Prices for Agricultural Output? (Yes: 1/No: 0)
	Highpr_input (High costs of agricultural input)	During the last 3 years, was your household affected negatively by unusually High Costs of Agricultural Inputs? (Yes: 1/No: 0)
	Highpr_food (High prices for Food)	During the last 3 years, was your household affected negatively by unusually High Prices for Food? (Yes: 1/No: 0)
	Neighbor step	Imagine six steps, where on the bottom, the first step, stand the poorest people, and on the highest step, the sixth, stand the rich. On which step are most of your neighbors today?
	Friend step	Imagine six steps, where on the bottom, the first step, stand the poorest people, and on the highest step, the sixth, stand the rich. On which step are most of your friends today?
	Access to water	How long does it take to draw water from the water source?
	Aid_maize	The amount of received maize (kg) from aid program in last 12 months.
	Bank account	Do you, either by yourself or together with another household member or someone outside your household, currently have an account at a bank, credit union, micro finance institution, village savings organization, or another financial institution? (Yes: 1/No: 0)
	Child away (Children lives elsewhere)	Does the household head or spouse have any biological sons and/or daughters who are 15 years old and over and do not live in this household?

		(Yes: 1/No: 0)
	Violence (Conflict/Violence)	During the last 3 years, was your household affected negatively by Conflict/Violence? (Yes: 1/No: 0)
Household	H_size	Total members of the household as a continuous variable
	Female	Sex of Household head Male: 0 / Female: 1
	Marital	What is a household head's present marital status? (Monogamous married or non-formal union. Polygamous married or non-formal union: 1, Separated. Divorced. Widow or widower. Never married: 0)
	Borrow	Over the past 12 months, did you or anyone else in this household borrow on credit from someone outside the household or from an institution for business or farming purposes, receiving either cash or inputs? (Yes: 1/No: 0)
	Electricity	Do you have electricity working in your dwelling? (Yes: 1/No: 0)
	Ill/injured	During the last 3 years, was your household affected negatively by Serious illness or Accident of Household Member(s)? (Yes: 1/No: 0)
	Food consume (Food consumption adequacy)	Concerning your household's food consumption over the past one month, which of the following is true? (It was less than adequate for household needs: 1/ It was just adequate for household needs: 2/ It was more than adequate for household needs: 3)
	Log_consume	log of total value of food and non-food consumption per year as a continuous variable (Not included in consumption poverty measure)

Individual	Age/Age ²	Age of household head including age squared value
	Education	What is the highest educational qualification you have acquired? (1-9)
	Farmer	In the last 12 months, did you work on household farming activities even if only for one hour? (Yes: 1/No: 0)
	Employed	In the last 12 months, did you work as an employee for a wage, salary, commission, or any payment in kind: including doing paid apprenticeship, domestic work or paid farm work, excluding Ganyu ^④ , even if only for one hour? (Yes:1/No:0)

Source: 2019 Malawi IHPS survey questionnaire selected by Author

According to Alkire, though the empirical data is insufficient, if the data directly affects human development and well-being, standard surveys can be improved, especially in encouraging ways for those who are poor, such as physical security, institution, and human empowerment (Alkire, 2007). In order to analyze whether it has enough effect on poverty and policy relevance, the study considered physical security measured by health and food insecurity. Thus, health and food insecurity questions in 2019 IHPS survey is included which directly effects to household well-being. Community insecurity questions were also included in the analysis to cover wide range of human well-being. In addition, study included natural disaster questions to analyze since Malawi suffered severe floods in 2019, when the survey took place. Also, regional and urban/rural dummy variables are included to control regional heterogeneity (religious, social differences, etc.).

Table 4 is classified into 4 main determinants of poverty (regional, community, household, individual). The included variables in each classification were selected based on the contents of **Table 2** and **Table 3**. Regional category consists of the regional characteristics of Malawi, including

^④ Any off-own-farm work done by rural people on a casual basis in Malawi.

not only the region and provincial variables, but also the and natural disasters. Community category covers the infrastructure variables like ‘access to water’ along with Social structure and social capital variables like receiving aids, and community security question like ‘conflicts/violent’. Household category contains various variables that are representing household characteristics like household size, age, sex, and marital status of household head. Beyond those information, economic shocks suffered by households were considered with health and food security issues. Lastly, in the individual category, the variables that are effectively depicts individual condition, abilities and employment status were included. The education variables are consisted of nine education levels, which are coded by NONE as 1, Primary school leaving certificate (PSLC) as 2, Junior Certificate of Education (JCE)as 3, Malawi School Certificate of Education (MSCE)/General Certificate of Secondary Education (GCSE) as 4, A-LEVEL⁵ as 5, Highschool diploma as 6, College degree as 7, Master’s degree as 8, and PhD degree as 9). Since there are no single household who took PhD degree, there are only 1 to 8 levels in the outcome.

Ganyu

Ganyu, the informal off-farm labor in Malawi, often defined as a poverty coping strategy which makes poor rural households to be more impoverished in longer period. Ganyu labor usually paid in cash or in kind (food, etc.) on a daily or weekly basis, with individual tasks. Ganyu can be done for relatives, neighbors, small farms at far distance, private land, or even neighboring countries. The fact that the Ganyu work is often relatively unskilled and based on agriculture. Men, women, and children can all be Ganyu labors.

Being Ganyu labor is one of the important variables in this analysis, since its tradition and customs characteristics in Malawi. However, the result of the regression analysis turns out to suspect that the variable ‘Ganyu’ has endogenous issue, due to the characteristics and conditions of Ganyu workers.

⁵ Abbreviation of ‘Advanced level qualifications’; Subject-based qualifications that can lead to university, further study, training, or work.

Ganyu is one of the key poverty issues in Malawi due to certain reasons: 1) Ganyu is the most important source of livelihood for most poor households after family farm production prevailed. 2) In severe hunger period in rural Malawi which is between the running out of grocery stores and next harvest, Ganyu is the most essential coping strategy for poor households. 3) Doing 'Ganyu' to get a fast food supply often contradicts with agricultural production, and thus, pushes some families be trapped in vicious cycle of food insecurity while resolving an immediate crisis. 4) Low Ganyu wage makes labors to have insufficient incomes so they cannot afford sustainable livelihood development. Such notions of Ganyu has been fixed across several studies and has been the starting point for many studies on poverty in Malawi. Studies often suggests that "Ganyu", driven by scarcity of Malawian households, may be the result of structural abnormalities such as small land size, credit constraints, labor and agricultural input shortages (Alwang and Siegel, 1999); (Orr and Mwale, 2001); (Harrigan, 2003). Small farmers are the main producers in the production system of developing countries (El-dukheri, 2012). In addition to household food security, small farmers' productivity can contribute to national food security by producing marketable surpluses such as local markets, urban markets, and even international trades through market transactions. Ganyu labors, who are mostly poor and small farm labors, it is essential to improve its customs of low-wage and harsh labor welfare system in order to eradicate chronic poverty of rural farmers.

Endogeneity

Endogeneity is one of the important problems for research. Endogeneity occurs when a predictor variable (x) in a regression model is correlated with the error term (e) in the model. In this study, the endogeneity occurs under a under Simultaneity bias, the condition when the outcome variable is a predictor of x , more than response to x . In order to supplement the endogeneity, the use of instrumental variables methods is often used by utilizing the Two or Three stage least squares estimation. Generally, the instrumental variables methods

begin with finding replacement variables (instruments) that are correlated with an endogenous x variable but are uncorrelated with the error term. Then, regressing the original x variable on these instruments and forming predicted values from this result to replace the original endogenous x, and regressing the outcome on the exogenous x variables and the predicted values formed in step (Lynch and Brown, 2011). However, it is quite difficult to find the appropriate replacement variables, especially there are limited variables. Therefore, several variables like being Ganyu worker, subjective income status are removed for the accuracy of the analysis results.

Table 5 depicts demographic and socio-economic characteristics of Malawian households by mean, standard deviation, minimum and maximum of the data. As an outcome variable, poverty status data has been used for analyzing subjective poverty, and total consumption data has been used for consumption poverty. Same independent variables were used for both subjective and consumption poverty, except log of total consumption variable was used only for subjective poverty analysis.

Table 5. Demographic and Socio-economic characteristics

Characteristics	Mean	SD	Min	Max
<i>Outcome variables</i>				
Poverty status (1-6)	2.24	0.97	1	6
Total consumption	739599.04	865679.58	2500	11,159,000
4 Combinations of poverty	2.58	1.08	1	4
<i>Explanatory variables</i>				
<i>Regional</i>				
Region	0.26	0.44	Rural = 0	Urban = 1

Northern Province	0.13	0.33	No=0	Yes=1
Central Province	0.48	0.50	No=0	Yes=1
Southern Province	0.39	0.49	No=0	Yes=1
Own property	0.67	0.47	No=0	Owned=1
Damaged by Irregular Rain	0.16	0.37	No=0	Yes=1
Damaged by Crop pest and Disease	0.17	0.38	No=0	Yes=1
Damaged by Landslide	0.18	0.38	No=0	Yes=1
Damaged by Livestock Disease	0.17	0.37	No=0	Yes=1
Damaged by Low prices of agricultural output	0.16	0.37	No=0	Yes=1
Damaged by High costs of agricultural input	0.17	0.38	No=0	Yes=1
Damaged by High prices for Food	0.17	0.38	No=0	Yes=1
<i>Community</i>				
Neighbors poverty, (1-6)	2.54	1.07	1	6
Friends poverty, (1-6)	2.56	1.08	1	6
Time of Access water (min)	15.07	47.58	0min	1,800min
Aid_maize (kg)	14.06	45.16	0kg	400kg
Bank Account	0.30	0.46	No=0	Yes=1

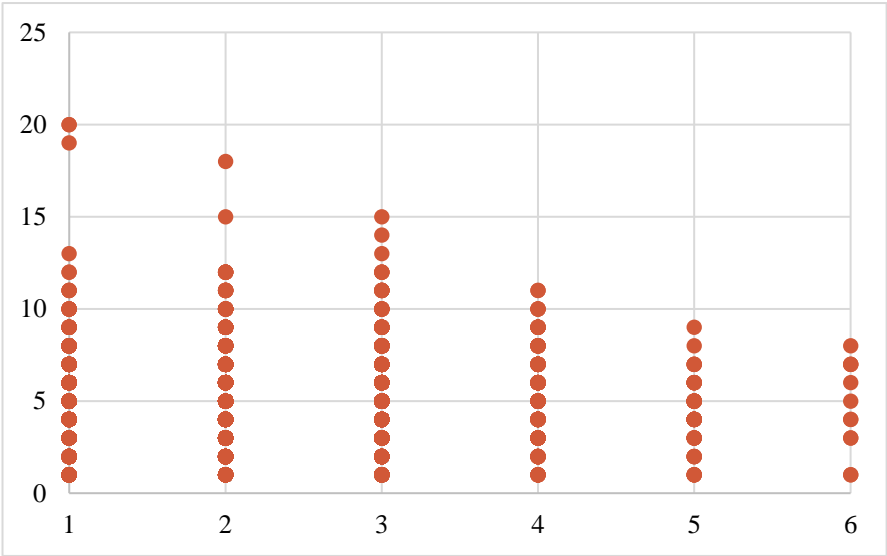
Child lives elsewhere	0.33	0.47	No=0	Yes=1
Damaged by Conflict/Violence	0.17	0.38	No=0	Yes=1
<i>Household</i>				
Household size	4.57	2.18	1	20
Household head sex	0.73	0.45	Male=0	Female=1
Marital status	0.75	0.43	Single=0	Married =1
Borrow on credits	0.27	0.45	No=0	Yes=1
Electricity	0.20	0.40	No=0	Yes=1
Damaged by Household Business Failure	0.17	0.37	No=0	Yes=1
Damaged by Illness or accident of Household member(s)	0.16	0.37	No=0	Yes=1
Food security	1.59	0.62	1	3
Log of household consumption	13.07	0.97	7.82	16.23
<i>Individual</i>				
Household head age	40.16	15.07	16	98
Age squared	1839.61	1434.39	256	9604
Education	1.81	1.35	1	8
Farming activities	0.70	0.46	No=0	Yes=1
Employed	0.23	0.42	No=0	Yes=1

Source: Calculated by Author

Study closely reviewed the data sets and its composition. Study identified several variables and its distribution by response variable. In terms of the

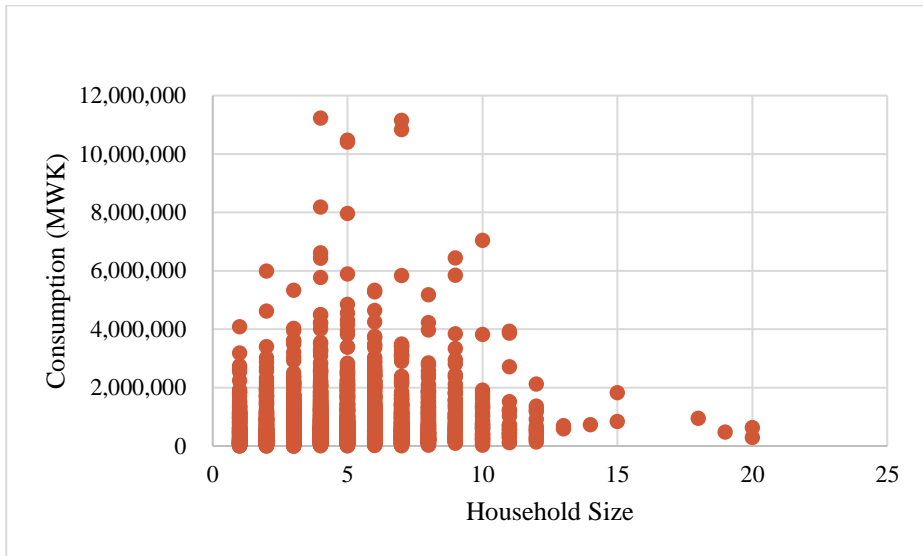
household level, the mean of the household size is 4.57 with 2.18 standard deviation. **Figure 6** depicts the distribution of the household size by subjective poverty steps (1-6). There is no vivid gap between household size and the poverty steps, but the graph shows that the larger household tend to be at lower poverty steps.

Figure 6. Scattered Plot of Household size by poverty step



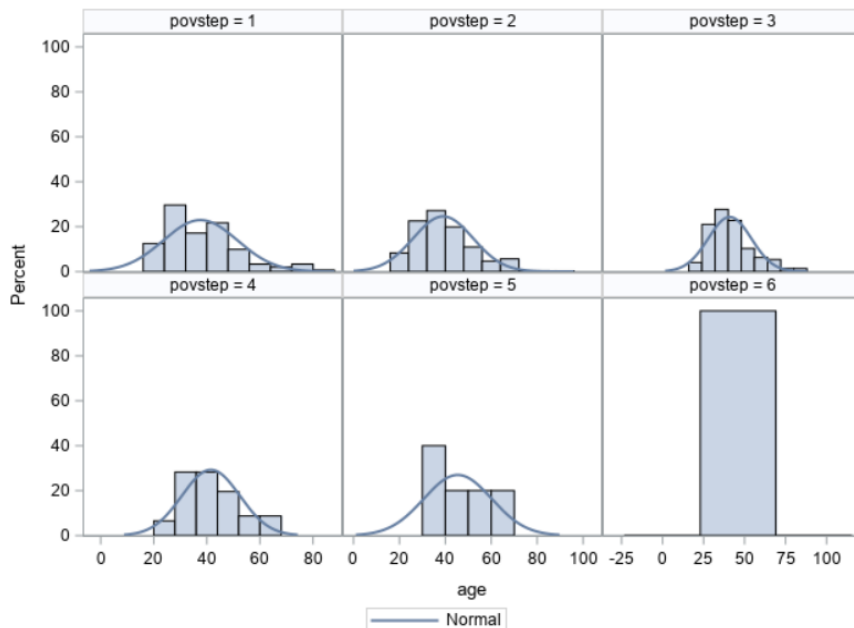
Also, **Figure 6** depicts the distribution of consumption by household size. The size of the household effects the consumption amount positively until the member of the household gets 5, then the consumption amount starts to decreases. In this regard, the household size and the consumption amount does not have positive relationship.

Figure 7. Scattered Plot of Consumption by household size



Finally, **Figure 8** depicts the distribution of the household head age by subjective poverty step. The older the household head gets, the higher the poverty step they belonged. However, there are some older age like 50's in lowest poverty step.

Figure 8. Age distribution



Note: Displayed in SAS software system

Additionally, study compared subjective and consumption poverty through multinomial logit model in order to calculate the relative impact. Four characteristics of poverty has been classified as dependent variable as depicted in **Table 6** for effective interpretation.

Table 6. Structure of 4 combinations of poverty

	1-2 poverty steps (1) (subjective poor)	3-6 poverty steps (0) (subjective non-poor)
Under Poverty line (1) (consumption poor)	1	3
Over Poverty line (0) (consumption non-poor)	2	4

5.4. Empirical Model

Like the explanations in **Chapter 4**, study uses Ordered Probit model since the independent variables are consisted of ordinal values.

The ordered probit model begins as,

$$y^* = x' \beta + \varepsilon \quad (15)$$

Since y^* is unobservable response variable, it provides a criterion for respondents to select observable response y . To analyze poverty status in the study, there are 6 selectable responses. The equation below represents the relationship between y^* (Unobserved) and y (Observed) applied in the analysis for poverty status.

$$\begin{aligned}
 y &= 1 \text{ if } y^* \leq \mu_1 (=0) \\
 &= 2 \text{ if } \mu_1 < y^* \leq \mu_2 \\
 &= 3 \text{ if } \mu_2 < y^* \leq \mu_3 \\
 &\dots \\
 &= 6 \text{ if } \mu_5 \leq y
 \end{aligned} \quad (16)$$

In order to apply the equation to the analysis, μ_1 to μ_5 represents the thresholds. If the respondent chooses 2, then the respondent has y^* between μ_1 and μ_2 .

The μ is defined as unknown parameters to be estimated with β . The determination of poverty step depends on certain measurable factors x and certain unobservable factors ε . Here, ε is assumed to be normally distributed across observations, and the mean and variance of ε is normalized to zero and one. The following probabilities are induced.

$$\begin{aligned}
\text{Prob}(y = 1 | x) &= \Phi(x'\beta), \\
\text{Prob}(y = 2 | x) &= \Phi(\mu_1 - x'\beta) - \Phi(-x'\beta), \\
\text{Prob}(y = 3 | x) &= \Phi(\mu_3 - x'\beta) - \Phi(\mu_1 - x'\beta), \\
\text{Prob}(y = 4 | x) &= \Phi(\mu_3 - x'\beta) - \Phi(\mu_2 - x'\beta), \\
\text{Prob}(y = 5 | x) &= \Phi(\mu_4 - x'\beta) - \Phi(\mu_3 - x'\beta), \\
\text{Prob}(y = 6 | x) &= 1 - \Phi(\mu_4 - x'\beta).
\end{aligned} \tag{17}$$

The β shows whether the latent variable y^* increases or decreases with the regressors x . The marginal effects can be explained as each unit increase in the independent variable increases or decreases the probability of selecting alternative J (1,2,...,6) by the marginal and is expressed as a percentage. As for the continuous variable, study calculated marginal effect as follows:

$$\begin{aligned}
&\text{ME}(y = 1 | x), -\Phi(-\bar{x}'\beta) \\
&\text{ME}(y = 2 | x), \Phi(\hat{\mu}_1 - \bar{x}'\beta) - \Phi(-\bar{x}'\beta) \\
&\text{ME}(y = 3 | x), \Phi(\hat{\mu}_2 - \bar{x}'\beta) - \Phi(\hat{\mu}_1 - \bar{x}'\beta) \\
&\text{ME}(y = 4 | x), \Phi(\hat{\mu}_3 - \bar{x}'\beta) - \Phi(\hat{\mu}_2 - \bar{x}'\beta) \\
&\text{ME}(y = 5 | x), \Phi(\hat{\mu}_4 - \bar{x}'\beta) - \Phi(\hat{\mu}_3 - \bar{x}'\beta) \\
&\text{ME}(y = 6 | x), 1 - \Phi(\hat{\mu}_4 - \bar{x}'\beta)
\end{aligned} \tag{18}$$

For the binary variable, study calculated marginal effect as follows:

$$\begin{aligned}
ME(y = 1 | x) &= [\{1 - \Phi(x'\beta^*1)\} - \{1 - \Phi(x'\beta^*0)\}] \\
ME(y = 2 | x) &= [\{\Phi(\mu_1 - x'\beta^*1) - \Phi(-x'\beta^*1)\} \\
&\quad - \{\Phi(\mu_1 - x'\beta^*0) - \Phi(-x'\beta^*0)\}] \\
ME(y = 3 | x) &= [\{\Phi(\mu_2 - x'\beta^*1) - \Phi(\mu_1 - x'\beta^*1)\} \\
&\quad - [\{\Phi(\mu_2 - x'\beta^*0) - \Phi(\mu_1 - x'\beta^*0)\}]] \quad (19) \\
ME(y = 4 | x) &= [\{\Phi(\mu_3 - x'\beta^*1) - \Phi(\mu_2 - x'\beta^*1)\} \\
&\quad - [\{\Phi(\mu_3 - x'\beta^*0) - \Phi(\mu_2 - x'\beta^*0)\}]] \\
ME(y = 5 | x) &= [\{\Phi(\mu_4 - x'\beta^*1) - \Phi(\mu_3 - x'\beta^*1)\} \\
&\quad - [\{\Phi(\mu_4 - x'\beta^*0) - \Phi(\mu_3 - x'\beta^*0)\}]] \\
ME(y = 6 | x) &= [\{1 - \Phi(\mu_4 - x'\beta^*1)\} - \{1 - \Phi(\mu_4 - x'\beta^*0)\}]
\end{aligned}$$

On the other hand, the consumption poverty has been calculated by linear regression model with following formation:

$$Y_{\text{Consumption}} = \beta_0 + X_{\text{Neighbor}}\beta_1 + X_{\text{Friend}}\beta_2 + X_{\text{Urban}}\beta_3 + \dots + X_{\text{Employed}}\beta_{28} + e_i$$

Finally, in order to compare combinations of subjective and consumption poverty(cp), study used multinomial logit model by separating both subjective and consumption data in to binary form. Note that *bs* are regression coefficient, the calculation is as follows:

$$\begin{aligned}
\ln\left(\frac{P(cp=overall\ poor)}{P(cp=overall\ non-poor)}\right) &= b_{0i} + b_{1iurban} + \dots + b_{31iemployed} \\
\ln\left(\frac{P(cp=subjectively\ poor)}{P(cp=overall\ non-poor)}\right) &= b_{0ii} + b_{1iiurban} + \dots + b_{31iiemployed} \quad (20) \\
\ln\left(\frac{P(cp=consumption\ poor)}{P(cp=overall\ non-poor)}\right) &= b_{0iii} + b_{1iiiurban} + \dots + b_{31iiiemployed}
\end{aligned}$$

6. Results and Discussions

6.1. Subjective Poverty

As for the subjective poverty, the results of the regression analysis for through ordered probit model is described in **Table 7**. The results were discussed through four categories (Regional, Community, Household, Individual).

Table 7. Determinant of Subjective Poverty

Parameter	Poverty Status	DF	Estimate	SD	Wald-Chisq	Pr > ChiSq
Intercept	6	1	-12.3216	0.49	634.0327	<.0001
Intercept	5	1	-11.1970	0.46	588.1676	<.0001
Intercept	4	1	-10.0315	0.45	494.8197	<.0001
Intercept	3	1	-8.5337	0.44	372.8223	<.0001
Intercept	2	1	-6.9794	0.43	258.1142	<.0001
<i>Regional</i>						
Urban		1	-0.2026**	0.07	8.9171	0.0028
Northern area		1	-0.4208***	0.07	32.4297	<.0001
Central area		1	-0.0030	0.05	0.0039	0.95
Property own		1	0.1506**	0.06	7.3708	0.0066
Irregular rain		1	-0.1194	0.06	3.4828	0.062
Crop disease		1	-0.1441*	0.06	5.3350	0.0209
Landslide		1	0.0060	0.06	0.0095	0.9224
Sick Livestock		1	-0.0871	0.06	1.8856	0.1697
<i>Community</i>						

Lowpr_output	1	-0.1312*	0.06	4.2885	0.0384
Highpr_input	1	0.1655**	0.06	7.1472	0.0075
Highpr_food		-0.1369*	0.06	4.8304	0.028
Neighbor step	1	0.3017***	0.02	156.4118	<.0001
Friend step	1	0.3851***	0.02	244.7937	<.0001
Water time	1	-0.0006	0.00	1.3306	0.2487
Aid_maize	1	0.0012*	0.00	5.8547	0.0155
Bank account	1	0.3189***	0.06	32.8393	<.0001
Child away	1	0.0785	0.06	1.5417	0.2144
Violence	1	0.0743	0.06	1.4468	0.229
<i>Household</i>					
H_size	1	-0.0277*	0.01	5.3965	0.0202
Female	1	-0.0645	0.06	1.0927	0.2959
Marital	1	0.2825***	0.07	18.6171	<.0001
Borrow	1	-0.0076	0.05	0.0234	0.8785
Electricity	1	0.3092***	0.07	18.2886	<.0001
Business fail	1	-0.1224	0.06	3.8110	0.0509
Ill/injured	1	-0.1425*	0.06	5.0183	0.0251
Food consume	1	0.3043***	0.04	62.0512	<.0001
Log_consume	1	0.3800***	0.03	134.0249	<.0001
<i>Individual</i>					
Age	1	0.0234*	0.01	6.5998	0.0102
Age ²	1	-0.0002*	0.00	5.9081	0.0151
Edu	1	0.0915***	0.02	21.6852	<.0001
Farmer	1	0.0704	0.06	1.4074	0.2355

Employed	1	-0.0345	0.06	0.3503	0.5539
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Note: *p < 0.05; **p < 0.01; ***p < 0.001

Number of observations: 2,688

Regional

In the regional category, people feel poor in the urban area, while they feel less poor in rural. This is unexpected result because the World Bank estimates that about 79% of the world's poor live in rural areas, far exceeding the proportion of the total rural population from 17% in 2016. This explains that drawbacks of urban life are causes of encroaching happiness (Fischer, 1976). Also, small population groups (mostly rural) are happier in the aspects of subjective well-being in advanced industrialized societies (Requena, 2016). This implies that though urban residents could receive more income than that of rural, urban households may feel poor. There are some differences when we look into detailed information. Northern people felt relatively poor than who lives in southern province, which is opposite to the country report (**Table 8**).

Table 8. Poverty incidence of Malawi

Region	Poverty Incidence (%)		
	2004	2006	2016
Northern	54.1	54.3	49.5
Central	44.2	44.5	47.5
Southern	59.7	55.5	56.0

Source:(IFPRI, 2019)

Table 8 depicts the poverty incidence of Malawi reported in (IFPRI, 2019). Southern province experienced the highest incidence of poverty through the given years, followed by the Northern and Central provinces. However, Subjective poverty rates were highest in the Northern region followed by Southern and Central region. **Table 9** depicts the mean procedures of subjective poverty step by province. Such difference between objective and subjective

poverty could raise an argument that people are suffering poverty regardless of the results of objective indicators. It should be considered that it is a nationwide issue, then the regional differences.

Table 9. Means of the Subjective poverty step by Province

Province	Mean	SD	Min	Max
North	2.169	0.897	1	5
Central	2.248	0.978	1	6
South	2.195	1.010	1	6

Source: Author's calculation based on 2019 Malawi IHPS data

Moreover, people who has their own property tend to feel less poor than those who have not. The result seems obvious, yet there are still households who are not poor as long as they got any form of land to work or live regardless of the ownership. Drivers of such inequality goes back to the independence of Malawi. After independence, Malawi adopted unfair colonial policies and laws rather than applying new transformational land laws (Kanyongolo, 2005). Since then, Malawi is still struggling to find appropriate land policies that help to improve unequal land distribution. According to Chikaya-Banda and Chilonga, Malawi's land policy should advance as follows; 1) The unequal land policy maintained after the integration of citizenship should be improved, and 2) Land reform that fully reflects competitive interests should be promoted in consideration of major stakeholders from the beginning stage of policy-making. 3) Considering the government's capabilities as essential, inequality in local customs should be eliminated, and the budget should be allocated efficiently (Chikaya-Banda and Chilonga, 2020).

In the aspects of natural disaster, people who suffered crop pest and disease tends to feel poor, since the outbreaks of insect pests and diseases in Malawi are currently on the increase as they are known to cause crop losses of up to 30% (Worldbank, 2018). Government supports like rural extension programs like utilization of weather and crop disease information, use of appropriate agricultural inputs such as pesticides and fertilizers are essential.

Community

In the community category, people who are damaged by the high cost of input feel less poor. The result suggests that the input subsidies will have positive impact on rural farmers, that the higher input subsidies made higher agricultural yields and increased income of farmers (Hemming *et al.*, 2018).

In addition, ‘damaged by high price of food’ with ‘receiving aid by maize(kg)’ and ‘food consumption adequacy level’ (food security) from ‘Household’ category also shown significant relationship with subjective poverty. Due to irregular rainfall, small farm size, insufficient input, and difficulties of access to market, many farmers cannot meet their livelihood needs. According to the IPC report, food insecurity is severe in both urban and rural areas of Malawi, since more than 12% of urban households suffered food crisis due to the above-average maize prices and greater vulnerability of market dependence (IPC, 2020). As Malawi consumes the highest amount of maize per capita in South Africa, the most important food in Malawi is maize, as a staple food (Mussa, 2015). Thus, Maize prices have special political, social, and economic importance. Maize is grown by more than 90% of farmers and accounts for 60% of calorie consumption. In fact, 80% of small farmers are net buyers of maize. The purchase of maize is decreased due to expensive import prices, reflecting Malawi's land-locked environment and poor access network (Makombe, Lewin and Fisher, 2010). One in three households does not meet the daily calorie requirement per person. In order to overcome such harsh condition, policy support to lower food prices (especially maize) will be needed for farm households, and structural changes such as market access, increased distribution facilities, food tax relief, and increased food aid are needed to revitalize the domestic maize market supply, and eradicate hunger.

Furthermore, the poverty networks which is defined by poverty status of neighbors and friends judged by the head of the household has significant relationship with the poverty of household head himself. Such results might be unsurprising regarding the fact that people often choose their neighborhoods

with similar economic status. Also, since most of the poor people suffers chronic poverty, it lasts for many years or a life time and likely to be transmitted through generations (Hulme and Shepherd, 2003). However, Poor households often fail to avoid neighborhood 'negative networks', which force many individuals to participate in survival networks that prevent upward mobility and often impose emotional penalties (Belle, 1983). Therefore, it is essential to reduce negative effects of neighborhoods for the poor households.

Finally, people who currently have an account at a bank, credit union, micro finance institution, village savings organization, or another financial institution tends to feel less poor. Such result supports the arguments of Omar and Inaba that financial activities have the effect of reducing poverty and income inequality in developing countries (Omar and Inaba, 2020). Thus, in order to maximize the overall welfare of society, policy reform should be addressed for further promote access and use of official financial services by the underprivileged.

Household

In the Household category, people tend to experience poverty when their household size gets bigger. However, the size of household has long been an argument since the bigger the size of the household, more consumption occurs while securing more free workers of household business at the same time. To investigate the specific case of Malawi, study analyzed the factors affecting household size with variables from 2019 IHPS data. According to the estimation, people who has their own property, having relationship, older age, living in northern province, received aid, and have bank account tends to have bigger family. On the other hand, people who has higher education level, having children lives elsewhere (majority of them send their earnings to their families) and having female household tends to have smaller family size. The result implies that, though there are more people with bigger household experienced poverty, the household size does not always lead to poverty, it rather depends on household characteristics and environment. In line with such findings, there

were no vivid gaps between poverty steps and household size (**Figure 6**).

People who currently in a relationship feel less poor, just as the results of the Anyanwu's analysis that divorce, separation, or widows have a statistically significant negative impact on the probability of poverty (Anyanwu, 2014).

Electricity has shown a positive effect on poverty alleviation, due to the convenience of any materials operated by electricity such as light, heating system, and any other electric home appliances. Also, suffering illness or injury had negatively affect subjective poverty, since there are not enough medical facilities in rural area with limited doctors in Malawi. According to Makwero, Malawi's health-care system is built on primary health-care delivery (PHC). PHC system suffers from resource misallocation, unorganized services, and a labor shortage. The result of his study implies that the family medicine provides opportunities for PHC and rural workforce training and retention, as well as clinical governance and capacity building. Therefore, promoting the function of family medicine is essential (Makwero, M.T., 2018).

In accordance with previous studies, household consumption has significant relationship with subjective poverty. According to Iyer and Muncy, personal attitudes about consumption tend to have an impact on a person's subjective well-being. Personal attitudes toward consumption, whether good or negative, promote subjective well-being. Alternatively, social concerns about excessive or insufficient consumption have a negative impact on a consumer's subjective well-being (Iyer and Muncy, 2016). Therefore, government interventions like market strategy and tax relief to motivate consumption and supply should be considered.

Individual

In the individual category, the older the household head gets, the more they seem to escape from poverty, but they start to feel poor again from the age of 58 based on the estimated result below. Parameter estimates for age and age squared values were used for calculation. Such results complements the composition of the data, that the ages are distributed quite even in the lower

steps (1-3), but number of older people decreased above third step. This could be an evidence of weakness in the welfare system for senior citizens, especially in rural area (**Figure 7**).

Finally, as previous studies on poverty have revealed, the level of education has significantly related to poverty. Therefore, the government of Malawi should constantly secure appropriate education support for further economic and social development.

The Partial Proportional Odds model is applied since the result has significant p-values ($<.0001$) from score test for proportional odds assumptions, which means it rejects the null hypothesis assuming that the slope coefficients in the model are the same across response categories (**Table 10**). The variables that are suspected to have unequal slopes were selected if the linear hypothesis testing result is significant (<0.05). Selected variables are represented partially in the table, to show the estimation of each slopes of dependent variables. Though the previous ordered probit model rejects the proportional odds assumption test, interpreting data has been done with previous estimation result as well as marginal effect since there are no differences between significant values of two estimation results.

Table 10. Determinants of subjective poverty in Malawi

Parameter	Poverty Status	DF	Estimate	SD	Wald-Chisq	Pr > ChiSq
Intercept	6	1	-2.861	3.307	0.749	0.387
Intercept	5	1	-3.045*	1.264	5.800	0.016*
Intercept	4	1	-6.824***	0.762	80.203	<.0001
Intercept	3	1	-8.857***	0.578	235.072	<.0001
Intercept	2	1	-7.338***	0.568	167.073	<.0001
<i>Regional</i>						
Urban		1	-0.179*	0.070	6.648	0.010
Northern area	6	1	-1.278	2.163	0.349	0.555

Northern area	5	1	-0.880*	0.358	6.053	0.014
Northern area	4	1	-0.669***	0.145	21.310	<.0001
Northern area	3	1	-0.472***	0.099	22.794	<.0001
Northern area	2	1	-0.326**	0.103	9.987	0.002
Central area	6	1	0.252	0.449	0.314	0.575
Central area	5	1	-0.075	0.164	0.212	0.645
Central area	4	1	-0.258**	0.093	7.763	0.005
Central area	3	1	-0.045	0.065	0.486	0.486
Central area	2	1	0.161*	0.068	5.619	0.018
Property own	6	1	-0.522	0.460	1.286	0.257
Property own	5	1	0.489**	0.184	7.085	0.008
Property own	4	1	0.365**	0.103	12.639	0.000
Property own	3	1	0.196**	0.074	6.986	0.008
Property own	2	1	-0.002	0.079	0.001	0.978
Irregular rain		1	-0.138*	0.065	4.531	0.033
Crop disease		1	-0.154*	0.063	5.925	0.015
Landslide		1	-0.009	0.062	0.022	0.881
Sick Livestock		1	-0.076	0.064	1.405	0.236
<i>Community</i>						
Lowpr_output		1	-0.125	0.064	3.798	0.051
Highpr_input		1	0.169**	0.063	7.244	0.007
Highpr_food	6	1	-0.876	2.153	0.166	0.684
Highpr_food	5	1	0.066	0.249	0.070	0.791
Highpr_food	4	1	-0.251	0.135	3.485	0.062
Highpr_food	3	1	-0.070	0.083	0.712	0.399
Highpr_food	2	1	-0.157	0.081	3.757	0.053

Neighbor step	6	1	0.521**	0.194	7.223	0.007
Neighbor step	5	1	0.431***	0.076	32.299	<.0001
Neighbor step	4	1	0.296***	0.043	47.867	<.0001
Neighbor step	3	1	0.278***	0.032	74.493	<.0001
Neighbor step	2	1	0.307***	0.036	73.045	<.0001
Friend step		1	0.402***	0.025	258.968	<.0001
Water time	6	1	-0.004	0.017	0.062	0.804
Water time	5	1	0.003	0.004	0.458	0.499
Water time	4	1	-0.001	0.002	0.616	0.432
Water time	3	1	-0.004**	0.001	10.835	0.001
Water time	2	1	0.000	0.001	0.004	0.950
Aid_maize		1	0.001*	0.000	5.408	0.020
Bank account	6	1	0.003	0.486	0.000	0.995
Bank account	5	1	0.751**	0.194	14.970	0.000
Bank account	4	1	0.360**	0.099	13.216	0.000
Bank account	3	1	0.381***	0.071	29.292	<.0001
Bank account	2	1	0.269**	0.086	9.694	0.002
Child away	6	1	0.528	0.415	1.619	0.203
Child away	5	1	-0.262	0.186	1.969	0.161
Child away	4	1	0.155	0.100	2.406	0.121
Child away	3	1	0.071	0.077	0.848	0.357
Child away	2	1	0.023	0.080	0.080	0.777
Violence		1	0.081	0.062	1.688	0.194
<i>Household</i>						
H_size	6	1	0.124	0.109	1.299	0.254
H_size	5	1	-0.051	0.047	1.190	0.275

H_size	4	1	-0.001	0.022	0.001	0.977
H_size	3	1	-0.007	0.015	0.242	0.623
H_size	2	1	-0.045**	0.016	8.067	0.005
Female		1	-0.078	0.063	1.562	0.211
Marital		1	0.279***	0.067	17.573	<.0001
Borrow	6	1	0.112	0.596	0.035	0.852
Borrow	5	1	-0.709**	0.227	9.763	0.002
Borrow	4	1	-0.320**	0.101	10.112	0.002
Borrow	3	1	-0.005	0.068	0.005	0.943
Borrow	2	1	0.140	0.073	3.678	0.055
Electricity		1	0.422***	0.075	31.471	<.0001
Business fail		1	-0.132*	0.064	4.300	0.038
Ill/injured		1	-0.129*	0.065	3.999	0.046
Food consume		1	0.309***	0.039	62.286	<.0001
Log_consume	6	1	-0.391	0.242	2.606	0.106
Log_consume	5	1	-0.263**	0.099	7.115	0.008
Log_consume	4	1	0.137*	0.058	5.621	0.018
Log_consume	3	1	0.400***	0.043	86.590	<.0001
Log_consume	2	1	0.412***	0.043	92.470	<.0001
<i>Individual</i>						
Age		1	0.020*	0.009	4.788	0.029
Age ²		1	0.000*	0.000	4.022	0.045
Edu		1	0.116***	0.020	32.666	<.0001
Farmer		1	0.079	0.061	1.702	0.192
Employed		1	-0.049	0.060	0.676	0.411

Note: *p < 0.05; **p < 0.01; ***p < 0.001

Number of observations: 2,688

The marginal effects of each variable can be calculated from the previous calculated coefficients (**chapter 4**) and are defined as each unit increases or decreases the probability of selecting alternative J (1, 2,...,6) expressed as a percentage. **Table 11** shows the marginal effects in each poverty status, respectively. The results were rounded based on the four digits below the decimal point.

Table 11. Estimation Result: Marginal Effects

Parameter	y=1	y=2	y=3	y=4	y=5	y=6
<i>Regional</i>						
Urban	0.0520***	0.0346***	-0.0718***	-0.0141***	-0.0008**	0.0000
North_area	0.0812***	0.0541***	-0.1120***	-0.0220***	-0.0013***	0.0000
Central_area	-0.0054	-0.0036	0.0074	0.0015	0.0001	0.0000
Own Property	-0.0308**	-0.0205**	0.0425**	0.0084*	0.0005*	0.0000
Irregular rain	0.0211	0.0140	-0.0291	-0.0057	-0.0003	0.0000
Crop disease	0.0322*	0.0214*	-0.0444*	-0.0087*	-0.0005*	0.0000
Landslide	-0.0036	-0.0024	0.0049	0.0010	0.0001	0.0000
Sick Livestock	0.0195	0.0130	-0.0269	-0.0053	-0.0003	0.0000
<i>Community</i>						
Lowpr_output	0.0310*	0.0206*	-0.0428*	-0.0084*	-0.0005*	0.0000
Highpr_input	-0.0299*	-0.0199*	0.0412*	0.0081*	0.0005*	0.0000
Highpr_Food	0.0271*	0.0181*	-0.0374*	-0.0074*	-0.0004	0.0000
Neighbor step	-0.0621***	-0.0414***	0.0857***	0.0168***	0.0010***	0.0000
Friend step	-0.0849***	-0.0565***	0.1171***	0.0230***	0.0013***	0.0000
Water	0.0001	0.0001	-0.0002	0.0000	0.0000	0.0000
Aid_maize	-0.0003**	-0.0002**	0.0004**	0.0001**	0.0000*	0.0000
Bank account	-0.0648***	-0.0431***	0.0893***	0.0176***	0.0010***	0.0000

Child away	-0.0154	-0.0103	0.0213	0.0042	0.0002	0.0000
Violence	-0.0191	-0.0127	0.0264	0.0052	0.0003	0.0000
<i>Household</i>						
H_size	0.0069**	0.0046**	-0.0095**	-0.0019**	-0.0001*	0.0000
Female	0.0151	0.0101	-0.0208	-0.0041	-0.0002	0.0000
Marital	-0.0614***	-0.0408***	0.0846***	0.0166***	0.0010**	0.0000
Borrow	0.0051	0.0034	-0.0070	-0.0014	-0.0001	0.0000
Electricity	-0.0662***	-0.0441***	0.0913***	0.0179***	0.0010**	0.0000
Business fail	0.0255	0.0170	-0.0352	-0.0069	-0.0004	0.0000
Ill/injured	0.0284*	0.0189*	-0.0392*	-0.0077*	-0.0004	0.0000
Food consume	-0.0681***	-0.0453***	0.0939***	0.0185***	0.0011***	0.0000
Log_consume	-0.0842***	-0.0561***	0.1161***	0.0228***	0.0013***	0.0000
<i>Individual</i>						
Age	-0.0052**	-0.0034**	0.0071**	0.0014**	0.0001*	0.0000
Education	-0.0193***	-0.0128***	0.0266***	0.0052***	0.0003**	0.0000
Farmer	-0.0190	-0.0126	0.0262	0.0051	0.0003	0.0000
Employed	0.0068	0.0045	-0.0094	-0.0018	-0.0001	0.0000

Note: *p < 0.05; **p < 0.01; ***p < 0.001
Number of observations: 2,688

Regional

In the regional category, the probability of being first step (y=1) of subjective poverty increase by 5.2% when people living in urban area. Also, probability of being second step increases by 3.46% while probability of being third (y=3), fourth (y=4) and fifth (y=5) step decreases by 7.18%, 1.41% and 0.08% each, given that the rest of the predictors are set to their mean values. Similarly, the probability of being first and second step of subjective poverty increase by 8.12% and 5.41% when people living in urban area, yet probability

of being third, fourth and fifth step decreases by 11.2%, 2.22% and 0.13%. Such result implies that both ‘living in urban area’ and ‘living in northern province’ negatively affects people’s subjective assessment of wellbeing, and living in northern province has higher impact on subjective poverty. In contrast, if household owns property, the probability of being first and second step decreases by 3.08% and 2.05%, while probability of being third, fourth and fifth step increases by 4.25%, 0.84% and 0.05% each. Thus, owning property positively affects people’s subjective poverty. Damaged by crop pest and disease has negative impact on subjective poverty since the probability of first and second step increases by 3.22% and 2.14%, while probability of being higher steps except sixth had decreases by 4.44%, 0.87% and 0.05%.

Community

Regarding the community characteristics, if household has been damaged by low price of output, negative impacts are detected on the probability of being $y=3$ (-4.28%), $y=4$ (-0.84%), and $y=5$ (-0.05%) while positive impacts has been detected in probability of being $y=1$ (3.1%) and $y=2$ (2.06%). Also, household who has been damaged by high price of food tend score lower rate of their subjective assessment of well-being, since the probability of being first and second step increases by 2.71% and 1.81% each, while probability of being fourth and fifth steps decreases by 3.74% and 0.74%. On the other hand, ‘damaged by high price of input’ positively affect subjective poverty, due to the probability of being lower steps decreases by 2.99% and 1.99%, and probability of being higher steps except sixth increases by 4.12%, 0.81%, and 0.05%. In terms of household social network, probability of being first and second step decreases by 6.21% and 4.14% when neighbor’s poverty step increases by one step. In the same condition, the probability of being higher steps except sixth increases by 8.57%, 1.68%, and 0.1%. Likewise, one step increase in friend’s poverty step positively affects household’s subjective poverty, since the probability of first two steps ($y=1,2$) decreases by 8.49% and 5.65%, while probability of being third, fourth and fifth steps increases by 11.71%, 2.30%,

and 0.13%. In this regard, the market condition affects subjective poverty of the Malawian households except for high cost of input, and social network of the household has positive impact, especially households are slightly more sensitive to friend's economic condition than those of neighbors. Moreover, 1kg increase in received maize as an aid positively affects subjective assessment of well-being because the probability of being third, fourth and fifth steps increases by 0.04%, 0.01%, and 0.005%, with decrease in the probability of being first and second steps decreases by 0.03% and 0.02%. Though receiving aid influenced positively on subjective poverty, the impacts are small. Therefore, increased amount of aid per household should be distributed in order to increase the effectiveness. In addition, if household transacts with any kinds of financial institution, the probability of $y=1$ and $y=2$ decreases by 6.62% and 4.41%, with increase in probability of being $y=3$ (8.93%), $y=4$ (1.76%), $y=5$ (0.1%). This implies that financial inclusion of household positively affects subjective poverty.

Household

Among the household characteristics, household size negatively affects subjective poverty, due to the result that one person increase among household members affects probability of being first step (0.69%) and second step (0.46%), while probabilities of being higher subjective poverty steps decreases by 0.95% ($y=3$), 0.19% ($y=4$), and 0.01% ($y=5$). On the contrary, being married to someone (including common-law marriage and cohabitation), electricity availability, food consumption adequacy level, and total consumption positively affects household subjective poverty in Malawi, since there are decreasing probabilities of being $y=1$ and $y=2$ by 6.14% ($y=1$) and 4.08% ($y=2$) for marital status, 6.62% ($y=1$) and 4.41% ($y=2$) for electricity availability, 6.81% ($y=1$) and 4.53% ($y=2$) for food consumption adequacy level, and 8.42% ($y=1$) and 5.61% ($y=2$) for total consumption per year. Correspondingly, the probabilities of being $y=3$, $y=4$, and $y=5$ increases by 8.46% ($y=3$), 1.66% ($y=4$), 0.1% ($y=5$) for marital status, 9.13% ($y=3$), 1.79% ($y=4$), 0.1% ($y=5$)

for electricity availability, 9.39% (y=3), 1.85% (y=4), and 0.11% (y=5) for food consumption adequacy, and 11.61% (y=3), 2.28% (y=4), and 0.13% (y=5) for total consumption per year.

Individual

In terms of the individual category, both household head age and education level had positive impact on subjective poverty of the Malawian household. The probability of being first and second steps decreases by 0.52% and 0.34% each if household age increases by 1 year old. The probabilities of being third, fourth and fifth steps increases by 0.71%, 0.14%, and 0.01%, which implies that the older the household head gets, the people tend to feel less poor. However, considering age squared value for precise interpretation, the household tends to feel poor again at some point, which is consistent with previous discussion. Finally, if one level increase in education level of the household, the probabilities of being first and second step of subjective poverty decreases by 1.93% and 1.28%, while probabilities of being third, fourth and fifth step increases by 2.66%, 0.52%, and 0.03%.

6.1. Consumption Poverty

The estimation result of consumption poverty is described on **Table 12**. Study analyzed the factors affecting total food and non-food expenditure of Malawian household.

Table 12. Determinants of Consumption poverty

Variable	Parameter Estimates	Std.error	t-value	Pr > t
Intercept	-701,188	118,069	-5.940	<.0001***
<i>Regional</i>				
Urban	334,529***	38,965	8.59	<.0001

North_area	-163,755**	42,974	-3.81	0.000
Central_area	1,597	28,276	0.06	0.955
Own Property	51,612	32,436	1.59	0.112
Irregular rain	-42,818	37,191	-1.15	0.250
Crop disease	-8,307	36,169	-0.23	0.818
Landslide	38,429	35,683	1.08	0.282
Sick Livestock	18,090	36,878	0.49	0.624
Lowpr_output	-19,908	36,738	-0.54	0.588
Highpr_input	-35,002	36,272	-0.97	0.335
Highpr_Food	25,565	36,072	0.71	0.479
<i>Community</i>				
Neighbor step	25,799	14,016	1.84	0.066
Friend step	76,542***	14,049	5.45	<.0001
Water	42	269	0.16	0.876
Aid_maize	-271	293	-0.92	0.356
Bank account	258,344***	32,377	7.98	<.0001
Child away	-40,994	37,025	-1.11	0.268
Violence	-24,230	36,123	-0.67	0.502
<i>Household</i>				
H_size	50,750***	6,837	7.42	<.0001
Female	43,343	36,128	1.20	0.230
Marital	10,098	38,251	0.26	0.792
Borrow	-48,826	29,184	-1.67	0.094
Electricity	485,624***	42,352	11.47	<.0001
Business fail	-12,064	36,433	-0.33	0.741
Ill/injured	51,955	36,913	1.41	0.159

Food consume	145,767***	22,255	6.55	<.0001
<i>Individual</i>				
Age	15,095**	5,248	2.88	0.004
Age^2	-150**	53	-2.85	0.004
Education	110,817***	11,559	9.59	<.0001
Farmer	-124,135**	34,764	-3.57	0.000
Employed	-44,310	34,498	-1.28	0.199

Note: *p < 0.05; **p < 0.01; ***p < 0.001.
Number of observations: 2,688

According to the result, all the significant variables except variables ‘household size’ and ‘being farmer’ are overlapped with the result of subjective poverty analysis. Such result supports the previous studies about subjective poverty assessment, that the subjective poverty assessment is not only reliable data but also gives more various information, regarding that there are more significant variables in subjective poverty analysis.

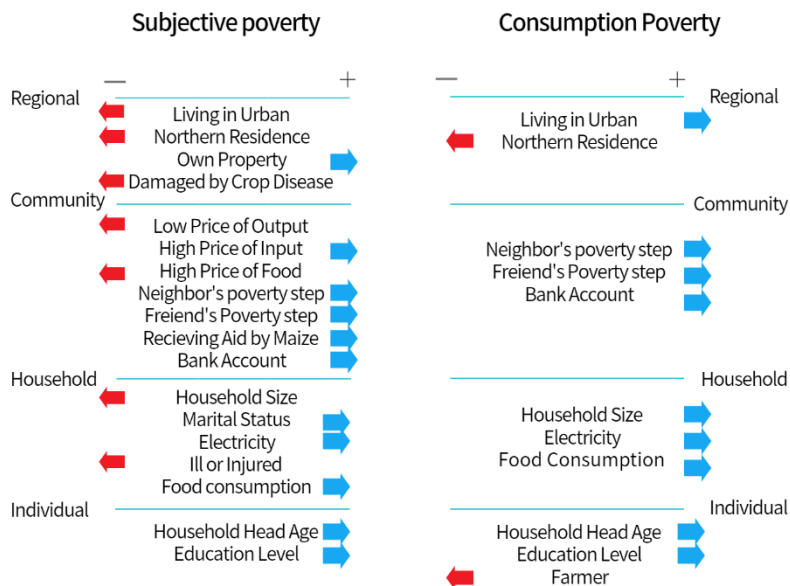
Unlike the case of subjective poverty, the bigger the household size gets, the more they consume. Though it seemed obvious that the consumption rises when there are more people, but the distribution of the consumption implies that the consumption amount is proportional to household size, but at some point, the consumption decreases (**Figure 7**). Ultimately, the impact of household size on consumption does have positive influence, only at a certain number of household members (In this case, no more than 7 household members). Therefore, it might help to escape poverty with many families. but too large household size does not give positive impact on poverty in Malawi.

Becoming farmer negatively affects consumption of the household, yet it is hard to interpret that the being farmer led household to be poor. Regarding that the data is food and non-food consumption data, which hardly consider numeric value of self-sufficiency, might not provide accurate data of the household food consumption. Malawi, where government has implemented the Farm Input Support Program (FISP) which has largely contributed to maize production rising above domestic self-sufficiency levels, has constant rate of increasing

self-sufficiency level (Ellis and Manda, 2012). Thus, it is important to note that the consumption data might not hold accurate food consumption value, especially in agricultural society. Despite these limitations, the estimation result still provides valuable information about the farmer's consumption. Being farmer as a determinant for being poor brings out multiple reasons. One is the factors affecting the consumption decision of the farmer, introduced by FAO (Chapter 3). The other reason is because the agriculture is a main production activity in many developing countries, proportion of being farmer is high, so as proportion of being poor farmer. Farmers in developing countries often have less information and technologies, along with weak policy structure and limited institutions. Plus, limited market access especially in land-locked countries like Malawi are relatively have low consumption (Addison *et al.*, 2019).

Figure 9 depicts the determinants of subjective and consumption poverty. Most of variables from consumption poverty were overlapped with subjective poverty, while subjective poverty embraces broader contents.

Figure 9. Determinants of Subjective and Consumption Poverty



6.3. Comparing poverty

By analyzing possible determinants of poverty in Malawi in terms of subjective assessment and consumption, significant variables and their impact on poverty are now highlighted. Additionally, study compared subjective and consumption poverty through multinomial logit model in order to calculate the relative impact.

Subjective poor and non-poor has been categorized considering the median number of the households regarding the subjective poverty step. The distribution of household by subjective poverty step and Malawi’s national poverty line is depicted in **Table 13**. As seen in the table, the households are concentrated in lower poverty steps, so the decision of poor versus non-poor should be done regarding the median number of the whole households. Thus, study categorized 1-2 poverty steps as poor group and others as non-poor group. The consumption poverty and non-poverty has been separated by latest national poverty line (2016), which is 164,191 MWK.

Table 13. Distribution of household

Subjective poverty step	Obs	Poverty line	Obs
6	9	Above	361
5	48		
4	193		
3	714		
2	1,087	Under	2327
1	637		
Total	2,688	Total	2,688

The estimation result of comparing subjective and consumption poverty is described in **Table 14**. Multinomial logit model is applied in the regression analysis. As a reference variable, variable ‘4’ (overall non-poor) is used.

Table 14. Comparing Subjective and Consumption poverty

Parameter	Combination	Parameter Estimate	Std.error	Pr > ChiSq
Intercept	1	12.649***	1.202	<.0001
Intercept	2	11.676***	1.065	<.0001
Intercept	3	-26.345	214.800	0.9024
<i>Regional</i>				
Urban	1	-3.070***	0.761	<.0001
Urban	2	0.286	0.228	0.2099
Urban	3	-12.573	158.600	0.9368
North_area	1	1.865***	0.391	<.0001
North_area	2	1.500***	0.308	<.0001
North_area	3	2.893*	1.333	0.0299
Central_area	1	1.229***	0.231	<.0001
Central_area	2	0.476*	0.189	0.0118
Central_area	3	0.581	1.179	0.6219
Property own	1	-0.496	0.281	0.0779
Property own	2	-0.843**	0.222	0.0001
Property own	3	11.723	164.600	0.9432
Irregular rain	1	0.196	0.331	0.554
Irregular rain	2	0.271	0.287	0.3444
Irregular rain	3	-10.603	179.000	0.9528
Crop disease	1	0.388	0.333	0.2446
Crop disease	2	0.514	0.289	0.075
Crop disease	3	-10.475	171.700	0.9514
Landslide	1	0.075	0.297	0.8009
Landslide	2	0.033	0.251	0.8967

Landslide	3	-11.871	174.800	0.9458
Sick livestock	1	0.470	0.359	0.1901
Sick livestock	2	0.599	0.320	0.0609
Sick livestock	3	1.402	1.345	0.297
<i>Community</i>				
Lowpr_output	1	-0.219	0.318	0.4913
Lowpr_output	2	-0.077	0.274	0.7792
Lowpr_output	3	-10.852	164.500	0.9474
Highpr_input	1	-0.398	0.293	0.1747
Highpr_input	2	-0.380	0.245	0.1214
Highpr_input	3	-0.667	1.384	0.6297
Highpr_Food	1	0.291	0.330	0.3787
Highpr_Food	2	0.475	0.287	0.0976
Highpr_Food	3	1.001	1.393	0.4724
Neighbor step	1	-0.553***	0.110	<.0001
Neighbor step	2	-0.596***	0.085	<.0001
Neighbor step	3	-0.137	0.462	0.7676
Friend step	1	-0.914***	0.113	<.0001
Friend step	2	-0.721***	0.085	<.0001
Friend step	3	0.390	0.513	0.4469
Water time	1	-0.002	0.005	0.5821
Water time	2	0.002	0.004	0.6989
Water time	3	-0.006	0.017	0.7355
Aid_maize	1	-0.002	0.002	0.4583
Aid_maize	2	-0.002	0.002	0.4555
Aid_maize	3	0.007	0.007	0.3209

Bank account	1	-1.881***	0.295	<.0001
Bank account	2	-0.876***	0.201	<.0001
Bank account	3	-0.991	1.293	0.4436
Child away	1	-0.243	0.305	0.425
Child away	2	-0.107	0.243	0.66
Child away	3	-2.038	1.624	0.2095
Violence	1	0.086	0.304	0.7769
Violence	2	-0.045	0.261	0.8627
Violence	3	0.307	1.447	0.832

Household

H_size	1	-0.154**	0.060	0.0098
H_size	2	0.056	0.047	0.2315
H_size	3	-0.682*	0.326	0.0364
Female	1	-0.425	0.298	0.1539
Female	2	-0.122	0.248	0.6224
Female	3	12.421	137.800	0.9282
Marital	1	-0.578	0.317	0.0685
Marital	2	-0.481	0.259	0.0638
Marital	3	-0.420	1.574	0.7894
Borrow	1	0.454	0.250	0.0696
Borrow	2	0.530**	0.202	0.0087
Borrow	3	0.345	1.335	0.7964
Electricity	1	-2.261**	0.642	0.0004
Electricity	2	-1.157***	0.230	<.0001
Electricity	3	-12.494	255.600	0.961
Business fail	1	0.616*	0.312	0.0488

Business fail	2	0.364	0.274	0.1838
Business fail	3	-0.715	1.563	0.6476
Ill/injured	1	0.330	0.331	0.3187
Ill/injured	2	0.486	0.288	0.0913
Ill/injured	3	-11.183	172.200	0.9482
Food consume	1	-1.052***	0.188	<.0001
Food consume	2	-0.512**	0.149	0.0006
Food consume	3	0.197	0.813	0.809

Individual

Age	1	-0.164**	0.050	0.0009
Age	2	-0.151**	0.044	0.0007
Age	3	0.162	0.192	0.3999
Age^2	1	0.002**	0.001	0.0005
Age^2	2	0.001**	0.000	0.0015
Age^2	3	-0.001	0.002	0.5652
Education	1	-0.569***	0.125	<.0001
Education	2	-0.166*	0.059	0.0046
Education	3	-0.492	0.519	0.3437
Farmer	1	0.026	0.286	0.9271
Farmer	2	-0.105	0.214	0.6226
Farmer	3	-1.120	1.312	0.3935
Employed	1	-0.795*	0.347	0.022
Employed	2	0.216	0.209	0.2995
Employed	3	0.980	1.278	0.443

Note: *p < 0.05; **p < 0.01; ***p < 0.001.

Number of observations: 2,688

Regional

According to result, variable 'living in urban' is associated with 3.07 decrease in the relative log odds of being 'overall poor' versus 'overall non-poor'. Recall the equation of the multinomial model in **chapter 5**, the result implies that there are lot of people who is 'overall non-poor' living in urban, while there is very small amount of 'overall poor' who lives in urban area. Living in northern province is associated with the relative increasing log odds of being 'overall poor' (1.87), 'subjectively poor' (1.50), and 'consumption poor' (2.89) versus 'overall non-poor' to each variable. Many people who are 'overall poor', 'subjectively poor' and 'consumption poor' lives in northern province, while there are less people who are 'overall non-poor' living in northern province. Similarly, living in central province is associated with 1.23 and 0.48 increase each in relative log odds of being 'overall poor' and 'subjectively poor' compared to 'overall non-poor', so there are more people living in central province who are 'overall poor' and 'subjectively poor' than who are 'overall non-poor'. Variable 'owned property' is associated with 0.84 decrease in the relative log odds of being 'subjectively poor', which implies that there are relatively more people who are subjectively poor with their own property than who are 'overall non-poor'.

Community

In the community category, one step increase in neighbor's poverty step is associated with a 0.55 and 0.60 decrease each in the relative log odds of being 'overall poor' and 'subjectively poor' versus 'overall non-poor'. Such result implies that there are relatively less people who are 'overall poor' and 'subjectively poor' in higher neighbor's poverty step than who are 'overall non-poor'. Similarly, friend's poverty step is associated with 0.91 and 0.72 decrease in each, in the relative log odds of being 'overall poor' and 'subjectively poor' versus 'overall non-poor'. Such result implies that there are relatively less people who are 'overall poor' and 'subjectively poor' in increase in friend's poverty step than who are 'overall non-poor'. Moreover, variable 'transaction

with any financial institution' is associated with 1.88 and 0.88 decrease each in the relative log odds of being 'overall poor' and 'subjectively poor' than 'overall non-poor'. More education lowers, as expected, the likelihood of being 'overall poor' or 'subjectively poor'.

Household

In comparison to the overall non-poor, bigger household size is associated with a higher likelihood of being consumption poor (-0.15) as well as overall poor (-0.68). In addition, the chances of being out of 'overall poverty' increases (0.53) for the households who borrowed credits to the base outcome, while people who are 'overall poor' (-2.26) and 'subjectively poor' (-1.16) has lower chance to access electricity than people who are 'overall non-poor'. Failure of household business is associated with 0.61 increase in the relative log odds of household of being 'overall poor' than based outcome. Furthermore, one unit increase in food consumption adequacy level is associated with 1.052 and 0.512 decrease each in the relative log odds of being 'overall poor' and 'subjectively poor'.

Individual

Age of the household head is associated with a higher likelihood of being poor subjectively (0.15) as well as overall poor (0.16) in comparison to the 'overall non-poor'.

Comparing poverty

According to the result, living in central province showed higher association to subjective poverty than consumption poverty. Such result is consistent with previous result that the central residents (where urban places are located the most) are vulnerable to relative feeling of poverty regardless of their absolute economic status. Also, people living in Northern province are

poor in terms of both subjective and household consumption, which also in line with consistent result.

Borrowing credits are more associated with subjective poverty than consumption. Since borrowing credits have not been mentioned in previous result, study had investigated more detailed information of the data. To be more specific, study investigated how much quantity amount household have borrowed credits from which source. **Table 15** depicts the amount of borrowed credits sorted by subjective poverty step.

Table 15. Borrowed credits by poverty step

Pov.step	1(poor)	2	3	4	5	6(rich)
Obs	183	343	246	55	7	1
Mean	39,211	32,313	97,746	207,109	532,429	1,000,000

Note: Calculated by author/ Unit: MWK

According to **Table 15**, the amount of the credit is in proportional to the level of subjective poverty step, which weakly explains the borrowing credits are relatively associated with subjective poverty. However, in terms of borrowing sources, there are 12 sources categorized by World Bank: 1) Relative, 2) Neighbor, 3) Grocery/Local merchant, 4) Money lender (Katapila), 5) Employer, 6) Religious institution, 7) MARDEF^⑥, 8) MRFC^⑦, 9) SACCO^⑧, 10) Commercial Bank, 11) NGO, 12) Other, 13) Village bank. Study additionally analyzed which borrowing sources had positive and negative factor on subjective poverty. It turns out that borrowing credits from the grocery and local merchant affects negatively on increase in poverty step. Also, borrowing credits from money lender (also known as a loan shark) affects negatively on subjective poverty too. On the other hand, borrowing credits from SACCO or Commercial bank positively affects subjective poverty. That is because, when conventional financial institutions are unavailable, households turn to networks,

^⑥ Malawi rural development fund

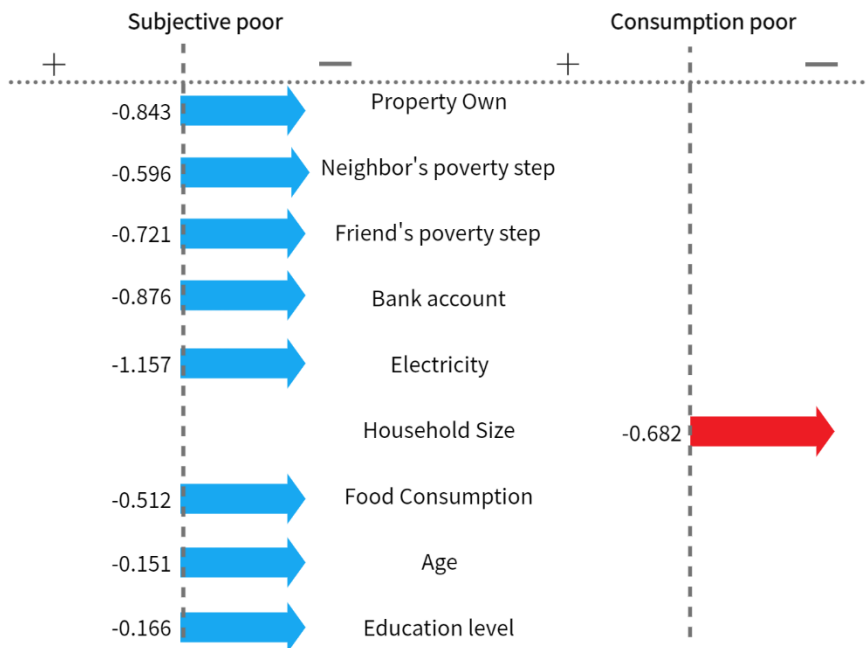
^⑦ Malawi rural finance company

^⑧ Savings and Credit Cooperatives: first promoted in Malawi by the Catholic Church and government in the 1970s

money lenders, and other informal financial mechanisms (Ksoll *et al.*, 2016). Therefore, the government should promote the conventional financial institution along with increasing financial inclusions of the household. Access to electricity also showed relatively gives high impact on subjective poverty, because of the life convenience.

In addition, Food consumption adequacy level is highly associated with subjective poverty, since have sufficient food directly link to subjective well-being as mentioned previously. Lastly, age of the household head also has strong association with subjective poverty than consumption poverty as described in the consistent result. **Figure 10** compares the subjective and consumption poverty based on a result.

Figure 10. Comparing Subjective and Consumption poverty



By comparing the Subjective poverty and Consumption poverty, property own, neighbor's poverty step, friend's poverty step, bank account, electricity, food consumption, age, education level is more associated with the combination of subjective poor and consumption non-poor group, while household size were

more associated with the combination of subjective non-poor and consumption-poor group. Such result suggests that the policy makers should consider the characteristics of the determinants of poverty in policy making process.

7. Conclusion

The thesis discovers the determinants of poverty in Malawi based on both subjective poverty assessment and consumption data. Considering the socio-economic characteristics of Malawian households collected from 2019 IHPS survey data, 2,688 households were observed for the analysis. As for the subjective poverty, ordered probit model is used for ordinal dependent variables. Subjective assessment of poverty, as a dependent variable, consist of ordinal data which represents the 6 levels of poverty status of Malawian households. To analyze consumption poverty, linear regression model has been used for discovering factors of consumption poverty in Malawi, by using total consumption of Malawian household as dependent variable. In order to select the independent variables as unbiased as possible, study selected appropriate variables based on the main determinants of multiple facets of poverty including general poverty, subjective poverty, and consumption poverty. For more accurate interpretation, study also calculated marginal effects of the result of ordered probit model. Additionally, study used multinomial logit model to compare subjective and consumption poverty.

As a result of the analysis, region, land distribution, crop pest and disease, aid, market condition, social network, financial inclusion, household assets, food security, consumption and household characteristics like household size, marital status, age, sex and education level were found to be key determinants of subjective poverty of Malawian households. Similarly, the determinants of consumption poverty include region, social network, financial inclusion, household assets, food security and household size, age, education level and being farmer. Most of variables are overlapped with determinants of subjective poverty, except household size and being farmer. In line with the previous studies, subjective poverty covers more diverse factors of poverty than the consumption poverty, still it cannot be denied that both poverties complements each other's limitations as 'Easterlin paradox' argued.

Policy implications are suggested regarding to the determinants of poverty

in Malawi, while specific variables were more likely to be associated with the subjective dimension. Therefore, in terms of subjective dimension in policy making, constitutional approach where clearly reflects underlying institutions is essential. Plus, 'Ganyu' labors, who represents rural poverty should be protected from unfair wage, and treated as fair labor in terms of welfare to overcome endless poverty and hunger.

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Appendix 1. Integrated Household Panel Survey 2019-2020 Questionnaire



Malawi Government
National Statistical Office

AUTHORIZED FOR PUBLIC DISCLOSURE

Questionnaire
Number

FIFTH INTEGRATED HOUSEHOLD SURVEY 2019/2020 AND THE INTEGRATED HOUSEHOLD PANEL SURVEY 2019

THIS SURVEY IS BEING CONDUCTED BY THE NATIONAL STATISTICAL OFFICE UNDER THE AUTHORITY OF THE 2013 STATISTICS ACT.

THIS INFORMATION IS STRICTLY CONFIDENTIAL AND IS TO BE USED FOR STATISTICAL PURPOSES ONLY.

HOUSEHOLD QUESTIONNAIRE

MODULE A-1: HOUSEHOLD IDENTIFICATION

WRITE CODES FOR TA, STA, OR TOWN; EA; AND HH ID. WRITE NAME OF DISTRICT, TA; VILLAGE; AND HOUSEHOLD HEAD.

	CODE	NAME
A01. DISTRICT:	<input type="text"/>
A02. TA, STA, or TOWN:	<input type="text"/>
A03. ENUMERATION AREA:	<input type="text"/>
A04. PLACE / VILLAGE NAME:	
A05. PANEL OR CROSS-SECTIONAL:	CROSS-SECTION1 PANEL A2>>A09 PANEL B3>>A09	<input type="text"/>
A06. HOUSEHOLD ID (FROM LIST):	<input type="text"/>
A07. NAME OF HOUSEHOLD HEAD:	
A08. DWELLING STRUCTURE NO. (FROM LIST):	CODE <input type="text"/> (THEN>>A15)	
A09. IHPS Y3-HHID FROM TRACKING FORM:	<input type="text"/> - <input type="text"/>	
A10. NAME OF HOUSEHOLD HEAD FROM IHPS:	
A11. LOCATION OF HOUSEHOLD:	SAME DWELLING UNIT1 ► A13 DIFFERENT DWELLING UNIT WITHIN SAME VILLAGE/URBAN LOCATION2 DIFFERENT VILLAGE/URBAN LOCATION, WITHIN SAME DISTRICT3	<input type="text"/>
A12. IHPS 2016 ROSTER ID & NAME OF TRACKING TARGET:	<input type="text"/>
A13. CURRENT NAME OF HOUSEHOLD HEAD:	
A14. LOWEST IHPS 2016 ROSTER ID NUMBER FROM SECTION B, QUESTION 06_1:	<input type="text"/>	REFER TO COMPLETED T0 AND CONFIRM IN MODULE B HOUSEHOLD ROSTER

VISIT 1

A15. DESCRIPTION OF LOCATION OF HOUSEHOLD:

.....

A16. WHAT ARE THE GPS COORDINATES OF THE DWELLING?

LATITUDE (S)									
			°				.		
LONGITUDE (E)									
			°				.		

A17. WEATHER CONDITION AT MEASUREMENT:

Clear/ Sunny.....1	Mostly Cloudy / Considerable Cloudiness. 4	
Mostly Clear / Mostly Sunny.....2	Completely Cloudy5	
Partly Cloudy / Partly Sunny.....3	Rainy.....6	

A18. PHONE NUMBER FOR HOUSEHOLD HEAD:

A. NAME: _____ B. PHONE: _____

A19. CONTACT INFORMATION - REFERENCE PERSON 1:

A. NAME: _____
 B. RELATIONSHIP TO HEAD: _____
 C. PHONE: _____
 D. DISTRICT: _____
 E. TA, STA, or TOWN: _____
 F. PLACE / VILLAGE: _____

A20. CONTACT INFORMATION - REFERENCE PERSON 2:

A. NAME: _____
 B. RELATIONSHIP TO HEAD: _____
 C. PHONE: _____
 D. DISTRICT: _____
 E. TA, STA, or TOWN: _____
 F. PLACE / VILLAGE: _____

VISIT 2 (ONLY APPLICABLE FOR PANEL HOUSEHOLDS)

A31. IS THIS HOUSEHOLD IN THE SAME DWELLING AS IN VISIT 1? YES...1 ▶A33
 NO2

A32. DESCRIPTION OF NEW LOCATION OF HOUSEHOLD:

.....

A33. WHAT ARE THE GPS COORDINATES OF THE DWELLING? (RETAKE - DO NOT COPY)

LATITUDE (S)									
			°				.		
LONGITUDE (E)									
			°				.		

A34. WEATHER CONDITION AT MEASUREMENT:

Clear/ Sunny.....1	Mostly Cloudy / Considerable Cloudiness. 4	
Mostly Clear / Mostly Sunny.....2	Completely Cloudy5	
Partly Cloudy / Partly Sunny.....3	Rainy.....6	

A35. PHONE NUMBER FOR HOUSEHOLD HEAD: (RETAKE - DO NOT COPY)

A. NAME: _____ B. PHONE: _____

A21. CONTACT INFORMATION - REFERENCE PERSON 3:

A. NAME: _____
 B. RELATIONSHIP TO HEAD: _____
 C. PHONE: _____
 D. DISTRICT: _____
 E. TA, STA, or TOWN: _____
 F. PLACE / VILLAGE: _____

MODULE A-2: SURVEY STAFF DETAILS

VISIT 1

A22. ENUMERATOR CODE:

A23. ENUMERATOR NAME: _____

	DATE	START	END	MODULES
A24. Attempt 1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Attempt 2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Attempt 3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

HH MM HH MM

ENUMERATOR>> NEXT PAGE

A25. SUPERVISOR CODE:

A26. SUPERVISOR NAME: _____

A27. DATE OF INSPECTION:

DD MM YYYY

RECORD GENERAL NOTES ABOUT THE INTERVIEW AND ANY SPECIAL INFORMATION THAT WILL BE HELPFUL FOR SUPERVISORS AND DATA ANALYSIS.

PLEASE MARK AN 'X' IN BOX IF HOUSEHOLD REFUSAL. PROVIDE DETAILS.

VISIT 2 (ONLY APPLICABLE FOR PANEL HOUSEHOLDS)

A36. ENUMERATOR CODE:

A37. ENUMERATOR NAME: _____

	DATE	START	END	MODULES
A38. Attempt 1	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Attempt 2	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Attempt 3	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

HH MM HH MM

ENUMERATOR>> NEXT PAGE

A39. SUPERVISOR CODE:

A40. SUPERVISOR NAME: _____

A41. DATE OF INSPECTION:

DD MM YYYY

RECORD GENERAL NOTES ABOUT THE INTERVIEW AND ANY SPECIAL INFORMATION THAT WILL BE HELPFUL FOR SUPERVISORS AND DATA ANALYSIS.

PLEASE MARK AN 'X' IN BOX IF HOUSEHOLD REFUSAL. PROVIDE DETAILS.

INTRODUCTION TO THE HOUSEHOLD TO BE INTERVIEWED

CONVEY THE FOLLOWING INFORMATION TO THE RESPONDENT:

Every few years the National Statistical Office in Zomba selects at random several hundred households in each district of the country to ask them questions about how they are living. It is within the legal mandate of the NSO to collect this information and the responses which are provided by the households to these questions are intended to help the government of Malawi do a better job in meeting the needs of all Malawians.

CROSS-SECTION:

Your household was selected as one of those to which the IHS questions will be asked this time. You were not selected for any specific reason. Simply your name was on a list of all of the households in this area, and your name was chosen randomly.

ALL PANEL:

You were one of the households interviewed as part of the Third Integrated Household Survey (IHS3) in 2009/2010 administered by the National Statistical Office in Zomba and selected for a follow-up interview in 2013 and again in 2016 as part of the Integrated Household Panel Survey (IHPS). The three surveys asked questions about how you were living and the responses provided were intended to help the government of Malawi do a better job in meeting the needs of all Malawians.

IHPS HOUSEHOLDS:

Now in 2019, we are returning to see how things are progressing in terms of living standards.

SPLIT-OFF HOUSEHOLDS:

At the time of IHPS 2016, one of your household members was living in a selected household, and we would like to see how things are progressing and how they, and the rest of their new household, are living now.

ALL:

I would like to ask the questions in this form to you as head of household or spouse of the head. I will also need to ask questions to other members of your household, as well as weigh and measure the height of any children under age 5 years who live in your household. These questions will take several hours to complete. All of your answers will be held in confidence. The answers which you and the members of your household might give me will only be used by the NSO or under its supervision.

Before I start, do you have any questions or is there anything which I have said on which you would like any further clarification? May I proceed with interviewing you and members of your household?

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MODULE B: HOUSEHOLD ROSTER

ENUMERATOR: RECORD
START DATE & TIME FOR
MODULE B

IN ORDER TO MAKE A COMPREHENSIVE LIST OF INDIVIDUALS CONNECTED TO THE HOUSEHOLD, USE THE FOLLOWING PROBE QUESTIONS:

First, give me the names of all the members of your immediate family who normally live and eat their meals together here.

WRITE DOWN NAMES, SEX, AND RELATIONSHIP TO HH HEAD (B02 to B04). LIST HOUSEHOLD HEAD ON LINE 1.

Then, give me the names of any other persons related to you or other household members who normally live and eat their meals together here. FILL IN B02 to B04.

Are there any other persons not here now who normally live and eat their meals here? For example, household members studying elsewhere or traveling. FILL IN B02 to B04.

Then, give me the names of any other persons not related to you or other household members, but who normally live and eat their meals together here, such as servants, lodgers, or other who are not relatives. FILL IN B02 to B04.

DO NOT LIST SERVANTS WHO HAVE A HOUSEHOLD ELSEWHERE, AND GUESTS WHO ARE VISITING TEMPORARILY AND HAVE A HOUSEHOLD ELSEWHERE.

B01	B02	B03	B04	B05		B05_1	B05_2	B06	B06_1		B06_2	B06_3	B06_4	B06_5	B07		
				YEARS	MONTHS				MONTH	YEAR (4-DIGIT)						IHPS 2016 ROSTER ID	YEARS
<p>C O I D E</p> <p>NAME</p> <p>SEX</p> <p>RELATIONSHIP TO HEAD:</p> <p>HEAD 1 WIFE/HUSBAND 2 CHILD/ADOPTED CHILD 3 GRANDCHILD 4 NIECE/NEPHEW 5 FATHER/MOTHER 6 SISTERS/BROTHERS 7 SON/DAUGHTER-IN-LAW 8 BROTHER/SISTER-IN-LAW 9 GRANDFATHER/MOTHER 10 FATHER/MOTHER-IN-LAW 11 OTHER RELATIVE 12 SERVANT OR SERVANT'S RELATIVE 13 LODGER/LODGER'S 14 RELATIVE 15 OTHER NON-RELATIVE 16</p> <p>MALE 1 FEMALE 2</p>	<p>MAKE A COMPLETE LIST OF ALL INDIVIDUALS WHO NORMALLY LIVE AND EAT THEIR MEALS TOGETHER IN THIS HOUSEHOLD, STARTING WITH THE HEAD OF HOUSEHOLD.</p> <p>(CONFIRM THAT HOUSEHOLD HEAD IS SAME AS HOUSEHOLD HEAD LISTED ON COVER.)</p> <p>FILL IN B02 TO B04 BEFORE COMPLETING QUESTIONS B04_1 AND FOLLOWING.</p>			<p>(ALL HOUSEHOLDS. PANEL HOUSEHOLDS FILL IN VISIT 1)</p> <p>How old is [NAME]?</p> <p>IF 5 YEARS AND OVER, GIVE YEARS ONLY. IF LESS THAN 5 YEARS IN AGE, GIVE YEARS AND MONTHS.</p>		<p>ENUMERATOR: IS THIS PERSON [NAME] AGED 12 YEARS OR OLDER?</p>	<p>Does [NAME] have a birth certificate and/or immunization card?</p>	<p>When was [NAME] born?</p>	<p>(PANEL HOUSEHOLDS ONLY - VISIT 1)</p> <p>IF THIS MEMBER WAS PRESENT AT LAST SURVEY, ENTER IHPS ROSTER ID NUMBER FROM TRACKING FORM</p> <p>ELSE, ENTER 99</p>	<p>(PANEL HOUSEHOLDS ONLY - FILL IN VISIT 2)</p> <p>Is [NAME] still a member of your household?</p>	<p>(PANEL HOUSEHOLDS ONLY - FILL IN VISIT 2)</p> <p>How old is [NAME]?</p> <p>IF 5 YEARS AND OVER, GIVE YEARS ONLY. IF LESS THAN 5 YEARS IN AGE, GIVE YEARS AND MONTHS.</p>	<p>Does [NAME] have a working cell phone (10 YEARS AND ABOVE)</p>	<p>PHONE NUMBER:</p>	<p>For how many months during the past 12 months (since MONTH/YEAR) has [NAME] been away from this household?</p>			
	1																
	2																
	3																
	4																
	5																
	6																
	7																
	8																
	9																
	10																
	11																
	12																
	13																
	14																
15																	

MODULE B: HOUSEHOLD ROSTER (CONTINUED)

B01	B22	B22_4	B23	B24	B24_1	B24_2	B25	B26						B27	B28
								COPY THE ID CODE OF THE WIFE/ HUSBAND. In what year did [NAME] marry or form a consensual union? IF MORE THAN ONE WIFE, COPY ID CODES OF ALL WIVES RESIDENT IN HOUSEHOLD.							
								SPOUSE #1		SPOUSE #2		SPOUSE #3			
ID	YEAR	ID	YEAR	ID	YEAR	YES..1 NO...2>>>NEXT ROW	NUMBER								
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															

**ENUMERATOR:
RECORD
PRIMARY
RESPONDENT
ID FOR VISIT 1
MODULE B:**

 ID
**ENUMERATOR:
RECORD VISIT 1
END TIME
FOR MODULE B:**

 HOURS MINUTES

MODULE C: EDUCATION

RESPONDENT: ASK OF ALL PERSONS AGED 5 YEARS AND OLDER.

C01 C O D E	C03 IS THE INFORMATION SELF-REPORTED OR IS IT BEING PROVIDED BY ANOTHER HOUSEHOLD MEMBER?	C04 WHO IS REPORTING THE INFORMATION FOR THE INDIVIDUAL? LIST FROM HOUSEHOLD ROSTER	C05_1 Can you read a short text in any language?	C05_2 What language can you read a short text in?		C05_3 Can you write a short note in any language?	C05_2 What language can you write a short note in?		C05_5 Can you do simple addition and subtraction?	C06 Have you ever attended school?	C07 What was the reason you never attended school? LIST UP TO 2 REASONS.		C08 What class are you in or what was the highest class level you ever attended?	C09 What is the highest educational qualification you have acquired?	C10 How old were you when you started school?	C11 Did you attend school in the last completed academic year?		
				YES..1 NO...2 >>>C05_3			YES..1 NO...2 >>>C05_5				YES..1>>>C08 NO...2							
				1st	2nd		1st	2nd			1st reason	2nd reason					YEARS	
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		

MODULE E: TIME USE & LABOUR (CONTINUED)

E01 C O D E	E06_8 In what type of economic activity did you spend most of your time in the last 12 months:		E07a How many hours in the last seven days did you spend on household farming activities whether for sale or for household food?	E07_1 List up to 5 crops that you worked on during the last 7 days, listed in accordance with importance (importance defined as value addition in terms of non-market (consumption) or market (commercial sales) terms). REFER TO CROP CODES AT THE END OF THE AGRICULTURE QUESTIONNAIRE. LIST ALL CROPS IN ORDER OF IMPORTANCE, STARTING WITH THE MOST IMPORTANT CROP. IMPORTANCE DEFINED AS VALUE ADDITION IN TERMS OF NON-MARKET (CONSUMPTION) OR MARKET (COMMERCIAL SALES) TERMS.					E07_1a In regards to the first crop listed in E07_1, are the products you worked on... READ RESPONSES: ALL INTENDED FOR SALE.....1>>E07_1c SOME ARE INTENDED TO BE SOLD AND SOME KEPT FOR USE OR CONSUMPTION BY YOUR FAMILY.....2 ALL ARE INTENDED TO BE KEPT FOR USE OR CONSUMPTION BY YOUR FAMILY.....3>>E07_1c	E07_1b In regards to the first crop listed in E07_1, is it intended to sell... READ RESPONSES: LESS THAN 1/4.....1 1/4.....2 1/2.....3 3/4.....4 MORE THAN 3/4.....5	E07_1c In regards to the first crop listed in E07_1, in general, in the past have these products been mainly sold or mainly kept for family use or consumption? READ RESPONSES: MAINLY SOLD.....1 MAINLY KEPT FOR FAMILY USE OR CONSUMPTION.....2	E07_2a In regards to the second crop listed in E07_1, are the products you worked on... READ RESPONSES: ALL INTENDED FOR SALE.....1>>E07_2c SOME ARE INTENDED TO BE SOLD AND SOME KEPT FOR USE OR CONSUMPTION BY YOUR FAMILY.....2 ALL ARE INTENDED TO BE KEPT FOR USE OR CONSUMPTION BY YOUR FAMILY.....1>>E07_2c	E07_2b In regards to the second crop listed in E07_1, is it intended to sell... READ RESPONSES: LESS THAN 1/4.....1 1/4.....2 1/2.....3 3/4.....4 MORE THAN 3/4.....5
	MAIN	SECONDARY		HOURS	1ST	2ND	3RD	4TH					
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

MODULE E: TIME USE & LABOUR (CONTINUED)

E01	E07b	E07c	E08	E09	E10	E11	E12	E13	E13_1	
	C O D E D I E D How many hours in the last seven days did you spend on household livestock activities whether for sale or for household food?	How many hours in the last seven days did you spend on household fishing activities whether for sale or for household food?	How many hours in the last seven days did you run or do any kind of non-agricultural or non-fishing household business, big or small, for yourself?	How many hours in the last seven days did you help in any of the household's non-agricultural or non-fishing household businesses, if any?	How many hours in the last seven days did you engage in casual, part-time or ganyu labour?	How many hours in the last seven days did you do any work for a wage, salary, commission, or any payment in kind, excluding ganyu?	How many hours in the last seven days did you engage in an unpaid apprenticeship for anyone that is not a member of the household?	REVIEW QUESTIONS E07 TO E12. DID THIS PERSON, [NAME], WORK FOR ANY HOURS AT THESE TASKS OVER THE LAST SEVEN DAYS? YES .1 NO .2 >>E14	In what type of economic activity did you spend most of your time in the last 7 days: WAGE EMPLOYMENT EXCLUDING GANYU.....1 HOUSEHOLD BUSINESS (NON-AG).....2 UNPAID HOUSEHOLD LABOR (AGRIC).....3 UNPAID APPRENTICESHIP.....4 GANYU.....5 (THEN >>E18)	
	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS	HOURS		MAIN	SECONDARY
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

MODULE F: HOUSING

ENUMERATOR: RECORD START DATE & TIME FOR

DAYS		MONTHS		HOURS		MINUTES	

F01 Do you own or are purchasing this property, is it provided to you by an employer, do you use it for free, or do you rent this property? OWNED 1 RENTED 2 EMPLOYER PROVIDED 3 FREE 4 EMPLOYER PROVIDED 5 RENTED 6 OTHER (SPECIFY) 7	F01_1 Who in this household owns this property? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.						F01_2 Do you have an ownership document for this property? YES, OFFER OF LEASE 1 YES, TITLE DEED 2 YES, CERTIFICATE OF LEASE 3 YES, LETTER FROM 4 NO 5 YES, OTHER (SPECIFY) 6 YES 1 NO 2		F01_3 ENUMERATOR: WAS RESPONDENT ABLE TO PROVIDE DOCUMENTATION?		F01_4 Whose names are listed as owners on the ownership document for this property? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.				F01_5 With regards to this property, who within this household has the right to sell it? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.				F01_6 With regards to this property, who within this household has the right to bequeath it? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.			
	HH ROSTER ID CODE #1	HH ROSTER ID CODE #2	HH ROSTER ID CODE #3	HH ROSTER ID CODE #4	NETWORK ROSTER ID CODE #1	NETWORK ROSTER ID CODE #2	HH ROSTER ID CODE #1	HH ROSTER ID CODE #2	HH ROSTER ID CODE #3	HH ROSTER ID CODE #4	NETWORK ROSTER ID CODE #1	NETWORK ROSTER ID CODE #2	HH ROSTER ID CODE #1	HH ROSTER ID CODE #2	HH ROSTER ID CODE #3	HH ROSTER ID CODE #4	NETWORK ROSTER ID CODE #1	NETWORK ROSTER ID CODE #2				

F02 If you sold this property today, how much would you receive for it?	F03 Estimate the rent you could receive if you rented this property? (CHECK >>>F05)		F04 How much do you pay to rent this property?		F04_1 Is there any land that is considered part of this property besides the		F04_2 What is the area of this property? ENUMERATOR: ASK THE RESPONDENT TO ESTIMATE THE AREA FIRST. MEASURE THE AREA WITH THE GPS LATER. MAKE SURE TO MEASURE THE PROPERTY AREA WITH GPS AT LEAST TWICE TO GET A CONSISTENT VALUE. RECORD ZEROS TO THE RIGHT OF THE DECIMAL. CODES FOR UNIT: ROBES 1 HECTARE 2 SQUARE METERS 3 GARAGE 4 OTHER (SPECIFY) 5		F04_3 Do you have to pay land rent on this property?		F04_4 What was the total amount paid in the form of land rent during the past year?		F04_5 Do you have to pay property tax on this property?		F04_6 What was the total amount paid in the form of property tax during the past tax year?		F05 How many years ago was this dwelling built? How old is it? IF DO NOT KNOW, RECORD 999.	
	DAY 3 WEEK 4 MONTH 5 YEAR 6	DAY 3 WEEK 4 MONTH 5 YEAR 6	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2	YES 1 NO 2
RESPONDENT ESTIMATION		GPS MEASURE		AREA		UNIT		AREA IN ACRES										

F06 WHAT GENERAL TYPE OF CONSTRUCTION MATERIALS ARE USED FOR THE DWELLING?	F07 THE OUTER WALLS OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?	F08 THE ROOF OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?	F09 THE FLOOR OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?	F10 How many separate rooms do the members of your household occupy? (DO NOT COUNT BATHROOMS, TOILETS, STOREROOMS, OR GARAGE)	F11 What is your main source of energy used for lighting?	F12 What is your main source of energy used for cooking?	F13 Do you ever use firewood for energy?	F14 Do you ever collect firewood?	F15 Where do you go to collect firewood?	F16 How long does it take you to walk from your dwelling to where you usually go to collect firewood?	F17 Of the firewood you used in the past week, how much of it did you purchase?	F18 What is the total value of the firewood you used in the past week, whether gathered or purchased? (Estimate purchase cost if)	F19 Do you have electricity working in your dwelling?
PERMANENT 1 SEMI-PERMANENT 2 TRADITIONAL 3 (SEMI-PERMANENT IS USED FOR TRADITIONAL WALLS, ROOF, FLOOR, AND OTHER MATERIALS) OTHER (SPECIFY) 4	GRASS 1 MUD (YINJISI) 2 COMPOSITE BATH 3 (WOODEN) MUD BRICK 4 WOODEN BRICKS 5 WOOD 6 MUD BRICKS 7 OTHER (SPECIFY) 8	GRASS 1 IRON 2 SHEETS 3 CLAY 4 TILES 5 CONCRETE 6 OTHER (SPECIFY) 7	SAND 1 SMOOTHED MUD 2 SMOOTH CEMENT 3 WOOD 4 TILE 5 OTHER (SPECIFY) 6	NUMBER OF ROOMS	COLLECTED 1 PURCHASED 2 FIREWOOD 3 PARAFFIN 4 ELECTRICITY 5 GAS 6 BATTERY/CELL 7 SUN 8 OTHER (SPECIFY) 9	COLLECTED 1 PURCHASED 2 FIREWOOD 3 PARAFFIN 4 ELECTRICITY 5 GAS 6 BATTERY/CELL 7 SUN 8 OTHER (SPECIFY) 9	YES 1 NO 2	YES 1 NO 2	WOODLOT 1 COMMUNITY 2 WOODCUT 3 FOREST 4 FARMER 5 UNPAID 6 AREA OF CHURCH 7 OTHER 8 OTHER (SPECIFY) 9	TIME AMOUNT	UNIT	YES 1 NO 2	

MODULE F: HOUSING

ENUMERATOR: RECORD START DATE & TIME FOR

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

F01 Do you own or are purchasing this property, is it provided to you by an employer, do you use it for free, or do you rent this property?	F01_1 Who in this household owns this property? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.	F01_2 Do you have an ownership document for this property?	F01_3 ENUMERATOR: WAS RESPONDENT ABLE TO PROVIDE DOCUMENTATION?	F01_4 Whose names are listed as owners on the ownership document for this property? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.	F01_5 With regards to this property, who within this household has the right to sell it? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.	F01_6 With regards to this property, who within this household has the right to bequeath it? LIST UP TO 4 HOUSEHOLD MEMBERS FROM THE HOUSEHOLD ROSTER. LIST UP TO 2 NETWORK ROSTER MEMBERS.
OWNER 1 RENTED 2 EMPLOYER PROVIDED 3 FREE 4 RENTED FROM EMPLOYER 5 RENTED FROM OTHER 6 OTHER (SPECIFY) 7	MR ROSTER ID CODE #1 MR ROSTER ID CODE #2 MR ROSTER ID CODE #3 MR ROSTER ID CODE #4 NETWORK ROSTER ID CODE #1 NETWORK ROSTER ID CODE #2	YES 1 NO 2	YES 1 NO 2	MR ROSTER ID CODE #1 MR ROSTER ID CODE #2 MR ROSTER ID CODE #3 MR ROSTER ID CODE #4 NETWORK ROSTER ID CODE #1 NETWORK ROSTER ID CODE #2	MR ROSTER ID CODE #1 MR ROSTER ID CODE #2 MR ROSTER ID CODE #3 MR ROSTER ID CODE #4 NETWORK ROSTER ID CODE #1 NETWORK ROSTER ID CODE #2	MR ROSTER ID CODE #1 MR ROSTER ID CODE #2 MR ROSTER ID CODE #3 MR ROSTER ID CODE #4 NETWORK ROSTER ID CODE #1 NETWORK ROSTER ID CODE #2

F02 If you sold this property today, how much would you receive for it?	F03 Estimate the rent you could receive if you rented this property? (OTHER >>F04)	F04 How much do you pay to rent this property?	F04_1 Is there any land that is considered part of this property besides the	F04_2 What is the area of this property? ENUMERATOR: ASK THE RESPONDENT TO ESTIMATE THE AREA FIRST. MEASURE THE AREA WITH THE GPS LATER. MAKE SURE TO MEASURE THE PROPERTY AREA WITH GPS AT LEAST TWICE TO GET A CONSISTENT VALUE. RECORD ZEROS TO THE RIGHT OF THE DECIMAL. CODES FOR UNIT: ACRES 1 HECTARES 2 SQUARE METERS 3 YARDS 4 OTHER (SPECIFY) 5	F04_3 Do you have to pay land rent on this property?	F04_4 What was the total amount paid in the form of land rent during the past tax year?	F04_5 Do you have to pay property tax on this property?	F04_6 What was the total amount paid in the form of property tax during the past tax year?	F05 How many years ago was this dwelling built? How old is it? IF DO NOT KNOW, RECORD 999.
MR	MR	MR	MR	MR	MR	MR	MR	MR	MR
TIME UNIT	TIME UNIT	TIME UNIT	AREA	UNIT	AREA IN ACRES	MR	MR	MR	YEARS

F06 WHAT GENERAL TYPE OF CONSTRUCTION MATERIALS ARE USED FOR THE DWELLING?	F07 THE OUTER WALLS OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?	F08 THE ROOF OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?	F09 THE FLOOR OF THE MAIN DWELLING IS PREDOMINANTLY MADE OF WHAT MATERIAL?	F10 How many separate rooms do the members of your household occupy? (DO NOT COUNT BATHROOMS, TOILETS, STOREROOMS, OR GARAGE)	F11 What is your main source of energy used for lighting?	F12 What is your main source of energy used for cooking?	F13 Do you ever use firewood for energy?	F14 Do you ever collect firewood?	F15 Where do you go to collect firewood?	F16 How long does it take you to walk from your dwelling to where you usually go to collect firewood?	F17 Of the firewood you used in the past week, how much of it did you purchase?	F18 What is the total value of the firewood you used in the past week, whether gathered or purchased?	F19 Do you have electricity working in your dwelling?
PERMANENT 1 BRICK/CONCRETE 2 TRADITIONAL 3 (SEMI-REGULATED IS NOT OF BRICK/CONCRETE) WOOD 4 MUD BRICK 5 OTHER (SPECIFY) 6	GRASS 1 MUD (MUD) 2 MUD (MUD) 3 CORRUGATED METAL 4 CLAY 5 OTHER (SPECIFY) 6	GRASS 1 MUD 2 CLAY 3 CORRUGATED METAL 4 MUD BRICK 5 OTHER (SPECIFY) 6	BRICK 1 MUD BRICK 2 WOOD 3 TILE 4 OTHER (SPECIFY) 5	NUMBER OF ROOMS	COLLECTED FIREWOOD 1 FIREWOOD 2 CASSIUM 3 PARAFFIN 4 MAGAZINE 5 MOTOR OIL 6 CELL PHONE 7 CANDLES 8 BATTERY 9 OTHER (SPECIFY) 10	COLLECTED FIREWOOD 1 FIREWOOD 2 CASSIUM 3 PARAFFIN 4 MAGAZINE 5 MOTOR OIL 6 CELL PHONE 7 CANDLES 8 BATTERY 9 OTHER (SPECIFY) 10	YES 1 NO 2	YES 1 NO 2	WOOD 1 CONCRETE 2 MUD 3 MAGAZINE 4 CASSIUM 5 OTHER (SPECIFY) 6	TIME AMOUNT	MR	MR	MR

MODULE F: HOUSING

F48 Do you, either by yourself or together with another household member or someone outside your household, currently have an account at a bank, credit union, micro finance institution, village savings organization, or another financial institution? YES..1 NO...2>>50	F49 ENUMERATOR: RECORD THE HOUSEHOLD ROSTER ID OF THE RESPONDENT. HH ROSTER ID CODE	F50 Does any other member of your household, either by him/herself or together with another household member or someone outside your household, currently have an account at a bank, credit union, micro finance institution, village savings organization, or another financial institution? YES..1 NO...2>>52	F51 ENUMERATOR: RECORD THE HOUSEHOLD ROSTER ID CODE FOR UP TO 3 INDIVIDUALS, EXCLUDING THE RESPONDENT.			F52 In the past year (12 months), have you used an account at a bank, credit union, etc. of someone else in your household or your community? YES..1 NO...2>>54	F53 ENUMERATOR: RECORD THE HOUSEHOLD ROSTER ID OF THE RESPONDENT. HH ROSTER ID CODE	F54 In the past year (12 months), has any other member of your household used an account at a bank, credit union, etc. of someone else in your household or your community? YES..1 NO...2>>NEXT MODULE	F55 ENUMERATOR: RECORD THE HOUSEHOLD ROSTER ID CODE FOR UP TO 3 INDIVIDUALS, EXCLUDING THE RESPONDENT.		
			HH ROSTER ID CODE #1	HH ROSTER ID CODE #2	HH ROSTER ID CODE #3				HH ROSTER ID CODE #1	HH ROSTER ID CODE #2	HH ROSTER ID CODE #3

ENUMERATOR: RECORD PRIMARY RESPONDENT ID FOR MODULE F:

ID

ENUMERATOR: RECORD END TIME FOR MODULE F:

HOURS	MINUTES

ENUMERATOR: RECORD START DATE & TIME FOR MODULE

DAYS	MONTHS	HOURS	MINUTES

G00_1. Who in the household is most knowledgeable about food consumed in the household. LIST MEMBER ID.

G00_2. Who in the household is reporting information on food consumption in this module. LIST MEMBER ID.

CODES FOR UNIT:

- KILOGRAMME.1
- PAIL.4
- PAIL SMALL. . . .4A
- PAIL MEDIUM. . .4B
- PAIL LARGE. . . .4C
- NO 10 PLATE. . . .5
- NO 10 PLATE FLAT. .6A
- NO 10 PLATE HEADED. . .6B
- NO 12 PLATE. . . .7
- NO 12 PLATE FLAT. 7A
- NO 12 PLATE HEADED. . .7B
- BUNCH SMALL. . . .8A
- BUNCH MEDIUM. . .8B
- BUNCH LARGE. . . .8C
- PIECE.9
- PIECE SMALL. . . .9A
- PIECE MEDIUM. . .9B
- PIECE LARGE. . . .9C
- HEAD.10
- HEAD SMALL. . .10A
- HEAD MEDIUM. . .10B
- HEAD LARGE. . .10C
- LITRE.15
- GRAM.18
- MILLILITRE. . . .19
- TEASPOON. . . .20
- SATCHET/TUBE. . .22
- SATCHET/TUBE SMALL. . 22A
- SATCHET/TUBE MEDIUM. . 22B
- SATCHET/TUBE LARGE. . 22C
- OTHER (SPECIFY). . .23
- TINA.25
- TINA FLAT. . . .25A
- TINA HEADED. . .25B
- 5 LITRE BUCKET (Chigoba). 26
- BASIN (SMALL). . .27A
- BASIN (SMALL) FLAT. . .27D
- BASIN (SMALL) HEADED. . 27E
- LOAF (500g) . . .31
- LOAF (600g) . . .32
- LOAF (700g) . . .33
- PACKET (150g). . .34
- PACKET (400g). . .35
- PACKET (500g). . .36
- PACKET (1kg) . . .37
- SATCHET/TUBE (250g). . 41
- SATCHET/TUBE (500g). . 42
- SATCHET/TUBE (100g). . 43
- CLUSTER.44
- CLUSTER SMALL. . 44A
- CLUSTER MEDIUM. . 44B
- CLUSTER LARGE. . 44C
- PACKET.51
- PACKET (SMALL). . .54
- PACKET (LARGE). . .55
- TABLESPOON. . . .59
- PACKET.60
- PACKET (250g). . .65
- PACKET (25g). . . .70
- TIN 100g. . . .71
- TIN 250g. . . .72
- TIN 500g. . . .73

	G01 YES..1 NO...2>> NEXT ITEM	G02 ITEM CODE	G03 How much in total did your household consume in the past week?		G04 How much came from purchases?		G05 How much did you spend?	G06 How much came from own- production?		G07 How much came from gifts and other sources?	
			QUANTITY	UNIT	QUANTITY	UNIT	MK	QUANTITY	UNIT	QUANTITY	UNIT
Cereals, Grains and Cereal Products											
Maize <i>ufa mgaiwa</i> (normal flour) *		101									
Maize <i>ufa refined</i> (fine flour) *		102									
Maize <i>ufa madeya</i> (bran flour) *		103									
Maize grain (not as <i>ufa</i>) *		104									
Green maize *		105									
Rice		106									
Finger millet (<i>mawere</i>)		107									
Sorghum (<i>mapira</i>)		108									
Pearl millet (<i>mchewere</i>)		109									
Wheat flour		110									
Bread		111									
Buns, scones		112									
Biscuits		113									
Spaghetti, macaroni, pasta		114									
Breakfast cereal		115									
Infant feeding cereals		116									
Other (specify)		117									

* ENUMERATOR: PLEASE SPECIFY SUB-UNIT CODE FOR ITEM. REFER TO PHOTO AID

	G01 Over the past one week (7 days), did you or others in your household consume any [...]? INCLUDE FOOD BOTH EATEN COMMUNALLY IN THE HOUSEHOLD AND THAT EATEN SEPARATELY BY INDIVIDUAL HOUSEHOLD MEMBERS. YES..1 NO...2>> NEXT ITEM	G02	G03 How much in total did your household consume in the past week?		G04 How much came from purchases?		G05 How much did you spend?	G06 How much came from own-production?		G07 How much came from gifts and other sources?	
			ITEM CODE	QUANTITY	UNIT	QUANTITY		UNIT	MR	QUANTITY	UNIT
Roots, Tubers, and Plantains											
Cassava tubers *		201									
Cassava flour		202									
White sweet potato *		203									
Orange sweet potato *		204									
Irish potato*		205									
Potato crisps		206									
Plantain, cooking banana*		207									
Cocoyam (<i>masimbi</i>)		208									
Other (specify)		209									
Nuts and Pulses											
Bean, white*		301									
Bean, brown *		302									
Pigeonpea (<i>nandolo</i>) *		303									
Groundnut (Shelled)*		304A									
Groundnut - dried (Unshelled)*		304B									
Groundnut - fresh (Unshelled)		304C									
Groundnut flour *		305									
Soyabean flour		306									
Ground bean (<i>nzama</i>)		307									
Cowpea (<i>khobwe</i>)		308									
Macademia nuts		309									
Other (specify)		310									

CODES FOR UNIT:
 KILOGRAMME.1
 PAIL.4
 PAIL SMALL. . . .4A
 PAIL MEDIUM. . .4B
 PAIL LARGE. . . .4C
 NO 10 PLATE. . . .6
 NO 10 PLATE FLAT. .6A
 NO 10 PLATE HEADED. .6B
 NO 12 PLATE. . . .7
 NO 12 PLATE FLAT. 7A
 NO 12 PLATE HEADED. .7B
 BUNCH SMALL. . . .8A
 BUNCH MEDIUM. . .8B
 BUNCH LARGE. . . .8C
 PIECE.9
 PIECE SMALL. . . .9A
 PIECE MEDIUM. . .9B
 PIECE LARGE. . . .9C
 HEAP.10
 HEAP SMALL. . . .10A
 HEAP MEDIUM. . .10B
 HEAP LARGE. . . .10C
 LITRE.15
 GRAM.18
 MILLILITRE. . . .19
 TEASPOON. . . .20
 SATCHET/TUBE. . .22
 SATCHET/TUBE SMALL. .22A
 SATCHET/TUBE MEDIUM. .22B
 SATCHET/TUBE LARGE. .22C
 OTHER (SPECIFY). .23
 TINA.25
 TINA FLAT. . . .25A
 TINA HEADED. . .25B
 5 LITRE BUCKET (Chigoba). 26
 BASIN (SMALL). . .27A
 BASIN (SMALL) FLAT.....27D
 BASIN (SMALL) HEADED... 27E
 LOAF (300G)31
 LOAF (400G)32
 LOAF (700G)33
 PACKET (150G). . .34
 PACKET (400G). . .35
 PACKET (500G). . .36
 PACKET (1KG) . . .37
 SATCHET/TUBE (25G). . .41
 SATCHET/TUBE (50G). . .42
 SATCHET/TUBE (100G). . .43
 CLUSTER.44
 CLUSTER SMALL. . .44A
 CLUSTER MEDIUM. .44B
 CLUSTER LARGE. . .44C
 PACKET.51
 PACKET (SMALL). . .54
 PACKET (LARGE). . .55
 TABLESPOON. . .59
 PACKET.60
 PACKET (250G). . .65
 PACKET (25g). . . .70
 TIN 100G. . . .71
 TIN 250G. . . .72
 TIN 500G. . . .73

* ENUMERATOR: PLEASE SPECIFY SUB-UNIT CODE FOR ITEM. REFER TO PHOTO AID

	G01 Over the past one week (7 days), did you or others in your household consume any [...]? INCLUDE FOOD BOTH EATEN COMMUNALLY IN THE HOUSEHOLD AND THAT EATEN SEPARATELY BY INDIVIDUAL HOUSEHOLD MEMBERS.	G02	G03 How much in total did your household consume in the past week?	G04 How much came from purchases?		G05 How much did you spend?		G06 How much came from own-production?		G07 How much came from gifts and other sources?	
				ITEM CODE	QUANTITY	UNIT	QUANTITY	UNIT	MK	QUANTITY	UNIT
Vegetables											
Onion *		401									
Cabbage *		402									
Tanaposi/Rape *		403									
Nkhwani *		404									
Chinese cabbage		405									
Other cultivated green leafy vegetables		406									
Gathered wild green leaves		407									
Tomato *		408									
Cucumber*		409									
Pumpkin *		410									
Okra / There're *		411									
Tinned vegetables (specify)		412									
Mushroom		413									
Other vegetables (specify)		414									
Meat, Fish and Animal products											
Eggs		501									
Dried fish *		502									
Fresh fish *		503									
Beef		504									
Goat		505									

CODES FOR UNIT:

KILOGRAMME 1
 PAIL 4
 PAIL SMALL 4A
 PAIL MEDIUM . . . 4B
 PAIL LARGE 4C
 NO 10 PLATE 6
 NO 10 PLATE FLAT .6A
 NO 10 PLATE HEAPED . . .6B
 NO 12 PLATE 7
 NO 12 PLATE FLAT .7A
 NO 12 PLATE HEAPED . . .7B
 BUNCH SMALL 8A
 BUNCH MEDIUM . . . 8B
 BUNCH LARGE 8C
 PIECE 9
 PIECE SMALL 9A
 PIECE MEDIUM . . . 9B
 PIECE LARGE 9C
 HEAP 10
 HEAP SMALL 10A
 HEAP MEDIUM . . . 10B
 HEAP LARGE 10C
 LITRE 15
 GRAM 18
 MILLILITRE 19
 TEASPOON 20
 SATCHET/TUBE . . . 22
 SATCHET/TUBE SMALL . . 22A
 SATCHET/TUBE MEDIUM . 22B
 SATCHET/TUBE LARGE . . 22C
 OTHER(SPECIFY) . . 23
 TIN 25
 TIN FLAT 25A
 TIN HEAPED 25B
 5 LITRE BUCKET (Chigoba) . 26
 BASIN (SMALL) . . . 27A
 BASIN (SMALL) FLAT 27D
 BASIN (SMALL) HEAPED . . 27E
 LOAF (300G) 31
 LOAF (600G) 32
 LOAF (700G) 33
 PACKET (150G) 34
 PACKET (400G) 35
 PACKET (500G) 36
 PACKET (1KG) 37
 SATCHET/TUBE (250) . . 41
 SATCHET/TUBE (500) . . 42
 SATCHET/TUBE (1000) . . 43
 CLUSTER 44
 CLUSTER SMALL . . . 44A
 CLUSTER MEDIUM . . 44B
 CLUSTER LARGE . . . 44C
 PACKET 51
 PACKET (SMALL) . . . 54
 PACKET (LARGE) . . . 55
 TABLESPOON 59
 PACKET 60
 PACKET (250g) 65
 PACKET (25g) 70
 TIN 100G 71
 TIN 250G 72
 TIN 500G 73

* ENUMERATOR: PLEASE SPECIFY SUB-UNIT CODE FOR ITEM. REFER TO PHOTO AID

	G01 Over the past one week (7 days), did you or others in your household consume any [...]? INCLUDE FOOD BOTH EATEN COMMUNALLY IN THE HOUSEHOLD AND THAT EATEN SEPARATELY BY INDIVIDUAL HOUSEHOLD MEMBERS. YES...1 NO...2>> NEXT ITEM	G02	G03 How much in total did your household consume in the past week?		G04 How much came from purchases?		G05 How much did you spend?		G06 How much came from own-production?		G07 How much came from gifts and other sources?	
			ITEM CODE	QUANTITY	UNIT	QUANTITY	UNIT	MK	QUANTITY	UNIT	QUANTITY	UNIT
Meat, Fish and Animal products (Continued)												
Pork		506										
Mutton		507										
Chicken		508										
Other poultry - guinea fowl, doves, etc.		509										
Small animal – rabbit, mice, etc.		510										
Termites, other insects (eg Ngumbi, caterpillar)		511										
Tinned meat or fish		512										
Smoked fish*		513										
Fish Soup/Sauce		514										
Other (specify)		515										
Fruits												
Mango *		601										
Banana *		602										
Citrus – naartje, orange, etc.		603										
Pineapple		604										
Papaya		605										
Guava *		606										
Avocado		607										
Wild fruit (<i>masau, malambe, etc.</i>)		608										
Apple		609										
Other fruits (specify)		610										

CODES FOR UNIT:

KILOGRAMME. . . .1
 PAIL.4
 PAIL SMALL. . .4A
 PAIL MEDIUM. .4B
 PAIL LARGE. . .4C
 NO 10 PLATE. . .6
 NO 10 PLATE FLAT.6A
 NO 10 PLATE HEAPED. .6B
 NO 12 PLATE. . .7
 NO 12 PLATE FLAT.7A
 NO 12 PLATE HEAPED. .7B
 BUNCH SMALL. . .8A
 BUNCH MEDIUM. .8B
 BUNCH LARGE. . .8C
 PIECE.9
 PIECE SMALL. . .9A
 PIECE MEDIUM. .9B
 PIECE LARGE. . .9C
 HEAP.10
 HEAP SMALL. . .10A
 HEAP MEDIUM. .10B
 HEAP LARGE. . .10C
 LITRE.15
 GRAM.18
 MILLILITRE. . .19
 STRASPON. . . .20
 SATCHET/TUBE. .22
 SATCHET/TUBE SMALL. .22A
 SATCHET/TUBE MEDIUM. .22B
 SATCHET/TUBE LARGE. .22C
 OTHER (SPECIFY). .23
 TINA.25
 TINA FLAT. . .25A
 TINA HEAPED. . .25B
 5 LITRE BUCKET (Chigoba).26
 BASIN (SMALL). .27A
 BASIN (SMALL) FLAT. . .27D
 BASIN (SMALL) HEAPED. .27E
 LOAF (300G). . .31
 LOAF (600G). . .32
 LOAF (700G). . .33
 PACKET (150G). .34
 PACKET (400G). .35
 PACKET (500G). .36
 PACKET (1KG). . .37
 SATCHET/TUBE (250G). .41
 SATCHET/TUBE (500G). .42
 SATCHET/TUBE (1000G). .43
 CLUSTER.44
 CLUSTER SMALL. .44A
 CLUSTER MEDIUM.44B
 CLUSTER LARGE. .44C
 PACKET.51
 PACKET (SMALL). .54
 PACKET (LARGE). .55
 TABLESPOON. . .59
 PACKET.60
 PACKET (250G). .65
 PACKET (25g). . .70
 TIN 100G. . . .71
 TIN 250G. . . .72
 TIN 500G. . . .73

	G01 Over the past one week (7 days), did you or others in your household consume any [...]? INCLUDE FOOD BOTH EATEN COMMUNALLY IN THE HOUSEHOLD AND THAT EATEN SEPARATELY BY INDIVIDUAL HOUSEHOLD MEMBERS. YES...1 NO...2>> NEXT ITEM	G02 ITEM CODE	G03 How much in total did your household consume in the past week?		G04 How much came from purchases?		G05 How much did you spend?	G06 How much came from own-production?		G07 How much came from gifts and other sources?	
			QUANTITY	UNIT	QUANTITY	UNIT	KW	QUANTITY	UNIT	QUANTITY	UNIT
Cooked Foods from Vendors											
Maize - boiled or roasted (vendor)		820									
Chips (vendor)		821									
Cassava - boiled (vendor)		822									
Eggs - boiled (vendor)		823									
Chicken (vendor)		824									
Meat (vendor)		825									
Fish (vendor)		826									
Mandazi, doughnut (vendor)		827									
Samosa (vendor)		828									
Meal eaten at restaurant		829									
Boiled sweet potatoes		831									
Roasted sweet potatoes		832									
Boiled groundnuts		833									
Roasted groundnuts		834									
Popcorn		835									
Zikondamoyo / Nkate		836									
KALONGONDA (Mucuna)		837									
Other (specify)		830									
Milk and Milk Products											
Fresh milk		701									
Powdered milk		702									
Margarine - Blue band		703									
Butter		704									
Chambiko - soured milk		705									
Yoghurt		706									
Cheese		707									
Infant feeding formula (for bottle)		708									
Other (specify)		709									

CODES FOR UNIT:

KTLOGRAMM... 1
 PAIL... 4
 PAIL SMALL... 6A
 PAIL MEDIUM... 6B
 PAIL LARGE... 6C
 NO 10 PLATE... 6
 NO 10 PLATE FLAT... 6A
 NO 10 PLATE HEAPER... 6B
 NO 12 PLATE... 6C
 NO 12 PLATE FLAT... 7A
 NO 12 PLATE HEAPER... 7B
 BUNCH SMALL... 8A
 BUNCH MEDIUM... 8B
 BUNCH LARGE... 8C
 PIECE... 9
 PIECE SMALL... 9A
 PIECE MEDIUM... 9B
 PIECE LARGE... 9C
 WRAP... 10
 WRAP SMALL... 10A
 WRAP MEDIUM... 10B
 WRAP LARGE... 10C
 LITRE... 15
 GRAW... 18
 MILLILITRE... 19
 TEASPOON... 20
 SATCHET/TUBE... 22
 SATCHET/TUBE SMALL... 22A
 SATCHET/TUBE MEDIUM... 22B
 SATCHET/TUBE LARGE... 22C
 OTHER (SPECIFY)... 23
 TUNA... 25
 TUNA PLAT... 25A
 TUNA HEAPER... 25B
 5 LITRE BUCKET (KALONGONDA)... 26
 BATH (SMALL)... 27A
 BASIN (SMALL) FLAT... 27B
 BATH (SMALL) HEAPER... 27C
 LOG (150G)... 31
 LOG (600G)... 32
 LOG (750G)... 33
 PACKET (150G)... 34
 PACKET (400G)... 35
 PACKET (500G)... 36
 PACKET (1KG)... 37
 SACHET/TUBE (50G)... 41
 SACHET/TUBE (50G)... 42
 SACHET/TUBE (100G)... 43
 CLUSTER... 44
 CLUSTER SMALL... 44A
 CLUSTER MEDIUM... 44B
 CLUSTER LARGE... 44C
 PACKET... 51
 PACKET (SMALL)... 51A
 PACKET (LARGE)... 51B
 TABLESPOON... 59
 PACKET... 60
 PACKET (250G)... 65
 PACKET (25g)... 70
 TIN 250G... 71
 TIN 250G... 72
 TIN 500G... 73

	G01 Over the past one week (7 days), did you or others in your household consume any [...]? INCLUDE FOOD BOTH EATEN COMMUNALLY IN THE HOUSEHOLD AND THAT EATEN SEPARATELY BY INDIVIDUAL HOUSEHOLD MEMBERS. YES...1 NO...2>> NEXT ITEM	G02 ITEM CODE	G03 How much in total did your household consume in the past week?		G04 How much came from purchases?		G05 How much did you spend?		G06 How much came from own-production?		G07 How much came from gifts and other sources?	
			QUANTITY	UNIT	QUANTITY	UNIT	MR	QUANTITY	UNIT	QUANTITY	UNIT	
Sugar, Fats, and Oil												
Sugar		801										
Sugar Cane		802										
Cooking oil *		803										
Other (specify)		804										
Beverages												
Tea		901										
Coffee		902										
Cocoa, millo		903										
Squash (Sobo drink concentrate)		904										
Fruit juice		905										
Freezes (flavoured ice)		906										
Soft drinks (Coca-cola, Fanta, Sprite, etc.)		907										
Chibuku (commercial traditional-style beer)		908										
Bottled water		909										
Maheu		910										
Bottled / canned beer (Carlsberg, etc.)		911										
Thobwa		912										
Traditional beer (masese)		913										
Wine or commercial liquor		914										
Locally brewed liquor (kachasu)		915										
Other (specify)		916										

CODES FOR UNIT:
 KILOGRAMME 1
 PAIL 4
 PAIL SMALL . . . 4A
 PAIL MEDIUM . . . 4B
 PAIL LARGE . . . 4C
 NO 10 PLATE . . . 5
 NO 10 PLATE FLAT . 6A
 NO 10 PLATE HEADED . . 6B
 NO 12 PLATE 7
 NO 12 PLATE FLAT. 7A
 NO 12 PLATE HEADED . . 7B
 BUNCH SMALL . . . 8A
 BUNCH MEDIUM . . . 8B
 BUNCH LARGE . . . 8C
 PIECE 9
 PIECE SMALL . . . 9A
 PIECE MEDIUM . . . 9B
 PIECE LARGE . . . 9C
 HEAP 10
 HEAP SMALL . . . 10A
 HEAP MEDIUM . . . 10B
 HEAP LARGE . . . 10C
 LITRE 15
 GRAM 18
 MILLILITRE . . . 19
 TEASPOON 20
 SATCHET/TUBE . . . 22
 SATCHET/TUBE SMALL . . 22A
 SATCHET/TUBE MEDIUM . . 22B
 SATCHET/TUBE LARGE . . 22C
 OTHER (SPECIFY) . . 23
 TINA 25
 TINA FLAT 25A
 TINA HEADED . . . 25B
 5 LITRE BUCKET (Chilimbwa) . 26
 BASIN (SMALL) . . . 27A
 BASIN (SMALL) FLAT 27D
 BASIN (SMALL) HEADED . . 27E
 LOAF (300G) . . . 31
 LOAF (600G) . . . 32
 LOAF (700G) . . . 33
 PACKET (150G) . . . 34
 PACKET (400G) . . . 35
 PACKET (50G) . . . 36
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 SATCHET/TUBE (25G) . . . 41
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 CLUSTER 44
 CLUSTER SMALL . . 44A
 CLUSTER MEDIUM . . 44B
 CLUSTER LARGE . . . 44C
 PACKET 51
 PACKET (SMALL) . . . 54
 PACKET (LARGE) . . . 55
 TABLESPOON . . . 59
 PACKET 60
 PACKET (250G) . . . 65
 PACKET (25g) . . . 70
 TIN 100G 71
 TIN 250G 72
 TIN 500G 73

MODULE H: FOOD SECURITY

ENUMERATOR: RECORD START DATE & TIME FOR MODULE H:

DAY	MONTH	HOURS	MINUTES

H01 In the past 7 days, did you worry that your household would not have enough food? YES...1 NO...2	H02 In the past 7 days, how many days have you or someone in your household had to: IF NO DAYS, RECORD ZERO.	H03 How many meals, including breakfast are taken per day in your household?	H04 In the last 12 months, have you been faced with a situation when you did not have enough food to feed the household? YES.1 NO..2 >>NEXT MODULE																
	<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <tr> <td style="width: 15%; text-align: center;">a. Rely on less preferred and/or less expensive foods?</td> <td style="width: 15%; text-align: center;">b. Limit portion size at meal-times?</td> <td style="width: 15%; text-align: center;">c. Reduce number of meals eaten in a day?</td> <td style="width: 15%; text-align: center;">d. Restrict consumption by adults in order for small children to eat?</td> <td style="width: 15%; text-align: center;">e. Borrow food, or rely on help from a friend or relative?</td> </tr> <tr> <td style="text-align: center;">DAYS</td> <td style="text-align: center;">DAYS</td> <td style="text-align: center;">DAYS</td> <td style="text-align: center;">DAYS</td> <td style="text-align: center;">DAYS</td> </tr> </table>	a. Rely on less preferred and/or less expensive foods?	b. Limit portion size at meal-times?	c. Reduce number of meals eaten in a day?	d. Restrict consumption by adults in order for small children to eat?	e. Borrow food, or rely on help from a friend or relative?	DAYS	DAYS	DAYS	DAYS	DAYS	<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <tr> <td style="width: 33%; text-align: center;">a. Adults</td> <td style="width: 33%; text-align: center;">b. Children (5-17 Yrs of Age)</td> <td style="width: 33%; text-align: center;">c. Children (6-59 months) LEAVE BLANK IF NO CHILDREN</td> </tr> <tr> <td style="text-align: center;">NUMBER</td> <td style="text-align: center;">NUMBER</td> <td style="text-align: center;">NUMBER</td> </tr> </table>	a. Adults	b. Children (5-17 Yrs of Age)	c. Children (6-59 months) LEAVE BLANK IF NO CHILDREN	NUMBER	NUMBER	NUMBER	
a. Rely on less preferred and/or less expensive foods?	b. Limit portion size at meal-times?	c. Reduce number of meals eaten in a day?	d. Restrict consumption by adults in order for small children to eat?	e. Borrow food, or rely on help from a friend or relative?															
DAYS	DAYS	DAYS	DAYS	DAYS															
a. Adults	b. Children (5-17 Yrs of Age)	c. Children (6-59 months) LEAVE BLANK IF NO CHILDREN																	
NUMBER	NUMBER	NUMBER																	

CODES FOR H06:

Inadequate household stocks due to drought/ poor rains.....1

Inadequate household food stocks due to crop pest damage.....2

Inadequate household food stocks due to small land size.....3

Inadequate household food stocks due to lack of farm inputs...4

Food in the market was very expensive.....5

Unable to reach the market due to high transportation costs.....6

No food in the market.....7

Floods/water logging.....8

Insufficient funds....9

H05 When did you experience this incident in the last 12 months? MARK X IN EACH MONTH OF 2018 AND 2019 THAT THE HOUSEHOLD DID NOT HAVE ENOUGH FOOD LEAVE CELL BLANK FOR FUTURE MONTHS FROM INTERVIEW DATE OR MONTHS MORE THAN 12 MONTHS AGO FROM INTERVIEW DATE.	H06 What was the cause																																																																				
<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <tr> <th colspan="8" style="text-align: center;">2018</th> <th colspan="3" style="text-align: center;">2019</th> </tr> <tr> <td style="text-align: center;">Apr</td> <td style="text-align: center;">May</td> <td style="text-align: center;">June</td> <td style="text-align: center;">July</td> <td style="text-align: center;">Aug</td> <td style="text-align: center;">Sep</td> <td style="text-align: center;">Oct</td> <td style="text-align: center;">Nov</td> <td style="text-align: center;">Dec</td> <td style="text-align: center;">Jan</td> <td style="text-align: center;">Feb</td> <td style="text-align: center;">Mar</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	2018								2019			Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar													<table border="1" style="width: 100%; border-collapse: collapse; font-size: 8px;"> <tr> <th colspan="4" style="text-align: center;">2019</th> <th colspan="3" style="text-align: center;">2020</th> </tr> <tr> <td style="text-align: center;">Apr</td> <td style="text-align: center;">May</td> <td style="text-align: center;">June</td> <td style="text-align: center;">July</td> <td style="text-align: center;">Aug</td> <td style="text-align: center;">Sep</td> <td style="text-align: center;">Oct</td> <td style="text-align: center;">Nov</td> <td style="text-align: center;">Dec</td> <td style="text-align: center;">Jan</td> <td style="text-align: center;">Feb</td> <td style="text-align: center;">Mar</td> <td style="text-align: center;">Apr</td> </tr> <tr> <td style="height: 20px;"></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	2019				2020			Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr													
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Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr																																																									

ENUMERATOR: RECORD PRIMARY RESPONDENT ID FOR <u>MODULE H</u> :	<input style="width: 30px; height: 20px;" type="text"/>	ENUMERATOR: RECORD END TIME FOR <u>MODULE H</u> :	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>	<input style="width: 30px; height: 20px;" type="text"/>
	ID		HOURS	MINUTES	

MODULE I: NON-FOOD EXPENDITURES – OVER PAST ONE WEEK & ONE MONTH

ENUMERATOR: RECORD START DATE & TIME FOR MODULE I:

DAY	MONTH	HOURS	MINUTES

ONE WEEK RECALL

DATA ENTRY LINE NUMBER	Over the past <u>one week (7 days)</u> , did your household purchase or pay for any [...]?	I01 YES . 1 NO . 2 >>NEXT ITEM	I02	I03 How much did you pay in total?	DATA ENTRY LINE NUMBER		
						ITEM	MK
						CODE	
1	Charcoal		101		1		
2	Paraffin or kerosene		102		2		
3	Cigarettes or other tobacco		103		3		
4	Candles		104		4		
5	Matches		105		5		
6	Newspapers or magazines		106		6		
7	Public transport - Bicycle Taxi		107		7		
8	Public transport - Bus/Minibus		108		8		
9	Public transport - Other (Truck, Oxcart, Etc..)		109		9		

ONE MONTH RECALL

DATA ENTRY LINE NUMBER	Over the past <u>one month</u> , did your household purchase or pay for any [...]?	I04 YES . 1 NO . 2 >>NEXT ITEM	I05	I06 How much did you pay in total?	DATA ENTRY LINE NUMBER		
						ITEM	MK
						CODE	
1	Milling fees, grain		201		1		
2	Bar soap (body soap or clothes soap)		202		2		
3	Clothes soap (powder, paste)		203		3		
4	Toothpaste, toothbrush		204		4		
5	Toilet paper		205		5		
6	Glycerine, Vaseline, skin creams		206		6		
7	Other personal products (shampoo, razor blades, cosmetics, hair products, etc.)		207		7		
8	Light bulbs		208		8		
9	Postage stamps or other postal fees		209		9		
10	Donation - to church, charity, beggar, etc.		210		10		
11	Diesel		211		11		
12	Petrol		212		12		
13	Motor vehicle spare parts and accessories		213		13		
14	Bicycle spare parts and accessories		214		14		
15	Motor vehicle maintenance and repairs		215		15		
16	Bicycle service maintenance and repairs		216		16		
17	Wages paid to servants		217		17		
18	Mortgage - regular payment to purchase house		218		18		
19	Repairs & maintenance to dwelling		219		19		
20	Repairs to household and personal items (radios, watches, etc., excluding battery		220		20		
21	Expenditures on pets		221		21		
22	Batteries (wireless and cell phones)		222		22		
23	Recharging batteries, cell phones		223		23		
24	Shoe polish		224		23		
25	Hair dressing salons and barber shops		225		23		

ENUMERATOR: RECORD
PRIMARY RESPONDENT
ID FOR MODULE I:

ID	HOURS	MINUTES	

ENUMERATOR: RECORD
END TIME
FOR MODULE I:

**MODULE J: NON-FOOD EXPENDITURES
OVER PAST THREE MONTHS**

ENUMERATOR: RECORD START DATE & TIME FOR MODULE J:

DAY	MONTH	HOURS	MINUTES

Over the past three months, did your household purchase or pay for any [...]?	J01	J02	J03
	YES . 1 NO . . 2 >> NEXT ITEM	ITEM CODE	How much did you pay in total? MK
Infant clothing		301	
Baby nappies/diapers		302	
Boy's trousers		303	
Boy's shirts		304	
Boy's jackets		305	
Boy's undergarments		306	
Boy's other clothing		307	
Men's trousers		308	
Men's shirts		309	
Men's jackets		310	
Men's undergarments		311	
Men's other clothing		312	
Girl's blouse/shirt		313	
Girl's dress/skirt		314	
Girl's undergarments		315	
Girl's other clothing		316	
Lady's blouse/shirt		317	
Chitenje cloth		318	
Lady's dress/skirt		319	
Lady's undergarments		320	
Plastic Basin		321	

Over the past three months, did your household purchase or pay for any [...]?	J01	J02	J03
	YES . 1 NO . . 2 >> NEXT ITEM	ITEM CODE	How much did you pay in total? MK
Lady's other clothing		322	
Boy's shoes		323	
Men's shoes		324	
Girl's shoes		325	
Lady's shoes		326	
Cloth, thread, other sewing material		327	
Laundry, dry cleaning, tailoring fees		328	
Bowls, glassware, plates, silverware, etc.		329	
Cooking utensils (cookpots, stirring spoons and whisks, etc.)		330	
Cleaning utensils (brooms, brushes, etc.)		331	
Torch / flashlight		332	
Umbrella		333	
Paraffin lamp (hurricane or pressure)		334	
Stationery items (not for school)		335	
Books (not for school)		336	
Music or video cassette or CD/DVD		337	
Tickets for sports / entertainment events		338	
House decorations		339	
Night's lodging in rest house		340	
Night's lodging in hotel		341	
Flask		342	

ENUMERATOR:
RECORD
PRIMARY
RESPONDENT
ID FOR MODULE J:

--

ENUMERATOR:
RECORD
END TIME
FOR MODULE J:

HOURS	MINUTES

MODULE K: NON-FOOD EXPENDITURES OVER PAST 12 MONTHS

Over the past one year (twelve months), did your household purchase or pay for any [...]?	K01	K02	K03
	YES .1 NO . . 2 >> NEXT ITEM	ITEM CODE	How much did you pay in total? MK
Carpet, rugs, drapes, curtains		401	
Linen - towels, sheets, blankets		402	
Mat - sleeping or for drying maize flour		403	
Mosquito net		404	
Mattress		405	
Sports & hobby equipment, musical instruments, toys		406	
Film, film processing, camera		407	
Cement		408	
Paint		409	
Bricks		410	
Construction timber		411	
Council rates		412	
Insurance - health (MASM, etc.), auto, home, life		413	
Losses to theft (value of items or cash lost)		414	
Fines or legal fees		415	
Lobola (bridewealth) costs		416	
Marriage ceremony costs		417	
Funeral costs, household members		418	
Funeral costs, nonhousehold members (relatives, neighbors/friends)		419	

ENUMERATOR: RECORD START DATE & TIME FOR MODULE K:

DAY	MONTH	HOURS	MINUTES
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NON-FOOD ITEMS THAT MAY NOT HAVE BEEN PURCHASED

Over the past one year (twelve months) did your household gather, purchase, or pay for any [...]?	K01	K02	K03	K04
	YES .1 NO . . 2 >> NEXT ITEM	ITEM CODE	What was the estimated total value of [...] consumed? MK	What was the cost of that which you purchased? MK
Woodpoles, bamboo		420		
Grass for thatching roof or other use		421		

ENUMERATOR: RECORD
PRIMARY RESPONDENT
ID FOR MODULE K:

ID

ENUMERATOR:
RECORD
END TIME
FOR MODULE K:

HOURS	MINUTES
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MODULE L: DURABLE GOODS

ENUMERATOR: RECORD START DATE & TIME
FOR MODULE L:

DAY	MONTH	HOURS	MINUTES

ITEM	L01 Does your household own a [ITEM]?	L02 D G O U R O A D A B L E	L03 How many [ITEM]s do you own?	L04 What is the age of this [ITEM]?	L05 If you wanted to sell one of this [ITEM] today, how much would you receive?	L06 Did you purchase or pay for any [ITEM] in the last 12 months?	L07 How much in total did pay for [ITEM] in the last 12 months?
	YES...1 NO...2 >> NEXT ITEM		IF MORE THAN ONE ITEM, AVERAGE AGE.	IF MORE THAN ONE ITEM, AVERAGE VALUE.	YES...1 NO...2 >> NEXT ITEM		
		ITEM CODE	NUMBER	YEARS	MK		MK
Mortar/pestle (<i>mtondo</i>)		501					
Bed		502					
Table		503					
Chair		504					
Fan		505					
Air conditioner		506					
Radio ('wireless')		507					
Radio with flash drive/micro CD		5801					
Tape or CD/DVD player, HiFi		508					
Television		509					
VCR		510					
Sewing machine		511					
Kerosene/paraffin stove		512					
Electric or gas stove; hot plate, cooker		513					
Refrigerator		514					
Washing machine		515					
Bicycle		516					

MODULE L: DURABLE GOODS (CONTINUED)

ITEM	L01 Does your household own a [ITEM]?	L02 D G U O R O A D B L E	L03 How many [ITEM]s do you own?	L04 What is the age of this [ITEM]?	L05 If you wanted to sell one of this [ITEM] today, how much would you receive?	L06 Did you purchase any [ITEM] in the last 12 months?	L07 How much in total did you pay for [ITEM] in the last 12 months?
	YES . . 1 NO . . . 2 >> NEXT ITEM	ITEM CODE	NUMBER	YEARS	MK	YES . . 1 NO . . . 2 >> NEXT ITEM	MK
Motorcycle/scooter			517				
Car			518				
Mini-bus			519				
Lorry			520				
Beer-brewing drum			521				
Upholstered chair, sofa set			522				
Coffee table (for sitting room)			523				
Cupboard, drawers, bureau			524				
Lantern (paraffin)			525				
Desk			526				
Clock			527				
Iron (for pressing clothes)			528				
Computer equipment & accessories			529				
Sattelite dish			530				
Solar panel			531				
Generator			532				
Electric Kettle			533				

ENUMERATOR:
RECORD
PRIMARY
RESPONDENT
ID FOR MODULE L:

ID

ENUMERATOR:
RECORD
END TIME
FOR MODULE L:

<input type="text"/>	<input type="text"/>
HOURS	MINUTES

MODULE O: CHILDREN LIVING ELSEWHERE

A. Does the household head or spouse have any biological sons and/or daughters who are 15 years old and over and do not live in this household?

YES..1
NO...2 >> NEXT MODULE

ENUMERATOR: RECORD START DATE & TIME FOR MODULE O:

DAY	MONTH
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HOURS	MINUTES
-------	---------

R E S P O N D E N T I D	O01 Please list all biological sons and/or daughters of head and/or spouse 15 years old and over who do not live in this household.	O01_2	O02	O03	O04	O05	O06	O07		O08		O09
		IF THIS MEMBER WAS PRESENT AT LAST SURVEY, ENTER IHPS ROSTER ID NUMBER FROM TRACKING FORM. ELSE, ENTER 99.	Age	Sex	What is the highest grade [NAME] has completed in school? NEVER ATTENDED SCHOOL- 0 FORM 5 - 13 FORM 6 - 14 PRIMARY STND. 1 - UNIVERSITY STND. 2 - 2 UNIV. 1 - 15 STND. 3 - 3 UNIV. 2 - 18 STND. 4 - 4 UNIV. 3 - 17 STND. 5 - 5 UNIV. 4 - 18 STND. 6 - 6 UNIV. 5 - 6 STND. 7 - 7 ABOVE - 19 STND. 8 - 8 TRAINING COLLEGE TO TR. - 20 SECONDARY FORM 1 - 9 TC YR. 2 - 21 FORM 2 - 10 TC YR. 3 - 22 FORM 3 - 11 TC YR. 4 - 23 FORM 4 - 12 YES..1 NO...2>>O07	Has [NAME] ever lived in this household?	In which year did [NAME] leave the household?	Where does [NAME] currently live? IF IN MALAWI, ASK FOR THE NAME OF DISTRICT OF CURRENT RESIDENCE. IF ABROAD, ASK FOR THE NAME OF COUNTRY OF CURRENT RESIDENCE. REFER TO THE MANUAL FOR DISTRICT AND COUNTRY CODES.	DISTRICT or COUNTRY	CODE	For how long has [NAME] lived in this [DISTRICT/ COUNTRY REPORTED IN O07]? CODES FOR UNIT: MONTH..1 YEAR...2	LENGTH
IHPS 2016 ROSTER ID	YEARS	MALE..1 FEMALE..2					YEAR (4-DIGIT)					
01												
02												
03												
04												
05												
06												
07												
08												
09												
10												
11												
12												

MODULE R: SOCIAL SAFETY NETS

ENUMERATOR: RECORD START DATE & TIME FOR MODULE R:

DAY	MONTH

HOURS	MINUTES

[ASK OF HOUSEHOLD HEAD]

CODE	PROGRAM <i>DO NOT INCLUDE PENSIONS AND VOUCHERS FOR FERTILIZER AND SEED.</i>	R01	R02			R03
		In the last 12 months, has any member of your household received cash, food, or other aid from [PROGRAMME]? YES...1 NO....2 >>NEXT ROW	In the last 12 months, what was the total assistance received from [PROGRAMME]?			Was the assistance given to... READ RESPONSES Entire HH...1 >> R05 Specific HH Members....2
			CASH MK	IN-KIND CASH VALUE - MK	MAIZE KG	
101	Free Maize (Specify)		 	 	 	
102	Free Food (other than Maize) (Specify)		 	 	 	
1031	MASAF - Public Works Programme		 	 	 	
1032	Food/Cash-for-Work Programme (NON-MASAF - Public Works Programme [PWP])		 	 	 	
104	Inputs-For-Work Programme		 	 	 	
105	School Feeding Programme		 	 	 	
106	Free Distribution of Likuni Phala to Children and Mothers (Targeted Nutrition Programme [TNP])		 	 	 	
107	Supplementary Feeding for Malnourished Children at a Nutritional Rehabilitation Unit		 	 	 	
108	Scholarships/Bursaries for Secondary Education. (e.g., CRECCOM)		 	 	 	
1091	Scholarships for Tertiary Education (e.g. University Scholarship, Upgrading Teachers) Tertiary Loan Scheme (Government Loan for University and Other Tertiary Education)		 	 	 	
111	Direct Cash Transfers from Government (Mtukula Pakhoma) SPECIFY		 	 	 	
112	Direct Cash Transfers from others (Development Partners, NGOs). SPECIFY		 	 	 	
113	Other, Specify:		 	 	 	

MODULE R: SOCIAL SAFETY NETS (CONTINUED)

[ASK OF HOUSEHOLD HEAD]

CODE	PROGRAM DO NOT INCLUDE PENSIONS AND VOUCHERS FOR FERTILIZER AND SEED.	R04 Which household members received this assistance in the last 12 months? RECORD HOUSEHOLD ROSTER ID OF EACH MEMBER MENTIONED					R5 Who in your household controls/decides on the use of assistance from [PROGRAMME]? LIST UP TO 2 FROM HOUSEHOLD ROSTER		R6 In the last 12 months, for how many months did your household receive assistance from [PROGRAMME]?	R7 When was the last time your household received this assistance (THEN >> NEXT ROW)	
		ID CODE #1	ID CODE #2	ID CODE #3	ID CODE #4	ID CODE #5	HH ROSTER ID CODE #1	HH ROSTER ID CODE #2	NUMBER OF MONTHS	MONTH	YEAR (4-DIGIT)
101	Free Maize										
102	Free Food (other than Maize)										
1031	MASAF - Public Works Programme										
1032	Food/Cash-for-Work Programme (NON-MASAF - Public Works Programme [PWP])										
104	Inputs-For-Work Programme										
105	School Feeding Programme										
106	Free Distribution of Likuni Phaia to Children and Mothers (Targeted Nutrition Programme [TNP])										
107	Supplementary Feeding for Malnourished Children at a Nutritional Rehabilitation Unit										
108	Scholarships/Bursaries for Secondary Education. (e.g., CRECCOM)										
1091	Scholarships for Tertiary Education (e.g. University Scholarship, Upgrading Teachers) Tertiary Loan Scheme (Government Loan for University and Other Tertiary Education)										
111	Direct Cash Transfers from Government										
112	Direct Cash Transfers from others (Development Partners, NGOs). SPECIFY										
113	Other, Specify:										

ENUMERATOR:
RECORD
PRIMARY
RESPONDENT
ID FOR MODULE R:

ENUMERATOR:
RECORD
END TIME
FOR MODULE R:

<input type="text"/>	<input type="text"/>
HOURS	MINUTES

MODULE S: CREDIT

[ASK OF HOUSEHOLD HEAD]

ENUMERATOR: RECORD START DATE & TIME FOR MODULE S:

DAY	MONTH	HOURS	MINUTES

S01. Over the past 12 months, did you or anyone else in this household borrow on credit from someone outside the household or from an institution for business or farming purposes, receiving either cash or inputs?

YES...1
 NO...2>>S12

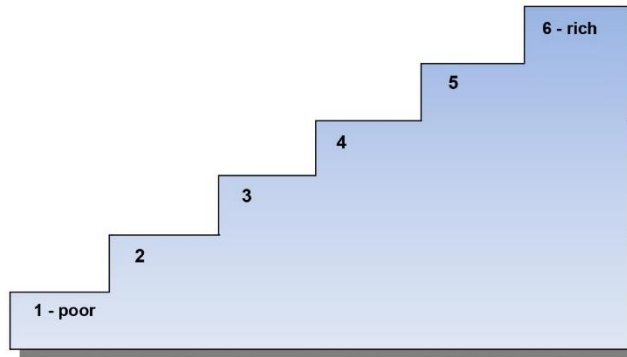
S02 L O A N N O	S03 What are the names of the persons or institutions from whom you or anyone else in your household borrowed on credit money for business or farming over the past 12 months? LIST ALL NAMES BEFORE GOING TO THE NEXT QUESTION.	S04 CODE SOURCE OF LOAN USE CODES ON THE NEXT PAGE.	S05 Which household member was responsible for the loan? LIST UP TO 2 FROM HOUSEHOLD ROSTER		S06 What was main reason for obtaining loan? Was it: [READ] PURCHASE LAND. .1 PURCHASE AGRI- CULTURAL INPUTS FOR FOOD CROP .2 PURCHASE INPUTS FOR TOBACCO . .3 PURCHASE INPUTS FOR OTHER CASH CROPS4 BUSINESS START- UP/BOOST CAPITAL. .5 PURCHASE NON- FARM INPUTS . .6 CONSUMPTION. .7 HOUSEHOLD NON- FARM EXPENDITURE. . . .8 OTHER (SPECIFY).9	S07 How much was borrowed? MK	S08 When did you get the loan within the past 12 months? JAN. .1 FEB. .2 MAR. .3 APR. .4 MAY. .5 JUN. .6 JUL. .7 AUG. .8 SEP. .9 OCT. 10 NOV. 11 DEC. 12		S09 Is the loan repaid? YES...1>>S11 NO...2	S10 Approximately when do you expect to pay back the money? JAN. .1 FEB. .2 MAR. .3 APR. .4 MAY. .5 JUN. .6 JUL. .7 AUG. .8 SEP. .9 OCT. 10 NOV. 11 DEC. 12		S11 How much did you pay (do you expect to have paid) in total when you (will have) paid off this loan (interest + principal)? (THEN >> NEXT ROW. WHEN ALL LOANS DONE, >> 12)	
			HH ROSTER ID CODE # 1	HH ROSTER ID CODE # 2			CALENDAR MONTH	CALENDAR YEAR		CALENDAR MONTH	CALENDAR YEAR		MK
1													
2													
3													
4													
5													
6													
7													
8													

MODULE T: SUBJECTIVE ASSESSMENT OF WELL-BEING

ENUMERATOR: RECORD START DATE & TIME FOR MODULE T:

DAY	MONTH	HOURS	MINUTES

<p>T01 Concerning your household's <u>food consumption</u> over the past <u>one month</u>, which of the following is true?</p> <p>It was less than adequate for household needs. 1 It was just adequate for household needs... 2 It was more than adequate for household needs. 3</p> <p><i>(NOTE THAT 'ADEQUATE' MEANS NO MORE OR NO LESS THAN WHAT THE RESPONDENT CONSIDERS TO BE THE MINIMUM CONSUMPTION NEEDS OF THE HOUSEHOLD.)</i></p>	<p>T02 Concerning your <u>housing</u>, which of the following is true?</p>	<p>T03 Concerning your household's <u>clothing</u>, which of the following is true?</p>	<p>T04 Concerning the standard of <u>health care</u> you receive for household members, which of the following is true?</p>	<p>T05 Imagine six steps, where on the bottom, the first step, stand the poorest people, and on the highest step, the sixth, stand the rich. SHOW THE PICTURE OF THE STEPS BELOW.</p>	<p>T06 On which step are most of your neighbors today?</p>	<p>T07 On which step are most of your friends today?</p>	<p>T08 Which of the following is true? Your current income ... [READ]: ALLOWS YOU TO BUILD YOUR SAVINGS.....1 ALLOWS YOU TO SAVE JUST A LITTLE.....2 ONLY JUST MEETS YOUR EXPENSES.....3 IS NOT SUFFICIENT, SO YOU NEED TO USE YOUR SAVINGS TO MEET EXPENSES.....4 IS REALLY NOT SUFFICIENT, SO YOU NEED TO BORROW TO MEET EXPENSES.....5</p>	<p>T09 How many <u>changes of clothes</u> do you (HH HEAD) own? (NUMBER OF TROUSERS FOR MEN; SKIRTS/ DRESSES FOR WOMEN)</p>	<p>T10 What do you (HH HEAD) <u>sleep on</u>? BED & MATTRESS . . 1 BED & MAT (GRASS). 2 BED ALONE 3 MATTRESSES ON FLOOR. 4 MAT (GRASS) ON FLOOR 5 CLOTH/SACK ON FLOOR 6 FLOOR (NOTHING ELSE) 7 OTHER (SPECIFY) . . 8</p>	<p>T11 What do you (HH HEAD) <u>sleep under in the cold season</u> (July)? BLANKET & SHEETS. . . 1 BLANKET ONLY. . . . 2 SHEETS ONLY 3 CHITENJE CLOTH. . . . 4 FERTILIZER or GRAIN SACK 5 CLOTHES 6 NOTHING 7 OTHER (SPECIFY) . . . 8</p>	<p>T12 What do you (HH HEAD) <u>sleep under in the hot season</u> (October)?</p>



MODULE T: SUBJECTIVE ASSESSMENT OF WELL-BEING (CONTINUED)

T13	T14	T15	T16	T17	T18	T19	T20
During the last 12 months, was there a time when you or others in your household worried about not having enough food to eat because of a lack of money or other resources?	During the last 12 months, was there a time when you or others in your household were unable to eat healthy and nutritious food because of a lack of money or other resources?	During the last 12 months, was there a time when you or others in your household ate only a few kinds of foods because of a lack of money or other resources?	During the last 12 months, was there a time when you or others in your household had to skip a meal because there was not enough money or other resources to get food?	During the last 12 months, was there a time when you or others in your household ate less than you thought you should because of a lack of money or other resources?	During the last 12 months, was there a time when your household ran out of food because of a lack of money or other resources?	During the last 12 months, was there a time when you or others in your household were hungry but did not eat because there was not enough money or other resources for food?	During the last 12 months, was there a time when you or others in your household went without eating for a whole day because of a lack of money or other resources?
NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4	NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4	NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4	NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4	NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4	NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4	NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4	NO.....1 YES.....2 DON'T KNOW..3 REFUSED.....4

ENUMERATOR: RECORD
PRIMARY RESPONDENT
ID FOR MODULE T:

ID

ENUMERATOR:
RECORD
END TIME
FOR MODULE T:

<input type="text"/>	<input type="text"/>
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HOURS MINUTES

Abstract in Korean

본 석사학위 논문은 2019년도 말라위 제5차 통합가구조사(IHPS) 자료를 활용하여 말라위의 빈곤 결정 요인을 분석하고, 실질적인 빈곤 감소를 위한 정책적 시사점을 제시한다. 빈곤 측정의 다양성을 고려하여, 본 연구에서는 가구의 주관적 빈곤과 소비 빈곤을 측정하였다. 말라위 가구의 빈곤에 대한 주관적 평가와 연간 소비가치를 종속변수로 설정하고, 일반빈곤, 주관적빈곤, 소비빈곤의 주요 결정요인을 바탕으로 가구의 사회경제적 특성을 독립변수로 선정했다. 연구는 순서형 데이터의 효율적이고 정확한 이해를 위해 순서형 프로빗 모델과 한계 효과를 채택 하였으며, 주관적 빈곤과 소비빈곤을 비교하기 위해 다항 로짓 모델을 적용하였다. 분석 결과 북부지역에 거주 할수록 주관적 빈곤 확률이 평균 4.51% 증가했고, 친구의 빈곤수준과 금융기관과의 거래, 전기사용은 평균 4.71%, 3.6%, 3.7%만큼 주관적 빈곤을 벗어날 확률이 높아진 것으로 나타났다. 소비빈곤의 경우, 전기 접근성(485,624 MWK), 도시 거주(334,519 MWK), 금융 기관과의 거래(258,344 MWK), 북부 거주(-163,755 MWK), 식품 소비 적정성(14,767 MWK)이 주요 빈곤결정요인 이었다. 또한 주관적 빈곤과 소비빈곤을 비교한 결과, 토지소유, 이웃과 친구의 빈곤수준, 금융기관과의 거래, 전기사용, 식량안보, 나이, 교육수준은 주관적 빈곤과 더 관련이 있는 반면 가구 규모는 소비빈곤과 더 큰 연관성을 가지고 있다.