Effects of social cash transfers on incidence of poverty in Malawi

Chrispine Kalungulu* and Venkatesh Seshamani**

* Economist, Ministry of Justice, Government of Malawi, Lilongwe, Malawi.
** Professor, Department of Economics, University of Zambia, Lusaka, Zambia.
Correspondance: selash4@gmail.com

Abstract

This paper investigates the effects of social welfare spending in the form of social cash transfers on incidence of poverty in Malawi.

Ordinary Least Squares (OLS) model is employed to observe the effects. Probit model is also estimated as a robustness check. Poverty variables are regressed on welfare variables (social cash transfer and duration of beneficiary from these programmes) and other control variables. Cross-section data from the third Integrated Household Survey (IHS) of 2011 has been used in the analysis. Test results from both models reveal that social cash transfer programmes have no significant effect on poverty in Malawi. The results bring to the fore the question about the cost effectiveness of such social welfare spending programmes in Malawi. The paper proposes possible policy interventions that can help to improve effectiveness of social welfare interventions in Malawi.

keywords: Malawi, social protection, poverty, ordinary least squares, probit.

1. Introduction

All over the world, welfare spending in the form of social protection programmes has dominated anti-poverty policies. Social protection comprises policies that assist households and communities to protect themselves against shocks and risks of poverty (Chinsinga, 2007). This approach has gained ground since the turn of the millennium. The recently adopted Sustainable Development Goals (SDGs) are an epitome of a contemporary inter-governmental response to poverty. The SDGs agenda, which is a United Nations Development Programme (UNDP) - led initiative, places poverty eradication above seventeen development targets to be met by the world governments by the year 2030 (World Bank, 2016).

In Malawi too, in response to the deterioration in people's welfare following the implementation of the Structural Adjustment Programmes between the early eighties and mid-nineties, the Government, in partnership with the World Bank and the International Monetary Fund (IMF), adopted safety net programmes to

cushion people from their vulnerability. This marked the onset of social protection programmes in Malawi. Since then, there has been a proliferation of these programmes. The programmes featured highly in different national development plans such as the Malawi Poverty Reduction Strategy Paper (MPRSP) and the Malawi Growth and Development Strategy (MGDS) I and II (Government of Malawi, 2009).

Despite the proliferation of social protection programmes, however, poverty reduction in Malawi has been very dismal. For instance, in the period between 2006 and 2011, the country recorded unprecedented social protection interventions and yet national poverty fell by 2% only. What is even more perplexing, successive Integrated Household Survey (IHS) data show that there was an increase in rural poverty level by 0.7% during the same period, when a large proportion of the beneficiaries of such programmes were rural households.

This raises the question: "Is there no significant relationship between social protection and poverty reduction in Malawi?" This is what this paper seeks to address.

2. Poverty trends and social protection programmes in Malawi

i. Poverty trends

Half of Malawi's population is poor. According to the periodic Integrated Household Survey (IHS) data, national poverty levels declined from 65.3% in 1998 to 52.4% in 2005 and further to 50.7% in 2011. This means that over a 14-year period, overall poverty in Malawi declined at the rate of roughly 1% annually. Further, the percentage of ultra-poor declined from 28.7% in1998 to just 22.4% in 2011. Thus, almost one quarter of Malawians live in dire poverty such that they cannot even afford to meet the minimum standard for recommended daily food requirement.

What is particularly notable is the poverty gap between the rural and urban areas. While there has been a decline in both rural and urban poverty levels, the rural – urban poverty gap has significantly grown. In 1998, the gap was 11.5% (66.5% in rural areas and 54.9% in urban areas), but it increased to nearly 40% (56.6% in rural areas and 17.5% in urban areas) in 2011. This is disturbing, considering that over 85% of the Malawian population live in the rural areas (NSO, 2014).

ii. Social protection

In the last two decades, the Government has been implementing a number of social protection programmes. These include inputs subsidy, inputs transfers, school feeding, cash-for-work, food-for-work, food transfers, bursaries, inputs-for-work, targeted nutrition, social cash transfers and distribution of relief items (Chinsinga, 2009). There has been an increase in the number of social protection programmes from 4 in 1964 to over 14 in the current time period.

Social protection expenditures constituted 14.1% of the total budget expenditures in the 2012/2013 Financial Year. Of the total social protection expenditure, the Farm Input Subsidy Program (FISP) constituted over 90% (World Bank, 2013). Although FISP is defined as a line item under social expenditure in the national budget, the Government treats it as a social protection intervention. This is because it is designed to help poor farmers who cannot afford farm inputs such as fertilizers and seeds. To some extent, the inclusion of FISP expenditure under social protection masks the lack of funds for social protection in the form of other benefits and safety nets (World Bank, 2013).

The Public Works Program (PWP) constitutes the second largest social protection expenditure. It is implemented under a broad programme called Malawi Social Action Fund (MASAF). MASAF is implemented largely with credit from the World Bank and started in 1994 as an intervention under the Poverty Alleviation Programme (PAP). It provides conditional cash transfers on a day labour supply basis for productive public works and direct cash transfers to the most vulnerable while contributing towards community development projects (Mangani and Mangani, 2012).

Since 2006 the Government started implementation of the Social Cash Transfer (SCT) Program. By 2012, the programme was operating in 7 out of 29 districts. SCT Programme objective is to alleviate poverty, reduce malnutrition, and improve school enrolment and attendance by delivering regular and reliable cash transfers to ultra-poor and labour-constrained households. The program has grown to reach close to 30,000 beneficiary households in early 2012 from 2006 (World Bank, 2013). Several donors have been contributing to the SCT Programme since its start. Currently the programme has been rolled out in all the 28 districts.

Social Protection expenditures also involve pensions, which in 2012/13 amounted to Malawian Kwacha (MK) 16 billion for about 30,000 government civil servant retirees. In Malawi, pension expenditures involve civil servants and other Government retirees. Eligibility for the Government Pension Fund is based on reaching the mandatory retirement age of 60 years with a minimum service of

10 years, or by voluntary retirement after 20 years of pensionable service, or with the consent of the Minister of the Public Service with a minimum of 10 years of service at age 45 (World Bank, 2013).

3. Literature review

Empirical studies conducted in developed countries attest that social protection programmes play a significant role in reducing poverty (Brady, 2005; Caminada, et al., 2012; Ferrarini, et al, 2016; Kenworthy, 1999; Cantillon, et al, 2002). These studies have been conducted in Western Europe, particularly in Organization for Economic Cooperation and Development (OECD) member countries. Most of these studies utilised panel data generated by Luxemburg Income Study (LIS) (an organization located in Luxembourg which produces a cross-national database of micro-economic income data). This fact may largely explain the consistency in the results of such studies. Cantillon, et al (2002), however, observe that putting more money in social transfer systems would not reduce poverty rates in all countries. They discovered that in Southern European countries poverty among working-age individuals and children was remarkably insensitive to social cash transfers. They postulated that, as welfare expenditure increased, most social transfer beneficiaries escaped poverty, but at the same time a relatively large proportion of households for whom earnings was the most important source of income were pulled into poverty by the increase in tax liability.

Studies conducted in developing countries also indicate strong negative relationship between social welfare programmes and poverty. Barrientos (2010) conducted an assessment on the impact of social protection on poverty in Latin America, South and East Asia, and Sub-Saharan Africa. He found that countries with stronger social protection show lower levels of poverty and vulnerability and that they are more resilient in the face of social and economic change or shock. Similar studies conducted in Namibia, Mozambique and Zambia (Devereux, 2002); South Africa (Armstrong and Burger, 2009; and Lekezwa, 2011); Ethiopia (Geda et al, 2005; and Bogale, et al, 2005) show strong negative relationship between poverty and social welfare programmes.

Most existing poverty studies in Malawi base their analyses on data from the first Integrated Household Survey of 1998. Such studies focus on the poverty profile, with their determinants and their policy implications based on policy simulations (NEC, 2001; Mukherjee and Benson, 2003). Most poverty studies in Malawi show that the main determinants of poverty are education, occupation, per capita land, type of crops cultivated, participation in public works

employment and paid employment opportunities (Chirwa, 2005). Mukherjee and Benson (1998) modelled the determinants of poverty for Malawian households by conducting an empirical multivariate analysis of household welfare, primarily using data from the 1997–98 Malawi Integrated Household Survey. Their model simulations showed that higher levels of educational attainment, especially for women, and the reallocation of household labour away from agriculture and into the trade and services sector of the economy proved effective in reducing poverty in Malawi.

Chirwa (2005) conducted an assessment on household panel data between 1998 and 2002 to infer macroeconomic policies that can effectively reduce poverty in Malawi. He concluded that macroeconomic policies that promoted growth were likely to lead to poverty reduction. He argued that agricultural sector remained the important sector for livelihoods in rural Malawi. Hence, issues of equitable distribution of land, rural employment and agricultural produce prices are important in understanding poverty in Malawi. It appeared that policies that promote salaried employment in the rural areas offer the highest opportunities to reduce poverty in Malawi.

As shown, these studies did not attempt to find the implication of social protection expenditures on poverty. An attempt to assess the cost and administrative efficiency of social cash transfer programmes in Malawi was made by Mangani and White (2012). They found that public works, through cash transfers and asset creation, stimulate Malawi's economy and have a multiplier effect. They reported that cash transfers had assisted beneficiaries to address food security needs, farm inputs purchase, as well as basic health and education needs.

Another paper by Covarrubias et al (2012) also concludes that social cash transfers yield some positive economic development impacts such as the generation of agricultural asset investments, reduction in adult participation in low-skilled labour and lower involvement of child labour outside the home.

Miller et al also found that social cash transfers appeared to be an effective tool within the National Social Welfare Policy in improving food security in Malawi's destitute households.

4. Methodology

i. Definitions and measurements

Indicator of welfare: Per capita consumption expenditure is used as a measure of welfare.

Identifying the poor: Individuals whose total consumption is below the national poverty line of MK 37,002 per year (used in IHS 3, 2011) are deemed to be poor.

Poverty Index: The headcount ratio index, Po, which measures the proportion of the population that is below the poverty line is taken as the Poverty Index. Po is given by:

$$\boldsymbol{P_0 = \frac{1}{N}\sum_{i=1}^{N} I(y_i < z)} \quad \textbf{(1)}$$

Where, yi is the consumption expenditure for household i; z is the poverty line; N is the population.

I(.) is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. So if expenditure (yi) is less than the poverty line (z), then I(.) equals to 1 and the household would be counted as poor (World Bank, 2005).

ii. Model specification

This study estimated two types of regression models that are conventionally used in the analysis of determinants of poverty and effectiveness of anti-poverty interventions:

i). Ordinary Least Squares model: Modelling the natural logarithm of household per capita consumption against a set of exogenous determinants:

$$\boldsymbol{lnC_i = \beta X_i + \mu_i} \quad \textbf{(2)}$$

Where:

Ci is the dependent variable (total consumption expenditure per capita for

household i.)

Xi is the set of exogenous determinants of poverty that include social protection variable;

μi is a random error.

Specifically, the model is as follows:

$$\begin{aligned}\text{InConsumption}_i &= \beta_0 + \beta_1\text{CashTrans} + \beta_2\text{Duration} + \beta_3\text{hhsize} + \beta_4\text{Location} \\ &+ \beta_5\text{head\_age} + \beta_6\text{head\_gender} + \beta_7\text{head\_edlevel} \\ &+ \beta_8\text{head\_marital} + \mu_i\end{aligned}$$

ii). Probit regression model:

$$\boldsymbol{Prob(pov = 1|X) = f(X, \beta)} \text{..... (3)}$$

Or equivalently stated as:

$$\boldsymbol{Prob(pov = 0|X) = 1 - f(X, \beta)} \text{..... (4)}$$

Where:

pov is a dummy variable such that pov = 1 if the household is below poverty line, pov = 0 if otherwise;

X is the vector of the independent variables.

β is the set of parameters reflecting the impact of changes in X on the probability.

Specifically, the model is as follows:

$$\begin{aligned}\text{Prob}(\text{pov} = 1|\text{X}) &= \beta_0 + \beta_1\text{CashTrans} + \beta_2\text{Duration} + \beta_3\text{hhsize} + \beta_4\text{Location} \\ &+ \beta_5\text{head\_age} + \beta_6\text{head\_gender} + \beta_7\text{head\_edlevel} \\ &+ \beta_8\text{head\_marital} + \beta_9\text{Plot\_size2} + \beta_{10}\text{hhsize2} + \beta_{11}\text{head\_age2} \\ &+ \mu\end{aligned}$$

This approach assesses the determinants of poverty by estimating the households' probability of being poor. This model will be used as a robustness check. Probit model is useful when designing targeted interventions as it allows one to assess the predictive power of various explanatory variables used.

Independent variables:

- *CashTrans*: Amount of cash received from social welfare programme. This is supposed to show negative relationship with poverty as it increases consumption expenditure of a household.
- *Duration*: Number of months in which a household has benefitted from social protection programmes in a given year. This is also supposed to show negative relationship with poverty as the longer the period, the larger the amount received in that given year.
- *Head_edlevel*: represents education attainment level of the household head. There are four categories: 1= none; 2= primary; 3= secondary; and 4= tertiary. As the level increases, income is supposed to increase since education level is positively related to job and business opportunities. Thus education level is expected to positively relate to consumption expenditure and negatively relate to poverty.
- *Location*: Represents rural or urban area location (urban = 0 and rural = 1). Urban locations are expected to have lower poverty levels compared to rural areas because of difference in economic opportunities
- *Head_age*: Age of household head in years. It is supposed to positively relate to poverty for both young headed and very old headed household as productivity is low. For middle ages, the relationship is supposed to be negative with poverty as productivity is assumed to be high at such age level.
- *Head_age2*: represents Square of age of household head. This is designed

to capture the age at which consumption expenditure is maximised.

- *Hhsize*: The total number of members in the household. It negatively relates to consumption expenditure per capita as the larger the size, the lower the consumption per household member.
- *Hhsize2*: Is the Square of total number of members in the household. It is meant to capture the household size that maximises consumption expenditure.
- *Head_gender*: Is the sex of the household head (male = 0 and female = 1). Female headed households are expected to have lower consumption expenditure as compared to male headed households because economic opportunities tend to favour men.
- *Head_marital*: Marital status of the head of the household (married = 1 and 0 otherwise). For married household heads, consumption expenditure is supposed to be high compared to single headed households.
- *Plot_size*: Household land holding size in acres. It is supposed to positively relate to consumption expenditure but negatively relate to poverty. The larger the plot size, the larger the economic benefits from it.
- *Plot_size2*: the Square of plot size. It is meant to capture the plot size for which consumption expenditure is maximised. It is supposed to be positively related to consumption expenditure.

NB: The first two variables are social protection variables and the rest are control variables.

5. Data sources

This study has used the 2010 /2011 Integrated Household Survey conducted by the National Statistics Office (NSO) of Malawi. This is the latest comprehensive household study on living conditions in Malawi. The survey covers all districts in Malawi with a sample size of 12,288 households. The survey covered all variables of interest to this research.

6. Estimation and interpretation of results

i. Econometric estimation

Diagnostic tests for the OLS model:

- Ramsey RESET Test for the model yielded results that were not statistically significant. As such the null hypothesis: "the model has no omitted variable" was not rejected. This meant that the model was correctly specified. Table 5.2 in the Appendix shows the test results.
- The White test for homoskedasticity was not significant as the p-value was greater than 5% level of significance. This indicates absence of heteroskedasticity. Table 5.5 in the Appendix indicates the test results.
- The overall Variance Inflation Factor (VIF) was 1.4 which is within the acceptable range. The VIF recommended values range from 0 and 10. Table 5.4 in the Appendix shows the results. This entails absence of multicollinearity. Correlation matrix was also used to ascertain absence of multicollinearity among dependent variables. The results also confirm absence of multicollinearity. Table 5.3 in the Appendix shows the test results.
- Kernel density distribution function as indicated in graph 5.1 of the Appendix shows that the data fairly conforms to the bell shape normal distribution function.

Diagnostic test for Probit model:

- Linktest in Table 5.7 in the Appendix (test for specification bias in nonlinear models) was used to detect presence of specification error in the model. The test is not statistically significant indicating that the function is correctly specified.

ii. Econometric interpretation of results

OLS model:

Table 5.1 provides the estimation results.

The p-value of F-Test is significant at all levels of significance (i. e. at 1%, 5% and

10%). This indicates that the independent variables in the model jointly explain the dependent variable. The R-squared is 29% and Adjusted R-squared is 28%. Though reasonably low, this does not necessarily suggest that OLS regression equation is deficient. Wooldridge (2004) concedes that in the social sciences, low R-squared in regression equations are not uncommon, especially for cross-sectional data.

The tests also indicate that the following independent variables are significant at 5% level of significance: household size, education of household head, gender of household head, and location of the household. The intercept is also significant at 5%. All the significant variables conform to the predicted signs. That is (i) education attainment level of household head positively relates to consumption expenditure for that household; (ii) female-headed households tend to have lower consumption expenditure as compared to male-headed households; (iii) household size negatively affects household consumption expenditure, and (iv) urban households' consumption is greater than rural consumption expenditure.

The two variables of interest, namely, social cash transfer and duration of benefit from welfare programmes, are not significant. However, social cash transfer shows a positive relationship to household consumption expenditure. On the other hand, duration of benefit from social welfare programmes shows negative relationship to the household consumption expenditure.

Probit model:

Table 5.6 provides the results.

In addition to the variables that are significant in the OLS model above, age of household head indicates positive relation to poverty. As was the case in the OLS model above, welfare independent variables are also not significant at all levels in the probit model.

Based on the test results, this study therefore, fails to reject the null hypothesis that "There is no relationship between social protection and poverty in Malawi".

iii. Economic interpretation

Both the OLS model and Probit model indicate that social welfare programs do not majorly impact on poverty in Malawi as shown by insignificant social welfare variables used in the study (Social Cash Transfer and the duration of beneficiary from social welfare programmes).

On the other hand, demographic factors - especially household composition variables such age of the household head, gender of the household head and household size - have a significant effect on poverty. Education attainment of household head and location of a household are also crucial in determining poverty levels in Malawi. This finding is consistent with results from other studies such as the Malawi Government's study on the determinants of poverty in Malawi (Government of Malawi, 2009).

Social welfare spending might not have the impact on poverty in Malawi because of the following reasons:

Problem of targeting beneficiaries: Most social welfare programmes are negatively affected by lack of proper targeting of qualified beneficiaries. Mangani and White (2012) conceded that social support programmes do not necessarily target the poorest households when the national poverty picture is considered. For instance, evidence suggests that the Malawi Social Cash Transfer Programme targeting process simply identifies the poorest 10% of the population in each district, without regard for the district's poverty profile in relation to other districts in the country. Worse still, targeting at the district level is marred by corruption which excludes legitimate poor people from benefiting. In such instances, social welfare spending will not show significant relation to poverty as the poor are excluded.

Transactions costs and size of transfers: The Malawi Public Expenditure Review (MPER) report indicates that administration costs of social welfare programmes costs go as high as 19% (Malawi Government, 2011). Obviously, this has significant negative effect on the size of funds available to the beneficiaries. The report further indicates that the average benefit per year for the poorest is approximately US$75. This transfer is too small to make a significant improvement on households' living conditions.

The Third Integrated Household Survey (IHS3) also indicates that 14.8% of the population in Malawi benefit from school feeding program while only approximately 2% of the population is directly involved in food or cash for work programs. This too, is an insignificant proportion of the population considering the high levels of poverty in the country.

Poor coordination of social welfare programs: Social welfare programmes in Malawi are managed by different stakeholders. Both the Government and non-governmental organisations run social welfare programmes in different districts. There is institutional fragmentation in the implementation of social welfare programmes even in the Government. For instance, social protection is the responsibility of the Ministry of Economic Planning and Development; the Ministry of Gender, Children and Social Welfare; the Ministry for the Disabled and the Elderly; and the Local Development Fund and its Technical Support Team (World Bank, 2013). This fragmentation undermines effective and efficient

implementation and monitoring of programmes. In some instances, it leads to duplication of effort in a particular areas of the programmes.

7. Conclusion and recommendations

i. Summary

The overall objective of this study was to investigate the effects of social welfare spending in the form of SCT on incidence of poverty in Malawi. Specifically the study intended to (i) find out the nature of relationship between SCT programme and poverty level in Malawi; (ii) find out other factors that influence poverty level in Malawi; and (iii) provide policy recommendations to Government based on findings of the study.

The study used Ordinary Least Squares (OLS) model to observe the effects of social protection programmes on poverty in Malawi. Probit model was also estimated as a robustness check. Poverty variables were regressed on welfare variables (social cash transfer and duration of beneficiary from SCT) and other control variables. The study employed cross-section data from the third Integrated Household Survey (IHS) of 2011 conducted by the National Statistics Office. Test results from both models revealed that social protection programmes have no significant effect on poverty in Malawi. The results bring to the fore the question about the cost effectiveness of social welfare programmes in Malawi.

ii. Policy recommendations

Based on the problems identified that might have rendered social cash transfer spending programmes insignificant to the reduction of poverty, the following policy interventions can help improve the situation:

I. Improvements in targeting beneficiaries of SCTs and indeed of various social welfare support programmes so as to ensure that social protection benefits the legitimate poor;
II. Reduction in the administrative costs of management and delivery of social protection programmes with the aim of making more resources available to the beneficiaries.
III. Improved coordination in the management and implementation of social welfare programmes among all stakeholders involved to enhance cost effectiveness and efficiency of the programmes.

References

Armstrong, P. & Burger, C. (2009). *Poverty, Inequality and the Role of Social Grants: An Analysis using Decomposition Techniques*. Stellenbosch Economic Working Papers: 15/09.

Barrientos, A. (2010). 'Social Protection and Poverty', *Social Policy and Development Programme Paper*, no. 42, United Nations Research Institute for Social Development, Geneva.

Bogale, A., Hagedorn, K. & Korf, B. (2005). Determinants of poverty in rural Ethiopia. *Quarterly Journal of International Agriculture* 44 (2005), No. 2: 101-120.

Bradshaw, T.K. (2005). *Theories of Poverty and Anti-Poverty Programs in Community Development*: RUPRI Rural Poverty Research Centre 214 Middlebush Hall University of Missouri Columbia MO 65211-6200.

Brady, D. (2005). The Welfare State and Relative Poverty in Rich Western Democracies, 1967-1997: *Social Forces*, June 2005, 83(4):1329–1364. The University of North Carolina Press.

Browne, E. (2015). *Social protection: Topic guide*. Birmingham, UK: GSDRC, University of Birmingham.

Caminada K., Goudswaard, K. & Koster F (2012). Social income transfers and poverty: Across-country analysis for OECD countries. *International Journal of Social Welfare* 21(2): 115–126.

Chinsinga, B. (2009). *Political Economy of Cash Transfers in Malawi: A Report prepared for the Overseas Development Institute.* Overseas Development Institute, London.

Chinsinga, B. (2007). *The Social Protection Policy in Malawi: Processes, Politics and Challenges. Future Agriculture*. Discussion Paper 002.

Cantillon, B., Marx, I. & Van den Bosch K (2002). The puzzle of egalitarianism: About the relationships between employment, wage inequality, social expenditures and poverty. *European Journal of Social Security* 5(2): 108-127.

Chirwa E. W. & Dorward. A (2011). *Evaluation of the Farm Input Subsidy Programme (FISP), Malawi – Private Sector Participation in the Farm Input Subsidy Programme in Malawi 2006/07-2011/12*, Working Paper (Draft), May 2012.

Chirwa, E.W. (1999). Structural Adjustment Programs and the Labour Market in Malawi. University of Malawi Chancellor College. *Working Paper* No. WC/06/99.

Chirwa. W.E. (2005). Macroeconomic Policies and Poverty Reduction in Malawi: What Can we infer from Panel Data? *Working Paper* No. 2005/06. Department of Economics. Chancellor College, University of Malawi.

Covarrubias, K., Benjamin, D. & Winters, P. (2012): From Protection to Production: Productive Impacts of the Malawi Social Cash Transfer Scheme, *Journal of Development Effectiveness*, 4(1), 59-57.

Davis, P.A. & Martinez, M.S. (2015). *Economic Theories of Poverty*. Joseph Rowntree Foundation. The Homestead, UK.

Devereux, S., (2002). 'Can Social Safety Nets Reduce Chronic Poverty?' *Development Policy Review*, vol. 20, no. 5, pp. 657-675.

Ferrarini, J. Palme, J., & Nelson, K. (2016). Social transfers and poverty in middle- and high income countries – A global perspective. *Global Social Policy* 2016, Vol. 16(1) pp. 22–46.

Geda, A; de Jong, N., Kimenyi, M S., & Mwabu, G. (2005). "Determinants of Poverty in Kenya: A Household Level Analysis" *Economics Working Papers*. Paper 200544.

Government of Malawi (2009). *Poverty Trends for Malawi: 2009 Report*. Ministry of Development Planning and Corporation. Lilongwe, Malawi.

Government of Malawi (2007). *Malawi Growth and Development Strategy: From Poverty to Prosperity, 2006-2011*. Lilongwe, Malawi.

Government of Malawi (2001). *Malawi Poverty Reduction Strategy Paper*. Lilongwe, Malawi.

Jung, Y.S. & Smith, R. (2006). *Economic Theories of Poverty: Understanding Poverty from Multiple Social Science Perspectives*.

Kenworthy, L. (1999). Do social welfare policies reduce poverty? A cross-national assessment. *Social Forces* March, 1999, 77(3):1119-39.

Lekezwa, B.I. (2011). *The Impact of Social Grants as Anti-Poverty Policy Instruments in South Africa: an Analysis Using Household Theory to Determine Intra-Household Allocation of Unearned Income*. University of Stellenbosch.

Mangani, R. & White, R. (2012). *Costing and Analysis of Transfer Levels for the Malawi Social Cash Transfer Programme*.

Miller, C. M., Tsoka, M. & Reichert, T. (2011): The Impact of the Social Cash Transfer Scheme on Food Security in Malawi, *Food Policy*, 36(2), 230-238.

Mukherjee, S. and Benson, T. (2003). The Determinants of Poverty in Malawi, 1998, *World Development*, 31(2), 339-358.

National Economic Council (2001). *The Determinants of Poverty in Malawi, 1998: An analysis of the Malawi Integrated Household Survey, 1997-98*. Lilongwe, Malawi.

National Statistics Office (2014). *Malawi MDG End line Survey*, National Statistics Office, Zomba, Malawi.

National Statistics Office (2011). *Integrated Household Survey 2011: Household Socio Economic Characteristics Report*. National Statistics Office, Zomba, Malawi.

National Statistics Office (2005). *Integrated Household Survey 2005: Household Socio Economic Characteristics Report*. National Statistics Office, Zomba, Malawi.

Persky, J. (2004). When did equality become a noneconomic objective? American *Journal of Economics and Sociology*, 63(4), 921-938.

Todaro, M.P. & Smith, S.C. (2012). *Economic Development* (11th ed). Addison-Wesley, Boston United Nations Development Programme (2015).

UNDP (2015). *Work for Human Development*. New York, USA.

UNDP (1997). *Human Development Report*. New York: UNDP.

Wedderburn, D. (1965). Facts and theories of the welfare state. In R. Miliband and J. Saville (eds). The *Socialist Register* ig6§, London: Merlin Press: 127-4.

Wooldridge, J. (2004). *Introductory Econometrics* (2nd ed). South-Western, Mason, Ohio.

World Bank (2016). *Global Monitoring Report 2015/2016: Development Goals in an Era of Demographic Change*. Washington, DC: World Bank Group.

World Bank (2013). *Malawi Public Expenditure Review: Report No. 79865* – MW. Washington, DC: World Bank Group.

World Bank (2005). *Introduction to Poverty Analysis: Poverty Manual*. Washington, DC: World Bank Group.

World Bank (2000). *World Development Report 2000/2001: Attacking Poverty*. Washington, DC: World Bank.

Appendix

Table5.1. OLS Model:

$$\text{InConsumption} = \beta_0 + \beta_1 \text{CashTrans} + \beta_2 \text{Duration} + \beta_3 \text{hhsize} + \beta_4 \text{Location} + \beta_5 \text{head\_age} + \beta_6 \text{head\_gender} + \beta_7 \text{head\_edlevel} + \beta_8 \text{head\_marital} + \mu$$

Source	SS	df	MS		Number of obs =	414
					F(9, 404) =	18.47
Model	44.8640751	9	4.98489723		Prob > F =	0.0000
Residual	109.026729	404	.269868141		R-squared =	0.2915
					Adj R-squared =	0.2757
Total	153.890804	413	.372616958		Root MSE =	.51949

lnCon_per_hh	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
CashTrans	1.04e-06	2.35e-06	0.44	0.658	-3.57e-06	5.66e-06
Duration	-.0019221	.0108507	-0.18	0.859	-.023253	.0194089
hhsize	.0979914	.0119633	8.19	0.000	.0744734	.1215095
Location	-.3562531	.1107942	-3.22	0.001	-.5740583	-.138448
head_age	-.0006318	.001691	-0.37	0.709	-.003956	.0026925
head_gender	-.279324	.0900488	-3.10	0.002	-.4563466	-.1023013
head_edlevel	.1208534	.0381827	3.17	0.002	.0457918	.195915
head_marital	-.0032616	.050437	-0.06	0.948	-.1024134	.0958902
Plot_size	.0122883	.0353727	0.35	0.728	-.0572493	.0818259
_cons	12.53285	.2717851	46.11	0.000	11.99856	13.06714

Table5.2. Ramsey RESET Test Results

```
Ramsey RESET test using powers of the fitted values of lnCon_per_hh
       Ho:  model has no omitted variables
                 F(3, 401) =      1.53
                  Prob > F =      0.2066
```

Table5.3. Correlation Matrix

	CashTr~s	Duration	hhsize	Location	head_age	head_g~r	head_e~l	head_m~l	Plot_s~e
CashTrans	1.0000								
Duration	0.1579	1.0000							
hhsize	0.1320	0.0550	1.0000						
Location	-0.0481	-0.0056	-0.1328	1.0000					
head_age	-0.0123	0.0969	0.0678	0.0021	1.0000				
head_gender	-0.0252	0.0602	-0.2479	-0.0077	0.1415	1.0000			
head_edlevel	0.1337	0.0630	-0.0152	-0.0622	-0.2409	-0.1525	1.0000		
head_marital	-0.0221	0.0943	-0.2958	-0.0066	0.1860	0.7709	-0.1181	1.0000	
Plot_size	0.0226	0.0147	0.1721	0.0168	0.1969	-0.0090	-0.0380	0.0125	1.0000

Table 5.4. VIF test for Multicollinearity

Variable	VIF	1/VIF
head_marital	2.61	0.382557
head_gender	2.50	0.400707
hhsize	1.20	0.833892
head_age	1.15	0.867090
head_edlevel	1.11	0.898894
Plot_size	1.07	0.932642
CashTrans	1.06	0.942919
Duration	1.05	0.949122
Location	1.03	0.972394
Mean VIF	1.42	

Table 5.5. White's Test for Heteroskedasticity

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(52)     =     51.92
         Prob > chi2  =    0.4769

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	51.92	52	0.4769
Skewness	3.29	9	0.9516
Kurtosis	1.28	1	0.2570
Total	56.50	62	0.6733

Graph 5.1 Kernel Density Distribution Function

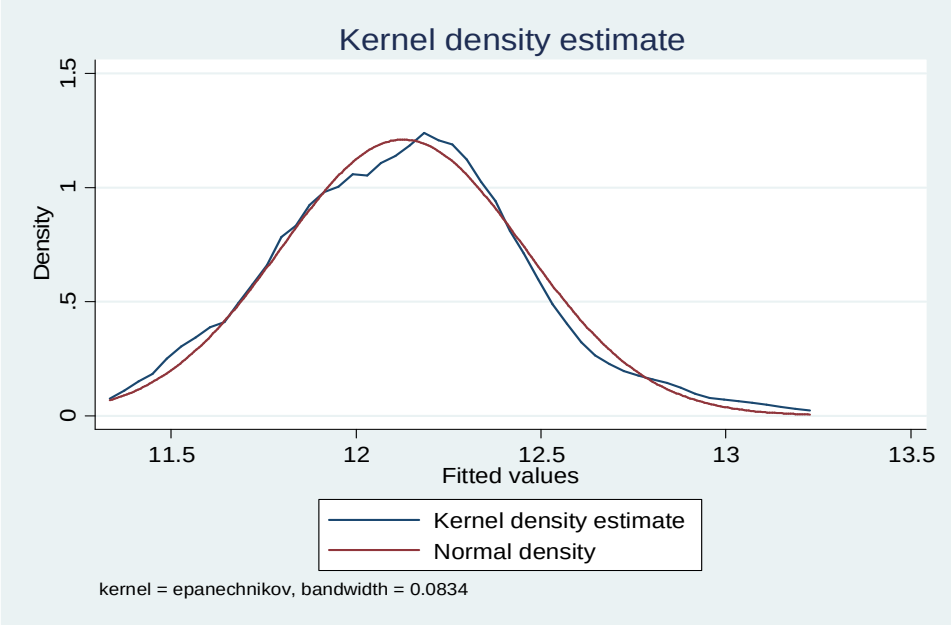

Table5.6. Probit Model:

$$\begin{aligned}\text{Prob}(\text{pov} = 1|\text{X}) &= \beta_0 + \beta_1\text{CashTrans} + \beta_2\text{Duration} + \beta_3\text{hhsize} + \beta_4\text{Location} \\ &+ \beta_5\text{head\_age} + \beta_6\text{head\_gender} + \beta_7\text{head\_edlevel} \\ &+ \beta_8\text{head\_marital} + \beta_9\text{Plot\_size}^2 + \beta_{10}\text{hhsize}^2 + \beta_{11}\text{head\_age}^2 + \mu\end{aligned}$$

```
Iteration 0:   log likelihood = -283.43114
Iteration 1:   log likelihood = -230.07325
Iteration 2:   log likelihood = -229.15195
Iteration 3:   log likelihood = -229.15152
Iteration 4:   log likelihood = -229.15152

Probit regression                                 Number of obs   =        414
                                                  LR chi2(12)     =     108.56
                                                  Prob > chi2     =     0.0000
Log likelihood = -229.15152                       Pseudo R2       =     0.1915

------------------------------------------------------------------------------
        poor |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   CashTrans |  -2.72e-06   5.73e-06    -0.47   0.635     -.000014    8.51e-06
    Duration |   .0326021   .0296412     1.10   0.271    -.0254935    .0906978
      hhsize |   .9455072   .1383758     6.83   0.000     .6742957    1.216719
    Location |   .7289523   .3138237     2.32   0.020     .1138691    1.344036
    head_age |  -.0793499   .0269249    -2.95   0.003    -.1321218    -.026578
 head_gender |   .8965789   .2756503     3.25   0.001     .3563143    1.436844
head_edlevel |  -.1974023    .103978    -1.90   0.058    -.4011956    .0063909
head_marital |  -.0942109   .1542771    -0.61   0.541    -.3965885    .2081667
  Plot_size2 |  -.0144246   .0507294    -0.28   0.776    -.1138523    .0850031
     hhsize2 |  -.0553519   .0104397    -5.30   0.000    -.0758133   -.0348906
   head_age2 |   .0007821   .0002662     2.94   0.003     .0002604    .0013039
   Plot_size |   .0884244    .211618     0.42   0.676    -.3263393    .5031882
       _cons |  -3.829225   .9145353    -4.19   0.000    -5.621681   -2.036769
------------------------------------------------------------------------------
```

Table5.7. Linktest for model specification.

```
Iteration 0:   log likelihood = -283.43114
Iteration 1:   log likelihood = -230.96735
Iteration 2:   log likelihood = -228.01567
Iteration 3:   log likelihood = -227.89896
Iteration 4:   log likelihood = -227.89854
Iteration 5:   log likelihood = -227.89854

Probit regression                                 Number of obs   =        414
                                                  LR chi2(2)      =     111.07
                                                  Prob > chi2     =     0.0000
Log likelihood = -227.89854                       Pseudo R2       =     0.1959

------------------------------------------------------------------------------
        poor |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        _hat |   .9249794   .1217151     7.60   0.000     .6864221    1.163537
      _hatsq |  -.2100899   .1371683    -1.53   0.126    -.4789349     .058755
       _cons |   .0703136   .0822187     0.86   0.392    -.0908321    .2314592
------------------------------------------------------------------------------
```