The Dynamics of Poverty, Inequality and Economic Well Being in Homa Bay County, Kenya

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Abstract

Poverty is one of the leading and greatest threats to security and sustainable development in the world today. The entire international community has developed unprecedented focus on poverty alleviation in order to achieve the Millennium Development Goals. It is hard to imagine an issue in development economics that is of greater importance to humankind than the effects of economic growth on poverty and economic well-being. Hence this study is stimulated by the desire to have an in depth knowledge of the key factors that determine regional poverty, inequality and economic well-being. Specifically, this paper reviews socio economic poverty profiles, labour force indicators, food security and county demographic/health indicators that influence the adoption of poverty reduction strategies in Homabay County, Kenya. Several studies were reviewed with the aim of identification of gaps to inform a new study.

1.0 Introduction

Extreme poverty is overwhelmingly experienced in rural areas. The majority of poor people lives in rural areas and depends on agriculture and agriculture related small industries and services for a living. These include small scale farmers, landless wage laborers, pastoralists and artisanal fishers. Of these are the world’s 450 million small scale farming households who cultivate less than two hectares (Food & Agricultural Organization, 2004). World Development Report asserts that agriculture remains the main source of livelihoods for an estimated 86 per cent of rural people (2.5 billion people) and for many countries the main opportunity for sustained, employment based growth (World Bank, 2007). The agricultural sector is broadly defined to include crop, livestock, forestry, fisheries, and wildlife which is the backbone of the economies of most Sub-Saharan Africa countries and will continue to be so in the foreseeable future. The key role of agriculture in Africa’s economy is apparent agriculture accounts for 35 per cent of the continent’s Gross Domestic Product, 40 per cent of its export, 70 per cent of its employment, and more than 70 per cent of the population depends for their livelihoods on agriculture and agri-business (Kijne, 2000).

Homabay County is in the Nyanza region of Kenya with Lake Victoria as a basic site for fishing as the main source of economic activity that has been declining in the recent past. Extreme poverty is overwhelmingly experienced in rural areas. The majority of poor people lives in rural areas and depends on agriculture and agriculture related small industries and services for a living. These include small scale farmers, landless wage laborers, pastoralists and artisanal fishers. Several strategies have been put in place by County and National governments as well as other development partners to alleviate poverty in the study area. It is ironical that the residents of Homabay County have continued to wallow in absolute poverty over very many years and has evolved to lead in HIV prevalence in Kenya yet a lot of effort has been made to alleviate this situation hence the desire for this study.
2.0 Literature Review
2.1 Introduction
This section is the core of this independent paper and contains empirical literature review in four major sub themes.

2.2 Empirical Literature Review
Poverty is a key aspect to human development and economic progress. Several studies have been done on poverty. They have adopted different approaches to analyzing poverty across countries and regions. There are two main approaches that have been used to identify the determinants of poverty. The first approach involves the use of consumption expenditure per adult equivalent where regression is done against potential explanatory variables (Geda et al., 2001). In this approach, critics believe that consumption is not a good indicator of welfare and the assumption. According to them, consumption of the poor and non-poor are both determined by the same process (Okwi, 1999). The consumption approach assumes that consumption expenditures are negatively correlated with absolute poverty at all expenditure levels. By common understanding, factors which increase expenditure obviously reduce poverty. However, this is not always the case, for instance increasing consumption expenditure for individuals above the poverty line will not affect the poverty level. This approach has not been popular because of its inherent weakness.

The second approach involves a discrete choice of a model which is used in the analysis of determinants of poverty. Several studies have used this approach. These include studies done by Geda et al., (2001) and Mariara (2002) of Kenya. The analysis employs binary logit or probit model to estimate the probability of a household being poor. Occasionally, the households are divided into absolute poor, poor and non-poor and then an ordered logit is used to identify the factors which affect the probability of a household being poor. This approach is preferable to the former in poverty analysis because of the its merits. The discrete choice model has a number of positive features in comparison to the expenditure approach. The expenditure approach unlike the discrete choice models does not give probabilistic estimates for the classification of the sample into different poverty categories. That means we cannot make probability statements about the effect of the variables in the poverty status of our economic agents. On the other hand the discrete choice model allows the effects of independent variables to vary across poverty categories.

This second approach aims at capturing any heterogeneity between the moderate poor, non-poor and absolute poor. This is not possible in the expenditure function approach. However, the discrete choice model approach of modeling poverty is not without flaws. The major concern is that there is loss of information when we create categories of poverty status by the level of consumption expenditure or income. On the other hand there is a concern that all those who are above the poverty line are intentionally considered to be homogenous or identical may not be realistic (Jollife and Datt, 1999). The approach has a challenge in the setting of the absolute poverty line. This require the usage of some dominance analysis to check the robustness of the poverty line to be employed. Lastly we need to assume that the distribution is non linear model. Moreover there are two fundamental problems built in to the underlying assumption of employing standard ordered logit and Multinomial logit model. They are restrictive because they make the parameters to be the same across groups. Ordered logit models necessitate the specification of a single latent variable in a linear function. Consequently these models do not have the flexibility of multivariate probit (Small, 1987).

2.2.1 Socioeconomic Poverty Profiles
Different studies have been undertaken with the different approaches. Geda et al., (2005) uses household level data from the Welfare Monitoring Survey collected in 1994 to examine probable determinants of poverty status in Kenya. The study employs both binomial and polychotomous logit models. The study shows that poverty status is strongly associated with the level of education, household size and engagement in agricultural activity, both in rural and urban areas. In general, those factors that are closely associated with overall poverty according to the binomial model are also important in the ordered-logit model, but they appear to be even more important in tackling extreme poverty. The studies show that these models are useful in poverty studies and have limited weakness which can be improved. Nortney et al (2011) analyzes trend analysis of determinants of poverty in Ghana using the logit approach. The study indicates that households that have larger sizes, household heads with less education and those with heads that have agriculture as their primary occupation are poorer. Also households in rural localities and the savanna zone are poorer. It was also evident that while the living standards of households with large sizes and those with agriculture as primary occupation were improving over the years,
the households with literate heads and those who live in the savanna zone were becoming worse off. From the study we note that the binomial logit modeling is an important criterion for the judgment of the poverty status of individual households. The approach explains why some population groups are poor and others non-poor considering their expenditure pattern.

2.2.2 Poverty and Labour Force
Poverty and labour markets are strongly related because earnings from labour markets are among the main sources of income for workers. In urban settings, people rely on market exchanges to obtain basic necessities such as food and shelter. Indeed, many of the problems associated with urban poverty are related to lack of income. The ability to earn income thus becomes an important determinant of poverty. This ability depends on the functioning of the urban labour markets, the nature of activities that the poor engage in, and the safety nets and labour protection the markets accord. Urban labour markets in developing countries are dichotomous. On the one hand, there is the formal labour market segment which traditionally is an important source for employment of the urban population. On the other hand, there is the informal labour segment, which is in many ways a result of failure of the formal segment to create sufficient job opportunities for the urban population. In many African countries, Kenya included, wage employment in the modern sector has fallen in absolute terms over time.

This situation has been made worse in the 1980s and 1990s by retrenchment in the public sectors. Since much of the formal sector employment in developing countries is concentrated in and around urban locations, they have had clear repercussions on the urban employment. In Kenya, for instance, the failure of urban employment in the modern private sector has led to a rapid expansion of the informal sector. The share of urban employment in the informal sector is estimated to be around 75%. Evidence from other countries presented by Sethuraman (1997) confirms that the informal sector plays an important role in urban employment.

In the literature, both unemployment and informal sector employment are considered to be important links between poverty and labour markets. Agenor (1998) define poverty as the ratio of the combined number of unemployed and those working in the informal sector to the total labour force. The unemployed clearly have no opportunity to earn income and are almost certainly poor. This group of persons includes those who are unable to find jobs due to lack of skills, the physically disabled, including the elderly. Available evidence in Kenya and elsewhere shows that earnings in the informal sector are typically low and not enough to push people out of poverty. There is thus a possibility that some of the people working in the sector may actually be poor. This group is sometimes referred to as the working poor. Also, most of the firms in the sector are small, employing in most cases only one person, and the survival rate of these firms is low. This means that they may not provide sustainable sources of income to their owners.

2.2.3 Poverty and Food Security
The following definition of food security is widely used: Year-round access to the amount and variety of safe foods required by all household members in order to lead active and healthy lives, without undue risk of losing such access. No country anywhere in the world is food secure on this definition. It represents therefore an ideal. To make the definition operational, four dimensions will be considered:

1. Food availability: The availability of sufficient quantities of food of appropriate qualities, supplied through domestic production or imports (including food aid). This is often confused with food security but should properly be seen as only a part, albeit an important part of food security. The question is not only whether food is available in a country but whether it is available in the right place at the right time and there must be a mechanism for ensuring that food of the right quality is made available.

2. Food access: Access by individuals to adequate resources (entitlements) to acquire appropriate foods for a nutritious diet. These resources need not be exclusively monetary but may also include traditional rights e.g. to a share of common resources. Entitlements are defined as the set of all those commodity bundles over which a person can establish command given the legal, political, economic and social arrangements of the community in which he or she lives.

3. Food utilization: Utilization of food through adequate diet, clean water, sanitation, and health care. This brings out the importance of non-food inputs in food security. It is not enough that someone is getting what appears to be an adequate quantity of food if that person is unable to make use of the food because he or she is always falling sick.

4. Stability of access: Are individuals at high risk of losing their access to food? An example of this situation would be a landless agricultural labourer who was almost wholly dependent on agricultural wages in
a region of erratic rainfall. Such a person is at high risk of not being able to find work in a situation of general crop failure and thus going hungry, i.e. is vulnerable. The first point to note is that all four dimensions have to be present before it can truly be said that an individual is food secure. The second critical point is that food security is defined at the level of the individual even though it is brought about by a combination of individual, household, community and national and even international factors. The third point is that the mere presence of food does not entitle a person to consume it. The quantity of food required must lie within that person’s entitlement set. It has to be kept in mind that we are all members simultaneously of different groups, ranging from the immediate family to wider associations, bound to them by ties of varying strength. This implies that food security status also depends on the extent to which a person can draw upon resources from the different groups to which he or she belongs and this is part of an entitlement set.

There was a tendency to underplay the importance of the fourth dimension, stability of access, in the past. It is, however, crucial, because it is required for understanding the concept of vulnerability. A person can be vulnerable to hunger even if he or she is not actually hungry at a given point in time. In general, the ability to call upon resources in emergencies reduces vulnerability. Being able to call upon relations or friends when needed or having a line of credit or possessing sufficient assets which can be sold in emergencies, are all examples of resources. This insight can be used to construct profiles of demographic groups which are vulnerable to the risk of food insecurity by inquiring about the variety of assets controlled by households in that group, the mediating factors that affect households, such as group memberships, laws, local customs etc., the external environment, such as demographic trends and the probability of shocks to income or health.

2.3 Theoretical Literature Review
2.3.1 Model Estimation of Poverty

It is assumed that the probability of being in a particular poverty category is determined by an underlying response variable that captures the true economic status of an individual. In the case of a binary poverty status (i.e. being poor or non-poor), let the underlying response variable \( y^* \) be defined by the regression relationship:

\[
y^*_i = X_i \beta + \mu_i \tag{1}
\]

Where

\[
\beta = [\beta_1, \beta_2, \ldots, \beta_k]
\]

And \( X_i = [X_{i1}, X_{i2}, \ldots, X_{ik}] \)

In equation (1), \( y^* \) is not observable, as it is a latent variable. What is observable is an event represented by a dummy variable \( y \) defined by:

\[
y = 1 \text{ if } y^*>0, \text{ and } y = 0 \text{ otherwise}
\]

The following equation can be obtained from (1) and (2)

\[
prob(y_i = 1) = prob \left( u_i > -\sum X_i \beta \right)
= 1 - F \left( -\sum X_i \beta \right) \tag{3}
\]

Where \( F \) is the cumulative distribution function for \( u_i \), and

\[
Prob(y_i = 0 | \beta X_i) = F \left( \sum X_i \beta \right)
\]

The observed values of \( y \) are the realization of the binomial with probabilities given by equation (3), which varies with \( X_i \). Thus, the likelihood function can be given by:

\[
L = \prod_{y_i \in Y} \left[ F \left( \sum X_i \beta \right) \right] \prod_{y_i \in 0} \left[ 1 - F \left( \sum X_i \beta \right) \right] \tag{4a}
\]

Re-written as:

\[
L = \prod_{y_i \in Y} \left[ F \left( \sum X_i \beta \right) \right] \prod_{y_i \in 0} \left[ 1 - F \left( \sum X_i \beta \right) \right] \tag{4b}
\]

The functional form imposed on \( F \) in equation (4) depends on the assumptions made about \( u_i \) in equation (1). The cumulative normal and logistic distributions are very close to each other. Thus, using one or the other will basically lead to the same result (Maddala, 1983). Moreover, following Amemiya (1981), it is possible to derive the would-be estimates of a probit model once we have parameters derived from the logit model. Thus, the logit model is used in this study. The logit model for this study has been specified by assuming a logistic cumulative distribution of \( u_i \) in \( F \) (in equations (4a) and (4b)). The relevant logistic expressions are:

\[
1 - F \left( \sum X_i \beta \right) = \frac{e^{\sum X_i \beta}}{1 + e^{\sum X_i \beta}} \tag{5a}
\]

\[
F \left( \sum X_i \beta \right) = \frac{1}{1 + e^{\sum X_i \beta}} \tag{5b}
\]
As before, $X_i$ are the characteristics of the households/individuals, and $\beta$, the coefficients for the respective variables in the logit regression. Having estimated equation (4) with maximum likelihood (ML) technique, equation (5a) basically gives us the probability of being poor (Prob $y_i=1$) and equations (5b) the probability of being non-poor (Prob $y_i=0$). After modeling the process that generates the poor or non-poor status, we focus attention on the hard-core poor versus the moderately poor and non-poor.

This can be handled by a polychotomous model, more in particular an ordered probit or logit model. This approach is justifiable, because we explicitly make the ordering of the population sub-samples, using total and food poverty lines as cut-off points in a cumulative distribution of expenditure. Since these categories have a natural order, the ordered logit is the appropriate model to be employed in the estimation of relevant probabilities (see Maddala, 1983, Amemiya, 1985, Greene 1993).

Assuming three categories (1, 2 and 3 and associated probabilities P1, P2 and P3), an individual would fall in category 3 if $u < \beta \cdot x$, in category 2 if $\beta \cdot x < u \leq \beta \cdot x + \alpha$, and in category 1 if $u > \beta \cdot x + \alpha$, where $\alpha > 0$ and $u$ is the error term in the underlining response model (see Equation 1). These relationships may be given by:

$$P_3 = F\left(\alpha \cdot X_i\right)$$

$$P_2 = F\left(\alpha \cdot X_i + \alpha\right) - F\left(\alpha \cdot X_i\right)$$

$$P_1 = 1 - F\left(\alpha \cdot X_i + \alpha\right)$$

Where the distribution $F$ is logistic in the ordered logit model. This can easily be generalized for $m$ categories (see Maddala, 1983). Assuming the underlying response model is given by:

$$y_i = \alpha \cdot X_i + u_i$$

We can define a set of ordinal variables as:

$Z_{ij} = 1$ if $y_i$ falls in the $j^{th}$ category

$Z_{ij} = 0$ otherwise

$i=1,2,\ldots,n; j=1,2,\ldots,m$

$Pr ob(Z_{ij} = 1) = \Phi(\alpha_j - \beta \cdot X_{ij}) - \Phi(\alpha_{j-1} - \beta \cdot X_{ij})$  

Where $\Phi$ is the cumulative logistic distribution and the $\alpha_j$’s are the equivalents of the $\alpha$’s in equation (6).

The likelihood and log-likelihood functions for the model can be given by equations (9) and (10) respectively, as:

$$L = \prod_{i=1}^{n} \prod_{j=1}^{m} \left[ \Phi(\alpha_j - \beta \cdot X_{ij}) - \Phi(\alpha_{j-1} - \beta \cdot X_{ij}) \right]^{z_{ij}}$$

$$L' = \sum_{i=1}^{n} \sum_{j=1}^{m} z_{ij} \Phi'(\alpha_j - \beta \cdot X_{ij}) - \Phi'(\alpha_{j-1} - \beta \cdot X_{ij})$$

Equation (10) can be maximized in the usual way, and can be solved iteratively by numerical methods, to yield maximum likelihood estimates of the model (see Maddala, 1983).

3.0 Discussions, Summary and Conclusions

First, the literature of socioeconomic profiles reveals that male headed households are less likely to be poor. Similarly, the likelihood of being poor is smaller in urban areas than in rural areas. Probably to some extent related to this, people living in households mainly engaged in agricultural activities are more likely to be poor compared to households engaged in manufacturing activities. In all reviewed poverty models the most important determinant of poverty status is the level of education. The effects of this variable are similar across the four models. The coefficient for household size is almost twice as high in the consumption based as income based models, while the impacts of the sector of employment, as well as the number of animals owned is insignificant in the consumption-based models. Total holding of land does not seem to be important in any of the specifications. An explanation for this may lie on the importance of the quality of land and/or lack of complementary agricultural inputs. Table 3 shows the estimated model and the marginal effects of each explanatory variable on the probability of being poor, based on models in which per adult equivalent consumption is used to estimate poverty. Those employed in the agricultural sector accounts for a good part of the probability of being poor. Thus, investing in the agricultural sector to reduce poverty should be a matter of great priority. Moreover, the finding that the size of land holding is not a determinant of poverty status may suggest the importance in poverty reduction not only of improving the quality of land, but also of providing complementary inputs that may enhance productivity. The educational attainment of the head of the household (in particular high school and university education) is found to be the most important factor that is associated with poverty. Lack of education is a factor that accounts for a higher probability of being poor. Thus, promotion of education is central in
addressing problems of moderate and extreme poverty. Specifically, primary education is found to be of paramount importance in reducing extreme poverty in, particularly, rural areas. Generally, the literature review on socioeconomic determinants of poverty helps in the identification of the methodology to be used during the current study besides understanding the findings of previous poverty studies that have been done over time. Similarly, it reveals that the discrete model approach is a more popular approach in poverty studies. The approach has a number of positive features in comparison to the expenditure approach in studying poverty. For instance, the discrete model approach gives probabilistic estimates unlike the expenditure approach. The review also helps us to learn that the methodology applied is important in affecting results of the study. The review, therefore, has helped us to identify the key explanatory variables to include in the current study. The review identified that there have been few studies done at county level in Kenya because most of the previous studies focused on poverty at national level and the current study will seek to bridge this gap. The study will also contribute to poverty literature in Kenya by identifying the unique challenges faced by regions like Homabay which have agriculture and other economic potential but have remained poor over the years. The study also includes remittances as an explanatory variable, which other previous studies did not focus on. Secondly, in the literature on labour and poverty, it was identified that both unemployment and informal sector employment are considered to be important links between poverty and labour markets. The unemployed clearly have no opportunity to earn income and are almost certainly poor. This group of persons included those who are unable to find jobs due to lack of skills, the physically disabled, including the elderly. It will help in identification the key explanatory variables to include in the current study. Thirdly, in the literatures of poverty and food security, it was noticed that a person can be vulnerable to hunger even if he or she is not actually hungry at a given point in time. In general, the ability to call upon resources in emergencies reduces vulnerability. Being able to call upon relations or friends when needed or having a line of credit or possessing sufficient assets which can be sold in emergencies, are all examples of resources. This insight can be used to construct profiles of demographic groups which are vulnerable to the risk of food insecurity by inquiring about the variety of assets controlled by households in that group, the mediating factors that affect households, such as group memberships, laws, local customs etc., the external environment, such as demographic trends and the probability of shocks to income or health. Lastly, investment in health is also increasingly recognized as an important – and previously underestimated – means of economic development as shown in the forgone literature. As the Commission on Macroeconomics and Health (CMH) of the World Health Organization has shown, substantially improved health outcomes are a prerequisite if developing countries are to break out of the circle of poverty. Good health contributes to development through a number of pathways, which partly overlap but in each case add to the total impact: 

- **Higher labour productivity.** Healthier workers are more productive, earn higher wages, and miss fewer days of work than those who are ill. This increases output, reduces turnover in the workforce, and increases enterprise profitability and agricultural production.

- **Higher rates of domestic and foreign investment.** Increased labour productivity in turn creates incentives for investment. In addition, controlling endemic and epidemic diseases, such as HIV/AIDS, is likely to encourage foreign investment, both by increasing growth opportunities for them and by reducing health risks for their personnel.

- **Improved human capital.** Healthy children have better cognitive potential. As health improves, rates of absenteeism and early school drop-outs fall, and children learn better, leading to growth in the human capital base.

- **Higher rates of national savings.** Healthy people have more resources to devote to savings, and people who live longer save for retirement. These savings in turn provide funds for capital investment.

- **Demographic changes.** Improvements in both health and education contribute to lower rates of fertility and mortality. After a delay, fertility falls faster than mortality, slowing population growth and reducing the “dependency ratio” (the ratio of active workers to dependants). This “demographic dividend” has been shown to be an important source of growth in per capita income for low-income countries. In addition to their beneficial macro-economic impact, *health improvements have intergenerational spill-over effects* that are clearly shown in micro-economic activities, not least in the household itself. The “demographic dividend” is particularly important for the poor as they tend to have more children, and less to “invest” in the education and health of each child.
With the spread of better health care and education, family size declines.

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