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DEPARTMENT OF ECONOMICS

Working Paper

Land, Poverty and Human Development in Kenya

By

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Land, Poverty and Human Development: The determinants of the poverty status of Rural Kenyan Households.

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Abstract.

The question of poverty has become central to the work of development economists in the last decade and a half. The 2000 World Development Report was entitled *Attacking Poverty* and the UN held a series of World Conferences in the 1990s, all of which addressed in some form or fashion the problem of poverty. Despite this and because of limited data there has been relatively little empirical work at the household level on determinants of poverty in Africa generally and Kenya specifically. In the few econometric studies that have been done for Kenya land has not been a significant determinant of poverty. This is a surprising result for a country where 80 per cent of the population depends on agriculture. Further the little that has been done has not incorporated the role of human development in the determination of poverty. Via an examination of a nationwide sample this paper will examine the role that land and social capital play in determining households poverty status in rural Kenya in addition to the standard theorized determinants.

Keywords: Poverty, Rural, Land, Kenya, Africa, Human Development

JEL Codes: O150, Q150

Introduction

This paper is motivated by four main factors. The first is the fact that over the last fifteen years poverty has come to the centre of the development agenda. The primary priority of many governments in less industrialized countries and the international development community has become the eradication of poverty. The second is that given this preoccupation with poverty there have been relatively few analytical studies in African broadly and in Kenya specifically that examine this question. Thirdly of the analytical studies in Kenya that have been done recently, land as variable has shown up as not significant, a claim that is hard to accept given the overwhelming dependence of the population on agriculture as a livelihood. Lastly recent theoretical and empirical work in development has pointed out the importance of social capital and time allocation. There importance empirically in determining poverty in Kenya has not been explored. This paper would be an opportunity to add to these components of the literature.

Past Studies

There have been few studies of poverty or inequality in the Kenya context or in Africa for that matter. The studies that have occurred so far (Jain 1969, IL0 1972, Anker and Knowles 1983, Bigsten 1981, Hazelwood 1981, Vandelmootle 1983, Jamal 1982, Jamal and Weeks 1983, Crawford and Thorbecke 1978, Gĩthĩnji 2000) have mostly been descriptive in nature and have not focussed on analytically determining the causes of poverty. More recently there have been a series of studies (Geda *et al*/2001, Mwabu et al 2000, Oyugi 2000, and Greer and Thorbecke 1986) that have attempted to model the determinants of poverty in Kenya. Using a variety of methods these authors have come to fairly similar conclusions about the determinants of poverty. The important variables in determining household poverty according to these authors include literacy or level of education, sector of economic activity, source of water, availability of off-farm employment, household size, the province of residence, and the sex of the head of the household. Given these findings, the recommendations for policy to eradicate poverty has revolved around the importance of education particularly that of female members of the household because of the interaction between female

education and the size of the household. These studies have not however isolated the direct effect of the education of women on poverty. What is most surprising in these findings is the fact that the size of land holding apparently plays little or no role in the poverty status of the household. This claim fits in neatly with the official Government reports of Poverty and the forthcoming National Human Development Report on Poverty, which using descriptive statistics, suggest that land is not an important determinant of poverty by comparing the total land holdings between the poor and non-poor and showing that there is very little difference. In fact in the case of two provinces namely Nyanza and Eastern the poor hold more land than the non-poor in total terms. In a country such as Kenya where close to 80 per cent of the population is dependent on agriculture this finding to put it mildly is surprising. In the case of the Geda *et al* study and the National Human Development Report a qualifier is made that it is possible that land is significant if quality of the land could be taken into account.

Enhancing the Basic Model

The finding on land, plus the fact that poverty is a complex phenomena that is influenced by a number of factors beyond what has been specified in the hitherto existing models is a major impetus for this particular study.

This study is based on the 1988 Rural Labor Force Survey. The sample frame for the survey is the National Sample Survey Frame, which covers 95 per cent of the population and 46 per cent of the landmass. Not included are the sparsely populated northern districts of the country. The sample contains over 44,000 individuals, which is approximately 8000 households, and is representative at the district level. (Kenya Government 1980, 1988). After correcting for missing variables we are left with a total of 7774 households.

The Kenyan countryside is one that is dominated by agricultural production. Close to 90 per cent of the households report agriculture as their main source of income, with the trading and service sectors being a distant second and third (Gĩthĩnji, 2000). Much of the agricultural production takes place on family farms which are categorized into three groups. The first two are subsistence and mixed farms that together make up close to 95 per cent of all farms. Subsistence farms are those where all production is produced for own consumption, while on the mixed farms output is split up approximately evenly between marketed output and output for own consumption. The third group is composed of cash crop farms. While relatively few in number these farms account for most of the employment of agricultural wage labor and marketed output. These farms tend to produce mostly non-food cash crops such as coffee, tea, pyrethrum and more recently cut flowers. Beyond the agricultural farm sector there is a cooperative sector that engages in basic processing and marketing of agricultural products. Small scale, often individual artisanal production, repair shops and trading stores make up the balance of production in the private sector, with government services providing much of the remaining employment.

Kenya is a country that despite having received favorable press initially, as a development model, that has been racked by glaring inequalities and poverty. This poverty has remained overwhelming by rural, although in very recent years urban poverty has been growing as fast as rural poverty if not faster. In the table below we present the series of FGT measures for rural Kenya in 1988 based on the Rural Labor Force Survey. The poverty line used is Kshs 2337 or US($) 127 per capita based on the prevailing exchange rate in 1988. This poverty line is based on the official Government poverty line of 1992, which has been deflated by the rate of inflation between 1992 and 1988. By our measure on average 60 per cent of rural Kenya is poor this coincides with the estimates by Geda *et al* for 1992.

Poverty Measures by Province and Nation for Rural Kenya

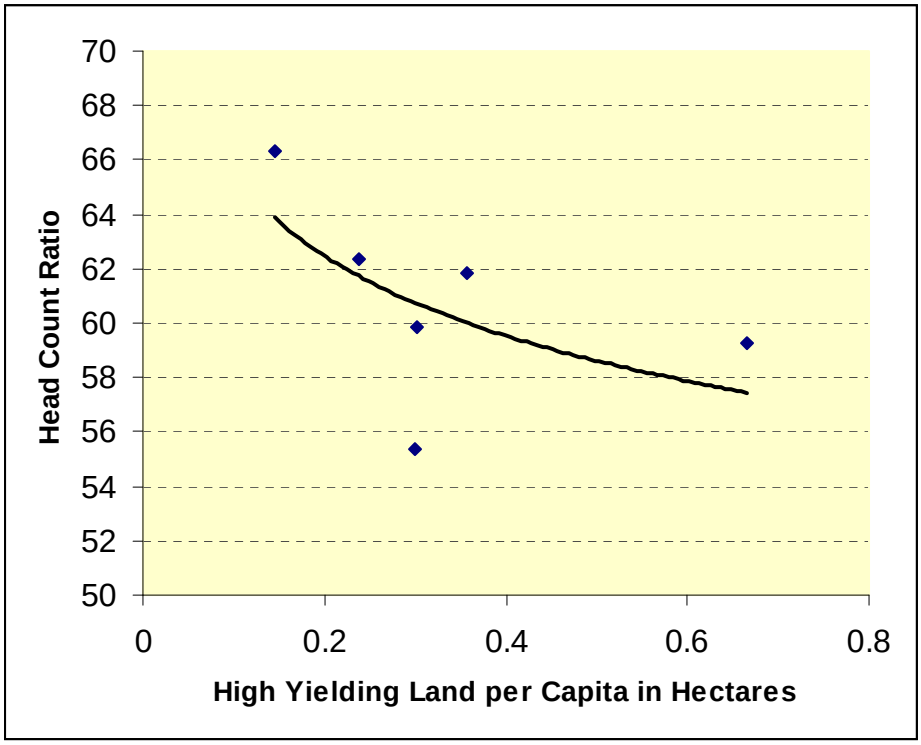
	% of Total Population	Head Count	Poverty Gap	Foster-Greer Thorbecke
Kenya	100.00	60.64	0.57	0.40
Central	17.75	55.34	0.55	0.37
Coast	5.89	62.33	0.55	0.38
Eastern	13.94	66.33	0.61	0.43
Nyanza	20.24	61.82	0.55	0.38
Rift Valley	23.80	59.24	0.56	0.38
Western	18.38	59.86	0.62	0.46

In terms of percentage of poor individuals Eastern Province has the largest proportion of its population classified as poor followed by the Coast. This is not surprising given the relatively poor agricultural conditions that prevail in these two provinces. Most of Eastern province with the exception of a few highland areas is considered arid to semi arid. Rain fed agriculture is thus a marginal livelihood. While the coast has a thin fertile coastal strip with a number of important tourist centres, vast semi arid areas dominate the rural part of the province.

Along with the third poorest province Nyanza, and the non-enumerated Northeastern Province, these provinces are also victims of government neglect in infrastructure and support for agricultural activities. For a variety of reasons these areas have been neglected by the colonial administration and the two post colonial Kenya regimes. Both the colonial administration and the successive Kenyan governments focussed resources in areas they considered to have high agricultural potential (see figure below). This set of a vicious cycle where the most fertile areas received more

government support and thus became even more successful and were thus able to influence the government for further support.

Province Head Count Ratio by High Yielding Land per Capita in Rural Kenya



In the case of Nyanza and North Eastern provinces there have also been overtly political reasons for their poverty. In the case of the Nyanza, the area has been marginalised politically since the radical position taken the Kenya Peoples Union which was led by politicians from the area in the 1960s. More recently this province has been the hardest hit by the HIV/AIDS pandemic and by more recent estimates is now the second poorest province. North Eastern province on the other hand has never been truly integrated into Kenya, partially due to its remoteness and barren landscape but also partially due to the inability of Kenyan politicians to accept the Somali population that dominates this area as Kenyan. What is surprising is that despite the differences in the share of government

resources going to these areas. The difference in amount of poverty between provinces is relatively small and in many cases may not be statistically significant. The remaining three provinces have a majority of the country's high potential land. Central and Rift Valley Provinces have also benefited from the "beneficence" of the two first presidents of the republic who have hailed from these areas.

While Eastern province performs the poorest by all measures, the position of Coast and Nyanza change with regards to the Poverty gap and the FGT2 index. In terms of the poverty gap i.e. the average distance of individuals from the poverty line, Coast and Nyanza perform as well as Central the best performing province and do not do much worse in terms of the FGT2 index, which measures the severity of poverty. The different endowments, political economy and different kinds of poverty in the provinces suggest some difference in the mechanisms that generate poverty. This is a question we shall revisit later in this essay.

In order to capture the complex nature of poverty our Logit model is comprised of a substantial increase in number of independent variables in comparison to the previous studies. Geda *et al* (2001), which is the latest study for example restricts its variables to Human capital variables for head of household, employment sector of head of household, size of holding, Area and province of residence, livestock holdings, household size, and marital status.

These variable we would argue are a bare minimum in terms of understanding poverty. Poverty is not related only to the skills of the head of household, but also to the skills of other members of the household, especially the spouse, the opportunities available to them, the support via formal or informal networks, and both the quantity and the quality of their capital particularly land in the case of rural Kenya. Our model is composed of seven groups of variables, namely general household variables, head of household human capital variables, type of household, spouse's human

capital variables, social capital variables, infrastructural variables, Land quality variables and area of residence variables (See Table of variables in Appendix).

Our major innovations compared to previous models are as follows: For land we use both the size and land per capita, as both of these have an effect on the income earned. Land size captures possible returns to scale regardless of per capita endowment. We also correct for land quality using two variables. Based on rainfall land in Kenya is divided into three categories; High, Medium, and low potential. We include two new variables calculated at the district level. The first is GLPC- good land per capita, which is a measure of the endowment of high potential land in a district in per capita terms. Because this is not a measure of actual households land, we also need to correct for the potential of a household having access to high potential land. We do this via GLTL- Good land as a ratio of total land in the district of residence. Other differences in terms of the household are three dummy variables: CASH, MIXED and SUBSISTENCE, which represent the kind of farming that the household participates. Cash Crop households are a small proportion of total farms representing approximately 2% of all rural households. These are households that use their farms almost exclusively for the production of cash crops such as tea, coffee, pyrethrum, etc. Mixed farming households are those that use their land in almost equal proportions for cash crop farming and farming for own consumption. This group makes up approximately 43 per cent of the rural households. The largest group being the subsistence group that represent approximately 49 per cent of rural household. The remaining households are not classified or classified as landless.

As a measure of the proportion of the household that is productive we have also included the child to adult ratio. In studies elsewhere, this variable has been shown to be an important indicator of the probability of a household being poor. Where the child to adult ratio is high you expect poverty to be more likely as in most instances children are net consumers and also make it more difficult for the adults to engage in productive activities.

In the group of variables for type of household we have also included a category of separated in addition to the standard married. We expect that households in this status would be more likely to be poor as on separation they loose the returns to scale that come with marriage and their marriage specific capital is no longer productive.

Unlike previous studies of poverty in Kenya, we have included all the human capital variables for the spouse in addition to those of the head of household.

Our final innovation is the inclusion of a set of variables to capture social capital. Increasingly the development literature is recognizing once again that social networks and institutions are important components of an individual's opportunities. In rural Kenya this is particularly so because of the important role that communities have played in providing safety nets (for example cattle loaning among the pastoralists) and more recently in constructing physical infrastructure such as schools or water supplies through the Harambee Self Help movement. We hypothesize that both a household connectedness to the local social capital and the availability of social capital would be important in determining the poverty status of a household.

In our model we use six measures. Four are district averages and proxies for the availability of social capital while the remaining two are household measures that attempt to measure the household's connectedness to the existing networks. The first of the district averages is MIGAVG, which measures the percentage of residents who are recent migrants. On average our 34 districts have an average of 18 per cent of the residents being migrants, with a range between 7 to 45 per cent. We expect that communities with a higher proportion of recent migrants should be more fractured and therefore have less social capital. The second of the averages is the literacy rate for all

individuals over fifteen years of age (LITAVG). We expect that social capital is an increasing function of the human capital of the population. Our average literacy rate for districts is 52 per cent and the range runs from 28 to 68 per cent. Our third district average (AVSOCIAL) that is a proxy for social capital, is average time in hours per week spent by each household on communal activities. This is a measure of time spent on building social capital and we expect social capital to be positively related to this variable. The amount of time varies in our sample from next to zero hours to approximately six hours per household per week. The average time for each household is approximately 1.8 hours per week. The last variable of the four variables is RELAVG which measures the number of households that have individuals who are non nuclear family members living in the household. This is a proxy for how willing households in a community are, to support individuals beyond their immediate family. We expect where this is higher that networks that extend beyond the immediate nuclear family will be stronger. On average across districts 10 per cent of the households have a non nuclear family member in the household, with the range running from 4.13 per cent to twenty seven per cent.

To measure each households connectedness to the social capital we use two variables. TIMEHERE is a measure of how long the head of household has lived in the district and should be positively related to social capital, and SOCIAL, which is a measure of the time that the household spends on social activities. We expect that increases in social capital or connectedness to it should lead to decreased probabilities of a household being poor. Our last innovative measure combines infrastructure and the natural endowments of a district. We use the average time spent in a district to collect water (AVWATER) as a proxy for the above two conditions. We also use the individual time that a household takes to collect water as a proxy for the household's access to infrastructure or natural endowments.

Results

Variable Class		Parameter	Estimate	Standard Error	Chi-Square	Pr > ChiSq	Marginal Effects
		Intercept	1.924	0.621	9.599	0.002	
Household	x1	Size_hol	0.003	0.003	1.778	0.182	0.0008
	x3		-0.394	0.195	4.093	0.043	-0.0923
		Cash					
	x4	Mixed	-0.400	0.057	49.711	<.0001	-0.0938
	x5	Winratio	-0.548	0.070	61.680	<.0001	-0.1286
	x6	Tot_h_ho	0.065	0.011	32.573	<.0001	0.0153
	x7	Caratio	0.455	0.035	169.579	<.0001	0.1067
	x71	Landpc	-0.052	0.015	12.265	0.001	-0.0122
Head of Household	x8	Ageh	-0.061	0.013	21.279	<.0001	-0.0143
	x9	Ageh2	0.001	0.000	18.232	<.0001	0.0001
	x11	Lith	-0.312	0.086	13.085	0.000	-0.0731
	x12	Cpe	-0.042	0.098	0.184	0.668	-0.0098
	x13	Jse	-0.437	0.196	4.975	0.026	-0.1026
	x14	Olevel	-0.762	0.158	23.423	<.0001	-0.1788
	x15	Tert_ed	-0.633	0.186	11.653	0.001	-0.1485
Type of Household	x10		0.460	0.097	22.333	<.0001	0.1079
		Femhead					
	x19	Married	0.159	0.167	0.908	0.341	0.0372
	x20	Seperate	0.344	0.175	3.839	0.050	0.0806
	x21	Agric	0.962	0.068	199.110	<.0001	0.2255
Spouse	x22	Ages	0.029	0.006	21.316	<.0001	0.0068
	x23	Ages2	0.000	0.000	14.473	0.000	-0.0001
	x24	Lits	-0.274	0.100	7.466	0.006	-0.0642
	x25	Cpe_s	-0.223	0.121	3.397	0.065	-0.0522
	x26	Jse_s	-0.939	0.302	9.678	0.002	-0.2202
	x27	Olevel_s	-1.191	0.282	17.908	<.0001	-0.2794
	x28	Tert_ed_s	-0.683	0.429	2.527	0.112	-0.1601
Social Capital	x31		-0.008	0.004	3.659	0.056	-0.0019
		Migavg					
	x32	Litavg	-0.012	0.006	3.717	0.054	-0.0029
	x33	Relavg	0.002	0.009	0.035	0.852	0.0004
	x34	Avsocial	0.060	0.036	2.745	0.098	0.0141
	x35	Social	-0.001	0.002	0.530	0.467	-0.0003
	x36	Timehere	0.002	0.002	0.901	0.343	0.0004
Infrastructure	x39	Water	-0.001	0.002	0.093	0.761	-0.0001
Infrastructure	x40	Avgwater	-0.196	0.069	8.084	0.005	-0.0460
Province	x72	Central	-0.354	0.159	4.961	0.026	-0.0830
	x73	Coast	-0.217	0.163	1.775	0.183	-0.0509
	x74	Western	-0.225	0.164	1.888	0.170	-0.0527
	x75	Nyanza	-0.194	0.159	1.484	0.223	-0.0454
	x76	Rift	0.280	0.142	3.872	0.049	0.0657
Land Quality	x78	Glpc	-1.064	0.117	82.915	<.0001	-0.2496
	x79	Gltl	0.306	0.161	3.621	0.057	0.0717

Key

Red – *Significant at 1%*
Blue – Significant at 5%
Green – Significant at 10%

Pseudo R^2= 0.20
Ratio of Predicted to Actual 76%
Number of Observations =7774

Results

Our model performs well with most of the independent variables showing up as significant. Of those variables that are significant, the most important are the education level, especially for the spouse. Working in the agricultural sector and the general quality of land in the district show up as significant. Only two of the provinces show up as significant with the probability of being poor being poor reduced by 8 per cent if you live in Central Province and increased by 6.5 per cent if you live in Rift Valley Province compared to Eastern province which has been omitted. This suggests that what has been captured in other models as regionally specific characteristics are more adequately captured in our model by the district level variables. In addition, access to markets as measured by form of farming, i.e. mixed or cash crop or by wage to income ratio also reduce the probability of being poor by about 9 per cent and 12 per cent respectively. Living in a female-headed household also increases the probability of being poor by about 10 per cent. While the total number of people in the household is significant, as important is the child to adult ratio.

While some of our social capital ratios show up as significant, they seem to have little impact. The direction of the effect for MIGAVG and AVSOCIAL is also surprising. We had expected that an increase in social time would reduce poverty whereas our results indicate the opposite. A probable explanation is that in poor communities people are spending more time in community projects, or that the opportunity cost of the time is lower, hence, more time is spent on social networks. A real measure of the density of social networks would be a better variable. MIGAVG tends to decrease the probability of poverty as opposed to our prediction, which suggested an increase in poverty. While it is reasonable to expect that communities with a large percentage of new migrants may have a lower degree of social capital[1] it is also true that people migrate to areas where there are more

[1] The exception being when new migrants may come from a single community and effectively transfer social networks. It may also be the case that the amount of migrants is high in areas where you have

opportunities. This latter effect seems to outweigh the former. The average literacy level has a weak negative effect on poverty.

Policy Implications

From our results we cannot make definitive statements about the comparative importance of different policies, as that would require a Benefit Cost analysis of the actual policies. We can however point out what policies would have some impact on reducing poverty.

The five main areas of policy would be, Education, Gender equality, land reform, access to water, and access to markets.

Education: Not only does an increase in education lower the probability of being poor directly , but it is now well established that increases in education particularly of women reduces household size, and children to adult ratios. What is more interesting from our perspective is that the probabilities of a household being poor are decreased by a bigger margin by increases in female education (see table below) at all levels except basic literacy- which is defined as 1-4 years of education in our study. It follows in this case that there should be an increased impetus in supporting the education of women. An interesting aspect of findings is that primary education over 4 years for men has no impact on the probability of being poor.

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government or Shirikisho (cooperative) settlement schemes. These schemes which are formally organised may have the advantage of formally created institutions which leads to a higher quantity of social capital in comparison to older settled areas.

Comparison of Marginal Effects of Women's and Men's Education in Rural Kenya

	Head Of Household	Spouse	Ratio
Literacy	-0.0731	-0.0642	0.89
CPE	-0.0098	-0.0522	5.30
JSE	-0.1026	-0.2202	2.15
O Levels	-0.1788	-0.2794	1.56
Tert_ed	-0.1485	-0.1601	1.08

Head of Household parameter for CPE not significant.
Parameter for Spouse not significant

Access to markets: Where wages are higher proportion of income the probability of being poor is decreased. From this it follows that the provision of wage employment in areas with poverty would have an effect on poverty. Other studies in different parts of Africa have shown that wages are often used to improve physical capital or education thus improving a household's opportunities. Wage earnings also tend to diversify the earnings of agricultural households making them less susceptible to the capriciousness of nature. In addition to access to wage employment giving subsistence farmers an opportunity to become mixed or cash crop farmers also increases the probability of being non-poor.

Land reform: From our results while land holdings are important, access to good land is even more important. The implication of this is that any attempt to reduce poverty by land redistribution must not only take size into effect but also quality. Where land of good quality is unavailable then supplementary inputs to farming must be part of the reform package to make it successful.

Infrastructure: Access to water is an important predictor of poverty. A reduction of one hour in average time to get water results in a four per cent decrease in the probability of a household being

poor. We suspect that this variable acts as a proxy for other infrastructural variables (as well as natural capital). An attempt should be made to identify which of these variables have the largest impact on poverty.

Gender: While addressing issues of equality in education would go a long way in addressing the feminization of poverty, the fact that female-headed households are poor even after controlling for education and land suggests that there are other processes connected to gender that result in poverty. These may include things such as barriers to credit and extension services, property laws and job discrimination. For example a cursory examination of the number of meetings between extension agents and female-headed households show that on average these households have fewer meetings than their male counterparts (see table below).

Average Number of Meetings with Agricultural Extension Officers

Type of Household	Average Number of Meetings	Average Number of Meetings on Own farm
Female-Headed	0.75	0.35
Male Headed	0.96	0.48
Ratio of Female to Male	0.78	0.72

Further fewer of the meetings take place on the farms of female-headed households (see table above) meaning that extension officers are less able to give farm specific advice to female-headed households as compared to the male headed households. Attempts should be made to further analytically identify these barriers.

These findings suggest that further work needs to be done in the examination of the feminization of poverty. From the basic statistics it is clear all female-headed households are fairly different from male-headed households, and the differences are not simply access to a smaller stock of resources. In order to clarify some of the relationships between poverty and female-headed households, it would be useful to examine the differences among female-headed households specifically.

Future Directions (In lieu of a conclusion)

This work is a first attempt at going beyond the standard explanations of poverty in Kenya. It has established that Gender, Land and Education are the most important components for understanding poverty in rural Kenya. Further refinements of the model should including an attempt at looking at poverty more broadly and accounting for how human development variables affect poverty and also accounting for social capital more completely. The lack of statistical significance of land in other studies is probably related to the fact that poverty-generating processes are different for different parts of the country and specifically for rural and urban areas. Further work should include attempts at modeling regional processes. The relationship between gender and poverty needs to be re-examined. Our present explanations while correct see to be incomplete. A more thorough examination of the relationships among land size and quality, labor availability and gender is necessary.

References

Anker, Richard and Knowles, James (1983) **Population Growth, Employment and Economic-Demographic Interactions in Kenya**, St. Martins Press, New York.

Bigsten, Arne, 1981, "Regional Inequality in Kenya" in Tony Killick. **Papers on the Kenyan Economy: Performance, Problems and Policies.** Nairobi: Heinemann Educational Books Ltd.

Crawford, E.W. and Thorbecke, E. (1978) **Employment, Income Distribution, Poverty Alleviation and Basic Needs in Kenya,** Cornell University Press, Ithaca

Geda, Alemayehu, , N. de Jong, M. Kimenyi and G. Mwabu, (2001) "Determinants of Poverty in Kenya: Household Level Analysis", *KIPPRA Discussion Paper*.

Ginneken, Wouter van and Park, Jong-goo (1984) **Generating Internationally Comparable Income Distribution Estimates**, ILO, Geneva.

Githinji, Mwangi wa (2000) **Ten Millionaires & Ten Million Beggars**, Ashgate Press, Aldershot, England.

Government of Kenya, (1998), First Report on Poverty in Kenya: Incidence and Depth of Poverty, Volume I. Nairobi: Ministry of Finance and Planning.

_____, (1976) **Statistical Abstract,** Government Printers, Nairobi.

_____(1980) The National Sample Survey and Evaluation Programme 1980/84, Ministry of Economic Planning and Development, Nairobi.

_____(1980b) **The National Sample Survey and Evaluation Programme 1980/84 Urban Areas,** Ministry of Economic Planning and Development, Nairobi.

_____(1994), **Historical Economic Data for Kenya: 1972-1992**, Ministry of Planning and National Development, Nairobi.

Greer, J. and E. Thorbecke, 1986a, "A Methodology for Measuring Food Poverty Applied to Kenya", *Journal Development Economics*, Vol. 24, No. 1.

Hazlewood, Arthur, 1981, "Income Distribution and Poverty: An Unfashionable View" in Tony Killick. **Papers on the Kenyan Economy: Performance, Problems and Policies.** Nairobi: Heinemann Educational Books Ltd.

House, William and Tony Killick, 1981, "Inequality and Poverty in Rural Economy and the Influence of Some Aspects of Policy" in Tony Killick. **Papers on the Kenyan Economy: Performance, Problems and Policies.** Nairobi: Heinemann Educational Books Ltd.

International Labor Organization, (1972) **Employment, Incomes and Equality,** ILO, Geneva.

Jain, Shail (1975) **Size Distribution of Income: A Compilation of Data,** World Bank, Washington, D.C.

Jamal, Vali (1982) *Rural-Urban Gap and Income Distribution,* ILO, Addis Ababa.

Jamal, Vali (1982) **Rural-Urban Gap and Income Distribution,** ILO, Addis Ababa.

Jamal, Vali and Weeks, John (1988) "The Vanishing Rural-Urban Gap in sub Saharan Africa", *International Labour Review* ,Vol. 127 No.3. pp: 271-292

Jamal, Vali and Weeks, John (1988) "The Vanishing Rural-Urban Gap in sub Saharan Africa*",* *International Labor Review* ,Vol. 127 No.3.

_____ (1993) **Africa Misunderstood,** Macmillan Press, London.

Mwabu, Germano, Wafula Masai, Rachel Gesami, Jane Kirimi, Godfrey Ndeng'e, Tabitha Kiriti, Francis Munene, Margaret Chemngich and Jane Mariara, (2000) **Poverty in Kenya: Profile and Determinants**, Nairobi: University of Nairobi and Ministry of Finance and Planning.

Oyugi, Lineth Nyaboke,(2000), "The Determinants of Poverty in Kenya" (Unpublished MA Thesis, Department of Economics, University of Nairobi).

Vandermootle, J.(1984) "Kenya" in Ginnenken, Wouter van and Park, Jong-goo (eds.) (1984) *Generating Internationally Comparable Income Distribution Estimates*, ILO, Geneva.

Appendices

Model for Social Capital and Poverty Logistic Regression.

Type of Variable	Variable name	Description
Dependant Variable	***Pov***	Poverty Status. If poor=1
Household	***Size_hol***	Size of Farm (acres)
	Subsist	Nature of farm. If Subsistence =1
	Cash	Nature of farm. If Cash Crop =1
	Mixed	Nature of farm. If both cash and Subsistence =1
	Winratio	Wage to Income ratio
	Tot_h_ho	Total in Household
	Caratio	Child to Adult Ratio
	Landpc	Per Capita Land Holding
Head of Household	***Ageh***	Age of Head of household
	Ageh2	Age of Head of household Squared
	Lith	Literacy of head of household 1=literate
	Cpe	Higest educational certificate received by head if CPE=1
	Jse	Higest educational certificate received by head if JSE=1
	Olevel	Higest educational certificate received by head if OLEVEL=1
	Tert_ed	Higest educational certificate received by head if ALEVEL or above =1
Type of Household	***Femhead***	Female headed household=1
	Single	Marital status If single=1
	Married	Marital status If Married=1
	Seperate	Marital status If seperated, divorced, widowed=1
	Agric	If in Head in Agricultural sector=1
Spousal Variables	***Ages***	Age of spouse
	Ages2	Age of spouse squared
	Lits	Literacy of Spouse 1=literate
	Cpe_s	Higest educational certificate received by SPOUSE if CPE=1
	Jse_s	Higest educational certificate received by SPOUSE if JSE=1
	Olevel_s	Higest educational certificate received by SPOUSE if OLEVEL=1
	Alevel_s	Higest educational certificate received by SPOUSE if ALEVEL or above =1
Social Capital Proxies	***Migavg***	Average % of district residents who have migrated
	Litavg	District Average for Literacy for all over 15
	Relavg	Average % of district households who have non nuclear family living with them.
	Avsocial	District Average for time in social for individuals
	Social	Household Time in hours spent on Social/Communal Activities
	Timehere	Time head of household has spent in district.
	Water	Household Time in hours spent on Water Collection
Infrastructure	***Avgwater***	District Average for time for Water collection for individuals
	Glpc	Good Land per Capita (High Potential Land)
Land Quality Proxies	***Gltl***	Good land as % Total Land in District
Provinces		Central, Eastern, Western, Rift Valley, Coast, Nyanza