The Poverty Demography Trap in Third World Countries: Empirical Evidence from Tanzania

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Abstract

This article aims to empirically verify the existence of a poverty-demography trap by analyzing survey data from two regions in northern Tanzania. First, the macro and microeconomic issues on the relation between GDP and population growth are summarized. Poverty and demographic variables in Africa and in Tanzania are also highlighted. The number of Children Everborne (CEB) and household size in the study area indicate a high rate of population growth. Also, the number on non-nuclear household members was found to be about 23%, indicating the impact of population pressure on household resources. The stated demographic variables were classified with selected poverty indicators. The latter include under- and malnutrition, monetary expenditure, access to land, access to clean water, access to sanitary facilities as well as access to energy. Survey results showed a moderate form of under-nutrition and acute malnutrition as being associated with CEB and household size. Large size households tend to spend less on food compared to smaller sized households. The mean weekly expenditure on food among households with six members is a meagre five dollars. As much as 50% of farming households do not own land. Access to clean water, modern toilet facilities, and electricity were found to be very low, especially among large sized households. Besides, as much as fifty percent of households depend on wood for home energy. Even though there was some variation by a rural-urban divide, by migration status, and by type of employment, the overall results show that the study area is within the demography-poverty trap.

Introduction

Many third world countries, including those in Sub-Sahara Africa, are afflicted with rampant poverty. The reasons for this are many and varied. Some of the reasons that tend to attract the attention of donors, international financial institutions, and aid recipient countries are related to the inability of

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poor countries to open up their economies with painful structural adjustment programmes, poor physical and social infrastructure, and a lack of appropriate incentive schemes for would be investors. Another reason that appears to have contributed to the magnitude and depth of poverty is the high rate of population growth. Even though the relation between population growth and economic development has been the subject of considerable theoretical and empirical investigation, population has been, and continues to be, treated as an exogenous variable and not as a variable that should be addressed by policy interventions. In other words, without appropriate policies to reduce population growth rates it will be difficult to increase the per capita GDP of developing countries and reduce poverty, which would allow countries to reach a higher level of development resulting in a lower rate of population growth contributing to sustained GDP per capita growth rates.

Those who argue in favour of treating population as an endogenous variable state that unless the current high rate of population growth in third world countries is reduced, there will continue to exist high rates of poverty - both in magnitude and depth (Demeney, 2003; Schultz, 1990; Leff, 1969; Coale and Hoover, 1958). They highlight the fact that in almost all developing countries, the poor appear to have large families. This is what is commonly referred to as the "demography-poverty trap"(Humberto, et. al., 2009; World Bank, 2009). Using a 2008 household survey on poverty profiles in Northern Tanzania (The Lake Victoria area), the relation between poverty indicators and demographic variables is explored in this article.

The Relation between Population Growth and Economic Development

Macroeconomic Aspects of Population Growth

The relation between growth and economic wellbeing has been a subject of discussion for centuries. Most of the work on this subject is undertaken both at a macro and micro level. Among those arguing at the macro level, Malthus was the first to hypothesize that uncontrolled fertility, or a high rate of population growth, would lead to lower per capita income and a corresponding consumption below the subsistence level. Besides, higher population growth would lead to deforestation, land degradation, low agricultural productivity, drought, and recurring famine (Kidane, 1989, 1990). Current proponents of this theory (Demeney 1994; Schultz 1990; Leff 1969; Coale and Hoover 1958) who are in the majority are labelled as "population pessimists". They cite the empirical fact that the developed countries of the northern hemisphere have a lower rate of population

growth. The opposite is true for the southern countries of Africa, South Asia, and Latin America, which have a low per capita income but with higher rates of population growth. For example, Bloom and Williamson (1998) consider the effect of demographic transition (where population growth is related with economic development over time). Their study, which is a macro-level analysis, establishes that the recent accelerated per capita GDP growth in East Asian countries was related to a higher percentage of productive population (those aged 15 to 59 years). The implication here is that a higher percentage of productive population in a country is a direct result of increased population growth (a fast growing population is expected to yield a more youthful or dependent population). On the other hand there are a group of "population optimists" (Simon, 1994 and others) who state that a high rate of population growth would accelerate innovation in order to keep up with growing consumption. A higher population growth rate will also lead to economies of scale and efficiency.

The negative relation between population growth and economic development may not be unidirectional. Increased income may also affect demographic variables through increased access to education and health services. As a result of increased income, access to health services may be enhanced and this in turn will lead to a lower infant and child mortality as well as an increase in the expectation of life at birth. Reduced infant/child mortality would lead to lower fertility as families may not opt for increased fertility so as to have the desired number of children. Access to education would lead to an increase in labour force participation rate of men and women. This would lead to reduced fertility and higher quality care for children will be preferred over quantity (Becker and Lewis, 1973; Rosenzweig and Evinson 1976).

Microeconomic Aspects of Population Growth

The preceding arguments are at the macro level and do not appear to directly link demographic variables with poverty. In order to link these two issues one needs to have empirical information at the micro or a household level. In other words one needs to make a comparative study of income and demographic differentials between communities and between various socioeconomic groups. Lack of access to education and basic health services are the main variables that characterize the poor (Hyden, 1980). Besides, empirical evidence strongly suggests that larger families are poor. When basic health services are not easily available, the infant and child mortality level is likely to remain high (Tanzania-DHS, 2005). This idea of relating low

income with demographic variables is commonly referred to as the "demography poverty trap". Also the fact that the poor have little or no assets that can be used for collateral implies that they are unlikely to have access to financial markets as a means of establishing security against old age uncertainties. Instead, poor households depend on their children as a source social security income after retirement. Quantity is preferred over quality as poor but high fertility households may not afford to send all their children to school. In the process of deciding which child or children will go to school they may be gender selective preferring males over females. The rationale here is investing in male off spring is more likely to yield a higher return than investing in daughters. This may be verified by classifying educational enrolment especially at the higher level. Parents prefer to send their sons, not daughters, to school.

As already noted, high infant and child mortality among the poor leads to higher fertility through the "replacement hypothesis". Higher fertility will also lead to a higher dependent ratio which, in turn lowers per capita consumption. Finally the fact that most of the poor in low income countries reside in rural areas where access to basic education, health and other social infrastructure facilities are meagre may lead to "energy poverty trap", a derivative of "demography poverty trap".

Demography and Economic Crisis in Africa

The demography poverty trap figures prominently in almost all African countries. The African development crisis appears to be more pronounced and unique than in other areas of the world. Most African countries gained their independence in the early 1960's. During this decade they registered a relatively high per capita GDP, even though fertility was also on the rise. The per capita GDP was not significantly lower than those of East Asian countries. On the other hand, between 1980 and 2000 many Sub-Sahara African countries registered a negative growth rate. During the same two decades there was a higher rate of population growth; this led to an accelerated ecological distress along with increased debt and debt servicing. All these led to increased magnitude and depth of poverty. A governance crisis, which is common in low income societies, appears to affect many African countries. This in turn retards development. High population led to a low saving rate, which in turn resulted in lower investment. The lower rate of domestic investment could not be offset by a high inflow of private foreign capital. This is due to poor infrastructure, weak human capital as well as the already stated poor governance and rampant corruption. Some analysts

(Humberto and Serven, 2009) have even declared some African countries as being in the demography poverty trap or "too poor to grow".

Several solutions have been forwarded, including increasing agricultural productivity, enhancing rural infrastructure, providing easy access to basic health facilities, improving nutrition as well as expanding family planning services. These solutions are expected to have a direct and indirect impact on demographic variables. Higher investment in rural infrastructure, along with access to family planning services, is associated with mortality and fertility reduction. As this reduction in fertility rate is an outcome of poverty alleviation, the above interventions would help the poor to be the prime beneficiaries of a positive demographic dividend. The effect of this demographic dividend on reducing the high poverty gap is obvious.

Among rural households income and consumption may be directly associated with larger household size. This is due to the argument that children are contributors to household income. However, empirical evidence over time and across countries clearly shows that rampant poverty is associated with increased household size (higher fertility) (Lanjuow and Ravallion, 1995). It is natural that in a rural African setting that agriculture is the major activity and the major employer. On the other hand, the size of arable land per farmer is very small and technology is primitive; as a result marginal productivity of agricultural output with respect to labour input is minimal and possibly negative. Thus, the argument that children contribute to household income is not always true.

Demographic and Economic Scenario in Tanzania

The first attempt to estimate the population of Tanzania was made in 1913 when the country was called Tanganyika and under German rule. However, the estimate was not scientific. The first census was conducted in 1948 and was followed by five periodic censuses in the years 1957, 1967, 1978, 1988 and more recently in 2003. Between 1948 and 1957 the annual population growth rate was only 1.7%. Between 1957 and 1967 population grew by 3.2% and between 1988 and 2002 the growth rate was 2.9%. By 2010 the population is expected to reach 43 million. The population growth is one of the highest in the world. Tanzania's population policy is oriented towards expanding family planning programmes and rural development assistance along with efficient economic redistributions.

Between the time of independence in 1961 and 1967, GDP growth was a healthy 5%. Tanzania was known as the "Granary of East Africa" with agricultural production growing at about 7% per year, which was more than three times the rate of population growth for the same period (Tanzania–URT, 2006). Beginning in 1970 the situation began to be reversed and Tanzania embarked on importing food to meet an ever increasing shortage. A nationwide system of collective agriculture and state regulation known as *Ujamaa* was introduced. Through the 1967 Arusha Declaration, Tanzania was declared as a socialist state and that was soon followed by the creation of an unprecedented system of price controls.

There was a major policy departure in the mid-1980s when IMF-World Bank conditionalities were introduced through Structural Adjustment Programmes (SAPs). The aim was to reintroduce market forces via privatization and opening up the country to private investors. In the mean time large-scale loans and grants followed. The immediate impact of this large scale liberalization programme was increased unemployment and inflation (Tanzania–URT, 2006). However, beginning in the early 1990s the expected impact of the SAPs began to be realized. It is now the policy makers' belief that in Tanzania agriculture is an engine for growth and a means of reducing poverty. The government is committed to reducing poverty by 50% by the year 2015. In order to achieve this objective, per capita GDP needs to grow between 6 to 7 % per year (Tanzania–URT, 2006).

Measures of Demography and Poverty

Demographic indicators are expected to measure the growth and age structure of the population. At a given time, and out of the different demographic indicators, fertility measures would provide reliable estimates of the future rate of population growth. There are several measures of fertility, the most common being the total fertility rate, gross and net reproduction rate, Children Everborn (CEB) as well as household size (Brass and Coale, 1966). They are all interrelated and naturally highly correlated. For this article both CEB and household size are used as demographic measures. The choice is dictated by the availability of data.

There are many indicators of poverty, including the demographic variables mentioned above. In this exercise we will highlight selected direct and indirect measures of poverty. The direct measures will be under-nutrition and malnutrition. The former is expected to measure the quantity of food intake, while the latter is expected to measure the quality of food intake.

Indirect indicators include expenditure on food, other consumption goods, and family assets. Access to land among agriculture households will also be considered as a poverty indicator. Other indirect measures include access to clean water, sanitation facilities, and energy.

Empirical Findings

The following empirical findings are based on a 2008 survey conducted in two Tanzanian regions - Mwanza and Mara. The former has a large urban population while the latter is predominantly agricultural. A sample of 520 households was selected. The sampling method was a multi-stage stratified sampling. The stratifying variables were both region and district. The unit of observation was a household with household heads (mostly males) identified as respondents. The aim of the study was to evaluate the magnitude and depth of poverty. In the process respondents were asked some demographic questions such as age, sex, and number of children and relatives within a household. The study area is predominantly agricultural with fisheries as one of the means of employment. With regards to literacy and provision of basic services within Tanzania, residents of the study area appear to be in a relatively better standing.

Demographic Indicators

CEB and household size were the measures of fertility. Table 1 and Figure 1 show the number of CEB classified by a conventional five year interval of the age of the mother. CEB is expected to be a non-decreasing function of mother's age. The results do not reflect this property. CEB follows the expected pattern up to age 40 and then begins to decline. However, this is characteristic of African demographic data. Mothers in their late reproductive ages forget to include children who have grown up and left the family (Brass, W. and A. Coale, 1966).

Because of the underestimated CEB, this data is supplemented by household size as an indirect measure of fertility. The result is shown in Table 2 and Figure 2. Naturally household size includes husband, wife, children and relatives and is larger than CEB. If household size is significantly greater than CEB by more than two, it implies the existence of relatives and dependents. A higher number of non-nuclear family members within a household is an indicator of a high population in distress. This in turn accelerates the demography poverty trap. I estimated and compared the mean value of a nuclear family (father mother and children) with the mean of

the household size. The former is 5.2 while the latter is 6.4. In other words 23% of household members are relatives.

As noted, the CEB estimate in our sample is under-reported for women 40 years or more. The 2004-5 Demographic and Health Survey for Tanzania showed the CEB as being 5.14. In other words both the CEB and household size indicate a higher rate of population growth in Tanzania. Table 2 shows that more than 63% of the surveyed households have a household size that is greater than six; this is very high.

Table 1
Children Everborn (CEB) - Tanzania Survey 2002-2003

Mother's age	Frequency	CEB
15-19	67	2.96
20-24	79	2.95
25-29	108	3.38
30-34	74	3.46
35-39	68	3.95
40-44	40	2.96
45-	73	3.39
Total	509	

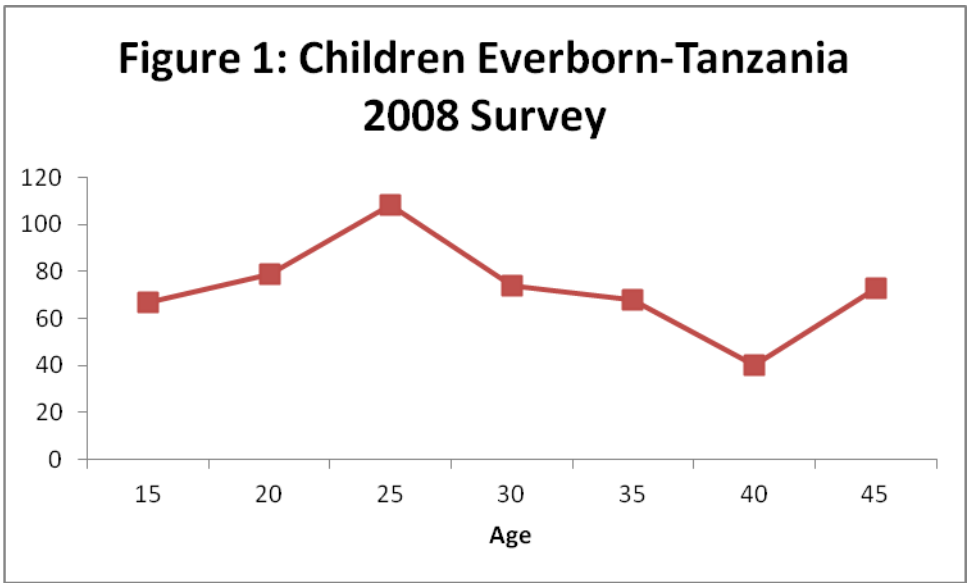
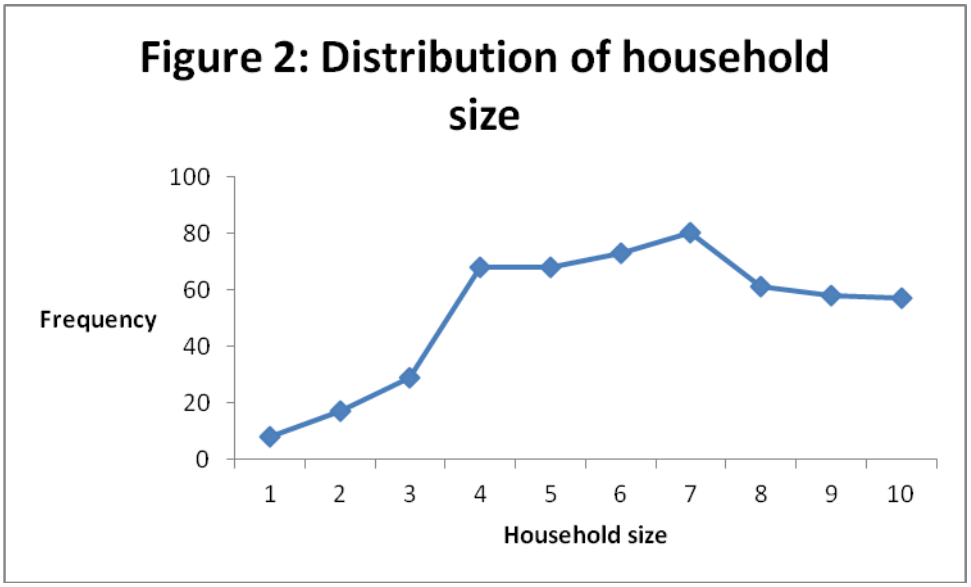


Table 2 Distribution of Household Size		
Size	Frequency	Percent
1	8	1.5
2	17	3.3
3	29	5.6
4	68	13.1
5	68	13.1
6	73	14.1
7	80	15.4
8	61	11.8
9	58	11.3
10	57	11.0
Total	519	100.0



Both the CEB and household size in the study area are expected to vary by region, by migrant status, and by type of employment. The result is given in

Table 3. The study's data came from around Lake Victoria. It was conducted in Mwanza (where a large percent of the residents reside in urban areas) and in Mara - a predominantly rural region. As expected Mara region has high fertility, especially with regards to household size. Also compared to migrants, the locals tend to have high fertility. Families with only a husband and wife are less educated exhibit high fertility. People engaged in agriculture also have a higher fertility compared to the others.

Table 3
Variation in CEB (fertility) and Household Size by Socio-economic Group

Socio economic group		Mean CEB*	Mean household size
Region	Mara	3.3 (2.2)	6.8(2.9)
	Mwanza	3.2(2.2)	6.1(1.8)
Residence status	Non migrant	3.5(2.2)	6.3(2.3)
	Migrant	2.9(2.1)	6.5(2.4)
Activity	Farmers	3.7(2.3)	6.4(2.4)
	Non farmers	2.7(1.9)	6.4(2.2)
Husband' education	No or little education**	3.4 (2.2)	6.3(2.4)
	High education**	2.8(2.1)	8.8(2.1)
Wife education	No or little education**	3.4(2.2)	6.4(2.3)
	High education**	2.4(2.1)	6.4(2.4)

Values in parenthesis are standard deviations

Based on the results in Table 3 an attempt was made to identify the proximate determinants of fertility. A multiple linear regression of CEB on husband's and wife's education, on type of employment, as well as migration status was estimated. The result is provided in Table 4.

Table 4
Determinants of Fertility (CEB)

Explanatory variables	Coefficient	Standard error
Husband's education	0.028	0.19
Mother(wife's) education	0.47*	0.21
Employment*	-1.01*	0.21

Migration Status**	-0.14*	0.21
Constant	4.21*	0.44
$\bar{R}^2$	0.08	
n	453	
F(4,48)***	9.59	
Prob>0***	0.00	

*0=farmer, 1=non farmer
**0=non migrant, 1=migrant
*** These results suggest that the estimate regression has a good explanatory power

Except for husband's education, all the explanatory variables appear to be significant. In other words households engaged in non-agricultural activities, as well as migrant households appear to have low fertility. The reported positive relation between wife's education and fertility appears to be counter intuitive; wife's education is expected to have a depressing effect on fertility if the level of education is sufficiently high. Among the surveyed wives the level of education is not very high. The effect of mother's education on fertility reduction have long been recognized (Rosenzweig and Evinson, 1976).

Poverty Indicators
We have noted that there are different ways of measuring poverty. Those used in this study include:

- Nutritional status
- Monetary expenditure
- Land ownership
- Access to clean water, toilet electricity and other energy

Below we consider each component of poverty and relate it to the already cited demographic growth indicators, that is, CEB and household size.

Nutritional Status
There are also different ways of measuring nutritional status. Some are direct while others are indirect. Based on the information from the 2008 survey, indirect measures of nutrition are proposed. Nutrition status is measured by under-nutrition, which is related to the quantity of food intake, and by malnutrition, which is related to the quality of food. In the 2008 survey

respondents were asked the number of meals they consume per day. A value of less than three implies existence of under-nutrition, while three implies absence of the same. In order to measure malnutrition respondents were asked whether they had meat/pork or fish in their meals. They were asked to identify the number of meals with meat or fish per week. The results are summarized in the following five tables.

Table 5 shows the extent of under-nutrition in percentage form. It appears that about 72% of the respondents have a mild form of under-nutrition (two meals) per day while 3% suffer from an extreme form of under-nutrition (one meal per day). The table also shows that people in a rural setting (Mara), farmers and non-migrants suffer from under-nutrition compared to the others. We have earlier noted that these groups belong to the high fertility class implying a demography poverty trap.

The mean meal per day is cross classified with fertility measures (Table 6a and 6b). The value in the parenthesis are standard deviations. Compared to Table 5 the variation of under nutrition by CEB and household size does not appear to be obvious. Still the result appears to show a moderate form of under nutrition.

Table 5
Indicators of Under-nutrition: Number of Meals per day

Socio economic group		No of meals	%
Region	Mara	1	2
		2	74
		3	24
	Mwanza	1	6
		2	68
		3	27
Residence status	Non migrant	1	3
		2	74
		3	23
	Migrant	1	4
		2	69
		3	27
Activity	Farmers	1	5
		2	74

		3	21
	Non farmers	1	2
		2	68
		3	30

Table 6a **Indicators of Under-nutrition** **Average (mean) Number of Meals per day by CEB**	
CEB	Mean
0	2.1(0.49)
1	2.2(0.49)
2	2.2(0.50)
3	2.3(0.50)
4	2.3(0.51)
5	2.2(0.45)
6	2.1(0.47)
7	2.2(0.39)
8	2.3(0.45)
overall	2.2(0.49)

Table 6b **Indicators of under nutrition** **Average (mean) number meals per day by Household size**	
Household size	Mean
1	2.3(0.49)*
2	2.0(0.50)
3	2.2(0.47)
4	2.2(0.48)
5	2.3(0.49)
6	2.3(0.49)
7	2.2(0.41)
8	2.2(0.51)
9	2.2(0.49)
10	2.2(0.56)
overall	2.3 (0.56)

*values in parenthesis are standard deviations

Table 7a and 7b measure the extent of malnutrition. The study area, which is in close proximity to Lake Victoria, is known for its fishery establishments. One would expect more people to consume fish compared to meat or pork. Still the percent of respondents without fish is about 32% - a relatively high number. The reason is that most fish produced is exported, export prices are high, and local people cannot afford to consume their own produce. The results indicate that families with high CEB and high household size suffer more from malnutrition. As much as 68% of the respondents had no meals with meat/pork/fish in a week (one is expected to have 21 meals per week).

Table 7a
Indicators of Malnutrition
Meal without Meat or Fish in a week - by CEB

CEB	Percent without meat	Percent without fish
0	67	37
1	30	36
2	40	25
3	47	22
4	59	31
5	55	27
6	66	50
7	68	42
8	67	25
overall	55	32

Table 7b
Indicators of Malnutrition
Meal without Meat or Fish in a week - by household size

Household size	Percent without meat	Percent without fish
1	50	13
2	47	29
3	58	31
4	34	35
5	39	27

6	42	34
7	55	29
8	61	33
9	46	29
10	58	38
overall	55	31

Monetary Expenditure

Respondents were asked their weekly, monthly, and yearly expenditures. Weekly expenditure refers to expenses on food items. Monthly expenditure refers to monthly bills for such things as house, rent, water, and electricity. Yearly expenditure refers to expenses regarding household assets such as radio and stoves. The results are presented in Tables 8a and 8b. All expenditure categories, especially the weekly expenditure on food items, show that larger family households spend less than small sized households. The mean weekly expenditure on food is only about five US dollars per household - a clear indicator of a demography poverty trap.

Table 8a
Monetary Expenditure (Mean Value in 000 Tanzanian Shillings*)

CEB	Weekly expenditure	Monthly expenditure	Yearly expenditure
0	9.5	27.0	185.0
1	6.7	9.0	157.8
2	6.3	10.2	139.9
3	5.9	11.7	207.4
4	6.7	12.6	250.7
5	6.0	10.5	312.2
6	10.4	6.9	126.8
7	8.2	4.8	112.0
8	5.7	8.3	90.0
overall	7.1	12.2	173.4

*One US dollar=1250 shillings

Table 8b **Monetary Expenditure (Mean Value in 000 Tanzanian Shillings)**			
Household size	Weekly expenditure	Monthly expenditure	Yearly expenditure
1	12.1	10.2	650.7
2	13.3	8.9	460.9
3	9.3	5.7	209.3
4	9.2	11.5	185.4
5	6.9	14.9	238.9
6	7.6	15.7	145.9
7	5.0	9.3	148.3
8	9.5	12.4	92.5
9	3.4	17.5	92.5
10	4.3	8.1	167.5
overall	7.1	12.2	173.4

Land ownership

Results of the survey on land ownership are given in Tables 9a and 9b and pertain to respondents engaged in agriculture. The results show that as much as 50% of those engaged in agriculture do not own land. This is true for small and large size households. This implies that large family farming households are heavily distressed when compared with small family households - another indicator of demography poverty trap.

Table 9a **Percent of Farmers without Land**	
CEB	Percent
0	48
1	29
2	59
3	51
4	56
5	55
6	52
7	34
8	57
overall	50

Table 9b **Percent of Farmers without Land**	
Household size	Percent
1	67
2	50
3	36
4	51
5	55
6	46
7	60
8	44
9	38
10	53
overall	50

Access to Clean Water, Sanitation Facilities and Energy

Lack of basic necessities is not only essential for a family or household but it may impact the society. Lack of appropriate sanitation facilities could have a devastating effect on community health and the environment. A shortage of modern sources of energy could deplete forest resources. Table 10a shows that as much as 60% of households do not have access to clean water, and about 80% have poor toilet facilities and no electricity; besides about 50% use firewood for cooking. Similar results are reported in Table 11b. These poverty indicators appear to be positively related to the size of households.

Table 10a **Access to Clean Water, Sanitation Facilities and Energy**				
CEB	Source of water (% with poor quality*	Type of toilet (% with poor quality)**	Source of electricity (% poor quality)***	Source of energy for cooking (% poor quality)****
0	49	70	79	38
1	66	78	79	55
2	59	71	74	49
3	65	82	79	58

4	52	75	75	43
5	61	76	75	52
6	53	67	75	53
7	66	76	76	63
8	50	75	75	42
overall	59	75	75	51

*Water from open wells, rivers and lakes
**Toilets without flush or cover
***Electricity neither connected, nor generator or solar
****Wood as a source of energy

Table 10b
Access to Clean Water, Sanitation Facilities and Energy

Household size	Source of water (% with poor quality*	Type of toilet (% with poor quality)**	Source of electricity ((poor quality)***	Source of energy for cooking (% poor quality)****
1	63	88	50	63
2	59	53	65	47
3	52	69	86	45
4	60	75	75	52
5	56	68	75	49
6	59	81	75	52
7	60	79	73	51
8	64	74	68	51
9	55	81	83	54
10	58	72	83	48
overall	59	75	75	51

*Water from open wells, rivers and lakes
**Toilets without flush or cover
***Electricity neither connected, nor generator or solar
****Wood as a source of energy

Relation between Poverty Indicators and Fertility

In Table 11 a simple linear regression of selected poverty indicators on CEB are presented. Due to the nature of the survey data and the limited range of values of the dependent variable, the explanatory power of the regression

estimates appear to be low. In spite of this the results are reported because the sign of the coefficients are in the expected direction, suggesting the depressing effect of demographic variables on basic needs. This further helps to explain the demography poverty trap.

Table 11
Demography and Poverty Indicators
(Explanatory CEB)

Dependent Variable	Intercept	Slope	$\bar{R}^2$
No. of meals per day	2.23* (0.04)	-0.03 (0.01)	0.001
Number of meals with meat and/or pork per week	0.89* (0.08)	-0.012 (0.02)	0.001
Number of meals with fish per week	1.65* (0.10)	-0.03* (0.01)	0.01
Weekly expenditure**	7287.9 (669.1)	--58.71 ((249.65)	0.002
Monthly expenditure***	18133.84* (1732.44)	-1834.12 (446.01)	0.001
Yearly expenditure****	189885.3* (30819.9)	-5105.6 (7939.8)	0.001
Source of water (0=bad, 1=good)	0.427* ((0.039)	--0.004 (0.010)	0.001
Type of toilet (0=bad, 1=good)	0.260* (0.030)	-0.002 (0.008)	0.001
Source of energy (0=bad, 1=good)	0.540)* (0.039)	-0.130**** (0.010)	0.003

*Significant at 5%
**Weekly expenditure, mostly on food and related items. Expenditures are in Tanzanian shillings
***Monthly expenditure mostly on utility bills
****Yearly expenditure mostly on assets

Conclusion

The preceding empirical results showed that demographic variables and poverty indicators are interrelated. The selected poverty indicators including

low nutritional status, meagre expenditure on food and related items, as well as limited access to land and basic services show that the surveyed population in Tanzania reside in rampant poverty - both in magnitude and depth. Even though there were some regional variations as well as variation by residence and employment, the overall picture shows a case of extreme poverty. The results also showed that the surveyed population exhibits high fertility and large family size. As much as 23% of household members are non-nuclear family. This again is an indicator of population pressure on resources. The two indicators - poverty and demography - appear to be closely linked. Getting out of the poverty trap implies lowering fertility to raise income and vice versa. This leads one to conclude that the population under study is within a "demography poverty trap".

The way out of this trap may be to treat population as an endogenous or a variable to be targeted by policy. Beside the often mentioned standard macro-economic policy prescriptions, an all out effort needs to be made to reduce fertility. It should be noted that poverty reduction policies should not only aim at introducing short run solutions, such as food subsidies, but they should also aim at providing basic necessities such as education and health care. This in turn will help reduce fertility. Investment in human capital is paramount. At the same time policy interventions should include aggressive reproductive and family services.

Getting out of poverty is a two-way street. Implementing appropriate macroeconomic policies along with poverty reduction strategies while at the same time availing family planning services will go a long way towards taking African countries out of the demography poverty trap that they are in.

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