Social Protection of the Elderly in Tanzania:

Current Status and Future Possibilities

By Thadeus Mboghoina
and Lars Osberg

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List of abbreviations

GDP   Gross Domestic Product
HBS   Household Budget Survey
ILO   International Labour Organisation
NBS   National Bureau of Statistics
REPOA   Research on Poverty Alleviation
OECD   Organization for Economic Co-operation and Development
Tshs   Tanzanian shillings
URT   United Republic of Tanzania
VAT   Value added tax
VoP   Views of the People

Acknowledgements

Abstract

Based on United Nations demographic estimates, the number of Tanzanians over 60 years of age is expected to almost triple between 2020 and 2050. As a consequence, the government is likely to face escalating pressure to design and implement effective social protection measures to minimise poverty and deprivation among the elderly. To inform this process, this study begins by analysing the current status of living arrangements and material well-being of Tanzanians over 60 years of age, using data from the 2007 Household Budget Survey conducted by the National Bureau of Statistics and the Views of the People 2007 survey conducted by Research on Poverty Alleviation. The study then assesses the affordability of a universal pension for all persons over age 60 or 65, set at the food poverty line. Finally, it explores implications of the introduction of an old age pension on the socio-economic and political attitudes and behaviours of Tanzanians.

The data show that in 2007 about three-fifths of older Tanzanians lived in traditional extended family settings, one-fifth were responsible for children or young adults, and one-fifth lived alone or with their spouse only. The HBS also found that one-third of all elderly Tanzanians lived below the basic needs poverty line, and the VoP found that 14% 'always/often' didn't have enough to eat. Older women outside Dar es Salaam were particularly vulnerable to food deprivation. On the question of affordability, the evidence indicates that a universal old age pension would be a fiscally feasible pillar of social protection; the pension's introduction would lift over three million Tanzanians out of poverty, half of whom would be children under 18 years.

Although the effects of the introduction of an old age pension on individual attitudes and behaviours are more difficult to estimate quantitatively than the direct distributional impact of pension income on household well-being, these effects may well be crucially important for economic development. Being able to look forward to a pension in old age might, for example, positively influence risk-taking behaviour, the time preferences of the young, fertility decisions and the rate of personal savings. Having dependable pension income as part of the overall income in an extended family household may also improve the capacity of households to afford school fees or to take greater calculated risks in cropping or business decisions, with positive impacts for long-term development. Moreover, if, via the old age pension, the government is seen to provide clear benefits in which all citizens can expect to share, the political legitimacy of the state and the willingness of citizens to pay taxes may well be enhanced.

Introduction

Old age is not quite inevitable. There is a saying that: "The only thing worse than growing old is the alternative…dying young". In a certain sense, therefore, everyone – in all societies – hopes to grow older. Hence, social protection of the elderly is essential for:

(1)   The current well-being of those who are now old;

(2)   The sense of security of younger generations today who hope some day to be old; and

(3)   The decisions that younger generations make now because they expect some day they will be old.

Furthermore, over time, the social basis for economic support of the elderly may radically shift. It is not so very long ago in all countries that the elderly worked as long as they were able to and thereafter depended (if they could) on the support of their children within an extended family setting. In affluent nations, this social norm has given way to a new norm of the nuclear family and to complex systems of pension entitlement and social security, combined with personal savings, which now provide income during retirement.

However, poverty among the elderly varies widely – even across affluent nations with 'mature' pension schemes – because social security systems differ substantially between countries. In developing nations, the rapidity of demographic and economic change, combined with varying, but generally limited, availability of social security implies even greater heterogeneity in levels of poverty among the aged. Hence, public policy decisions on social protection for the elderly have substantial implications both for the well-being of elderly citizens today, and for the decisions which forward-looking individuals make in anticipation of their senior years.

Tanzania is now a relatively young country; in 2007, the median age was 19 years and only 10% of the population were 50 years of age or more.[1] However, an inevitable implication of longer life spans and declining birth rates is an increase in the number and proportion of Tanzanians in their senior years. The UN projects that between 2020 and 2050, the absolute number of Tanzanians over 60 will almost triple, increasing from 2.95 million to 8.39 million. Under the UN's 'medium' fertility projection, the percentage of the population aged 60 or over will increase from 5.0% in 2020 to 7.7 % in 2050. Compared to other countries, however, Tanzania will be a 'late arrival' to the problems of an aging population. OECD nations are already far along this demographic path, and many other developing nations (notably China and Latin American countries) can expect much more dramatic increases in their elderly population over the next few decades.[2] In a very real sense, therefore, Tanzania is now at the optimal point to begin designing a long-term, sustainable system of social protection for the elderly, i.e., before the aging issue becomes a crisis and when the current financial cost of reforms is relatively small (because the elderly population is relatively small).

[1]   All current Tanzania data are computed from the HBS 2007. Readers are advised that other data sets may produce different estimates of population frequencies, e.g., the UN demographic data (accessed November 2009) estimate the percentage of Tanzanians over 60 years of age to be 4.9%, significantly less than the 6.1% estimate implied by the HBS 2007. However, although estimates of levels differ, forecasts of change over time in demographic structure are subject to the same long-term influences, and therefore exhibit the same trends.

[2]   International demographic data and population projections are taken from the Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2008 Revision, http://esa.un.org/unpp*. In Canada, for example, 17.8% of the population was over 60 in 2005,

This paper is therefore organised around three sets of questions:

(1)   How adequate are the current mechanisms of social protection for elderly Tanzanians?
(2)   What short-term policy responses are feasible and desirable? How might they affect the current well-being of young and old in Tanzania? What long-term policy responses are needed for the social protection of the elderly in Tanzania?
(3)   If individuals could look forward to reliable mechanisms of social protection in their older years, what behavioural implications might this entail, and how might these reforms affect growth and development?

The paper is divided into four chapters. Chapter 1 outlines the most recent evidence available on the current living arrangements and material well-being of elderly Tanzanians, using data from the Views of the People (VoP) survey conducted by REPOA in 2007 and the Household Budget Survey 2007 conducted by the National Bureau of Statistics. The chapter also discusses the stresses which urbanisation, declining birth rates, and migration place on the extended family as the primary mechanism of social protection for elderly Tanzanians.

Social protection is necessarily public policy for the long term. Chapter 2, therefore, presents a thought-experiment of a universal old age pension set at the food poverty line and payable either at 60 or 65 years of age. The affordability of such a pension is also assessed. Given that the median age of the population is currently 19 years, the majority of Tanzanians alive in 2010 cannot expect to claim a pension until 2051 or after. One can be certain that between now and then there will be many changes in Tanzania's economic, demographic and social context. Section 2.2 therefore discusses briefly the larger issue of the optimal architecture of public policy on social protection for the elderly.

Chapter 3 then speculates on the implications of the introduction of an old age pension on individual attitudes and behaviour. Being able to look forward to a pension in old age might, for example, influence the risk-taking behaviours and time preferences of the young, as well as affecting fertility decisions and the rate of personal savings. Having a dependable pension income as part of the income portfolio of an extended family household might affect labour supply and influence the ability of households to afford school fees or take greater risks in income generation. Moreover, if the government is seen to provide benefits in which all citizens can expect to share, the political legitimacy of the state may be enhanced. Although the scale of these impacts on behaviour are harder to estimate quantitatively than the direct cost of an old age pension, they may well be more important for national economic development. Chapter 4, the final chapter, presents the main conclusions from the study.[3]

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and the medium variant projection of the UN foresees this increasing to 31.8% in 2050. Both China (10.8%) and Brazil (8.9%) had a substantially lower population percentage over 60 in 2005, but the rate at which their populations are aging is much more rapid under the medium variant projection; 29.3% of Brazilians and 31.1% of Chinese will be over 60 by 2050.

[3]   The empirical findings and conclusions of this paper are largely consistent with those of the report on the feasibility of a universal old age pension by the Ministry of Labour, Employment and Youth Development and HelpAge International (2010), but data are presented differently – e.g. this paper presents data organized by *individuals* of differing age, gender, location, etc., while MoLEYD et al. (2010) usually present data by *household* of differing age, gender, location, etc.

1 The Current Circumstances of Tanzania's Elderly

1.1 What social protection is now provided by the living arrangements of Tanzania's elderly?

Table 1 presents HBS data on the living arrangements and poverty rates amongst Tanzanians aged 60 years or more in 2007.[4]

Table 1: **Living arrangements and poverty rate among Mainland Tanzanians aged 60 years and over (% of elderly)**

	Living Arrangements			Poverty Rate*		
	Male	Female	Total	Male	Female	All
Alone	7.3	9.1	8.2	0.23	0.14	0.2
With spouse only	14.6	8.4	11.4	0.12	0.11	0.12
With children aged < 18 years and no adults aged 25-59 years	6.7	14.4	10.7	0.39	0.42	0.41
Average household size	*3.9*	*3.3*	*3.4*			
With young adults aged 18-24 years and no adults aged 25-59 years	6.1	9.9	8.1	0.38	0.35	0.36
Average household size	*5.3*	*4.7*	*4.9*			
With other adults aged 25-59 years	64.8	56.1	60.3	0.38	0.36	0.37
Average household size	*6.7*	*7*	*6.8*			
(residual)	0.6	2.2	1.4			
Total	**100%**	**100%**	**100%**	**0.33**	**0.33**	**0.33**

Source: HBS 2007

*Basic Needs Poverty Line = 13,998 Tshs

As Table 1 indicates, living with their extended family is still the norm for three-fifths (60.3%) of the elderly. Women are about nine percentage points less likely to live in extended family households – about 56% of women aged 60+ live with prime age adults compared with 65% of men. These extended family units are quite large, averaging 6.8 household members. Table 1 also implies that elderly poverty is less prevalent amongst one and two person households but more prevalent in households in which the elderly are responsible for the care of grandchildren. How does this fit with other evidence from the Views of the People 2007 survey?

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[4]   In Appendix A, Table A1 presents a matching table using Views of the People data. The VoP 2007 and HBS 2007 datasets were both designed to be random samples of the population, but their population estimates sometimes differ despite the large samples involved (VoP 2007, n= 4987 households; HBS 2007, n = 10.466 households). While the two datasets often produce similar results, the HBS data report significantly more small households than the VoP. The randomisation procedure used in the HBS is considered by the authors to have been more rigorous, therefore, HBS population estimates where available are used in this paper.

Table 2: Relative probability of food deprivation among the elderly, by sex, residence and living arrangement

Living arrangement	Dar es Salaam		Outside Dar es Salaam*		All survey regions	
	Always/ often without enough food	Meat/ fish = 0	Always/ often without enough food	Meat/ fish = 0	Always/ often without enough food	Meat/ fish = 0
Living alone						
- Male	**	**	2.22	1.23	2.08	1.15
- Female	**	**	3.00	2.13	2.53	1.42
With spouse only	**	**	1.24	1.57	1.19	1.64
With children < 18 yrs only						
- Male	**	**	1.12	1.24	1.41	1.21
- Female	**	**	1.62	1.90	1.24	1.74
With young adults aged 18-24 yrs						
- Male	**	**	0.84	1.39	0.73	1.34
- Female	**	**	0.77	1.27	0.91	1.01
- Male & Female	**	**	0.81	1.34	0.81	1.19
With adults aged 25-59 yrs						
- Male	0.61	0.73	1.06	1.23	0.97	1.12
- Female	0.57	0.57	1.65	1.22	1.35	1.04
All elderly						
- Male	0.71	0.82	1.12	1.26	1.04	1.17
- Female	0.61	0.62	1.72	1.44	1.44	1.23
- Male & Female	0.66	0.73	1.34	1.33	1.19	1.20
All non-elderly	0.28	0.45	1.22	1.16	0.96	0.96
- Male	0.26	0.41	1.26	1.12	1.05	0.97
- Female	0.30	0.47	1.18	1.20	0.88	0.95
All respondents	0.34	0.49	1.25	1.19	1	1
Base probability: All respondents	0.14	0.25	0.14	0.25	0.14	0.25

Source: VoP 2007

* Outside Dar es Salaam is Arusha, Tanga, Lindi, Mtwara, Iringa, Singida, Rukwa, Shinyanga and Mwanza regions

**Insufficient number of observations

Unlike the HBS and other national surveys that sample and report the responses of household heads, VoP 2007 randomly selected respondents from adults over 25 years within the 4,987 households surveyed. This methodology implies direct questioning of women, as well as men.

The VoP survey addressed the issue of individual food security with the question: "Have there been times during the last year when you didn't have enough food to eat?" Overall, 14% of the sample answered "Always/Often" and there was little evidence of discrimination against women.[5] Table 2 reports the relative frequency of hunger, by sex, residence and living arrangement compared to this base probability.[6] For example, residents of Dar es Salaam, i.e., "All Respondents in Dar es Salaam" have much less chance of being "always/often" hungry than average (i.e., about 0.34 of the average probability, or an underlying probability of 0.34*0.14=4.8%). This contrasts sharply with the situation for elderly women outside Dar es Salaam, whose chances of "always/often" not having enough food to eat are over two-thirds (1.72) higher than the national average (i.e., a raw probability of almost one chance in four; 1.72*0.14= 24.1%).

Reading down the columns of Table 2 shows the influence of gender and living arrangement on food security. The first column shows that elderly women in Dar es Salaam have somewhat lower chances of "always/often" not having enough food compared to elderly men, but the gender differences in food security are mostly not large in Dar. However, gender parity in food security for the elderly is most definitely not the case in the rest of Tanzania. Outside Dar es Salaam, elderly women are 72% more likely than the national average to report being "always/often" hungry, surely an indicator of extreme deprivation. Remarkably, living within multi-generation extended families does not seem to protect older women outside Dar es Salaam. Whether the intra-family division of consumption is the result of a power dynamic in which women are disadvantaged and have less access to household earnings and consumption, or a set of social norms about caring for others in which women get less because they voluntarily 'eat last from the pot'[7], the result can be the same – less food for women.

By living arrangement, the relative probability of "always/often" being hungry is about two-thirds higher than the national average (1.65) among older women outside Dar es Salaam who live with other adults aged 25 to 59 years, but is virtually the same as the national average (1.06) among elderly men living in the same type of extended family

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[5]   Among all women, 12.93% report "Always/often" not having enough food, compared to 14.54% of all men. The other response categories were "sometimes" (37.97% of women, 40.09% of men) and "never". We do not analyse the percentage of the population who report "sometimes" not having enough food to eat because it can change at either margin, and its interpretation is therefore ambiguous. Both a decline in the fraction of the population that is food-secure and answer "never" and a decline in the fraction that are food-deprived (i.e. answer "always/often") will tend to increase the proportion who answer "sometimes".

[6]   In Table 2 we distinguish between Dar es Salaam and the rest of the country, while some tabulations of the HBS also distinguish between 'other urban areas' and 'rural areas'. In the tabulations presented in this paper, the 'other urban'/'rural' differentials were relatively small, so have not been presented here (but are available from the authors on request).

[7]   When several adult women share in household consumption (e.g., wife of household head plus aged mother or mother-in-law plus other younger relations) inequality among women must be considered, as well as male/female and adult/child inequality. Being the person who actually cooks and directly controls food may then be particularly important in determining food access.

situation. This significant disparity indicates that resources are not equitably shared within extended families in Tanzania. Notably, when the elderly live with young adults aged 18 to 24 years, household members presumably share in the earning potential of the young adult members, and the elderly are also more likely to retain relative authority within the family – in particular, elderly women are likely to retain control over cooking. In this context, both male and female elderly have less chance than the national average of being "always/often" without enough food (0.84 and 0.77 respectively, and the male/female difference is not statistically significant).

The social isolation of living alone is a strong predictor of food deprivation. The 7% of elderly women who live alone outside of Dar es Salaam have a probability of "always/often" being hungry that is three times the national average, while for elderly men living alone it is twice the national average. More than any other demographic characteristic living alone predicts food deprivation, though being female and over 60 in Tanzania outside Dar es Salaam is also strongly correlated with a higher chance of 'always/often' not having enough food to eat. It is only when elderly men live alone that they have a higher chance of being food insecure than younger men in rural Tanzania. However, single status is a clear predictor of food insecurity. In most of Tanzania, food deprivation among the elderly also appears to be primarily a female phenomenon.

Food security in Dar es Salaam appears to be markedly different from the rest of the country. Within Dar es Salaam, gender differences are small, and the overall probability of 'always/often' being without enough food is much higher among the elderly (both male and female) than among the non-elderly. Outside Dar es Salaam, both the elderly and the non-elderly are much more likely to be food deprived than residents of Dar es Salaam. Elderly women are much worse off than non-elderly women. The gap between Dar es Salaam and the rest of the country in the probability of hunger is not surprising – but the difference in gender bias is stark.

Table 2 also reports the relative probability that a respondent answered "zero" to the question: "How many days did you eat meat or fish in the last week?" Among all adult Tanzanians, 25% reported not eating meat or fish, with substantial differences between respondents in Dar es Salaam and those in other regions. Since the definition of 'household' used in the VoP survey is based on "eating together", the type of food consumed (if not the quantity of food) can be expected to be a largely common characteristic for all household members. It is therefore not surprising that rural elderly men and women living with other adults report the same relative chances of not eating meat or fish, and that in Dar es Salaam the male/female difference is not statistically significant. However, the elderly who live alone or just with their spouse have a much higher chance than average of not consuming meat or fish.

The evidence on food deprivation, including lack of access to protein-rich food, indicates that the elderly who live alone, or just with their spouse, are worse off than the average elderly person, and worse off than the average Tanzanian. This is not consistent with the data on poverty rates in Table 1, which reported a substantially lower poverty rate for these types of household. One key issue, of course, is the definition of the basic needs poverty line. The methodology applied by NBS makes it considerably harder for older Tanzanians who live by themselves or with their spouse, particularly women, to be classified as 'poor' than younger

people. The NBS uses an equivalence scale such that a woman over 60 years is considered to have only 72% of the basic needs of an 'adult equivalent' male. This implies that a single rural woman living alone was only classified as being in 'basic needs' poverty if her expenditures (excluding medical and education costs) were less than 9,442 Tshs per month, while the poverty line for a rural male aged 19 to 59 living alone was 13,144 Tshs. Appendix B discusses this issue in more depth.

Table 3: Reported sources of income/subsistence* for the elderly (% of respondents)

Depending on:	All Elderly			Dar es Salaam			Outside Dar es Salaam		
	Male	**Female**	**M+F**	**Male**	**Female**	**M+F**	**Male**	**Female**	**M+F**
Children/family around me	34.1	60.5	44.3	34.0	69.0	49.7	34.1	57.6	42.7
Remittances from children	20.4	22.4	21.2	22.6	28.6	25.3	19.9	20.3	20.1
Full-time work	32.7	19.5	27.6	14.6	4.8	10.2	37.2	24.6	32.5
Part-time work	7.6	3.3	6.0	16.5	4.8	11.2	5.5	2.9	4.5
Pension from former employer	6.9	0.6	4.4	14.6	**	8.0	5.0	**	3.4
Charity (FBO, NGO, neighbours)	1.3	1.8	1.5	**	**	2.1	1.2	1.6	1.4
Total	**103**	**108.1**	**105**	**102.3**	**107.2**	**106.5**	**102.9**	**107**	**104.6**

Source: Authors calculations based on VoP 2007 data

Notes: * About 5% of respondents reported multiple sources of livelihood; ** Insufficient number of observations

Table 3 reports the answers of the elderly in Tanzania to the VoP 2007 question: "What do you live on? Which of the following are your main sources of income/subsistence?" Adding together monetary remittances from children and in-kind transfers of goods and services within the household, two-thirds (66%) of the elderly were dependent on their children in some way. There were two very large differences between Dar es Salaam and the rest of the country – the twenty percentage point gap between the 32.5% of the elderly outside Dar es Salaam who depended on full-time work compared with 10.2% in Dar es Salaam, and the ten percentage point difference between the proportion of older men receiving a pension in Dar es Salaam (14.6%) compared with all other regions (5.0%). In summary, therefore, these data indicate that about two-thirds of the elderly depend primarily on their families. Among the elderly who do not rely on family, those outside Dar es Salaam mostly depend on full-time work, while an appreciable minority of men (but not women) in Dar es Salaam have some pension rights.

1.2 Pressures on the traditional model of the extended family
As reported in Table 1, about three out of five Tanzanians over 60 years of age were living with other adults aged 25-59 years – in almost all cases, with their children and extended family. However, several socio-economic trends are placing predictable pressure on the continuation of this traditional family model and the future welfare of elderly Tanzanians.

1) Declining birth rates

Compared to the decline already experienced in many other countries, the fall in Tanzania's birth rate has been relatively small from a crude birth rate of 46 per 1,000 in 1980-85 to 41.6 in 2005-2010. However, a rapid decline to 22.8 in 2045-2050 is forecast under the UN's

Medium Population Variant. Fewer children inevitably mean less chance of parents being able to live with one of their children.

2)   Accelerating urbanisation

The UN projects that between 2010 and 2030, Tanzania will see an increase of 12.3 percentage points in the overall rate of urbanisation.[8] Based on estimated population growth, this implies that the urban population of Tanzania is forecast to increase by roughly 14 million over this 20-year period.

Since the rural economy of smallholder production has much more of a place for the continuing contribution of older workers to the family economic unit, greater urbanisation has historically meant that older family members cannot continue to play as much of a productive economic role – which implies greater pressure on their continued support through the extended family.

3)   Migration

As more family members move away from their place of origin, it becomes structurally much more difficult to sustain the extended family model of elderly support. Children who live far away cannot provide the day-to-day care that elderly people often depend on, and the elderly cannot reciprocate by helping out within the family unit, e.g., in child care. When such ties weaken, children who move away may not send money home. Remittances from family members who migrate away from home are uncertain and subject to erosion with time and distance. Muzzini and Lindeboom (2008) found that "about 5.3 percent of the urban population moved to or from urban areas in the country in 2001, and an additional 2.6 percent of the urban population moved between urban centers".[9] One can expect that this rate of internal migration will increase over time, implying ever greater pressures on a family-based model of elder care.

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[8]   Specifically, the UN projects the proportion of the Tanzanian population in urban areas to increase from 22.3% in 2000 to 26.4% in 2010 and 38.7% in 2030. Evidently, the UN is relying on the statistical, enumeration area-based criterion of urban areas favoured by the National Bureau of Statistics. Using a density of settlement-based criterion, Muzzini and Lindeboom (2008) put Tanzania's urbanisation in 2000 substantially higher at 33.5% in 2000. But although level estimates differ, the trend in future years is likely to be of similar magnitude. Note that the total population is expected to grow significantly over the 2000 to 2030 period from 33.989 million to 65.516 million in the medium population variant. Therefore, based on the projected proportions above, the urban population will increase from 7.6 million in 2000 (=0.223*33.989) to 11.5 million in 2010 (=0.264*43.542) and 25.4 million in 2030 (=0.387*65.516). See http://www.unfpa.org/swp/2007/presskit/country_by_country.html

[9]   Given their use of a density-based criterion to distinguish urban areas as home to 33.5% of the Mainland population, 5.3% of the urban population is equal to about 1.8% of the total population and 2.6% of the urban population is roughly equivalent to 0.9% of the total population. The migration concept used is "usual place of residence now compared to usual place of residence one year previous". Shorter term movements are not captured.

2 Social Protection for the Elderly – Future Possibilities

A key pillar of social protection is a public pension that guarantees a minimum standard of living to the elderly. Nations differ as to the extent to which people are eligible for government pensions; in some countries it is a universal benefit, while pensions in other countries are restricted by a means test to those who have no other source of income. However, the core idea is that, as Article 25 of the United Nations' Universal Declaration of Human Rights declared in 1948, "security in the event ... of old age" is a basic human right[10], and that it is the responsibility of the state to ensure that all citizens have this right.

In Tanzania, there is understandable concern that a universal basic needs pension, though desirable, might not yet be affordable. This chapter, therefore, examines the affordability of introducing a basic needs old age pension. In this paper, the "old age pension" is defined as one that is delivered to all citizens, as a universal right, as soon as they reach a specific age (e.g., 60 or 65 years). As a focal point for the analysis, a pension of 10,000 Tshs per month per person (equivalent to the "food poverty line") is considered. Clearly, a more generous pension – e.g., a pension of 14,000 Tshs per month per person (equivalent to the "basic needs poverty line")[11] – would be proportionately more expensive.

This paper does not envisage means testing in the comprehensive sense that net pension benefits are adjusted to reflect the amount of other income from all sources received by each pensioner.[12] Given the small fraction of Tanzania's elderly who now receive any pension income, this implies that initially the old age pension would be close to universal. However, if formal sector employment with pension benefits expands over time, resulting in fewer Tanzanians needing the protection against destitution that a basic old age pension provides, 'means testing' with respect to other pension income will become increasingly important.

2.1   The impact on poverty rates of an old age pension set at the food poverty line

One would not normally expect a transfer programme targeted towards a small percentage of the population to have a large direct effect on national measures of poverty. Only 6.1% of Tanzania's population is aged over 60 years (i.e., about one person in every 16), so one might expect that the impact of introducing an old age pension on aggregate poverty rates would be rather small. However, Table 1 showed that most of the elderly in Tanzania live with younger people, so the benefits of an old age pension would in fact be fairly widely spread. If all persons over the age of 60 received a pension equal to the food poverty line (10,000 Tshs monthly) and if that income were shared equally with all members of the household that

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[10]   Article 25 states specifically that: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control."

[11]   At the $1(US) = 1,330 Tshs exchange rate of March 2010, 10,000 shillings was worth $7.52 (US) and 14,000 Tshs was $10.52.

[12] However, the old age pension could be reduced if other pension income were received – e.g., by 50 shillings for every 100 shillings in other pension income. This would imply, for the 'food poverty line' basic pension, that persons with other pension income in excess of 20,000 shillings per month would not receive the old age pension.

they live in, the rate of poverty in Mainland Tanzania (as measured by HBS) would change by 7.7 percentage points from 33.3% to 25.6%. The average poverty gap would fall from 9.9% to 6.8% and 'poverty intensity' (also known as the Foster Greer Thorbecke Index of order 1 or the 'normalized poverty gap') would decline from 4.2% to 2.7%.

Table 4: Anti-poverty impact of old age pension of 10,000 Tshs per month payable at age 60

Indicator	Mainland Tanzania	Under 18	Age 18-59 Male	Age 18-59 Female	Age 60+ Male	Age 60+ Female
Poverty rate (%)						
- Before pension	33.3	36.8	28.3	30.3	33.1	32.9
- After pension	25.6	29.3	22.5	23.4	15.1	14
Difference	7.7	7.5	5.8	6.9	18	18.9
People out of poverty						
- Number	3,080,000	1,506,000	473,000	646,000	209,000	242,000
- Percentage	100%	48.9%	15.4%	21.0%	6.8%	7.9%
Poverty Gap (%)						
- Before pension	9.9	11	8.1	8.9	10	10
- After pension	6.8	7.9	5.8	6.2	3.4	3.1
Difference	3.1	3.1	2.3	2.7	6.6	6.9
Poverty Intensity (%)						
- Before pension	4.2	4.8	3.4	3.8	4.6	4.6
- After pension	2.7	3.2	2.3	2.5	1.2	1
Difference	1.5	1.6	1.1	1.3	3.4	3.6

Source: Calculations by authors using HBS 2007 data;

"Basic Needs" poverty line used for poverty index calculations

Notes: Equal sharing of consumption within households assumed; tax impact not modelled

Based on this analysis, which group records the biggest percentage reduction in the rate, depth and intensity of poverty? Table 4 clearly shows that the main beneficiaries of an old age pension would, of course, be the elderly. The poverty rate among elderly men and women drops by 18 and 19 percentage points respectively, which is over twice the 7.5 percentage point decline in the poverty rate of those under 18 years. However, about 50% of Tanzanians are under the age of 18 years while only 6.1% are over age 60, hence, the absolute number of children moved out of poverty (approximately 1.5 million) is much larger than the number of seniors moved out of poverty (approximately 451,000). Because elderly Tanzanians typically live in the same household with children, both will benefit if old age pension income is shared within poor households. In total, the 7.7% of Mainland Tanzanians who would be moved out of poverty is equivalent to approximately 3.08 million people, of whom about half are under 18 and only about 15% are over 60.

One must caution that these are standard 'initial incidence' calculations that ignore the distributional incidence of tax increases related to pension benefits, and that assume no behavioural changes would be caused by the introduction of an old age pension. The remaining sections of this chapter now turn to the cost of an old age pension with respect to GDP and taxation revenues. The bigger issue, however, is that if an old age pension were implemented today, it would also change the expectations of the 94% of the population who are too young to get the pension now but who will someday be old enough to receive it. Chapter 3 discusses how this might influence their future attitudes and behaviour.

2.2   How much of GDP would a 'poverty line' old age pension absorb?

The key determinants of the cost of a pension system are the average level of the pension that is paid and the fraction of the population who qualify for it. If an old age pension equal to a poverty line income were made available for the elderly in Tanzania, what would the cost be, as a percentage of GDP? The percentage of GDP needed to pay pension benefits can be calculated using the following simple formula:[13]

Pension benefits as % of GDP
    = (Average individual pension benefits as % of GDP per capita)
    * (pensioners as % of population)

The total financial cost of the pension system also includes administration costs, hence:

Pension expenditure as % GDP
    = (Pension benefits as % GDP) * (1+ administration costs as % benefits)

The ILO (2005:25) estimated that implementing a universal basic old age (for all persons over 65) and disability pension system in Tanzania would require expenditure equal to 0.8% of GDP in 2005, decreasing to 0.5% by 2034.[14] In their calculations, the level of the universal basic pension was set at 28% of GDP per capita (2005:10), approximately equal to the food poverty line set by the NBS. The ILO calculations also illustrate the effect on total costs based upon the age at which the old age pension commences to be paid. The cost of an old age pension starting at age 65 is much less than one starting at age 60, because there are far fewer Tanzanians over 65 years of age.[15]

What level of benefits, as a percentage of GDP per capita, might be appropriate for a basic old age pension? The level of benefits to provide is, fundamentally, an issue of social values, reflecting the relative importance placed on inter-generational equity and the prevention of poverty. Opinions on such issues are likely to differ widely.

However, in 2007, the NBS set the level of the basic needs poverty line in Mainland Tanzania at 14,000 Tshs per month or 182,000 Tshs per year[16] per adult equivalent, which was approximately 39.5% of per capita GDP in 2007. The food poverty line was set considerably lower at 10,200 Tshs per month, or about 28.8% of per capita GDP in 2007. Since these are absolute poverty lines, and are updated only for inflation, real growth in GDP per capita implies that they will decline as a fraction of GDP per capita over time. If real growth in GDP

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[13]   If B = average value of pension benefits, Y = per capita GDP, n = number of pensioners and N = total population, then Total pension benefits = nB and GDP = NY. Hence, Pension benefits as % of GDP = nB/NY = (B/Y) * (n/N)

[14]   The ILO also calculated the cost of a basic health package and child benefits. They used an assumption of 15% administration costs, a level that was significantly higher than Willmore (2005).

[15]   For example, based on the population projections of the United Nations, 4.9% of Tanzanians were 60 years or over in 2005 but only 3.0% were 65 or over – and in future, this ratio is expected to change only marginally. The ILO used these population estimates, which imply that an old age pension plan starting at age 65 costs about 40% less than one starting at age 60. However, the HBS population frequencies are substantially different. The HBS estimates that 6.1% of the population are over 60 and 4.4% are over 65 – which implies that an old age pension plan starting at age 65 costs about 30% less than one starting at age 60. The reason for the discrepancy between the UN and HBS population estimates is unknown.

[16]   See Household Budget Survey 2007 – Final Report, January 2009, p. 48. The basic needs poverty line for a 28-day period was set at Tshs 13,998.

per capita were 3% per annum, for example, the rise in per capita GDP combined with the fact that the food poverty line is fixed imply that the food poverty line would decline to 22.8% of GDP in 2015 per capita and the basic needs poverty line would be 31.2% of GDP per capita.

What percentage of the population might qualify for such an old age pension? As already noted, Tanzania has a relatively small percentage of population aged 60 or more, and this percentage is not expected to increase very much between now and 2050. Under the UN's 'medium' fertility projection, it rises by only 0.1 percentage points by 2020 and by 2.8 percentage points between 2010 and 2050. Trends in the percentage of the population over 65 are similar, moving up by just 0.2 percentage points by 2020. Since the rate of increase in the percentage of the population that is elderly is substantially less than the rate of increase in per capita GDP, an important implication of fixing pension benefits at a constant real level is that pension costs decline as a percentage of GDP over time.

How much should be allowed for administration costs? Willmore (2005) presents data indicating that developing countries are no exception to the general rule – universal benefit programmes without complicated means tests are administratively fairly simple and relatively cheap to run. He estimates that administration costs are typically 6% or less of benefit payments. The ILO uses a much more pessimistic assumption, that administration costs would resemble those in Botswana, an outlier at 15%.

An upper bound to the cost of an old age pension costs is for all age-eligible persons to claim the maximum benefit. Assuming that the maximum benefit is set at the basic needs poverty line, and that all people over 60 years of age receive maximum benefits would imply pension costs of about 2.3% of GDP in 2010.[17] Continuing growth of 3% in real per capita GDP would bring that down to 1.7% of GDP in 2020.

The corresponding upper bound cost for a pension in 2010 set at the food poverty line, assuming all persons over age 60 get maximum benefits, would be 1.7% of GDP, declining to 1.3% of GDP in 2020.[18] If the pension were to start at age 65, the cost for pension spending with benefits set at the food poverty line would be much lower at 1.1 % of GDP in 2010.[19]

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[17] 2.33% = (pension benefit as % per capita GDP in 2010)*(over 60s as % population)*(1+ administration cost as % benefits) = 0.0361*0.061*1.06. Note that these calculations presume that the estimate implied by the HBS that 6.1% of the population was over 60 in 2007 is accurate. The UN estimate is substantially lower (4.9%) – which implies a substantially lower total pension cost.

[18]   Using 2006 data for current US dollar GDP, (i.e., $12.78B) the dollar cost of the basic poverty line option would have been $240M, while the food poverty line pension costs out at $175M.

[19]   The difference between UN (4.9%) and HBS (6.1%) estimates of the percentage of the populations over 60 is the only reason this estimate of the impact of GDP is not exactly the same as the ILO estimate for 2005.

Assuming 100% of age-eligible people take up the pension at maximum value is clearly an over-estimate. A much more generous system of basic pensions has been in place for some time in South Africa[20], but only about 80% of age-eligible African households receive benefits. Some of the elderly in Tanzania (7% of males in 2007) do have pension income even today, and the percentage is likely to increase over time – hence they would be ineligible for the full basic pension.

There is, of course, a trade-off between administration costs and more targeted pension delivery.[21] If the only income stream considered for means testing is cash pension benefits from a defined-benefit government or corporate pension plan, the increment to administration costs may only be a one-time assessment of outside pension income at relatively low cost. More precise means testing which includes other forms of income will decrease pension benefit expenditures, but increase pension administration costs. It would be extremely difficult (and very expensive) to estimate the crop sales or value of own-account agricultural production for elderly self-employed farmers in rural Tanzania – and it is not likely to be worth the bother. In addition, the experience of other social programs is that greater complexity in program delivery tends to discourage application and reduce program take-up, even among those who would be eligible for full benefits. As the case studies cited by Ministry of Labour and HelpAge International (2010: pp. 24 and 44-47) also illustrate, the imposition of means testing is likely to be highly divisive, and perceived as somewhat arbitrary, especially in rural Tanzania. Given the relatively small percentage of Tanzania's elderly who would be affected by a means test which just considered other pension income, the details of such a test are probably currently of secondary importance for programme costs, but if economic development in future years increases the percentage of those who can depend on an earnings-related pension, then means testing will become more important.

The key conclusion of these calculations – and those of Ministry of Labour and HelpAge International (2010) – can be summarised as follows: a universal basic old age pension for Tanzania set at plausible levels, either for the 60+ or the 65+ population, would not absorb a prohibitively large percentage of national resources. The cost would be considerably less than a single year's GDP growth – for the food poverty line at age 60 option, the cost would be about a quarter of one year's average increment in GDP from 2003 to 2006. An old age pension for Tanzania would clearly be a significant expenditure initiative, but it is not so large as to be impossible.

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[20] As Case and Deaton (1998) note, the South African old age pension was, almost 20 years ago, delivered by taking heavily guarded, mobile, fingerprint-activated ATMs on tour in rural areas on a regular monthly schedule. This example demonstrated the administrative feasibility of delivering cash benefits, even given geographic isolation, bad roads, widespread illiteracy and a sometimes violent environment. Since then, there has been a long history of administrative experience in program delivery – and substantial improvement in the technology of biometric identification (e.g., the use of iris scan technology in India's Unique Identity Card program, inaugurated in 2010). Part C of Ministry of Labour and HelpAge International (2010) discusses delivery issues, in the Tanzanian context, in some depth.

[21] In addition, attempts to target program delivery can also produce behavioural changes and/or fraud. For example, restricting pension benefits to elderly people caring for grandchildren would be likely to motivate some families to send their children to their grandparents – or at least report doing so.

2.3   How much of tax revenue would an old age pension absorb?

Public pensions must be paid for – but how? Any number of tax changes could in principal be used to raise the revenue necessary to finance an old age pension, and the merits (or problems) of the different tax options are quite distinct from the advantages or disadvantages of a spending proposal like old age pension. Nevertheless, taxes will have to be raised if public expenditure is to increase by the amount of an old age pension. The net distributional and efficiency impact of an old age pension will be the distributional and efficiency impacts of the increased spending plus the distributional and efficiency impacts of the increased taxation necessary to fund that spending.

One possible revenue source – excise taxes on gasoline and diesel motor fuels – can be seen as a form of "carbon tax", and the tax-induced impact on aggregate demand for these petroleum products (the size of which will depend on the price elasticity of demand[22]) can be seen as an environmental benefit.[23, 24] In addition, taxation of petroleum products is relatively easy to administer and difficult to evade. However, partly because gasoline and diesel prices are widely advertised and fuel is repeatedly purchased, taxes on motor fuels have a unique degree of social visibility. This can make such taxes more politically problematic than other more discreet forms of taxation as a source of general revenue.

As Fjeldstad and Rackner (2003) and others have argued, the limited ability of sub-Saharan African countries to raise tax revenue is an important impediment to raising the capital needed for development. In noting that "a lack of a 'taxpaying culture' is the largest obstacle to building a firm long-term revenue base" (2003: x), the authors emphasise that citizens must see benefits from paying tax if such a culture is to be established. A tax surcharge on motor fuels which was specifically ear-marked to pay old age pension benefits would pair a highly visible tax cost with a highly visible and widely received expenditure benefit, which might help such development.

Alternatively, personal income tax rates could be adjusted upward; Tanzania's top marginal tax rate of 30% is relatively low by international standards. Or the Value Added Tax (VAT) could be raised from its current 18%, or some of the numerous exemptions to VAT could be closed. Or corporate income tax could be increased. Table 5 below presents estimates of the total cost of a 10,000 shilling per month pension and a calculation of the cost as a percentage of the actual tax revenue raised in 2006-07 from four major tax sources.

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[22] Bolnick and Haughton (1998:19) have argued ``Revenue from excise taxes could, and should, be doubled in most African countries." They emphasise the revenue-raising advantages implied by the high income elasticity of demand for fuel, and the administrative and compliance cost advantages of fuel taxes. Excise taxes on fuel can also be seen as user-pay charges for road construction and as a corrective for negative congestion externalities. Osoro et al. (2006:20) concluded that demand for motor fuel (gasoline and diesel) in Tanzania is primarily driven by the stock of vehicles on the road and that "own price elasticities are 0.16 and 0.27 in the short run and long run respectively". This implies that current tax rates (at 25%) are very much below the long-run revenue-maximizing tax rate (187.6%). See also Mkenda et al. (forthcoming).

[23] To the extent that rich nations want to purchase carbon credits to help meet their own CO_2 emissions targets, they may be willing to pay (via carbon credit purchases or additional aid transfers) for changes in the tax mix in countries like Tanzania which reduce CO2 emissions (via a tax/price mechanism induced decline in demand). But the possibility of such added financial benefits is not considered further here.

[24] When the current tax rate on a commodity is less than its socially optimal tax rate, there is no "Dead Weight Loss" in economic efficiency from tax increases to worry about. Empirical estimates of the 'Dead Weight Loss' of consumer's surplus due to taxation are, in any event, highly variable in all countries and not available for Tanzania.

Table 5: Total cost of an old age pension of 10,000 Tshs per month and tax implications

	Payable at age 60	Payable at age 65
Cost		
Number of beneficiaries*	2,355,000	1,716,000
Total Benefits Cost	Tshs 282,635 million	Tshs 205,894 million
Benefits as % of Tanzanian tax revenue**		
Fuel taxes	72.0%	52.5%
Corporate tax	130.2%	94.8%
Personal income tax	64.3%	46.8%
VAT	66.8%	48.6%

*Based on HBS 2007 population estimate of 6.1% over age 60 years and 100% take-up full benefits

** Actual tax collections 2006-07

Source: URT. Financial Statement and Revenue Estimates for Year 2008-09, Vol.1 pp. 92-97

The cost of alternative pension scenarios can easily be calculated from Table 5. For example, a 5,000 Tshs per month pension would cost half as much as a 10,000 Tshs pension or about a quarter of current VAT revenue, if paid at age 65. If solely funded through VAT changes, this level of pension would require an increase in the VAT rate from 18% to 22.5%. Alternatively, the cost of an old age pension could be spread over several tax revenue bases. Nevertheless, it is at this point that the calculations of economic feasibility may collide with political feasibility. The key question is: Would increases in taxation to fund an old age pension be politically possible?

2.4   Pension policy: Designing for the long term

Because most of Tanzania's elderly live with younger relatives, the benefits of any pensions for people over 60 would likely be shared to some extent with younger generations within families. Nevertheless, the fact that the median Tanzanian was 19 years in 2009 implies that the majority of the population would not be eligible for such a pension for 41 years – i.e., not before 2050. Whatever the benefits of instituting such a pension now, one can be sure that profound economic and social changes will have occurred in Tanzania by 2050, and that the issue of social protection for the elderly will have been revisited and revised, probably several times.

Pension design is necessarily long-term public policy subject to uncertainty and revision. The adoption of a basic old age pension, set at the poverty line and means tested only for other pension income, should only be seen as one component – albeit an important one – of the social protection system for the elderly in Tanzania. Although the literature on pension design in general, and in developing countries in particular, is immense and contested, it is generally accepted that some sort of basic minimum guaranteed public pension for the elderly is a key feature of a well-designed system.

All known systems for the support of the elderly combine, in varying proportions, important roles for the public sector, for individual savings and for family support. Government cannot escape involvement because the public sector role typically encompasses:

- Direct provision of pension income;

- Preferential tax treatment for specific types of retirement savings;

- Legislation which may require mandatory contributions to pension plans (which may themselves legally be either public or private); and

- Regulation/oversight of private pension plans and the capital markets that absorb private savings.

Because these responsibilities interact – for example, regulatory policies which fail to prevent the bankruptcy of private pension plans will also produce greater claims for public support of the elderly who are destitute because their pension incomes have disappeared – governments have no real choice but to consider the public policy options.

Willmore (2005) cites the World Bank's (1994) classification of pension plan systems as based on three pillars:

[1] Basic pension

[2] Mandatory contributions to an earnings-related pension

[3] Voluntary saving

If this focus is broadened to the bigger issue of 'social protection for the elderly', one should also add, as possible means of support for older persons:

[4] Consumption sharing within extended families

[5] Earnings from continuing work

As section 1.1 documented, very few elderly Tanzanians can now rely on any type of pension plan for income, implying that they must now depend on some combination of [3], [4] and [5] – i.e., voluntary savings, consumption sharing and continued earnings. The combination of good health and available employment mean that continued earnings are at least an option – but this is only for a fortunate few. Moreover, a significant minority of the elderly are already unable to depend on consumption sharing within extended families. In developing countries in general, the trend to greater geographic mobility and urbanisation has put great pressure on the ability of the extended family to pool consumption across generations – and in Tanzania there is the added dimension of a significant proportion of 'skip-generation' extended families, in which grandparents are caring for grandchildren, because the parents are absent or deceased. Pillars [4] and [5] are therefore likely to be increasingly inadequate as a basis for social protection for elderly Tanzanians.

In theory, a perfectly rational economic decision-maker with complete self-control might not need to arrange a pension, because such a person might be able to save for their retirement years. But, even in the most affluent nations, voluntary saving, the third pillar, is rarely sufficient since very few people nearing 60 find that they have been able to accumulate enough private savings to support themselves in their older years.[25] Day-to-day expenditure needs can easily pre-empt the savings needed for retirement, unless a degree of self-control is exercised that very few people actually have – a dilemma referred to by economists as the dynamic inconsistency problem. Even if diligent savings enables the accumulation of some assets, they are always at risk – health shocks may increase financial needs, unemployment may interrupt income flows and nominal wealth can disappear in stock market declines. The recognition of self-control limitations and the risks of individual savings are key reasons why individuals agree to impose on themselves mandatory contributions to pension plans, either within private company pension plans or public sector contributory plans.[26] The difficulty of saving for retirement is of course much greater in poor countries, because the closer an individual is to bare subsistence, the greater are the pressures to consume now, simply to survive, rather than save for an uncertain future.

In affluent countries, the elderly therefore depend overwhelmingly on some form of pension – either basic or earnings-related, i.e., Pillars [1] and [2]. In Tanzania, a much smaller fraction of the employed labour force is now covered by 'social security', in the sense of an earnings-related pension, than is the case in richer nations. However, even the richest countries recognise that earnings-related pensions can never provide income adequacy in old age for those individuals who have not had a paying job. Many women, for example, may work most or all their lives in a non-market context.[27] In developing countries including Tanzania, self-employment, both in agriculture and in the service sector, and undocumented jobs in the informal market sector also constitute a relatively large percentage of total economic activity. Although it is anticipated that the long-term trend of economic development will increase formal sector activity over time, there always remains a segment of the population with little or no entitlement to earnings-related pensions. The first pillar is therefore defined in terms of a public pension providing a minimum income in old age irrespective of recorded earnings, because in all countries it is realistic to expect that many individuals will reach old age without savings and unable to claim adequate benefits from an earnings-related pension.

In 1948, Article 25 of the United Nations' Universal Declaration of Human Rights declared that "security in the event ... of old age" was a basic human right.[28] However, Pillars [1] and [2] of pension policy correspond to social protection against different types of insecurity. One type of anxiety about old age concerns the probability and depth of poverty. In the United Kingdom, the tradition of social policy has been to emphasise income adequacy for the least well-off, which implies a concern for a 'basic pension' which is universally available, i.e., Pillar [1]. However, the more affluent also worry about being able to maintain their customary patterns of living, even if they may not fear actually becoming poor. An earnings-related pension design – Pillar [2] – reflects the perception that "security in the event of old age" can

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[25] For Canadian data, see Osberg (2001, 2005)

[26] Pension plans also offer significant advantages in risk pooling and economies of scale in investment.

[27] If married to someone with a pension, such persons may be able to depend indirectly on an earnings-related pension, but death and divorce inevitably produce a substantial group without direct or indirect pension claims.

[28] Pension plans also offer significant advantages in risk pooling and economies of scale in investment.

also be perceived as enabling "dignity in one's old age", in the sense of receiving a pension or other income that enables an individual's previous lifestyle and position in society to be maintained[29], at least approximately.

There are many design options for the earnings-related component of a pension system, and the issue is highly contested terrain. Social security in the United States remains the largest single example of the historically dominant form of earnings-related pension design – publicly administered, universal, compulsory, and with the pension tied directly to pensionable earnings (i.e., 'Defined Benefit'). Enthusiasm for alternative designs has waxed and waned. The option of 'Defined Contribution' plans – those in which the pension payout depends on the market performance of an investment portfolio derived from pension contributions – looked, for example, much more attractive before 2006 when global stock markets were soaring, than in 2008-09 when the markets had tanked. And although many Latin American countries legislated mandatory enrolment in private sector pension plans in the 1990s in hopes of benefitting from the presumed virtues of competition among plan providers, they have discovered more recently that such systems have very high administrative costs, but little apparent benefit in capital market efficiency, since most pension plan assets remain invested in public debt.[30]

When Tanzanian authorities embark on full-scale reform of the earnings-related pillar of the pension system, they will have substantial international evidence on which to evaluate alternative design options. But underpinning all these options is the need for Pillar [1] – a basic, residual and publicly funded old age pension to catch those who 'fall through the cracks' of an earnings-related system and thereby prevent the occurrence of total destitution among the elderly.[31]

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[29] The UK perspective has often been ascribed to Beveridge, but the earnings-related perspective goes back at least to Bismark (1884).

[30] See OECD Latin American Economic Outlook 2008, Chapter 2

[31] Note that defined contribution plans transfer portfolio risk to the pensioner. This implies that portfolio choices can turn out badly. If individual defined contribution retirement accounts are the public policy choice, one must recognise that individual decision making on such retirement investment portfolios implies that while some people will do well, others will lose their money and become dependent on the basic public pension.

3

Possible Attitudinal and Behavioural Implications of a Basic Old Age Pension in Tanzania

A number of developing countries have instituted universal basic pensions for the elderly.[32] Willmore (2005) notes the very early 1898 example of New Zealand, and more recently Mauritius, Namibia, Botswana, Bolivia, Nepal and Antigua. The South Africa experience has been thoroughly evaluated; Case and Deaton (1998), Duflo (2003), Bertrand et al. (2003) and Jensen (2004) have provided rigorous econometric analysis of the introduction of a universal, means-tested old age pension in 1991. Under the apartheid regime, South Africa had very different basic pension levels for different racial groups. But the extension to the entire nation of a safety net initially designed for the white population meant that men over 65 and women over 60 were eligible for payments more than twice as high as the per capita income of African households. These benefits are means tested, and 77% of elderly African men and 80% of elderly African women qualified (usually for full benefits). A series of economic articles using a 1993 survey examined the impact of the sudden, unanticipated introduction of such a large transfer, 'tagged' as it is to age. The general conclusion is that it has been a highly effective anti-poverty program.

Because most of the elderly in South Africa (as in Tanzania) live in households containing children, a key finding of this research was that the benefits of an old age pension were shared with children, as well as with other household members. Because women can expect a longer lifespan and would otherwise typically be poorer (because they have lesser eligibility for other pension and asset income), older women benefit especially from this sort of age-driven pension. Case and Deaton (1998) concluded that the pension income was spent in much the same way as other household income and that it was an effective tool of income redistribution, reaching predominantly poor households. However, Bertrand et al. (2003) and Duflo (2003) found that sharing within the family depended on gender, both of the pension recipient and of other household members. Duflo (2003) in particular emphasised that pension income received by grandmothers had positive impacts on the physical well-being of their granddaughters.

This evidence from South Africa supports the assumption of Section 2.1 that the anti-poverty impact of an old age pension in Tanzania should be calculated on the basis that pension income is largely pooled with other household income. However, the analysis of 1993 data means that only the short-run, immediate impact of the 1991 policy intervention in South Africa has been assessed. The magnitude of the cash transfer in South Africa is also much larger relative to the median African income, than a fiscally feasible cash transfer in the Tanzanian context. A smaller pension can be expected to have smaller impacts, both positive and negative.

In many ways, however, the long-run influence of the introduction of a basic old age pension is likely to be more socially important and much more multi-dimensional than its short-run impacts. The South African literature examined short-run impacts on consumer expenditure and labour supply behaviour, but economic theory and other data imply that the list of plausible implications might also include:

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[32] Seventeen countries are cited in Ministry of Labour and HelpAge International (2010: Table c.1, p. 43)

- Household structure

- Division of household resources and the well-being of household members

- Planning for a longer, more secure future

- Fertility

- Labour supply

- Household investment decisions

- Improved perceptions of the role of the State and greater willingness to pay taxes

Each of these topics is discussed below.

3.1 Household structure

All the analyses of the South African data noted that the pattern of household formation is likely to be affected over the long term when the elderly receive a pension income. There is a clear incentive, particularly for the poorest individuals, to want to share living space with the elderly and thereby share in their financial good fortune. Although the social and economic changes of the development process may still tend to produce a structural trend to smaller average household size and greater numbers of nuclear families, the availability of pension income for the elderly can be expected to offset this trend to some degree. If co-residence makes caring behaviour easier[33], then the greater proportion of multi-generational households caused by a public pension would correspond to an increase in well-being.

3.2 Division of household resources and the well-being of household members

When the elderly receive pension income, they change from being a financial liability to the household to being a financial asset.[34] Power, respect and the division of economic resources within the family are likely to change as a consequence. The game theory perspective of economics predicts that the outcomes of explicit and implicit intra-family bargaining will shift in favour of the elderly when there is a fundamental improvement in the alternatives available to the elderly.

Financial concerns may not matter for some families. If norms of mutual caring are very strong within a household, a change in financial arrangements (like the introduction of a public old age pension) may not change the relative well-being of household members. Some families are like that – but not all. In other families, the intra-family distribution of resources will doubtless be affected by the fact that public pensions for the elderly imply a fundamental shift in economic options. Although 'threats' may never be explicitly expressed,

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[33] Phrased differently, if there are more non-monetary transfers of personal services within than between households.

[34] In the South African data, the size of the basic pension implies that the elderly often became the household's main income earner.

there is a huge difference between a situation where younger household members can hint "if we throw you out, you will be penniless" compared to a situation where elderly household members can imply "if I am not happy, I will leave, and I will take my pension with me". This shift can be expected to be particularly important for the relative well-being of elderly women and for poor households. As Chapter 1 noted, elderly women outside Dar es Salaam are particularly disadvantaged by current social protection arrangements, so they can expect to benefit disproportionately from receiving a pension income.

An extreme example of the possible importance of pensions for older women in poor rural households comes from the work of Miguel (2005), who correlated data on witch killings in Shinyanga with food availability – across households, seasonally and in years of poor rainfall. In arguing that economic stress in rural Tanzania is a key driver of witch killings and that older women are the main victims, he proposed an economic explanation of behaviour that had previously been thought to be sociologically determined.

The implication is that socio-economic policy can influence the prevalence of witch killings. Miguel concluded that an attractive policy option is to "provide elderly women in the study area with regular pensions, which would transform them from a net household economic liability into an asset, and could help households smooth their consumption". Although he went on to say that: "Unfortunately, Tanzania is too poor to afford a pension scheme as ambitious as the South African programme without considerable external donor assistance" (p. 1170)[35], his data was from 2001-02. Between 2002 and 2008, real GDP in Tanzania grew at an average annual rate of 6.9% per year.[36] This annual growth compounded over the period to a total increase in GDP of 48.8 %, which is roughly sixty times the cost of the pension scheme modelled by ILO (2005).[37]

3.3   Planning for a longer, more secure life

If expectations about likely outcomes in old age change – specifically, if people can reasonably expect to have enough to live on in their old age, instead of expecting to be penniless – will the attitudes of young people towards the future change? In a much cited article, Becker and Mulligan (1997) have argued that individuals' rate of time preference (i.e., what non-economists call "patience") is influenced by their economic context. If, for example, the probability of death is high, then "living for today" can be seen as a rational response of individuals to their environment.

More generally, Becker and Mulligan argue that because imagining and making plans for the future takes effort and energy, it is more likely to happen if people have better prospects for the future, such as greater wealth or more future income or higher chances of a longer life. They therefore conclude that "anything that raises future utilities without raising the marginal

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[35]   Miguel goes on to say that: "The South African case provides suggestive evidence that this could have a substantial impact: witch killings in Northern Province, South Africa, have dropped dramatically since the introduction of an old age pension in the early 1990s."

[36]   Variables NY.GDP.MKTP.KN and NY.GDP.MKTP.KD.ZG - World Development Indicators online

[37]   To be precise, the ILO proposal – a food poverty line income at age 65 (which is less ambitious than the South African pension, and as noted above, would cost roughly 0.8% of GDP) would cost 1/61 of the 2002-2008 increment in real GDP (GDP data from World Development Indicators, World Bank).

utility of current consumption will tend to lower the equilibrium discount on the future"
(p. 739). Introduction of a basic pension for the elderly is a clear example of a policy
intervention that would raise expected future utilities.

Although Becker and Mulligan cite a variety of empirical findings consistent with their
hypothesis, econometric tests of the causal influence of expectations on time preference that
are as fully rigorous as, for example, Case and Deaton (1998) or Duflo (2003), would be
difficult to construct. Nevertheless, if Becker and Mulligan are even partly right, the
implications for economic development and for well-being are likely to be profound.
Suppose, for example, that the prospect of looking forward to a comfortable old age meant
that a small percentage of Tanzanian drivers became a bit more cautious in their highway
decisions. Given the high levels of deaths and injuries resulting from motor vehicle accidents
in the country, every marginal increase in safety behaviour would yield a long-term stream of
benefits. The rate at which people discount the future affects so many important behaviours,
including savings, investment, fertility, labour market search, economic and personal
risk-taking, and environmental management, that even if the introduction of an old age
pension had only a small influence on each behaviour, adding up the positive changes could
well produce a significant total impact.

3.4   Fertility

The relatively young age of Tanzania's population implies that most Tanzanians have not yet
reached their peak child-bearing years, so even if the fertility rate continues to decline at the
current rate Tanzania's population will continue to increase. Nevertheless, the future fertility
rate has a huge impact on eventual population size. In 2005, Tanzania's population was 39
million but the UN projects a total population of 166 million in 2050 under their constant
fertility assumption (i.e., a crude birth rate per thousand which remains at approximately 40).
If the crude birth rate falls over time to 22.8 per thousand in 2050 (the 'medium variant' of the
UN projections), the population is projected to be 109.5 million in that year.[38] Clearly, the trend
of future fertility is vitally important for Tanzania's future.

The traditional 'within family' model of social protection for the elderly on which the majority
of Tanzanians still depend implies that if a person wants to be sure they will be cared for by
their children in old age, first they have to produce children, preferably many children. The
greater the expectation that some children will die before maturity, or move away, or become
parts of other households or be poor themselves, the greater is the number of births each
adult needs to produce, in order to have a reasonable chance of having enough affluent,
living children to provide adequate support in their old age. There is a large body of evidence
that fertility decisions are associated with the rational motivation for 'old age security'. At least
since Nugent and Gillaspy (1983) the literature has also emphasised its corollary – that the
availability of alternative mechanisms of social protection in old age, such as pensions, can
be expected to decrease the birth rate.

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[38]   See Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat,
World Population Prospects: The 2008 Revision, http://esa.un.org/unpp . Under the 'low fertility variant' in which
the crude birth rate declines to 18.7 in 2050, the population estimate is 95.9 million, whereas the 'high' crude
birth rate variant (26.8) implies 124 million in 2050.

When the birth rate falls, there is a 'demographic bonus' for economic growth. A decline in the birth rate will raise the growth rate of per capita income for at least a generation, both because there is less population to share in a given level of national income and because total incomes rise when the dependency rate falls and resources can be diverted from investment in children's development to investment in fixed plant and equipment.

3.5   Labour supply

Views of the People 2007 reported that 34% of the elderly depend on full-time or part-time work as their main source of income. The HBS 2007 data indicated that 60% of the elderly co-reside in households with prime age adults, whose decisions and capacity to work may be influenced by greater pension income coming into the household. The possible labour supply effects of a public pension must therefore be considered.[39]

In general, the magnitude of changes to labour supply will depend on the design of a pension plan. However if means testing is restricted to a pension recipient's other pension income, there is no impact on the marginal wage from current employment either of the pensioner or other household members – hence no 'substitution effect' on labour supply. There may be an 'income effect' on labour supply, as recipients work less hours due to their now greater affluence. Bertrand et al. (2003) concluded that in South Africa both the elderly and other household members, particularly the oldest male, reacted to the increase in household income via the old age pension, partly by reducing their labour supply.

In an economy with full employment, a reduction of labour supply among some households would imply a fall in aggregate output, but when unemployment is high the jobs that some people refuse are available for other people to accept. Hence, in a high unemployment economy, total hours of work are reallocated, but not reduced, when a transfer program (such as an old age pension) causes some individuals to reduce their labour supply. As Case and Deaton (1998) noted in the South African context: "The distortionary effect of cash transfers on labour supply is surely insignificant in many developing countries (and especially South Africa) where there are high rates of unemployment and underemployment" (p. 1331).

In addition, working hours in paid jobs are only part of labour supply, especially in rural Tanzania. For example, most working hours in agriculture are self-employment. If elderly Tanzanians in rural areas use part of their new cash income to hire agricultural labour and work less themselves on their own land, the advent of an old age pension may increase the demand for rural labour, and create additional paid rural employment to substitute for a reduction in their own unpaid labour. If this happens, total working hours are reallocated from older to younger workers, and paid hours increase as a proportion of total hours worked. However, it is not clear if aggregate output would rise or fall. Both the size of this shift, and its implications for aggregate agricultural output, are not known.

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[39]   Note that this is very different from rich countries, where the elderly typically live in separate households and are not expected to continue in paid employment. As a consequence, debates on old age pension design in rich nations have largely been spared the fixation on possible labour supply disincentives that dominates the literature on social assistance for the working age population.

3.6 Household investment decisions

Pension income for the elderly is a dependable, regular source of cash income for households with elderly members. Particularly for the poorest, most vulnerable and most isolated households, dependability and regularity of cash income are important attributes for improving the efficiency of investment.

Development economists have long noted that households living close to subsistence have very good reason to worry about the 'worst case' scenario arising from their decisions. If survival itself may be imperilled, very poor households may rationally avoid adopting new technologies, or growing new crops or making other investments with potentially higher future returns, as these choices can entail greater risk to household well-being now.[40] Indeed, this phenomenon has been referred to as a 'poverty trap'; the very poorest households are locked into low return, low risk activities.

If risk aversion for the poor is primarily based on their concern with survival rather than on the variance of outcomes in general, it follows that an increase in family resources in the 'worst case' scenario will have particularly strong impacts on behaviour at the margin. Adding a dependable stream of income from an old age pension puts a monthly floor under the cash income of recipient households. If negative shocks to markets or weather occur or if investments turn out badly for other reasons, such income limits the consequent loss in family well-being. The expectation that pension income will provide a buffer can be expected to increase the likelihood of more productive, higher risk investment behaviour by households.

Children's education is a particularly important household investment. However, a short-term lack of cash may mean households cannot meet school expenses, forcing children to not attend or to drop out of school altogether, an outcome that can be difficult to reverse later. In such a case, the cash nature of pension benefits can be especially useful in keeping children in school.

Household savings behaviour may also be affected by the introduction of an old age pension. If the alternative to a public pension is private savings for retirement, and if individuals were actually able to do so, the availability of a public pension plan might displace private savings for retirement. However, in the Tanzanian context this is a theoretical, rather than a practical, possibility. The 'wealth effect' of pensions on private savings depends on how large a net gain in lifetime wealth (i.e., present value of lifetime benefits minus present value of additional taxes paid to finance benefits) is received. Those who are nearing retirement at the time of a pension's inception do get an unambiguous wealth transfer from a pay-as-you-go public pension, but few of them have appreciable private savings in the form of financial assets that they could possible reduce.

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[40] See Ardington and Lund (1994), Dercon (1996, 2002); Ardington and Lund (1994) conclude that pensions are "a significant source of income, with definite redistributive effects; they are a reliable source of income, which leads to household security; they are the basis of food security; they deliver cash into remote areas where no other institutions do; they are gender sensitive to women; and they reach rural areas as few other services do".

In practice, even in a developed country context, only the most affluent households acquire much by way of private financial wealth. For most households, the primary channel of private asset acquisition is housing – specifically buying a home and paying off any mortgage or loan necessary for its purchase. Since the implicit income of in-kind services from owner-occupied housing is very rarely (if ever) considered in means testing for basic public pension entitlement, saving for such asset acquisition is unaffected.

In the context of affluent nations with well-developed financial markets, the means testing of public pensions can create an implicit tax on the financial returns from savings which may discourage savings through acquisition of financial assets. However, as already noted, home equity is the main form of private savings in affluent countries, and even more so in Tanzania. Furthermore, if the means testing of the basic public pension is limited to other pension income from mandatory earnings-related pensions, the marginal return from saving in other forms will be unaffected. The mandatory nature of contributions to pension plans means that individuals cannot in practice escape such saving. In any event, as argued in section 3.3, the rate of time preference may increase if pensions are introduced, which implies that savings might increase rather than decrease.

3.7   Improved perceptions of the role of the State and greater willingness to pay taxes

There have been wide swings in the dominant view of economists about the role of the state in economic development. The 1960s may have been far too optimistic about the ability of a beneficent state to plan investment, regulate markets and organise labour force development. However, the pendulum arguably swung much too far in the other direction in the 1980s to an unquestioning faith in unhindered market forces which neglected the essential role of the public sector in enabling markets to work effectively. Today, the crucial role of government in the maintenance of law and order, property rights, infrastructure provision, and education and social services is widely recognised by economists. This implies that solving the political problem of maintaining the legitimacy of the state is also now recognised as a crucial determinant of economic development.

Governments need broad-based political legitimacy in part because they need to raise tax revenue if they are to provide the public services which economic development requires. Raising adequate revenue from income tax and sales tax requires compliance from the majority of citizens.[41] If the answer to the question: "What has the government ever done for people like me?" is often perceived to be "Nothing", then citizens are less likely to pay taxes willingly. When large segments of the population feel that they derive no particular benefit from public expenditures, the low level of tax revenue implied by widespread non-compliance with tax laws can only fund a low level of public services. The lack of quality services, in turn, tends to reinforce the belief of most citizens that government does not do much for them.

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[41]   See Fjeldstad and Rackner (2003) for a fuller discussion of the problems of tax collection in sub-Saharan Africa.

The result can be a low-level equilibrium trap. When tax evasion becomes embedded, tax enforcement becomes focused on a relatively small formal sector that cannot avoid taxation. The fact that the formal sector in Tanzania is small, while the informal sector largely escapes tax, implies a large difference in effective tax rates and a corresponding disincentive for enterprises to make the transition to formal (taxed) status. The continuing narrowness of the tax base then implies a level of tax revenue that is insufficient to support adequate investment in infrastructure or public services, and this feedback loop is closed as the cynically low expectations of the public about their governments are confirmed by experience.

Governments therefore need to provide visible evidence that the tax revenue they gather helps improve the lives of ordinary citizens. Fjeldstad, Katera and Ngalewa (2009) found that public opinion on taxation is heavily influenced by perceived improvements in service delivery; Tanzanians' willingness to pay taxes improved between 2003 and 2006, but the government still has "a major challenge to enhance linkages between tax payment and service delivery" (p. 26).

The introduction of an old age pension is a promising place to improve Tanzanians perceptions of government service delivery because aging affects everyone and pension payments are highly visible when most of the elderly live with their younger relatives. In the Tanzanian context, the relatively small percentage of the population that is over 60 means that pension costs at inception will be correspondingly small. If the pension benefit is fixed in real terms (i.e., adjusted for inflation only), continued economic growth means that the aggregate fiscal burden will shrink over time as a percentage of GDP. However, because the benefits of pensions are broadly spread and the expectation of future receipt is almost universal, it is a very visible example of what tax revenue can do to improve the lives of 'people like me'.

4 Summary and Conclusions

Tanzanian society is likely to face escalating pressures to respond to the problem of poverty and deprivation among the elderly. The HBS 2007 and VoP 2007 datasets agree that elderly citizens who are primary caregivers for young children – about 10% of all Tanzanians over 60 years and about 14% of elderly rural women – are extremely vulnerable to poverty and food deprivation. These surveys disagree, however, in their evidence of deprivation among the elderly who are living alone or with their spouse. The VoP 2007 found that the probability of food deprivation, including access to protein-rich foods (meat and fish), was higher among the elderly who live alone or just with their spouse than the average elderly person and the average Tanzanian. Yet the HBS 2007 reported a substantially lower poverty rate for these same households. This disagreement is partly due to methodological decisions in setting lower poverty lines for elderly household members, particularly for women (see Appendix B). But obscure decisions on statistical methodology should not drive social policy. Rather, the disagreement between data sources on the nature and extent of elderly poverty in Tanzania indicates the need for more research on the adequacy of the HBS 'basic needs' and 'food poverty' lines in accurately identifying poor and vulnerable households.

On the question of affordability, the analysis found that a universal pension for all persons over age 60 or 65, set at the food poverty line, would be a costly but feasible pillar of social protection policy in Tanzania. It would have a significant impact on poverty. Given that most of the elderly live and share consumption with children and with other younger adults, half of the 3.08 million people who would be raised out of poverty would be children under 18 years and a further 35% would be aged 18 to 59. Expressed as a fraction of current GDP, or even as a percentage of GDP growth over the past five years, the cost of such a pension looks much more modest than when it is calculated as a percentage of current tax revenue from income or corporate tax, excise taxes or VAT.

This paper does not compare the benefits of spending public funds on an old age pension with the benefits of spending similar amounts on other priorities. Policy makers, therefore, will have to critically assess alternative uses of public funds for poverty reduction and development, such as rural roads, education or healthcare. However, this paper has argued that both the immediate impact of an old age pension on poverty rates and the long-term effects on individual behaviour are likely to be significant and generally positive for economic development.

If every initiative could be ranked against a one-dimensional scale for the allocation of public funds (e.g., impact on growth of per capita GDP) then a quantitative cost-benefit comparison of different policy options would, in principle, be possible (although it would require a vastly longer paper to identify and assess all alternative policies). But the introduction of an old age pension is a multi-dimensional policy initiative. It would have significant impacts on all three major dimensions of the social welfare function – distributional equity, average current income and growth over time. The political process can specify the relevant weights to be assigned to these three dimensions – i.e., the trade-off between the poverty reduction impact of an old age pension compared to growth or efficiency impacts – but economic arguments alone cannot be sufficient.

What is clear is that the number of Tanzanians over 60 will grow substantially in future years. In conjunction with other major demographic shifts – a falling birth rate, rapid urbanisation and growing labour mobility – this trend will accentuate pressures on the traditional extended family model of elderly social support. At some point, a reformed social protection framework for elderly Tanzanians will have to be put in place – the crucial questions are: what will it look like and when will it happen? In part answer to the second question, this analysis strongly indicates that Tanzania is now at an optimal juncture to design and implement a long-term, sustainable system of social protection for the elderly, before the aging issue becomes a crisis and when the size of the elderly population and the current financial cost of the reforms are relatively small.

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Appendix A

Table A1: Living arrangements of Tanzanians aged 60 years and older

Living arrangement	Male	Female	Total
Alone	5.3	7	6
With spouse only	8.4	1.5	5.7
With fellow non-spouse elderly	0.2	0.6	0.4
With children aged < 18 years	5.7	13.3	8.7
Average household size	*4.1*	*3.8*	*3.9*
With young adults aged 18-24 years	5.7	7.3	6.3
Average household size	*5.3*	*5.8*	*5.6*
With other adults aged 25-59 years	74.7	70.3	73
Average household size	*8.4*	*8.3*	*8.3*
TOTAL	**100%**	**100%**	**100%**

Source: Authors' tabulations from Views of the People Survey 2007

Appendix B

Official Poverty in Tanzania

In analysing both the 2001 and 2007 Household Budget Surveys, Tanzania's National Bureau of Statistics followed essentially the same methodology for determining national poverty lines. Since the "Basic Needs Poverty Line" was calculated as 1.37 times the "Food Poverty Line,"[42] the fundamental calculation is clearly the latter. In 2007, the NBS estimated the Food Poverty Line to be approximately 10,000 Tshs[43] per equivalent adult per month as (about $US 7.52 at March 2010 exchange rates). However, the NBS applied an equivalence scale in calculating the relative food needs of individuals of different ages within households.

Table B1: Equivalence scales used in NBS "Food Poverty Line" calculation

Age group	Sex			
	Male		Female	
0-2 years	X_1	0.40	X_2	0.40
3-4 years	X_3	0.40	X_{14}	0.48
5-6 years	X_5	0.56	X_{16}	0.56
7-8 years	X_7	0.64	X_{18}	0.64
9-10 years	X_9	0.76	X_{10}	0.76
11-12 years	X_{11}	0.80	X_{12}	0.88
13-14 years	X_{13}	1.00	X_{14}	1.00
15-18 years	X_{15}	1.20	X_{16}	1.00
19-59 years	X_{17}	1.00	X_{18}	0.88
60+ years	X_{19}	0.80	X_{20}	0.72

Source: HBS 2007 – Appendix A

As Table B1 indicates, the NBS equivalence scale calculation systematically assigns lower expenditure needs to the elderly in general and elderly women in particular – where men aged 19-59 years are weighted 1.0 and men over 60 are weighted 0.80, while women aged 19-59 years are weighted as 0.88 Equivalent Adults (EA) units and women over age 60 as 0.72 EA units. A man aged 19 to 59 years residing in a rural areas and living alone would be counted as food poor if expenditures were less than Tshs 9,574, but elderly rural men and women living alone would only be counted as being below the food poverty line if their total expenditures after medical and education costs were below Tshs 7,660 and Tshs 6,893 per month respectively. Clearly, the poverty rates calculated among the elderly population will be lower when the poverty line for them is set lower.

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43   The NBS notes (see HBS 2007; Appendix A) "The 2000/01 poverty line was based on the food basket consumed by the poorest 50 percent of Tanzanians. Median quantities consumed per adult equivalent were estimated for every food item, excluding alcohol and those that could not be assigned a calorific value. Median unit prices were also calculated. The calorific values of these foods were calculated. The food basket gives the *share* of consumption accounted for by each item. The level is set so that the sum of calories is 2,200 per day, the minimum necessary for survival. The food basket defined by these two parameters is then priced to give the food poverty line." "The food poverty line was then adjusted to allow for non-food consumption, giving the basic needs poverty line. This was done by calculating the share of expenditure that goes on food in the poorest 25 percent of households. Multiplying the food poverty line by the inverse of this share inflates it to allow for non-food consumption. The food share was 73 percent in 2000/01" (1/0.73 = 1.3698)

44   The 2007 estimate for Mainland Tanzania was Tshs 10,219, for Dar es Salaam Tshs 13,098, for other urban areas Tshs 10,875 and for rural areas Tshs 9,574. See HBS 2007 Chapter 7 page 1.

When people live in larger households, the 'equivalence scale' differences between prime age men and women, children and the elderly are averaged across household members in calculating the total number of adult equivalents in each household. Hence, these differences will affect poverty rate calculations most strongly for one and two person elderly households – which are precisely the household types for which the HBS 2007 and VoP 2007 datasets disagree.

How should one assess the relative income or expenditure 'needs' of individuals?

In international literature on poverty, the most commonly encountered equivalence scale methodology is the Luxembourg Income Study (LIS) scale. This scale sets the number of equivalent adults at the square root of household size. There are also two versions of "the OECD scale", in which children are assigned lower consumption needs than adults, and household size plays a major role.[44] Both these equivalence scales focus on economies of scale in household consumption, and ignore entirely any possible role of age or gender. In the developing country context it has been argued that food is the main expense item and economies of scale in food preparation are less important, so household size should be de-emphasised. In general, however, it is very unusual in equivalence scale calculations to make a distinction between the consumption needs of elderly persons and those of younger adults.

Much of the literature in economics on the calculation of equivalence scales relies on econometric analysis of household expenditure data. To estimate the level of total consumption expenditure corresponding to equal levels of utility for households with different characteristics, one approach (ascribed to Engel, initially) is to assume that the food share of total expenditure is the same at the same level of household utility. If so, then one can use the increment in total household expenditure when household membership changes, holding constant the food share, to impute the 'adult equivalent' cost of each demographic type. Alternatively, the Rothbarth approach assumes that the adult goods share of total expenditure is constant at similar levels of household utility. However, all of these approaches are based on the assumption of equal sharing of utility within households. Econometric analysis of expenditure patterns can, for example, reveal how much household expenditure on food changes when a household includes an elderly woman. However, such analysis cannot reveal if that simply embodies a general pattern of systematic disadvantage, i.e., family food spending patterns may just reflect the fact that older women are, on average, more likely to consume less food and be left more hungry than other household members.[45]

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[44] The original OECD scale sets the number of equivalent adults at $1 + .7(N_a - 1) + .5N_c$) where Na is the number of adults in the family and Nc is the number of children under age 15. A modified version, now used by Eurostat, sets equivalent adults = $1 + .5(N_a - 1) + .3N_c$). Statistics Canada uses $1 + .4(N_a - 1) + .3N_c$ but counts the first child as equivalent in cost to an adult. See Clavet (2006).

[45] Seebens (2008) has used the 2001 HBS expenditure data to show that female-headed households in Tanzania spend a significantly higher percentage of total expenditures on food than male-headed households. The interpretation he stresses is the likelihood that female-headed households spend more on children's food than male households and his general point is the infeasibility of inferring equivalence scales in Tanzania from observed food expenditure patterns in a defensible way. His results are also very hard to reconcile with a systematic under-counting of women in equivalent adult units.

If it is assumed that expenditure needs for the over 60 population are no different from those of prime age males, the poverty rate for the elderly who live alone would increase by three percentage points (from 19.7% to 22.7%), and by 8.4 percentage points (14.7 to 22.7) for those who live in two person families. Although quite large, this increase in the measured poverty rate of the elderly who live in small households would still leave their poverty rate below that of the entire population. The basic reason is the household size effect – the fact that smaller households in Tanzania have poverty rates much below the average; at 9.0% the 'basic needs' poverty rate among single-person households aged under 60 years is less than half that of single-person households aged over 60 years.[46]

In deciding on equivalence scales, the NBS relies on an estimate of caloric needs by age and gender which neglects the important role of physical activity (see below). The elderly who do not live in larger households and cannot share in the consumption enabled by the labour of younger adults have to provide for themselves. Because pension income is available only to a small minority, the elderly who live alone or in couples have to depend on continued work to enable their consumption – work which necessarily requires caloric intake.

Rather than rely on tables of age/gender caloric needs which neglect physical activity to estimate the level of the food poverty line, one could use the information about food adequacy contained in the VoP 2007 and HBS 2007 surveys. If we make the assumption that people who report "always/often" and "sometimes" not having enough food to eat will be found at the bottom of the income/expenditure distribution, then the question is how far up the distribution one has to go before respondents stop reporting that they "always/often" or "sometimes" do not have enough food. One could call these consumption levels the "Always/Often Hungry Borderline" and the "Sometimes Hungry Borderline".

In the VoP 2007, individual respondents were asked: "Have there been times in the last year when you didn't have enough food to eat?" In HBS 2007, a somewhat similar question[47] was asked, but with reference to the household. Hence, the referent in these two surveys is only identical for one-person households. As Table B2 shows, in the VoP 2007 data, 19% of all Tanzanians living alone outside Dar es Salaam reported "always/often" not having enough food to eat. In the HBS 2007 data, the comparable fraction was 22.3%. Taking the lower of these two estimates and assuming those "always/often" without enough food are the bottom 19% of the distribution of total expenditure of all single-person households outside Dar es Salaam, the 19th percentile of the distribution of total expenditure of non-Dar es Salaam, one-person households is Tshs 19,876 per month (about $ 14.94 US at March 2010 exchange rates). If medical expenses, rent, school tuition, etc. are excluded[48], the 19th percentile is at 18,187 Tshs. By either calculation, the "Always/Often Hungry Borderline" is almost twice as high as the NBS food poverty line for rural areas (Tshs 9,574).

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[46] Note however that living in a one person household is much less common (1.9%) among Tanzanians under 60, than among those over 60 (8.2%). Calculations by author using HBS2007.

[47] "How often in the last year did you have problems of satisfying the food needs of the household?" In the HBS2007, always and often are separately identified as response categories, but not in the VoP2007. As Table B2 illustrates, the wording differences are not very important for the 'always/often' response, but do make quite a large difference for the 'sometimes' response.

[48] Variable expadeqx* adulteq1 in HBS2007

Table B2: Food security in single-person households (% of households)

Location	VoP 2007		HBS 2007	
	"always/often" without enough food	"sometimes" without enough food	"always/often" without enough food	"sometimes" without enough food
Mainland Tanzania				
- Male	13.3	45.8	19.5	7.1
- Female	14.8	28.4	20.8	10.2
- Male & Female	13.9	38.5	20.0	8.2
Dar es Salaam				
- Male & Female	5.2	33.8	10.3	6.8
Non-Dar es Salaam*				
- Male	15.7	50.6	22.0	7.1
- Female	25.0	25.0	22.9	11.0
- Male & Female	19.0	41.2	22.3	8.5

Source: VoP 2007; HBS 2007

* Arusha, Tanga, Lindi, Mtwara, Iringa, Singida, Rukwa, Shinyanga and Mwanza regions

The NBS calculations omit the cost of cooking fuel and ignore the percentage of purchased food which is lost to spoilage or other waste. As well, even when it means going hungry, people need to spend money on non-food items such as shelter and clothing. However, the discrepancy between the "Always Hungry Borderline" and the Food Poverty Line is much too large to be explained solely by such issues. A more direct reason is likely the inadequacy of the NBS criterion of 2,200 calories as a daily standard in a country in which most people work hard physically to make a living.

Recommended caloric intake varies with height, weight, age, gender and physical activity. For a 66 inch (168 cm) tall, 140 pound (63.5 kg) 30-year-old male who is "rarely" physically active, the US National Academy of Sciences recommends 2,291 calories as sufficient – but physical activity for more than an hour a day would raise his required calories to 3,210. A physically active female of the same size and age is estimated to need 2,773 calories, while a 60 year old male the same size needs 2,924 calories – if active for an hour or more (but 2,005 calories if rarely active).[50] The differential in caloric needs associated with even an hour of physical activity is far larger than that associated with age or gender – and agricultural work typically occupies much more than an hour a day. For the vast majority of Tanzanians, particularly in rural areas, caloric needs reflect the mode of production – predominantly hand labour with few inputs of machinery or motive energy. It is not therefore surprising that so many report "always/often" not enough food, even at household income levels which are twice as high as the food poverty line.

The current poverty line methodology of the NBS attempts to account for differences in food prices – hence the 'basic needs' poverty line per adult equivalent was set at 17,941 Tshs monthly in Dar es Salaam, 14,846 Tshs in other urban areas and 13,114 Tshs in rural areas. However, the NBS does not allow for differences in caloric needs due to physical labour. Arguably, this methodology discriminates particularly against rural areas, where so many people engage in physically demanding agricultural labour.

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[50]   For a calorie calculator see http:// www.bcm.edu/cnrc/caloriesneed.htm

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