Working paper

International Growth Centre

Urbanisation in Tanzania

Population Growth, Internal Migration and Urbanisation in Tanzania 1967-2012: A Census-Based Regional Analysis

Tanzania's Urban Population, 1967-2012

A Density-Based Measure of 'Urban' for Tanzania? A Feasibility Study Using Dodoma Region

April 2014

DIRECTED BY LSE UNIVERSITY OF OXFORD

FUNDED BY UKaid from the British people

IGC project: Urbanization in Tanzania
Phase 1: Data assembly and preliminary analysis

Executive summary

The aim of this project is to obtain a better understanding of the interaction between population growth, internal migration and urbanization in Tanzania, and their relationship to the changing structure of the economy from soon after independence to the present day.

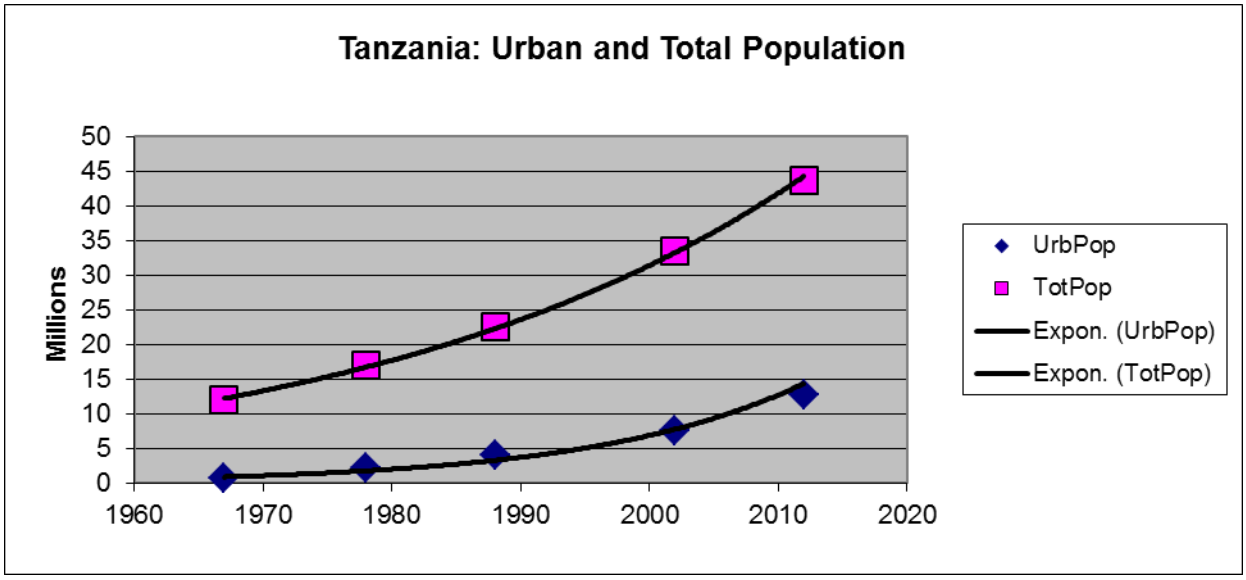
The aims of this first phase were: to obtain from the 2012 census the best possible data on the number, size and location of urban settlements in Tanzania, to link to analysis already carried out on previous censuses; and to investigate the feasibility of developing a new density-based definition of 'urban area' to apply to 2012 and earlier census data.

The Phase 1 results are set out in the three working papers which make up this report:

- **WP1**: Population growth, internal migration and urbanization in Tanzania, 1967-2012: A census-based regional analysis;
- **WP2**: Tanzania's urban populations, 1967-2012; and
- **WP3**: A density-based measure of 'urban' for Tanzania? A feasibility study using Dodoma region.

Key findings

The overall trend in population growth and urbanization for mainland Tanzania is shown in **Table 2** of **WP1** and in the figure below.



There was a spurt in both population growth and urbanization in the two decades following independence. Thereafter population growth still averaged nearly 3% p.a. while the urban population increased by about 5% p.a. In consequence, urbanization increased from 5.7% in 1967 to 29.1% in 2012. Thus, of the 31.6 million increase in the total population, 12.0 million were absorbed into urban areas. The increase in the rural population was 19.6 million, nearly a threefold increase over 1967, adding greatly to the pressure of population on land and other resources in rural areas.

Dar es Salaam stands out as the primate city, accommodating some 4.4 million people – 10% of the national population. What is striking about other regions is how variable the urbanization experience has been elsewhere (see **Table 3**, p.8). To aid interpretation of the figures, we introduce measures of rural out-migration, urban in-migration, regional in-migration, and the proportion of the increase in a region's urban population attributable to in-migration - see **Tables 4** (p.11), **5** (p.12), **6** (p.13) and **7** (p.15). Again, the striking feature is the wide variation in regional experience, with regions such as Dar es Salaam, Rukwa and Arusha gaining strongly while others, such as Lindi, Mtwara and Iringa have lost out. It may be useful, with future analytical work in mind, that the forces driving rural out-migration appear to differ from those driving urban in-migration; as also may be the fact that urbanization propensities vary quite markedly between one period and the next.

WP2 aims to track the populations of Tanzania's larger towns using census data from 1967, 1978, 1988, 2002 and 2012. However, at the time of writing 2012 data for towns not having the status of a Municipal or Town Council had not been released so the analysis focuses on regional capitals. The figures confirm a surge in urbanization during 1967-1978. After 1978, this surge eased, although regional capitals continued to grow on average well above the rate of population growth. What is striking, however, is the wide variation in the growth rates of these towns from 1978 onwards. In 1978-88, while Songea and Shinyanga grew strongly, Tanga, Bagamoyo, Lindi, Iringa and Bukoba lagged behind general population growth. In 1988-2002, only Arusha grew strongly (if the high population figure for 2002 is accepted), while Moshi, Tanga, Bagamoyo, Mtwara, Iringa, Singida and Tabora lagged, and Lindi actually lost population. Then in the latest period, 2002-2012, Bagamoyo and Lindi grew strongly while Arusha, Moshi, Tanga, Mtwara, Tabora and Musoma lagged.

Potential problems with the census data used to derive the results reported in **WP1** and **WP2** include uncertainty as to whether a consistent definition of 'urban' has been applied in the censuses, and the effect of boundary changes on urban population counts. To assess the quantitative significance of the

latter effect, we tried to locate the government gazettes which are supposed to record boundary changes and searched for historic maps from which boundary changes might be deduced. However, up to the time of writing neither line of enquiry has been fruitful.

As regards the definition of 'urban', **WP3** uses data for Dodoma region to explore the feasibility of adopting a density-based definition of 'urban' in Tanzania. We conclude that despite the advantage of consistency, a density-based measure would have limitations unless used in conjunction with other criteria and central guidance. We also suggest a sub-division of the 'urban' category into 'urban - informal' and 'urban - formal' in future censuses.

Next steps

In **Phase 2** of this project, the intention is to gain a better understanding of the drivers of the trends found in Phase 1. In particular, to use our Phase 1 propensities to investigate how regions with high propensities differ from those with low propensities, period by period, leading to a narrative account of the spatial development of the Tanzanian economy over this period, interpreting what has happened. Where the evidence seems sufficiently convincing, we will draw conclusions and suggest policy implications. Where uncertainties remain, we will suggest directions for future research.

Working paper

International Growth Centre

Population Growth, Internal Migration and Urbanisation in Tanzania

1967-2012: A Census Based Regional Analysis

Hugh Wenban-Smith

April 2014

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INTERNATIONAL GROWTH CENTRE (IGC)

Project on urbanization in Tanzania

Phase 1: Data assembly and preliminary analysis

Working Paper 1

POPULATION GROWTH, INTERNAL MIGRATION AND URBANISATION IN TANZANIA, 1967-2012: A CENSUS BASED REGIONAL ANALYSIS

H B Wenban-Smith

Independent Research Economist

(wenban@globalnet.co.uk)

Final Version: 1 April 2014

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Introduction

In the 1960s and 1970s, soon after Tanzania's Independence, rural-urban migration was the subject of considerable academic attention. Much of this focused on the dual economy model of Harris & Todaro (Harris & Todaro (1970) – see also a recent survey by Lall *et al* (2006)). In Tanzania, important studies were undertaken by Collier (1979) and Sabot (1979). Sabot worked within a Harris-Todaro framework ("The excess supply of urban labour increases until there is equality between the expected income of migrants, the product of the urban wage and the probability of obtaining a job, and the rural wage" p.2) but provides a long historical perspective (1900-1971) and adds investment in human capital (i.e. primary or secondary education) as a determinant of migration. Collier goes further, finding the Harris-Todaro model over-simplistic, and its implications unwarranted once more realistic features of the labour market are introduced[1]. He also moves from static partial equilibrium to dynamic general equilibrium – an important innovation in this context[2]. After 1980, work of this kind rather tailed off as academic attention moved on to new problems and, in Tanzania's case, some disenchantment set in regarding its development policies. However, there have recently been some new studies: For Tanzania, Beegle *et al* (2011) have tracked migration in the Kagera region and there is a World Bank (2009b) report on the urban transition in Tanzania; For the wider SSA area we have Barrios *et al* (2009), who consider the influence of climate change on rural-urban migration, Bruckner (2012), who investigates the relationship between agriculture and urbanization, Gollin *et al* (2013), who distinguish between urbanization with and without industrialization, and Christiaensen *et al* (2013), who draw attention to the growing significance of natural population growth in urban areas, giving rise to 'urban push'.

[1] These features are: Heterogeneity in both the stock of unemployed and the flow of migrants; The reservation price of job seekers treated as a function of the length of job search; Existing wage employees assumed to have priority over new job seekers; The urban non-wage sector disaggregated into casual wage labour, self-employment and unemployment; Migrants and the unemployed stratified by age, sex and educational characteristics.

[2] Today, general equilibrium is less highly regarded. Arguably, the key here is dynamic modelling, the continuing flow of migrants clearly demonstrating that no equilibrium has been (or maybe ever will be) achieved.

The ultimate aim of the work reported in this paper is to contribute to this revival by documenting rural-urban migration in the particular case of Tanzania, relating it on the one hand to the impact of population growth on rural productivity (rather neglected in the work cited above) and, on the other hand, to the rate of urbanization. Urbanisation should be a powerful force for structural change and income growth (World Bank, 2009b) but, in countries like Tanzania, it is failing to realize this potential (Fay & Opal (2000); Cohen (2004); Bryceson & Potts (2006)). With the passage of time, theoretical advances in urban economics and economic geography (and in statistical techniques and computing power) offer the prospect of a better understanding of these processes – and hence of the scope for improving performance.

As a first step, the Tanzanian censuses for 1967, 1978, 1988, 2002 and 2012 are in this paper analysed to estimate at regional level how the rural and urban populations have evolved over a period of 45 years. The analysis allows us to present:

- An overall picture of the trend towards urbanisation in Tanzania;
- Estimated flows of migrants from rural areas to urban areas in their own or other regions, or to rural areas in other regions (e.g. in connection with artisanal mining);
- Derived from these estimates, summary measures of these flows, here termed:
    - The regional propensity for rural out-migration ***P(rom)***;
    - The regional propensity for urban in-migration ***P(uim)***; and
    - The regional propensity for regional in-migration ***P(rim)***.

Before presenting these estimates, the data sources are discussed, including the question of the definition of 'urban' in the Tanzanian context. This leads to discussion of what the data seem to show. This analysis is all basically descriptive, establishing the facts. A final section foreshadows use of the information that has been assembled in further research aimed at understanding and explaining the facts, leading hopefully to better informed policies towards rural development, migration and urbanization.

Treatment of Urban Areas in the Census Reports

(a) 1967 Census: Volume 2 of the 1967 Population Census is "Statistics for Urban Areas". For mainland Tanzania, the report explains that the then 17 regions were divided into 60 districts and 14 towns, plus Dar es Salaam. The 14 towns have their own town councils, responsible directly to the

regional headquarters. In addition, the district administrations cover 17 'former townships' which are treated as urban areas in the census, making 32 urban areas in all. The definition of urban was thus based on administrative criteria – but this probably coincided pretty well with the larger denser settlements at that time (many of which were nevertheless quite small).

(b) 1978 Census: Volume IV of the 1978 Population Census shows in Table 5 (p.7) a list of urban areas/localities by region together with the populations of each[3]. In addition to Dar es Salaam, the 14 towns and 17 former townships of 1967, this list includes 78 additional settlements, making 110 urban areas in all. Regarding the definition of urban, Table 15 of the same volume shows which wards are included in each urban area but does not say what criteria were used to determine whether a ward was urban or not. By this date the Tanzanian 'Ujamaa' programme of village consolidation was well under way producing some villages with sizeable populations. However, as the majority of the urban areas in the report are stated to be regional or district headquarters, it appears that no villages were yet considered to be urban.

(c) 1988 Census: Here matters become more complicated. According to Vol. X of the 2002 Census: "It should be noted that in the 1988 Population Census, identification as well as the size of the urban localities was not addressed by the Bureau of Statistics as it was for the 1967 and 1978 Censuses". However, the 20 volumes of Regional Profiles published as part of the census reports indicate for each ward whether it is 'urban', 'mixed' or 'rural', with the urban populations totaled for each district and each region – enabling regional urban populations to be established. It seems that whether part or all of a ward was considered to be urban was left to the judgement of the district administration. No criteria were laid down centrally. We may surmise that different judgements were made in different areas[4] but it seems likely that most would be administrative centres. Examination of the ward figures suggests that were around 170 'urban areas' at this time.

(d) 2002 Census: Vol. X of the 2002 Census gives regional rural and urban populations (Table 1.10, p.10) with a fuller discussion in Chapter 10 (pp. 160-165). It also notes that: "The urban areas are defined as the localities that are identified as urban areas by the district authority. There is no clear and

[3] The urban populations in this table differ somewhat from those shown in Table 6 of the 1978 Preliminary Census Report and, being later, are more authoritative.

[4] We may note here also figures published in Appendix 4 of the Tanzania National Human Settlements Development Policy in 2000. These claim to be 1988 populations but appear in most cases to be greatly inflated compared with the other sources – Vol. X of the 2002 Census reports that [in the 1988 Census]: "The assignment of urban population portion in a mixed ward was mainly based on guesstimate."

uniform definition applied by the various districts in the country." This chapter also refers to the National Human Settlements figures (see F/N 4). The number of urban settlements in the 2002 census had fallen to around 150, suggesting a stricter definition than in 1988.

(e) 2012 Census: The 2012 census report on 'Migration and Urbanisation' is not scheduled to be published until May 2014. However, the census tables reporting 'Population distribution by Age and Sex', which were released in September 2013, include a rural-urban breakdown of the population down to district level. These figures may be preliminary but have been adopted in this paper. As regards the definition of 'urban', this report says: "For the purpose of the 2012 PHC, urban population consists of people living in areas legally recognized (gazetted) as urban and all areas recognized by Local Government Authorities as urban." A listing of 'urban centres' compiled by NBS, in association with government departments, for the 2012 census shows nearly 600 such centres. It appears that many smaller settlements not previously considered urban are now so considered – a point on which the forthcoming 'Migration and Urbanisation' report may be expected to shed more light.

The key figures noted above are summarized in **Table 1** below:

Census Year	No. of Regions	No. of Districts	No. of Urban Areas
1967	17	60	32
1978	20	95	110
1988	20	[?]	c.170
2002	20	123	c.150
2012	25	159	c.600

Table 1: Mainland Tanzania – Numbers of Regions, Districts and Urban Areas

Using the census urban areas data

Thus figures for the total urban population of mainland Tanzania at regional as well as national level are available for all five census years. The problem here is that the definition of 'urban' has not remained the same over the period. In 1967 and 1978 the definition was clear but quite restrictive – essentially regional and district administrative centres (whose boundaries probably expanded between the two years). By 1988, and again in 2002, more settlements were being classified as urban but the criteria seem to have differed between district authorities, with some being perhaps more generous than others. In so doing, the authorities were no doubt responding to changes they could see on the ground. The total population of mainland Tanzania increased by over 30% between 1978 and 1988, by 45%

between 1988 and 2002, and by a further 30 % between 2002 and 2012, leading to more and larger settlements. Among the types of urban expansion taking place were:

i. *Densification of established urban centres*, particularly Dar es Salaam but also Mwanza, Arusha, Dodoma, Mbeya and Moshi;
ii. *Extension of shanty type settlements around these centres*, extending their boundaries and perhaps absorbing previously independent villages or other settlements;
iii. *Growth of previously insignificant trading centres*, particularly along major roads and railways;
iv. *Growth of villages*, particularly in the wake of the Ujamaa villagisation programme;
v. *Temporary or semi-permanent settlements associated with small scale mining activities*;
vi. *Camps or settlements formed by refugees from neighbouring countries*, particularly (at different times) Burundi, DR Congo and Rwanda (See **Appendix B** for some estimates of numbers).

While it seems likely that expansion of types (i) – (iii) would generally be reflected in district authority classifications, practice with types (iv) – (vi) is unclear, and cases of these kinds are hard to identify in the census reports.

In the 2012 census, there seems to have been a relaxation of the criteria (or at least a widening of the administrative definition) although again there is some uncertainty as to precisely what criteria Local Government Authorities have followed. It seems possible that some populations in settlements of types (iv) – (vi) are now being counted as urban. Thus caution is in order when using the census estimates of urbanization over these years – some of the recorded changes may reflect changing definitions of 'urban'. Moreover, even where the formal definition has not changed, expansion of the urban boundary will lead to more people being counted as urban (see also F/N 11 on p.10).

Census migration data

In the long form census questionnaires for 1967, 1978, 1988 and 2002, administered to only a sample of respondents, questions were included about place of birth, place of normal current residence and place of residence in the previous year[5]. The information allows observations to be made on both long term and short term migration. This is explained more fully in Chapter 9 of Vol. X of the 2002 Census Report. However, the responses were coded by region only so that the data shed no light on rural-urban migration. For this reason, the derivation of migration flows presented later in this paper has been preferred.

[5] It needs to be checked whether similar questions were included in the 2012 census.

Alternative measures of urbanization

A World Bank report on 'The Urban Transition in Tanzania' (World Bank (2009a)) notes that there are three perspectives on 'urban' in Tanzania: The politico-administrative used by the Prime Minister's Office, Regional Administration and Local Government (PMO-RALG); The human settlements perspective used by the Ministry of Lands and Human Settlements Development (MoLHSD; and the statistical perspective adopted by the National Bureau of Statistics (NBS). None of these, the report observes, explicitly accounts for population density. There is thus a question whether a density-based measure of urbanization would provide a more consistent yardstick for tracking urbanization over long periods, as the other measures may be affected by arbitrary changes in definition from time to time. A pilot investigation into the feasibility of an urbanisation measure of the form "contiguous areas with a density greater than X, and a total population greater than Y" is being carried out for Dodoma region as a part of this project and will be reported separately. This will provide an opportunity to compare census based urban population figures with those obtained using a density-based measure. In addition, information is being sought on how the boundaries of regional capitals have changed between censuses, to help assess the importance of this factor.

Overall trend in urbanization in Tanzania

Bearing in mind what has been said above about the 'urban' definition, **Table 2** shows urban and total population for mainland Tanzania for each census year.

Tanzania	1967 Census	1978 Census	1988 Census	2002 Census	2012 Census
Mainland Urban Population (Growth rate % p.a.)	685,092	2,257,921 (11.5%)	3,999,882 (5.9%)	7,554,838 (4.7%)	12,701,238 (5.3%)
- of which: Dar es Salaam (Growth rate % p.a.)	*272,821*	*769,445 (9.9%)*	*1,205,443 (4.6%)*	*2,336,055 (4.8%)*	*4,364,541 (6.5%)*
Mainland Total Population (Growth rate % p.a.)	11,975,757	17,036,499 (3.3%)	22,507,047 (2.8%)	33,461,849 (2.9%)	43,625,354 (2.7%)
Urbanisation (%)	5.7	13.3	17.8	22.6	29.1

Table 2: Overall trend in urbanization in Tanzania

These figures show quite rapid urbanization in the first period with a subsequent slowing down. While total population growth has gradually declined from 3.3% p.a. in the first period to 2.7% p.a. now, the urban population has always grown more rapidly so that by 2012 urbanisation had risen to 29.1%

compared with 5.7% in 1967. This is still quite low by international standards, implying that more than 70% of the population remains rural, emphasizing the importance of relating developments in the urban sector to conditions in rural areas. We may note, for example, that of the 31.6 million increase in the total population between 1967 and 2012, 12.0 million were absorbed into urban areas; the increase in the rural population was therefore 19.6 million, nearly a threefold increase over 1967, adding greatly to the pressure of population on land and other resources in the rural areas.

The Regional Dimension

Table 3 sets out urbanization percentages and urban population growth rates for each of the 20 regions[6] for the 1978 to 2012 period[7].

Region[a]	Urbanization (%)				Urban Population Growth (% p.a.)		
	1978	1988	2002	2012	1978-1988	1988-2002	2002-2012
1. DOD	8.8	10.6	12.6	15.4	4.4	3.5	4.2
2. ARU/MAY	8.0	12.1	23.4	24.1	8.3	9.0	3.3
3. KIL	7.5	15.0	20.9	24.2	9.4	4.0	3.3
4. TAN	14.1	17.6	18.4	21.6	4.5	2.1	3.9
5. MOR	14.4	21.0	27.0	28.7	7.1	4.1	3.0
6. PWA	7.2	15.0	21.1	32.8	9.8	4.9	6.8
7. DAR	91.3	89.6	93.9	100.0	4.6	4.8	6.5
8. LIN	10.1	15.1	16.0	18.7	6.2	1.9	2.5
9. MTW	12.0	14.4	20.3	22.9	3.3	4.2	2.5
10. RUV	7.7	11.7	15.2	24.6	7.7	4.5	7.2
11. IRI/NJO	9.1	9.8	17.2	25.7	3.3	5.8	5.1
12. MBE	8.9	18.0	20.4	33.2	10.7	3.3	7.9
13. SIN	9.4	8.6	13.7	12.5	1.7	5.7	1.4
14. TAB	13.1	14.3	12.9	12.6	3.3	2.8	2.7
15. RUK/KAT	11.7	14.1	17.6	25.1	6.4	5.2	7.0
16. KIG	9.9	12.3	12.1	17.2	5.0	4.8	6.1
17. SHI/GEI/SIM	4.2	6.6	9.2	12.1	7.6	5.8	4.6
18. KAG/GEI	3.4	5.3	6.2	9.9	7.3	4.4	8.2
19. MWA/GEI/SIM	10.2	18.1	20.5	28.3	8.7	4.2	6.4
20. MAR	7.3	10.5	18.6	17.4	6.6	6.9	1.8
Mainland	**13.3**	**17.8**	**22.6**	**29.1**	**5.9**	**4.7**	**5.3**

[Note: [a] Listed here with NBS numbers of 2002. See Appendix A for full names of regions.]

Table 3: Urbanization and urban population growth by region, Tanzania 1978 to 2012

[6] Although figures are given separately for Arusha and Manyara regions in the 2002 census reports, this division of Arusha region took place in 2003. Combining ARU and MAY here preserves comparability with earlier years. Similarly, by 2012, 4 new regions had been created with Iringa (IRI) being divided into Iringa and Njombe (NJO), Rukwa (RUK) being divided into Rukwa and Katavi (KAT), while parts of Mwanza (MWA) and Shinyanga (SHI) have been reallocated to the new regions of Geita (GEI) and Simiyu (SIM). To preserve comparability, districts have here been allocated back to the previous 20 regions. **Appendix A** lists today's 25 regions, indicating the areas transferred since 2002.

[7] Taking the regional analysis back to 1967, when there were 17 regions, would be difficult.

Dar es Salaam (DAR) of course stands out. Although no longer formally the capital of Tanzania – that is now Dodoma – it remains the primate city, accommodating 10% of the national population, and its growth has accelerated recently. It is not really comparable with the other regions, being defined by its municipal boundaries. It used to have a small rural population within those boundaries but by 2012 that was no longer the case and it seems likely that some of the growth of the surrounding Pwani (PWA) region may be due to overflow from Dar[8]. As will emerge, its growth has been fueled mainly by in-migration from other regions.

What is most striking about the figures for other regions is how variable their urbanization experience has been. Some that grew fast in one period, slowed in others; others, which started slow, speeded up later. Only four regions urbanised below the average rate in all three periods: Dodoma[9], Tanga, Mtwara and Tabora, with Tabora less urbanized in 2012 than it was in 1978. However, there are signs that more regions are losing urban dynamism: In 1978-1988, urban growth was below population growth in only one region, Singida (SIN); In 1988-2002, there were three, Tanga (TAN), Lindi (LIN) and Tabora (TAB); in 2002-2012, there were five, Lindi, Mtwara (MTW), Singida, Tabora and Mara (MAR).

Only two regions urbanized above the average rate in all three periods: Pwani and Rukwa. However, by 2012, two regions were more than 30% urbanized (Pwani and Mbeya), while another four were more than 25% (Morogoro, Iringa, Rukwa and Mwanza). At the other end of the spectrum, Kagera was still under 10% urbanized in 2012. We can hope that looking more closely at these regional differences will throw new light on the drivers of urbanization in Tanzania. As a step in this direction, we look next at the relative roles of natural population growth and internal migration in urban growth at regional level.

The relative roles of natural growth and migration in urbanisation

In this section, we introduce four measures which aid interpretation of the data. They are:

i. ***P(rom)*** , the regional propensity for rural out-migration: This is the percentage of the expected rural population in a region that migrates either to the urban parts of the same region or to other regions (a negative value indicating a net inflow to the region's rural areas);

[8] Indeed, there may be a case for treating Dar and Pwani as a single region for the kind of analysis done in this paper.
[9] It is surprising to find Dodoma region in this position but the decision in 1973 to relocate the capital there has not been implemented with any enthusiasm – most government departments remain in Dar.

ii. ***P(uim)*** **,** the regional propensity for urban in-migration: This is the number of migrants to the region's urban areas expressed as a percentage of the expected urban population (a negative value indicating that some of the expected urban population left the region's urban areas);
iii. ***P(rim)*** **,** the regional propensity for in-migration, both rural and urban: This is the number of migrants coming into the region expressed as a percentage of the expected total population of the region, rural and urban (a negative value indicating a net outflow from the region);
iv. $\boldsymbol{MU_{Prop}}$ **,** the proportion of the increase in a region's urban population attributable to in-migration.

To obtain these measures, it is first assumed that the natural growth rate for all regions between the census years1978, 1988, 2002 and 2012 is the national average rate for each period. Of course, this is unlikely to be quite right but it provides a benchmark – the 'expected population' – against which other movements can be assessed[10]. Next it is supposed that the expected growth in the rural population in each region that is not found to be still rural at the end of each period goes either to the urban parts of the same region[11]; or, if there is still a surplus, it is supposed to migrate to other regions[12]. The calculations leading to the derived measures are set out in **Appendix C**, **Tables C1** (for 1978-1988)**, C2** (for 1988-2002) and **C3** (for 2002-2012).

(a) Regional propensities for regional in-migration **(*P(rim)*)**

A good starting point is to consider which regions have gained most from migration and which have lost population. **Table 4** sets out the figures for ***P(rim)*** for the three inter-censal periods[13], adding a column for the whole period 1978 to 2012. To avoid the appearance of a random series of numbers, the regions are listed with the gainers at the top and the losers at the bottom.

The inter-regional flows of migrants balance out, hence the zeros in the final row. Dar dominates the table, with over 70% of the increase in its population between 1978 and 2012 being accounted for by in-migration. This inflow has been high and rising (only Kigoma being higher, in one period, 1988-2002, boosted by refugees from Burundi and DRC). Next, Rukwa and Arusha regions have been

[10] Potts (2009, p.254) takes a similar position: "… as a general guide, the contribution of net in-migration to the growth of one town, or a group of towns, can be assessed by comparing its growth to the national rate."
[11] It has been pointed out to me that when the urban population increases because the urban boundary has expanded, no migration is involved (Deborah Potts, personal communication). The quantitative importance of this needs to be assessed.
[12] It is important to keep in mind that these are all *net* flows. Potts (2006, pp.73-77) discusses the extent of circular migration in SSA countries; she also discusses the relative contributions of natural increase and in-migration to urban growth, noting that higher rural birth rates are balanced by a higher proportion of people of child-bearing age in urban areas.
[13] Propensities for 1967-1978 have not been calculated because of the change in number of regions (See F/N 7).

persistent gainers but at a much more moderate rate than Dar. In contrast, the bottom eight regions have consistently lost population in every period. Mtwara and Lindi regions experienced the largest outflows but some easing may perhaps now be expected following the oil and gas discoveries in that area. The fortunes of the intermediate regions fluctuate, sometimes gaining population, sometimes losing.

Region[a]	1978-1988	1988-2002	2002-2012	1978-2012
7. DAR	20.8	24.4	34.6	72.9
15. RUK/KAT	17.8	8.7	5.9	22.2
2. ARU/MAY	10.3	15.9	2.9	20.6
16. KIG	-0.7	32.3	-2.5	19.5
18. KAG/GEI	-1.5	3.8	6.8	9.0
14. TAB	-3.7	10.6	2.8	8.8
19. MWA/GEI/SIM	-1.6	5.0	2.9	6.0
12. MBE	3.5	-6.0	0.6	-2.3
17. SHI/GEI/SIM	0.9	6.6	-8.6	-3.6
20. MAR	-0.4	-3.7	-1.9	-4.9
10. RUV	5.1	-3.9	-5.2	-5.7
5. MOR	3.1	-7.9	-3.0	-7.4
13. SIN	-2.1	-7.9	-3.3	-10.3
6. PWA	-6.8	-6.4	-4.8	-12.9
1. DOD	-3.8	-7.9	-5.5	-13.2
4. TAN	-6.6	-14.0	-4.1	-17.9
3. KIL	-7.4	-16.1	-8.6	-23.6
11. IRI/NJO	-2.4	-15.9	-15.5	-27.1
9. MTW	-12.8	-14.9	-13.3	-29.2
8. LIN	-7.8	-17.5	-15.8	-30.8
Mainland	**0.0**	**0.0**	**0.0**	**0.0**

[Note: [a] Listed here with NBS numbers of 2002. See Appendix A for full names of regions.]

Table 4: Regional propensities for in-migration (*P(rim)*), Tanzania 1978-2012

So much for the broad pattern of migration: In looking next at the rural and urban dimensions, it will be of interest to see whether a similar pattern emerges.

(b) Regional propensities for rural out-migration (***P(rom)***)

Table 5 sets out the regional propensities for rural out-migration, with the regions ordered as in **Table 4**. Here, we may note first a rising trend in rural net out-migration so that over the whole period some 15% of the expected rural population had migrated either to urban areas in their own region or to another region. Leaving aside Dar, which had no recorded rural population in 2012, the broad pattern is consistent with **Table 4**, with regions towards the top gaining rural (as well as urban) population – negative ***P(rom)*** – while regions in the lower half of the table lost around a third of their rural populations. However, there are some irregularities. The big rural inflow to Kigoma in 1988-2002

stands out – presumably mainly refugees. The inflows to Kagera, Mwanza, Tabora and Shinyanga in the same period may be connected with artisanal mining, which is thought to have attracted some 750,000 workers to the rural parts of these regions[14]. Lower down the table, Singida and Dodoma had relatively modest outflows; Pwani's on the other hand are rather high – presumably mainly to Dar. Somewhat surprising are the high outflows from Kilimanjaro, generally regarded a rather prosperous area.

Region[a]	1978-1988	1988-2002	2002-2012	1978-2012
7. DAR	-43.6	26.9	100.0	100.0
15. RUK/KAT	-14.6	-4.3	3.7	-6.4
2. ARU/MAY	-5.4	-0.9	-1.9	-5.4
16. KIG	3.3	-32.6	8.1	-11.4
18. KAG/GEI	3.5	-2.8	-2.6	-2.9
14. TAB	5.0	-12.4	-3.1	-9.8
19. MWA/GEI/SIM	10.2	-1.9	7.1	11.0
12. MBE	6.8	8.7	15.5	24.2
17. SHI/GEI/SIM	1.6	-3.7	11.5	9.8
20. MAR	3.8	12.5	0.4	12.1
10. RUV	-0.6	7.8	15.7	20.6
5. MOR	4.8	14.9	5.1	18.6
13. SIN	1.2	13.0	1.9	12.6
6. PWA	14.6	13.2	18.9	33.4
1. DOD	5.8	9.9	8.6	18.3
4. TAN	10.5	14.8	7.8	23.5
3. KIL	14.9	22.0	12.4	34.3
11. IRI/NJO	3.1	22.9	24.1	39.3
9. MTW	15.2	20.8	16.2	36.4
8. LIN	13.0	18.4	18.5	35.7
Mainland	**5.2**	**5.8**	**8.4**	**15.1**

[Note: [a] Listed here with NBS numbers of 2002. See Appendix A for full names of regions.]

Table 5: Regional propensities for rural out-migration (*P(rom)*), Tanzania 1978-2012

Some of the anomalous figures may perhaps be explained by relatively high urbanization in some regions, providing a destination within the region for rural migrants. If so, it should show up in the figures next considered.

(c) Regional propensities for urban in-migration (***P(uim)***)

Table 6 sets out the figures for net urban in-migration, with the regions again ordered as in **Table 4**. A quick glance at these figures is enough to appreciate that urban in-migration bears little relation to overall regional in-migration. The highest rates are scattered through the list, with Dar ranked 9th, not

[14] Bryceson *et al* (2012)

first. These high ***P(uim)*** values indicate that some regions with a relatively low initial urbanization rate have urbanised more rapidly than some with longer established urban areas. The lowest rate is for Tabora, suggesting that incomers to this region settled mainly in rural areas; the next lowest rate is for Lindi, which was the heaviest loser of population, indicating that urbanization in this region had little attraction for its rural migrants (a situation that may now change as oil and gas related activity picks up in the vicinity of Lindi and Mtwara towns).

Region[a]	1978-1988	1988-2002	2002-2012	1978-2012
7. DAR	18.6	30.4	43.3	88.7
15. RUK/KAT	41.2	35.9	50.9	119.7
2. ARU/MAY	67.3	125.0	6.0	120.1
16. KIG	23.2	30.1	38.1	84.7
18. KAG/GEI	53.5	22.7	69.1	137.7
14. TAB	4.8	-0.6	0.3	2.2
19. MWA/GEI/SIM	74.2	19.0	42.0	104.9
12. MBE	108.4	6.5	63.6	133.3
17. SHI/GEI/SIM	57.0	48.4	20.6	93.4
20. MAR	43.0	71.0	-8.2	55.3
10. RUV	58.8	25.2	53.2	121.1
5. MOR	50.4	18.6	3.0	40.3
13. SIN	-10.6	45.9	-11.9	10.0
6. PWA	93.3	32.0	47.9	136.5
1. DOD	16.6	9.4	15.5	33.2
4. TAN	17.2	-10.3	12.3	11.8
3. KIL	85.4	17.0	5.8	54.4
11. IRI/NJO	4.8	48.2	26.4	71.9
9. MTW	4.7	20.3	-2.2	14.9
8. LIN	38.2	-12.5	-1.7	3.9
Mainland	**34.1**	**27.0**	**29.0**	**75.8**

[Note: [a] Listed here with NBS numbers of 2002. See Appendix A for full names of regions.]

Table 6: Regional propensities for urban in-migration (*P(uim)*), Tanzania 1978-2012

A plus point from these observations, with future analytical work in mind, is that it appears that the forces driving rural out-migration differ from those driving urban in-migration, within as well as between regions. The fact that urbanization propensities also vary quite markedly between one period and the next may also be helpful in this respect, if they can be related to parallel variations in Tanzania's development trajectory.

To illustrate the contrast between these two propensities, **Figure 1** plots ***P(rom)*** and ***P(uim)*** against the regions ordered as in **Table 4**.

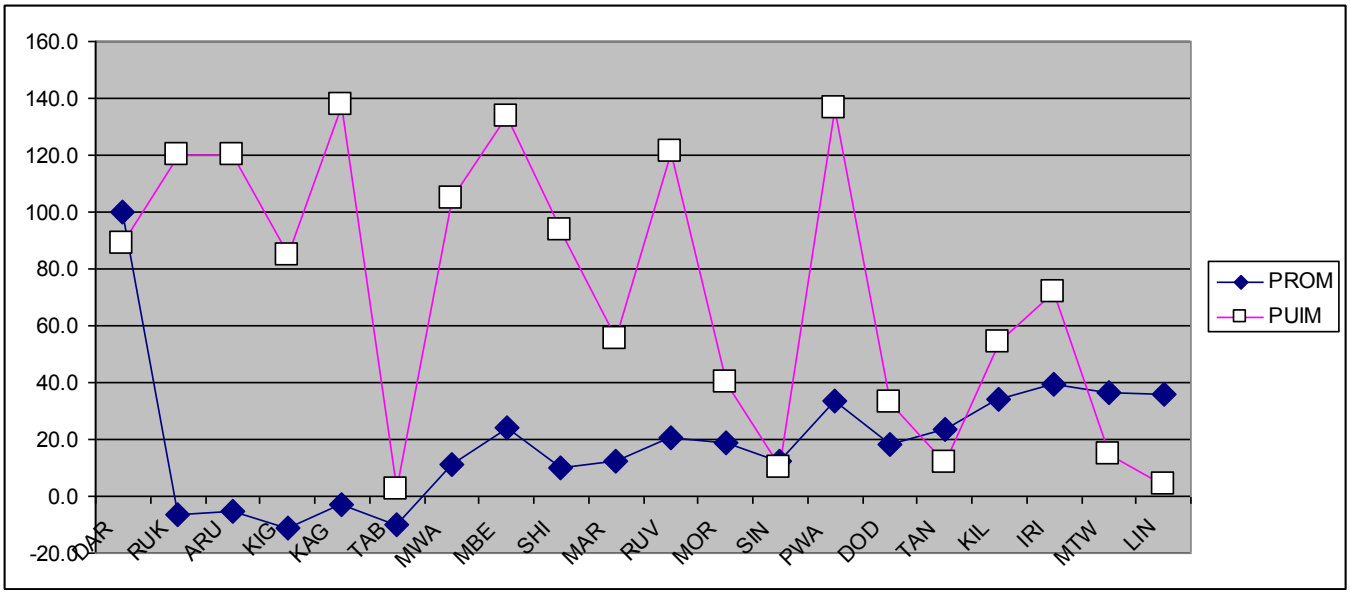

Figure 1: Regional propensities for rural out-migration (*P(rom)*) and urban in-migration (*Puim)*), with regions ranked by overall in-migration (Dar on the left, Lindi on the right)

(d) Proportion of urban increase attributable to in-migration (***MU*$_{Prop}$**)

It has been suggested that the contribution of rural-urban migration to urban growth in sub-Saharan Africa has been slowing down recently, with natural growth of the already urbanized population becoming more important (Potts (2009), Christiaensen *et al* (2013)). However, this does not (yet) seem to be generally the case in Tanzania, as the figures for ***MU*$_{Prop}$** (the proportion of the increase in a region's urban population attributable to in-migration) in **Table 7** show[15]. This proportion dropped in the 1988-2002 period but has since picked up. For most regions, in-migration has accounted for around half the increase in urban population over 1978 to 2012. However, by the 2002-2012 period, four regions were losing part of their natural growth (Mara, Singida, Mtwara and Lindi) – indeed, in Singida's case, the urban population actually declined – while in another two cases (Morogoro and Tabora), the contribution of in-migration was very small. These cases were balanced by a contribution of in-migration well over 50% in most of the remaining regions. We conclude that in Tanzania, rural-urban migration is still important but not in all regions.

[15] The reason for this measure differing from ***P(uim)*** can be seen in the formulae at the head of the **Appendix C** tables. The numerator is the same but the denominator is expected population for ***P(uim)***, actual population for ***MU*$_{Prop}$**.

Region[a]	1978-1988	1988-2002	2002-2012	1978-2012
7. DAR	0.43	0.48	0.65	0.57
15. RUK/KAT	0.63	0.52	0.69	0.63
2. ARU/MAY	0.73	0.79	0.21	0.60
16. KIG	0.49	0.48	0.62	0.56
18. KAG/GEI	0.69	0.41	0.75	0.66
14. TAB	0.17	-0.02	0.01	0.03
19. MWA/GEI/SIM	0.75	0.37	0.64	0.59
12. MBE	0.82	0.17	0.73	0.64
17. SHI/GEI/SIM	0.70	0.60	0.47	0.56
20. MAR	0.64	0.68	-0.55	0.43
10. RUV	0.71	0.44	0.70	0.63
5. MOR	0.67	0.36	0.11	0.36
13. SIN	-0.77	0.58	-1.05	0.14
6. PWA	0.79	0.49	0.67	0.64
1. DOD	0.41	0.22	0.40	0.34
4. TAN	0.41	-0.46	0.35	0.16
3. KIL	0.78	0.34	0.20	0.42
11. IRI/NJO	0.16	0.60	0.53	0.52
9. MTW	0.16	0.38	-0.10	0.19
8. LIN	0.61	-0.61	-0.08	0.06
Mainland	**0.58**	**0.45**	**0.55**	**0.52**

[Note: [a] Listed here with NBS numbers of 2002. See Appendix A for full names of regions.]

Table 7: Proportion of the increase in each region's urban population attributable to in-migration (MU_{Prop}), Tanzania 1978-2012

Next steps

The ultimate objective of this project is to obtain a better understanding of the urbanization process in Tanzania, with a view to identifying policy interventions that will lead to urbanization making a more positive contribution to Tanzania's development than has so far been the case. The findings can be expected to be relevant to other similarly placed countries in sub-Saharan Africa.

In this first phase of the project, data from the 1967, 1978, 1988, 2002 and 2012 censuses has been used to quantify the interaction between population growth, internal migration and urbanization, showing up big differences in the experience of Tanzania's various regions[16]. Further elements planned for this phase of the project are:

- Identification of towns with over 10,000 population in 2012, to link with town populations derived from previous censuses[17];

[16] **Appendix B** provides some estimates of refugee populations in the regions on the census dates; also useful would be to estimate the numbers of artisanal miners and their regional location.

[17] Unfortunately, populations for smaller towns have not yet become available although those for regional capitals have – See **Working Paper 2**.

- A check on the effect of boundary changes on the recorded urban populations of the 20 regional capitals[18];
- Investigation of the feasibility of a density-based measure of urbanization as it appears that the definition of 'urban' has not been uniform across previous censuses. A standard density-based measure, if feasible, would ensure comparability across the period under review.

The outcome of the first two items is reported in **Working Paper 2** ('Tanzania's Urban Populations, 1967-2012') and of the third item in **Working Paper 3** ('A Density-based Measure of 'urban' for Tanzania?').

While it is a useful first step to document what has been happening in this way, policy recommendations need to rest on an understanding what is driving these processes, i.e. moving from description to explanation. This will be the focus of the next phase of the project, proposals for which are now being developed.

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Appendix A

2012 Regions	2002 Regions	Including in 2002
1. Dodoma (DOD)	**1. Dodoma (DOD)**	
2. Arusha (ARU)	**2. Arusha (ARU/MAY)**	All **Manyara**.
3. Kilimanjaro (KIL)	**3. Kilimanjaro (KIL)**	
4. Tanga (TAN)	**4. Tanga (TAN)**	
5. Morogoro (MOR)	**5. Morogoro (MOR)**	
6. Pwani (PWA)	**6. Pwani (PWA)**	
7. Dar es Salaam (DAR)	**7. Dar es Salaam (DAR)**	
8. Lindi (LIN)	**8. Lindi (LIN)**	
9. Mtwara (MTW)	**9. Mtwara (MTW)**	
10. Ruvuma (RUV)	**10. Ruvuma (RUV)**	
11. Iringa (IRI)	**11. Iringa (IRI/NJO)**	All **Njombe**.
12. Mbeya (MBE)	**12. Mbeya (MBE)**	
13. Singida (SIN)	**13. Singida (SIN)**	
14. Tabora (TAB)	**14. Tabora (TAB)**	
15. Rukwa (RUK)	**15. Rukwa (RUK/KAT)**	All **Katavi**
16. Kigoma (KIG)	**16. Kigoma (KIG)**	
17. Shinyanga (SHI)	**17. Shinyanga (SHI/GEI/SIM)**	Maswa, Meatu, Itilima & Bariadi Districts from **Simiyu**; Bukombe & Mbogwe Districts from **Geita**.
18. Kagera (KAG)	**18. Kagera (KAG/GEI)**	Chato District from **Geita**.
19. Mwanza (MWA)	**19. Mwanza (MWA/GEI/SIM)**	Geita & Nyang'hwale Districts from **Geita**; Busega District from **Simiyu**.
20. Mara (MAR)	**20. Mara (MAR)**	
21. Manyara (MAY)		
22. Njombe (NJO)		
23. Katavi (KAT)		
24. Simiyu (SIM)		
25. Geita (GEI)		

The Regions of Tanzania, 2002 and 2012 (NBS numbering)

Apppendix B

Refugees in Tanzania

According to UNHCR, a first wave of refugees from Burundi came to Tanzania in the 1970s, being accommodated in camps in Kigoma region and at Mishamo in Rukwa region. Some 162,000 of these were offered naturalization in 2010, although the process was suspended in 2011 so that the current status of these people is presently unclear. Two further waves of around 800,000 refugees arrived in mid-1994 and 1996, coming from DR Congo and Burundi, being mainly accommodated in camps in Kagera and Kigoma regions.

At the time of the 2002 and 2012 censuses, the numbers recorded by UNHCR are shown below, with migrant figures[19] derived from the 2002 census shown for comparison:

From	2002 Census (Migrants, '000s)	2002 UNHCR (Refugees '000s)	2012 UNHCR (Refugees '000s)
Burundi	654	541	35*
DR Congo	163	140	63
Somalia		3	2
Rwanda	44	3	0
TOTAL	**796**	**687**	**101***

Note: * See note to table below.

The numbers ('000s) in camps in Tanzania at the same dates were:

Region	2002 Census (Migrants, 000s)	Camp (District) UNHCR	2002 UNHCR (Refugees '000s)	2012 UNHCR (Refugees '000s)
Kigoma	405	Nyarugusu (Kasulu)	56	67
		Mtabila 2 (Kasulu)	44	35*
		Myovosi (Kasulu)	39	
		Mtendeli (Kibondo)	52	
		Nduta (Kibondo)	50	
Kagera	164	Lukole (Ngara)	111	
Rukwa	167	Mishamo (urban)	45	37
Tabora	46	Ulyankulu (urban)	42	
TOTAL	**782**		**439**	**139***

Note: * Mtabila camp was closed in 2013, and the occupants repatriated to Burundi. These figures do not include the 162,000 Burundi refugees who have been offered naturalization and mostly remain in the same camps as in 2002.

[19] Only figures for regions with more than 10,000 migrants shown; there were also 18,000 migrants from Uganda in Kagera and 14,000 migrants from Mozambique in Mtwara.

Appendix C

	RurPop 1978	ExpGr 78-88[a]	RurPop 1988	RurOut-/In+	*P (rom)*	UrbPop 1978	ExpGr 78-88[a]	UrbPop 1988	UrbOut-/In+	*P (uim)*	RegPop +/-	*P (rim)*	MU_{Prop}
	A	B	C	D =C-(A+B)	= -D/ (A+B)	E	F	G	H =G-(E+F)	=H/ (E+F)	I =D+H	= I/ (A+B+E+F)	=H/ (F+H)
DOD	886828	284785	1104115	-67498	5.76	85177	27353	131162	18632	16.56	-48866	-3.81	0.41
ARU/MAY	852588	273790	1187495	61117	-5.43	73635	23646	162730	65449	67.28	126566	10.34	0.73
KIL	834838	268090	938449	-164479	14.91	67599	21708	165619	76312	85.45	-88167	-7.40	0.78
TAN	891803	286383	1054350	-123836	10.51	145964	46873	225912	33075	17.15	-90761	-6.62	0.41
MOR	803959	258174	1011130	-51003	4.80	135305	43450	268801	90046	50.37	39043	3.15	0.67
PWA	479304	153918	540961	-92261	14.57	37282	11972	95221	45967	93.33	-46294	-6.78	0.79
DAR	73645	23649	139675	42381	-43.56	769445	247090	1205443	188908	18.58	231288	20.77	0.43
LIN	474434	152354	545247	-81541	13.01	53190	17081	97117	26846	38.20	-54695	-7.85	0.61
MTW	679463	218195	761117	-136541	15.21	92355	29658	127765	5752	4.71	-130788	-12.83	0.16
RUV	518152	166393	688747	4202	-0.61	43423	13944	91121	33754	58.84	37955	5.12	0.71
IRI/NJO	840968	270058	1076464	-34562	3.11	84076	26999	116376	5301	4.77	-29262	-2.39	0.16
MBE	983241	315746	1210205	-88782	6.83	96623	31028	266012	138361	108.39	49578	3.48	0.82
SIN	555939	178528	725351	-9116	1.24	58010	18629	68536	-8103	-10.57	-17218	-2.12	-0.77
TAB	710408	228132	891774	-46766	4.98	107499	34521	148848	6828	4.81	-39938	-3.70	0.17
RUK/KAT	398805	128068	604003	77130	-14.64	53092	17049	99047	28906	41.21	106036	17.76	0.63
KIG	584503	187700	746396	-25807	3.34	64438	20693	104867	19736	23.18	-6071	-0.71	0.49
SHI/GEI/SIM	1267580	407056	1647870	-26766	1.60	55955	17969	116090	42166	57.04	15401	0.88	0.70
KAG/GEI	975506	313262	1244182	-44586	3.46	34261	11002	69457	24194	53.45	-20393	-1.53	0.69
MWA/GEI/SIM	1295607	416056	1536781	-174882	10.22	147772	47454	339995	144769	74.15	-30113	-1.58	0.75
MAR	671007	215479	852853	-33633	3.79	52820	16962	99763	29981	42.96	-3652	-0.38	0.64
Mainland	**14778578**	**4745817**	**18507165**	**-1017230**	**5.21**	**2257921**	**725082**	**3999882**	**1016879**	**34.09**	**-351**	**0.0**	**0.58**

[**Note**: [a] If relevant population grows at national rate of 2.824% p.a.]

Table C1: Rural out-migration, Urban in-migration and inter-regional migration, 1978-1988

Appendix C

Region	RurPop 1988	ExpGr 88-02[a]	RurPop 2002	RurOut-/In+	*P (rom)*	UrbPop 1988	ExpGr 88-02[a]	UrbPop 2002	UrbOut-/In+	*P (uim)*	RegPop +/-	*P (rim)*	MU_{Prop}
	A	B	C	D =C-(A+B)	= -D/ (A+B)	E	F	G	H =G-(E+F)	=H/ (E+F)	I =D+H	= I/ (A+B+E+F)	=H/ (F+H)
DOD	1104115	537359	1478782	-162692	9.91	131162	63835	213243	18246	9.36	-144446	-7.87	0.22
ARU/MAY	1187495	577939	1781377	15943	-0.90	162730	79199	544316	302387	124.99	318330	15.86	0.79
KIL	938449	456731	1088611	-306569	21.97	165619	80605	288091	41867	17.00	-264702	-16.13	0.34
TAN	1054350	513139	1335084	-232405	14.83	225912	109949	301196	-34665	-10.32	-267069	-14.03	-0.46
MOR	1011130	492104	1279513	-223721	14.88	268801	130822	473849	74226	18.57	-149495	-7.86	0.36
PWA	540961	263279	698156	-106084	13.19	95221	46343	186861	45297	32.00	-60787	-6.43	0.49
DAR	139675	67978	151885	-55768	26.86	1205443	586674	2336055	543938	30.35	488170	24.41	0.48
LIN	545247	265365	661228	-149384	18.43	97117	47266	126396	-17987	-12.46	-167370	-17.53	-0.61
MTW	761117	370426	895942	-235601	20.82	127765	62182	228539	38592	20.32	-197009	-14.91	0.38
RUV	688747	335205	944045	-79907	7.80	91121	44347	169670	34202	25.25	-45705	-3.94	0.44
IRI/NJO	1076464	523901	1234560	-365805	22.86	116376	56639	256332	83317	48.16	-282488	-15.93	0.60
MBE	1210205	588992	1642183	-157014	8.73	266012	129465	421145	25668	6.49	-131345	-5.98	0.17
SIN	725351	353019	938081	-140289	13.01	68536	33356	148667	46775	45.91	-93514	-7.92	0.58
TAB	891774	434015	1490581	164792	-12.43	148848	72442	219884	-1406	-0.64	163385	10.56	-0.02
RUK/KAT	604003	293961	936232	38268	-4.26	99047	48205	200122	52870	35.90	91138	8.72	0.52
KIG	746396	363262	1471240	361582	-32.59	104867	51037	202807	46903	30.08	408485	32.28	0.48
SHI/GEI/SIM	1647870	801998	2540578	90710	-3.70	116090	56500	256052	83462	48.36	174173	6.64	0.60
KAG/GEI	1244182	605528	1901407	51697	-2.79	69457	33804	126750	23489	22.75	75186	3.85	0.41
MWA/GEI/ SIM	1536781	747932	2328387	43674	-1.91	339995	165471	601257	95791	18.95	139465	5.00	0.37
MAR	852853	415073	1109791	-158135	12.47	99763	48553	253606	105290	70.99	-52845	-3.73	0.68
Mainland	**18507165**	**9007205**	**25907011**	**-1607359**	**5.84**	**3999882**	**1946692**	**7554838**	**1608264**	**27.05**	**905**	**0.0**	**0.45**

[**Note**: [a] If relevant population grows at national rate of 2.873% p.a.]

Table C2: Rural out-migration, Urban in-migration and inter-regional migration, 1988-2002

Appendix C

Region	RurPop 2002	ExpGr 02-12[a]	RurPop 2012	RurOut-/In+	*P (rom)*	UrbPop 2002	ExpGr 02-12[a]	UrbPop 2012	UrbOut-/In+	*P (uim)*	RegPop +/-	*P (rim)*	MU_{Pro} $_{p}$
	A	B	C	D =C-(A+B)	= -D/ (A+B)	E	F	G	H =G-(E+F)	=H/ (E+F)	I =D+H	= I/ (A+B+E+F)	=H/ (F+H)
DOD	1478782	449192	1762394	-165580	8.59	213243	64774	321194	43177	15.53	-122403	-5.55	0.40
ARU/MAY	1781377	541107	2367101	44617	-1.92	544316	165340	752340	42684	6.01	87300	2.88	0.21
KIL	1088611	330674	1242712	-176573	12.44	288091	87510	397375	21774	5.80	-154799	-8.62	0.20
TAN	1335084	405542	1604297	-136329	7.83	301196	91491	440908	48221	12.28	-88108	-4.13	0.35
MOR	1279513	388662	1582434	-85741	5.14	473849	143935	636058	18274	2.96	-67468	-2.95	0.11
PWA	698156	212070	738297	-171929	18.89	186861	56761	360371	116749	47.92	-55180	-4.78	0.67
DAR	151885	46136	0	-198021	100.0	2336055	709595	4364541	1318891	43.30	1120870	34.56	0.65
LIN	661228	200853	702603	-159478	18.50	126396	38394	162049	-2741	-1.66	-162219	-15.80	-0.08
MTW	895942	272149	979350	-188741	16.16	228539	69421	291504	-6456	-2.17	-195197	-13.31	-0.10
RUV	944045	286761	1038071	-192735	15.66	169670	51539	338820	117611	53.17	-75124	-5.17	0.70
IRI/NJO	1234560	375007	1221079	-388488	24.14	256332	77863	422256	88061	26.35	-300427	-15.46	0.53
MBE	1642183	498826	1809298	-331711	15.49	421145	127926	898112	349041	63.57	17330	0.64	0.73
SIN	938081	284950	1199936	-23095	1.89	148667	45159	170701	-23125	-11.93	-46219	-3.26	-1.05
TAB	1490581	452776	2004114	60757	-3.13	219884	66792	287509	833	0.29	61591	2.76	0.01
RUK/KAT	936232	284388	1175534	-45086	3.69	200122	60789	393609	132698	50.86	87612	5.91	0.69
KIG	1471240	446901	1762669	-155472	8.11	202807	61604	365261	100850	38.14	-54622	-2.50	0.62
SHI/GEI/ SIM	2540578	771721	2931269	-381030	11.50	256052	77778	402563	68733	20.59	-312296	-8.57	0.47
KAG/GEI	1901407	577567	2543717	64743	-2.61	126750	38501	279433	114182	69.10	178924	6.77	0.75
MWA/ SIM/GEI	2328387	707266	2818823	-216830	7.14	601257	182637	1113222	329328	42.01	112498	2.95	0.64
MAR	1109791	337108	1440418	-6481	0.45	253606	77035	303412	-27229	-8.24	-33710	-1.90	-0.55
Mainland	**25907011**	**7869459**	**30924116**	**-2852354**	**8.44**	**7554838**	**2294842**	**12701238**	**2851558**	**28.95**	**-796**	**0.00**	**0.55**

[**Note**: [a] If relevant population grows at national rate of 2.688% p.a.]

Table C3: Rural out-migration, Urban in-migration and inter-regional migration, 2002-2012

Working paper

Tanzania's Urban Population

1967-2012

Angela Ambroz
Hugh Wenban-Smith

April 2014

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INTERNATIONAL GROWTH CENTRE (IGC)

Project on urbanization in Tanzania

Phase 1: Data assembly and preliminary analysis

Working Paper 2

TANZANIA'S URBAN POPULATIONS, 1967-2012

Angela Ambroz[1] & H B Wenban-Smith[2]

Final Version: 4 April 2014

[1] IGC In-country Economist, Tanzania (Angela.Ambroz@theigc.org)
[2] Independent Research Economist (wenban@globalnet.co.uk)

TANZANIA'S URBAN POPULATIONS, 1967-2012

Angela Ambroz & Hugh Wenban-Smith

(Final Version: 4 April 2014)

Introduction

In this working paper, we track the populations of Tanzania's larger towns using census data from 1967, 1978, 1988, 2002 and 2012[3]. This data is set out in the **Appendix A** tables, which show, for each region, the population for the regional capital, other large towns, and rural areas. For 2012, regional capital populations and total regional urban populations can be derived from Volume 2 of the Tanzanian National Bureau of Statistics 2012 Census Report but populations for smaller towns have not yet been published. This paper therefore discusses the evolution of the individual regional capitals and considers other urban areas collectively, rather than individually.

Data sources: Pre-2012 urban populations

A full discussion of the derivation of the pre-2012 population figures can be found in Wenban-Smith (2013a). In brief, in addition to the census reports for these years, comparisons were made with figures published on two websites to clarify some uncertainties and to fill gaps (particularly for 1988):

Thomas Brinkhoff: http://www.citypopulation.de/Tanzania.html and

E-Geopolis: http://www.e-geopolis.eu

The procedure then was: Where a census figure was available for a recognized town, this was taken as the best estimate; where a census figure was not available, the Thomas Brinkhoff figure was accepted, if available; otherwise, the E-Geopolis figure adjusted for the 2-year difference in timing was taken. In a few cases (Tukuyu, Kilosa and Mpanda in 1988; Arusha[4], Kilosa, Tumbi/Kibaha, Mpanda and Mwanza in 2002), the population was inferred using a mix of census and other information.

Data sources: 2012 urban populations

The 2012 Census volume on 'Migration and Urbanisation' is not scheduled to be published until end of May 2014. However, the volume 'Population Distribution by Age and Sex' published in September

[3] We would like to acknowledge here information provided by Mr Ruyobya and Mr Kuchengo of the Census Unit of the National Bureau of Statistics, Tanzania.

[4] Arusha poses a particular difficulty. The published figure is 333,791. However, the census report gives the total population of Arusha District as 274,668, of which 8,044 were in rural wards and 41,647 in mixed wards, suggesting an urban population of about 260,000. Nevertheless, the higher figure has been adopted in **Appendix A**, to avoid a large unallocated 'other urban' number.

2013 (NBS, 2013) includes a rural/urban split for regions and districts, down to the ward level. This enables urban populations for areas which do not include any mixed wards to be evaluated. In this way, populations for Municipal Councils and most Town Councils can be established – although they should perhaps be regarded as provisional until full publication in May. Smaller urban areas usually include a number of mixed wards so that population figures for them must await publication by NBS.

Regional capital populations, 1967-2012

The figures in **Table 1** have been taken from **Appendix A**, and show the evolution of the populations of 20 regional capitals over this period. We can see that there was a surge in urbanization during 1967-78, continuing a trend that started with Independence (1961), when restraints on African movement to towns were removed (the surge was even more marked for secondary towns, as may be seen in **Table 2**). After 1978, this surge eased, although regional capitals continued to grow on average well above the rate of population growth. What is striking, however, is the wide variation in the growth rates of these towns from 1978 onwards. In 1978-88, while Songea and Shinyanga grew strongly, Tanga, Bagamoyo, Lindi, Iringa and Bukoba lagged behind general population growth. In 1988-2002, only Arusha grew strongly (if the high population figure for 2002 is accepted), while Moshi, Tanga, Bagamoyo, Mtwara, Iringa, Singida and Tabora lagged, and Lindi actually lost population. Then in the latest period, 2002-2012, Bagamoyo and Lindi grew strongly while Arusha, Moshi, Tanga, Mtwara, Tabora and Musoma lagged. These varying fortunes, which seem to have no immediate explanation[5], are reflected in the changing ranking of regional capitals as shown in **Table 3** below:

Rank	Census Year				
	1967	**1978**	**1988**	**2002**	**2012**
1	Dar es Salaam	Dar es Salaam	Dar es Salaam	Dar es Salaam	Dar es Salaam
2	Tanga	Mwanza	Mwanza	Mwanza	Mwanza
3	Mwanza	Tanga	Tanga	Arusha	Arusha
4	Arusha	Mbeya	Mbeya	Mbeya	Mbeya
5	Moshi	Tabora	Morogoro	Morogoro	Morogoro
…	…	…	…	…	…
18	Songea	Shinyanga	Lindi	Singida	Singida
19	Shinyanga	Songea	Bukoba	Lindi	Lindi
20	Bagamoyo	Bagamoyo	Bagamoyo	Bagamoyo	Bagamoyo

Table 3: Ranking by population of Regional Capitals in Tanzania

Brief additional comments may be offered on some particular cases:

[5] For example, no relationship between initial size and subsequent growth can be found.

Dodoma: The somewhat muted growth of Dodoma, despite being selected by popular referendum as Tanzania's new capital in 1973, is explained by failure to follow through that decision, with the majority of government departments remaining in Dar. It is also unfortunately the case that Dodoma has few particular advantages, apart from a central location.

Arusha: Arusha has emerged as Tanzania's third city. This may owe something to a generous definition of 'urban', though Arusha has also attracted considerable activity associated with game park tourism and its role as the location for the International Criminal Tribunal for Rwanda .

Moshi: The relatively slow growth of Moshi is a puzzle, given its position as capital of the prosperous Kilimanjaro region. However, **Table 2** shows relatively fast growth of other towns in the region, particularly during 1978-88.

Tanga: This is another town that has grown relatively slowly, having been the second biggest city in Tanzania in 1967. Failure of its port activities to flourish in the face of competition from Dar and Mombasa may provide part of the explanation.

Bagamoyo: Although Bagamoyo has been included in this analysis as capital of Pwani region, it does not really fulfil that function. In fact, Pwani is largely administered from Dar. A more appropriate treatment might be to view Dar and Pwani regions as a single entity, with Bagamoyo seen as a secondary town. As **Appendix A** shows, Kibaha in Pwani region, which is virtually a commuter suburb to Dar now, is nearly twice as large as Bagamoyo.

Lindi and **Mtwara**: These two regions have been in long-term decline with substantial rural out-migration (Wenban-Smith, 2013b). However, Lindi is now the site of an upturn in activity following oil and gas discoveries in the area. This likely explains its recent growth, though Mtwara does not yet appear to have benefited.

Mbeya: The main town of the Southern Highlands, Mbeya grew particularly rapidly during 1978-88. **Table 2** shows that secondary towns in the region also grew rapidly then. The region benefits from a good climate, prospering agriculture, and the construction of the Tazara railway. However, there has been little research to flesh out these conjectures. Mbeya would make an excellent case study of urbanization in Tanzania.

Shinyanga: Shinyanga grew strongly in both 1967-78 and 1978-88. The town is close to the former Williamson Diamond Mines and there has been considerable growth in artisanal mining in the area. This may have boosted the town's population, although most of the mining activities are in rural areas. More information is needed about the location of artisanal mining activity.

Effect of boundary changes

As the populations of Tanzania's cities and towns have grown, their boundaries have expanded. In theory this should be reflected in gazetted changes but this does not always happen, or may only do so after some lapse of time. In the census reports, what is considered to be urban is built bottom up. The smallest census units, enumeration areas (EAs) are classified as either 'urban' or 'rural'[6]. A number of EAs then make up a ward. A ward may thus be 'urban', 'rural' or 'mixed', depending on the classification of its constituent EAs. The urban populations reported in the censuses include only EAs classified as 'urban', so counting only part of the populations of 'mixed' wards, even though some of these wards may effectively be part of the same town. With successive censuses, EAs and wards which were previously classified as 'rural' or 'mixed' may evolve to become 'urban'. Ward boundaries also change over time: sometimes due to increasing population (when populous wards may be sub-divided); sometimes, it is said, due to gerrymandering (anecdotal evidence indicates that ward boundaries are more likely to change in the months leading up to an election – this would be an intriguing area of future research).

In an attempt to assess the quantitative significance of shifting urban boundaries for urban growth and migration, we sought historical data from the University of Dar es Salaam, the Ministry of Lands and Settlements, and the National Bureau of Statistics. Two avenues of enquiry seemed worth pursuing: (i) locating the government gazettes which are supposed to record boundary changes, and (ii) locating historic maps from which boundary changes might be deduced. Unfortunately, up to the time of writing, neither line of enquiry has been fruitful.

Secondary town populations, 1967-2012

Turning to **Table 2**, which shows the evolution of secondary towns, there is less to comment on. Overall, growth of these towns has been faster than for regional capitals. By 1978, quite a few smaller towns which had not counted as urban in 1967 had arisen, and these continued to grow during 1978-88, particularly in Kilimanjaro, Mbeya, and Mwanza regions[7]. Growth slowed during 1988-2002 but still averaged above 5% per year. Growth continued during 2002-2012 but with a wider spread of rates, with secondary towns in Lindi and Singida regions actually losing population. At the same time, there was stronger growth of secondary towns in Mbeya region (over 10% per year), and, in 10 other regions,

[6] However, as noted elsewhere, no central definition of 'urban' has been imposed, the judgement being left to local authorities.

[7] On the reasonable assumption that settlements not classified as urban in the base year did not then have zero population, these growth rates are overstated, but without additional information, we cannot say by how much.

secondary towns grew by more than 5% per year. It may be possible to comment further when more information on individual smaller towns is available.

Conclusions

We have commented in our first Working Paper on data limitations. It is appropriate to add a reminder here. First, the definition of 'urban' in the Tanzanian censuses is not completely clear, resting mainly on the judgment of district officials. It is possible that some of the changes recorded reflect changing definitions as well as actual urban growth. Secondly, there is the question how urban boundary changes have affected the story. Thirdly, some developments that might be regarded as urbanization, such as mining settlements and refugee camps, appear to have been classed as rural. Nevertheless, we think that the figures presented can be taken as giving a reasonable broad picture of urbanization trends in Tanzania.

This working paper thus adds detail to the analysis reported in Wenban-Smith (2013b), providing more material to inform the further work proposed for Phase 2 of this project. While further refinement of the census statistics would no doubt be possible, we suggest that detailed case studies of the development of individual towns would be more helpful in throwing fresh light on the urbanization process in Tanzania.

References

Tanzania Census Reports

National Bureau of Statistics,*1967 Population Census, Volume 2 'Statistics for Urban Areas'*
National Bureau of Statistics,*1978 Population Census, Volume IV*
National Bureau of Statistics,*1988 Population Census, Regional Profiles* (20 volumes)
National Bureau of Statistics, *2002 Population and Housing Census, General Report & Volume X*
National Bureau of Statistics, *2012 Population and Housing Census, Volume 2 'Population Distribution by Age and Sex'*

Wenban-Smith, H B (2013a) *Urbanisation in Tanzania, 1967-2002: What the census reports do (and do not) tell us* (Unpublished working paper)

Wenban-Smith, H B (2013b) *Population Growth, Internal Migration and Urbanisation in Tanzania, 1967-2012: A Census Based Regional Analysis* (Working Paper No.1, IGC project on Urbanisation in Tanzania).

Regional Capital	Population of Regional Capitals					Growth rate (% p.a.)			
	1967	1978	1988	2002	2012	67-78	78-88	88-02	02-12
Dodoma	23559	45807	83205	150604*	213636	6.23	6.15	4.33	3.56
Arusha	32452	55223	102544	333791**	416442	4.95	6.38	8.80	2.24
Moshi	26864	52046	96645	144336	184292	6.20	6.38	2.91	2.47
Tanga	61058	103399	137364	172557*	221127	4.91	2.88	1.64	2.51
Morogoro	25262	60782	117593	209058*	305840	8.31	6.82	4.20	3.88
Bagamoyo	5112	16272	21184	28368	74788***	11.10	2.67	2.11	10.18***
Dar es Salaam	272821	769445	1205443	2336055	4364541	9.88	4.59	4.84	6.45
Lindi	13352	27312	33014	29178	78841	6.72	1.91	-0.88	10.45
Mtwara	20413	48491	66878	79277*	100626	8.18	3.27	1.22	2.41
Songea	5430	17955	52985	98683*	203309	11.49	11.43	4.54	7.50
Iringa	21746	57164	73516	102208*	151345	9.18	2.55	2.38	4.00
Mbeya	12479	76601	130798	232596*	385279	17.93	5.50	4.20	5.18
Singida	9478	29258	39630	58153	85242	10.79	3.08	2.78	3.90
Tabora	21012	67388	92532	126089*	160608	11.18	3.22	2.23	2.45
Sumbawanga	0	28586	46631	74890*	124204		5.02	3.44	5.19
Kigoma/Ujiji	21369	50075	74224	131792*	215458	8.05	4.01	4.19	5.04
Shinyanga	5135	20439	46802	73921*	103795	13.38	8.64	3.32	3.45
Bukoba	8141	21547	28316	59157*	128796	9.25	2.77	5.40	8.09
Mwanza	34861	110553	172287	385810*	706453	11.06	4.54	5.93	6.24
Musoma	15412	31051	68364	104851*	134327	6.58	8.21	3.10	2.51
TOTAL	**635956**	**1689394**	**2689955**	**4931374**	**8358949**	**9.29**	**4.76**	**4.42**	**5.42**

[Notes: * From Thomas Brinkhoff: http://www.citypopulation.de/Tanzania.html

** See F/N 4 (p.2)

*** Provisional, may include some mixed wards

All other figures from Tanzania Census Reports listed in References.]

Table 1: Evolution of the populations of Tanzanian regional capitals, 1967-2012

Region	Urban Population (excl. Regional Capitals)					Growth rate (% p.a.)			
	1967	1978	1988	2002	2012	67-78	78-88	88-02	02-12
DOD	6943	39370	47957	62639	107558	17.09	1.99	1.93	5.56
ARU/MAY	0	18412	60186	210525	335898		12.57	9.36	4.78
KIL	0	15553	68974	143755	213083		16.06	5.39	4.01
TAN	11433	42565	88548	128639	219781	12.69	7.60	2.70	5.50
MOR	6321	74523	151208	264791	330218	25.14	7.33	4.08	2.23
PWA	0	21010	74037	158493	285583		13.42	5.59	6.07
DAR	0	0	0	0	0				
LIN	3751	25878	64103	97218	83208	19.19	9.50	3.02	-1.54
MTW	0	43864	60887	149262	190878		3.33	6.61	2.49
RUV	0	25468	38136	70987	135511		4.12	4.54	6.68
IRI/NJO	0	26912	42860	154124	270911		4.76	9.57	5.80
MBE	6487	20022	135214	188549	512833	10.79	21.05	2.40	10.52
SIN	0	28752	28906	90514	85459		0.05	8.49	-0.57
TAB	0	40111	56316	93795	126901		3.45	3.71	3.07
RUK/KAT	0	24506	52416	125232	269405		7.90	6.42	7.96
KIG	0	14363	30643	71015	149803		7.87	6.19	7.75
SHI/GEI/SIM	10594	35516	69288	182131	298768	11.62	6.91	7.15	5.07
KAG/GEI	0	12714	41141	67593	150637		12.46	3.61	8.34
MWA/GEI/SIM	3607	37219	167708	215447	406769	23.64	16.25	1.81	6.56
MAR	0	21769	31399	148755	169085		3.73	11.75	1.29
TOTAL	**49136**	**568527**	**1309927**	**2623464**	**4342289**	**24.93[a]**	**8.71**	**5.09**	**5.17**

Note: [a] Does not take into account 1967 populations of smaller settlements not then considered to be urban.

Table 2: Evolution of the populations of Tanzania's smaller towns, 1967-2012

Region	Town/Ward	1967	1978	1988	2002	2012
DOD	Dodoma	23559	45807	83205	150604*	213636
	Kondoa	4514	12182	14872	20426*	..
	Mpwapwa	2429	18631	17578	18992*	..
	Kibaigwa			4678	10004*	..
	Other urban	0	8557	10829	13217	..
	Urban s/total	**30502**	**85177**	**131162**	**213243**	**321194**
	Rural s/total	678878	886828	1104115	1478782	1762394
	TotPop	**709380**	**972005**	**1235277**	**1692025**	**2083588**
ARU	Arusha	32452	55223	102544	333791***	416442
	Usa River				13542*	..
	Karatu				9437*	..
	Mto wa Mbu			2079	9320*	..
	Mbuguni				14880	..
	Babati		9759	15977	31077	57909
MAY	Mbulu		3784	5683	12171	..
ARU/MAY	Other urban	0	4869	36447	193889	..
	Urban s/total	**32452**	**73635**	**162730**	**544316**	**752340**
	Rural s/total	578022	852588	1187495	1781377	2367101
	TotPop	**610474**	**926223**	**1350225**	**2325693**	**3119441**
KIL	Moshi	26864	52046	96645	144336	184292
	Bomang'ombe/Hai			11988**	17795	..
	Same		5292	8515	16854	..
	Hedaru			4414	14179*	..
	Mwanga			4471	12404	..
	Tarakea			647	9569*	..
	Makuyuni			2699	9355*	..
	Other urban	0	10261	36240	63599	..
	Urban s/total	**26864**	**67599**	**165619**	**288091**	**397375**
	Rural s/total	625858	834838	938449	1088611	1242712
	TotPop	**652722**	**902437**	**1104068**	**1376702**	**1640087**
TAN	Tanga	61058	103399	137364	172557*	221127
	Korogwe	6675	15388	24470	26601*	52282
	Muheza		5676	12788	22764	..
	Handeni/Chanika		9444	10150	14057*	79056
	Lushoto	1803	2923	7141	9834*	..
	Mnyuzi			7606	9542*	..
	Other urban	2955	9134	26393	45841	..
	Urban s/total	**72491**	**145964**	**225912**	**301196**	**440908**
	Rural s/total	698569	891803	1054350	1335084	1604297
	TotPop	**771060**	**1037767**	**1280262**	**1636280**	**2045205**

Appendix A, Part 1: 'Best Estimate' Tanzania Urban Populations (Towns >9,000 in 2002)

… /App A (cont.)

Region	Town/Ward	1967	1978	1988	2002	2012
MOR	Morogoro	25262	60782	117593	209058*	305840
	Ifakara		15250	27918	41606*	..
	Kidatu-Kidodi		21884	30430	38486*	..
	Kilosa	4458	12886	22903	18260	..
	Gairo		(11847**)	9595	16982*	..
	Mlimba				13740*	..
	Mvomero			7966	12576*	..
	Mtibwa				12348**	..
	Mang'ula			11233	12083*	..
	Mikumi		5508	5321	11778*	..
	Kimamba (A+B)	1863	9164	8909	10562	..
	Dumila				9650*	..
	Other urban	0	9831	26933	66720	..
	Urban s/total	**31583**	**135305**	**268801**	**473849**	**636058**
	Rural s/total	653521	803959	1011130	1279513	1582434
	TotPop	**685104**	**939264**	**1279931**	**1753362**	**2218492**
PWA	Kibaha/Tumbi		2817	8443	42503*	128488
	Bagamoyo	5112	16272	21184	28368*	74788?
	Mlandizi		6484	11268	17324*	..
	Kibiti			9594	11395*	..
	Chalinze			11902	10469*	..
	Ikwiriri			4448	10029*	..
	Kilindoni		4033	5728	9463*	..
	Other urban	0	7676	22654	57310	..
	Urban s/total	**5112**	**37282**	**95221**	**186861**	**360371**
	Rural s/total	506394	479304	540961	698156	738297
	TotPop	**511506**	**516586**	**636182**	**885017**	**1098668**
DAR	**Dar es Salaam**	**272821**	**769445**	**1205443**	**2336055**	**4364541**
	Rural s/total	0	73645	139675	151233	0
	TotPop	**272821**	**843090**	**1345118**	**2487288**	**4364541**
LIN	Lindi	13352	27312	33014	29178	78841
	Nachingwea	3751	8886	14350	18810*	..
	Nambambo				14458	..
	Liwale		7260	11862	14096*	..
	Ruangwa			6539	9605*	..
	Narunyu				9394*	..
	Other urban	0	9732	31352	30855	..
	Urban s/total	**17103**	**53190**	**97117**	**126396**	**162049**
	Rural s/total		474434	545247	661228	702603
	TotPop	**see Mtwara**	**527624**	**642364**	**787624**	**864652**

Appendix A, Part 2: 'Best Estimate' Tanzania Urban Populations (Towns >9,000 in 2002)

… /App A (cont.)

Region	Town/Ward	1967	1978	1988	2002	2012
MTW	Mtwara	20413	48491	66878	79277*	100626
	Masasi		13129	27861	34172	58314
	Newala/Luchingu		18395	12896	16910*	..
	Mkoma				11001**	..
	Tandahimba			5322	10713*	..
	Nanyamba			6898	9872*	..
	Mahuta		6668	7910	9460*	..
	Ndanda				9234*	..
	Other urban	0	5672	0	47900	..
	Urban s/total	**20413**	**92355**	**127765**	**228539**	**291504**
	Rural s/total	1020733	679463	761117	895942	979350
	TotPop	**1041146**	**771818**	**888882**	**1124481**	**1270854**
RUV	Songea	5430	17955	52985	98683*	203309
	Tunduru/Mlingoti		18160	21737	24512*	..
	Mbinga		7308	9389	15359*	..
	Other urban	0	0	7010	31116	..
	Urban s/total	**5430**	**43423**	**91121**	**169670**	**338820**
	Rural s/total	387613	518152	688747	944045	1038171
	TotPop	**393043**	**561575**	**779868**	**1113715**	**1376991**
IRI/NJO	Iringa	21746	57164	73516	102208*	151345
	Makambako		9097	15489	35919*	57288
	Njombe		5874	7870	34630*	64122
	Ilula				17065*	..
	Mafinga		11414	12818	16612*	51902
	Other urban	0	527	6683	49898	..
	Urban s/total	**21746**	**84076**	**116376**	**256332**	**422256**
	Rural s/total	668159	840968	1076464	1234560	1221079
	TotPop	**689905**	**925044**	**1192840**	**1490892**	**1643335**
MBE	Mbeya	12479	76601	130798	232596*	385279
	Utengule			17804	30816*	..
	Tunduma		(10961**)	12077	28237*	97562
	Vwawa		1585	6716	19298*	..
	Kyela		4906	10294	17602*	..
	Tukuyu	4089	7081	11600***	15856*	..
	Ubaruku				12685*	..
	Rujewa			9337	9413*	..
	Other urban	2398	6450	67386	54642	..
	Urban s/total	**18966**	**96623**	**266012**	**421145**	**898112**
	Rural s/total	950087	983241	1210205	1642183	1809298
	TotPop	**969053**	**1079864**	**1476217**	**2063328**	**2707410**

Appendix A, Part 3: 'Best Estimate' Tanzania Urban Populations (Towns >9,000 in 2002)

… /App A (cont.)

Region	Town/Ward	1967	1978	1988	2002	2012
SIN	Singida	9478	29258	39630	58153	85242
	Manyoni		8157	10981	16645*	..
	Itigi		6729	6469	14362*	..
	Kiomboi		9039	6869	11350*	..
	Other urban	0	4827	4587	48157	..
	Urban s/total	**9478**	**58010**	**68536**	**148667**	**170701**
	Rural s/total	448460	555939	725351	938081	1199936
	TotPop	**457938**	**613949**	**793887**	**1086748**	**1370637**
TAB	Tabora	21012	67388	92532	126089*	160608
	Nzega		9542	14965	24347	..
	Urambo		10692	11830	18913*	..
	Igunga		4847	8607	15553*	..
	Sikonge			5114	9506*	..
	Other urban	0	15030	15800	25476	..
	Urban s/total	**21012**	**107499**	**148848**	**219884**	**287509**
	Rural s/total	541859	710408	891774	1490581	2004114
	TotPop	**562871**	**817907**	**1040622**	**1710465**	**2291623**
RUK/KAT	Sumbawanga		28586	46631	74890*	124204
	Mpanda/Kashaulili		13450	19305	26636	81540
	Namanyere			10985	15638*	..
	Kirando				9936*	..
	Laela				9745*	..
	Chala				9046*	..
	Other urban	0	11056	22126	54330	..
	Urban s/total	**0**	**53092**	**99047**	**200122**	**393609**
	Rural s/total		398805	604003	936232	1175534
	TotPop	**see Mbeya**	**451897**	**703050**	**1136354**	**1569143**
KIG	Kigoma/Ujiji	21369	50075	74224	131792*	215458
	Kasulu		10838	17964	33668	67704
	Nguruka				20413*	..
	Kibondo		3525	6108	13241*	..
	Other urban	0	0	6571	3693	..
	Urban s/total	**21369**	**64438**	**104867**	**202807**	**365261**
	Rural s/total	452074	584503	746396	1471240	1762669
	TotPop	**473443**	**648941**	**851263**	**1674047**	**2127930**
SHI/GEI/SIM	Shinyanga	5135	20439	46802	73921*	103795
	Kahama	3211	7637	11383	26003**	95087
	Nyalikungu/Maswa		6704	9782	17384*	..
	Ushirombo			5250**	16016*	..
	Bariadi		4603	10800	15462*	..
	Isagehe				10909*	..
	Masumbwe				10791*	..
	Diobahika				10616*	..
	Bugarama				9248*	..
	Other urban	7383	16572	37323	65702	..
	Urban s/total	**15729**	**55955**	**116090**	**256052**	**402563**
	Rural s/total	883739	1267580	1647870	2540578	2931269
	TotPop	**899468**	**1323535**	**1763960**	**2796630**	**3333832**

Appendix A, Part 4: 'Best Estimate' Tanzania Urban Populations (Towns >9,000 in 2002)

… /App A (cont.)

Region	Town/Ward	1967	1978	1988	2002	2012
KAG/GEI	Bukoba	8141	21547	28316	59157*	128796
	Chato			9022	13540*	..
	Biharamulo		3349	5469	9585*	..
	Buseresere				9202*	..
	Other urban	0	9365	26650	35266	..
	Urban s/total	**8141**	**34261**	**69457**	**126750**	**279433**
	Rural s/total	650571	975506	1244182	1901407	2543717
	TotPop	**658712**	**1009767**	**1313639**	**2028157**	**2823150**
MWA/GEI/SIM	Mwanza	34861	110553	172287	385810*	706453
	Geita/Kalangalala		6917	14417	39562*	167160?
	Sengerema		13745	21696	38424*	..
	Nansio	3607	7804	11107	28545	..
	Magu		4859	10492	17689	..
	Nkome				15443*	..
	Katoro				13458*	..
	Ngudu		3894	6644	12324*	..
	Misungwi			6505	12127*	..
	Kisesa/Kisasa			6752	10179*	..
	Other urban	0	0	90095	27696	..
	Urban s/total	**38468**	**147772**	**339995**	**601257**	**1113222**
	Rural s/total	1017415	1295607	1536781	2328387	2818823
	TotPop	**1055883**	**1443379**	**1876776**	**2929644**	**3932045**
MAR	Musoma	15412	31051	68364	104851*	134327
	Bunda		7873	9401	40404*	..
	Tarime		9854	15590	29339	..
	Sirari				16795*	..
	Mugumu		4042	6674	12549*	..
	Shirati				9794*	..
	Other urban	0	0	0	39874	..
	Urban s/total	**15412**	**52820**	**99763**	**253606**	**303412**
	Rural s/total	528713	671007	852853	1109791	1440418
	TotPop	**544125**	**723827**	**952616**	**1363397**	**1743830**
Mainland	Named above	672356	2128362	3538096	6655998	..
	Other urban	12736	129559	461786	898840	..
	Urban s/total	**685092**	**2257921**	**3999882**	**7554838**	**12701238**
	Rural s/total	11290665	14778578	18507165	25907011	30924116
	TotPop	**11975757**	**17036499**	**22507047**	**33461849**	**43625354**

[Notes: * From Thomas Brinkhoff: http://www.citypopulation.de/Tanzania.html
** From E-Geopolis: http://www.e-geopolis.eu
*** Assessed using census and other data (See also F/N 4, p. 2).
.. Not yet available.
All other figures from Tanzania Census Reports listed in References.]

Appendix A, Part 5: 'Best Estimate' Tanzania Urban Populations (Towns >9,000 in 2002)

Working paper

International Growth Centre

A Density-Based Measure of 'Urban' for Tanzania?

A Feasibility Study Using Dodoma Region

Hugh Wenban-Smith

April 2014

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INTERNATIONAL GROWTH CENTRE (IGC)

Project on urbanization in Tanzania

Phase 1: Data assembly and preliminary analysis

Working Paper 3

A DENSITY-BASED MEASURE OF 'URBAN' FOR TANZANIA?

A feasibility study using Dodoma region

H B Wenban-Smith

Independent Research Economist

(wenban@globalnet.co.uk)

Final Version: 4 April 2014

A DENSITY-BASED MEASURE OF 'URBAN' FOR TANZANIA?

A feasibility study using Dodoma region

Hugh Wenban-Smith[1]

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Introduction

In the Tanzanian censuses of 1967 and 1978, the definition of 'urban' was based on whether a town was gazetted, with populations within the defined boundary categorized as urban. In the later censuses of 1988, 2002 and 2012, as the number of potential urban areas increased, a different approach was adopted. Each Enumeration Area (of about 100 households, i.e. 400-500 people) was classified as 'rural' or 'urban' as decided by the district authorities[2]. No central criteria were laid down and it seems likely that the judgement of district authorities may have varied from region to region and between censuses.

In deciding the classification of EAs, the authorities were no doubt responding to changes they could see on the ground. The total population of Tanzania increased by over 30% between 1978 and 1988, by 45% between 1988 and 2002, and by a further 68% between 2002 and 2012, leading to more and larger settlements. Among the types of urban expansion taking place were:

vii. *Densification of established urban centres*, particularly Dar es Salaam but also Arusha, Mwanza, Dodoma, Mbeya and Moshi;

viii. *Extension of shanty type settlements around these centres*, extending their boundaries and perhaps absorbing previously independent villages or other settlements;

ix. *Growth of previously insignificant trading centres*, particularly along major roads and railways;

x. *Growth of villages*, particularly in the wake of the Ujamaa villagisation programme;

xi. *Temporary or semi-permanent settlements associated with small scale mining activities*;

xii. *Camps or settlements formed by refugees from neighbouring countries*, particularly (at different times) from Burundi, DR Congo and Rwanda.

While it seems likely that expansion of types (i) – (iii) would generally be reflected in district authority classifications, practice with types (iv) – (vi) may have been more varied, and cases of these kinds are

[1] Independent Research Economist (wenban@globalnet.co.uk). I gratefully acknowledge input from Prof. Steve Gibbons, Director, Spatial Economics Research Centre, LSE and from Vincent Mugaya and his team at the GIS unit, National Bureau of Statistics, Tanzania.

[2] Certain other categories were also separately identified, such as prisons and hospitals.

more difficult to identify in the census reports. Indeed, Volume X of the 2002 Census remarks that "The urban areas are defined as the localities that are identified as urban areas by the district authority. There is no clear and uniform definition applied by the various districts in the country." Similarly, in the 2012 Census report, it states "For the purpose of the 2012 PHC, urban population consists of people living in areas legally recognized (gazetted) as urban and all areas recognized by Local Government Authorities as urban." In consequence, it is hard to know precisely what the recorded increase in urban populations in the censuses has measured.

Of course, there is no single 'correct' definition of 'urban'. Appendix 1 briefly reviews international practice, showing that an 'urban' population may vary from as few as 200 (in Sweden) up to 5,000 or more (in India). For Tanzania, a World Bank study on 'The Urban Transition in Tanzania' (2009) provides an in-depth discussion (Ch. 1, pp9-21). Much may depend on the use to which the information is to be put. Administrative boundaries are useful in defining which authority is responsible for which area even if not all the area is urban in character. Another alternative is to consider what functions the area fulfills, e.g. whether typically urban services and facilities are present within the area, but this is quite demanding of information which may not be easy to obtain. A simpler method is to suppose that if an area has a density greater than some threshold value and a total population of sufficient size, then it is likely to be 'urban'. This has the advantage of providing a consistent definition so that, even if not ideal, it is at least comparable between areas and across time.

In this paper, we use data from Dodoma region for 2002 and 2012 to investigate what the effect of adopting a density-based measure of 'urban' in Tanzania would be. We conclude that despite the advantage of consistency, a density-based measure would have limitations unless used in conjunction with other criteria – see **Conclusions** section below.

A density-based definition of 'urban'

The definition we consider is of the general form "contiguous areas with a density greater than X persons per hectare and a total population greater than Y." Ideally the areas in question would be Enumeration Areas (EAs) but in this investigation we use wards and 'streets' as these are the units used in the data (explained more fully below). For X, we test values of 1.5, 2.5, 5.0 and 7.5 persons per hectare (equivalent to 150, 250, 500 and 750 persons per sq. km). For Y, we test values of 5,000 and 10,000. These values are higher than those often used in developed countries[3], but appear appropriate

[3] e.g. OECD adopts a cut-off of 150 people per sq. km, except that for Japan the cut-off is 500 people per sq. km.

to conditions in Tanzania, where urban settlements have fewer roads, parks and public buildings to reduce urban densities, and there is commonly a big difference between very sparsely populated rural areas and rather dense urban settlements.

Data used

Ward populations for the Dodoma region can be found in the 1988, 2002 and 2012 Census reports. However, it should be noted that in 1988 Dodoma region had 3 districts and 121 wards, in 2002 it had 5 districts and 146 wards, and in 2012 it had 7 districts and 189 wards. At ward level, wards that become very large may get sub-divided for the next census, with new ward names being introduced (so that the previous ward name may now refer to a smaller area).

For ward and 'street' areas, the GIS Shapefiles for 2002 have been made publicly available by the National Bureau of Statistics (NBS)[4], while pre-publication ward level GIS Shapefiles for Dodoma region were kindly provided to us by NBS. GIS mapping was not carried out for the 1988 census (or earlier ones) so that densities at ward (or lower) level for 1988 and earlier years cannot be computed.

Results for 2002

In the 2002 census GIS Shapefiles, the basic unit is the 'Street' (mtaa in Swahili). In rural areas, this generally corresponds with Enumeration Areas (EAs), but in towns several EAs are often combined to form a 'Street'. EAs typically contain around 500 people; urban 'streets' typically contain between 1,000 and 5,000 people. The coding of these spatial units enables ward totals to be obtained by aggregation. As a first step, what the total urban population of the whole Dodoma region would be using a range of density cut-offs for wards and streets was calculated (without regard to the total population of individual settlements). The results are shown in **Table 1** below.

[4] It was noted that the ward populations obtained from the Shapefiles are generally a bit lower than those reported in the 2002 Census Report, for reasons which have not been determined, but typically by only a few tens (i.e. around 0.1%), so not material in the context of density calculations.

Criterion		Resulting urban population	Area (sq.km)	No of units
As in 2002 Census		213,243	..	..
Using ward units **(Sum of populations in wards having greater than the specified density)**	**Density >7.5/Ha**	110,324	35.1	11
	Density >5.0/Ha	129,623	61.7	12
	Density >2.5/Ha	167,074	177.0	14
	Density >1.5/Ha	206,481	408.0	17
Using 'Street' units **(Sum of populations in streets having greater than the specified density)**	**Density >7.5/Ha**	163,060	52.3	84
	Density >5.0/Ha	187,169	88.4	96
	Density >2.5/Ha	214,520	176.1	123
	Density >1.5/Ha	295,431	603.1	156

Table 1: Urban population of Dodoma region in 2002 under different urban measures

For wards, the higher density cut-offs appear too severe. Indeed, with >7.5/Ha, only 11 wards, all in the Dodoma Urban District, qualify. To get an urban population comparable with that found in the census, it is necessary to go down to >1.5/Ha, when 17 wards qualify (with the last three rather low density wards adding 231 sq. km, or 130%, to the area, but only 39,407, or 24%, to the population). Average densities are higher at 'street' level, and an urban total comparable to that found in the census is obtained using >2.5/Ha. On this criterion, 123 'streets' qualify – the highest density case being Gereza la Isanga in Hazina ward (with a startling 1736 people on 2.4 Ha = Density of 726/Ha), the next highest case being Baruti in Viwandani ward (754 people on 4.2 Ha = Density of 178/Ha), both in Dodoma Urban District. It is striking that applying this criterion produces an area similar to that found if the >2.5/Ha ward criterion is applied.

Adopting the >1.5/Ha ward and >2.5/Ha 'street' cut-offs, we next see how this would affect the population counts for individual towns, having regard to the 5,000 and 10,000 size criteria. The results are shown in **Table 2**.

For the three larger towns, Dodoma, Kondoa and Mpwapwa, it may be seen that using the >1.5/Ha ward criterion leads to population figures very similar to those in the 2002 census report. However, using the >2.5/Ha 'street' criterion yields populations about 15% lower, no doubt due to the exclusion of less dense 'streets' both within the towns (e.g. parks) and around their peripheries.

Towns	2002 Census Population	Using ward density >1.5/Ha	Using street density >2.5/Ha
Dodoma	150,604	155,113	145,391
Kondoa	20,426	21,758	18,134
Mpwapwa	18,992	18,428	15,842
Kibaigwa	10,004	[15,207]	7,969
Mvumi Mission	8,875	[13,179]	7,904
Kongwa	..	11,182	[4,744]
Ving'hawe	..	[10,995]	5,050
Other urban	13,217	0	14,230
Urban s/total	213,243	206481	214,520
Rural s/total	1,478,782	1,485,544	1,477,505
TOTAL POPN	**1,692,025**	**1,692,025**	**1,692,025**

Note: Figures in square brackets are ward populations which fail to meet the density or the size criterion, and which are therefore not included in the urban sub-totals.

Table 2: Dodoma Region: 2002 urban populations under different measures

For the next tier of towns, we find Kibaigwa and Mvumi Mission, both with sizeable populations, counting as urban in the census but not if the >1.5/Ha ward criterion is applied; they then re-qualify if the >2.5/Ha 'street' criterion is applied, albeit with urban populations 20% and 10% lower than in the census. Kongwa, on the other hand, is not listed as urban in the census but comes in on the >1.5/Ha ward criterion with a population over 10,000 (the Kongwa Mjini ward has a population of 11,182 and an average density of 1.57/Ha). It then drops out again on the >2.5/Ha 'street' criterion – the 9 'streets' that qualify have a total population of only 4,744). Finally, Ving'hawe ward has a population of 10,995 but the density is only 1.05/Ha; however, when its 'streets' are considered, the 7 with >2.5/Ha have a total population of 5,050.

Although we have only looked at one region and one census year here, the conclusion seems to be that whatever criterion is applied, the results are likely to be more secure for towns with populations above 10,000 than for those with smaller populations. With the latter, the >1.5/Ha ward criterion is liable to exclude sizeable towns which are part of large area wards, while the >2.5/Ha 'street' criterion will bring in some of these towns but may understate their populations.

Results for 2012

Our results for 2012 are provisional and incomplete as 'street' level populations and areas are not yet available[5]. However, we have been able to produce a ward level analysis similar to that for 2002 reported above. Starting with the whole region analysis, the results are shown in **Table 3** below.

Criterion		Resulting urban population	Area (sq.km)	No of units
As in 2012 Census		321,194	..	..
Using ward units (Sum of populations in wards having greater than the specified density)	**Density >7.5/Ha**	136,727	52.2	14
	Density >5.0/Ha	217,624	184.6	18
	Density >2.5/Ha	239,911	231.7	20
	Density >1.5/Ha	348,192	840.7	26
Using 'Street' units (Sum of populations in streets having greater than the specified density)	**Density >7.5/Ha**	..	..	..
	Density >5.0/Ha	..	..	..
	Density >2.5/Ha	..	..	..
	Density >1.5/Ha	..	..	..

Table 3: Urban population of Dodoma region in 2012 under different urban measures

As was found for 2002 (see **Table 1**), it is necessary to go down to the > 1.5/Ha ward density criterion to give an urban population comparable with that reported for the region in the 2012 census report. In fact, using this criterion we get a rather larger urban population (for 2002, it was rather smaller). The number of wards now meeting the criterion has risen from 17 to 26, while their combined area has more than doubled from 408 to 841 sq. km, indicative partly of the urban expansion taking place and partly of the rather low average density (1.8/Ha) of the last 6 wards.

Adopting this criterion, we next consider the effect on populations of the larger towns. This is done in **Table 4**.

[5] Ward level data for Chemba district of Dodoma region was also missing. However, the effect on our results is not significant as this district contains only one small urban area (Mrijo).

Towns	Census Population	Using ward density >1.5/Ha	Using street density >2.5/Ha
Dodoma	213,636	230,130	..
Kondoa	..	22,296[a]	..
Mpwapwa	..	21,337	..
Kibaigwa	..	24,761	..
Mlali	..	19,623	..
Mvumi Mission	..	16,514	..
Kongwa	..	13,531	..
Ving'hawe	..	[12,277]	..
Other urban	..	0	..
Urban s/total	321,194	348,192	..
Rural s/total	1,762,394	1,735,396	..
TOTAL POPN	**2,083,588**	**2,083,588**	**2,083,588**

Note: [a] Incl. Chemchem ward; Figures in square brackets are for towns that fail to meet the density criterion

Table 4: Dodoma Region: 2012 urban populations under different measures

Without comparative figures from the census or a street level analysis, the main interest is how the larger towns appear to have grown between 2002 and 2012 using the ward density criterion, which can in due course be compared with their growth under other measures. The incomplete comparisons are set out in **Table 5:**

Town	Urban Population						Growth %pa 02-12		
	Census02	Census12	Wards02	Wards12	Streets02	Streets12	Census	Wards	Streets
Dodoma	150,604	213,636	155,113	230,130	145,391	..	3.56	4.02	..
Kondoa	20,426	..	21,758	22,296[a]	18,134	..	..	0.24	..
Mpwapwa	18,992	..	18,428	21,337	15,842	..	..	1.48	..
Kibaigwa	10,004	..	[15,207]	24,761	7,969	..	..	5.00	..
Mlali	..	..	..	19,623	..	..	..	..	..
Mvumi Mission	8,875	..	[13,179]	16,514	7,904	..	..	2.28	..
Kongwa	..	..	11,182	13,531	4,744	..	..	1.93	..
Ving'hawe	..	..	[10,995]	[12,277]	5,050	..	..	1.11	..
Other	13,217	..	0	0	14,230	..	..	..	..
Urban s/t	213,243	321,194	206481	348,192	214,520	..	4.18	5.36	..
Rural	1,478,782	1,762,394	1,485,544	1,735,396	1,477,505	..	1.77	1.57	..
TOTAL	**1,692,025**	**2,083,588**	**1,692,025**	**2,083,588**	**1,692,025**	**2,083,588**	2.10	2.10	2.10

Note: [a] Incl. Chemchem ward; Figures in square brackets are for towns that fail to meet the density criterion

Table 5: Growth rates of larger towns in Dodoma region under different measures of 'urban'

What we find here is a little odd. Although using the ward density >1.5/Ha criterion gives a rather higher growth rate for Dodoma and for the urban sub-total than the census does, growth rates for the other listed towns, except Kibaigwa, are rather low. At the same time, a large new town, Mlali in Kongwa district, appears with a population of nearly 20,000. Further comment here must await the availability of more data.

Conclusions

In this working paper, the effect of an 'urban' definition based on density at ward and 'street' level has been investigated for Dodoma region. It has been noted that to get an urban population comparable to that reported in the census reports, the density cut-off at ward level needs to be 1.5/Ha while at 'street' level the density cut-off needs to be 2.5/Ha. At the same time, some limitations in using these criteria have also been noted:

- The 1.5/Ha ward level criterion may miss some sizeable towns if they are part of a ward which includes a large rural area;
- The 2.5/Ha 'street' level criterion will omit some relatively low density areas within urban areas and so may understate urban populations.

To assess whether adoption of a density-based measure would be an improvement, there needs to be comparison with alternatives. Two alternatives are: (a) the existing exercise of judgement at EA level by district officials, or (b) a centrally specified definition. The strengths and weaknesses of each approach are summarized in **Table 6**.

Method	Strengths	Weaknesses
Local district judgement	• Uses local knowledge • Fine grain if done at EA level	• Judgement may vary from district to district and over time • Judgements may not be sufficiently objective
Centrally imposed definition	• Ensures consistency	• Does not incorporate local knowledge
Ward level density criterion	• Easy to apply; consistent	• May miss towns in large wards • Arbitrary cut-off
Street level density criterion	• Easy to apply; consistent	• Will omit lower density areas within urban areas • Arbitrary cut-off

Table 6: Strengths and weaknesses of alternative approaches to definition of 'urban'

It is perhaps not the role of a working paper to make recommendations on this point. Nevertheless, there does appear to be scope for adopting the best features of all four approaches, as highlighted in bold below.

We start by observing that **there is much to be said for the present approach of getting local officials to make the judgement**, as they will have better information on local circumstances and hence be better able to judge whether a particular area is urban in character. However, there is a risk that, without some central guidance, such judgements may vary from district to district, and even within the same district may change over time, as new officials come into office. There is also perhaps a risk that extraneous considerations may come into play (such as a hope for greater prestige, or a larger resource allocation, if a larger urban population is reported). It would therefore be **desirable to try to ensure consistency at local level by providing some central guidance**. Such guidance **could include density criteria**, such as those suggested above, but should perhaps also **add some qualifications to address the limitations we have identified**.

A further issue to consider is that a simple 'urban'/'rural' division does not sufficiently recognize the complexities of urban development in countries like Tanzania, where much urban growth is highly informal. A solution to this problem might be to **introduce a sub-division of the 'urban' category into 'urban – informal' and 'urban – formal' in the census enumeration**, the distinction resting on whether or not urban services such as water, sanitation and paved roads are available, and on housing standards. The indicators of deprivation adopted by UN-HABITAT (2008) in its 2008/2009 *State of the World's Cities Report* (pp. 92-95) might be appropriate for this purpose.

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Appendix I

Measuring urbanization

In discussing urbanisation, it is important to keep in mind that the definition of an urban area in the UN statistics varies quite widely from country to country (as well as across time within countries) and that large numbers of settlements that count as urban are actually quite small. Thus in Sweden an urban area has a population of 200 or more; in Britain, the current Office of National Statistics (ONS) definition of an urban area is "Areas of built up land of at least 20 Ha, with a population of 1,500 or more"; in India, however, the definition requires (*inter alia*) a minimum population of 5,000. Yet when urbanization is under discussion, the picture in most people's minds is probably of a town or city of 100,000 or more.

Moreover, there are often problems with identification of urban boundaries, particularly as urban population growth leads to colonization of peripheral areas. Apart from developments on the ground running ahead of administrative boundaries, areas previously separate become merged. This is increasingly recognized in the concept of urban agglomerations. Thus in India, an urban agglomeration may constitute:

> "(i) A city or town with a continuous outgrowth, the outgrowth being outside the statutory limits but falling within the boundaries of the adjoining village or villages; or
>
> (ii) Two or more adjoining towns with their outgrowths, if any; or
>
> (iii) A city and one or more adjoining towns with or without outgrowths all of which form a continuous spread."

While the problems with the measurement of urbanisation are fairly well known (although often ignored in public discussion), fixing them is another matter. An interesting recent development is the use by the World Bank of a new Agglomeration Index in its World Development Report 2009, a report which is also timely in taking economic geography as its main theme. The development of the Agglomeration Index is described in a background paper by Uchida & Nelson (2008). It is based on three criteria: population density; travel time to the urban centre; and size of the urban centre. The Index is calculated by aggregating the population in 1 x1 km cells which satisfy critical values for all three criteria, and dividing this number by a country's total population. After some experimentation with values, those adopted by the World Bank are:

> (i) Population density $\geq$ 150 people per sq. km;
>
> (ii) Travel time to urban centre $\leq$ 60 minutes;
>
> (iii) Population of urban centre $\geq$ 50,000.

The authors comment:

> "The index does not define what is urban *per se* – it does not incorporate urban characteristics such as political status and the presence of particular services or activities. Instead, the index creates a globally consistent definition of settlement concentration that could be used to conduct cross-country comparative analyses … A new measure of agglomeration does not suggest that the UN's data is flawed. The matter is analogous to measurements of global poverty levels across countries. Each country has its own definition based on legitimate factors, but the varying definitions among countries make cross-country analysis and aggregation nearly impossible."

Does the new index change our view of urbanization? So far the index has only been estimated for a single year (2000). For this year, the index gives a significantly higher value than the UN series for the South Asia region (50.4% compared with 27.2%) and for the Middle East and North Africa region (67.5% compared with about 57%); on the other hand it gives a lower value for the Latin America and

Caribbean region (64.4% compared with 75.4%). For other regions, the difference is relatively small. However, the regional averages hide some quite significant differences at country level. The Table below shows a small selection of cases. First, three countries for which the Agglomeration Index is significantly higher than the UN figure; secondly, three countries for which it makes little difference; finally three countries for which the Agglomeration Index is significantly lower:

Country	**UN urban share (%)**	**Agglomeration index (%)**
AI higher than UN		
Egypt	42.5	92.6
Bangladesh	23.2	42.8
Uganda	12.1	25.0
AI about the same		
Saudi Arabia	79.9	79.3
Turkey	64.7	62.5
China	35.8	36.2
AI lower than UN		
Australia	87.2	75.2
Sweden	84.0	53.8
Brazil	81.2	60.4

Table 4: Comparison of World Bank Agglomeration Index and UN urban share for selected countries

***Source*: Uchida & Nelson (2008, Table A.2)**

One could spend some time puzzling over the reasons for these differences. The main point however is that the Agglomeration Index, which is comparable across countries, can give a very different view of the extent of urbanization in particular cases.

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