IGC International Growth Centre

Urbanization in Tanzania

Phase 2: Part 2

The Regions

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UKaid from the British people

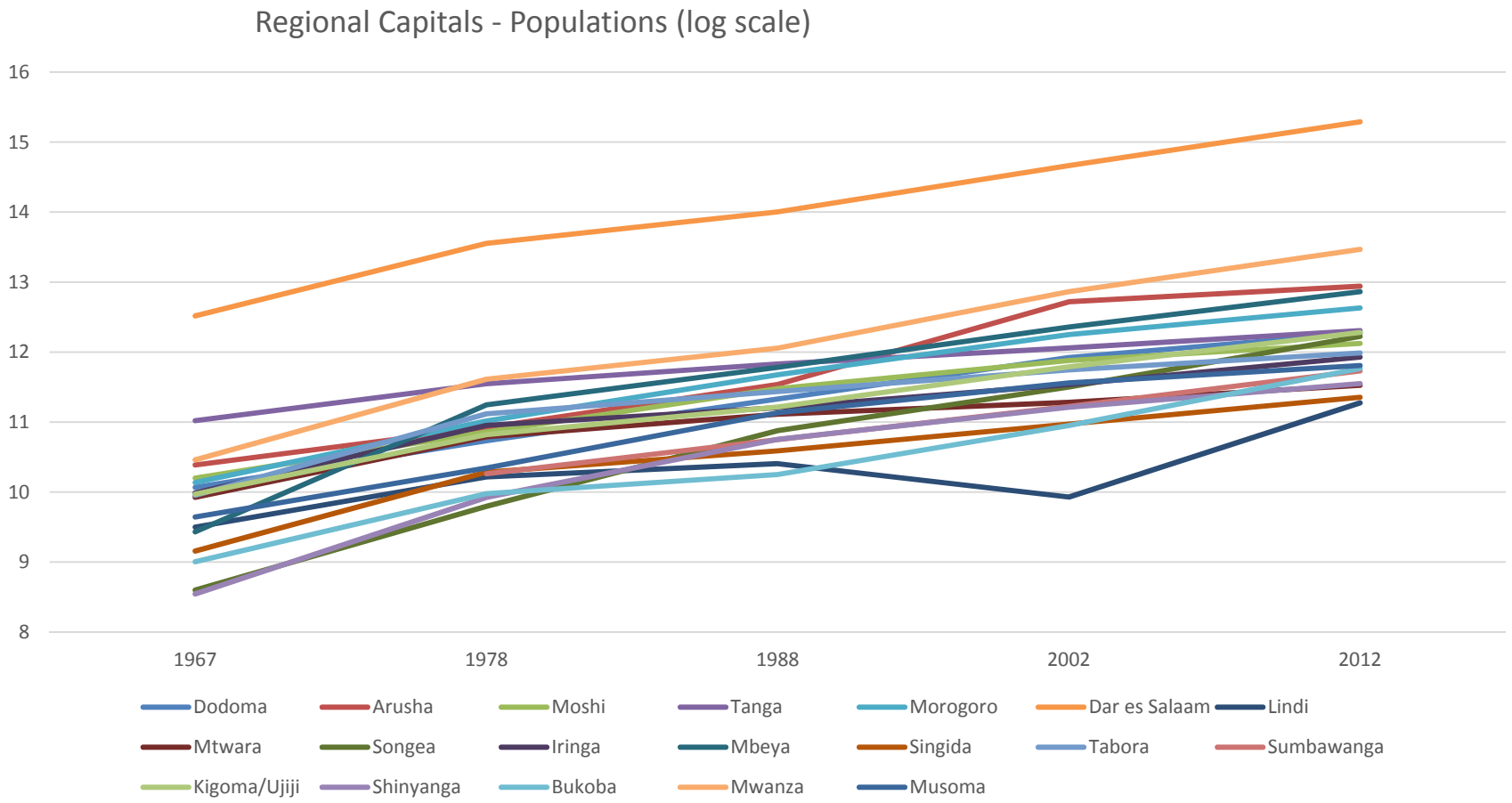
Propensities reminder

- *Prom* = Propensity for rural out-migration
  - $Prom = \frac{100*(ExpRurPop - ActRurPop)}{ExpRurPop}$
- *Prim* = Propensity for regional in-migration
  - $Prim = \frac{100*(ActRegPop - ExpRegPop)}{ExpRegPop}$
- *Puim* = Propensity for urban in-migration
  - $Puim = \frac{100*(ActUrbPop - ExpUrbPop)}{ExpUrbPop}$

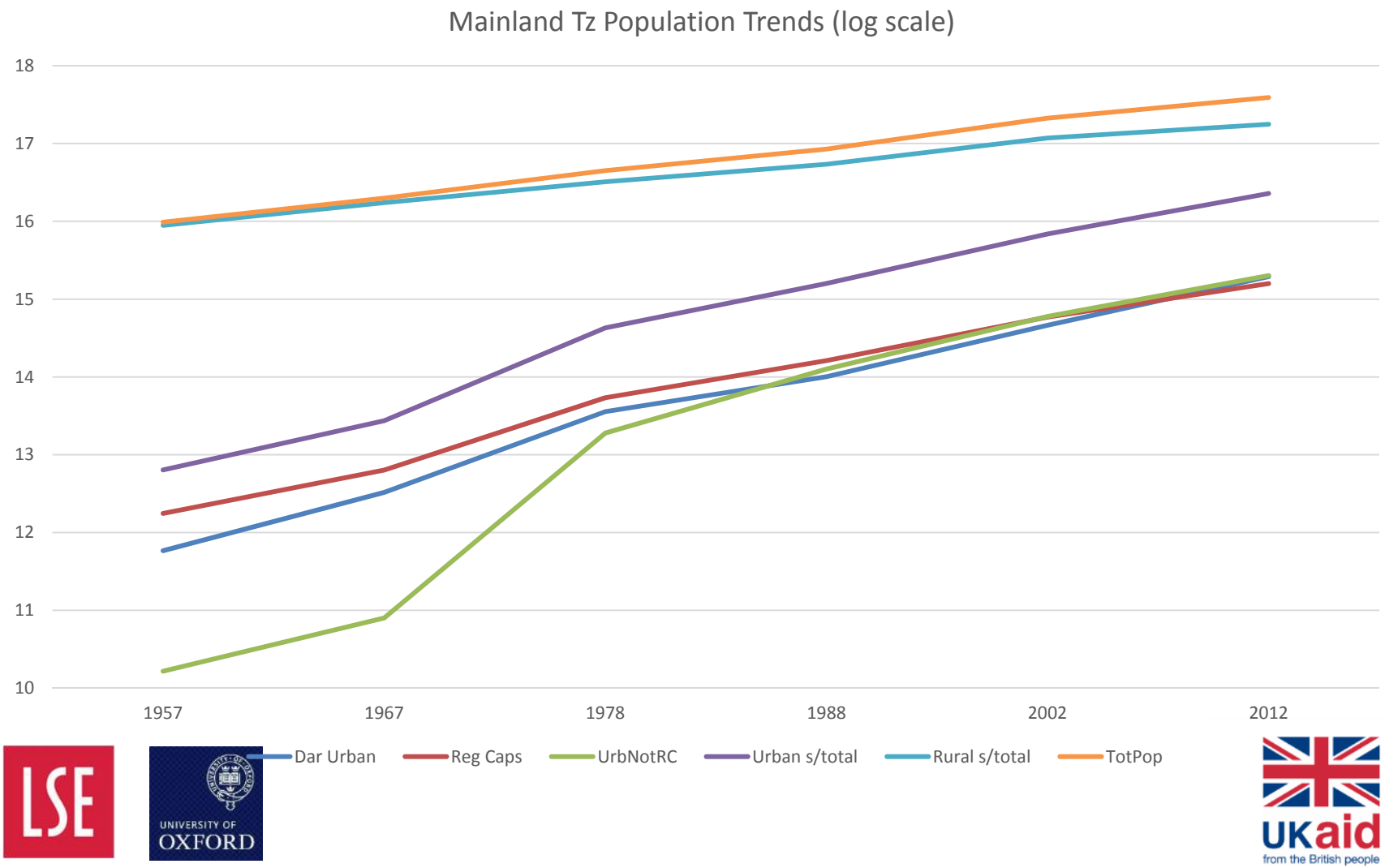
Definition of Mainland Regions

- 17 regions in 1967
- 20 regions in 1978 and 1988
- 20 regions in 2002 (but Manyara separated from Arusha for census report)
- 25 regions in 2012 (New regions: Geita, Katavi, Njombe, Simiyu)
- Analysis based on 20 regions of 2002 (19 when Pwani combined with Dar)

Growth of regional capitals



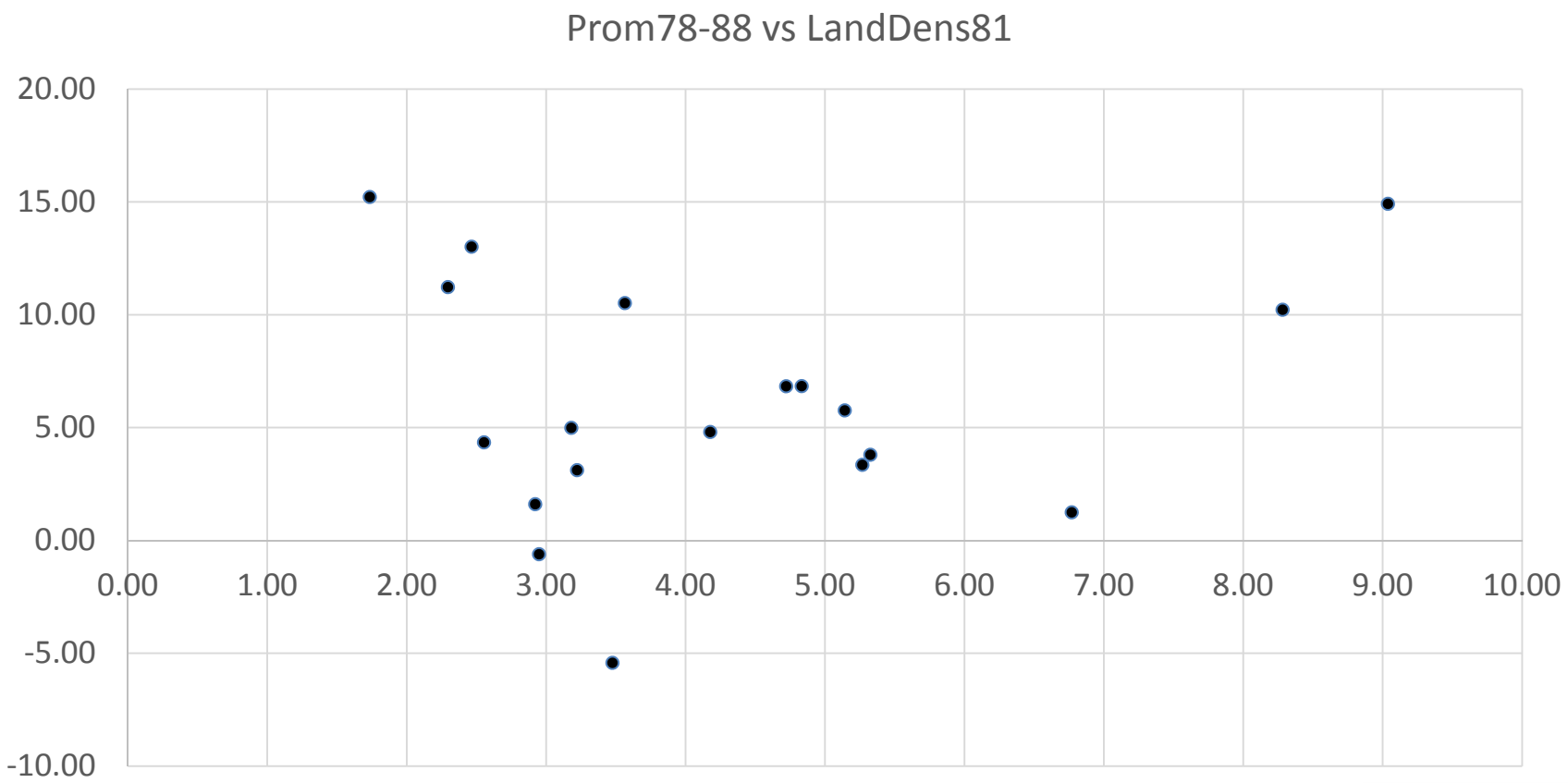
Growth of other urban areas



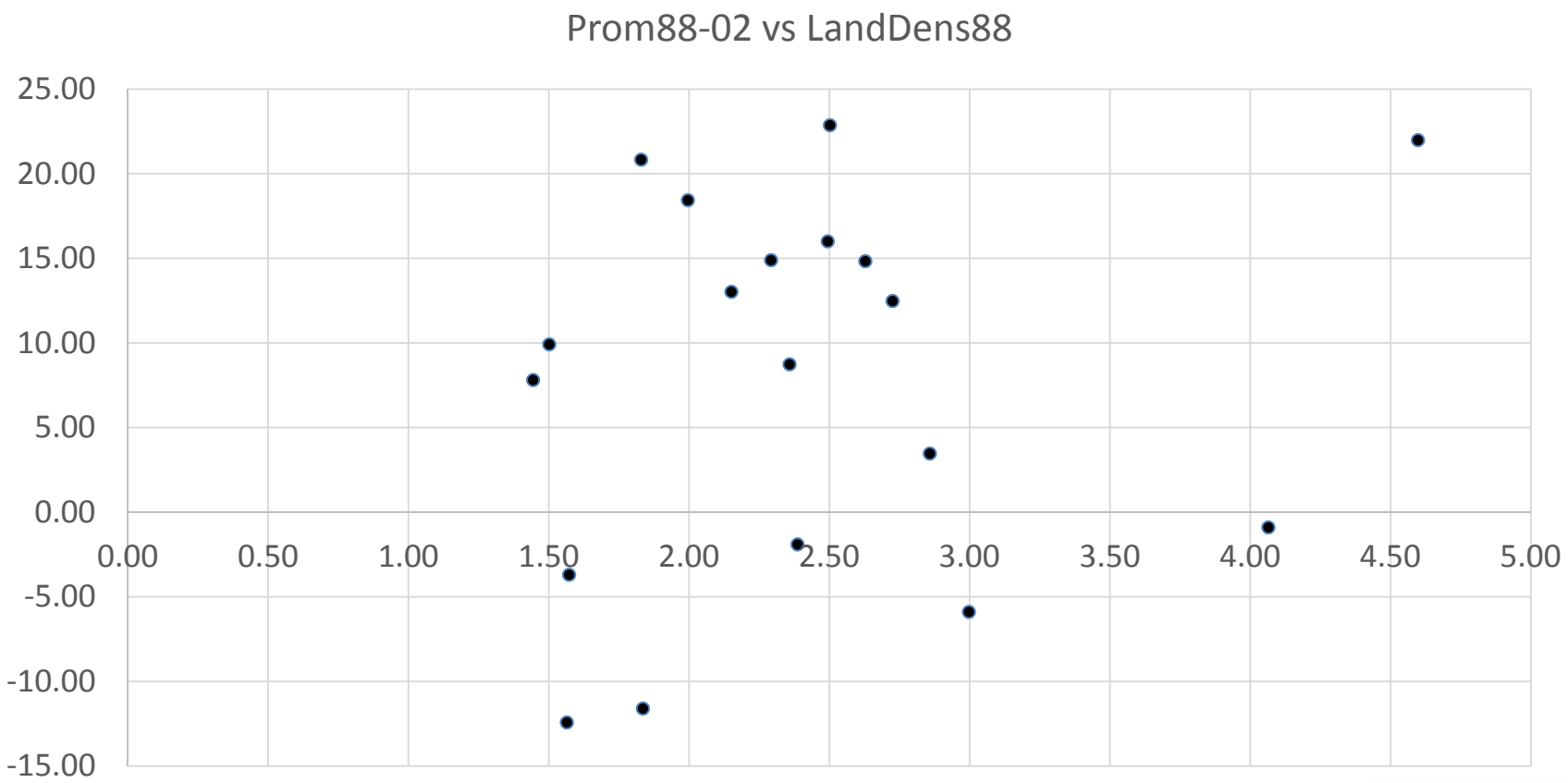
Regional annexes

- Each regional annex contains:
  - Information concerning the physical and other characteristics of the region;
  - Information about its infrastructure;
  - Its urban populations with a number of derived measures;
  - Information related to its rural economy; and, finally
  - Information related to its urban economy.

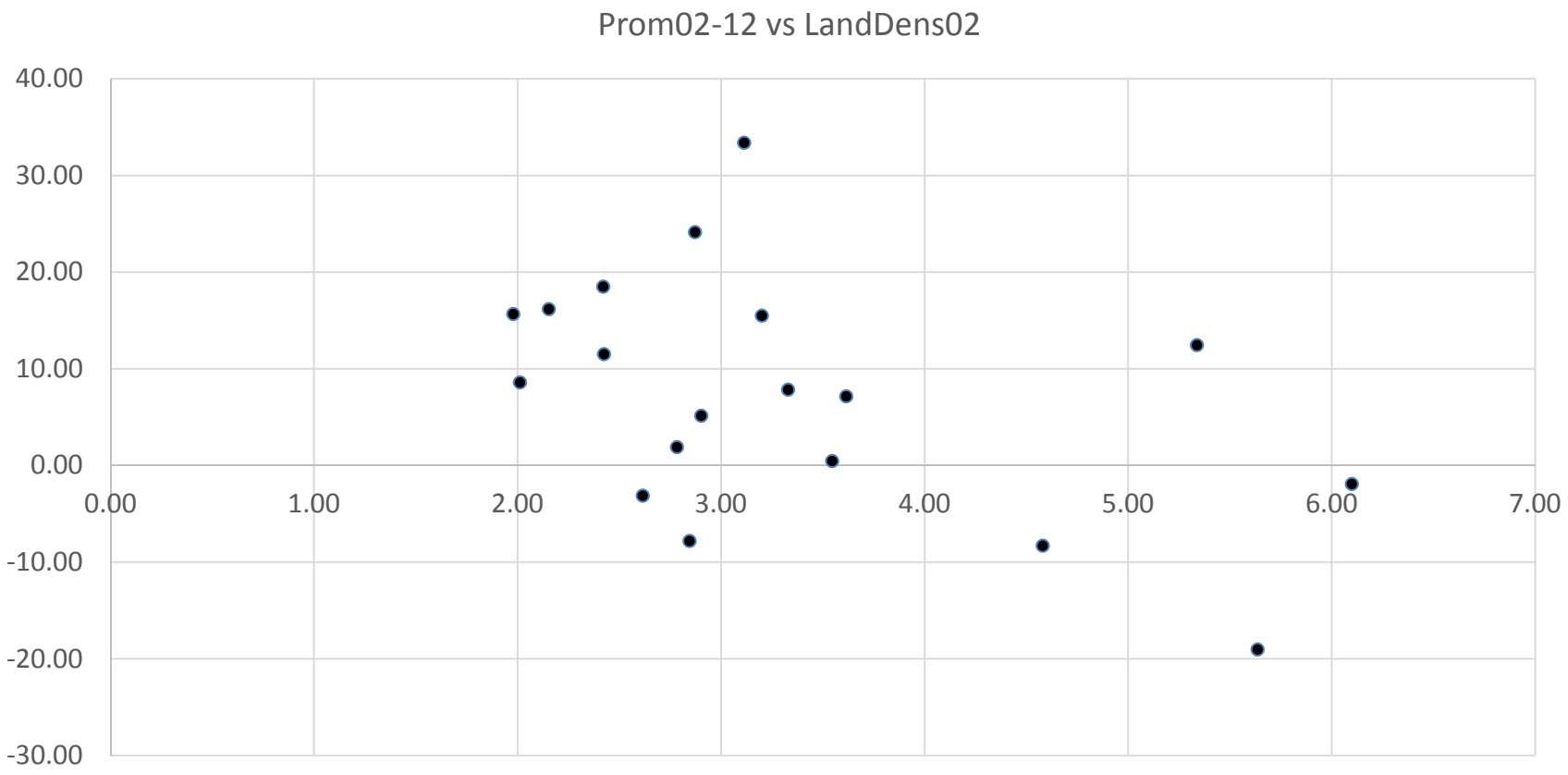
Prom due to 'Rural Push'? (78)



Prom due to 'Rural Push'? (88)



Prom due to 'Rural Push'? (02)



But 'Urban Pull' matters too …

- Simple economic theory:
  - Rural sector: Population growth => Lower marginal product (unless more land and/or better technology)
  - Urban sector: Population growth => Higher marginal product (agglomeration effects) BUT must be supported by investment in industry and infrastructure
- Migration will tend to equalize marginal products (subject to frictions e.g. distance)

A crude specification

- $Prom = a + b.LandDens + c.Rain + d.UrbPop + e.DistDar$
- Rationale:
  - Higher LandDens => higher Prom
  - Higher Rainfall => lower Prom
  - Higher UrbPop => higher Prom
  - Higher DistDar => lower Prom
- Refugee adjustment
- Mining dummy

Variables definitions

- *LandDens* = RurPop/Area Planted (base year)
- *Rain* = Av annual rainfall (mm) (period)
- *UrbPop* = Urban population (base year)
- *DistDar* = Distance from regional capital to Dar (km) (constant)

Regression results (1) *Prom*

Period	LandDens (b)	Rainfall (c)	LnUrbPop (d)	DistDar (e)	Mining (dummy)	R^2
1978-88	1.32* (0.68)	16.9* (5.73)	-3.36 (2.39)	-8.45* (3.85)	1.78 (3.88)	0.44
1988-2002	1.59* (0.77)	-3.49 (7.15)	-4.29 (3.71)	-20.6* (6.37)	-0.97 (6.87)	0.62
2002-2012	-2.65 (2.39)	2.98 (7.52)	2.47 (3.77)	-19.5* (7.24)	6.13 (7.28)	0.65

Regression Results (2) *Prim*

PrimR	LandDens	Rain	LnUrbPop	DistDar	Mining	R^2
1978-1988	-1.08 (0.76)	-13.3* (6.45)	8.57* (2.70)	8.87* (4.34)	-2.90 (4.37)	0.44
1988-2002	-1.53 (0.86)	0.026 (7.96)	12.2* (4.12)	22.8* (7.08)	-4.72 (7.64)	0.56
2002-2012	0.44 (2.14)	9.85 (6.74)	12.8* (3.38)	17.7* (6.49)	-14.5* (6.52)	0.68

Other variables tested

- *LandDens2* = RurPop/Area suitable for annuals (WB, 1994) (constant)
- *Climate* = PDSI
- *UrbPop* = Employment; UrbEmp (78)
- *DistDar* = Popn wtd average distance; Roads/sq.km
- 2001 HBS urban/rural differential
- All judged to be inferior

Why not use *Puim*?

- Regression produced no significant coeffts
- Reasons for growth often particular to each large city
- High *Puim* found in some surprising regions …

Regions ranking high on *Puim*

1978-88		1988-2002		2002-12	
Region (Capital & its growth rate)	Puim [Rank]	Region (Capital & its growth rate)	Puim [Rank]	Region (Capital & its growth rate)	Puim [Rank]
Mbeya (Mbeya 5.5%) (OtherUrb 21.1%)	108.4 [1]	Arusha (Arusha 8.8%) (OtherUrb 9.4%)	125.0 [1]	Kagera (Bukoba 8.5%) (OtherUrb 8.0%)	69.1 [1]
Kilimanjaro (Moshi 6.4%) (OtherUrb 16.1%)	85.5 [2]	Mara (Musoma 3.1%) (OtherUrb 11.8%)	71.0 [2]	Mbeya (Mbeya 5.2%) (OtherUrb 10.5%)	63.6 [2]
Mwanza (Mwanza 4.5%) (OtherUrb 16.3%)	74.2 [3]	Shinyanga (Shinyanga 3.3%) (OtherUrb 7.2%)	48.4 [3]	Ruvuma (Songea 7.5%) (OtherUrb 6.7%)	53.2 [3]
Arusha (Arusha 6.4%) (OtherUrb 12.6%)	67.3 [4]	Iringa (Iringa 2.4%) (OtherUrb 9.6%)	48.2 [4]	Rukwa (Sumbawanga 5.2%) (OtherUrb 8.0%)	50.9 [4]
Ruvuma (Songea 11.4%) (OtherUrb 4.1%)	58.8 [5]	Singida (Singida 2.8% (OtherUrb 8.5%))	45.9 [5]	Pwani/Dar (Dar es Salaam 6.5%) (OtherUrb 6.1%)	43.7 [5]

Is there a better approach?

- Yes: better would be a general equilibrium model which could take fuller account of rural/urban interactions (e.g. Adam *et al*, 2014)
- Also attractive might be dynamic modelling
- Beyond resources of this project (also would need to overcome data limitations)
- A challenge for the next generation of urban researchers in Tanzania?

What have we learned?

- Census-based database on migration and urbanisation established – help yourself!
- Some evidence for 'Rural Push' in 1978-88 and 1988-2002; pressure of population on land and other resources a cause for concern
- A large urban population favours regional in-migration
- Greater distance from Dar discourages out-migration
- But methods not robust enough to be very confident
- More case studies needed to help identify drivers of migration and urbanisation in Tanzania – **Regional Annexes** provide a starting point

Issues for discussion

- Can the data on regional capitals and regional populations be further improved?
- What are the drivers of high rural out-migration from some regions ('Rural Push')? Do they differ from period to period? Can the analysis based on equation (1) be improved?
- How strong is the evidence for 'Urban Pull' in some regions? How convincing is the analysis based on equation (2)?
- How can we explain the surprisingly high *Puim* of some regions in Table 4?
- The analysis in this paper is weak on real economic variables: e.g. Relative prices, wages and employment, transport costs, etc. What can be done to provide more robust analysis?
- What are the priorities for future research? Would more case studies of larger towns be helpful?
- [More issues?]