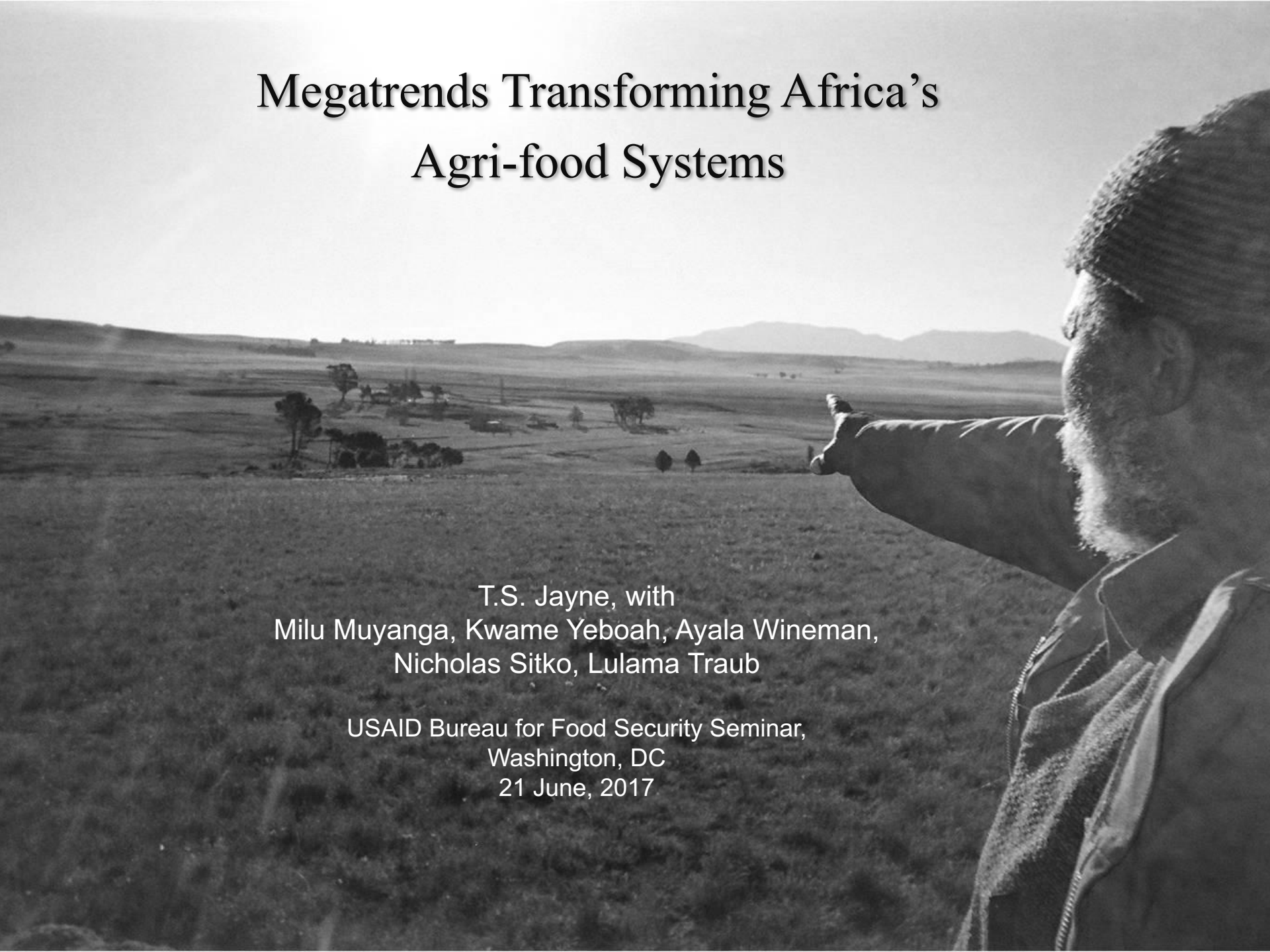


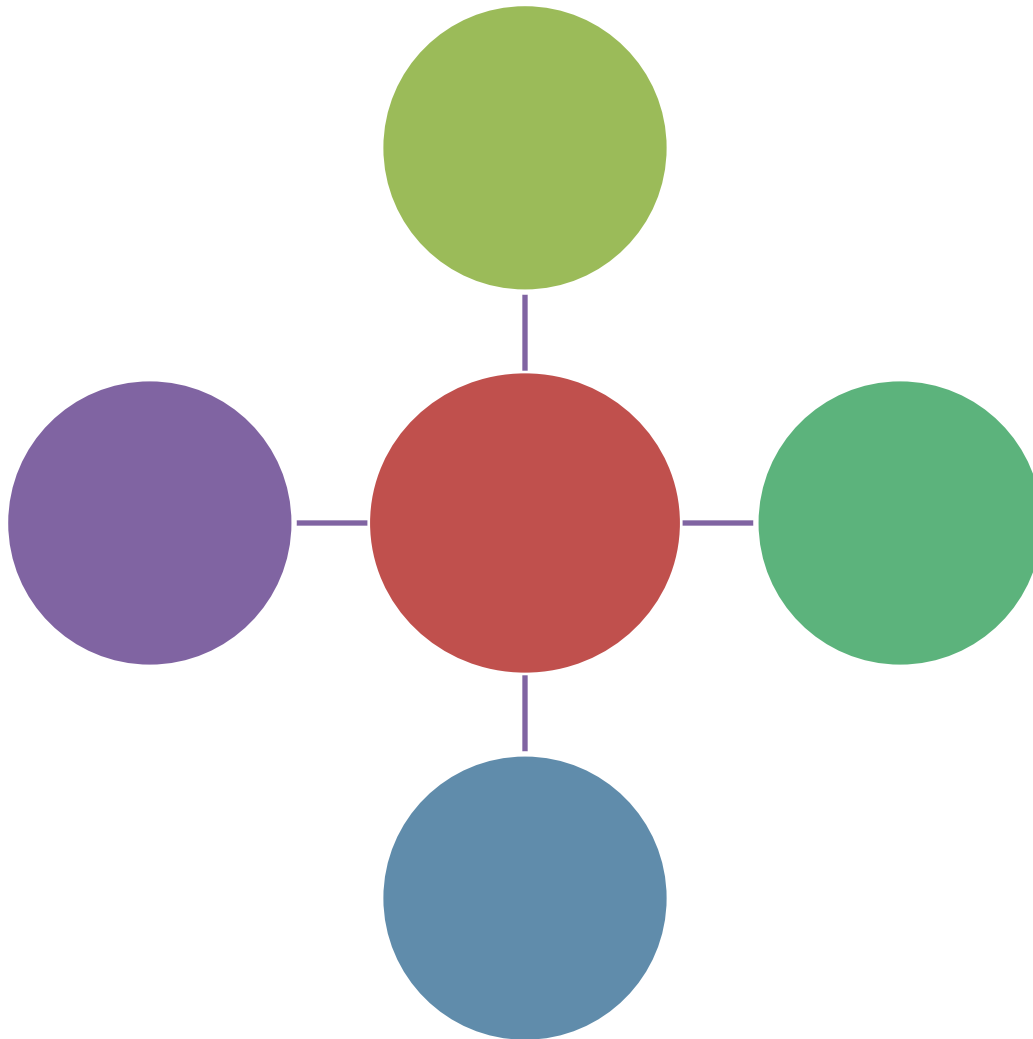
# Megatrends Transforming Africa's Agri-food Systems

T.S. Jayne, with  
Milu Muyanga, Kwame Yeboah, Ayala Wineman,  
Nicholas Sitko, Lulama Traub

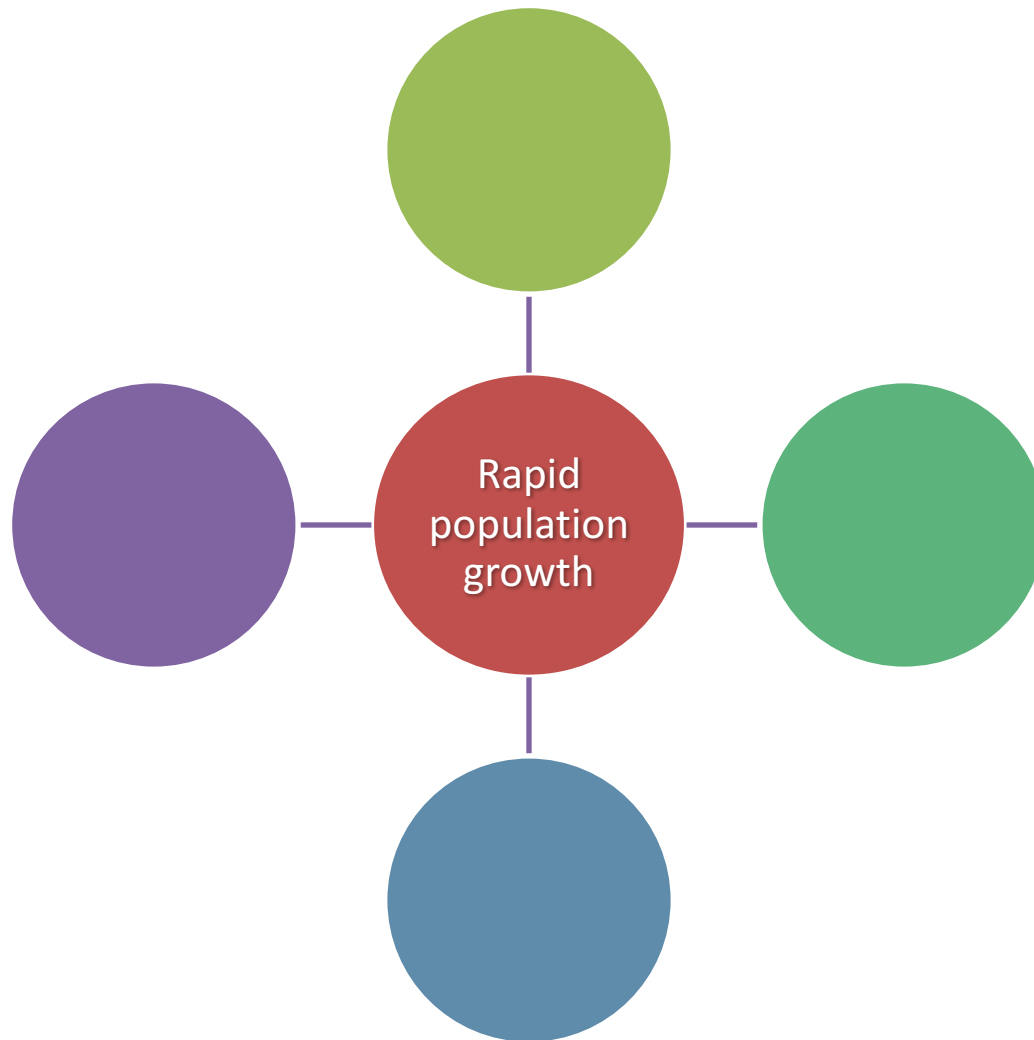
USAID Bureau for Food Security Seminar,  
Washington, DC  
21 June, 2017



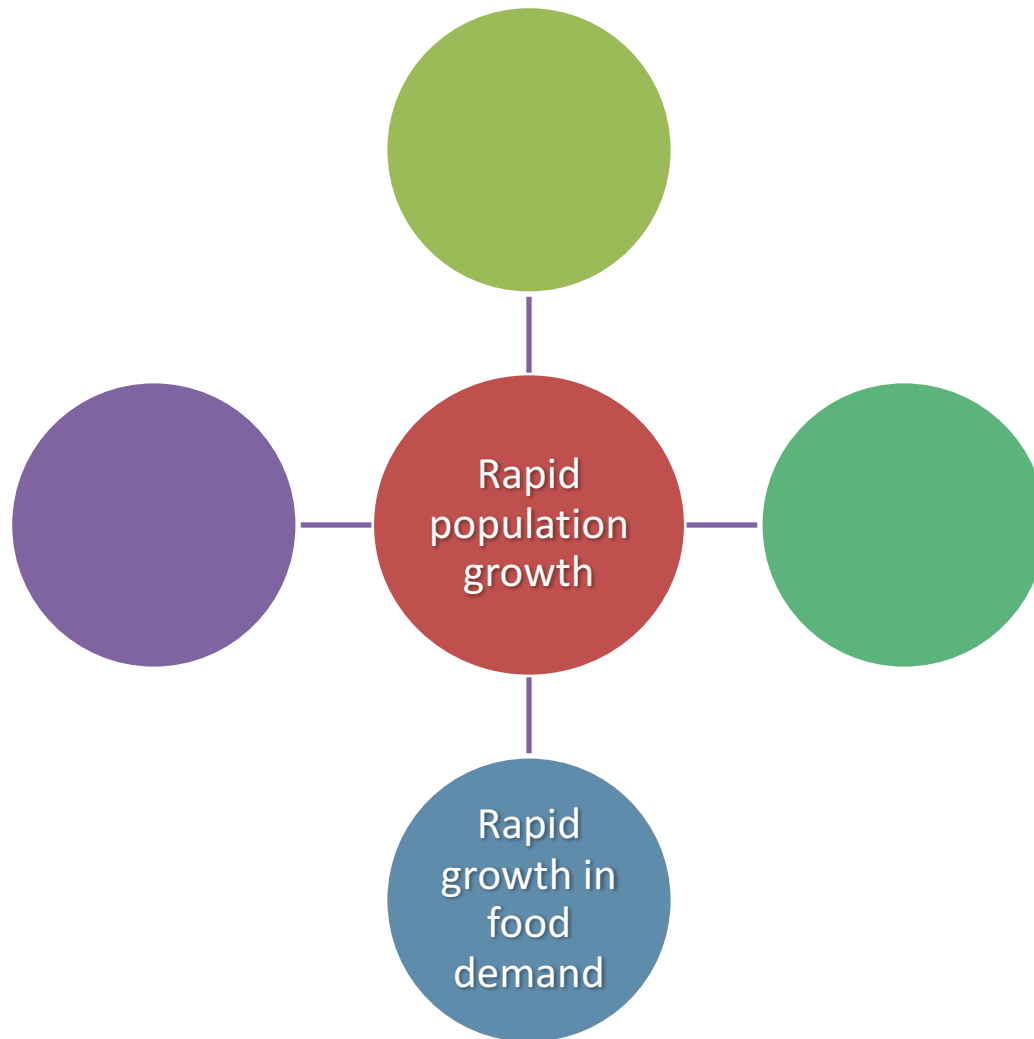
# Five inter-related trends



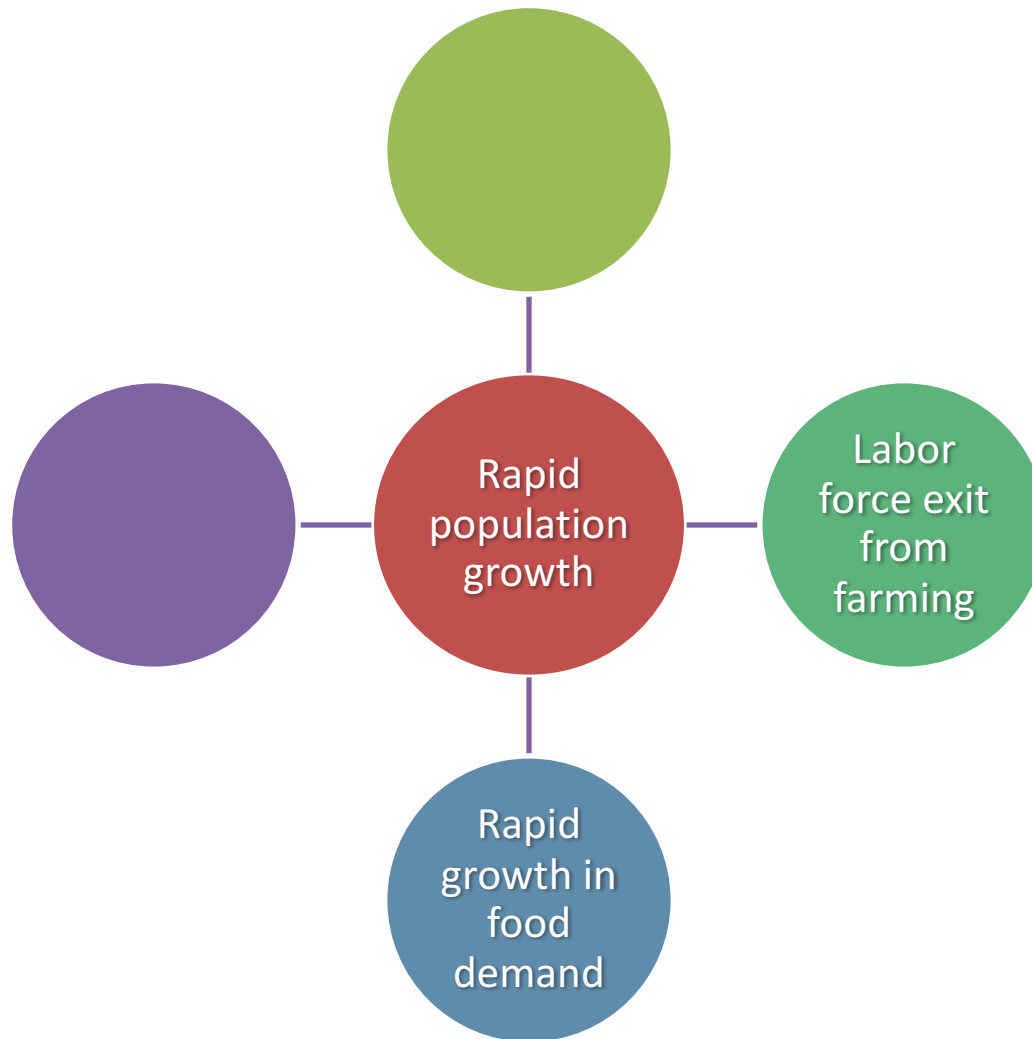
# Five inter-related trends



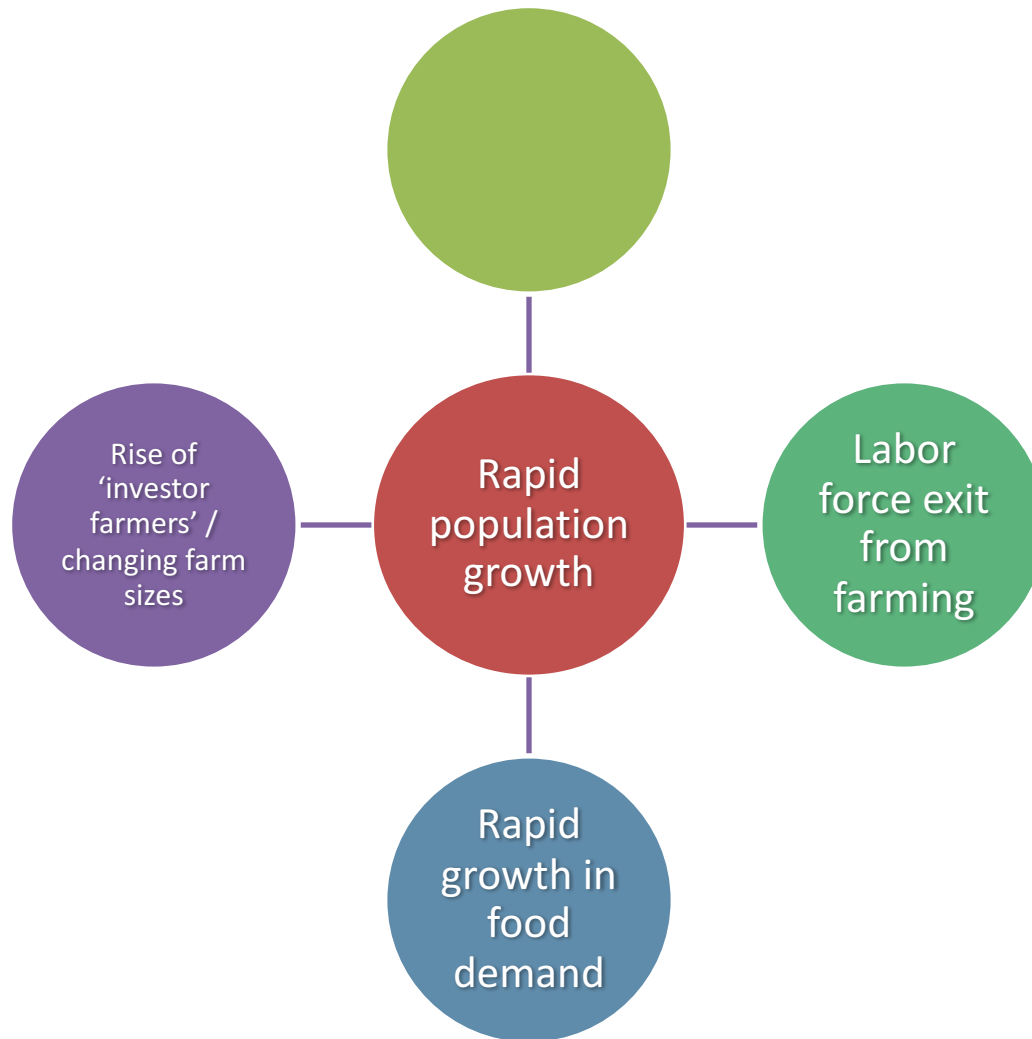
# Five inter-related trends



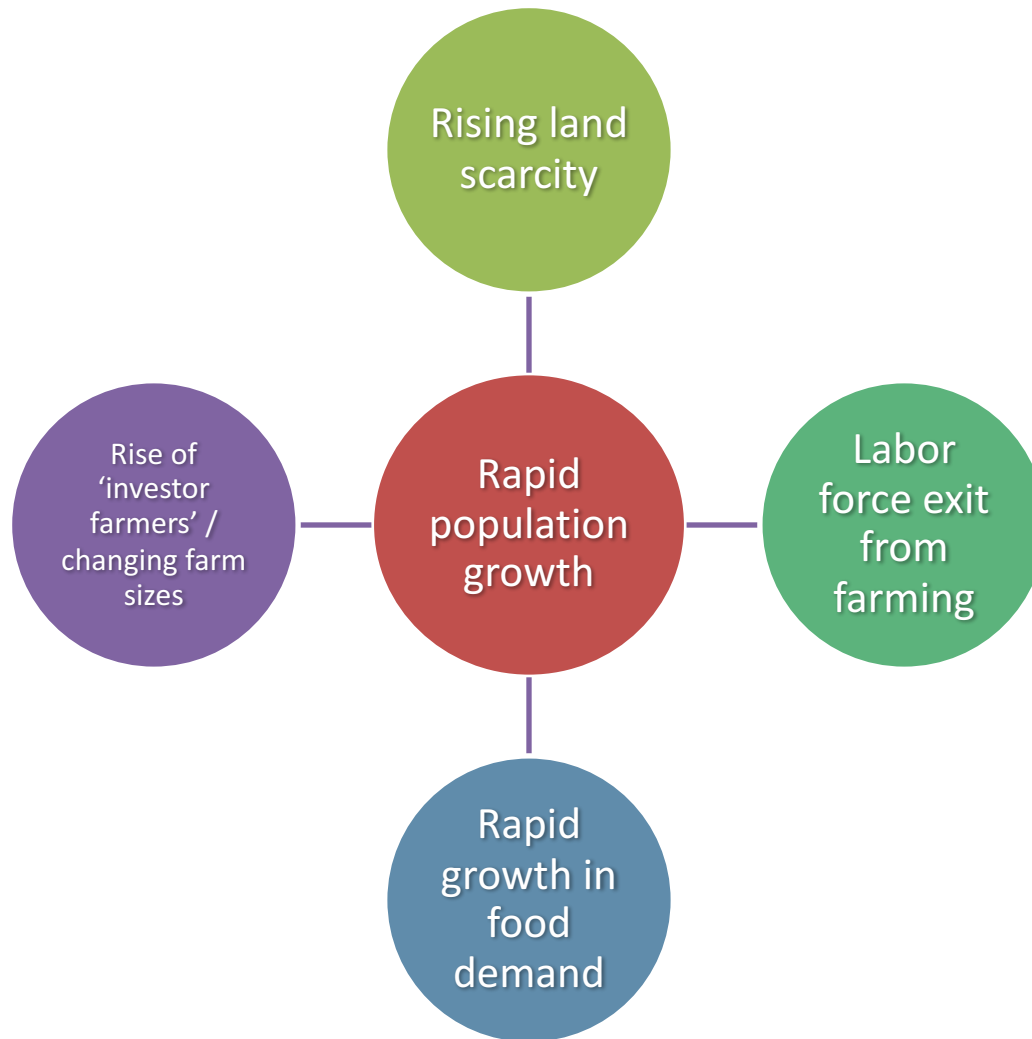
# Five inter-related trends



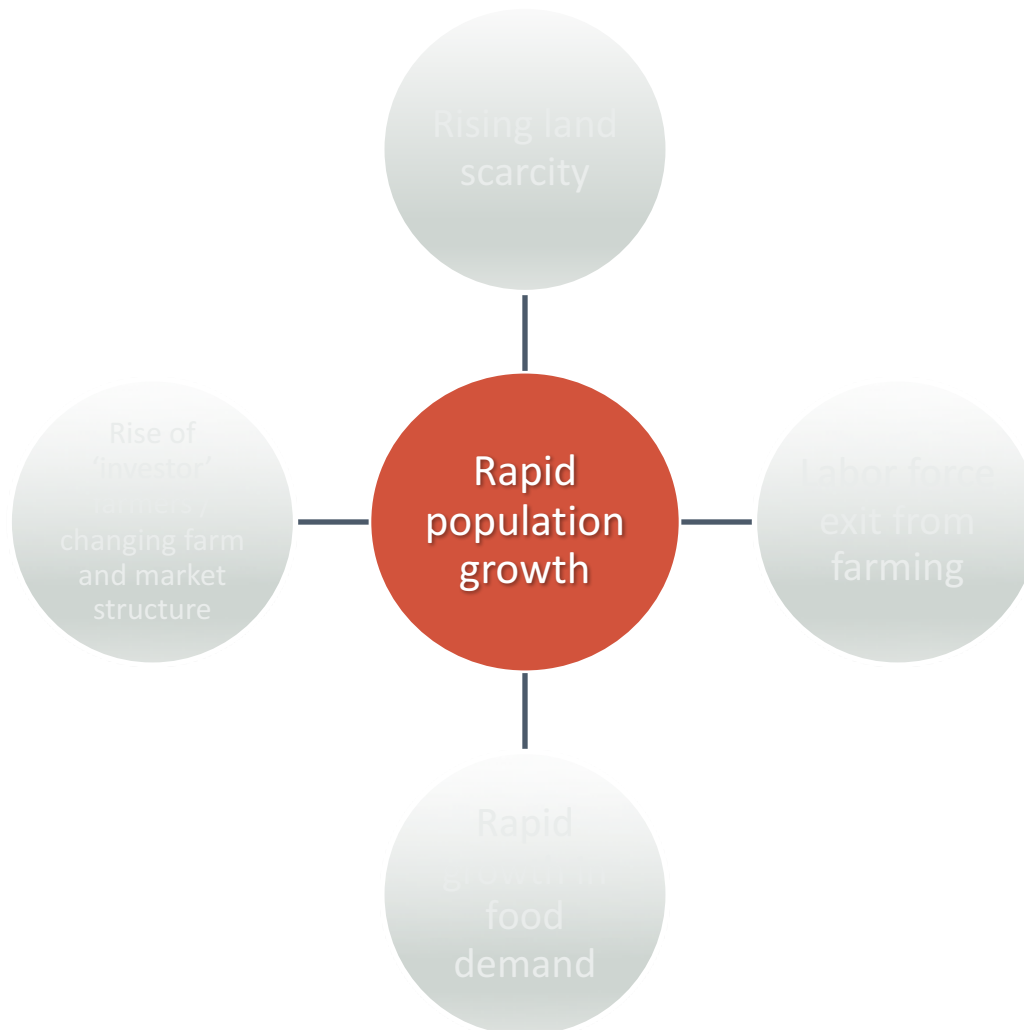
# Five inter-related trends



# Five inter-related trends

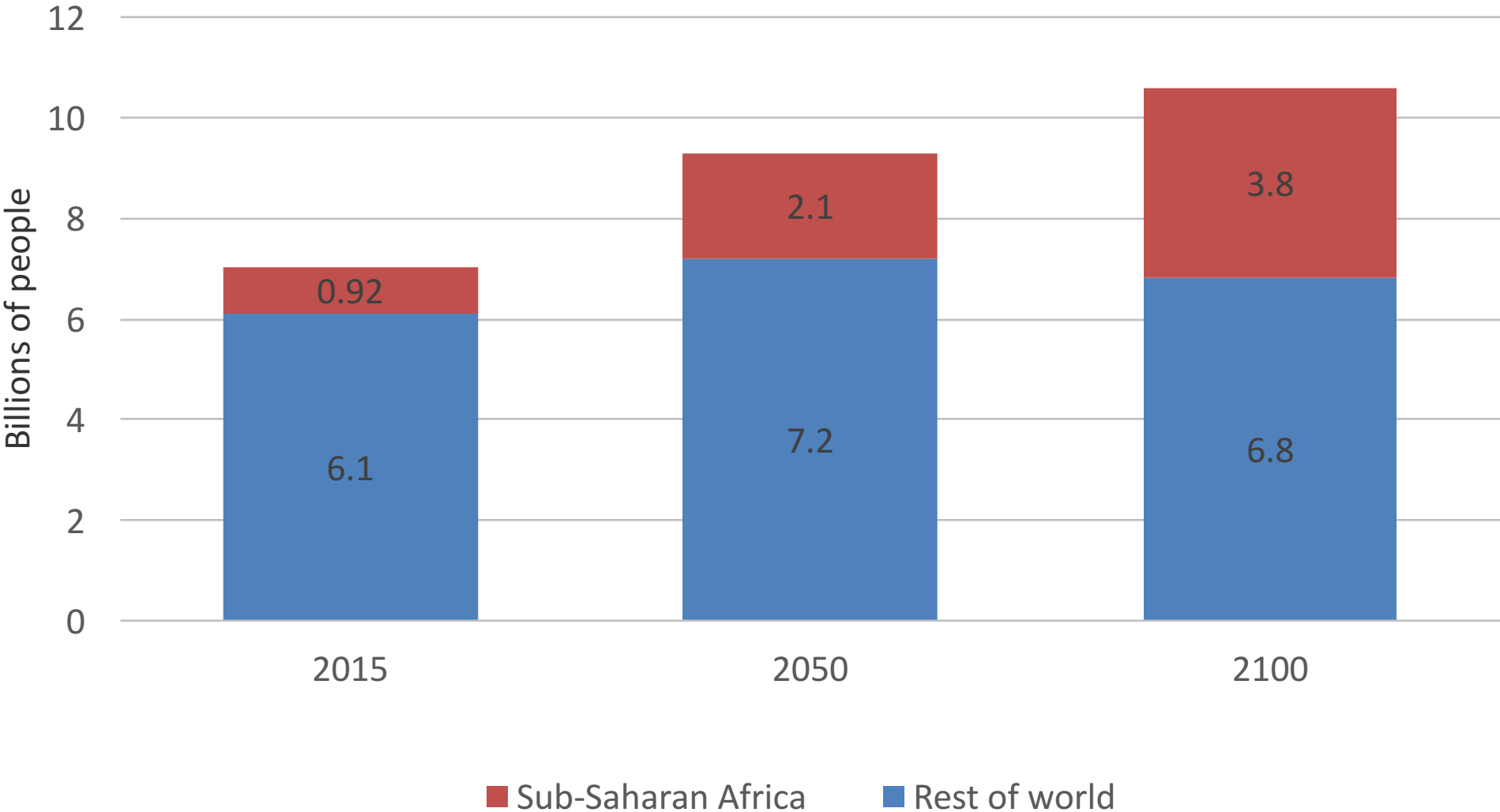


# Five inter-related trends

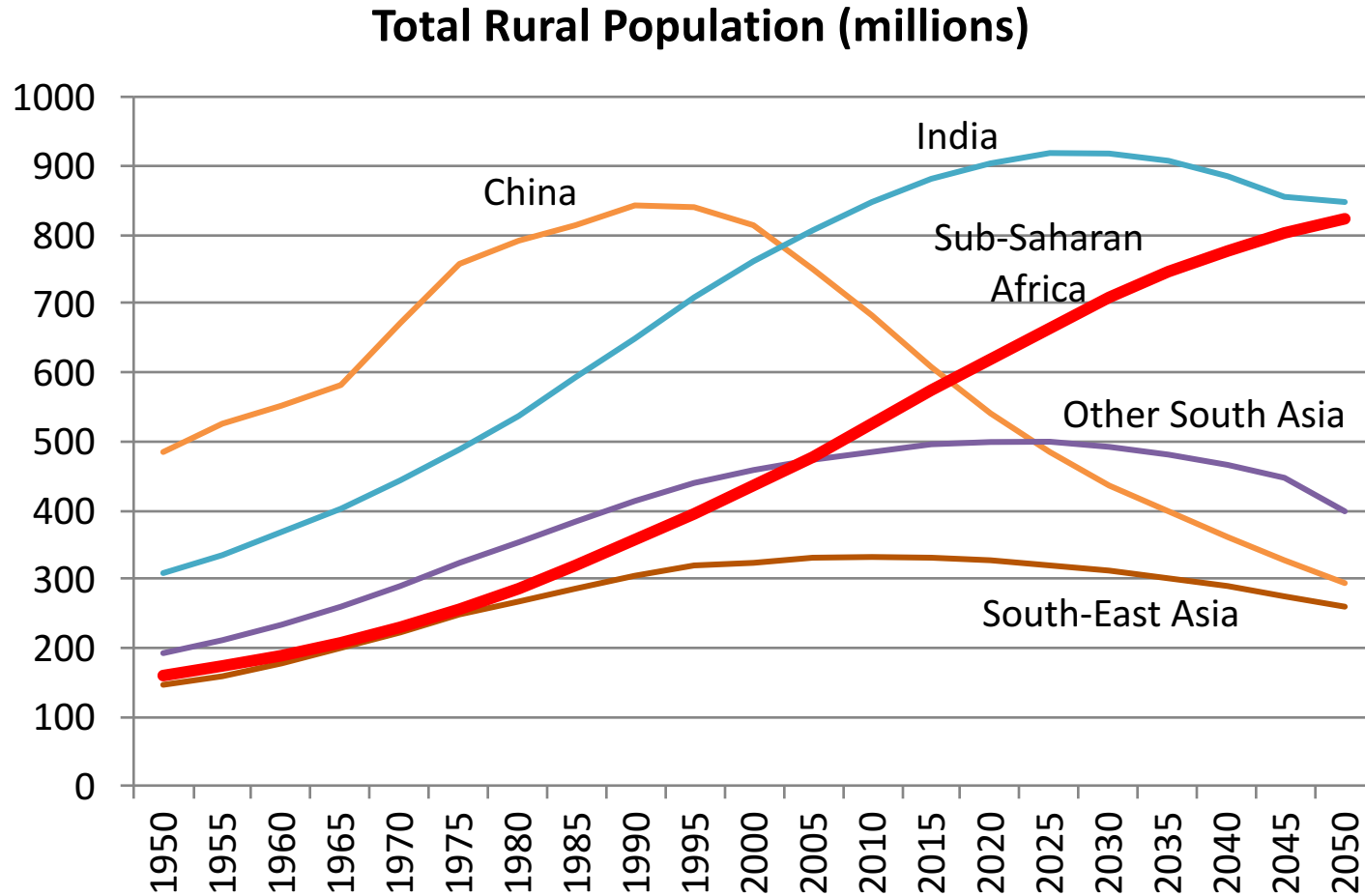




# Africa's rapid population growth

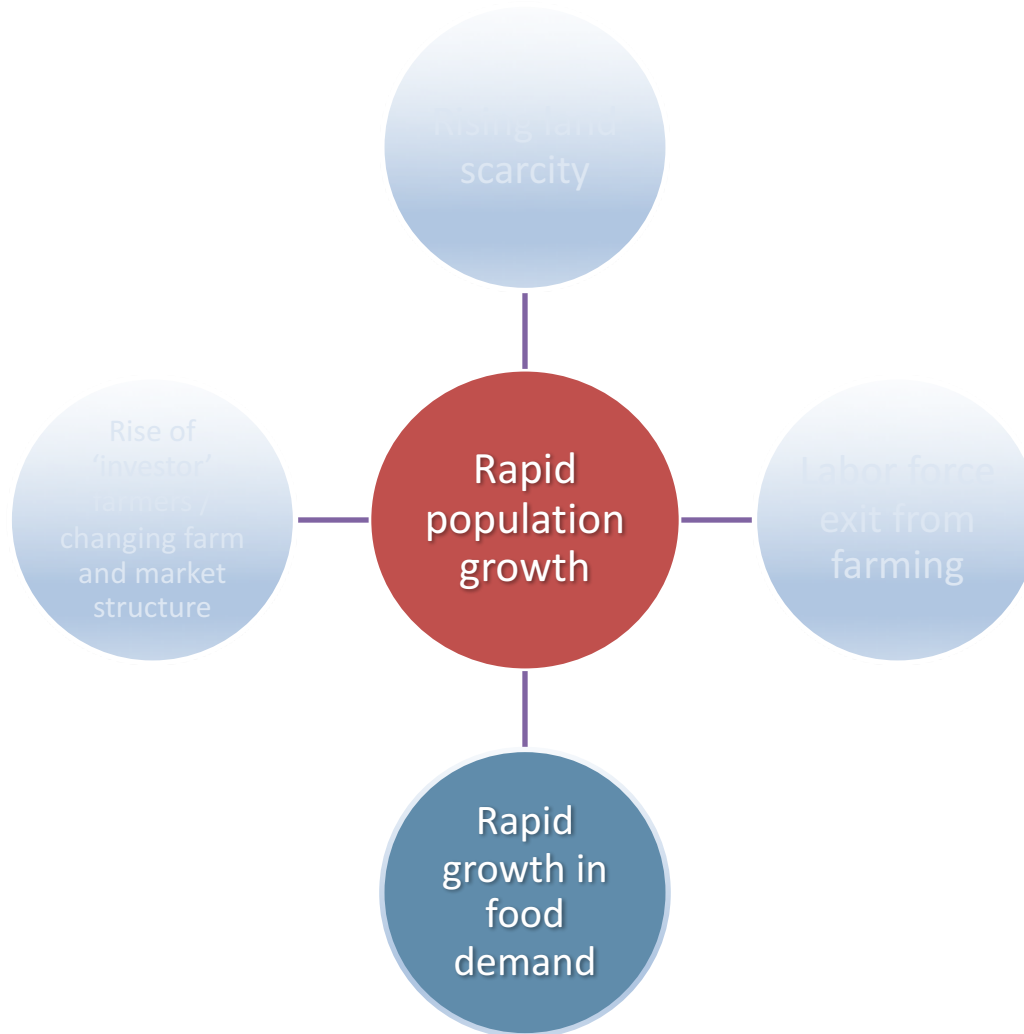


# Sub-Saharan Africa: only region of world where rural population continues to rise past 2050



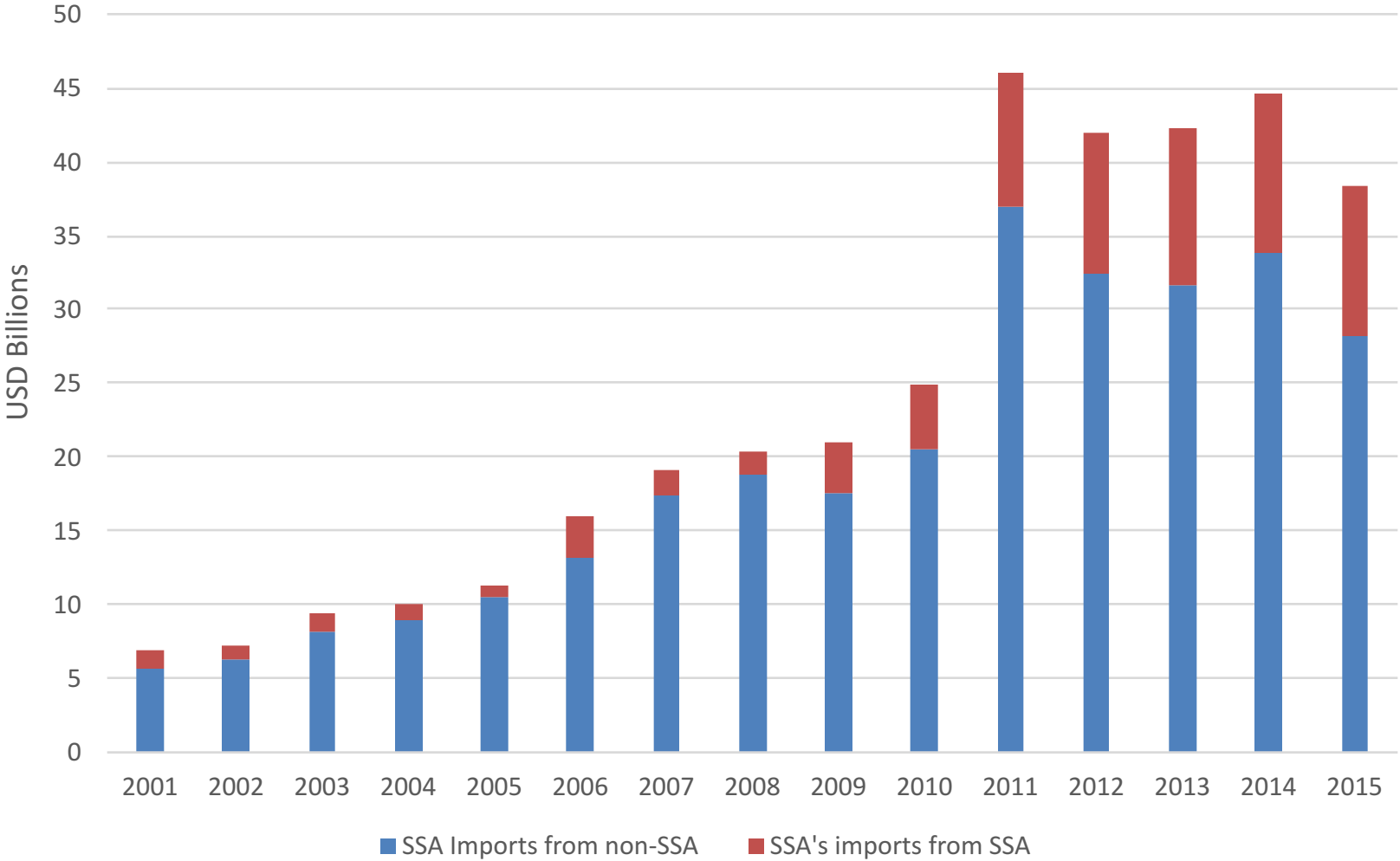
Source: UN 2013

# Five inter-related trends

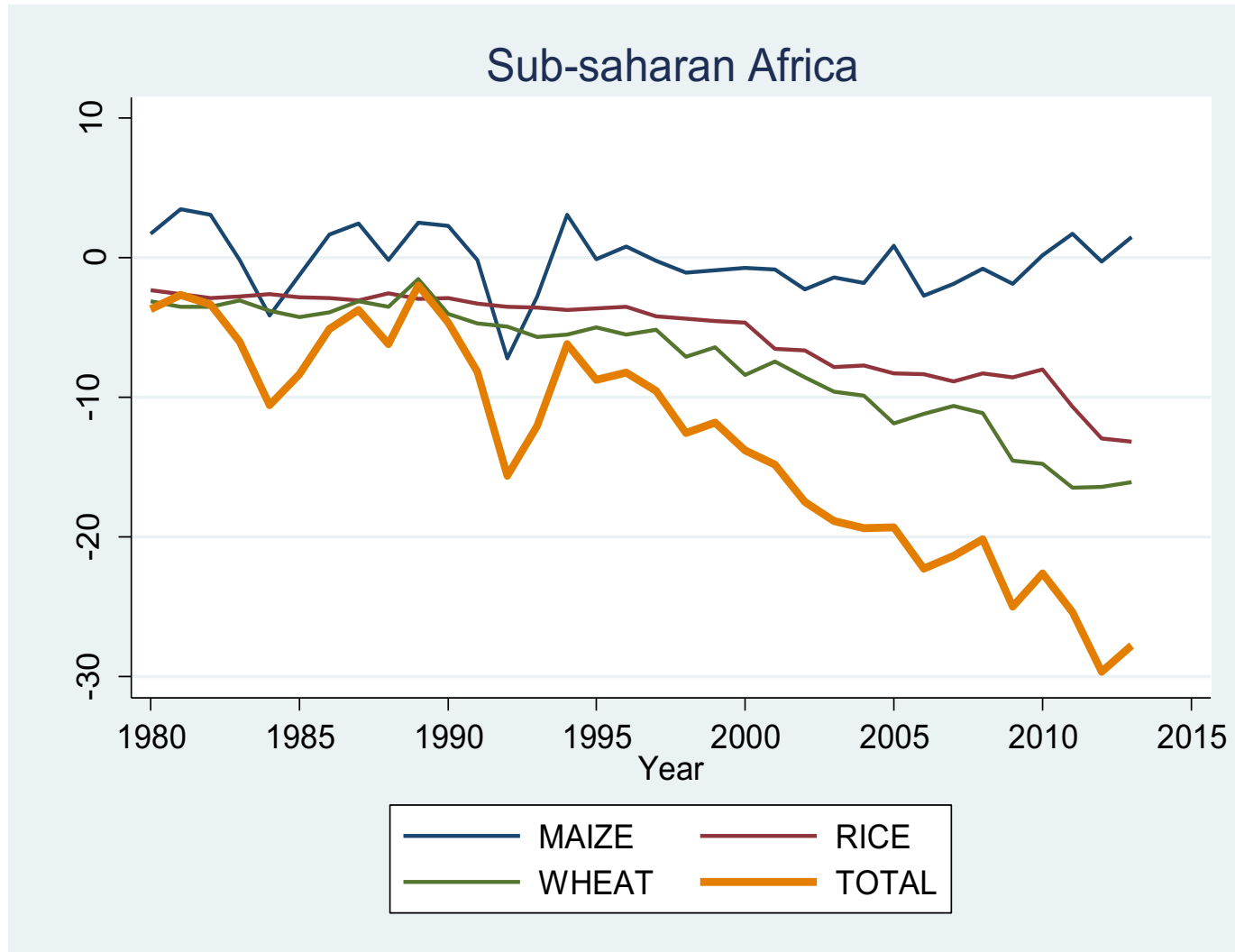


# SSA Total Food Imports from 7 to 40 billion USD (2001-2015)

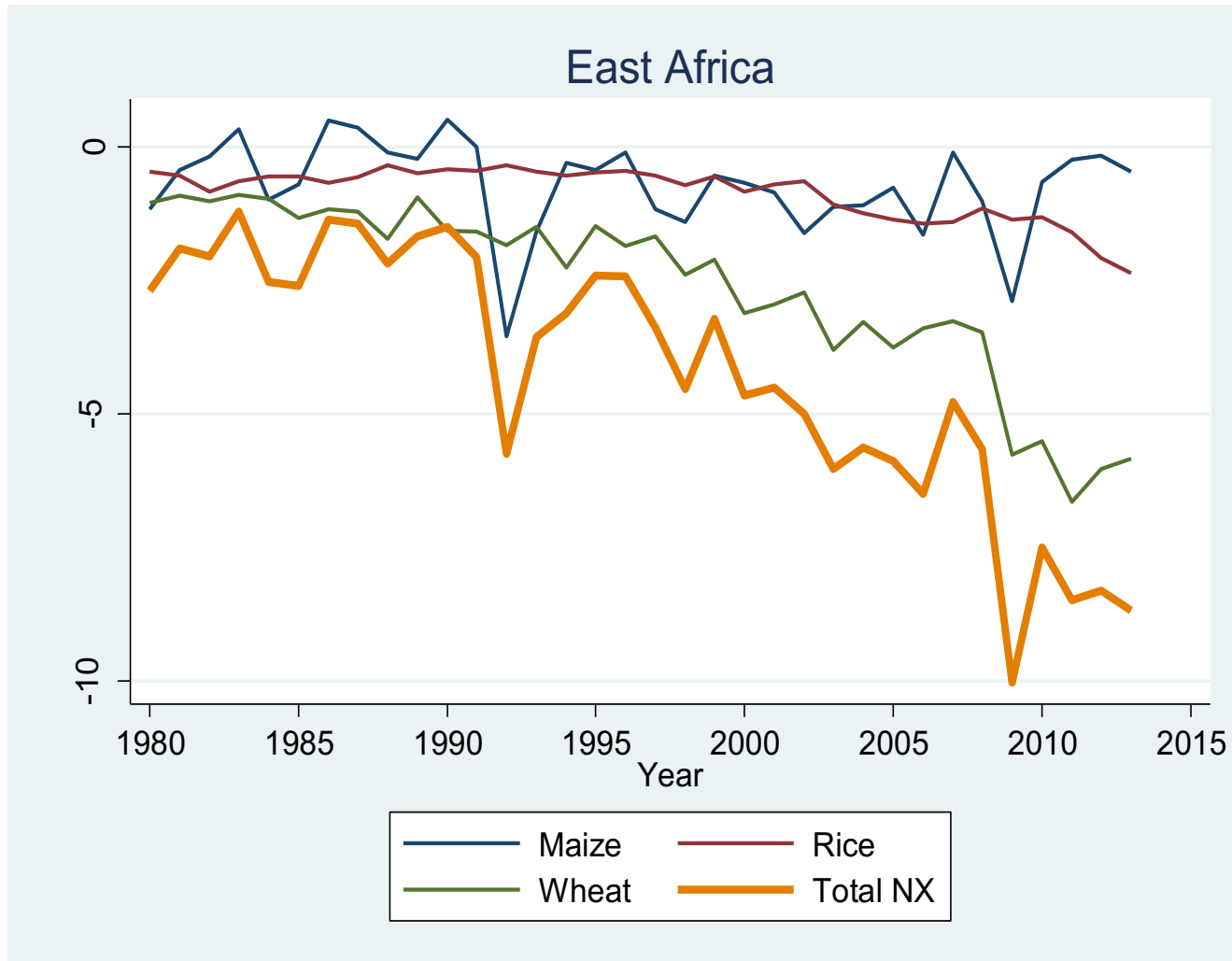
(intra SSA trade from 1 to 10 billion USD)



# Net cereal exports, Sub-Saharan Africa



# Net cereal exports, East Africa Region



# Significance:

“Currently, sub-Saharan Africa (SSA) is amongst the (sub)continents with the largest gap between cereal consumption and production, whereas its projected tripling demand between 2010 and 2050 is much greater than in other continents. We show that nearly complete closure of the gap between current farm yields and yield potential is needed to maintain the current level of cereal self-sufficiency (approximately 80%) by 2050. For all countries, such yield gap closure requires a large, abrupt acceleration in rate of yield increase. If this acceleration is not achieved, massive cropland expansion with attendant biodiversity loss and greenhouse gas emissions or vast import dependency are to be expected.”

# Significance:

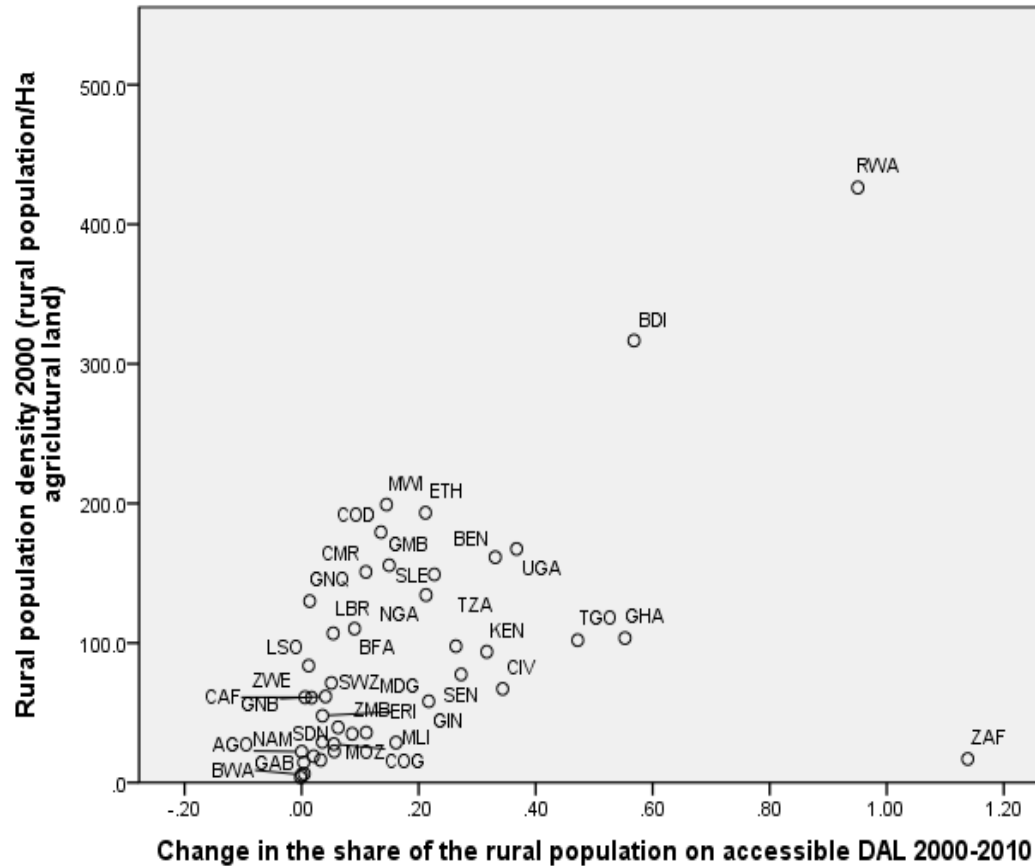
“Currently, sub-Saharan Africa (SSA) is amongst the (sub)continents with the largest gap between cereal consumption and production, whereas its projected tripling demand between 2010 and 2050 is much greater than in other continents. **Nearly complete closure of the gap between current farm yields and yield potential is needed to maintain the current level of cereal self-sufficiency (approximately 80%) by 2050. For all countries, such yield gap closure requires a large, abrupt acceleration in rate of yield increase. If this acceleration is not achieved, massive cropland expansion with attendant biodiversity loss and greenhouse gas emissions or vast import dependency are to be expected.**”



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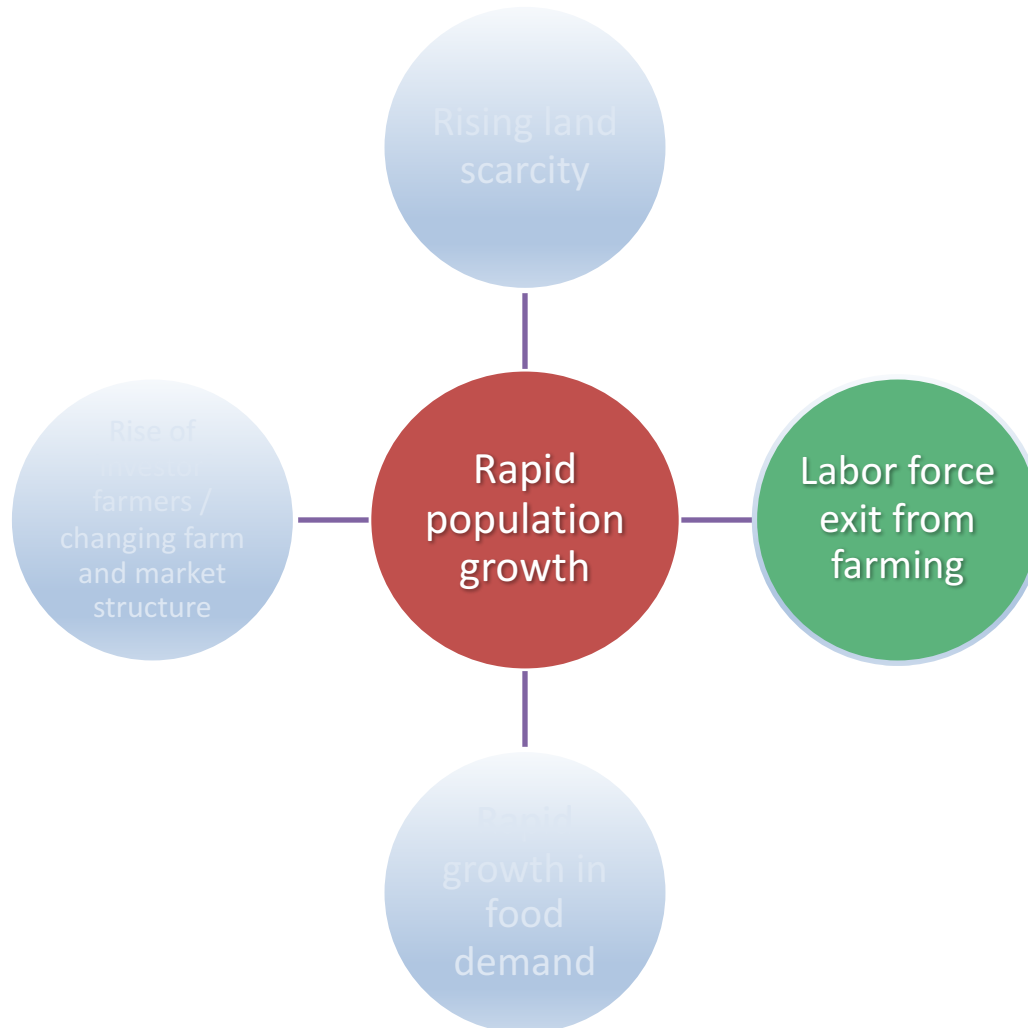
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# Relationship between % of rural population on degrading agricultural land and pop density



- Roughly 28% of rural population in SSA live on degrading agricultural land.
- 43 million additional people living on DAL between 2000-2010

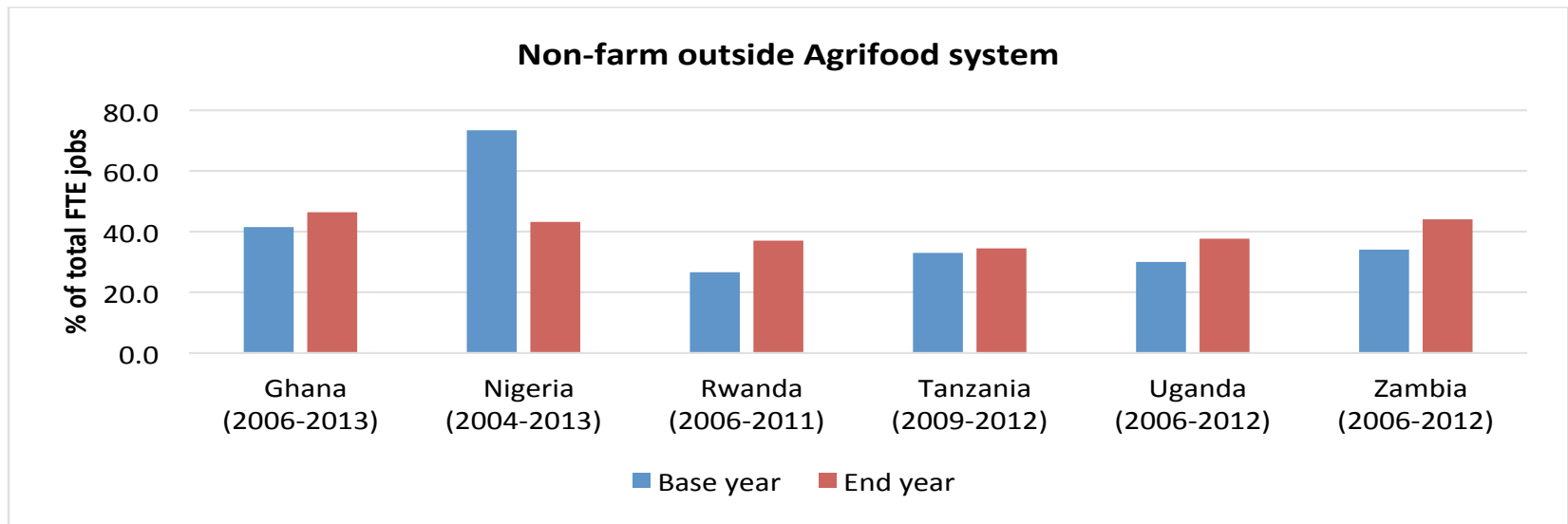
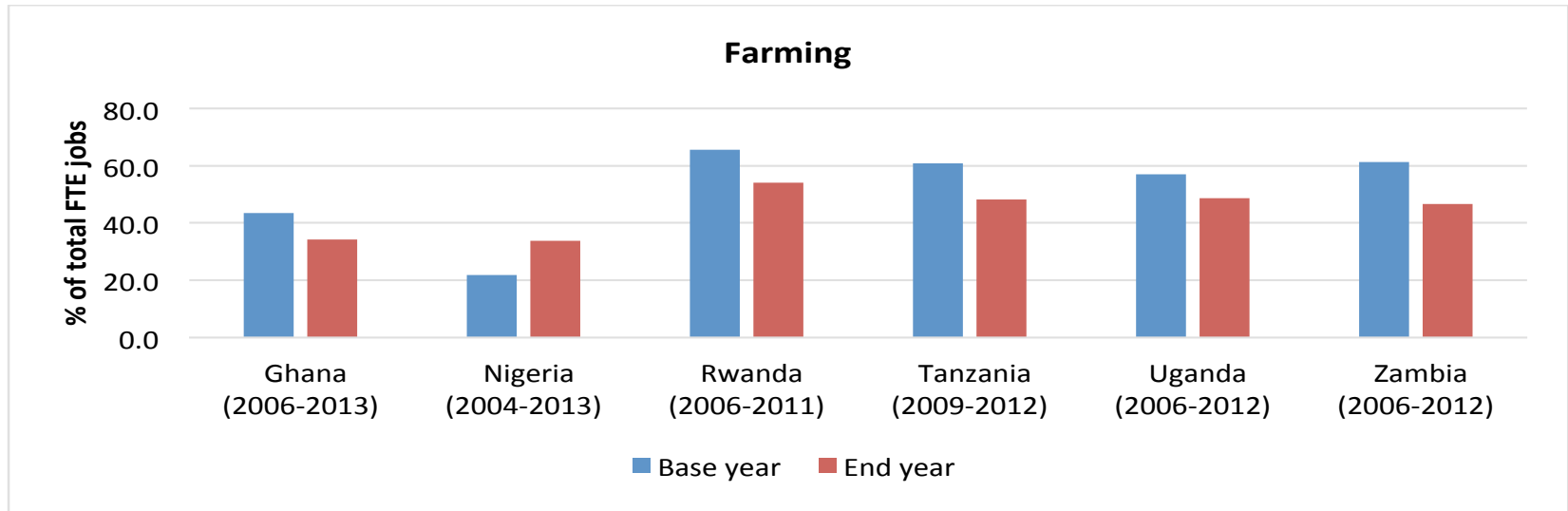
# Five inter-related trends



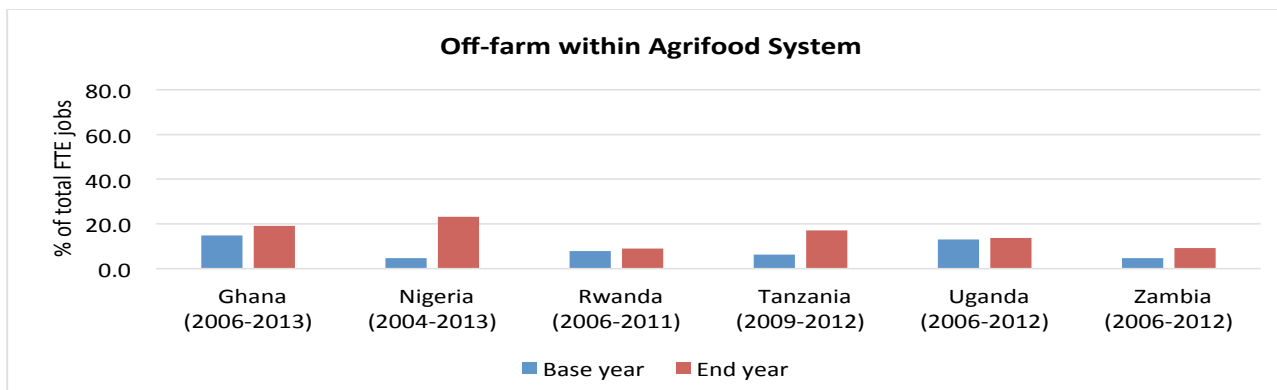
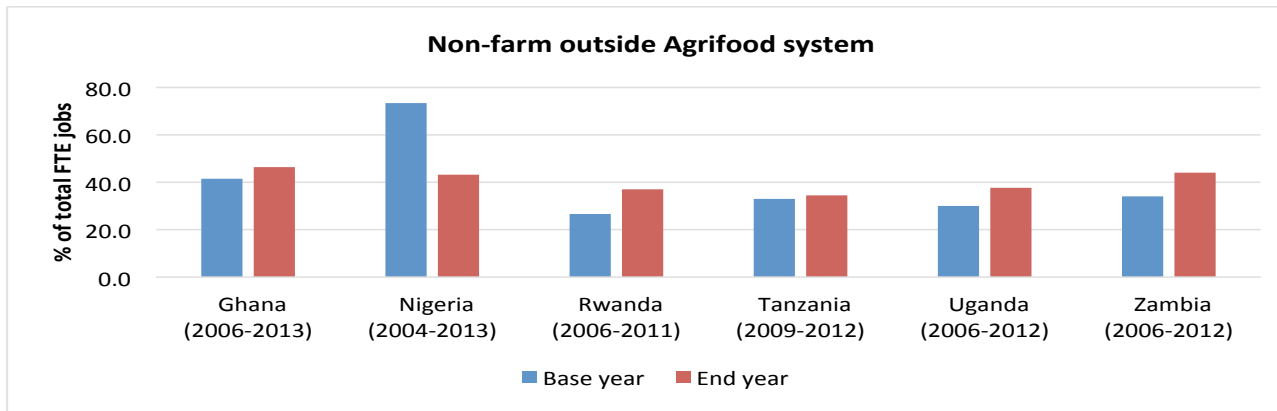
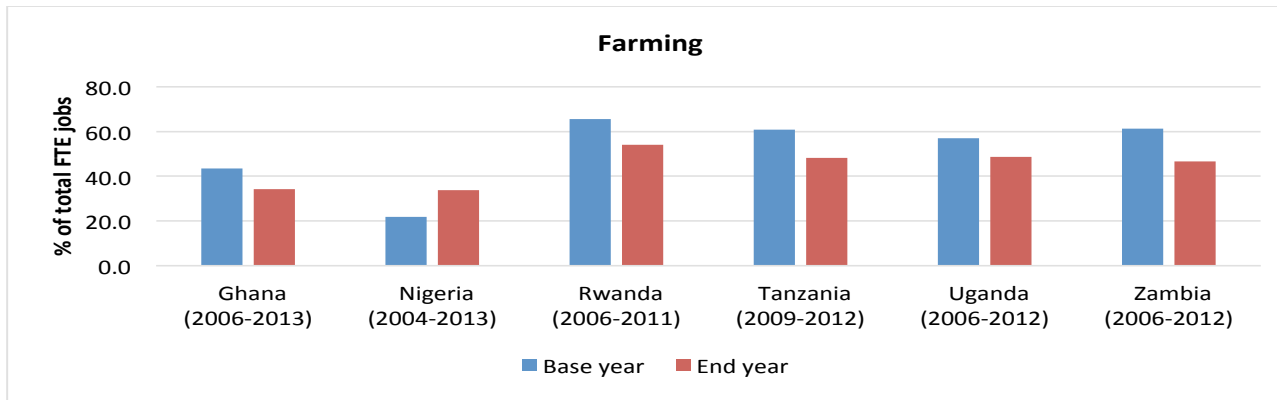


# Employment trends

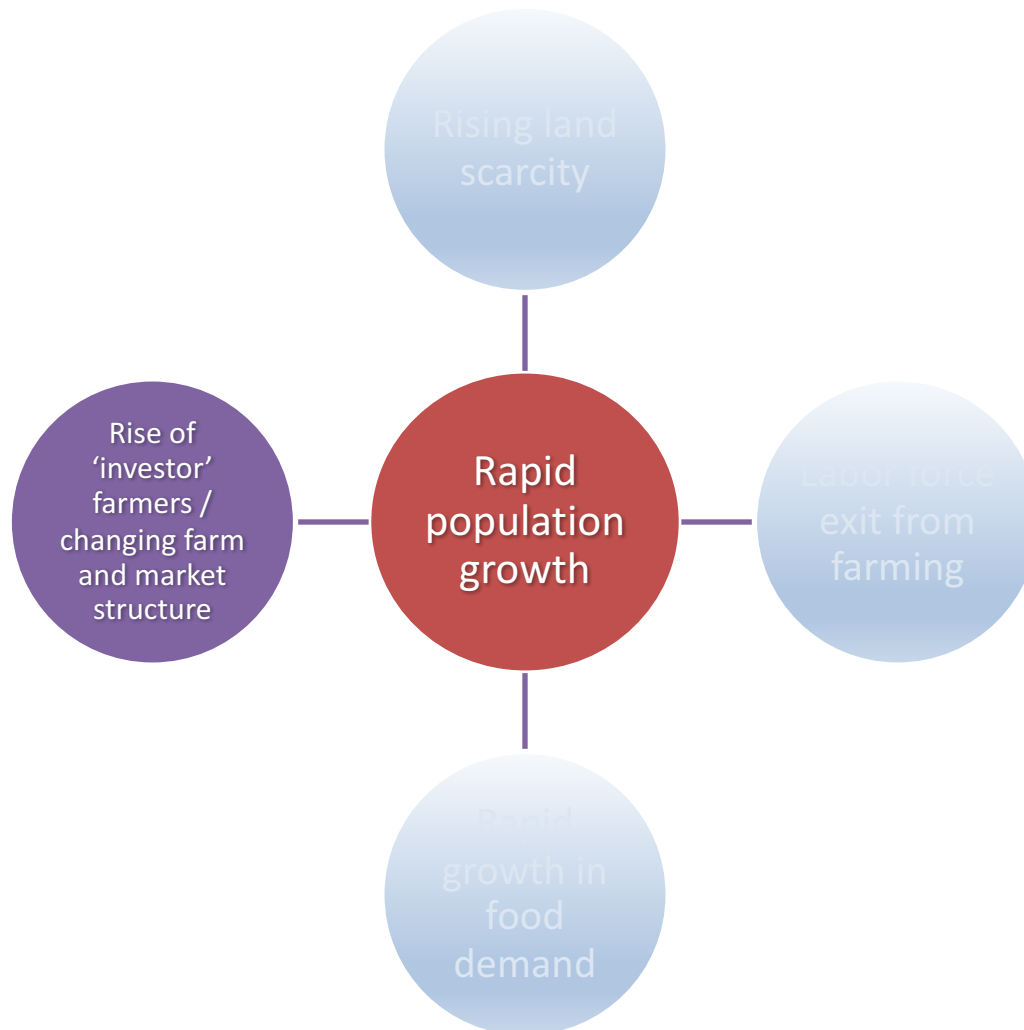
# Changes in the share of total jobs in farming, non-farm and off-farm agri-food systems, among the working age population (15–64 years)



# Changes in the share of total jobs in farming, non-farm and off-farm agri-food systems, among the working age population (15–64 years)



# Five inter-related trends



## Changes in farm structure in Tanzania (2008-2012), National Panel Surveys

Farm size	Number of farms (% of total)		% growth in number of farms between initial and latest year	% of total operated land on farms between 0-100 ha	
	2008	2012		2008	2012
0 – 5 ha	5,454,961 (92.8)	6,151,035 (91.4)	12.8	62.4	56.3
5 – 10 ha	300,511 (5.1)	406,947 (6.0)	35.4	15.9	18.0
10 – 20 ha	77,668 (1.3)	109,960 (1.6)	41.6	7.9	9.7
20 – 100 ha	45,700 (0.7)	64,588 (0.9)	41.3	13.8	16.0
Total	5,878,840 (100%)	6,732,530 (100%)	14.5	100.0	100.0

Share of farmland on farms 5-100 ha from 38% to 44% in 4 years



## Changes in farm structure in Ghana (1992-2013)

Ghana	Number of farms		% growth in number of farms	% of total cultivated area	
	1992	2013		1992	2013
0-2 ha	1,458,540	1,582,034	8.5	25.1	14.2
2-5 ha	578,890	998,651	72.5	35.6	31.3
5-10 ha	116,800	320,411	174.3	17.2	22.8
10-20 ha	38,690	117,722	204.3	11.0	16.1
20-100 ha	18,980	37,421	97.2	11.1	12.2
>100 ha	--	1,740	-	--	3.5
<b>Total</b>	<b>2,211,900</b>	<b>3,057,978</b>	<b>38.3</b>	<b>100</b>	<b>100</b>

51.1%

Source: Ghana GLSS Surveys, 1992, 2013, Jayne et al., 2016, using data from Ghana GLSS Surveys I and IV.

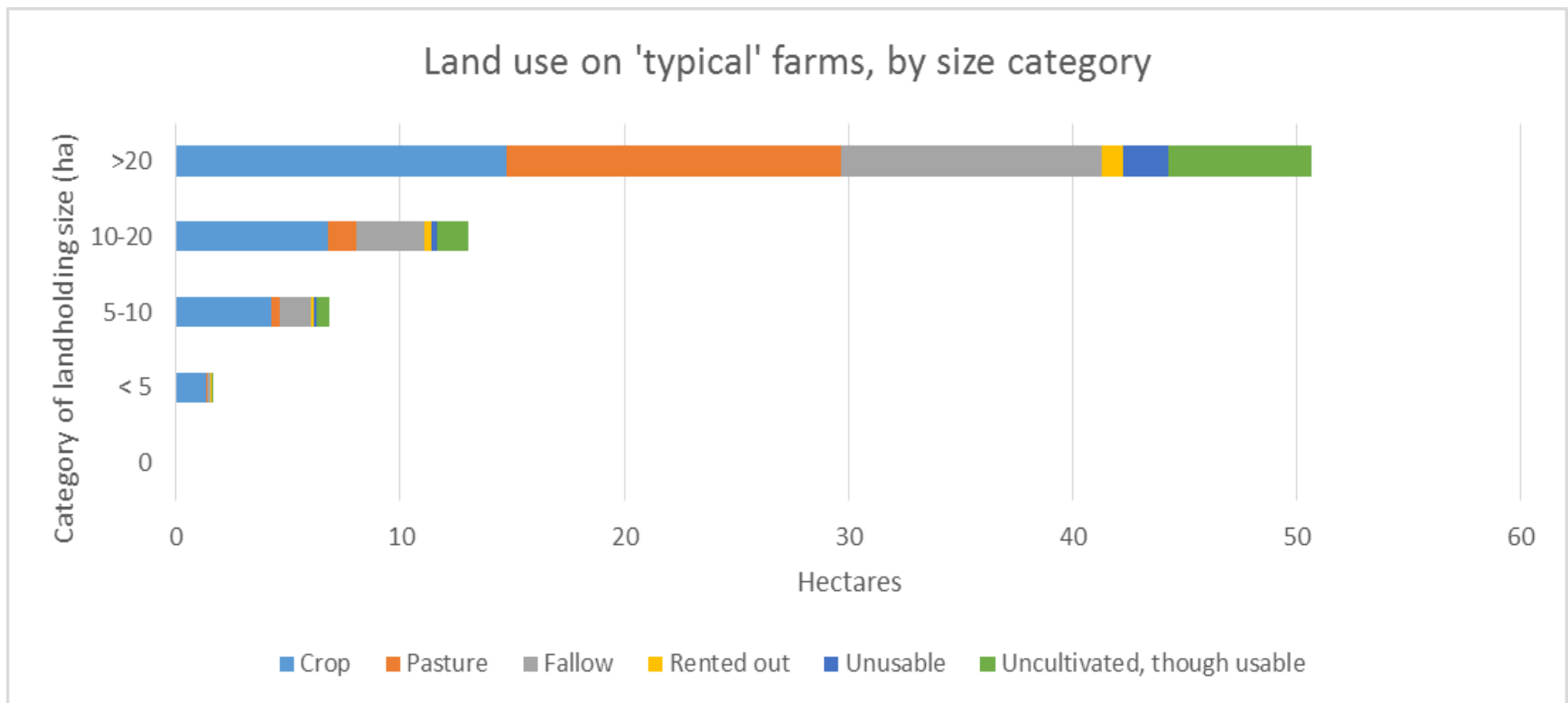
## Changes in farm structure in Zambia (2001-2012)

Farm size category	Number of farms		% growth in number of farms	% of total cultivated area	
	2001	2012		2001	2012
0 – 2 ha	638,118	748,771	17.3	34.1	16.2
2 – 5 ha	159,039	418,544	163.2	45	31.7
5 – 10 ha	20,832	165,129	692.6	14.3	25.0
10 – 20 ha	2,352	53,454	2272.7	6.6	15.0
20 – 100 ha	--	13,839	na	--	12.1
<b>Total</b>	<b>820,341</b>	<b>1,399,737</b>		<b>100</b>	<b>100</b>

52.1%

Source: Zambia MAL Crop Forecast Surveys, 2001 and 2012

# Average land area allocated to each land use, by category of landholding size, Tanzania

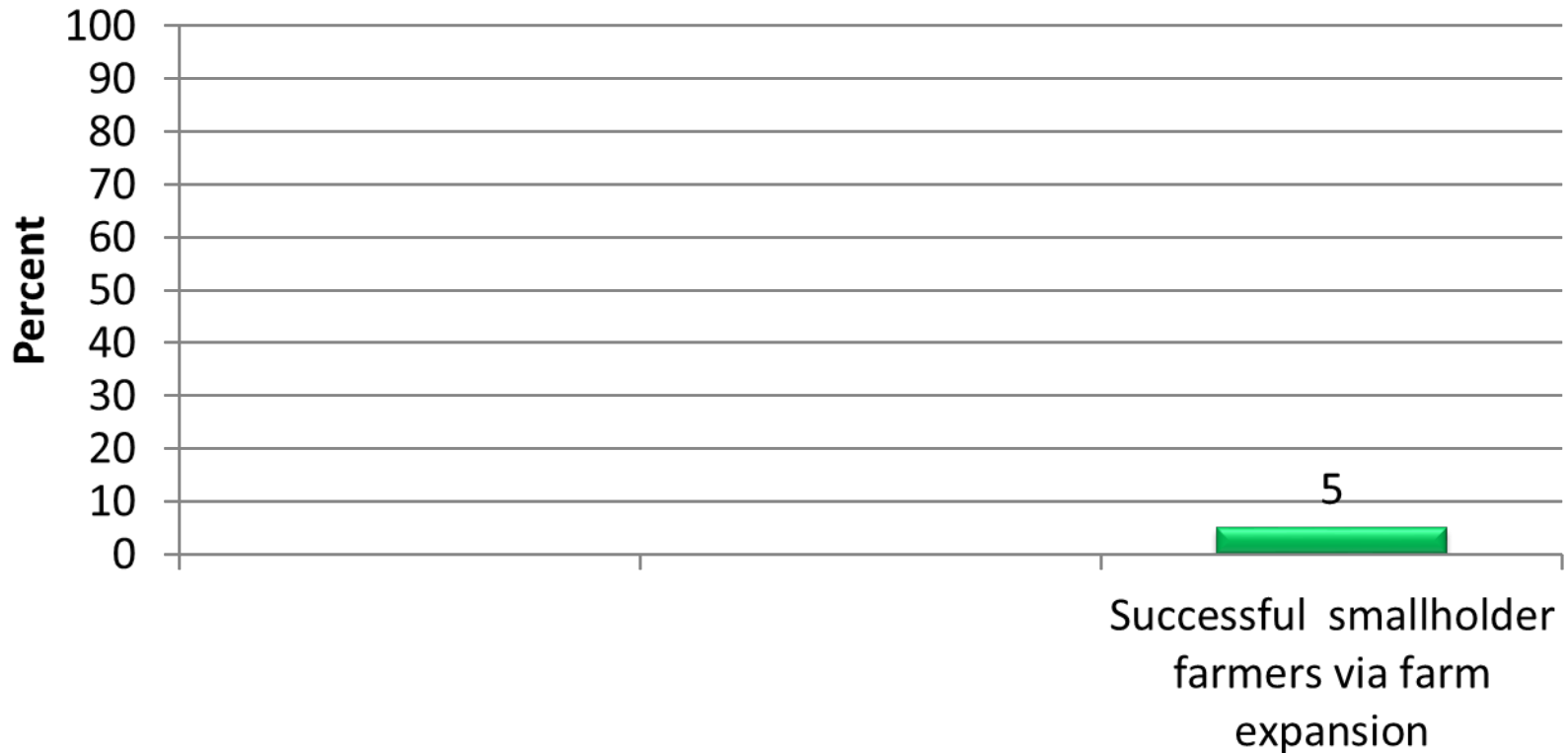


Source: Agricultural Sample Census, 2008

# Characteristics of “emergent farmers”

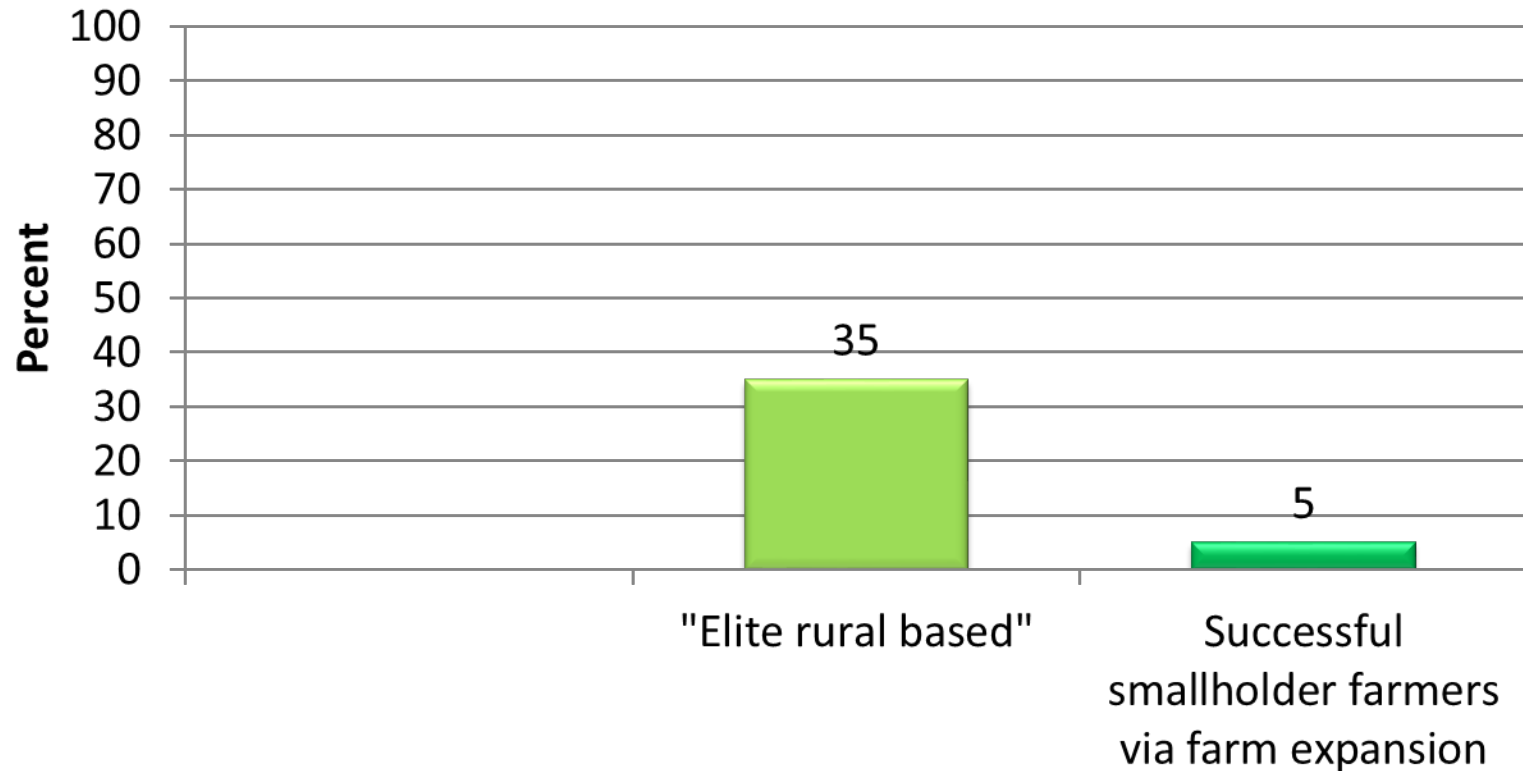
# Rise of the medium-scale farmers

## Three sub-categories of medium scale farmers (Kenya, Zambia, Ghana)



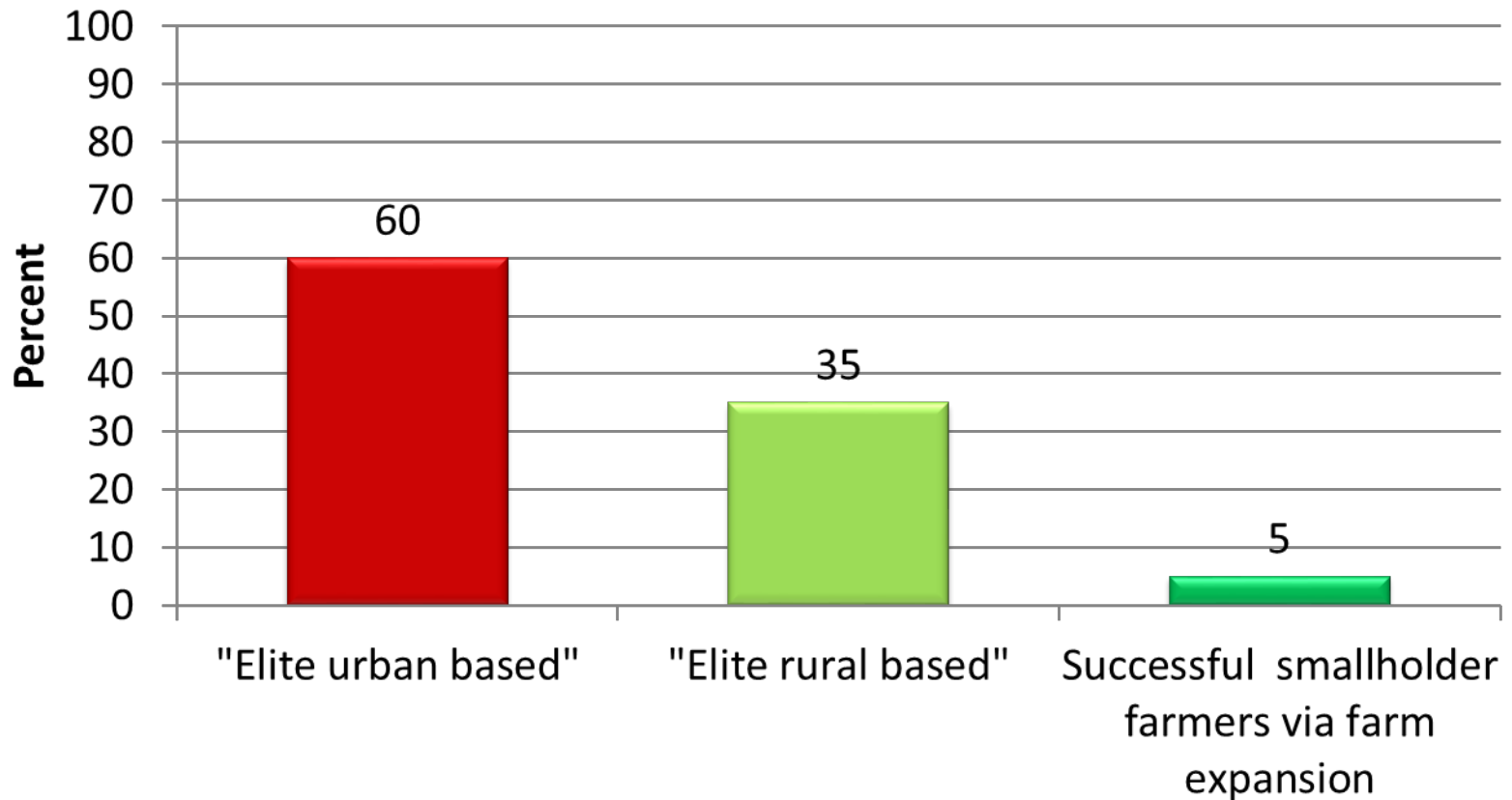
# Rise of the medium-scale farmers

## Three sub-categories of medium scale farmers: Kenya, Zambia, Ghana



# Rise of the medium-scale farmers

## Three sub-categories of medium scale farmers: Kenya, Zambia, Ghana



# Type 1: Urban-based investor farmer

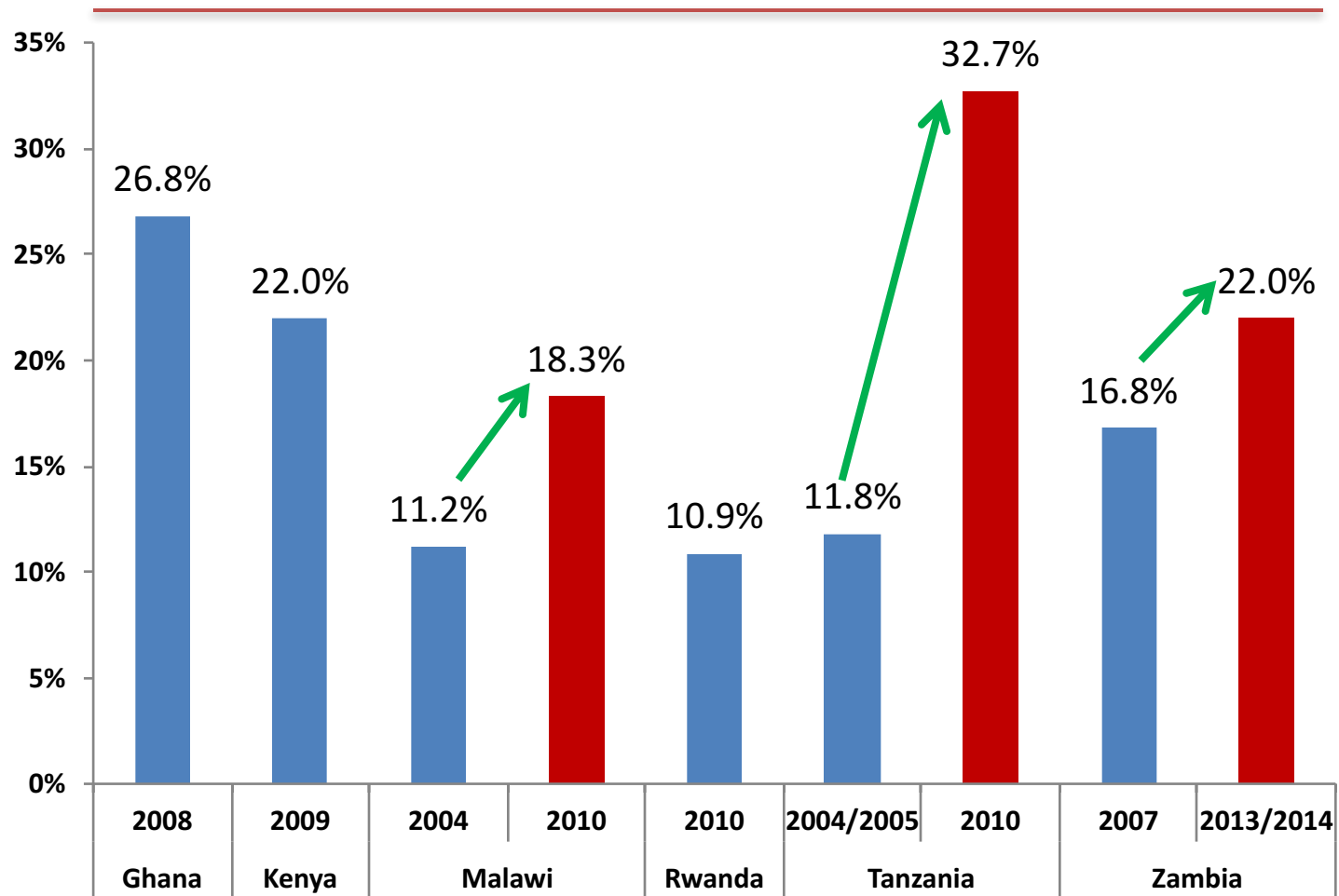
	Mode of entry to medium-scale farming status: acquire farm using non-farm income	
	Zambia	Kenya
	(n=164)	(n=180)
% of cases	58	60
% men	91.4	80
Year of birth	1960	1947
Years of education of head	11	12.7
Have held a job other than farmer (%)	100	83.3
Formerly /currently employed by the public sector (%)	59.6	56.7
Current landholding size (ha)	74.9	50.1
% of land currently under cultivation	24.7	46.6
Decade when land was acquired		
1969 or earlier	1.1	6
1970-79	5.1	18
1980-89	7.4	20
1990-99	23.8	32
2000 or later	63.4	25



## Type 2: Rural-based 'elite' farmer

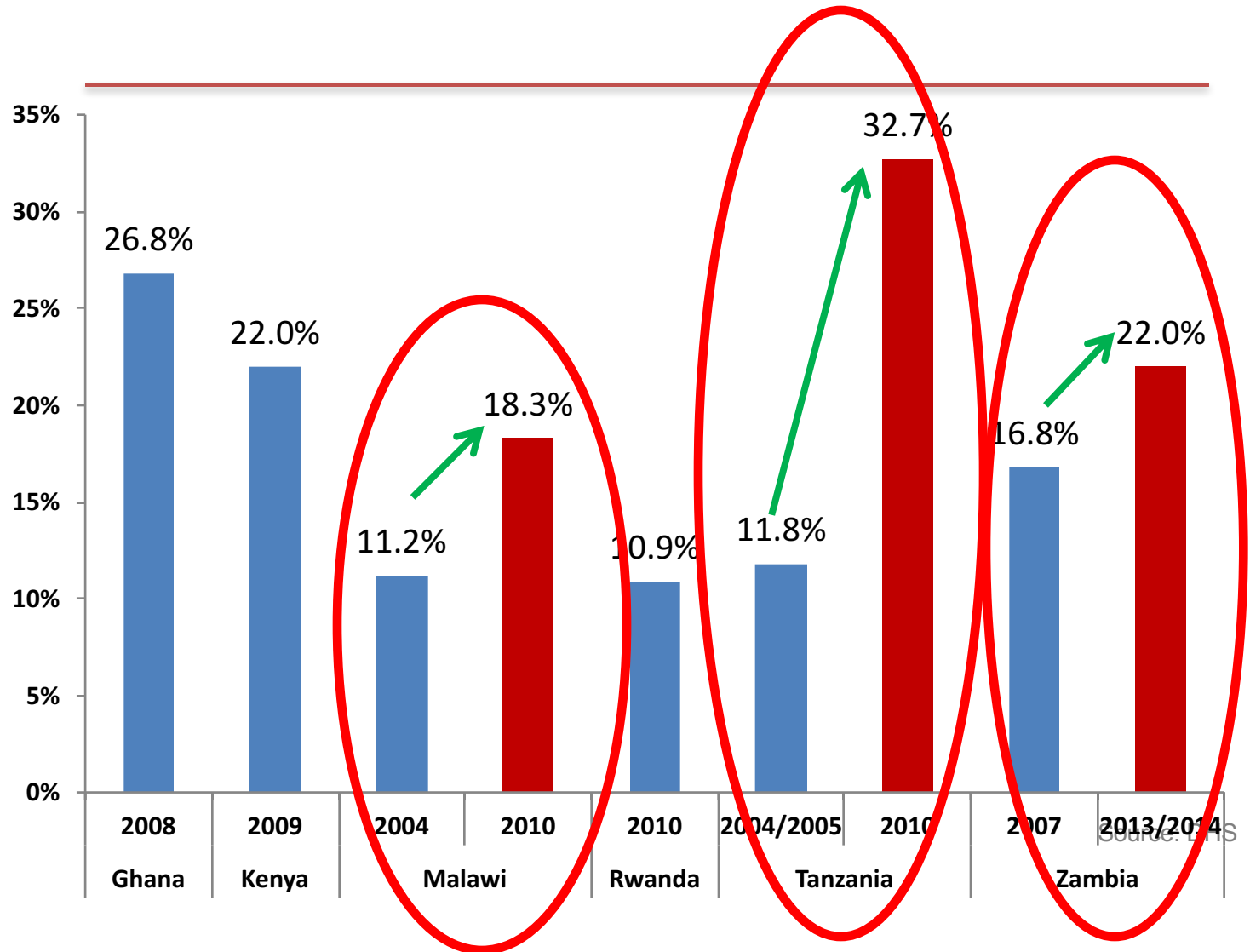
	Mode of entry into medium-scale farming status: expansion of rural elite	
	Zambia	Kenya
	(n=118)	(n=120)
% of cases	42	40
% men	92.9	82.5
Year of birth	1966	1945
Years of education of head	8.2	7.5
Have held a job other than as a farmer (%)	32.9	17.5
Landholding size when operator started own household (ha)	10.7	16.2
Current landholding size (ha)	38.2	32.7
% of land currently under cultivation	46.9	54.1
Decade when land was acquired		
1969 or earlier	3.9	29
1970-79	6.7	24
1980-89	14.8	20
1990-99	32.2	18
2000 or later	42.0	9

# % of National Landholdings held by Urban Households

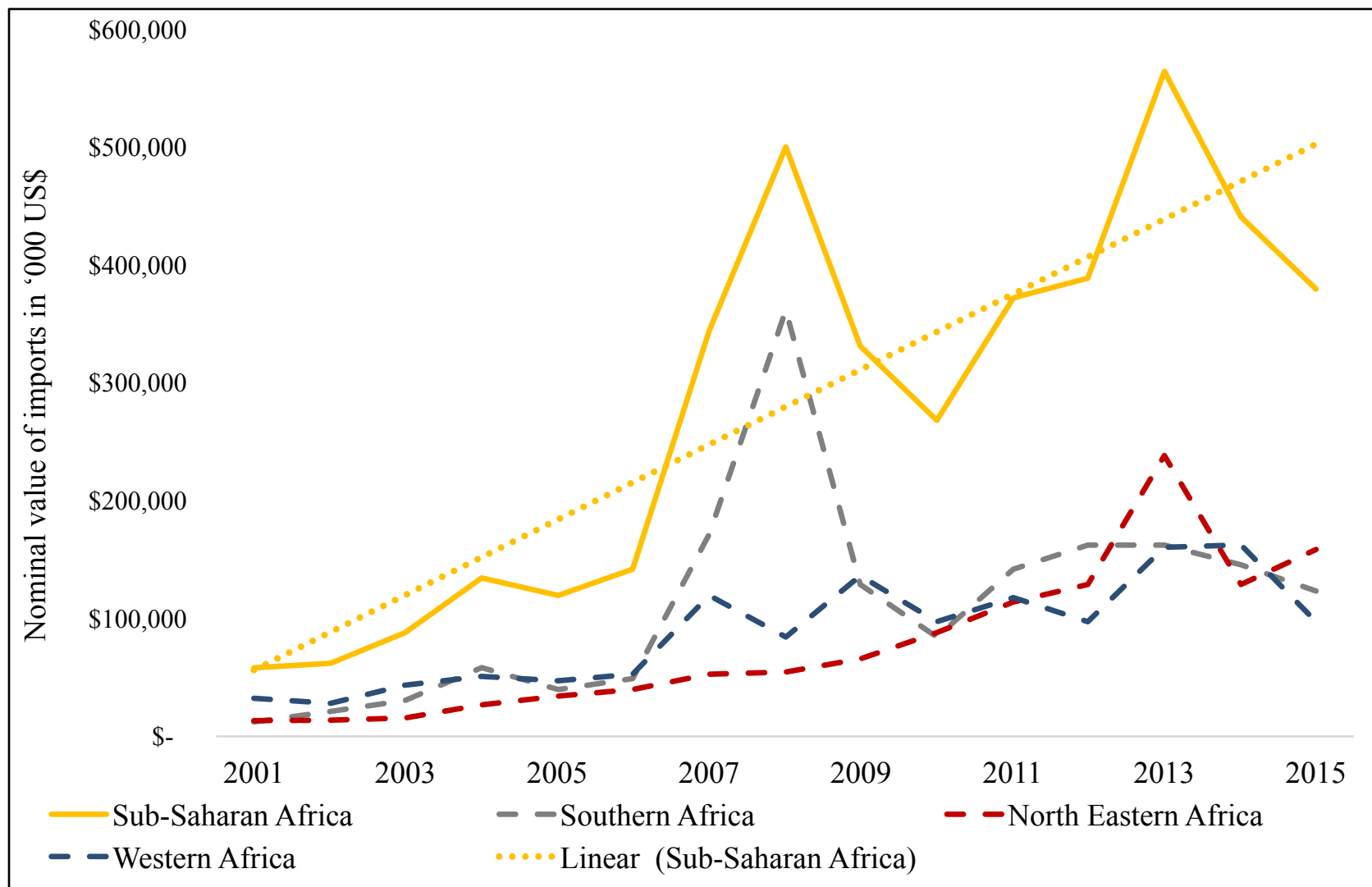


Source: Demographic and Health Surveys, various years between 2004-2014.

# % of National Landholdings held by Urban Households

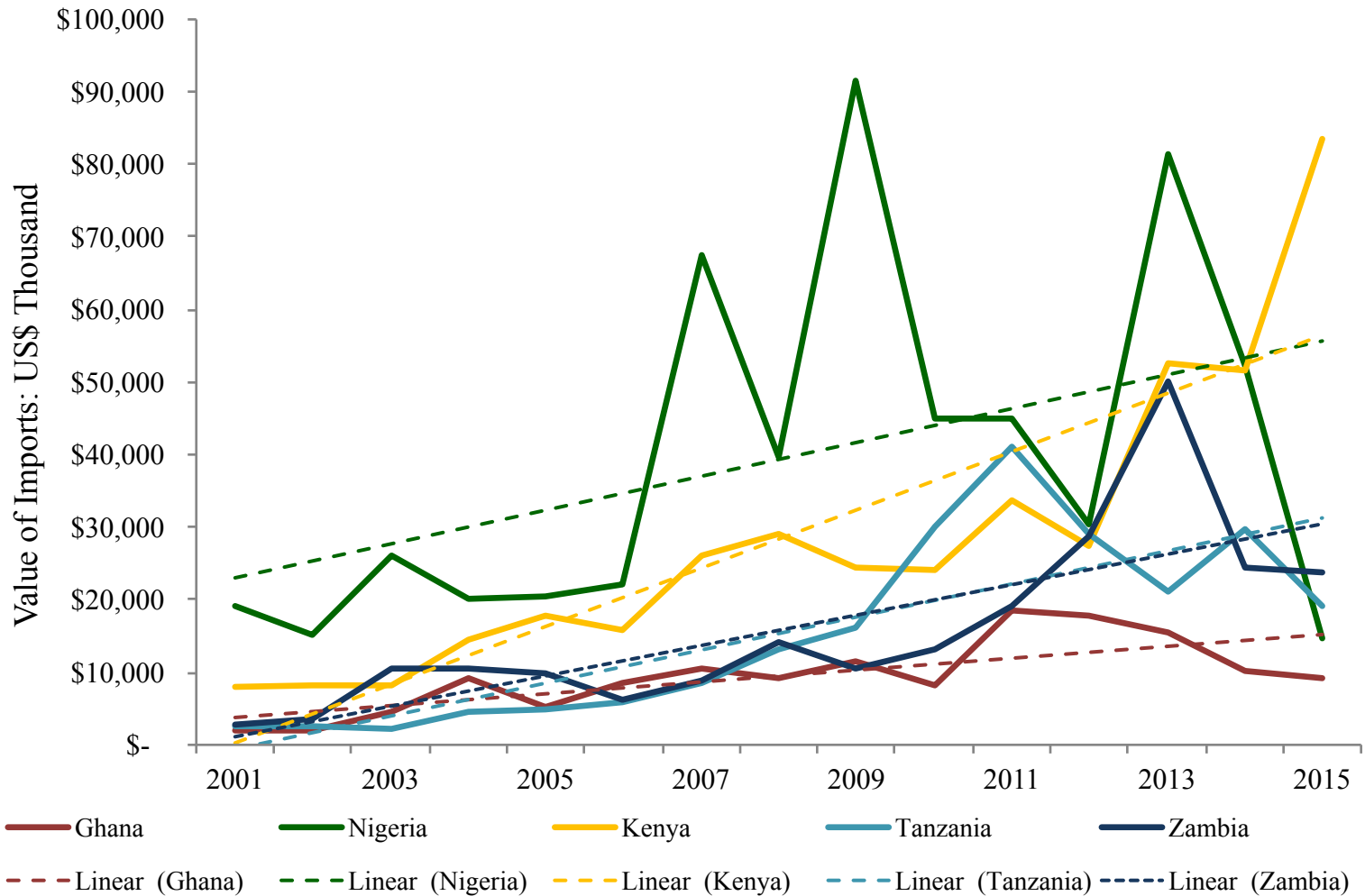


# Nominal value of tractor imports to Sub-Saharan Africa (excluding South Africa), 2001-2015



Source: vanderWesthuisen, forthcoming

## Nominal value of tractor imports in selective Sub-Saharan African countries (2001-2015)



Source: vanderWesthuisen, forthcoming

# Rise of large-scale traders

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Large-scale traders purchases from smallholder farmers are rising rapidly

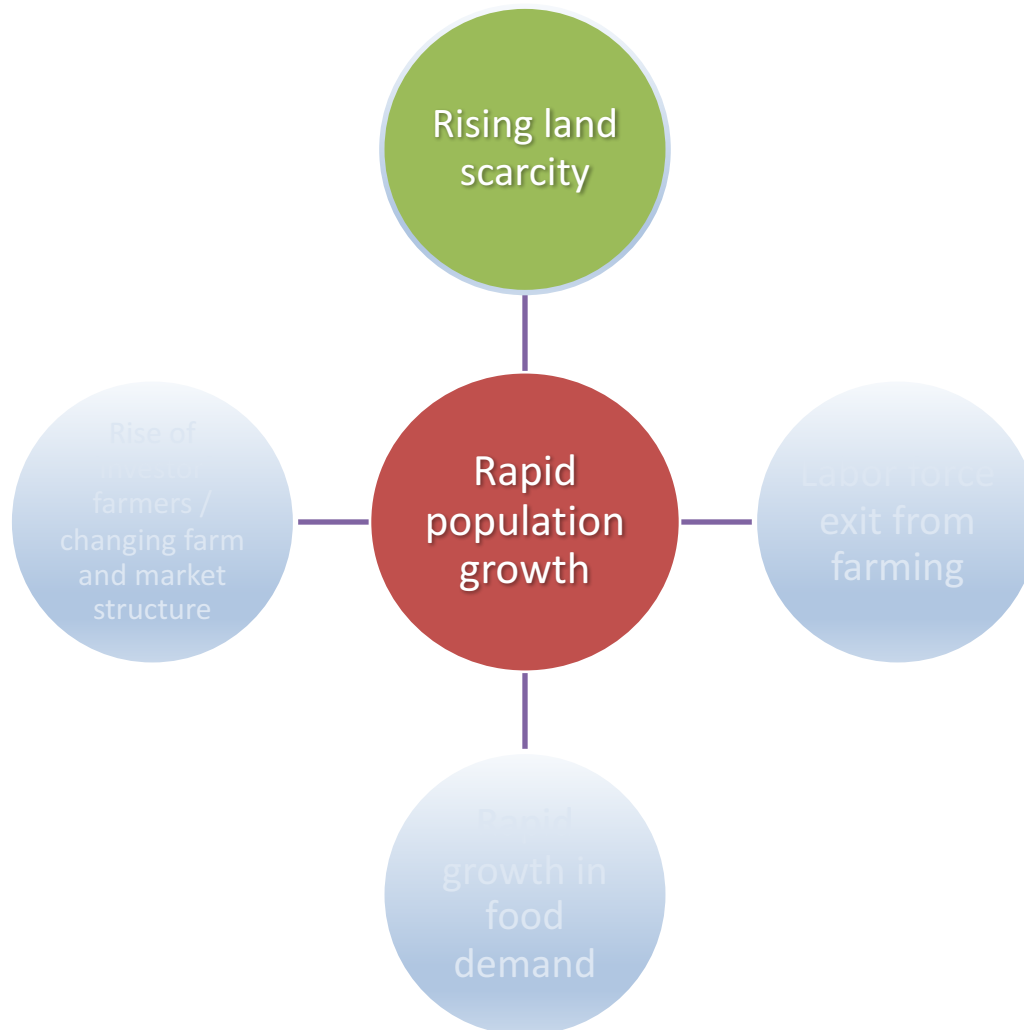
- Zambia: nationally representative smallholder survey data shows that between 2012 and 2015, maize sales to large-scale traders (LSTs) increased from 23% to 41%
- Kenya: no sales to LSTs in 2004 → 21% of maize sales by volume in 2007 → 37% in 2014
- Tanzania: 34% of maize sales by volume in 2016

# GINI coefficients in farm landholding

	Period	Movement in Gini coefficient:
Ghana (cult. area)	1992 → 2013	0.54 → 0.70
Kenya (cult. area)	1994 → 2006	0.51 → 0.55
Tanzania (landholdings)	2008 → 2012	0.63 → 0.69
Zambia (landholding)	2001 → 2012	0.42 → 0.49

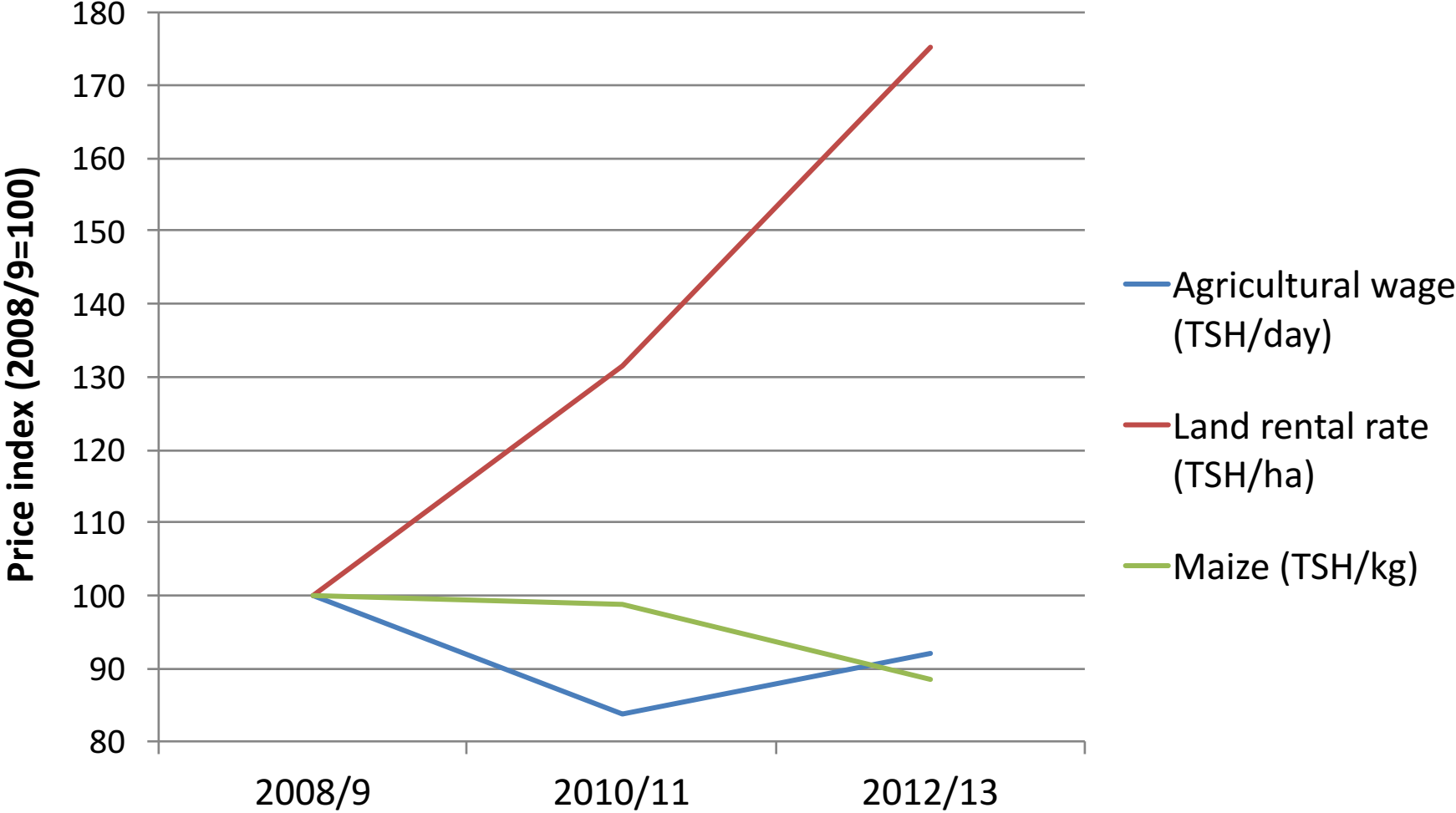
Source: Jayne et al. 2014 (JIA)

# Five inter-related trends

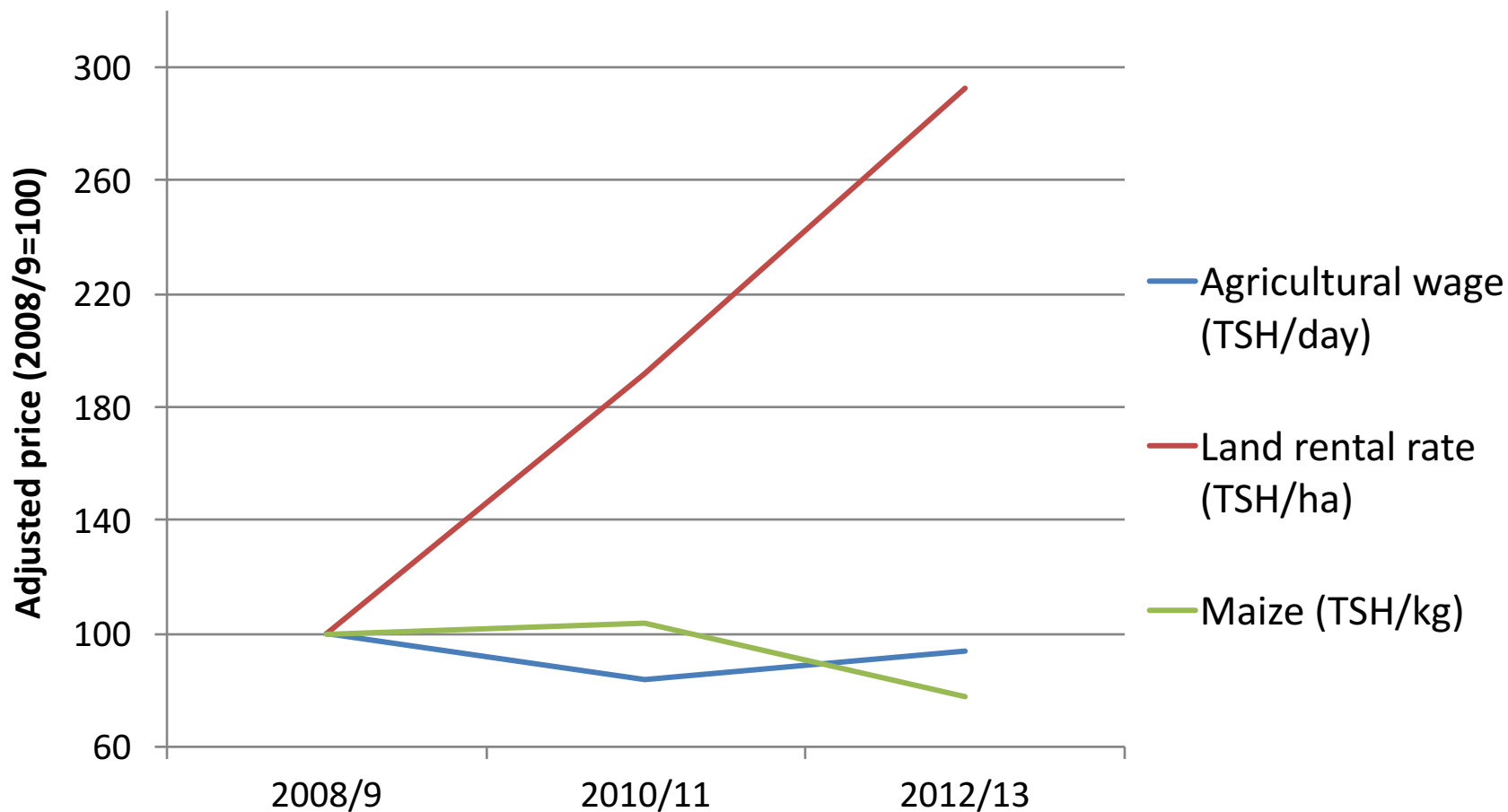




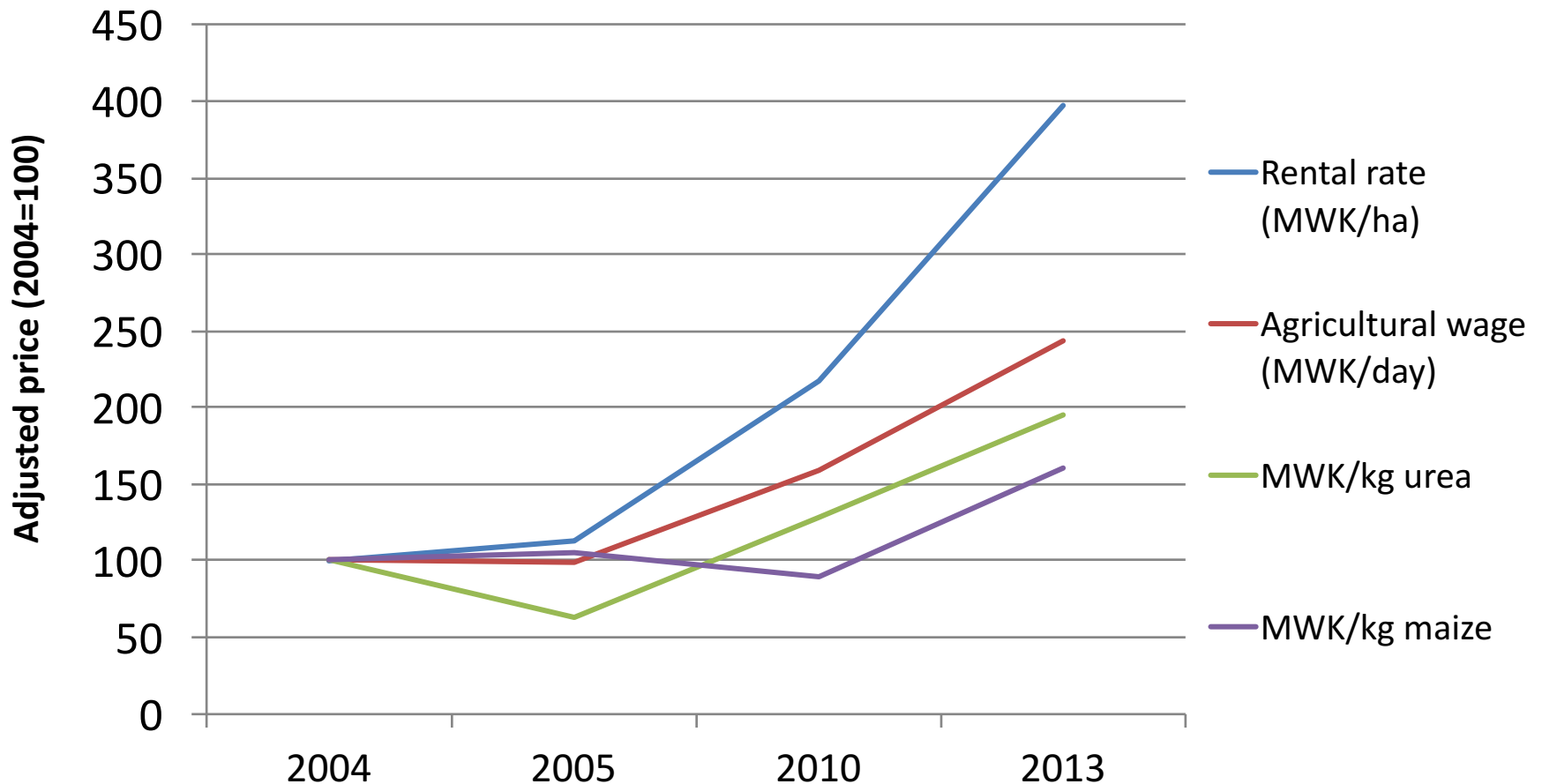
# Output and factor price indices, northern Tanzania



# Output and factor price indices, western Tanzania

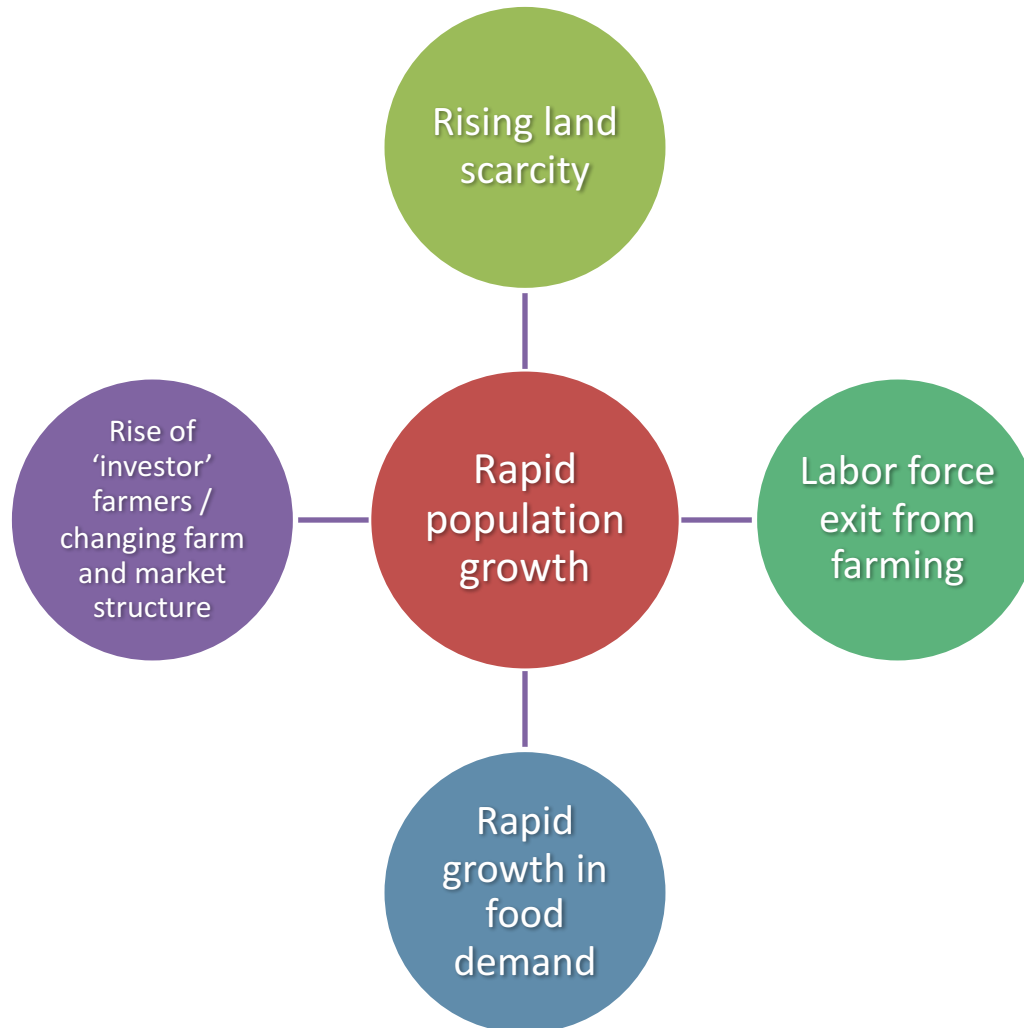


# Output and factor price indices, rural Malawi, 2004-2013



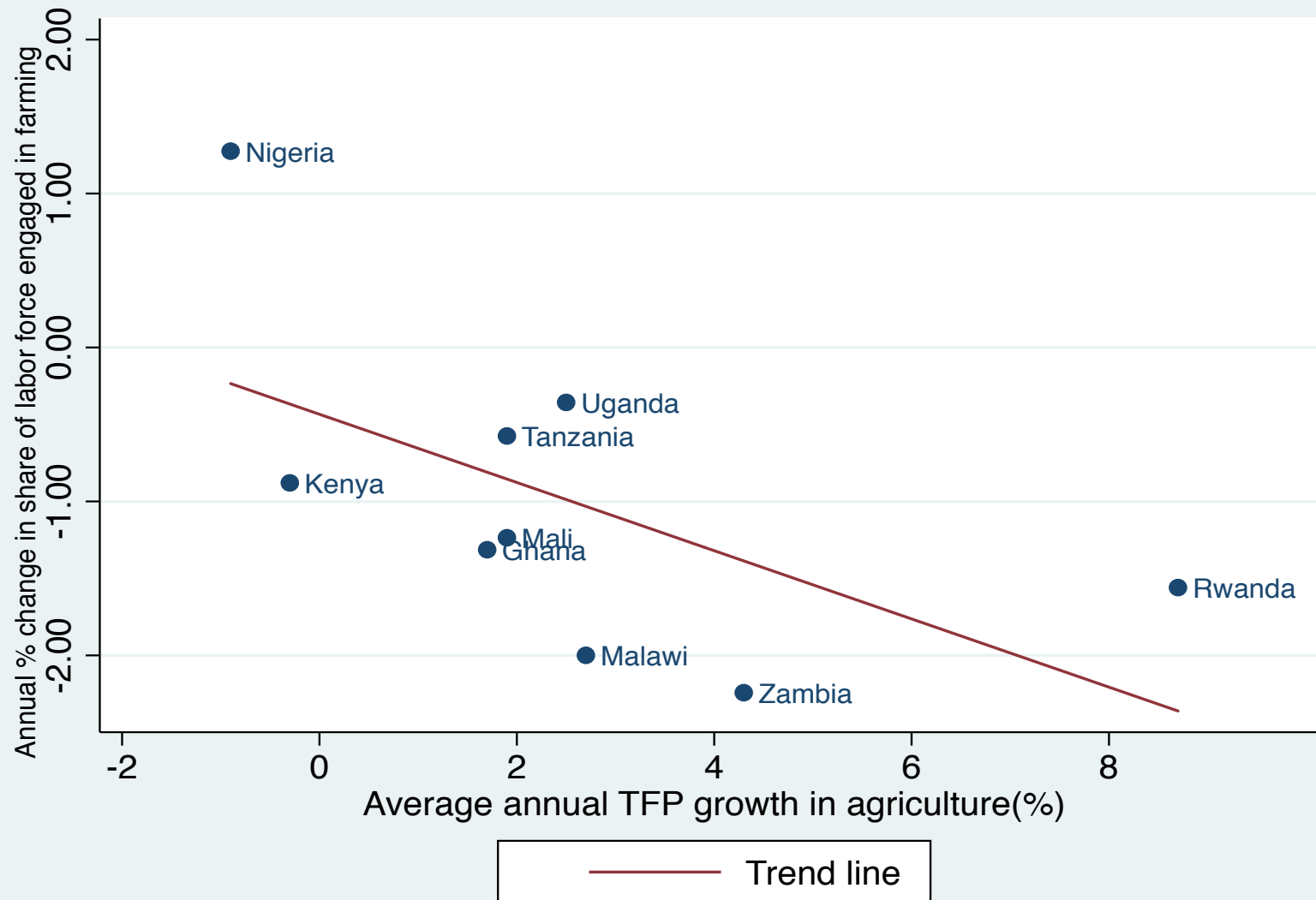
Sources: IHS for land and wages; FEWSNET for urea and maize

# Five inter-related trends

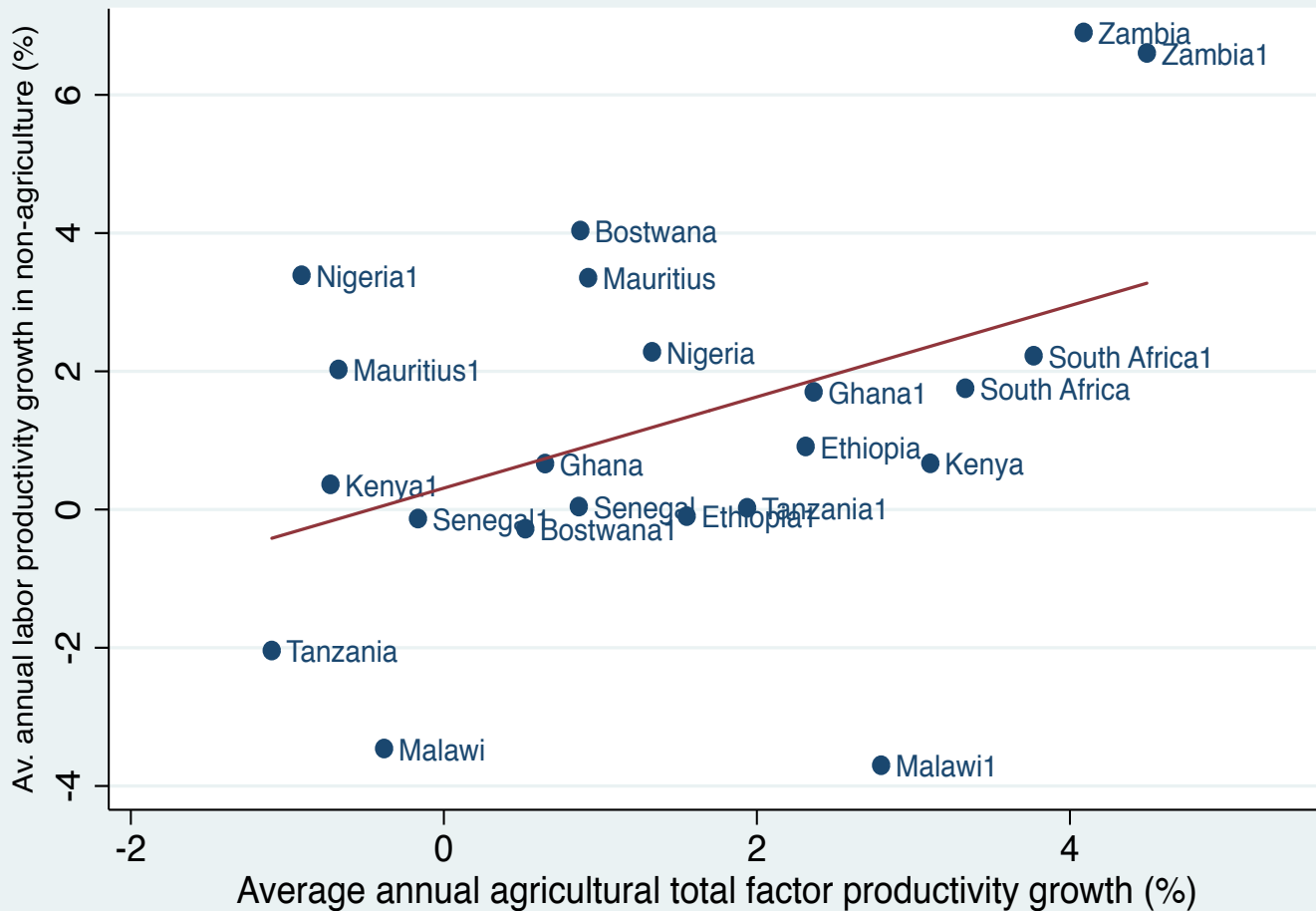




# Share of labor force in farming is declining most rapidly where agricultural productivity growth is highest



# Non-farm labor productivity growth linked to lagged agricultural productivity growth



— Trend line

Table 1. Factors associated with changes in proportion of labor force in farming, 11-country annual pooled data, 1995-2011

	Fixed effect model	
	(i)	(ii)
Log lag labor productivity in agriculture	-0.133* (-2.15)	-0.284** (-2.77)
Log lag labor productivity in non-agriculture	-0.0121 (-0.23)	-0.176 (-1.89)
<b>Other covariates</b>		
Index of governance (lagged)	-0.0205 (-0.45)	0.0698 (1.06)
Time trend	-0.00961*** (-4.62)	-0.00458 (-0.96)
Population density	-0.00181 (-1.51)	-0.00475 (-1.89)
Road density	-	-0.000260 (-0.21)
Constant	-0.519** (-3.07)	0.0690 (0.20)
Number of observations	161	78
Number of Countries	11	10
Adjusted/Overall R-square	0.71	0.87
Time period	1995-2011	1995-2011

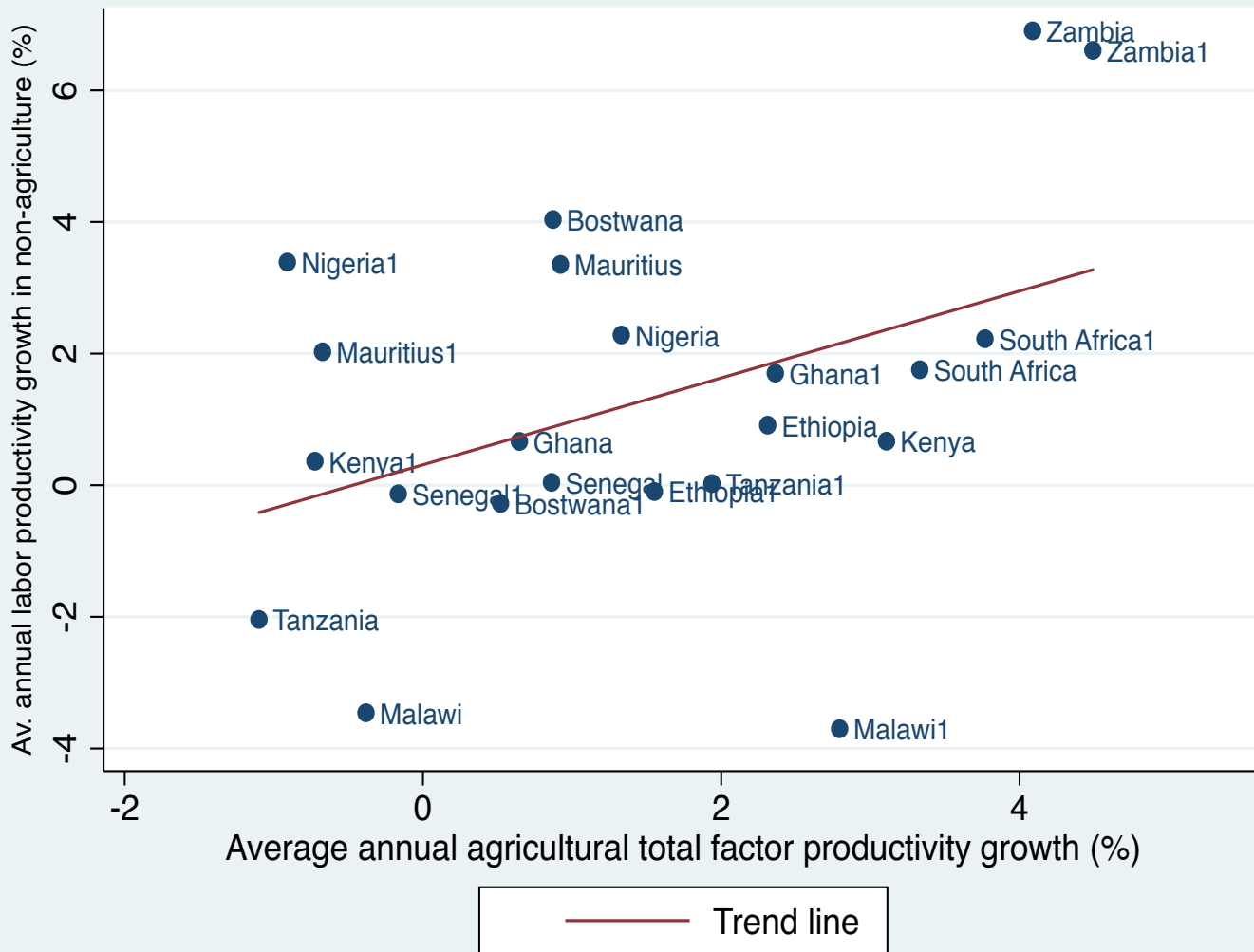


# Conclusions

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1. Performance of agriculture will continue to exert major influence on job growth and income growth in overall economy
2. Agricultural productivity growth will be the cornerstone of any comprehensive youth livelihoods strategy:
  - Ag productivity growth influences
    - pace of labor force exit out of farming
    - Labor productivity in broader economy

# Non-farm labor productivity growth linked to lagged agricultural productivity growth



# Conclusions (cont.)

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- ## 3. Important changes in the distribution of farm sizes
- Decline in share of farmland under 5 hectare farms
  - Rise of medium-scale farms
  - Rising inequality of farmland distribution
  - Growing land scarcity driven by middle/high income urban people seeking to acquire land – not just for farming
    - speculation, housing/properties, farming
    - Rise of new towns converting formerly remote land into valued property

# Conclusions (cont.)

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## 3. Ag sector policies must anticipate and respond to

- rising land prices, decline of inheritance, market as increasingly important mode of acquiring land
- Resources needed for youth to succeed in farming (access to land, finance)
- Distinguish between “trying to keep youth in agriculture” vs. “giving youth viable choices”

# Conclusions

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4. Investments that raise productivity / profitability of farming:
  - Agricultural R&D and extension systems
    - Improved seed + fertilizer: crucial but incomplete
    - Farm management “best practices”
  - Well resourced public agricultural-nutrition institutions
  - Local policy institutes
  - Access to finance
  - Policy/enabling environment to attract private investment
5. Education: 300 million youth need access to skills, training
  - Malawi example
  - Ethiopia: 3,000 PhDs per year in 1995; now over 100,000 per year

# Conclusions

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Bottom line:

Economic transformation in SSA will require

- inclusive agricultural productivity growth
- improved access to education
- strengthening of African public institutions

Governments hold the key!

**Thank You**

