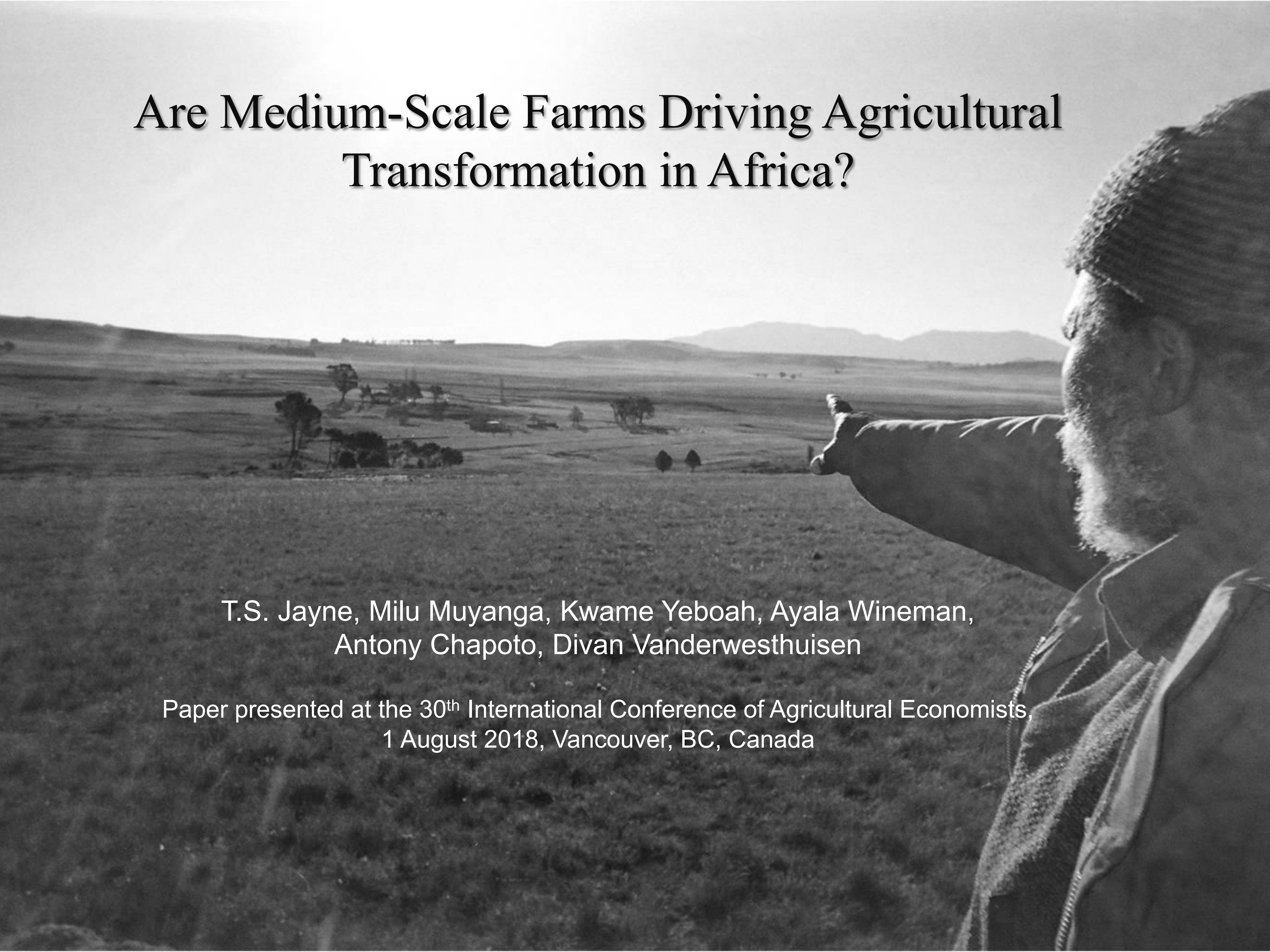


Are Medium-Scale Farms Driving Agricultural Transformation in Africa?

T.S. Jayne, Milu Muyanga, Kwame Yeboah, Ayala Wineman, Antony Chapoto, Divan Vanderwesthuisen

Paper presented at the 30th International Conference of Agricultural Economists, 1 August 2018, Vancouver, BC, Canada

FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

Acknowledgements: The work highlighted here is jointly funded by:

- the United States Agency for International Development (USAID) under the Food Security Policy Innovation Lab
- the Bill and Melinda Gates Foundation under the Guiding Investments in Sustainable Agricultural Intensification Grant
- the Agricultural Policy Research in Africa (APRA) Project led by IDS-Sussex and funded by DfID

Outline

1. Document changes in farm structure in six African countries
2. Characteristics of MS farms
3. Causes
4. Consequences
5. Implications

Data

- Nationally representative data sets conducted in multiple years by National Statistical Offices in coordination with the World Bank
  - Ghana, General Living Standards Surveys (GLSS)
  - Zambia, Crop Forecast Surveys (CFS)
  - Uganda
  - Rwanda
  - Nigeria
  - Tanzania
- Surveys of MS farms drawn from population listings in selected districts/regions (Tanzania, Nigeria, Zambia, Kenya)

Outline

1. Document changes in farm structure
2. Characteristics of MS farms
3. Causes
4. Consequences
5. Implications

Comparison of farmland owned and land under cultivation in Tanzania: 2008 Agricultural Sample Census Survey vs. 2008 LSMS/NPS Survey

	Farm land controlled			Land under operation		
	LSMS	Ag Sample Census Survey	% difference	LSMS	Ag Sample Census Survey	% difference
By holdings of:	Million hectares			Million hectares		
0-5 ha	8.246	8.595	+4.2	8.117	8.130	+0.002
5-100 ha	3.872	5.861	+51.4	3.816	5.181	+35.8
Over 100 ha	0.809	1.294	+60.0	0.809	0.942	+16.5

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
Total	**820,341**	**1,399,737**		**100**	**100**

-39%

+91%

Source: Zambia MAL Crop Forecast Surveys, 2001 and 2012

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
Total	**820,341**	**1,399,737**		**100**	**100**

17%

52%

Source: Zambia MAL Crop Forecast Surveys, 2001 and 2012

Changes in farm structure in Tanzania (2008-2012), LSMS/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	- 6.1%
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	+ 6.1%
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	

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
Total	**2,211,900**	**3,057,978**	**38.3**	**100**	**100**

51% of total farm-land

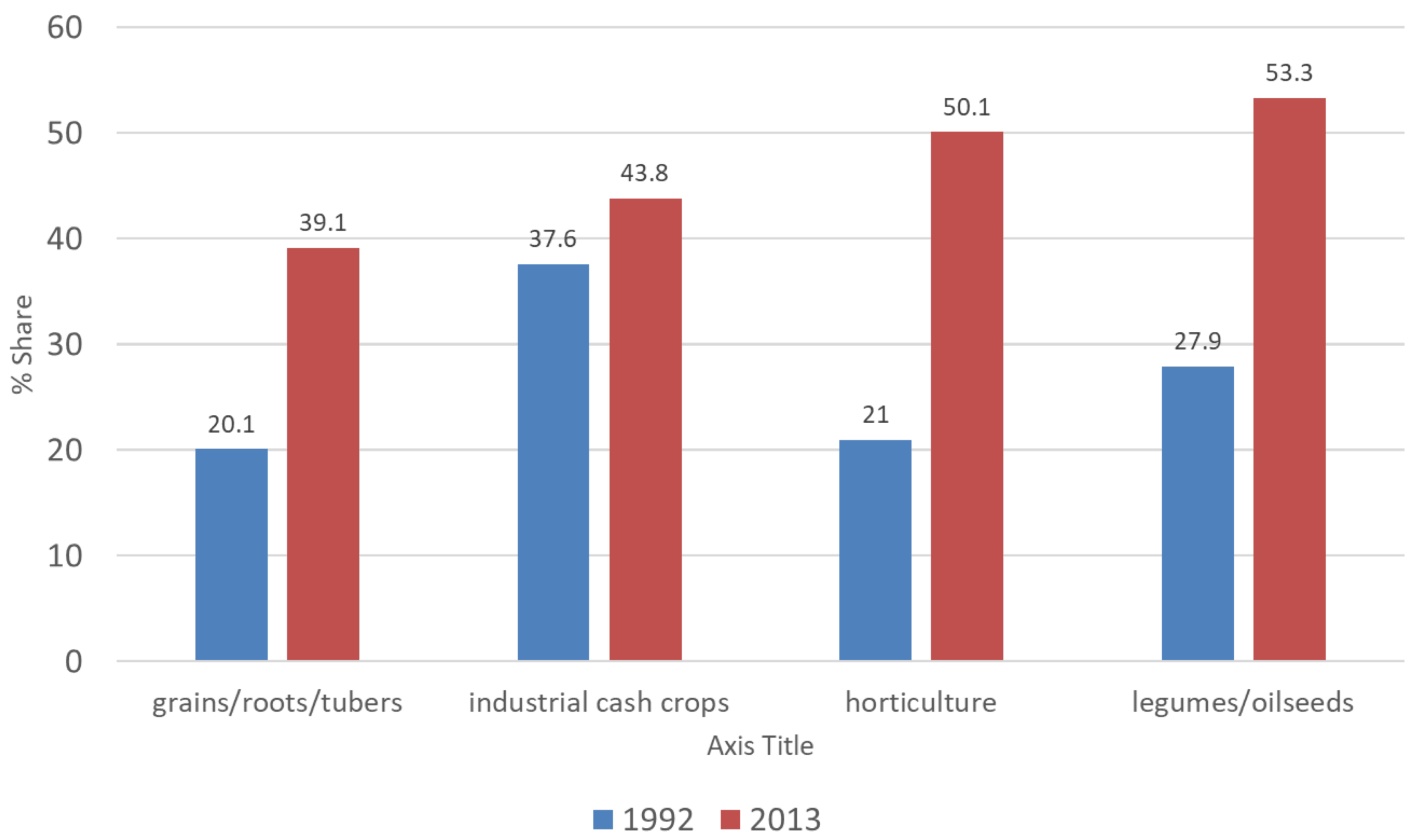
Source: Ghana GLSS Surveys, 1992, 2013

% Share of total value of national marketed crop output: Ghana

Survey year	Farm size category					
	0-5 ha	5-10 ha	10-20 ha	20-100 ha	> 100 ha	All farms
1992	74.8	12.5	6.8	5.1	0.7	100
1998	65.4	16.9	9.5	8.1	0.1	100
2006	59.5	15.5	10.4	10.2	4.5	100
2013	56.6	22.9	13.1	7.0	0.4	100

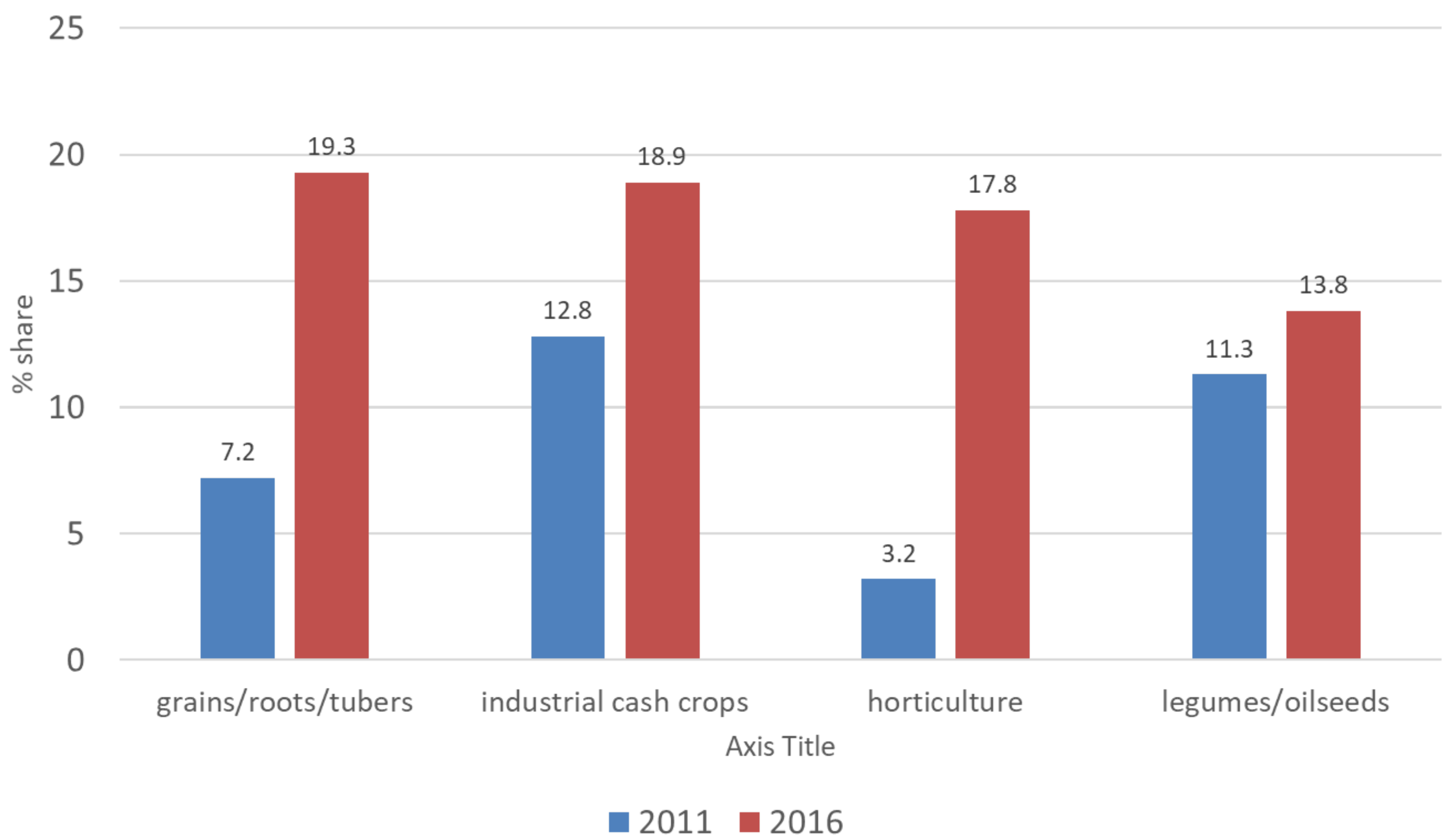
Source: Ghana Living Standards Surveys

Medium-scale (5-100 ha) share of national value marketed crop output, Ghana



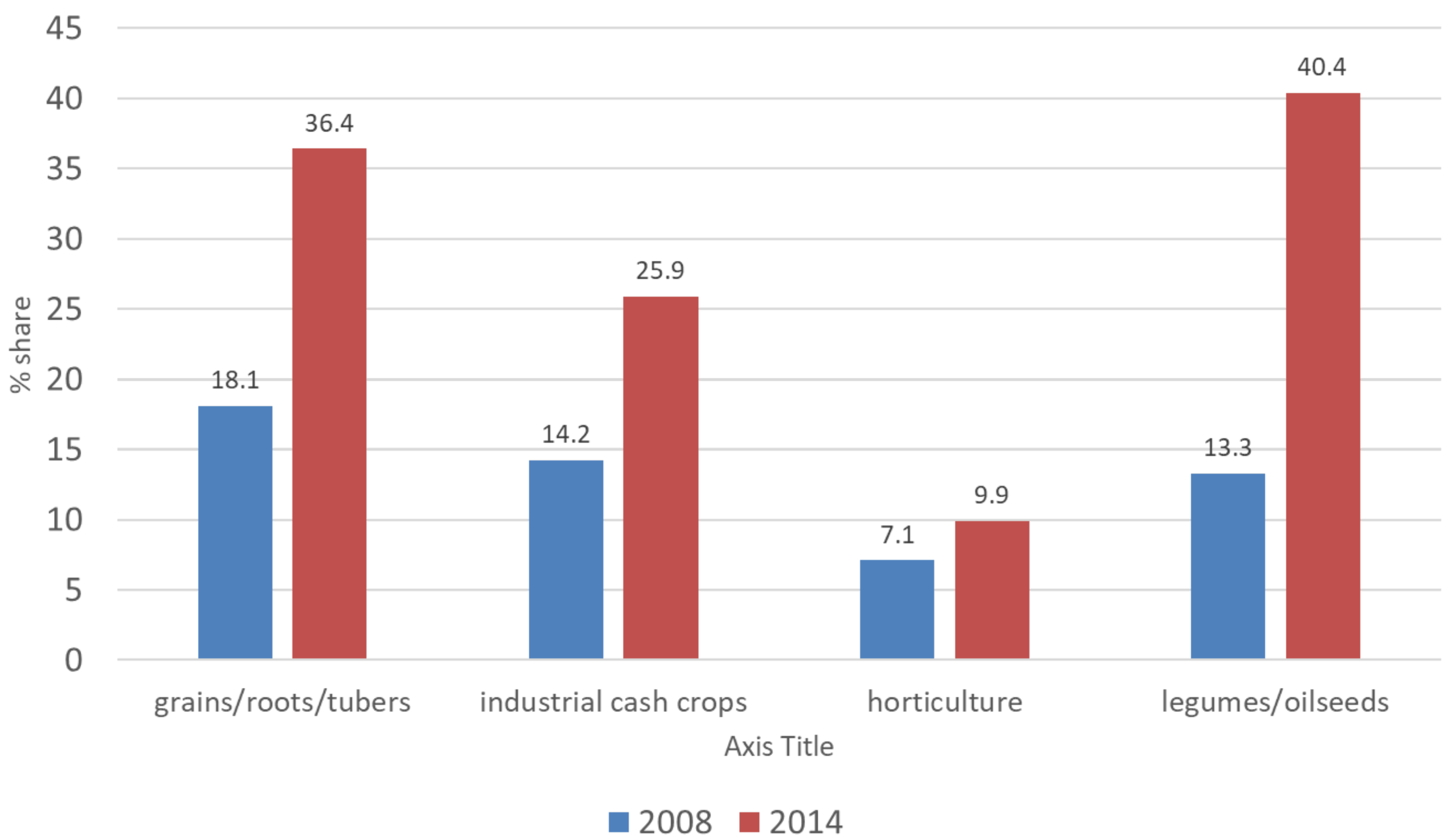
Source: Ghana Living Standards Surveys

Medium-scale (5-100 ha) share of national value marketed crop output, Nigeria



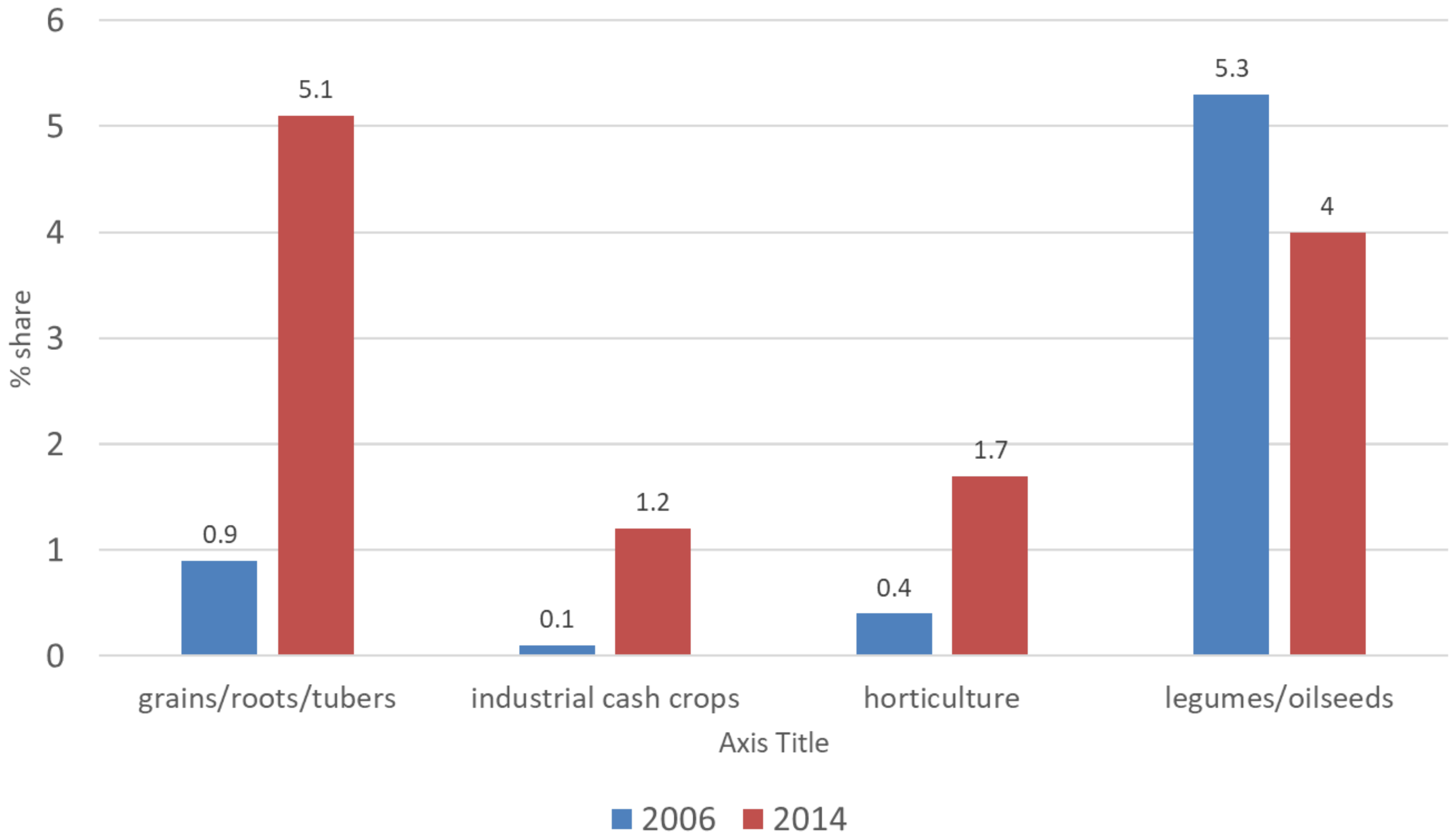
Source: Nigeria General Household Surveys

Medium-scale (5-100 ha) share of national value marketed crop output, Tanzania



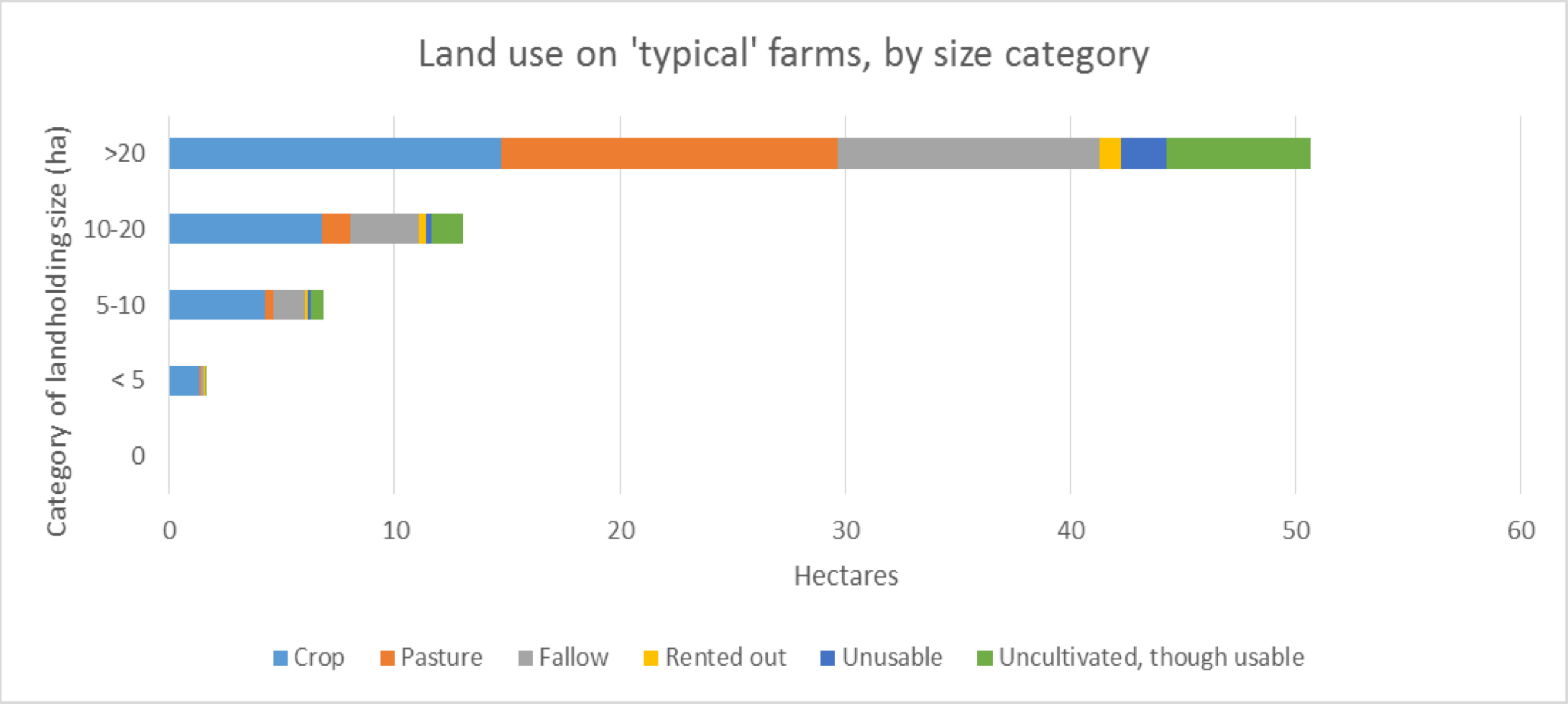
Source: Tanzania LSMS Surveys

Medium-scale (5-100 ha) share of national value marketed crop output, Rwanda



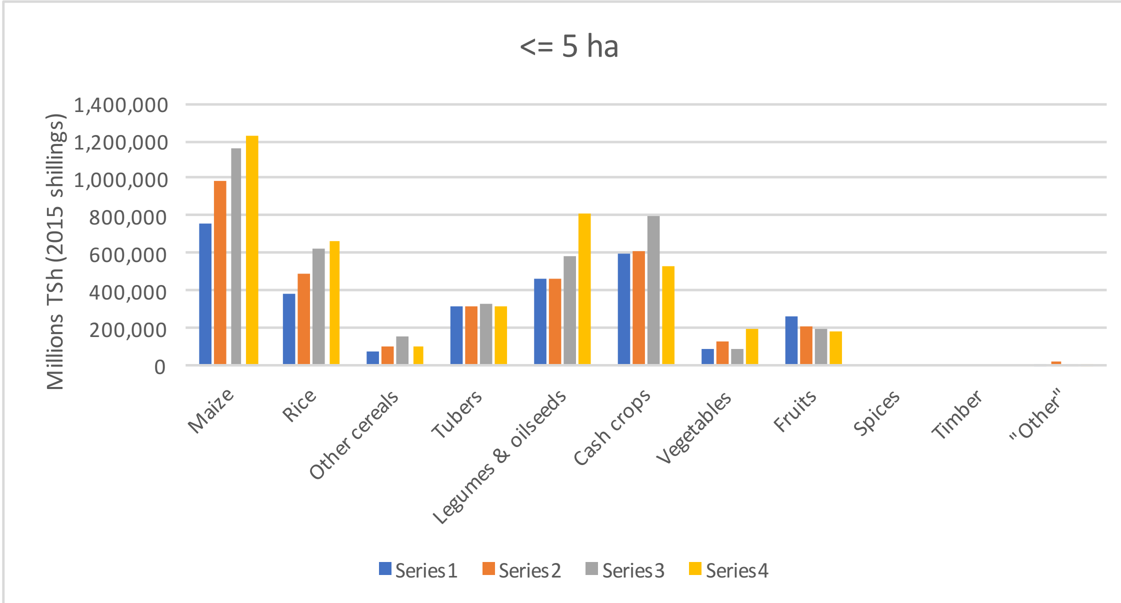
Source: Rwanda Integrated Household Living Condition Surveys

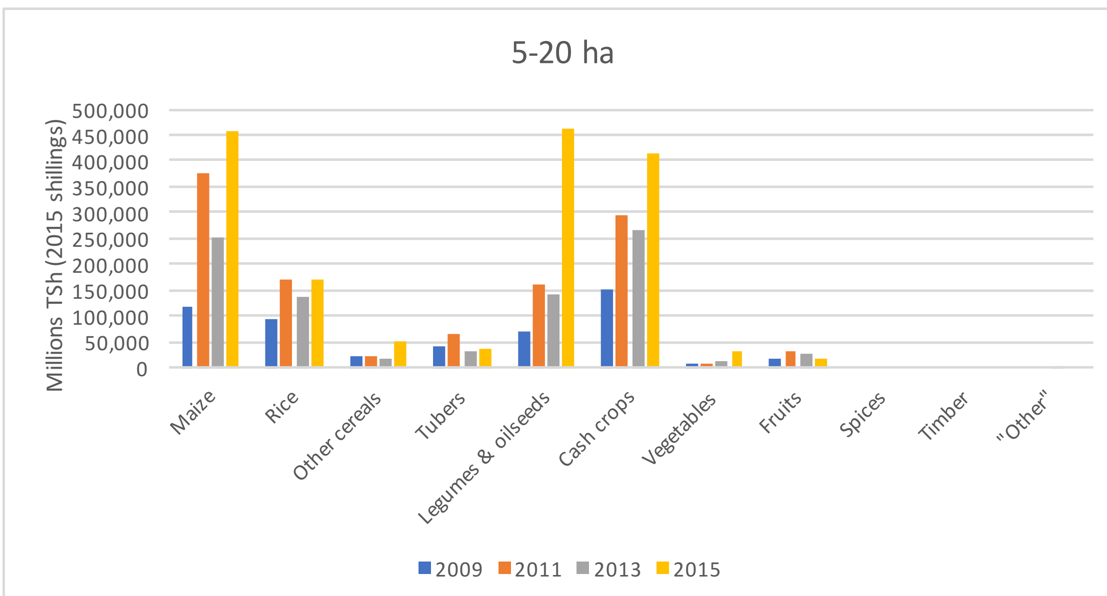
Average land area allocated to each land use, by category of landholding size – Tanzania



Source: Agricultural Sample Census, 2008

Value of crop production, Tanzania, 2009-2015





Source: NPS, 2009, 2011, 2013, 2015

Changes in farm size distributions: Summary

1. Number of small farms growing slowly
2. Number of medium-scale farms growing rapidly
3. Share of total area and marketed output under small farms declining
4. Share of area under medium-scale growing, and currently over 40% of farm holdings (> 25% of cultivated area)
5. Growth of MS farms mainly in areas where unutilized land remains for expansion. Very little MS farm growth in densely populated areas

Outline

1. Document changes in farm structure
2. Characteristics of MS farms
3. Causes
4. Consequences
5. Implications

Characteristics of
medium-scale farmers:

A diverse set of characteristics
–
3 general categories

3 Categories of MS farmers

Category 1: Formerly small-scale farmers who successfully expanded their operations –

- now typically operate 5-20 ha
- About 30-40%% of total MS farms

Category 2: Rural people who were primarily in non-farm jobs, then invested in farming

- Much more likely to be related to rural power structures – chiefs, headmen, state govt, religious leaders
- Now typically operating 5-20 ha
- About 40%-50% of MS farms

Category 3: People formerly or currently residing in urban areas

- Formerly or currently salaried jobs, public sector
- Many retirees in this category
- Typically operating 20-50 ha
- Often "telephone farmers"
- 15-25% of total MS farms

Outline

1. Document changes in farm structure
2. Characteristics of MS farms
3. Causes of changing farm size distributions
4. Consequences
5. Implications

Causes of changing farm size distributions

1. Rise in world food prices – heightened investor interest in farmland

2. Urban farmer capture of land policy / farm lobbies → *de facto* land laws have generally become more favorable to

3. Rise of land markets for purchase/sale – often considered illegal only 20 years ago

4. Increasing land scarcity and economic transformation are encouraging youth out-migration and exit from farming

    - Land inheritance declining
    - Rising demand for land → rising land prices
    - Rising challenges of youth access to land → migration
    - Relatively slow growth in numbers of small-scale farms

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	1,725,024	18.3	25.1	12.5
2-5 ha	578,890	957,722	65.4	35.6	24.1
5-10 ha	116,800	256,620	119.7	17.2	14.6
10-20 ha	38,690	110,076	184.5	11.0	12.0
20-100 ha	18,980	46,143	143.1	11.1	11.7
>100 ha	--	6,958	388.6*	--	25.0
Total	**2,211,900**	**3,102,543**		**100**	**100**

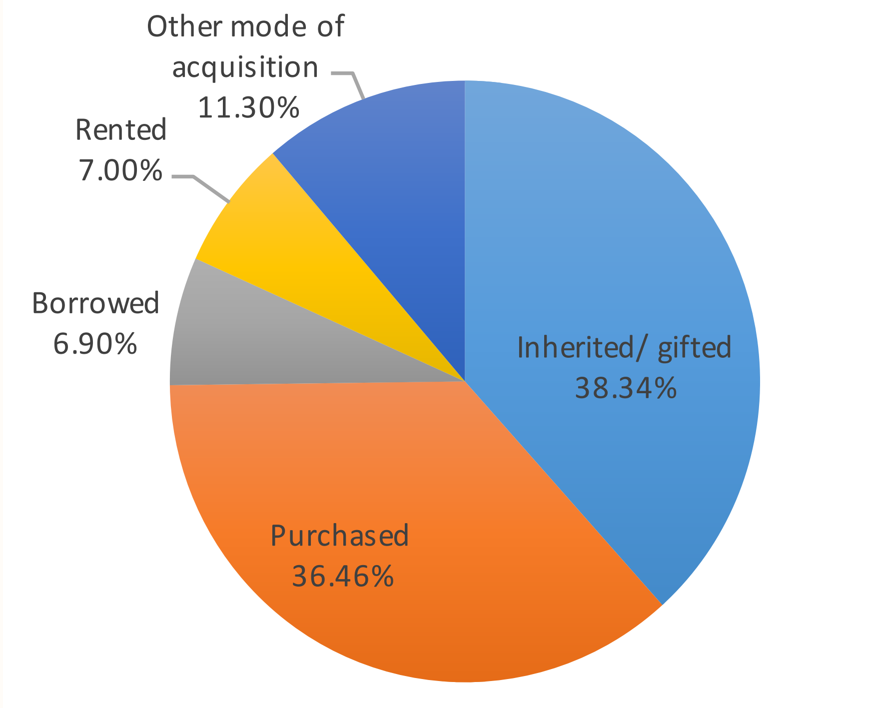
Source: Ghana GLSS Surveys, 1992, 2013

Mode of acquisition of all farm plots in Tanzania

Percent of plots

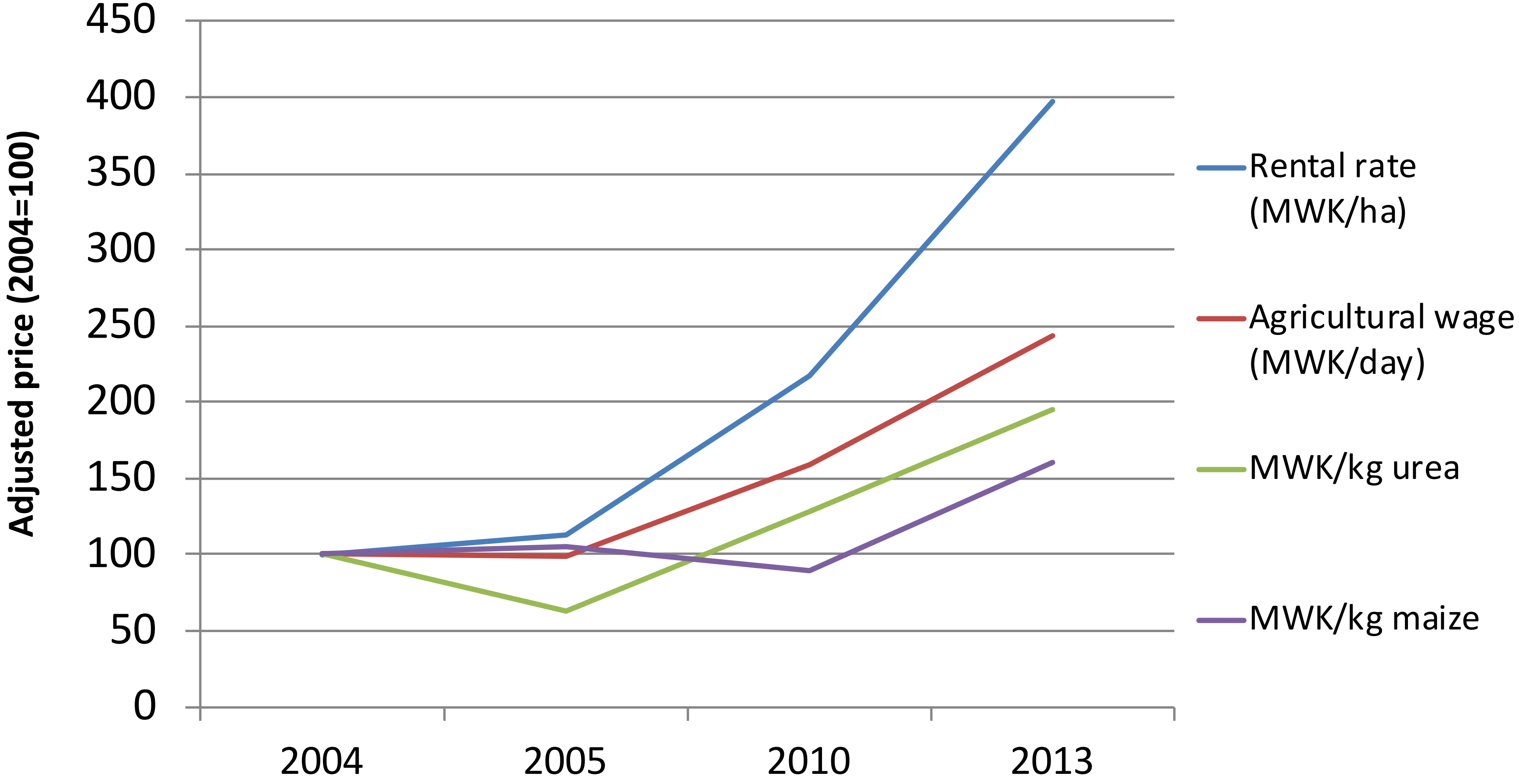
Inherited	33.17%
Gifted	10.33%
Purchased	**29.63%**
Borrowed	11.09%
Rented	**9.63%**
Other (squatting / cleared land/ allocated)	6.16%
Observations	4,291

Percent of total farmland area



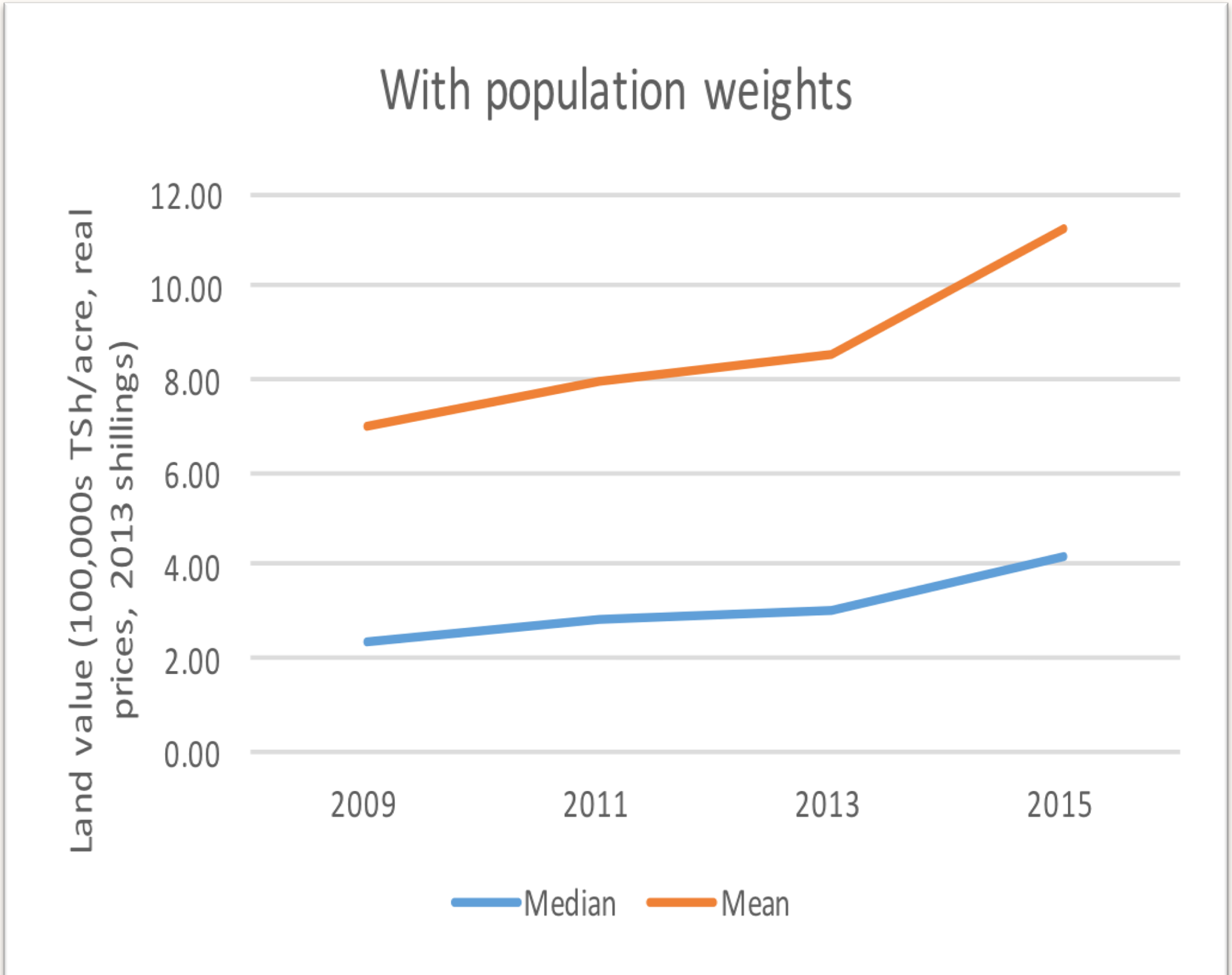
Source: NPS 2014/15

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



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

Mean land prices in Tanzania: +53.9% in real terms in 6 years



Source: NPS 2009, 2011, 2013, 2015

Land values across Tanzania, 2009 to 2013

Land value (100,000s TSh/acre, real prices)

	2009	
	Median	Mean
PANEL A		
Whole country	2.39	6.98
Zone		
Western	2.00	3.70
Northern	6.24	15.38
Central	1.20	1.89
Southern Highlands	1.80	5.14
Lake	3.99	8.87
Eastern	2.99	8.82
Southern	1.80	4.94
Zanzibar	7.48	13.87

Correlates of land values (pooled OLS, cultivated plots)

Dependent variable: ln(land value, TSh/ acre, inflation adjusted)

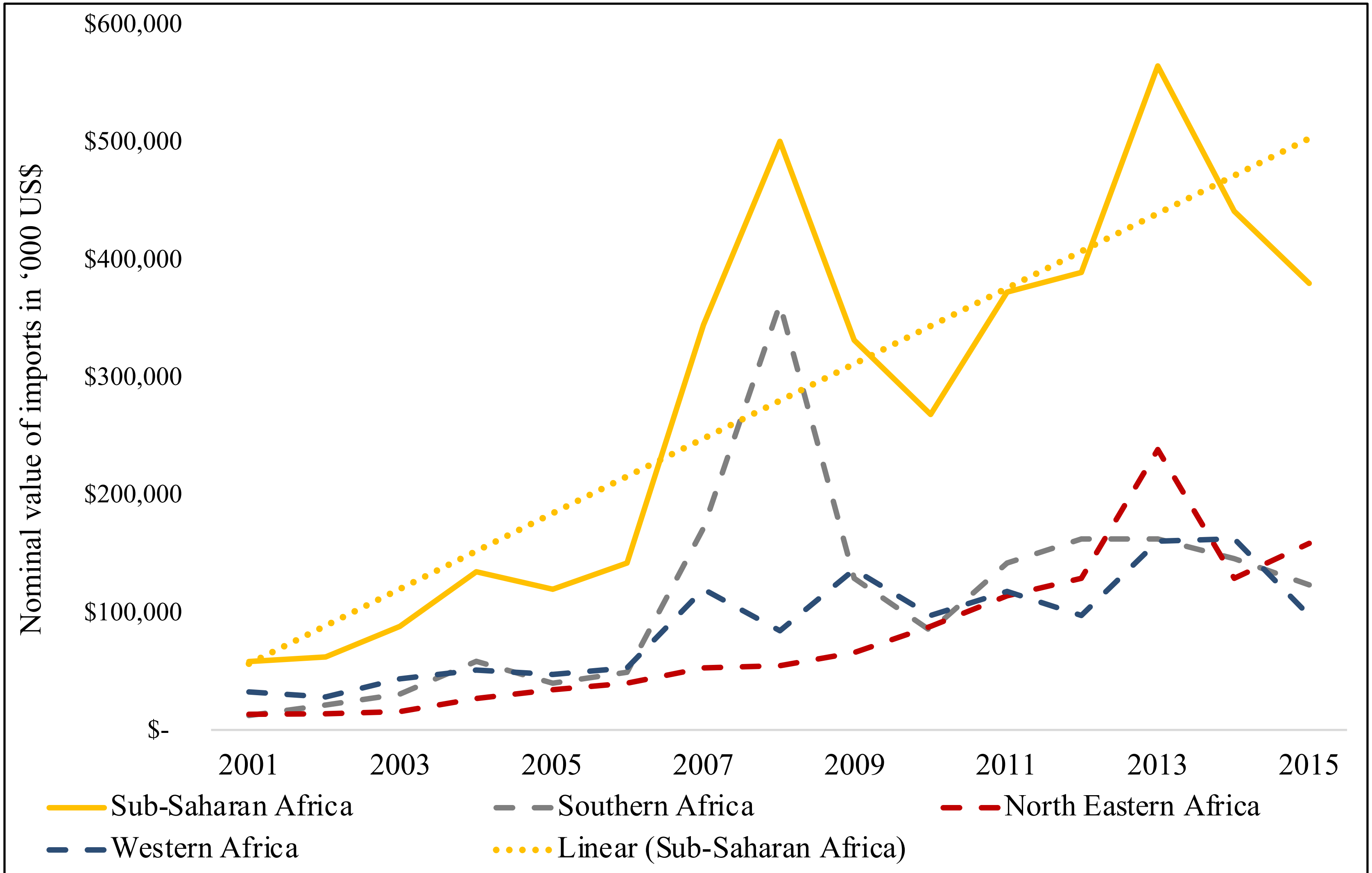
Outline

1. Document changes in farm structure
2. Characteristics of MS farms
3. Causes
4. Consequences of changing farm size distributions
5. Implications

Consequences of changing farm size distributions

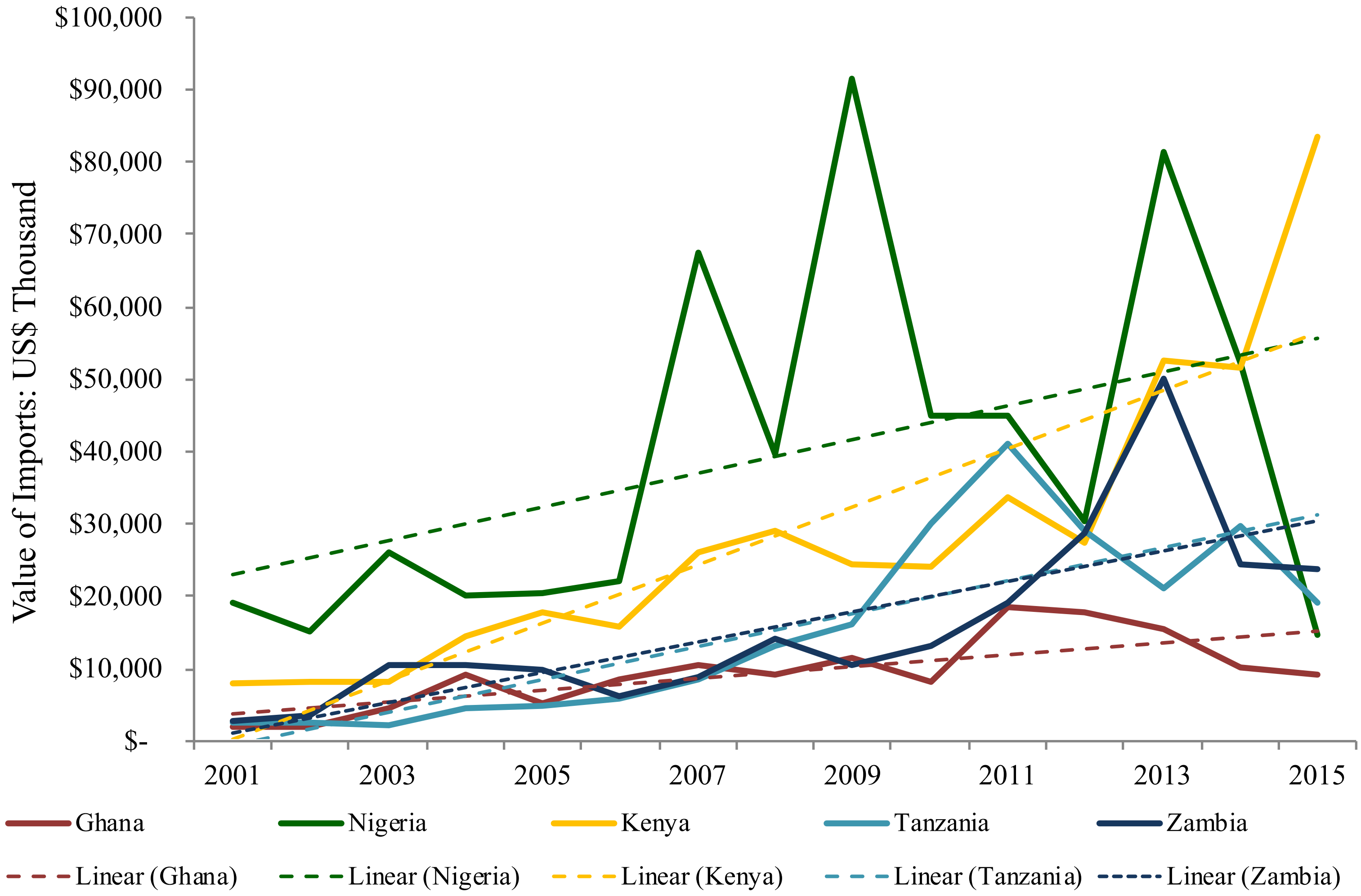
1. Rising use of mechanization rental markets utilized by small-scale farms
2. Pulling in large-scale commodity traders
3. Greater inequality of farmland distribution
4. Some displacement
5. Rising land prices → straining youth access to land

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



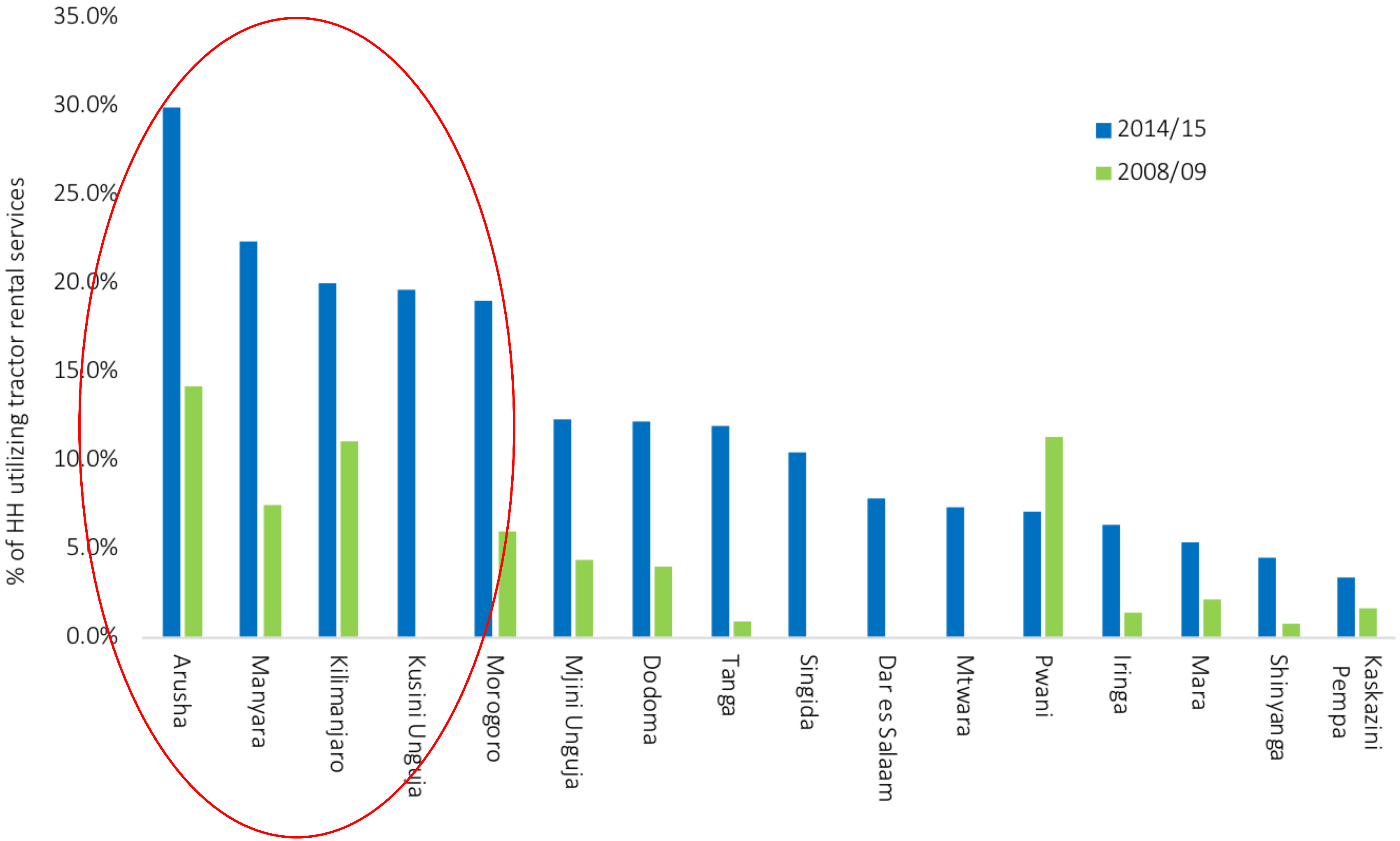
Source: vanderWesthuisen, forthcoming

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



Source: vanderWesthuisen, forthcoming

% OF FARM HOUSEHOLDS RENTING TRACTOR SERVICES IN TANZANIA, 2009 VS 2015



Source: Van der Westhuisen, 2018, based on LSMS/NPS surveys

GINI coefficients in farm landholding

	Period	Movement in Gini coefficient:
Ghana (cult. area) (GLSS)	1992 → 2013	0.54 → 0.70
Kenya (cult. area) (KIHBS)	1994 → 2006	0.51 → 0.55
Tanzania (landholdings) (LSMS)	2008 → 2012	0.63 → 0.69
Tanzania (area controlled) (ASCS)	2008	0.89
Zambia (landholding) (CFS)	2001 → 2012	0.42 → 0.49

Source: Jayne et al. 2014 (JIA)

Have MS farms contributed to agricultural transformation in Africa?

- 4.84% real annual agricultural growth in sub-Saharan Africa between 2001-2015
- 70% of agricultural growth has been attributed to area expansion
- Farms 5-100 hectares, while accounting for 5-10% of farms, have accounted for about 30-50% of the growth in total national value of production (small sample caveat! – drawing from TZ, Ug, Zm, Ng, Rw, Gh only)
- MS farms appear to have contributed significantly to SSA's agricultural growth – mainly in countries where major potential for area expansion

Outline

1. Document how rapidly farm structure is changing
2. Characteristics
3. Causes
4. Consequences
5. Implications for policy and research

Summary of main findings:

1. Important changes in the distribution of farm sizes
   - Decline in share of farmland under 5 hectare farms
   - Rise of medium-scale farms
2. Rising inequality of farmland distribution
3. Rising land prices driven by relatively wealthy people seeking to acquire land – not just for land
   - speculation, housing/properties, farming
   - Rise of new towns converting formerly remote land into valued property
4. Results derived during a decade of very high food prices

Implications for policy

1. The greater share of land under commercialized MS farms is likely to positively influence agricultural productivity and structural transformation – though evidence is not conclusive yet

2. The “transition” issue

   - How to transform African economies from current situation to more diversified and productive economies

Implications for policy (cont.)

3. Ag sector policies must anticipate and respond to
   - rising land prices
   - decline of land inheritance,
   - land markets as increasingly important means of acquiring land
   - Need to invest in better statistics on MS and LS farms

Major research issues to guide agricultural policy:

1. Productivity differences between small and medium-scale farms – limited evidence
   - but reasons to believe that capitalized and educated MS farms may increasingly become more productive
   - Main implications for economic transformation may pertain more to GE effects on employment and wages
2. Are there positive or negative ‘spillover’ effects?

Major research issues to guide agricultural policy:

3. Are the multiplier effects of ag growth changing?
4. Are governments losing their ability to estimate national output?

Thank You