



Agricultural Growth and Poverty Reduction: Why the Relationship is Not As Strong As We Think

T.S. Jayne and IAPRI colleagues*

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* Particularly Nicholas Sitko, Chewe Nkonde, Chance Kabaghe, Nicole Mason, and Munguzwe Hichaambwa

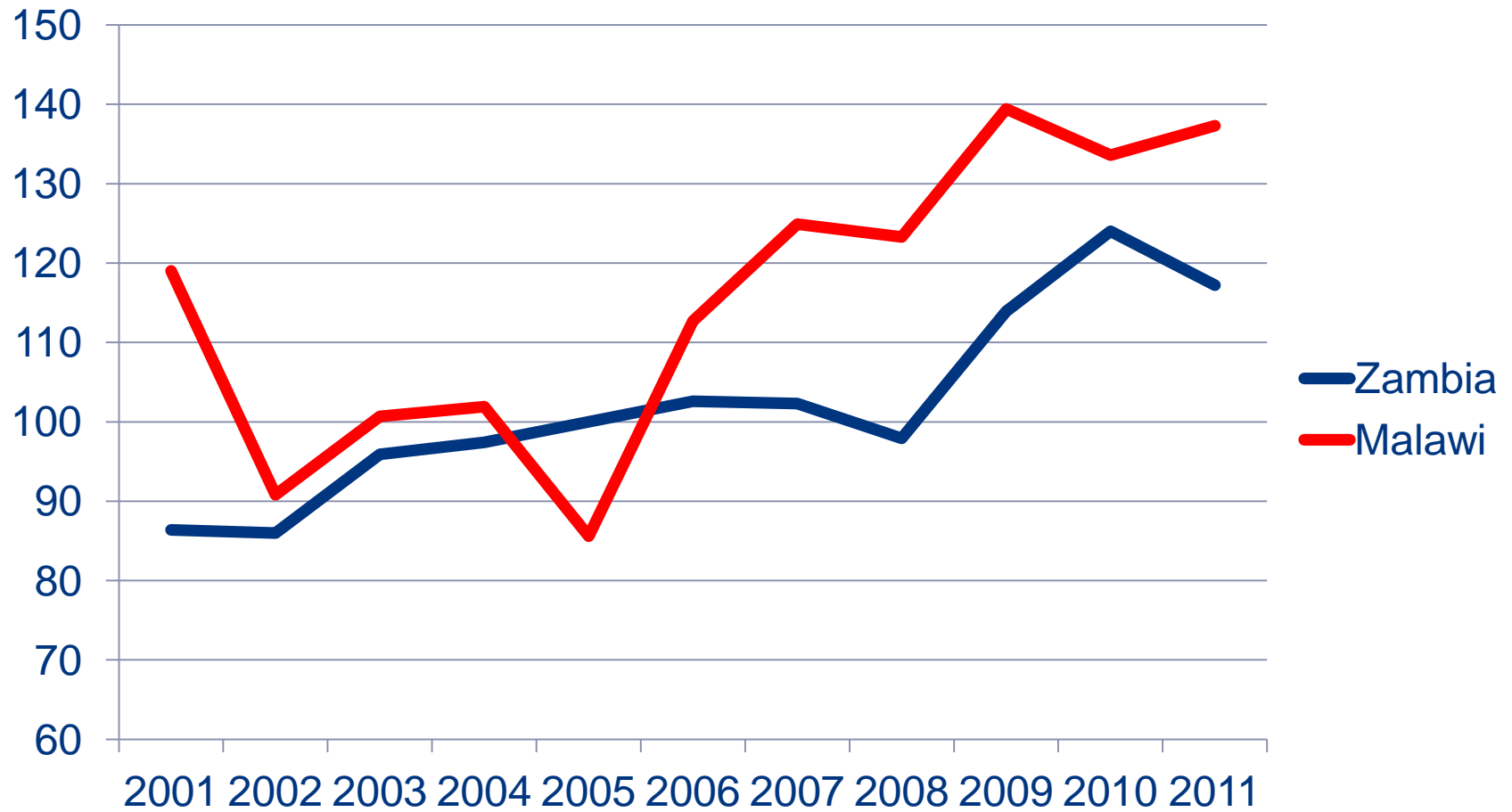
Relationship between agricultural growth and poverty reduction

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- Depends on farm structure (Johnston, Mellor):
 - uni-modal → positive association (Asia)
 - bi-modal → less so (e.g., Latin America)
- Sub-Saharan Africa (SSA) typically considered uni-modal
- However, rapid agricultural growth is not always associated with rural poverty reduction
 - Why?

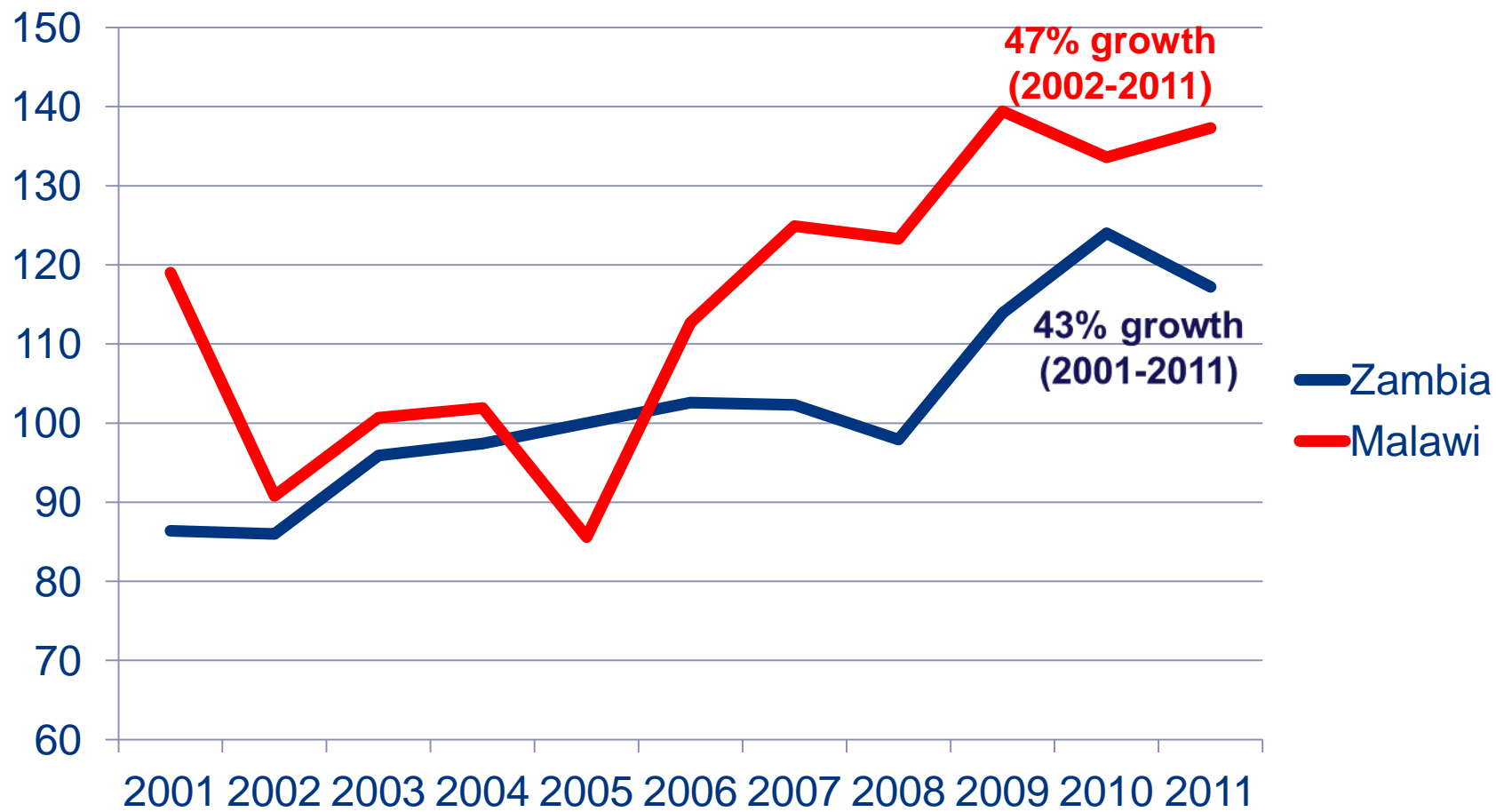
Agricultural Production Indices, FAOSTAT

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Agricultural Production Indices, FAOSTAT

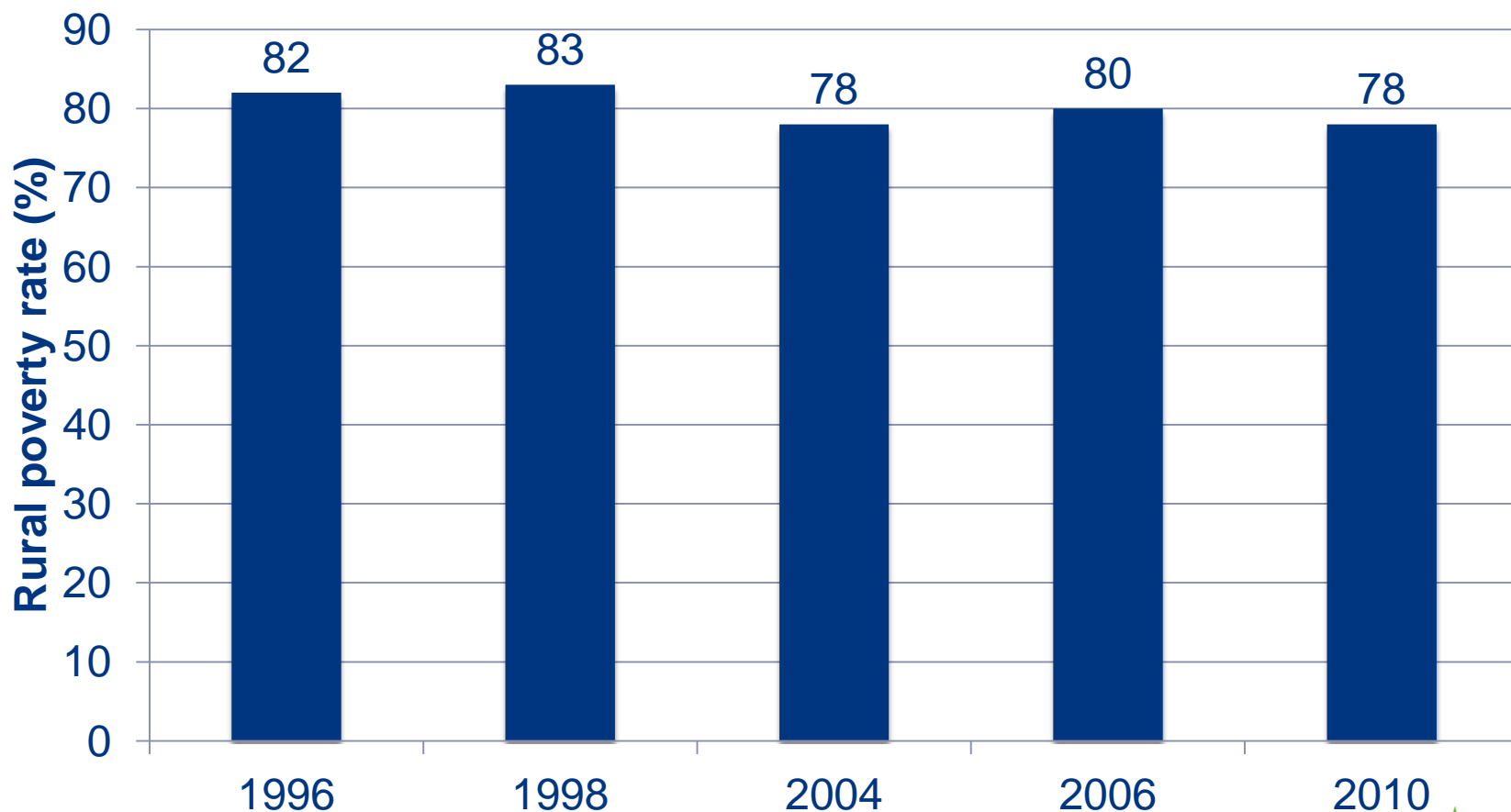
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Rural headcount poverty rates, Zambia

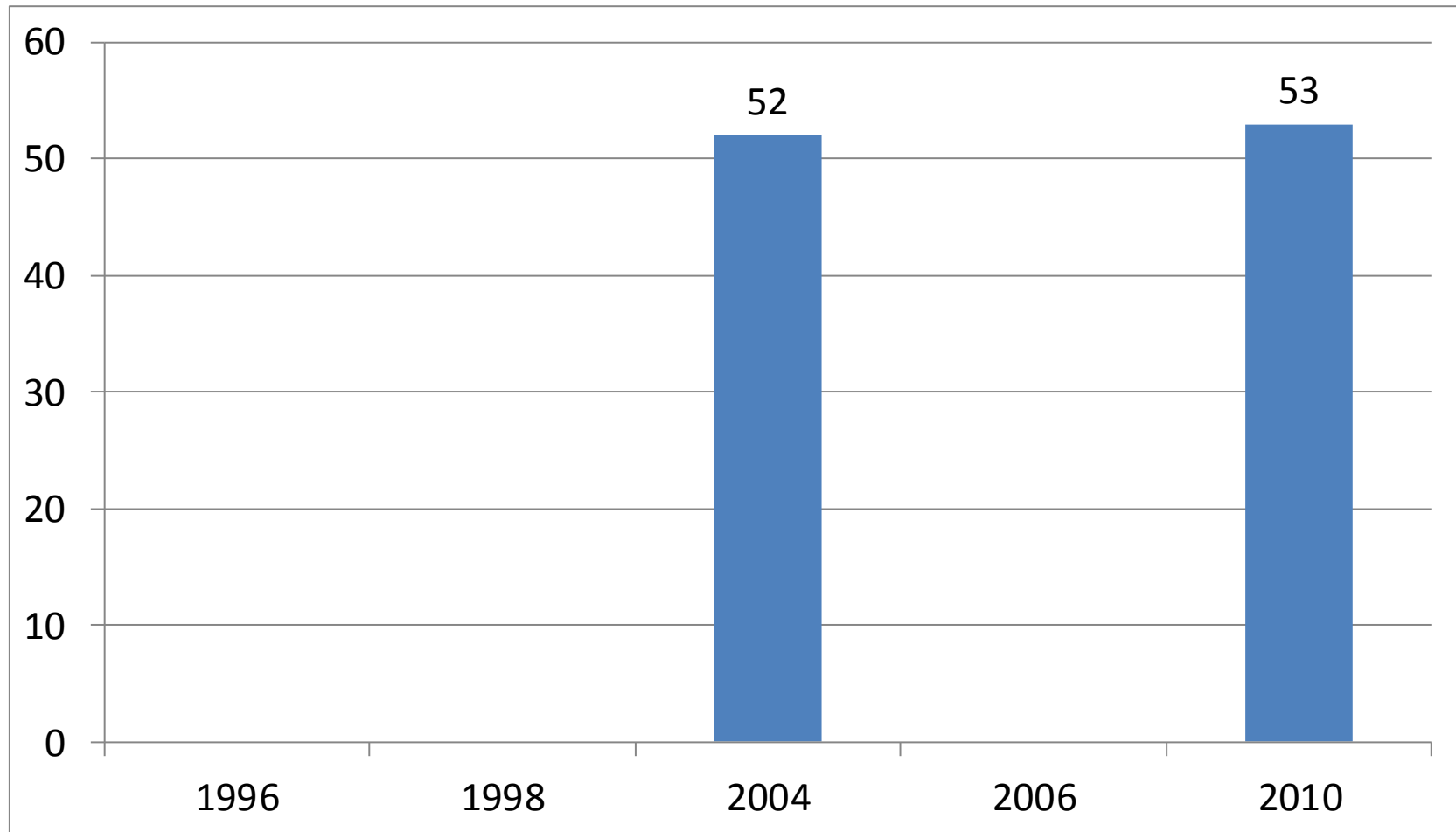
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Rural poverty rate (%)



Rural headcount poverty rates, Malawi

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Main conclusions

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1. The relationship between agricultural growth and poverty reduction depends on both:
 - a. farm structure
 - b. public sector policies and expenditure patterns



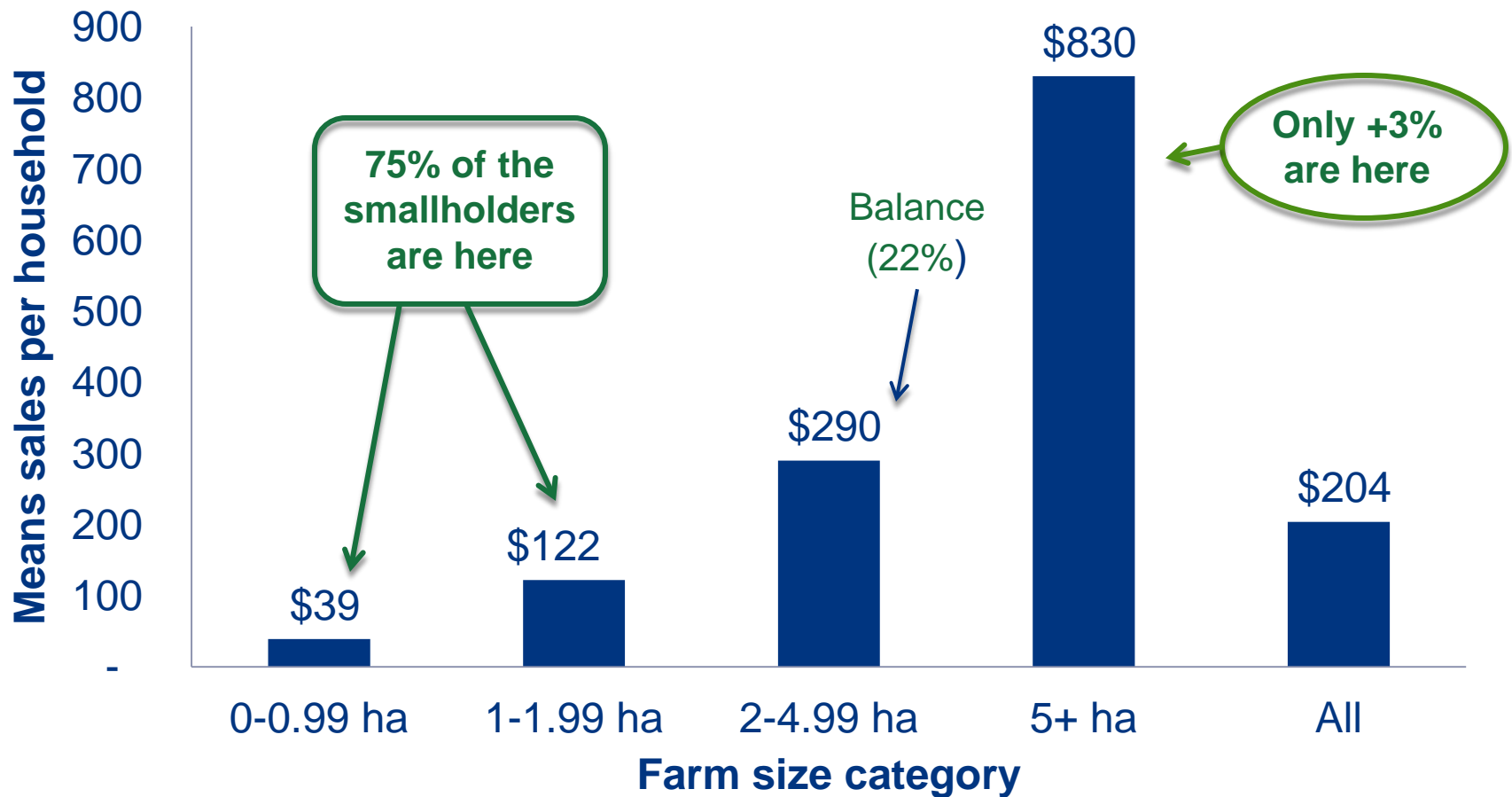
2. These relationships may reveal something about political objectives, or perhaps the need for more effective research and outreach...or both

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Decomposition of Agricultural Growth

Mean agricultural sales by farm size (US\$), Zambia

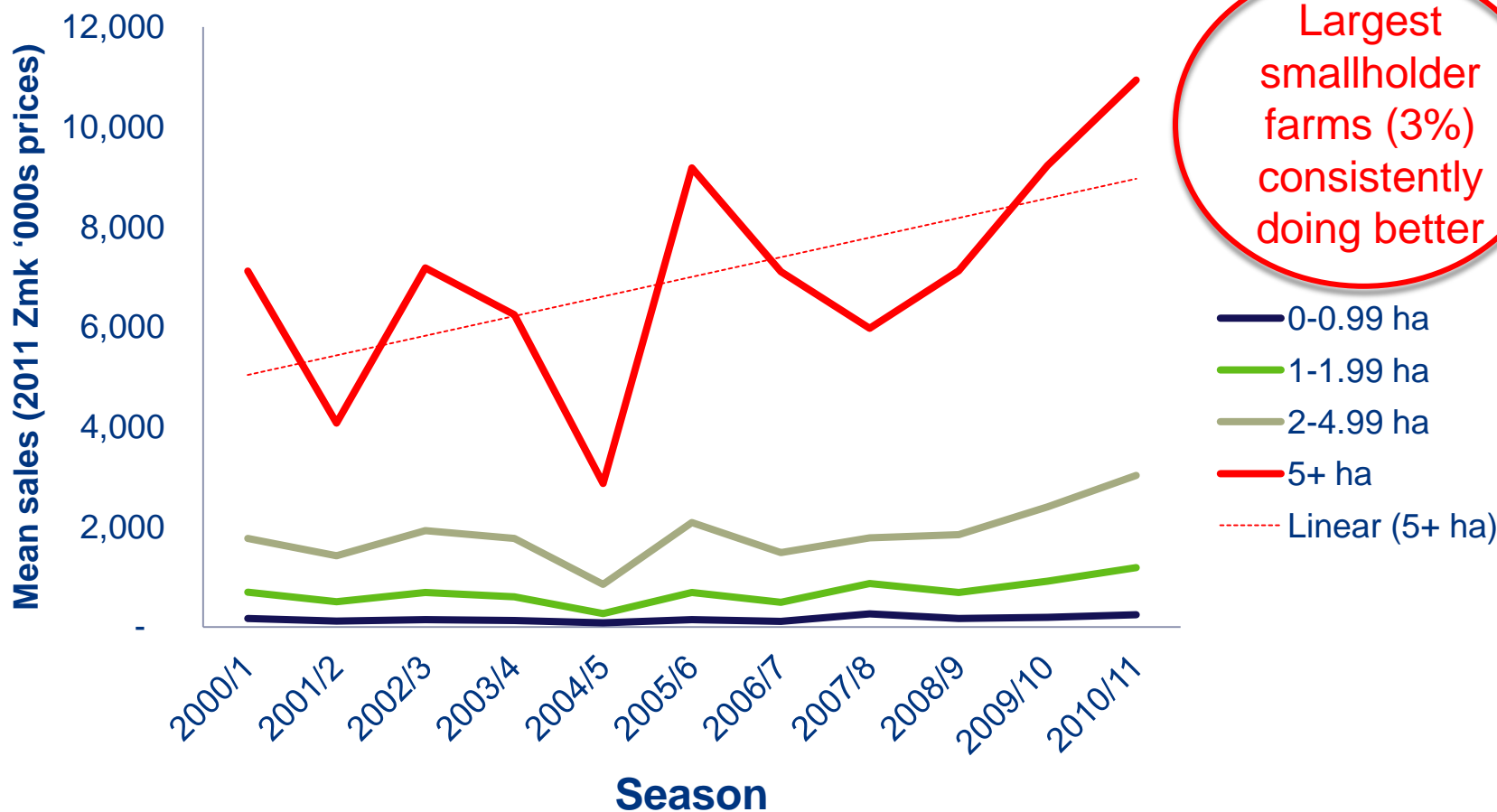
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Source: 2001 and 2008 SS and authors' computations

Crop sales by farm size over time (2011 Zmk prices)

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Source: MACO CFS 2000/1 to 2010/11 and authors' computations

Smallholder maize production growth from the baseline period (2005/06–2007/08) to 2010/11, by farm size category

Total smallholder maize production

Total area cultivated (maize + all other crops)	Average number of farms, 2005/06 to 2007/08, and 2010/11	% of Farms	Annual mean during 2005/06 to 2007/08 baseline period (MT)	2010/11 (MT)	Absolute change (MT) (D-C)	Change per farm (kg per farm) (E*1000/A)
	(A)	(B)	(C)	(D)	(E)	(F)
0-0.99 ha	616,867	41.9%				
1-1.99 ha	489,937	33.3%				
2-4.99 ha	315,459	21.4%				
5-9.99 ha	42,332	2.9%				
10-20 ha	6,626	0.5%				
Total	1,471,221	100%	1,383,735	2,786,896	1,403,161	953.7

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	(A)	(B)	(C)	(D)	(E)	(F)
0-0.99 ha	616,867	41.9%	212,335			
1-1.99 ha	489,937	33.3%	381,293			
2-4.99 ha	315,459	21.4%	490,102			
5-9.99 ha	42,332	2.9%	196,848			
10-20 ha	6,626	0.5%	103,156			
Total	1,471,221	100%	1,383,735	2,786,896	1,403,161	953.7

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0-0.99 ha	616,867	41.9%	212,335	309,324		
1-1.99 ha	489,937	33.3%	381,293	707,438		
2-4.99 ha	315,459	21.4%	490,102	1,130,527		
5-9.99 ha	42,332	2.9%	196,848	494,719		
10-20 ha	6,626	0.5%	103,156	144,888		
Total	1,471,221	100%	1,383,735	2,786,896	1,403,161	953.7

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0-0.99 ha	616,867	41.9%	212,335	309,324	96,989	
1-1.99 ha	489,937	33.3%	381,293	707,438	326,145	
2-4.99 ha	315,459	21.4%	490,102	1,130,527	640,425	
5-9.99 ha	42,332	2.9%	196,848	494,719	297,871	
10-20 ha	6,626	0.5%	103,156	144,888	41,732	
Total	1,471,221	100%	1,383,735	2,786,896	1,403,161	953.7

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	(A)	(B)	(C)	(D)	(E)	(F)
0-0.99 ha	616,867	41.9%	212,335	309,324	96,989	157.2
1-1.99 ha	489,937	33.3%	381,293	707,438	326,145	665.7
2-4.99 ha	315,459	21.4%	490,102	1,130,527	640,425	2,030.1
5-9.99 ha	42,332	2.9%	196,848	494,719	297,871	7,036.6
10-20 ha	6,626	0.5%	103,156	144,888	41,732	6,298.4
Total	1,471,221	100%	1,383,735	2,786,896	1,403,161	953.7

FISP fertiliser received (2010/11 crop season) and expected maize sales, 2011, by farm size category

Total area cultivated (maize + all other crops)	Number of farms	% of farms	% of farmers receiving FISP fertilizer	kg of FISP fertilizer received per farm household	% of farmers expecting to sell maize	Expected maize sales (kg/farm household)
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1-1.99 ha	489,937	33.3%	30.6%			
2-4.99 ha	315,459	21.4%	45.1%			
5-9.99 ha	42,332	2.9%	58.5%			
10-20 ha	6,626	0.5%	52.6%			
Total	1,471,221	100%	28.6%			

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0-0.99 ha	616,867	41.9%	14.3%	24.1		
1-1.99 ha	489,937	33.3%	30.6%	69.3		
2-4.99 ha	315,459	21.4%	45.1%	139.7		
5-9.99 ha	42,332	2.9%	58.5%	309.7		
10-20 ha	6,626	0.5%	52.6%	345.6		
Total	1,471,221	100%	28.6%	77.1		

FISP fertiliser received (2010/11 crop season) and expected maize sales, 2011, by farm size category

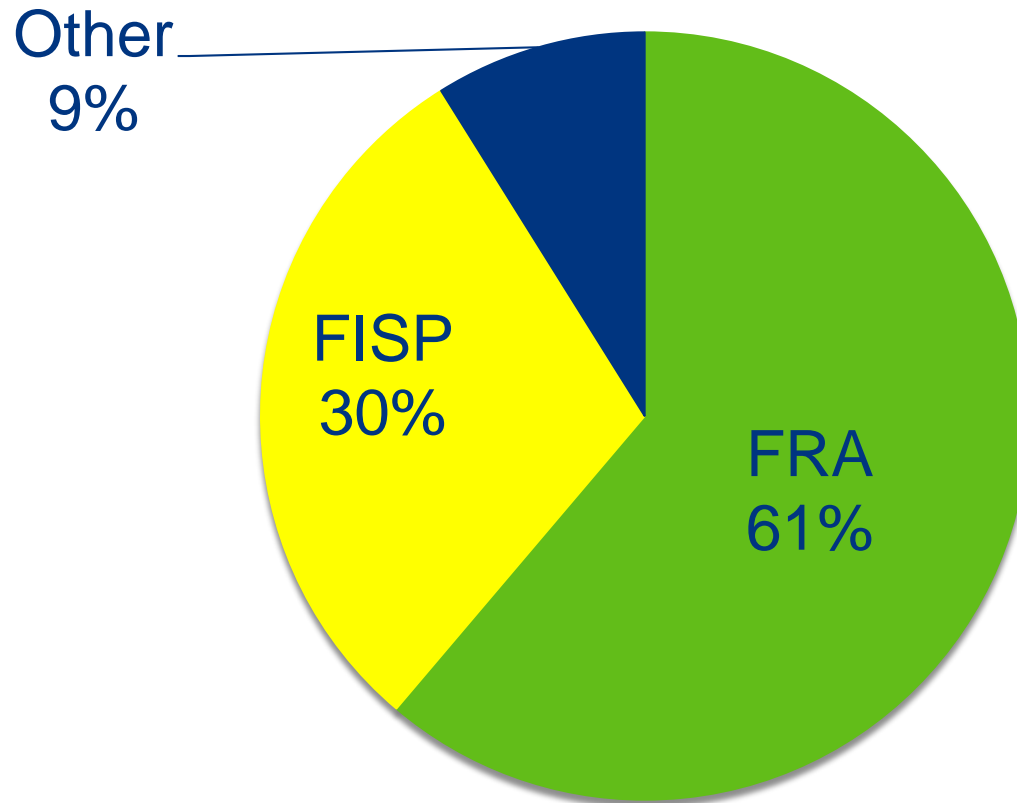
Total area cultivated (maize + all other crops)	Number of farms	% of farms	% of farmers receiving FISP fertilizer	kg of FISP fertilizer received per farm household	% of farmers expecting to sell maize	Expected maize sales (kg/farm household)
	(A)	(B)	(C)	(D)	(E)	(F)
0-0.99 ha	616,867	41.9%	14.3%	24.1	22.2	
1-1.99 ha	489,937	33.3%	30.6%	69.3	47.7	
2-4.99 ha	315,459	21.4%	45.1%	139.7	64.0	
5-9.99 ha	42,332	2.9%	58.5%	309.7	82.1	
10-20 ha	6,626	0.5%	52.6%	345.6	86.8	
Total	1,471,221	100%	28.6%	77.1	42.7	

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0-0.99 ha	616,867	41.9%	14.3%	24.1	22.2	135
1-1.99 ha	489,937	33.3%	30.6%	69.3	47.7	609
2-4.99 ha	315,459	21.4%	45.1%	139.7	64.0	1,729
5-9.99 ha	42,332	2.9%	58.5%	309.7	82.1	6,613
10-20 ha	6,626	0.5%	52.6%	345.6	86.8	15,144
Total	1,471,221	100%	28.6%	77.1	42.7	950

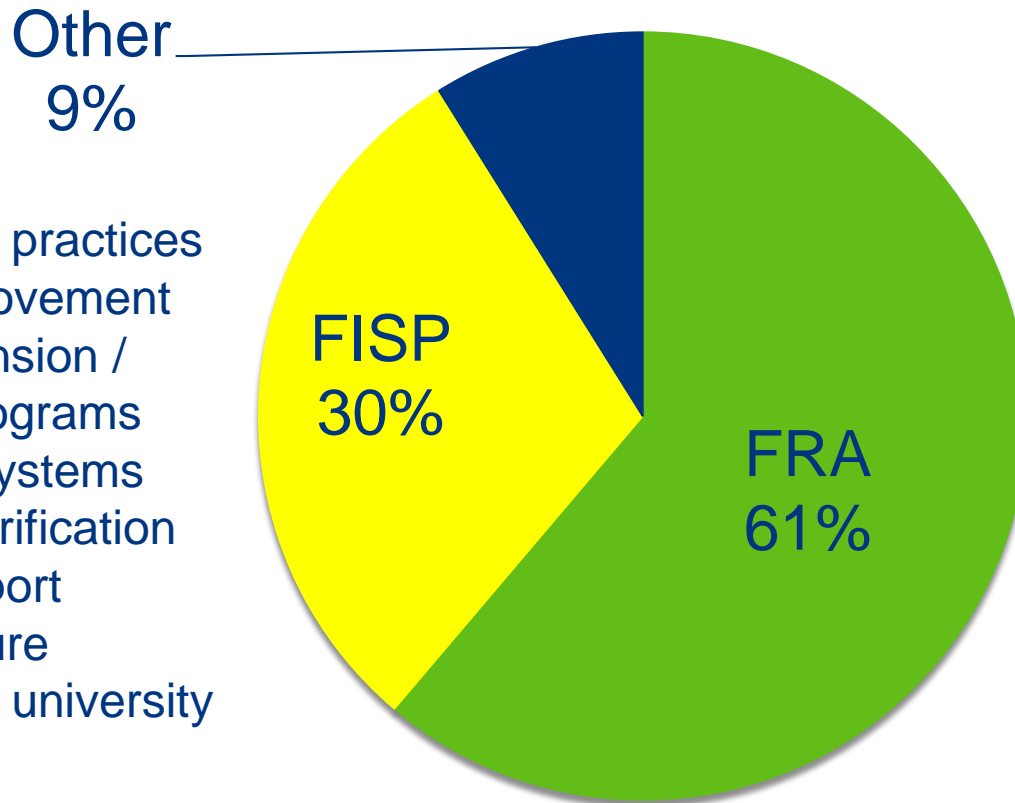
Public spending on agriculture, 2010

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Public spending on agriculture, 2010

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- Agronomic practices
- Seed improvement
- Farm extension / training programs
- Irrigation systems
- Rural electrification
- Road-rail-port infrastructure
- Land grant university system

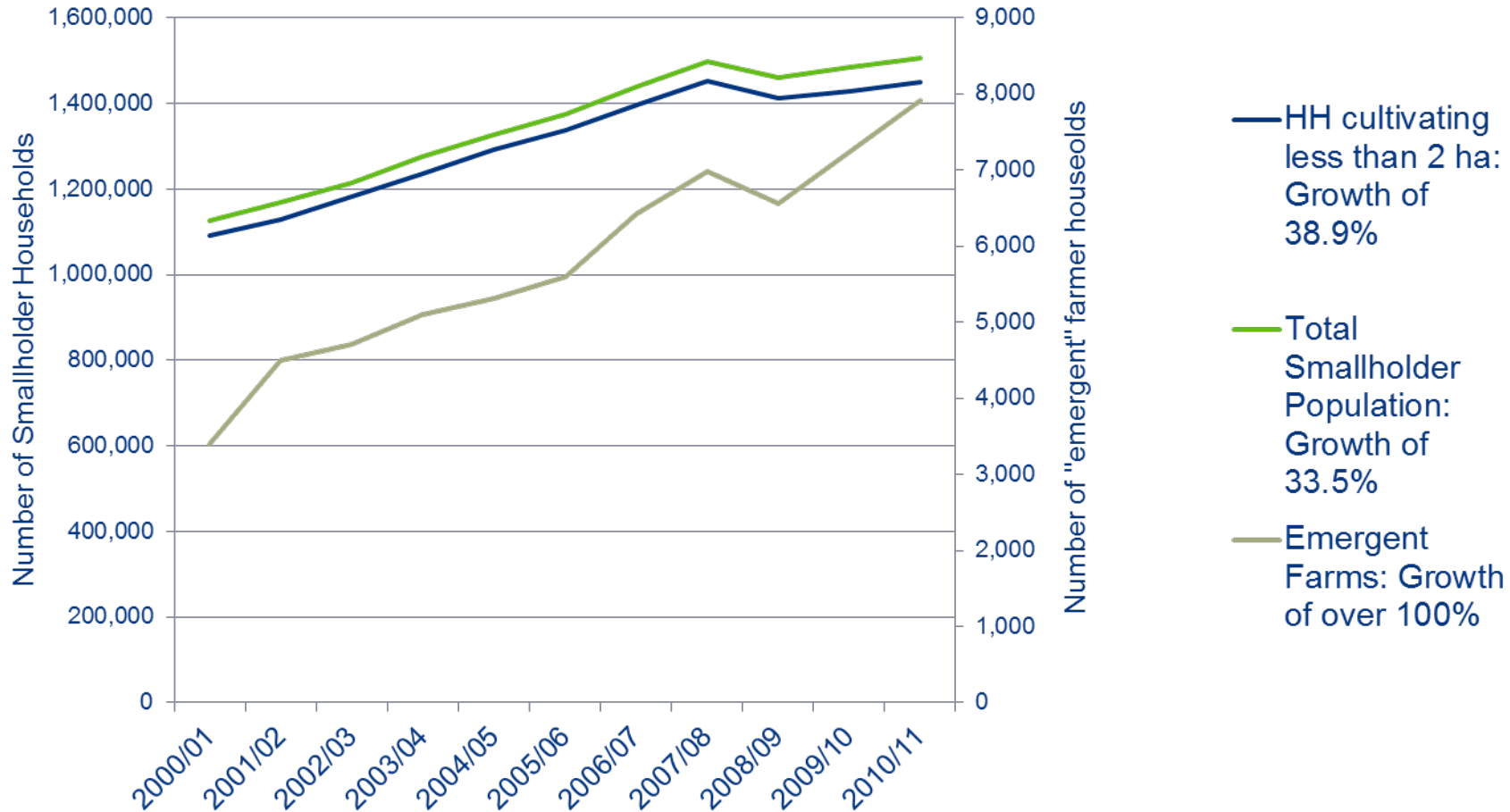
- Hertel (2011):
 - Major scope for endogenous farm intensification in response to higher food prices...but how broadly-based can the process be?

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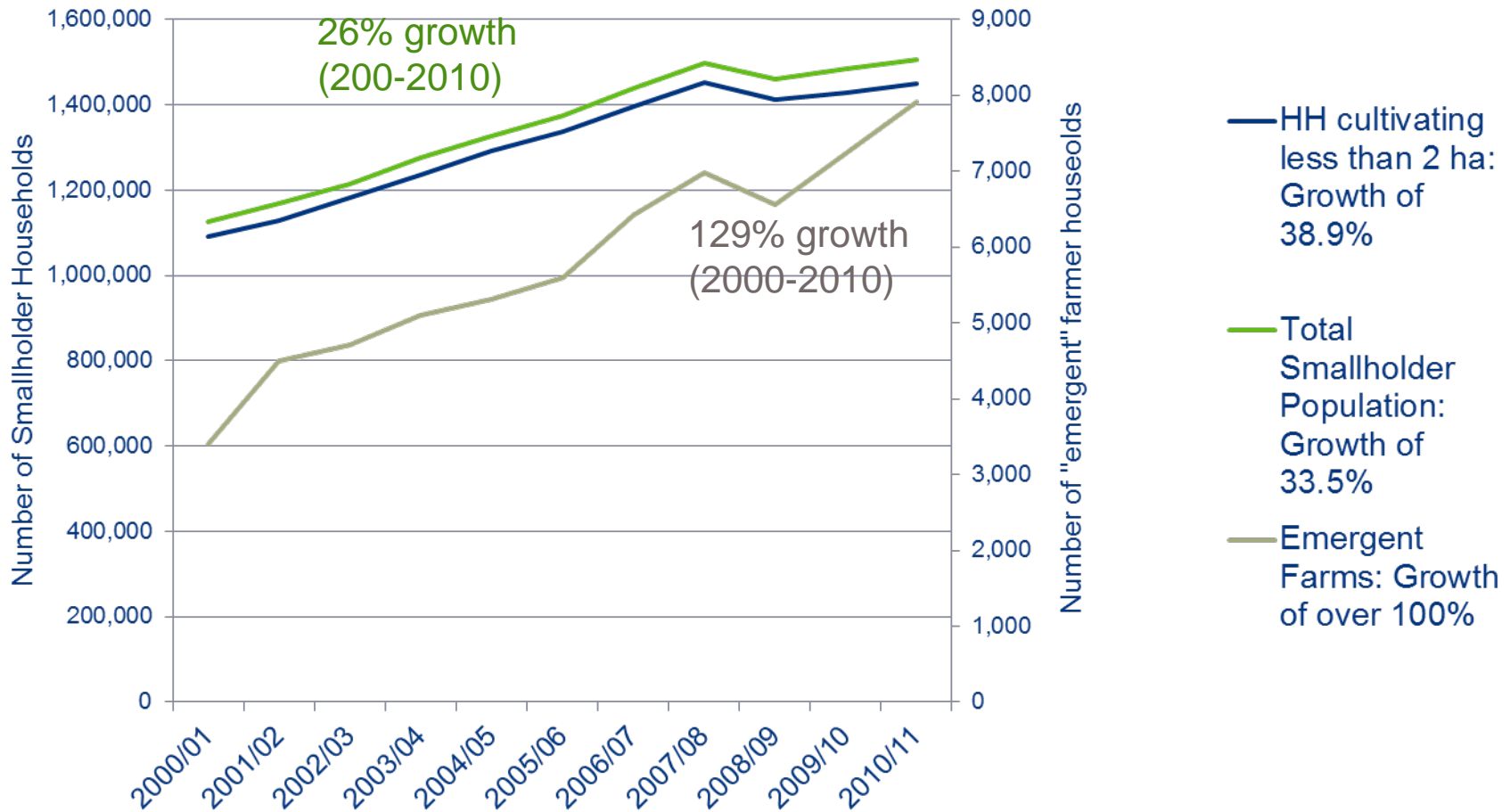
Who are the medium-scale farmers?

The rapid increase in “emergent” (medium-scale, 5-20 hectare) farmers: 2000-2011

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The rapid increase in “emergent” (medium-scale, 5-20 hectare) farmers: 2000-2011



1995 Land Act

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- 1995 Land Act permits transfer of land from customary tenure to state tenure
- Rationale: to promote investment in land development
- Traditional authorities vested with power to approve or deny application for conversion (little incentive to cede title to existing smallholders)

- **Semi-structured survey with 183 current emergent farmers in Zambia**
 - Designed to explore how the process of accumulation followed to reach current scale of operation:
 - Lateral Entry or
 - Smallholder-led growth trajectory?

	Have title to land	No title to land / usufruct tenure structure
Financed emergent farming entry through non-farm income	Group 1	Group 2
Entered emergent farming through growth of small-scale operation	Group 3	Group 4

Key Findings

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	Primarily involved in off-farm employment prior to acquiring farm		Primarily involved in farming → acquired more land	
	Titled land Group 1	Customary land Group 2	Titled land Group 3	Customary land Group 4
1. Count (n=)	30	70	7	76
2. Percent of total sample	16%	38%	4%	42%
3. Percent of total area cultivated	48%	21%	6%	24%
4. Have held a job other than as a farmer (% of respondents)	93%	96%	29%	46%
5. Formerly or currently employed in the public sector (% of respondents)	60%	50%	29%	15%

- Majority followed a lateral entry pathway into emergent farming
- The majority of the lateral entry farmers were or are public sector employees

Key Findings

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Growth pathway	Primarily involved in off-farm employment prior to acquiring farm		Primarily involved in farming → acquired more land	
	Titled land Group 1	Customary land Group 2	Titled land Group 3	Customary land Group 4
Tenure Status				
Mode of Land Acquisition				
a. Given by chief	0%	21%	13%	27%
b. Given by headman	0%	36%	0%	36%
c. Given by relative	8%	7%	25%	21%
d. Purchase, with title	55%	0%	0%	0%
e. Purchase without title	0%	17%	0%	3%
f. Rental	0%	10%	0%	2%
g. Inheritance	5%	10%	25%	11%
h. State land given to the farmer**	32%	0%	38%	0%

- Little evidence of farmers following an agricultural-led growth path using markets to acquire land:

Key Finding

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Growth pathway	Lateral Entry in Medium-Scale Farming		Agricultural-led Growth Strategy	
	Titled land Group 1	Customary land Group 2	Titled land Group 3	Customary land Group 4
Tenure Status				
Size of Initial Land Acquisition (ha)	Hectares			
25 th percentile	25	8	15	10
50 th percentile	49	16	30	19
75 th percentile	240	35	107	35
Mean	176.9	27.79	63	25.8

- Farmers with title to their land have most of their land uncultivated
- Even at the 25th percentile, medium-scale farmers began with relatively large land holdings:
 - No evidence in our sample of farmers beginning with 2 ha or less of land

Observations:

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1. Over half of the medium-scale farmers in Zambia were primarily involved in urban non-farm jobs prior to acquiring their farms
2. Most of the rapid increase in the number of medium-scale farms from 2000-2010 represents either
 - Farms that were already large by Zambian standards acquiring more land
 - People in non-farm activities diversifying into farming

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Literature on returns to public investments

Ranking of Alternative Investments: Meta-Study Evidence from Asia and Africa

	The Economist	IFPRI study
Policies		
Road investment		
Agricultural R&D		
Agricultural extension services		
Credit subsidies		
Fertilizer subsidies		
Irrigation		

Ranking with respect to *agricultural growth*: Evidence from Asia

	The Economist	IFPRI
Policies	1	
Road investment	2	1
Agricultural R&D	3	2
Agricultural extension services	4	
Credit subsidies	7	3
Fertilizer subsidies	5	4
Irrigation	6	5

Ranking with respect to *poverty reduction*: Evidence from Asia

	The Economist	IFPRI
Policies	1	
Road investment	2	1
Agricultural R&D	3	2
Agricultural extension services	5	
Credit subsidies	7	3
Fertilizer subsidies	4	4
Irrigation	6	5

Conclusions

- Agricultural growth has *the potential* to be an effective driver of rural poverty reduction
- Whether agricultural growth *actually* reduces rural poverty depends on how the agricultural growth occurs
 - Policies and programs targeted on the largest farms are likely to produce very concentrated benefits and lose opportunities to reduce poverty
 - Policies/programs targeted to the middle and poor strata of farmers must be done very carefully done – some approaches are ill-advised, but others are likely to be effective

- Examples of approaches where targeting the middle/low income farmers may promote the achievement of agricultural growth *with* poverty reduction
 - If input subsidy programs are to remain, target them to farmers who wouldn't otherwise purchase them, i.e., not the wealthiest farmers
 - Crop science, technologies/management practices appropriate for 1 hectare farms
 - Service delivery/extension for rural communities
 - Marketing education programs
 - Health and education programs more broadly

- Marketing board price supports for cereals provide the greatest benefit to those who sell the most, i.e., the largest farms
- Input subsidy programs targeting the largest farms tend to crowd out commercial input suppliers and erode investment in viable input retail systems that make inputs available more broadly to rural communities
- Transfer of land from customary to state land not likely to promote equitable agricultural growth, though there are exceptions

- Remember how green revolution achieved its agricultural growth – with poverty reduction:
 - Focused on small farms
 - Equitable, broad based agricultural growth
 - Improved seeds, water control, increased use of fertilizer, education, and health improvements were all crucial
 - Rising non-farm employment and gradual movement of marginal farmers into non-farm was a crucial part of the process

Thank You

