Food and Agriculture Organization of the United Nations

Evaluation of Zambia's Home Grown School Feeding program and of its combination with the Conservation Agriculture Scale-Up project

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Agenda

- [Background on HGSF and CASU]
- Theory of change
- Study design
- Results

Home Grown School Feeding (HGSF)

- **Objective**: Increased *school attendance*, cognition, and educational achievement while stimulating *farm production*.
- **How it achieves it:**
  - **School feeding (SF)**
    - One meal per day to children in pre-primary and primary (grades 1-7) public and community schools
    - **Coverage:** 38 districts and 1 m children
  - **Market access (MA)** through the **P4P**
    - Purchases of ***beans*** and ***peas***
    - Selects coops with storage capacity and sets purchasing price in advance
    - **Coverage:** 23 districts, hundreds of farmers in each district

Conservation Agriculture Scale Up (CASU)

- **Objective**: scale up conservation agriculture in order to increase productivity and *production of crops for food security* and income generation
- **How it achieves it:**
  - **Productive support** to farmers through conservation agriculture training and input vouchers
  - **Coverage**: more than 10 thousand lead farmers and 220 thousand follower farmers across 31 districts.

Why evaluate them jointly?

- Capture not only the impact of each program in isolation but also possible complementarities
  - Programs mutually reinforcing, mitigating or cancelling out each others' effects
  - May suggest ways to improve coherence of programs at the design or implementation stage
- Stronger *coherence* between agriculture and social protection interventions can assist in improving the productivity and welfare of poor small family farmers
- *Coherence* is about avoiding potentially conflicting interactions between programs and actively exploiting complementarities

Policy questions and coherence

- **CASU** supports *production*, but combining it with market access through the HGSF may translate into increased income
- **Market access** through HGSF should impact revenues and *income* directly. It is unclear whether this translates in improvements of other aspects of household welfare.
  - If farmers' production capacity lags behind, there may be unintended negative effects on food security through misallocation of time and resources and of the crop portfolio
  - Combination with a productive support program such as CASU may mitigate some of these negative effects

Agenda

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Objective of the evaluation

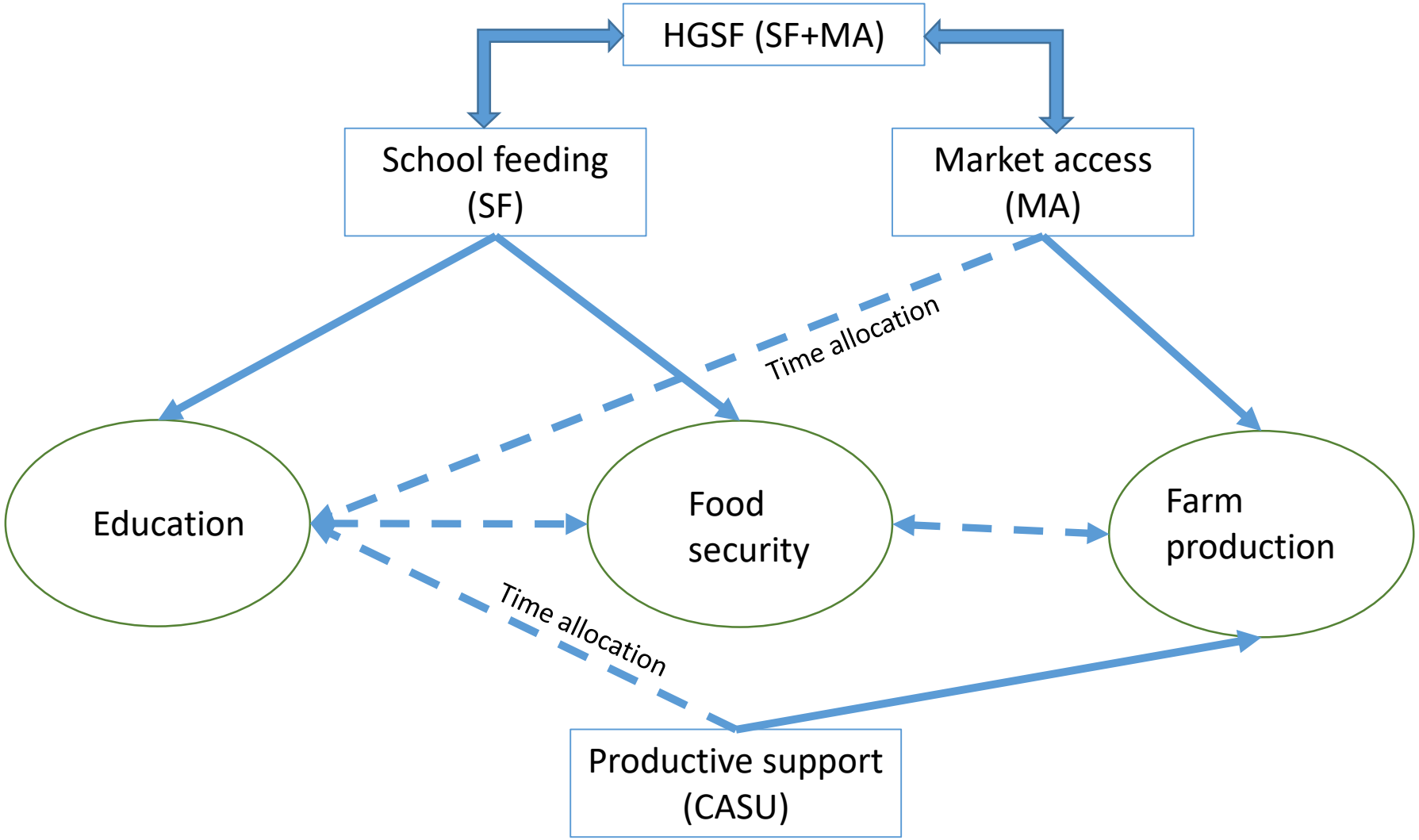
- The objective of the combined evaluation is to:
  - *Generate evidence* aimed at informing decisions around possible changes in the *program parameters* (targeting, coverage etc.)
  - Feed into the national *policy debate* about the most efficient ways of implementing and combining social protection and agricultural policies.
  - We use an ex post **impact evaluation** and an ex ante **microsimulation** to answer different questions

Research questions

- **Impact evaluation** - How the programs –alone or in combination – affect selected outcomes:
  - Schooling (attendance, dropout, pass rate etc.)
  - Food security (children & women DD, FIES)
  - Farm production (crop & livestock, crop diversification, technology adoption)
- **Microsimulation**
  - Simulate ex ante the impacts of programs on *poverty and extreme poverty* and the *impact of national school feeding* on attendance rates

Impact evaluation

Theory of change



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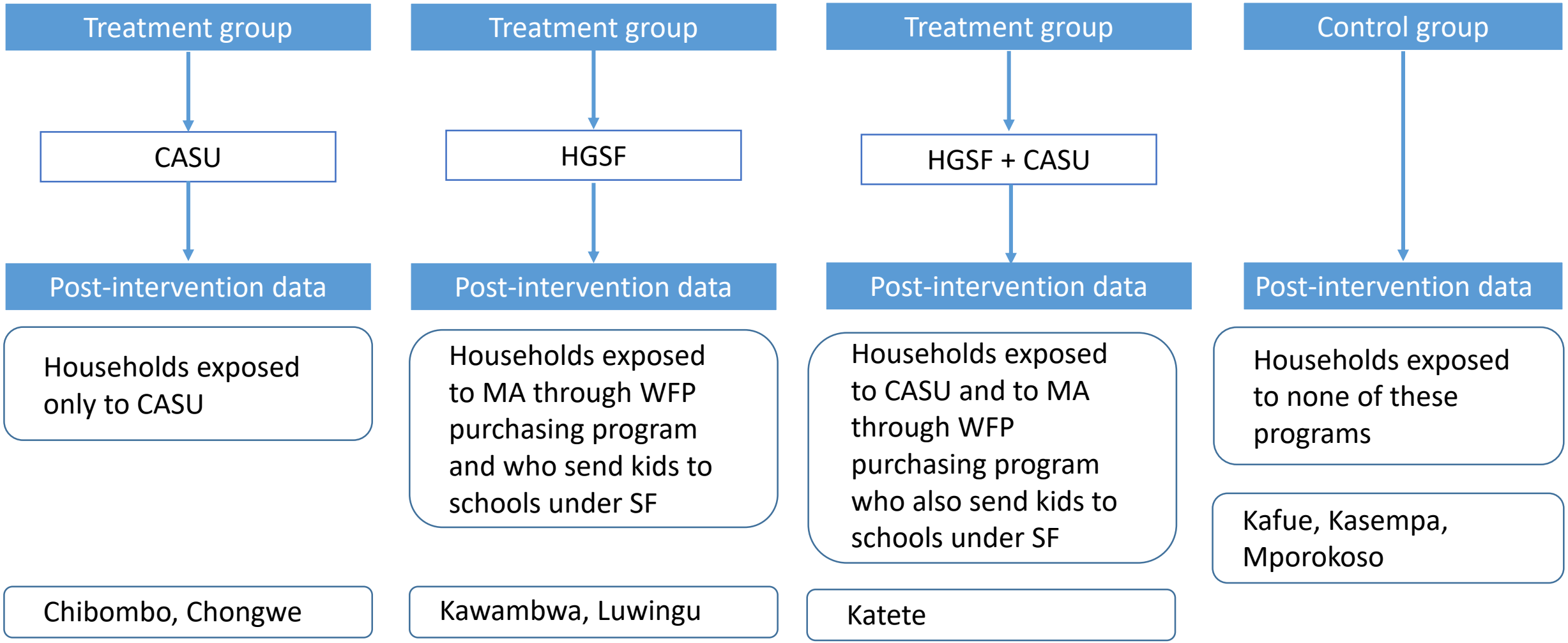
Study design



Selected attributes of the reweighted sample

Households size: 5 members ***
Female headed households: 17%
Single headed households: 17%
Age of head: 34
Education of head (years): 7 ***
Members aged 0-5 years: 1.7
Members aged: 6-14 years: 0.9
Members aged: 15-65 years: 2.4
Members aged >65 years: 0.1
Labour constrains: 2.8 unable to work for every able-bodied adult
Literacy rate: 59% of households member able to read
Operated land : 5.4 ha ***
TLU owned 2 years ago: 2.3

=> Reweighting significantly improves the comparability of the four groups

Questions?

Agenda

- Background on HGSM and CASU
- Theory of change
- Study design
- [Results]

Impact evaluation results in a nutshell

	CASU	Meals *per se*	HGSF	Both
Farm production	**++**		**+/-**	**++**
Crop production	+/-		+/-	+/-
Crop sales	+/-		++	+/-
Livst. production	++		- -	++
Tot. gross income	0		- -	++
CA adoption	**+++**		**0**	**+++**
FNS	**+++**	**++**	**- - -**	**++**
Schooling	**0**	**++**	**0**	**- - -**

Legend:
+++ Majority of impacts are positive
- - - Majority of impacts are negative
0 No Impacts

Results: crop production and sales

- **CASU** increases the share of farmers producing and selling maize, peas and groundnuts, while reducing the share of beans growers and sellers. Harvest and revenues of maize, peas and groundnuts increase.
- **HGSF** increases the share of beans growers and sellers. Sale revenues of beans also increase. A smaller share of farmers grows maize and the amounts of maize harvested drop.
- In the **combination arm** results are similar to the CASU only arm
- Households in all 3 arms increase crop diversification. Results stronger in the **combined** arm
- Households in all 3 arms increase the production of groundnuts
- Households in all 3 arms increase *total crop sale revenues*. The increase in smallest in the HGSF only arm and largest in the combined arm
- *Total gross income* reduces in the HGSF-only arm and increases in the combined arm

Results: livestock production and sales

- **CASU** increases herd size owned, the number of animals sold, the share of farmers producing byproducts
- **HGSF** reduces herd size and the share of farmers owning any livestock.
- In the **combination arm** results are similar to the CASU only arm, if not better

Crop production

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Share of farmers producing							
Beans	0.170	0.897	0.129	0.339	-0.217***	0.527***	-0.254***
Cowpeas	0.155	0.010	0.052	0.008	0.121***	0.001	0.031**
Maize	0.993	0.792	0.978	0.933	0.056***	-0.138***	0.046**
Groundnuts	0.491	0.430	0.547	0.180	0.292***	0.263***	0.368***
Quantity produced (kg)							
Beans	36.152	877.558	32.015	103.195	-90.748	363.076	-94.083
Cowpeas	26.284	1.944	9.449	0.909	18.962***	0.905	4.428
Maize	3,404	1,357	2,718	1,931	1,291***	-643***	607**
Groundnuts	206.473	139.694	329.450	63.727	118.907***	69.390**	238.409***

Crop sales

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Share of farmers selling							
Beans	0.096	0.713	0.095	0.231	-0.175***	0.462***	-0.162***
Cowpeas	0.072	0.004	0.045	0.003	0.045***	-0.002	0.026**
Maize	0.586	0.603	0.626	0.437	0.126***	0.090***	0.156***
Groundnuts	0.227	0.190	0.360	0.062	0.144***	0.125***	0.332***
Sales (kg)							
Beans	16.626	772.248	133.418	244.496	-161.862	306.820	-54.587
Cowpeas	34.836	2.222	25.030	0.358	39.420	0.652	4.010
Maize	2,441	1,130	1,281	957	1,432**	63	293
Groundnuts	80.528	244.720	146.420	17.386	60.310	228.872**	139.405

Crop sales

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Sales revenues (ZMK)							
Beans	126.452	1,206.020	107.109	340.401	-297.441***	804.082***	242.748**
Cowpeas	68.176	0.154	20.994	0.635	61.167**	0.246	4.668
Maize	2,976.262	1,513.287	2,312.221	2,130.637	839.839**	-357.504	75.694
Groundnuts	205.864	155.709	262.296	48.831	137.732***	140.423***	233.642***
Total revenues (ZMW)	2,722	2,111	3,291	1,439	996***	714**	1,548***

Livestock production

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Any livestock	0.843	0.439	0.803	0.609	0.185***	-0.139***	0.123***
TLU Owned (current)	2.360	0.489	2.628	1.137	0.532**	-1.000***	1.159***
TLU Purchased (1y)	0.228	0.064	4.370	0.178	0.014	-0.086	0.977
TLU Sold (1y)	0.485	0.078	0.202	0.206	0.173**	-0.120	0.025
Byproduct producer (share)	0.123	0.016	0.088	0.049	0.074***	-0.024	0.084***

Crop diversification

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Diversification indices							
Simpson index (value of harvest)	0.247	0.392	0.395	0.254	0.045***	0.158***	0.230***
Number of crops	2.360	2.121	2.854	1.568	0.458***	0.526***	1.147***

Total gross income

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Gross income (ZMK)	8,818.315	3,494.991	7,164.101	4,939.623	1,007.029	-1999.853**	2,118.716*

- Gross income includes crop, livestock, wage and NFB income
- Reduction in HGSF due to livestock and wage income
- Increase in Combined group due to livestock and NFB

Results: crop input use

- Total area of operated land is left generally unaffected, except for o slight reduction caused by CASU
- **CASU** leads to increased use of most variable inputs for crop production
- **HGSF** reduces the use of most crop inputs
- In the **combination arm** results are similar to the CASU only arm

Crop input use

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Operated land (ha)	5.835	3.779	5.122	3.163	-0.028**	0.014	0.009
Share of farmers using crop input							
Chemical fertili	0.846	0.260	0.672	0.383	0.427***	-0.150***	0.328***
Organic fertiliz	0.159	0.016	0.309	0.037	0.094***	-0.020	0.308***
Pest. and herb.	0.497	0.027	0.247	0.147	0.337***	-0.125***	0.100***
Share of farmers purchasing crop input							
Chemical fertili	0.559	0.172	0.470	0.237	0.332***	-0.104***	0.265***
Organic fertiliz	0.020	0.010	0.109	0.005	0.013	0.002	0.107***
Pest. and herb.	0.195	0.013	0.127	0.056	0.094***	-0.060***	0.065***

Asset and services use

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Share of farmers using asset							
Tractor	0.067	0.000	0.006	0.020	0.051***	-0.017	-0.010
Cultivator	0.041	0.001	0.056	0.009	0.023**	-0.016*	0.048***
Share of farmers purchasing service							
Tractor	0.027	0.000	0.002	0.006	0.017***	-0.006	-0.004
Cultivator	0.010	0.001	0.013	0.004	-0.001	-0.007	0.001

Livestock input use

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Share of farmers using livestock input							
Fodder	0.027	0.016	0.019	0.005	0.018**	0.014*	0.011
Feed	0.043	0.004	0.060	0.004	0.032***	0.002	0.093***
Vet Services	0.159	0.019	0.384	0.029	0.125***	-0.020	0.386***
Share of farmers purchasing livestock input							
Fodder	0.003	0.003	0.002	0.000	0.005**	0.002	0.000
Feed	0.027	0.001	0.039	0.003	0.022***	-0.001	0.075***
Vet Services	0.105	0.014	0.249	0.015	0.098***	-0.011	0.230***

Results: Conservation agriculture adoption

- **CASU** increases the share of farmers adopting at least one CA on a given crop and the use of specific CAs
- **HGSF** farmers substitute away from use of CA in maize and use them more for beans. MA also leads to increased use of crop rotations
- In the **combination arm** results are similar to the CASU only arm, if not better

Conservation agriculture techniques

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Share of hh using any CA by crop							
Beans	0.121	0.162	0.090	0.053	0.081***	0.104***	0.012
Cowpeas	0.126	0.001	0.047	0.003	0.092***	-0.005	0.030**
Maize	0.798	0.178	0.822	0.305	0.472***	-0.142***	0.529***
Groundnuts	0.326	0.064	0.321	0.041	0.261***	0.035	0.279***
Share of hh using specific CA on any crop							
Zero tillage	0.574	0.161	0.760	0.145	0.415***	0.011	0.557***
Crop rotations	0.697	0.364	0.788	0.191	0.442***	0.176***	0.608***
Inter cropping	0.353	0.215	0.536	0.169	0.158***	-0.002	0.288***

Questions?

Results: schooling

- **Meals** per se have a positive impact on schooling outcomes
- **CASU** and **HGSF** do not have significant impacts on the main *schooling indicators* for neither primary nor secondary aged children
- Their **combination** seems to have detrimental effects on most *schooling indicators*, especially on attendance

Results: children's time use

- **Time allocation channel**
  - **CASU** leads to an increase in *children's time* dedicated to school activities but also to work.
  - **HGSF** no impact on the time dedicated to school but reduces children's involvement in work and chores.
  - The **combined** treatment reduces children's time dedicated to schooling activities. It does not increase work involvement.

School meals alone → Schooling

	Primary school		Secondary school	
	Average	Effect	Average	Effect
Pass grade (share)	0.905	-0.063	0.943	0.060*
Drop out (share)	0.023	-0.036*	0.065	0.019
Currently attending (share)	0.970	0.053**	0.755	0.014
Days att. last 2 weeks (# days)	8.634	-0.350	9.168	0.106**
Attended prev. year (share)	0.814	0.048	0.811	-0.009

HGSF, CASU, Both → primary schools

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Pass grade (share)	0.929	0.905	0.818	0.886	0.049**	0.014	-0.120***
Drop out (share)	0.015	0.023	0.019	0.015	-0.002	-0.004	0.003
Currently attending (share)	0.985	0.970	0.869	0.974	0.017	0.018	-0.106***
Days att. last 2 weeks (# days)	8.894	8.634	4.313	8.808	-0.004	-0.362*	-4.009***
Attended prev. year (share)	0.833	0.814	0.684	0.851	0.037	-0.013	-0.176***
Spending on schooling	247.463	208.040	225.319	240.736	3.481	-75.582*	47.248

HGSF, CASU, Both → secondary schools

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Pass grade (share)	0.942	0.943	0.873	0.866	-0.005	0.073**	-0.015
Drop out (share)	0.067	0.065	0.056	0.066	-0.035	-0.004	-0.024
Currently attending (share)	0.782	0.755	0.805	0.791	0.037	-0.005	0.027
Days att. last 2 weeks (# days)	8.179	9.168	4.123	8.717	-0.379	0.334	-4.528***
Attended prev. year (share)	0.843	0.811	0.836	0.844	0.004	-0.013	-0.061*
Spending on schooling	959.152	1,111.959	673.328	945.210	-50.475	-58.016	-185.668

Children's time use: primary

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Fetching	0.950	1.019	0.743	1.029	0.007	0.039	-0.052
Chores	0.899	0.749	0.765	0.919	0.038	-0.236***	-0.082
School	4.320	2.983	2.754	3.334	1.184***	-0.259	-0.456**
On the farm	1.034	1.002	0.989	0.979	0.069	-0.251**	0.022
Livestock	0.411	0.119	0.089	0.139	0.321***	-0.050	-0.035
Non farm work	0.225	0.029	0.156	0.217	0.186***	-0.148**	0.045
Paid work	0.090	0.240	0.229	0.191	-0.132**	0.026	0.023

*Hours per day

Children's time use: secondary

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Fetching	1.236	1.514	1.180	1.449	-0.215**	-0.084	-0.435***
Chores	1.326	1.504	1.026	1.453	-0.167	-0.023	-0.396***
School	5.112	4.087	3.159	3.998	0.627**	-0.306	-1.041***
On the farm	1.792	1.920	1.952	1.763	-0.076	0.010	0.147
Livestock	0.631	0.239	0.312	0.196	0.416***	-0.011	-0.020
NFB	0.391	0.091	0.180	0.318	0.516***	-0.023	0.105
Paid work	0.153	0.257	0.286	0.257	0.051	0.082	0.009

*Hours per day

Results: Food and Nutrition Security

- **Meals alone** seem to improve children's and women's dietary diversity
- **CASU** associated with improvements of children's and women's dietary diversity and reduces food insecurity for the household
- **HGSF** associated with reductions of children's and women's dietary diversity and increases food insecurity for the household
- Their **combination** has positive effects on children's and women's dietary diversity

Results: Food consumption

- **CASU** leads to increases of consumption in a higher number of own produced crops without reducing food expenditure
- **HGSF** households substitute away from consuming own produced maize and into beans and reduce food expenditure
- Households in the **combined arm** increase consumption of some own produced crops but also reduce weekly food expenditure

Food and Nutrition Security

School Feeding → Food and Nutrition Security

	Average	Effect
wdds [0-9]	2.431	0.581***
cdds [0-9]	1.842	1.134***
fies [0-8]	5.765	0.619**

Food and Nutrition Security

HGSF, CASU, Both → Food and Nutrition Security

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
wdds [0-9]	3.099	2.431	4.071	3.029	0.310*	-0.587***	1.196***
cdds [0-9]	3.459	1.842	3.266	2.523	0.313*	-0.791***	0.647***
fies [0-8]	4.610	5.765	5.535	5.746	-1.054***	0.542***	0.063

Own produced and purchased consumption

	CASU	HGSF	Both	None	CASU vs Ctrl	HGSF vs Ctrl	Both vs Ctrl
Beans (kg)	11.847	270.757	11.440	20.997	-14.780	341.838***	-17.417
Cowpeas (kg)	9.940	0.279	2.863	0.686	5.870***	-0.242	-0.171
Maize (kg)	858.745	326.515	1,113.619	672.586	158.614**	-359.051***	315.301***
Cassava (kg)	0.181	21.460	2.159	19.304	-19.545**	11.241	-16.273
Potatoes (kg)	2.368	0.901	0.000	0.581	2.357	1.341	0.101
Sweet pot. (kg)	57.522	8.678	28.083	13.069	30.329***	-1.426	38.143***
Food cons exp ZMK	141.128	91.889	100.460	131.776	-1.714	-47.763***	-48.459***

Questions?

Discussion

Recap – CASU

- **CASU** meets its own stated objectives and impacts are generally positive. It increases farm production and food security without significant effects on schooling
  - Increased crop production and sales (except for beans)
  - Promoted crop diversification and the adoption of CA techniques
  - Encouraged input use
  - Increased livestock accumulation and livestock byproducts (**CA** stimulating complementarities between crop and livestock activities?)
  - Raised revenues from crop sales
  - No effects on school attendance or drop out. Improved pass rates (among primary-school children)
  - Increased the time children spend on- and off-farm, but also time spent in schooling activities
  - Improved children's and women's dietary diversity, as well as consumption (from purchases or own production) of maize and other crops (except cassava)

Recap – Meals alone

- **Meals alone** show encouraging effects on
  - Schooling
  - Food security

Recap HGSF

- HGSF meets its objective of increasing pulse production and sales, but falls short of improving food security, producing sometimes negative impacts. No significant effects on schooling
  - Increased production and sales of beans, though at the expense of maize cultivation and livestock raising
  - Increased total revenues from crop sales (less than in the other two arms), but reduced input use in agriculture
  - Reduced total gross income
  - Promoted crop diversification
  - Decreased dietary diversity (for both women and children) and increased food insecurity
  - No effects on drop out or school attendance among the primary-school children, but increased pass rates among secondary-school children
  - Reduced time spent by primary-school children in on- and off-farm labor, with no impacts on time spent on schooling activities
  - Reduced food expenditures and consumption of own produced maize, while increasing the consumption of own produced beans

Discussion HGSF

	CASU	Meals *per se*	HGSF	Both
Farm production	**++**		**+/-**	**++**
Crop production	+/-		+/-	+/-
Crop sales	+/-		++	+/-
Livst. production	++		- -	++
Tot. gross income	0		- -	++
CA adoption	**+++**		**0**	**+++**
FNS	**+++**	**++**	**- - -**	**++**
Schooling	**0**	**++**	**0**	**- - -**

Discussion HGSF

- Possible unintended detrimental effect of MA in the HGSF group considering the positive effect of SF alone. Which channel?
  - Despite the rise in crop sales revenues – although less than in the CASU or combined groups - total gross income reduces.
    - => May explain negative impacts of HGSF on FNS through reduced spending on food
    - => MA may be neutralizing positive effects of meals on school outcomes through reduced spending on schooling (fees, transport, uniforms etc.).
  - Substituting beans for maize and crops for livestock may worsen FNS outcomes (Beans less nutritious than maize? Longer gestation period? Intercropping possible? Maize is a staple and beans are not)

Discussion HGSF

- Agro-Economic explanations
  - Increased market participation for some farm products may require shifting from producing other crops or moving away from other income generating activities.
  - The *forgone **revenues*** from moving away from other crops (maize) and livestock production are not compensated from the increase in beans revenues.
    - Farmers may be prioritizing safer but lower income from P4P beans purchases, although maize has a safe market too (FRA). P4P sets prices in advance while FRA after harvest, so, P4P less uncertain.
    - Land use does not increase. Reallocation of resources and crop portfolio. Price ratio beans/maize not high enough to compensate the yield ratio beans/maize. *Either productivity or price of beans need to increase*
  - To increase **productivity**, productive support in seeds/fertilizers may be needed. Link HGSF-FSP? Target MA to FSP beneficiaries? Link mutual beneficial for both programs, helps FSP beneficiaries to graduate to FISP by providing a market and helps MA beneficiaries meet extra demand.
  - Pulses revenues could be increased by setting a *higher purchasing **price***. No increases in land may mean no constraints in increasing scale of production.
  - Farmers may face ***constraints*** that limit productive capacity and the ability to respond to the extra demand from P4P without sacrificing other sectors of farm production (other crops, livst) and of household welfare (food security, schooling).

Discussion HGSF

- Program design explanations
  - How do contract prices fixed in advance compare to market prices at the moment of purchase?
  - Farmer *obliged* to sell even at below market prices?
  - Are inflation expectations taken into consideration when fixing the forward price?
  - Is targeting of households adequate? Are households in a position to fulfill the extra demand without compromising other aspects of wellbeing?
    - HGSF farmers may face tougher constraints (land, access to inputs etc) impairing their ability to expand overall production leading to substitution within crops (maize -> beans) and from livestock to crops
  - Timing and market signals of market access programs may be very important to trigger agricultural process or to avoid disruptions of production cycle (land preparation, seedling, cultivation, harvest, collection and commercialization)

Discussion HGSF

- Program implementation explanations
  - Coop <–> farmer price arrangements, profit reinvestment? Is the deal working well for the farmer?
  - Is participation in the program stable over the years for the single farmer?
  - How long does a single farmer stay under the program?
  - Are expectations over the future participation stable and fulfilled?
  - Timing and predictability in terms of signature of contracts, collection/delivery of food produced and payments are key

Recap – combined arm

- The **combination of programs** had positive impacts on a wide number of farming and FSN outcomes
  - Increased crop production and sales. For some crops, more than CASU alone
  - Increased crop input use
  - Increased total gross income
  - In term of crop diversification, shows better results than either standalone program
  - Accumulated more livestock and produced more byproducts. Sometime more than CASU alone
  - Increased adoption of CA techniques to a larger extent than CASU farmers
  - Had higher revenues from crop sales than households in either standalone program
  - Improved women's and children's dietary diversity, and increased maize (and sweet potatoes) consumption – more than among CASU farmers
- The **combined programs** have negative impacts on schooling outcomes for primary school aged children
  - Reduced passing grade
  - Reduced share of those attending
  - Reduced number of days attended

Discussion – combined arm

	CASU	Meals *per se*	HGSF	Both
Farm production	**++**		**+/-**	**++**
Crop production	+/-		+/-	+/-
Crop sales	+/-		++	+/-
Livst. production	++		- -	++
Tot. gross income	0		- -	++
CA adoption	**+++**		**0**	**+++**
FNS	**+++**	**++**	**- - -**	**++**
Schooling	**0**	**++**	**0**	**- - -**

Discussion – combined arm

- The **combination of programs** had positive impacts on a wide number of farming and FSN outcomes
  - HGSF shows mixed productive effects and negative FNS effects, but when combined with CASU, effects turn positive
    - Prevailing influence of the CASU treatment?
    - Combination triggers complementarities?

Discussion - combined arm

- Is commitment to the productive interventions (P4P, CASU) leading farmers to sacrifice aspects of household welfare? (*time allocation channel*)
  - Conflicting interactions among the productive components (MA, CASU) and the social protection component (school meals)?
  - Lack of evidence of greater work involvement of children although the number of daily hours dedicated to schooling does reduce significantly.
- Are negative effects on schooling due to unintended consequences of the market-access incentive (*income channel*)?
  - Total gross income increases, no evidence of reduced spending on schooling
  - Income growth alone may be insufficient to translate into increased schooling. There is value in knowing whether income gains translate into other gains (soft conditions?)
- *Intra-household bargaining power channel*
  - Women empowerment and control over income and resources may play a role in how income is spent

Conclusions

- Production and consumption decisions are all interdependent inside the farm household
- For this reason, productive support and social programs should not operate in isolation as silos.
- How can we continue to support income generating activities without the household having to sacrifice some aspects of welfare (food security or schooling of children)
- Insufficient coordination among interventions may lead to conflicting impacts on certain outcomes
- Links and complementary among programs (+Cash, Female Empowerment) should be promoted to mitigate negative unintended impacts of a single program in a given sector of household welfare or production.
- Coherence is not automatic. Not simply obtained by *accidental overlap* in a given area, it requires intention and specific design/implementation changes
- For increased coherence, multi-stakeholder management and coordination mechanisms are required

Conclusions

- Some questions remain unanswered (why and how CASU, HGSF and their combination affect schooling)
- Upcoming *qualitative* study to shed more light on mechanisms and interpretation of results

Microsimulation

Contribution of microsimulation

The impact evaluation found some measurable impacts of CASU and HGSF

The results, however, concern geographically limited areas and populations

Microsimulation allows:

- Exploring the impacts of the programmes on nationwide poverty and extreme poverty rates and income distribution
- Calculating the overall impact of school feeding on school attendance rates and food consumption
- Easily generating several scenarios with different assumptions or programme coverage

Methodology – CASU and HGSF

1) Use the evaluation data to estimate *who participates* in CASU and HGSF market access given household characteristics

2) Use the same model to simulate the *beneficiaries* in the Rural Agricultural Livelihoods Survey 2015 data, given the total number of beneficiaries per district

3) Add the estimated impact of programmes on total monthly income per adult equivalent to the income of simulated participants

5) Explore poverty impacts and income distribution

Methodology

The impact of CASU, market access and combined programmes on gross household income per adult equivalent per month, estimated from the impact evaluation data

(2015 poverty line 214 kw per adult equivalent, extreme poverty 152)

1) CASU: +55 Kwacha (44 kw, 2015 prices)
2) HGSF market access: -40 kwacha (32 kw 2015 prices)
2) CASU together with market access: +60 kwacha (48 kw 2015 prices)

Simulated coverage scenarios

HGSF:

- 2017 coverage
- Expansion to double the size of the scheme

- CASU:
  - 2017 coverage
- Combined programmes:
  - 2017 coverage of both programmes
  - 2017 CASU with expanded HGSF

Results

The simulated participants of the programmes in RALS are

Less poor that non-participants (who have 65% poverty rate)

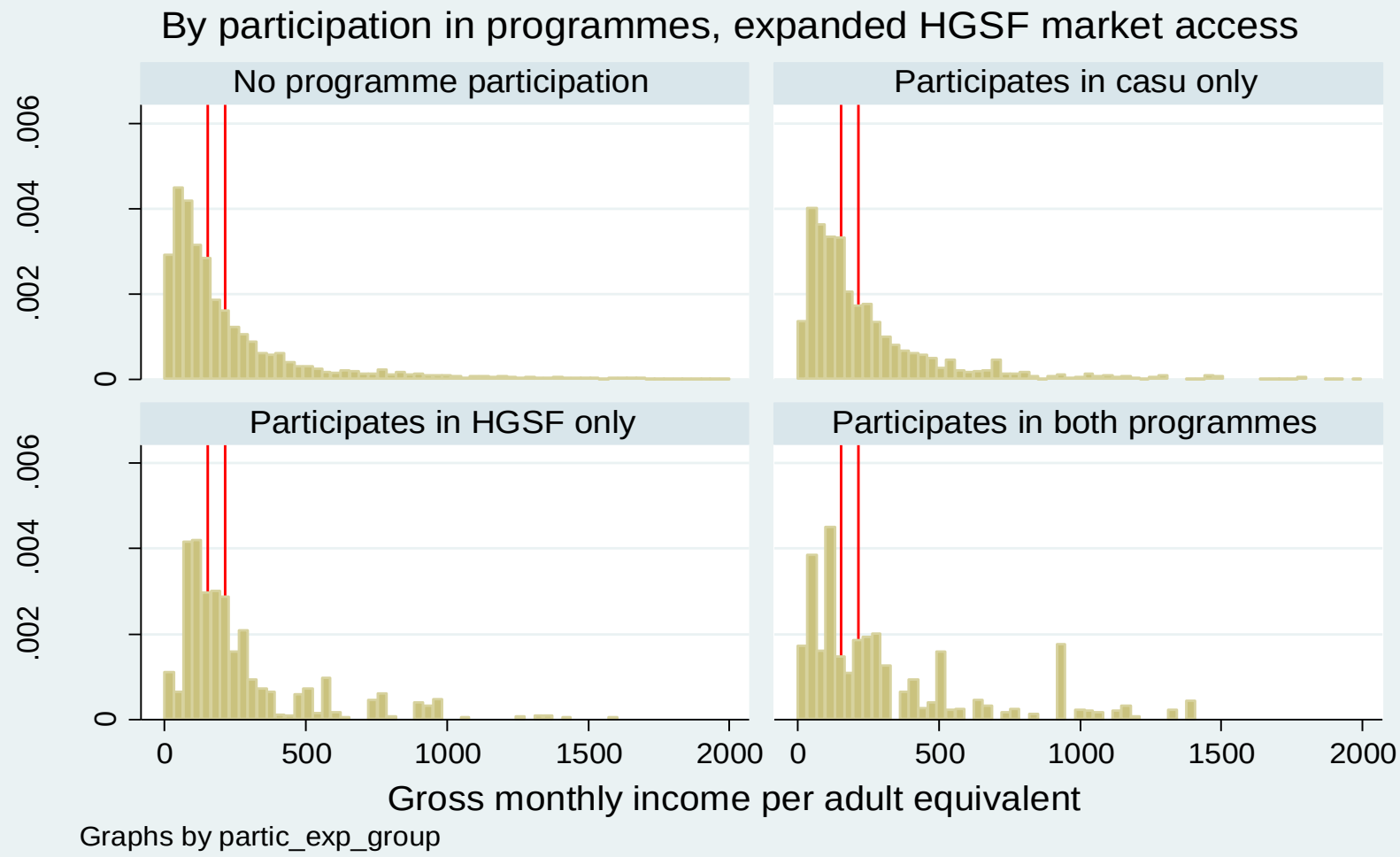
but a relatively high degree of pre-programme poverty amongst them:

CASU participants (59%)

HGSF participants (2017 participants 53%, expanded scheme 53%)

Participants in both programmes (2017 50.2%, expanded HGSF 47.5%)

Distribution of gross income of smallholder households



Key results

Participation in CASU *increases the income of participants and subsequently decreases the poverty rate and the extreme poverty rat*e:

1) Overall 1.2 percentage point (poverty) and 2 pp (extreme poverty)

2) In districts where CASU is present 2 pp and 3.5 pp

3) Among CASU participants 8.1 pp and 13.9 pp.

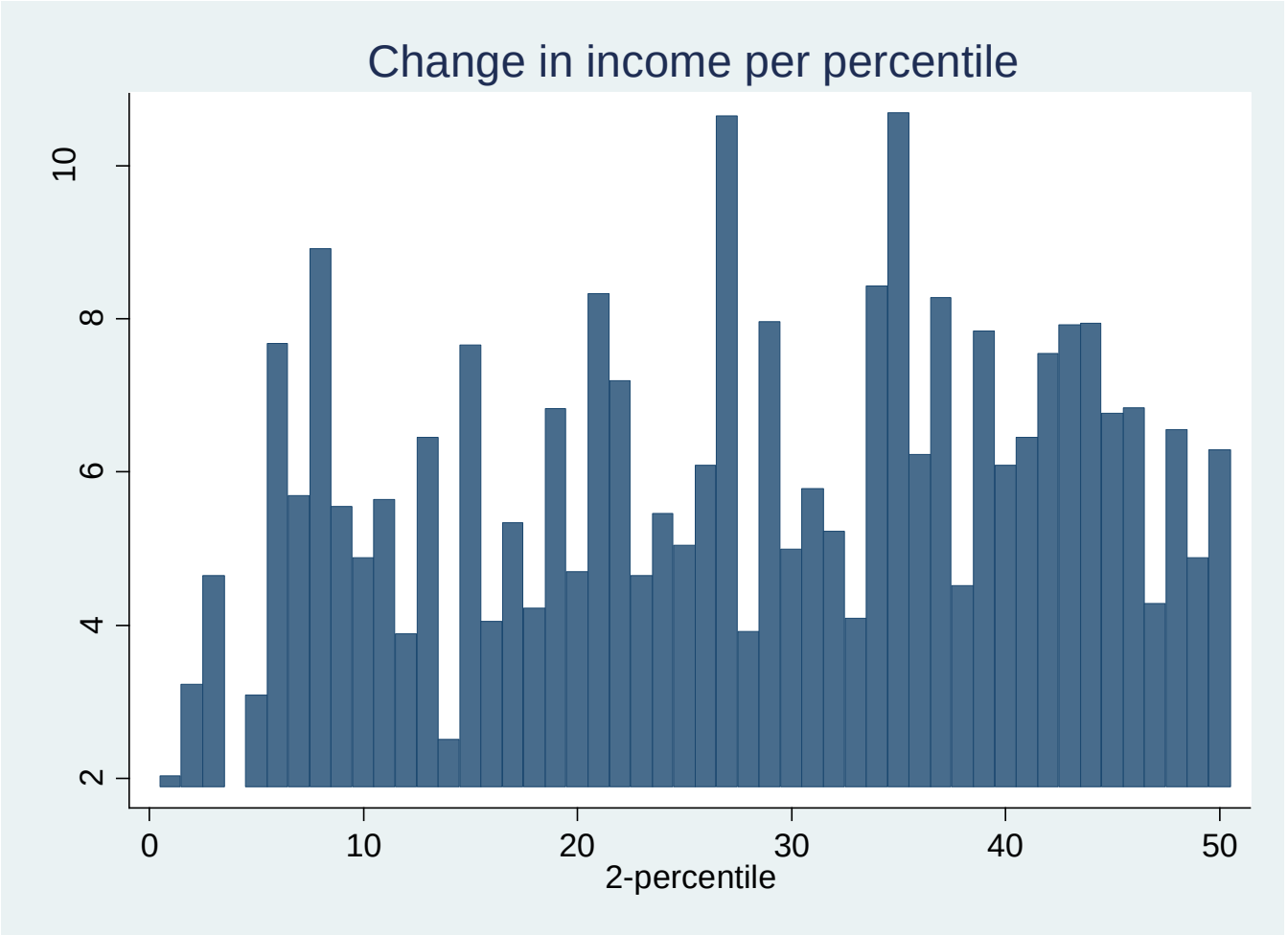
Key results

HGSF market access is associated with *lower income*, but impacts on poverty overall or for the whole districts are small: coverage is very low.

- For the simulated participants, poverty increases 6.9 pp for 2017 participants and 7 pp for the participants of the expanded scheme (expansion involves less well off households)
- Given the distribution of income among beneficiaries, HGSF market access would have **potential** to reduce poverty among the beneficiaries if the impact was positive

Key results

- *However*, when *both* programmes and the *combined* effects are taken into account, the total impact of CASU and expanded market access is to:
  - **reduce** overall poverty by 1.6 pp and extreme poverty 2.9 pp in the districts where either programme is present.



Income increases (difference in the average income before and after CASU and expanded HGSF) are distributed throughout the income distribution.

Measures of income inequality decrease, Gini coefficient from 0.626 to 0.618 and P90/P10 to 18.42 to 17.54

School Feeding - methodology

- Use LCMS 2010 and 2015 rural households to model primary school attendance, determined by household demographic and economic characteristics and the presence of school feeding
- There is a large variation across districts: the estimation also takes this into account
- In urban areas the observed impact of school feeding is small (possibly due to targeting of programmes or already high school attendance): in further analysis concentrate on rural areas

School Feeding - methodology

1) By using the model, simulate scenarios with different coverage of school feeding in LCMS 2015:

- No school feeding
- 2017 or current coverage
- Universal school feeding

2) Explore differences in primary school attendance rates

3) Impact on consumption/food consumption: assume the value transfer is either allocated solely to the child or divided equally among adult equivalents in the household

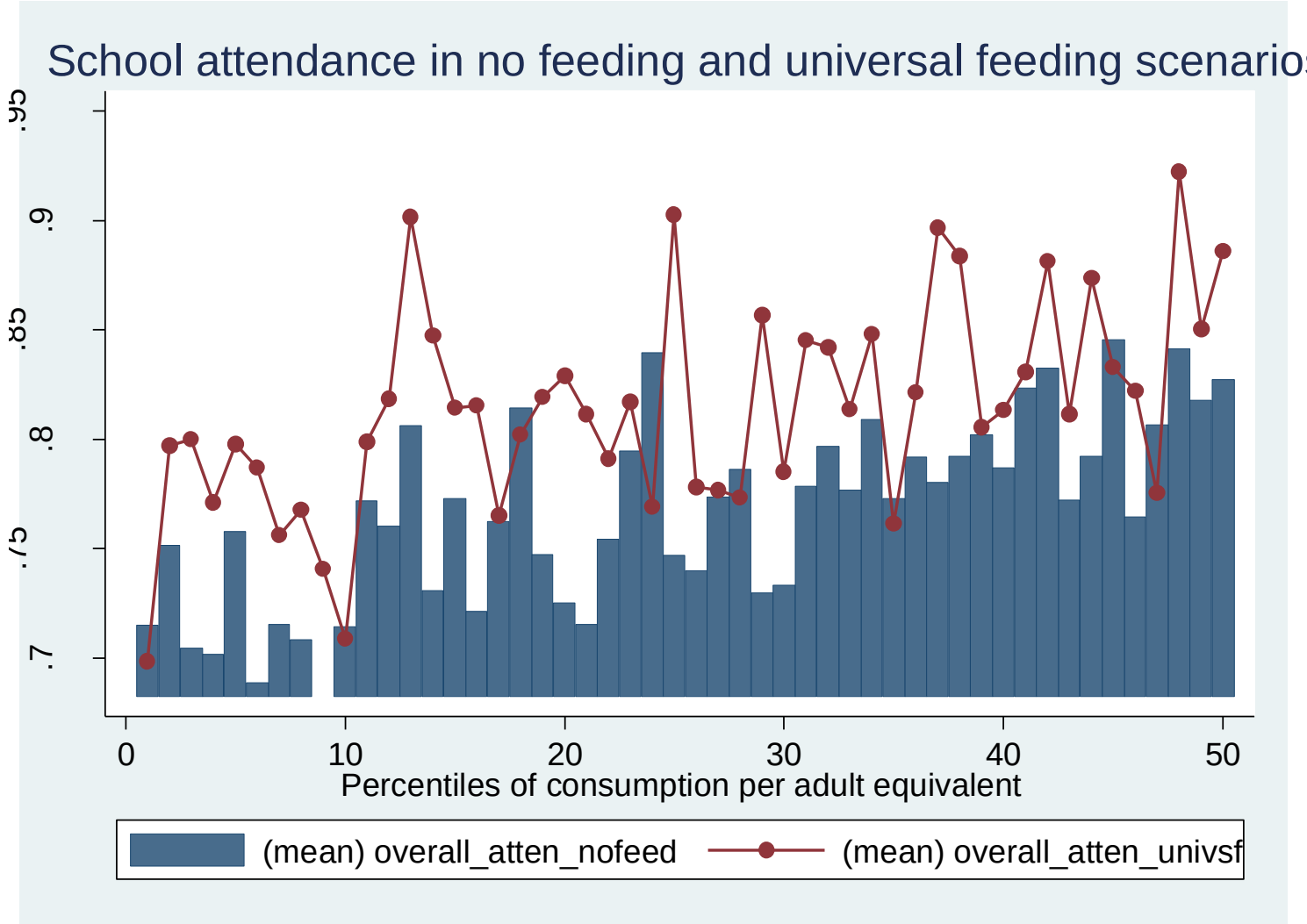
School feeding - Key results

Universal school feeding in rural areas would increase primary school aged children's school attendance :

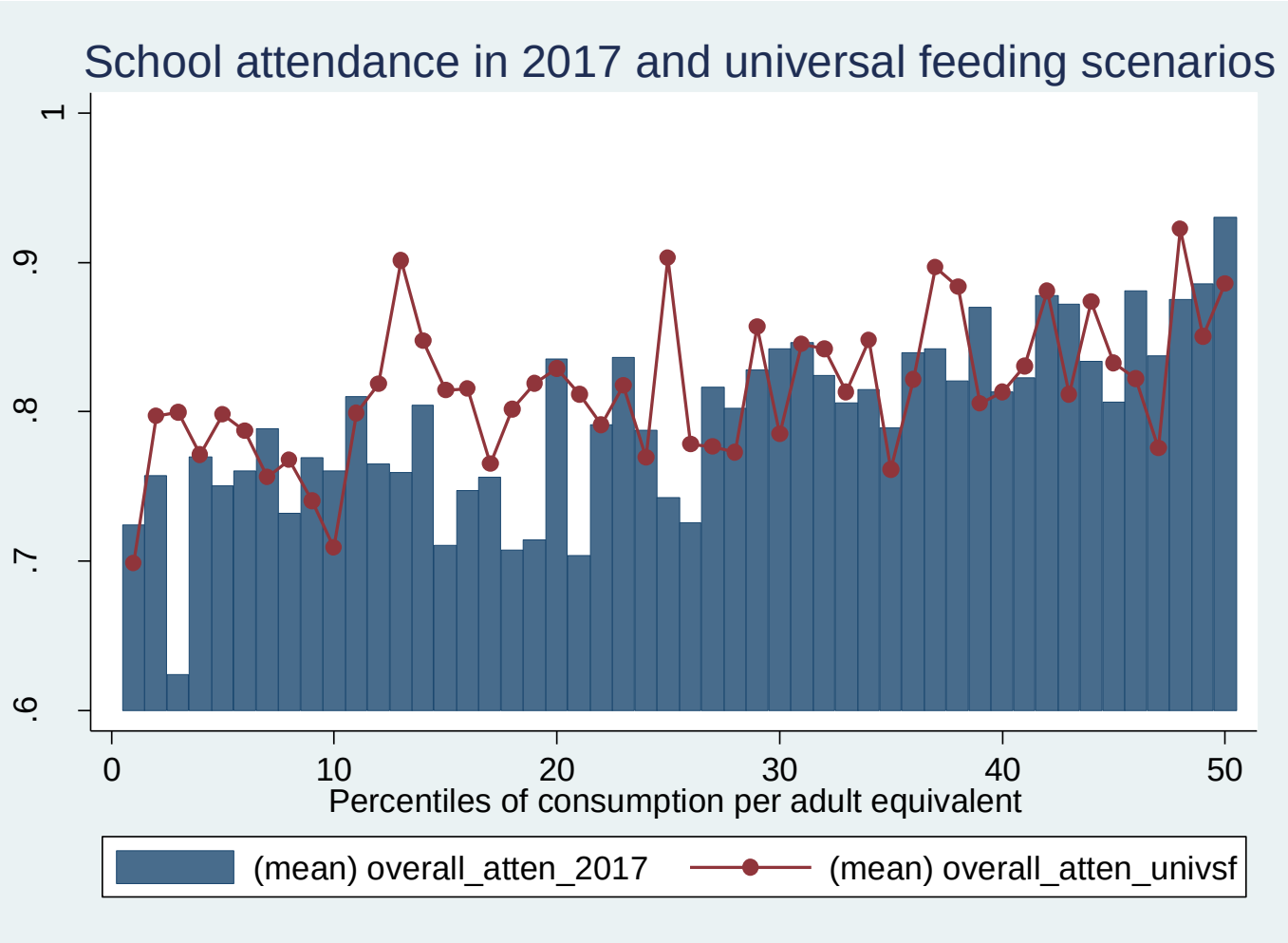
1. by 4.7 percentage points compared to the situation with no school feeding
2. by 1.8 percentage points compared to the 2017 situation

The increase resulting from school feeding is higher for:

1) Medium, large and non-agricultural rural households than smallholders: 15.5 pp vs 3.6
2) Female children than male children in smallholder stratum (though not signif): 4.6 vs 2.5 pp



Difference between school attendance in no feeding and universal feeding scenarios across income distribution



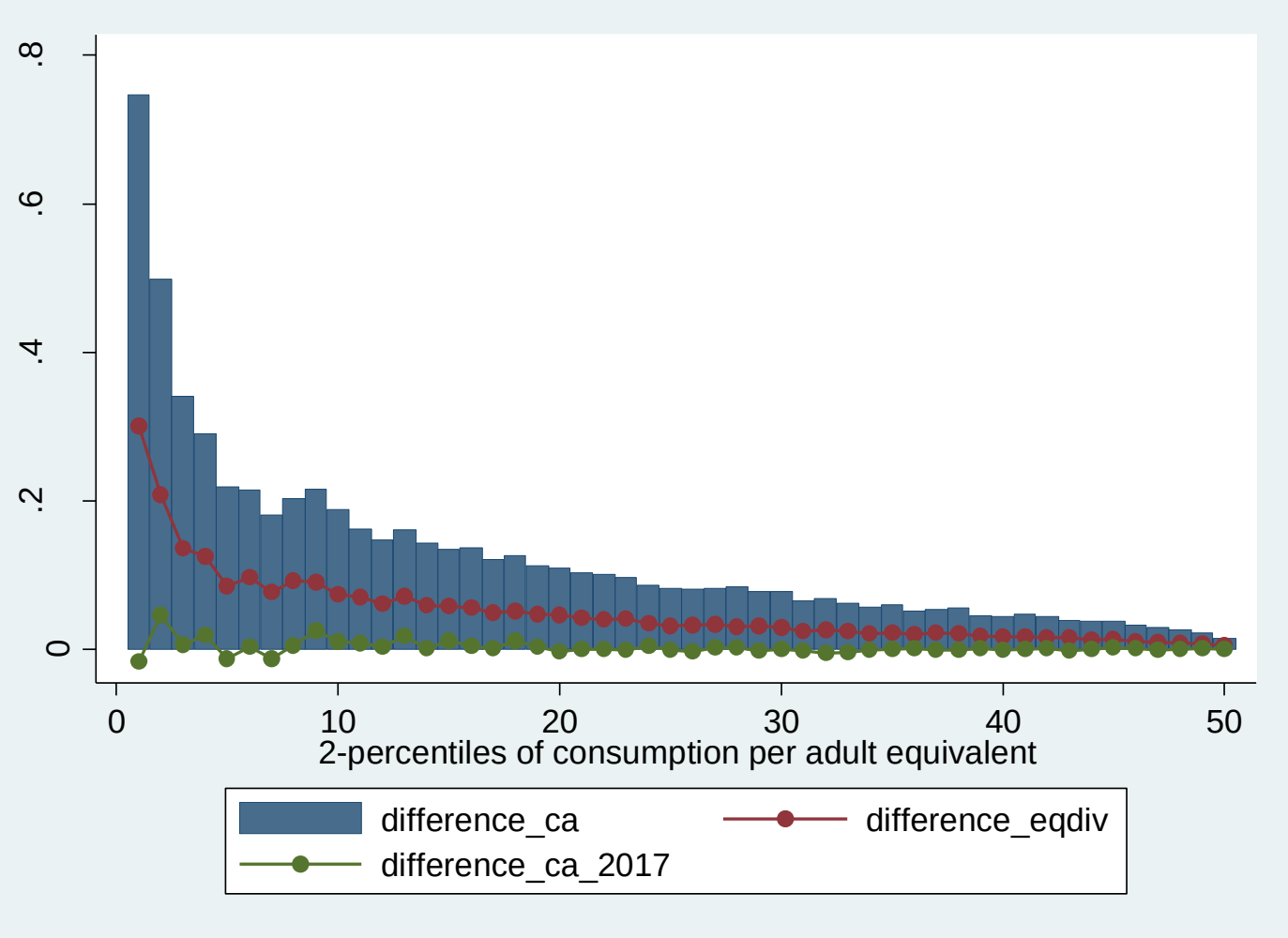
Difference between school attendance in 2017 and universal feeding scenarios across income distribution

Key results

- If the transfer is *divided equally* within households universal school feeding would result (compared to no school feeding) in rural areas:
  1. an 2.2% increase in average total consumption per adult equivalent among the extreme poor and less than 1% of moderately poor
  2. A 3.5% increase in food consumption per adult equivalent among the extreme poor and 1.4% among the moderately poor.
  3. Impact on overall Gini-coefficient small
- Consumption effects relatively small, but the poorer the household the more meaningful the magnitudes

Key results

- If the extra food is equally distributed within household, and the child's food consumption is adjusted to her age, universal school feeding increases primary school aged children's food consumption by 3.7% compared to no school feeding
- If the food is allocated to the child alone, this increase is 8.9%
- However, compared to the 2017 scenario where attendance is already high, the consumption effect is small



The relative increase in food consumption is higher for poorer children and when the food is allocated completely to the child (difference_ca) than when it is divided equally (difference_eqdiv). The gain between 2017 and universal feeding (diff_ca_2017) is small.

Conclusions

- CASU and joint effects of programmes lead to poverty reduction
- Participants in the programmes include less poor households than non-participants but clearly targeting also works for poverty reduction
- The income gains are distributed across the whole population of smallholders, but they reduce overall income inequality
- The income effect of HGSF seems to be negative: this requires an explanation

Conclusions

- School feeding has a positive effect on school attendance in rural households
- There is also scope for increasing it further by expanding school feeding
- The relative impact of school feeding on food consumption is more meaningful in poorer households but even with universal school feeding poorer households are lagging behind in terms of school attendance

Remaining questions

- CASU and HGSF reach less poor households (compared to non-participants) but nevertheless have potential to reduce poverty. How to reverse it the negative effect of HGSF?
- What are the main factors driving participation, as seen from the ground? Is there interaction with other government programmes?
- How to further strengthen the impact of school feeding on poorest households for whom the food transfer is also relatively more significant?
- How to ensure that income generating activities and interventions are coherent with the aims of school feeding? Need for complementary programmes and conscious coordination of policies.

Policy messages

- Productive support, both training and market access, goes a long way in enhancing income and reducing poverty, but coordination at the design and especially at the implementation stage is crucial.
- Coherence is about real intended coordination rather than accidental overlap
  - Income generating activities should not come at a cost in terms of food security or educational attainments
- Planning in detail program design and implementation is vital to foresee the overall impact of the intervention on the beneficiaries lives.
  - It may be necessary to complement the main treatment with a complementary package or another program to avoid undesirable side effects.

Thank you