Heterogeneous impacts of cash transfers on farm profitability

Ervin Prifti

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Smallholder farming, poverty and markets
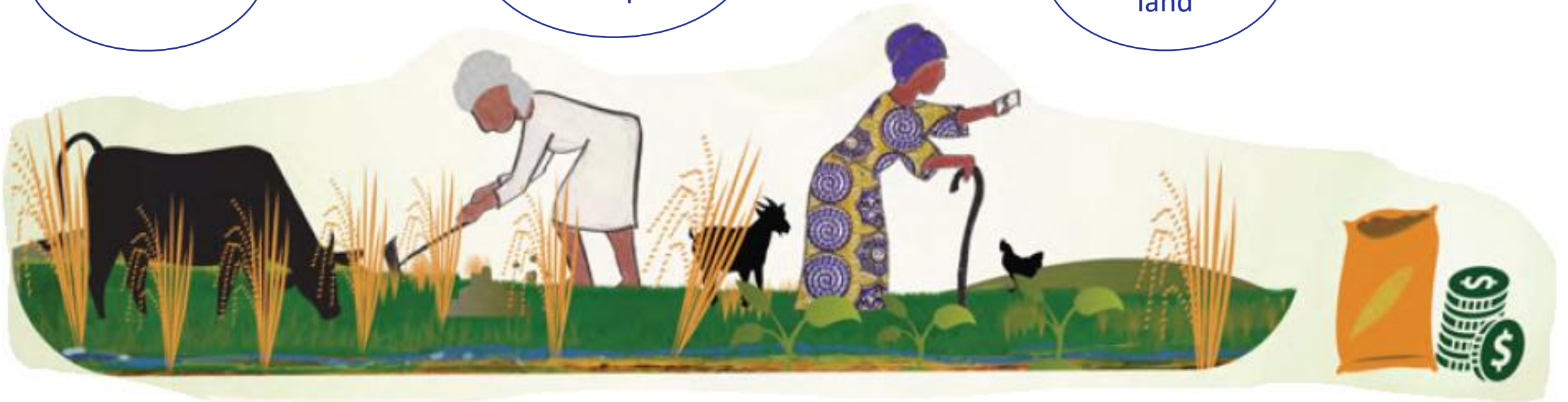

Few animals

Low human capital

Basic technologies and inputs

Limited modern inputs

Limited access to land

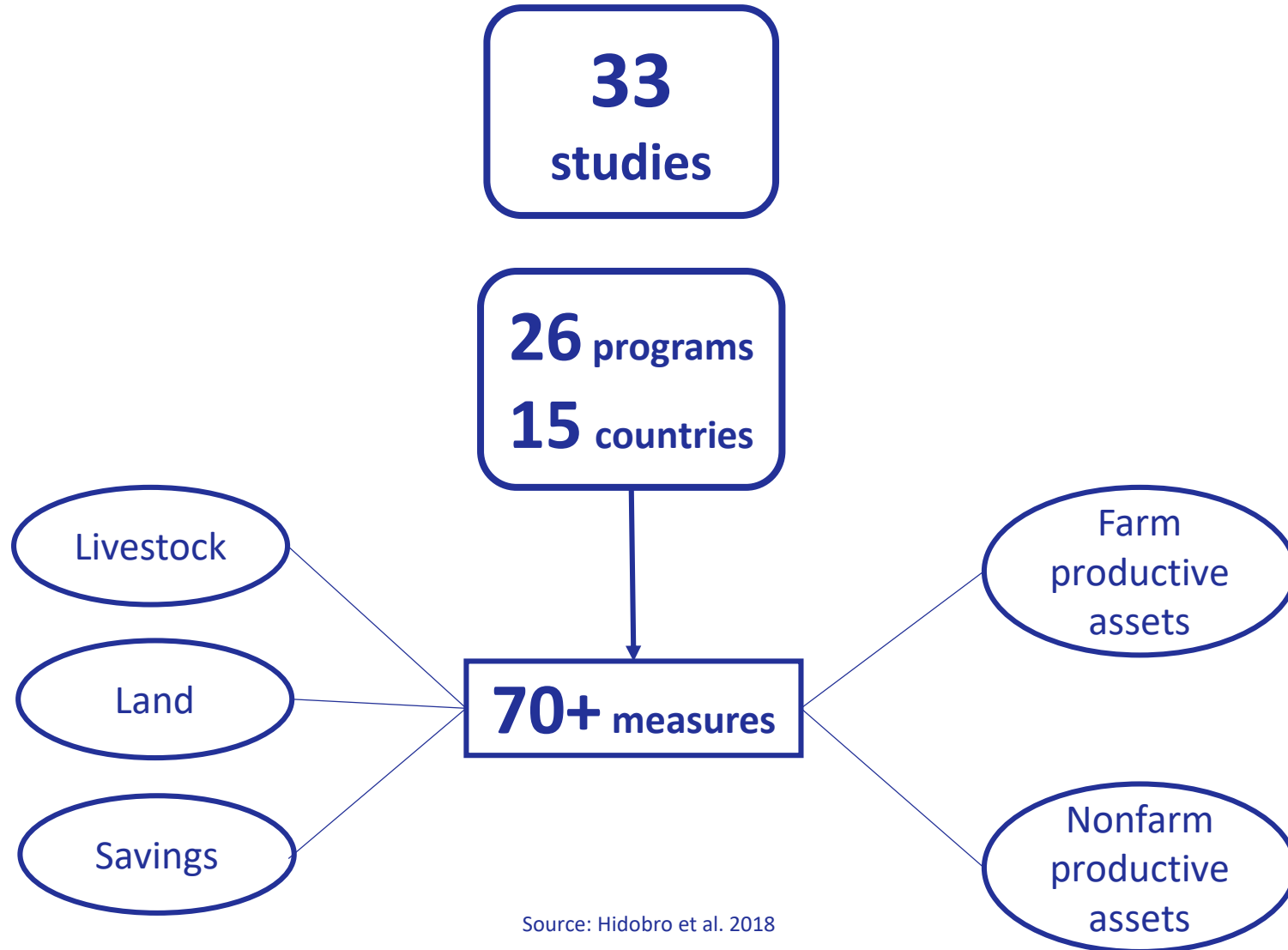No or little access to credit and insurance

Agricultural interventions insufficient to increase production

Vicious circle of poverty
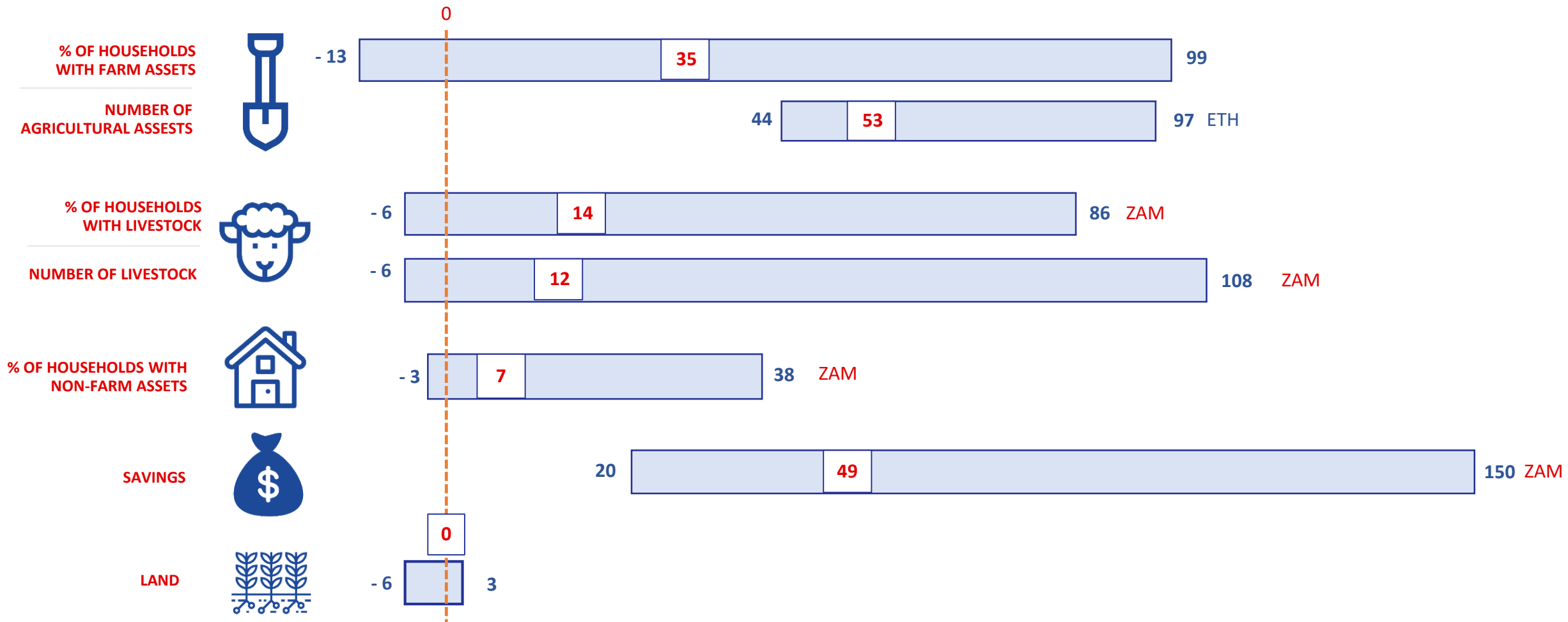
Program and data

- Lesotho CGP is an **unconditional social cash** transfer targeted to poor and vulnerable households

- **Eligibility** of HHs in the village was based on PMT and community validation

- Transfer value originally set at **360 LSL ($36, I$79)** quarterly. From April 2013 indexed to number of children (360-750LSL)

- **Study design** based on community-randomized controlled trial implemented in 96 electoral divisions.

- **Longitudinal study** with BL in 2011 and FU in 2013

- **Sample size** of 1353 HHs (2706 obs) almost equally distributed
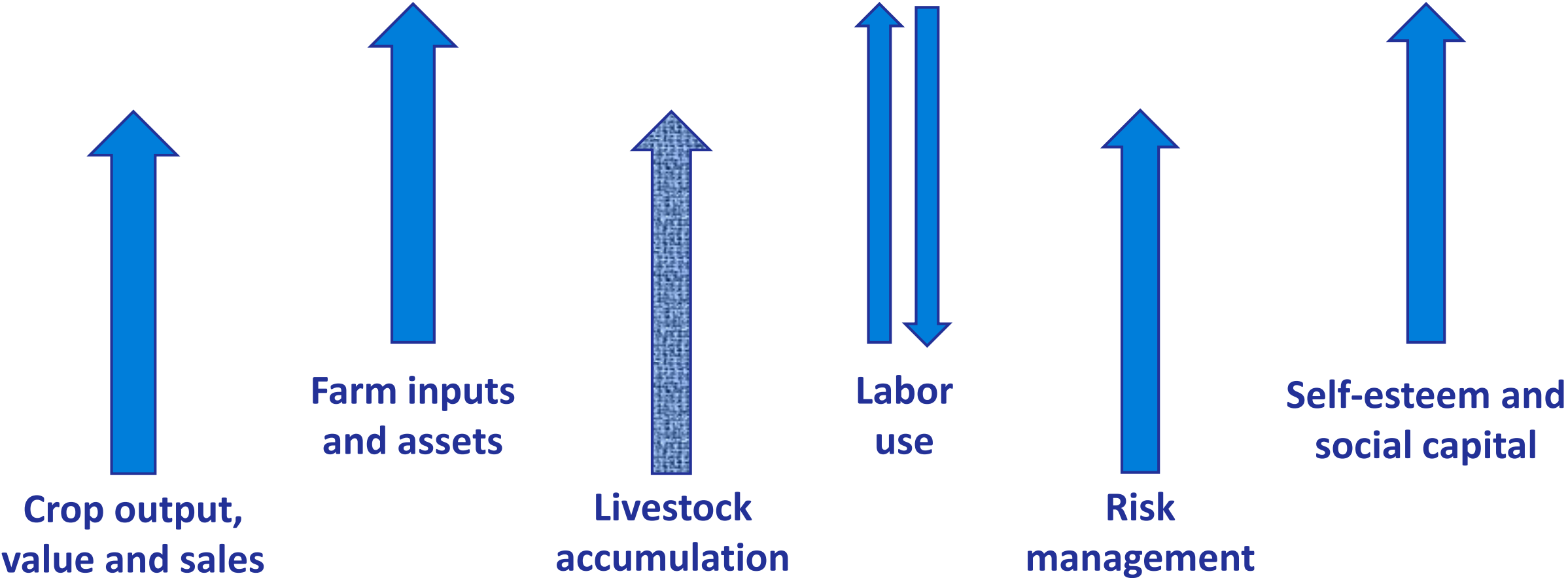
- Randomization successful

Overview of the literature

33
studies

26 programs
15 countries

Livestock

Land

Savings

70+ measures

Farm productive assets

Nonfarm productive assets

Source: Hidobro et al. 2018

Productive asset holdings

% OF HOUSEHOLDS WITH FARM ASSETS — 13 | 35 | 99

NUMBER OF AGRICULTURAL ASSESTS — 44 | 53 | 97 ETH

% OF HOUSEHOLDS WITH LIVESTOCK — 6 | 14 | 86 ZAM

NUMBER OF LIVESTOCK — 6 | 12 | 108 ZAM

% OF HOUSEHOLDS WITH NON-FARM ASSETS — 3 | 7 | 38 ZAM

SAVINGS — 20 | 49 | 150 ZAM

LAND — 6 | 0 | 3

Economic and productive impacts

Crop output, value and sales

Farm inputs and assets

Livestock accumulation

Labor use

Risk management

Self-esteem and social capital

Empirical strategy

- ## Mean Effects

  - ### Constant ATE

    $$\breve{y}_i = \alpha + \beta \boldsymbol{X}_i + \delta D_i + \varepsilon_i$$

  - ### ATE as a function of x: CATE

    - #### Parametric

      $$\breve{y}_i = \alpha + \beta \boldsymbol{X}_i + \delta D_i + \gamma \mathrm{X} D_i + v_i$$

    - #### Semi-Parametric

      $$\breve{y}_i = f(\boldsymbol{X}_i) + \delta(\mathrm{X}) D_i + v_i$$

- ## Quantile Effects - QTE

  $$\breve{y}_i = \alpha^q + \beta^q \boldsymbol{X}_i + \delta^q D_i + \mathrm{e}_i$$

Outcomes and covariates

- **Gross margin** - relative measures of profitability: value of production netted of the corresponding production costs and divided by some measure of capital
  - **Crop** (CrGM) – value of crop production divided by the area of operated land
  - **Livestock** (LvsGM) - value of livestock production divided by the number of Tropical Livestock Units

- **Covariates** – household size, share of female-headed HHs, age and education of HH head, dependency and sex ratio, operated land, irrigated land, TLUs, tractor use, shocks at community of floods and droughts, district dummies

Covariates balance
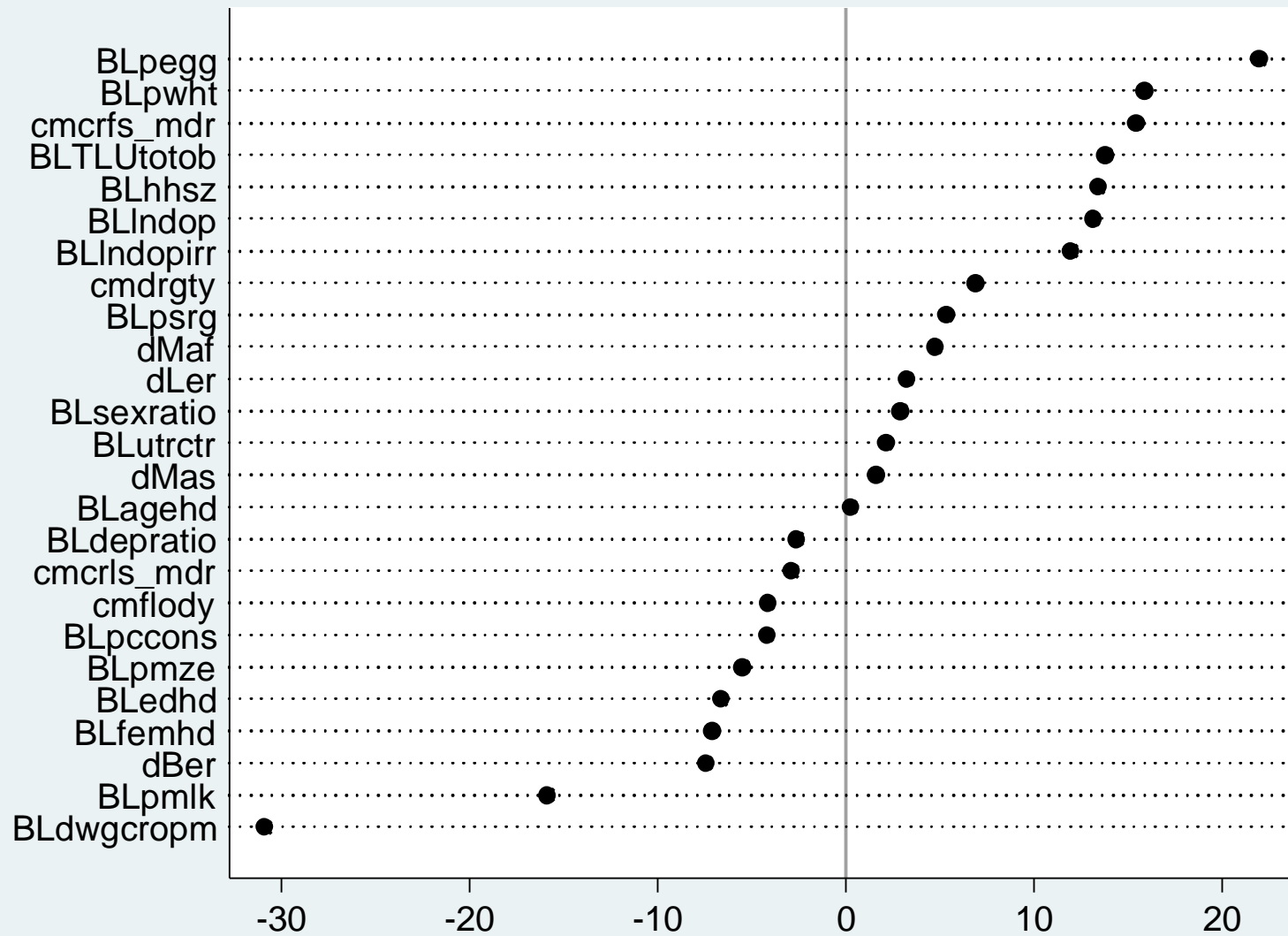
Results

- Constant ATE

	Gross margin (crop)		Gross margin (lvst)	
ATT	646.72**	[304.67]	289.06*	[169.80]

- ATE as a function of x: CATE
  - Parametric

	Gross margin (crop)		Gross margin (lvst)	
T x # members in the hh	-42.786	(90.726)	-185.177*	(90.513)
T x Age of hh head (years)	-12.015	(16.544)	-7.574	(8.059)
T x Years of edu of hh head	-19.997	(101.811)	-1.630	(54.509)
T x Dependency ratio	-145.638*	(59.009)	36.613	(38.523)
T x Operated land, ha	172.678	(194.006)	-18.999	(68.863)
T x Herd size 1y before BL	-7.907	(175.479)	-38.864	(147.395)
T x per capita cons exp	5.664*	(2.661)	1.891	(1.693)

Results

- Semi- Parametric
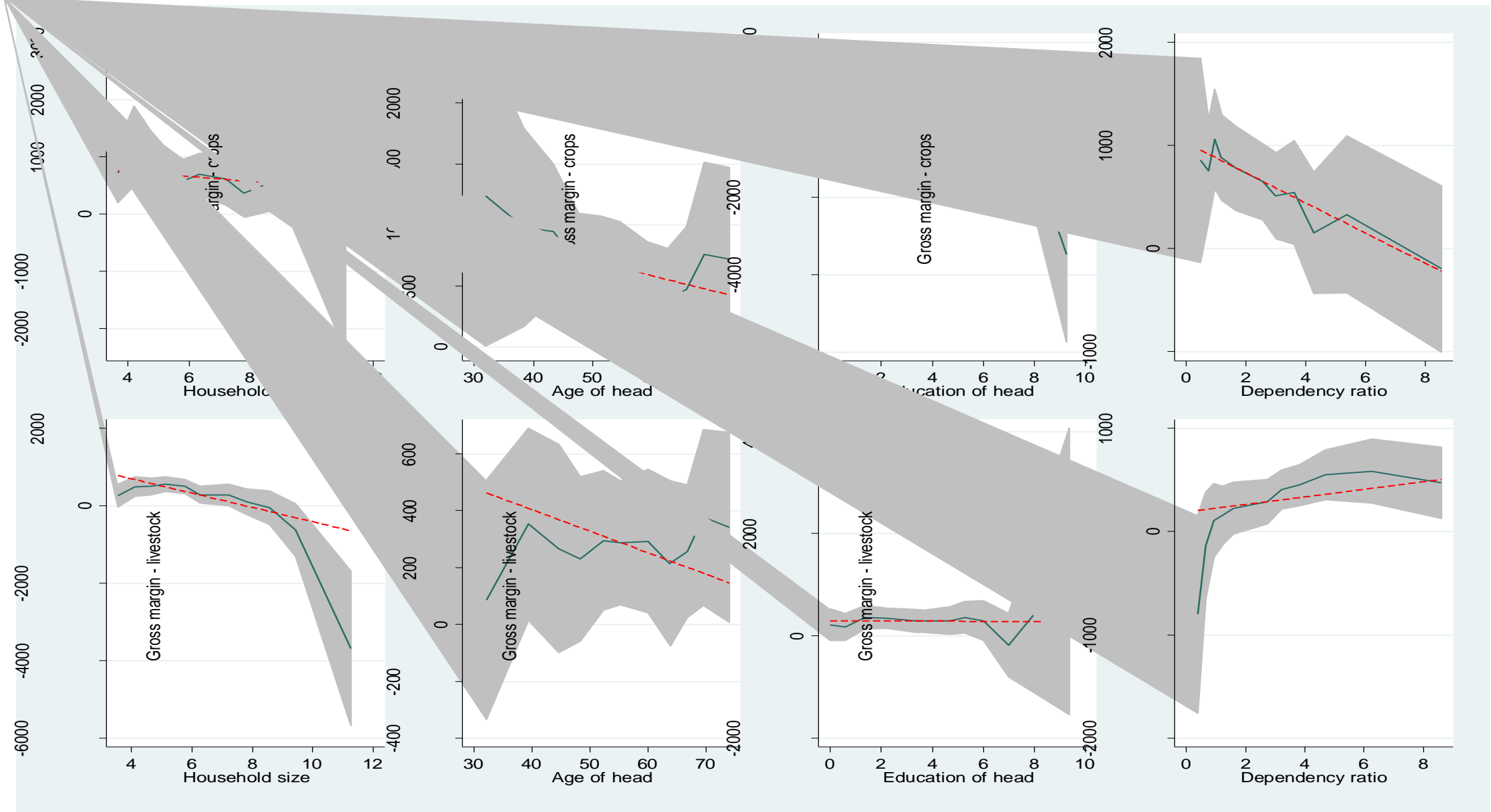
Results

- Semi- Parametric
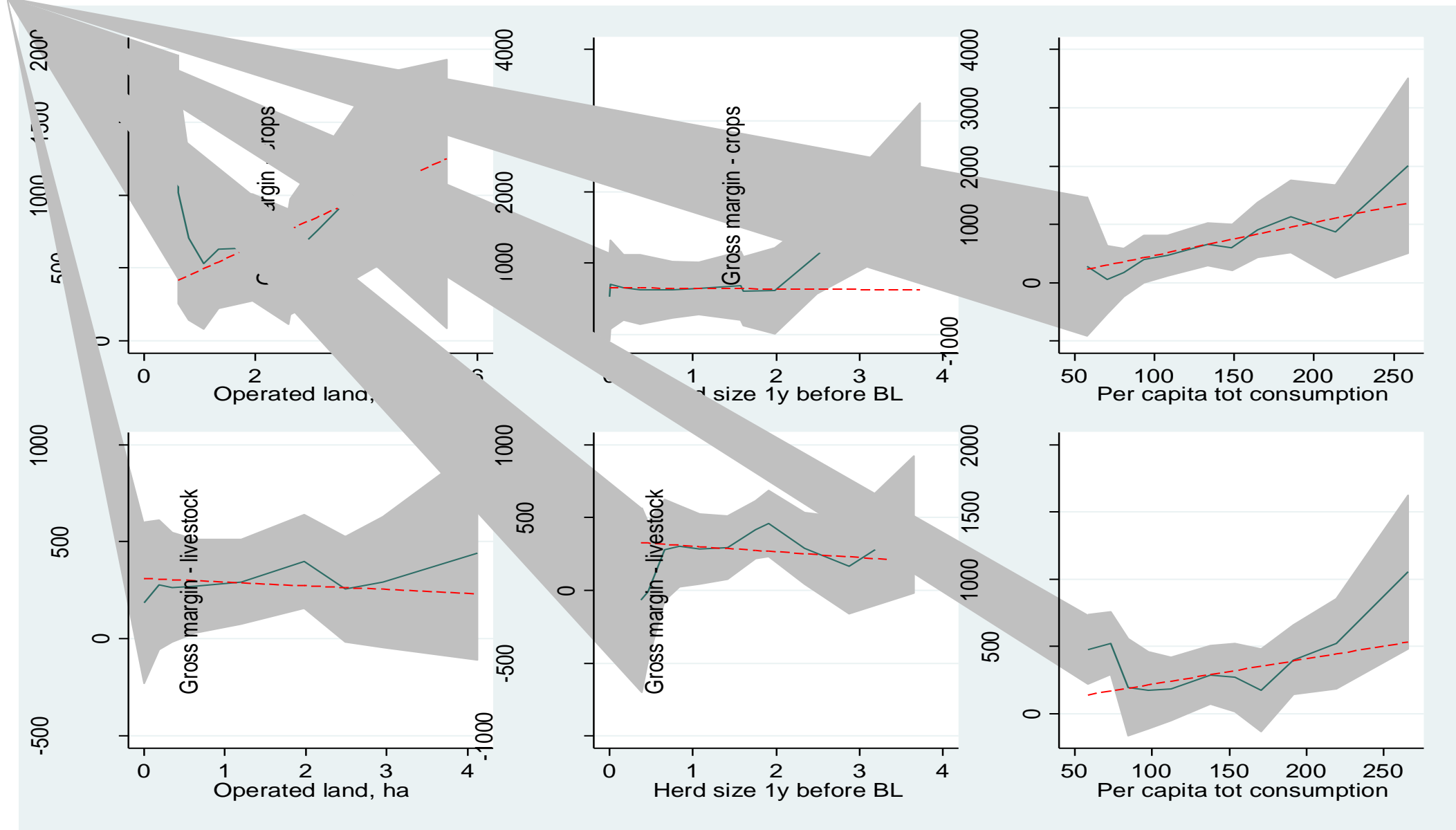
Results

- Quantile effects
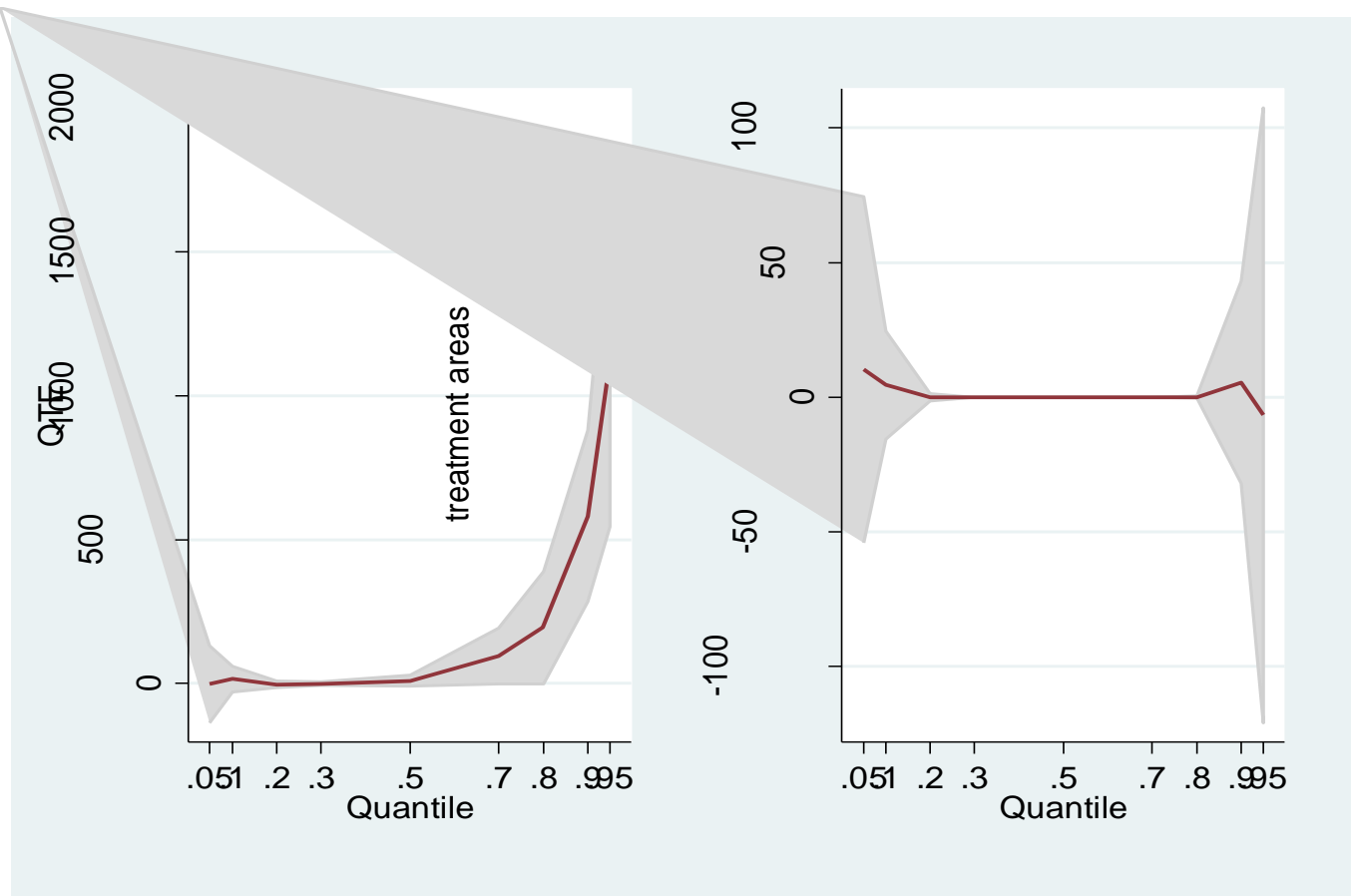
	CrGM		LvsGM	
δ^{05}	122.462	[176.824]	1595.865	[307.106]***
δ^{10}	100.234	[120.804]	995.937	[187.410]***
δ^{20}	54.276	[115.947]	171.154	[75.779]**
δ^{30}	47.671	[99.214]	40.141	[25.436]
δ^{50}	208.275	[105.832]**	14.975	[14.574]
δ^{70}	365.860	[187.081]*	42.173	[33.606]
δ^{80}	327.846	[272.069]	123.119	[88.043]
δ^{90}	772.788	[417.873]*	328.259	[285.754]
δ^{95}	1266.092	[543.965]**	101.607	[285.002]
F-test	0.034		0.000	

Conclusions

- In terms of heterogeneity across subgroups defined by baseline observed characteristics, we highlight that households with sufficient labor capacity (dependency ratio below 3) and with sufficient land endowment (at least 2 ha) experience bigger increases in crop profitability.

- A minimum of two years of schooling and two TLUs also come out as thresholds above which recipients reap greater increases of crop profitability from the extra liquidity provided by the program.

- Increases in crop profitability kick in only above a level of per capita consumption expenditure of 100 LSL.

- In the livestock sector, impacts on the gross margin are greater for households with a dependency ratio above 3 and no more than 2 ha of land, which is the exact opposite profile of those that benefit more in the crop sector.

Conclusions

- The program leads to greater increases in livestock profitability for those with at least 0.8 TLUs approximately and a level of per capita consumption expenditure or LSL 160, underlining the idea of some minimum endowment in order to productively benefit from the cash transfer.

- Completing the profile of those that benefit more in terms of livestock gross margin is a minimum education of the household head of 2 years.