POLICIES FOR HUMAN CAPITAL ACCUMULATION AMONG THE WORLD'S POOR

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January 2020

Based on joint work with Livia Alfonsi, Oriana Bandiera, Niklas Buehren, Robin Burgess, Vittorio Bassi, Pedro Carneiro, Markus Goldstein,

Lucy Kraftman, Giacomo Mason, Lucie Moore, Molly Scott, Andrea Smurra and Munshi Sulaiman

+ many many others….

HUMAN CAPITAL

- Labor is the key asset endowment of the world's poorest individuals

- Rural poor engaged in insecure wage labor:
  - low and volatile earnings from spot labor markets
  - multiple labor activities at any moment in time, and over time
    - driven by need to diversify (choice), seasonality in agriculture (constraint)
  - earnings generation through $f(L)$, not $f(L,K)$

- These features are central to understanding the design and impact of anti-poverty policies

HUMAN CAPITAL: AN AGENDA

- On the **measurement** of human capital

- On the **accumulation** of human capital

- On the (mis)**allocation** of human capital

1. ON THE MEASUREMENT OF HUMAN CAPITAL

- Anthropometrics and health:
  - birthweight, HAZ, WAZ, WHZ, malnutrition
  - daily functioning, incidence of illness
  - combines stock and flow elements
- Skills:
  - cognitive versus con-cognitive/character
  - 'non-cognitive': personality, traits (grit, patience), developmental (motor skills, communication…)

- Long run development process might be characterized as changing relative returns to 'brains versus brawn' [*Pitt et al. 2012*]

1. MEASURING HUMAN CAPITAL: AN AGENDA

- Many possible typologies of skills/traits, e.g. by 'sphere of economic activity’:
  - education/labor market: skills, anthropometrics/health,…
  - quality of decision making: rationality, patience, risk preferences…
  - social interactions: personality, competitiveness, social image concerns…
  - coping with volatile/uncertain economic environments: negotiation skills, hot and cold decision making, emotions
- mental health?

- big picture for LR development process: changing nature of complementarity/substitutability of:
  - brawn (anthropometrics, health)
  - brains (skills/traits)
  - as economy develops: trade, technology, institutional change…

2. ON THE ACCUMULATION OF HUMAN CAPITAL

- HK accumulation through the life cycle
  - early childhood development
  - pre-school
  - schooling
  - transition from formal education system into labor market
  - vocational training, on-the-job training
- initial conditions matter: factors in early life have persistent impacts [*Almond and Currie 2011*]
- more generally, dynamic complementarities across stages
  - but actors, objectives, constraints <u>differ</u> across stages

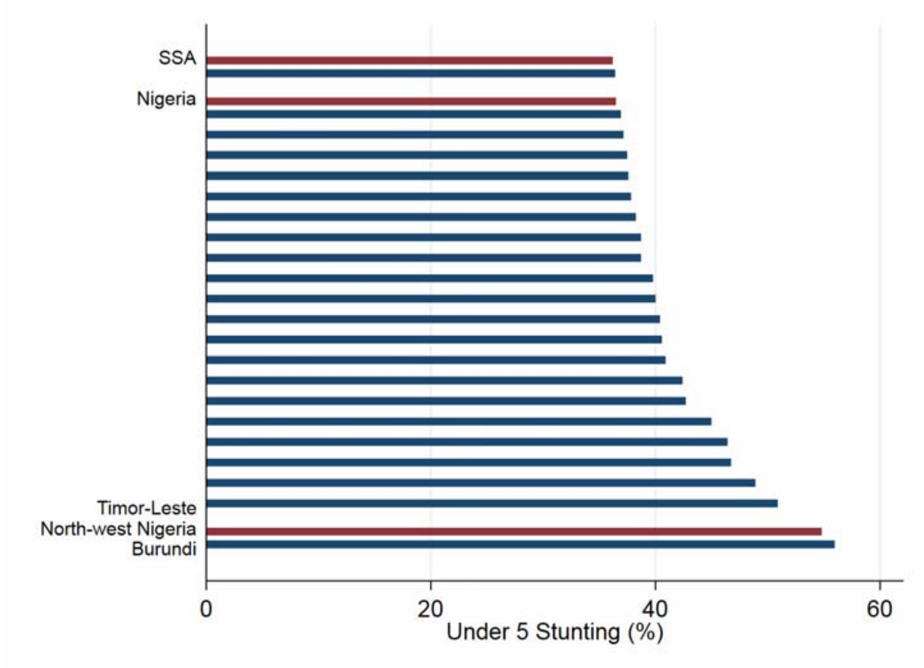
EARLY CHILDHOOD DEVELOPMENT

- ➤**deprivation in early life has consequences through the life cycle** [Heckman 2006, Almond and Currie 2011]

- ➤**interventions to boost HK accumulation in early life have been shown to have private, social and intergenerational returns:**
  - ➤cognitive development, health [Campbell et al. 2014, Conti et al. 2016, Attanasio et al. 2019]
  - ➤schooling, labor market productivity, crime [Hoddinott et al. 2008, Gertler et al. 2014]
  - ➤intergenerational [Heckman and Karapakula 2019]

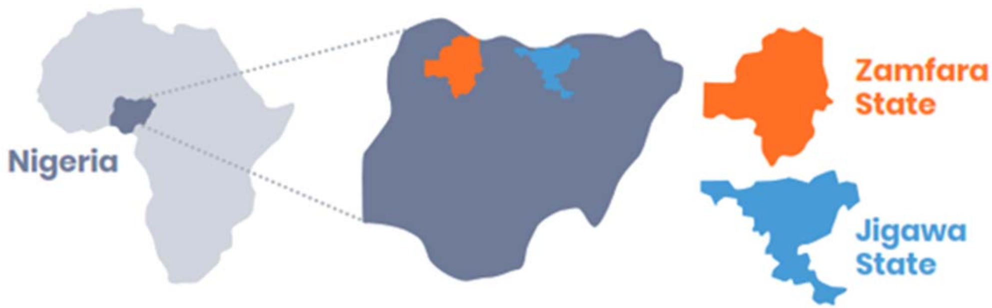
EARLY CHILDHOOD DEVELOPMENT

- much of the evidence base comes from high and middle-income settings
- yet, lowest levels of HK accumulation among children in Sub Saharan Africa
- 33% of children under 5 are stunted, 7% are wasted [Akombi et al. 2017]



POLICY INTERVENTION: EXAMPLE 1

- What is the impact of providing information and unconditional cash transfers to pregnant mothers, on child's outcomes? [*Carneiro et al. 2019*]



- poor, volatile, food insecure
- mothers: low levels of HK/knowledge
  - e.g. 13% of mothers (and fathers) know to exclusively breastfeed for first 6 months
  - IMR: 9%

POLICY INTERVENTION: EXAMPLE 1

- intervention components:
  - information *(antenatal, peri-natal, post natal messages, to mothers and fathers)*
  - cash transfers: high valued (US$20/month) and long-lasting (from pregnancy to child aged 24 months)
    - value corresponds to 80% of female earnings, 25% of household consumption
- eligibility: verified pregnancy
- evaluation method: RCT
- data: 3600 pregnant mothers tracked for four years (BL, ML at 2yrs, EL at 4yrs)

POLICY INTERVENTION: RESULTS

- Child outcomes:
  - reduced stunting (HAZ<-2):
    - 8% at ML, 7% at EL
  - reduced extreme stunting (HAZ<-3):
    - 14% at ML, 14% at EL
  - improved health: 18% (25%) reduction in incidence of diarrhoea at ML (EL)
    - by EL, 74% increase in de-worming medication, 350% increase in completion of vaccinations

POLICY INTERVENTION: MECHANISMS

- Information channels are key in first two years of life:
  - knowledge, antenatal practices (mothers matter more than fathers)

- But resource channels key for <u>sustaining impacts </u>from 2 to 4 yrs:
  - allocation of labor towards self-employment for women
  - building livestock/asset base
  - endogenously generating own income in long run (self-sustaining) → food secure → reduce income volatility
- [Figure: Livestock → food]

Figure 5: Livestock Ownership, Dietary Diversity and Food Expenditures

Sample: Households with Pregnant Women at Baseline, In Utero Child (N=3688)

POLICY INTERVENTION: LESSONS AND AGENDA

- ➤ IRR of between 10 and 20% under alternative scenarios
- ➤ Early life interventions can be implemented in environments of extreme economic deprivation and with low state capacity

- ➤ Returns to targeting fathers?
- ➤ Role of universal eligibility?
- ➤ Extensive margin fertility responses?
- ➤ GE effects: 45% of women pregnant in XS at BL
  - ➤ linking <u>demand</u> shocks for health care to <u>supply</u> of health services

HUMAN CAPITAL ACCUMULATION **IN ADOLESCENCE**

- For women, control over the body as a key driver of long term change:
  - economic history of US [*Goldin and Katz 2002*]
  - co-evolution with legal and political rights [*Doepke and Tertilt 2009, Fernandez 2014*]

- For adolescent girls in low-income countries, economic challenges during school-work transition are particularly high and compounded by health challenges related to control over their body:
- Teen pregnancy and early motherhood → reduced ability to invest in human capital
- Lack of future labor market opportunities → reduced incentives to invest in human capital
- YET, many policy interventions targeted to youth focus on:
  - HIV education and related issues to reduce risky behaviors OR vocational training to improve labor market outcomes

POLICY INTERVENTION: EXAMPLE 2 *[BANDIERA ET AL. 2018]*

- Context: Uganda, girls facing range of health and economic challenges
- BRAC's *Empowerment and Livelihood for Adolescents* (ELA) program:
  - Establishes community youth clubs for girls
  - Provide:
    1. Life skills training to build knowledge and reduce risky behaviors
    2. Vocational skills training to improve self-employment opportunities

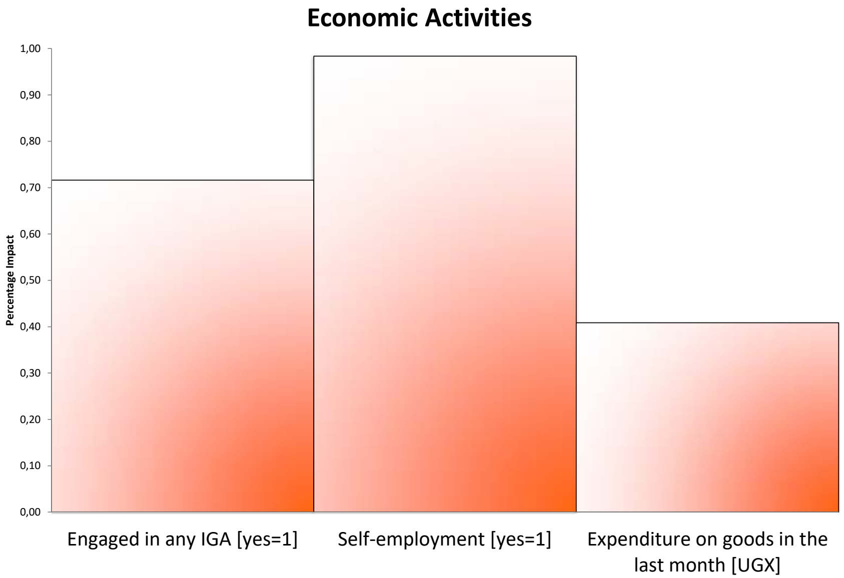
- Eligibility: girls aged 12-24
- Evaluation method: RCT
- Data: 5000 adolescent girls tracked for <u>four</u> years (BL, ML at 2yrs, EL at 4yrs)

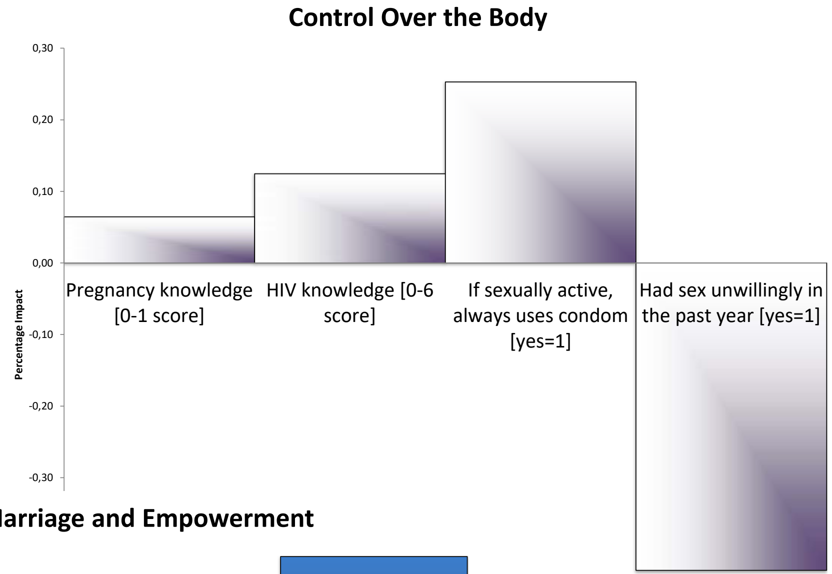
- Adolescent Development Clubs bring girls together, gives them a place to socialize, ‘keeps them away from bars’
- Physical, joint space, ‘owned’ by the members of the club
- Open every day except Sunday, 2-6pm (after school)
- Games, songs, drama, dancing, sports, social time etc.

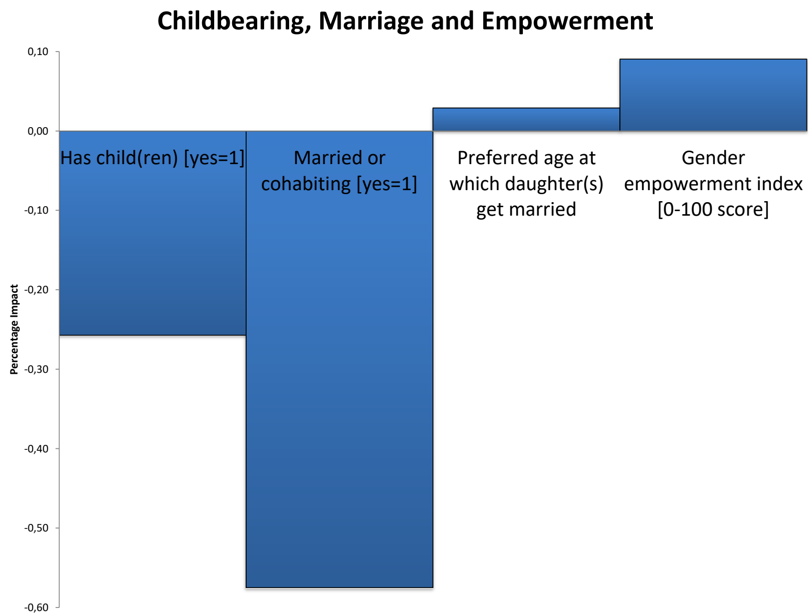





SUMMARY OF KEY 4YR IMPACTS [%]







COST-BENEFIT ANALYSIS

- Cost per potential beneficiary is $18
- Measurable benefit per potential beneficiary is $32

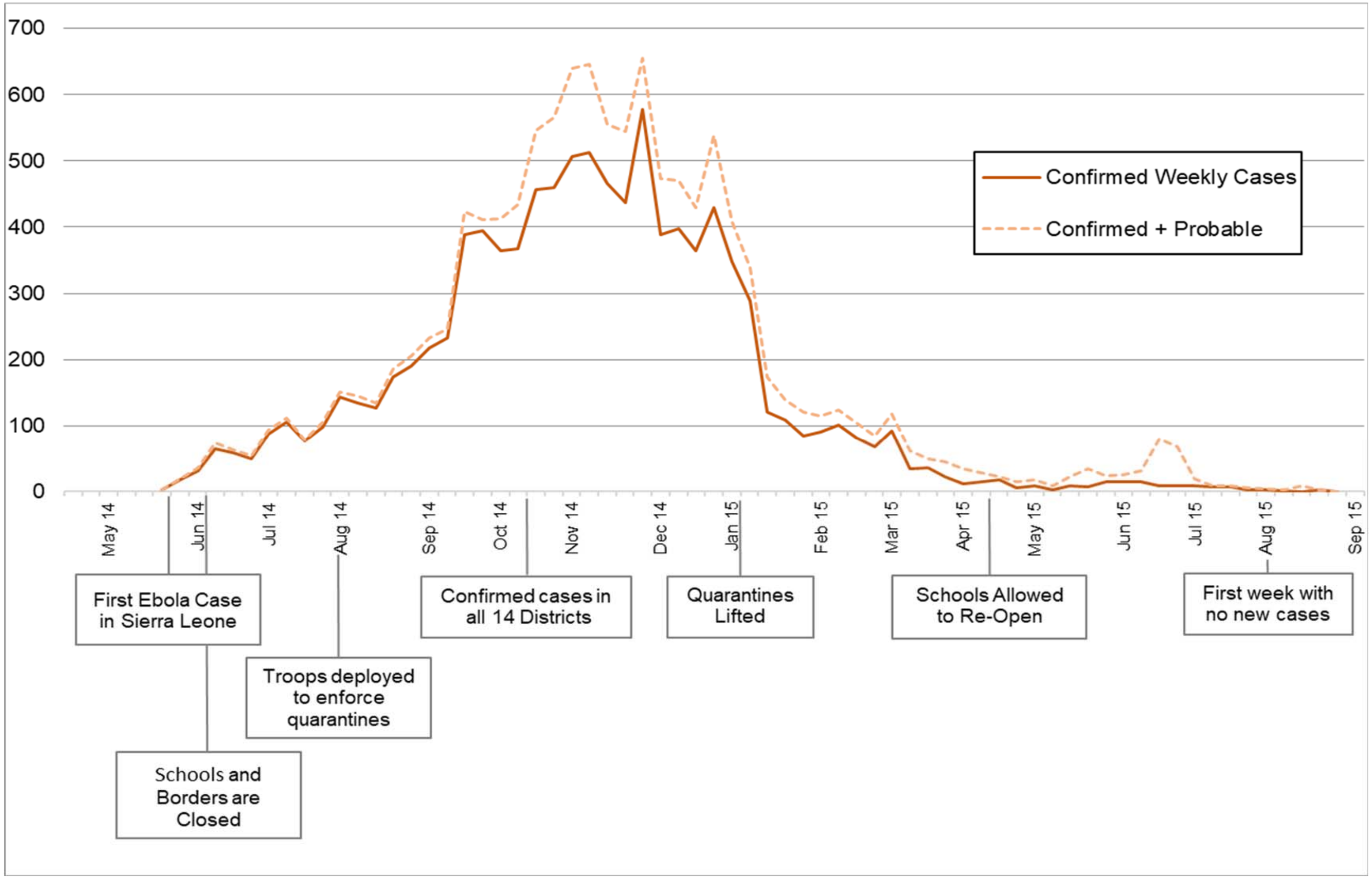
- Unaccounted for benefits:
  - reduction in fertility, delay in marriage, reduction in sex against her will and other forms of empowerment

SCALING UP

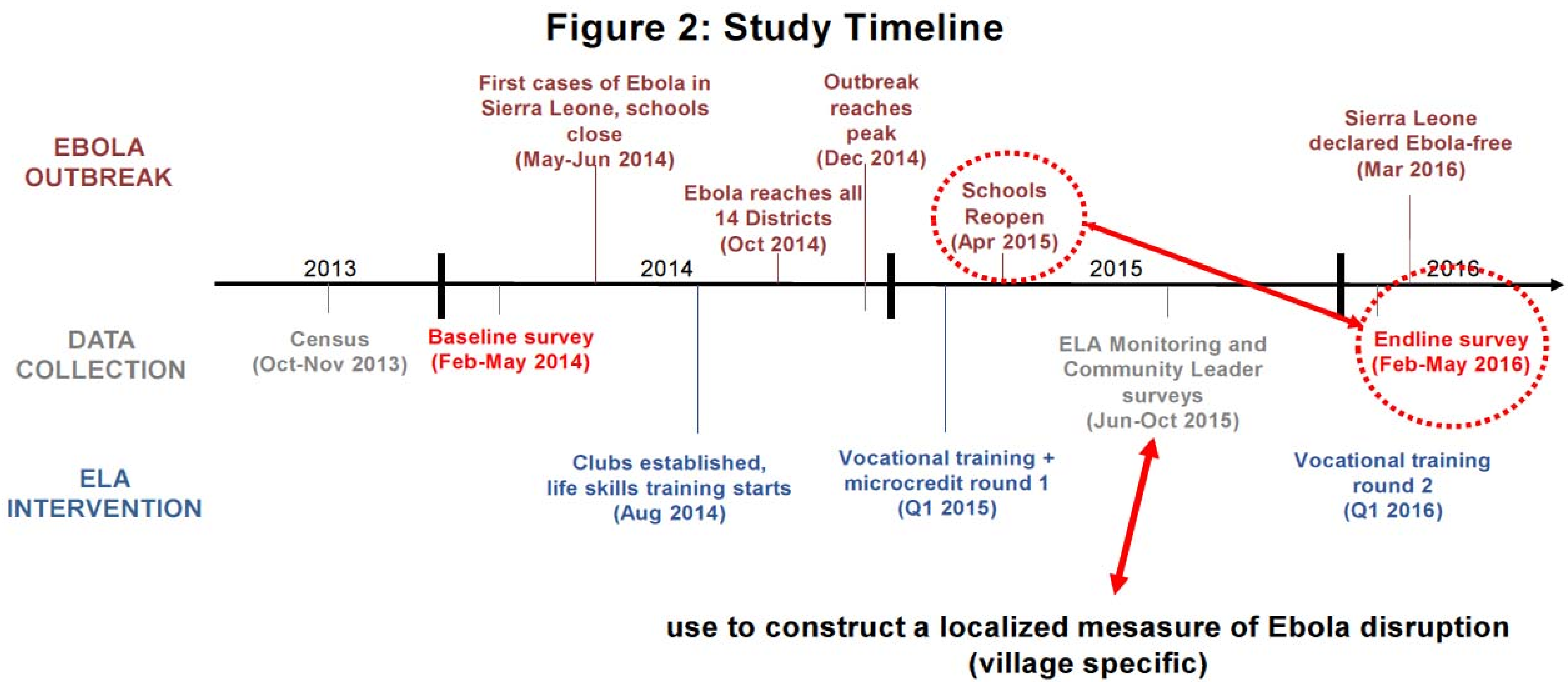
- Extended ELA program to Sierra Leone and South Sudan
  - both contexts struck by aggregate shocks part way through RCT evaluations
    - Sierra Leone (Ebola)
    - South Sudan (civil war)
- As described earlier, skills can be useful beyond labor market returns
  - returns versus resilience to shocks

ELA IN A TIME OF AGGREGATE SHOCK
[BANDIERA ET AL. 2018]

Timeline of Ebola Outbreak in Sierra Leone, 2014/15

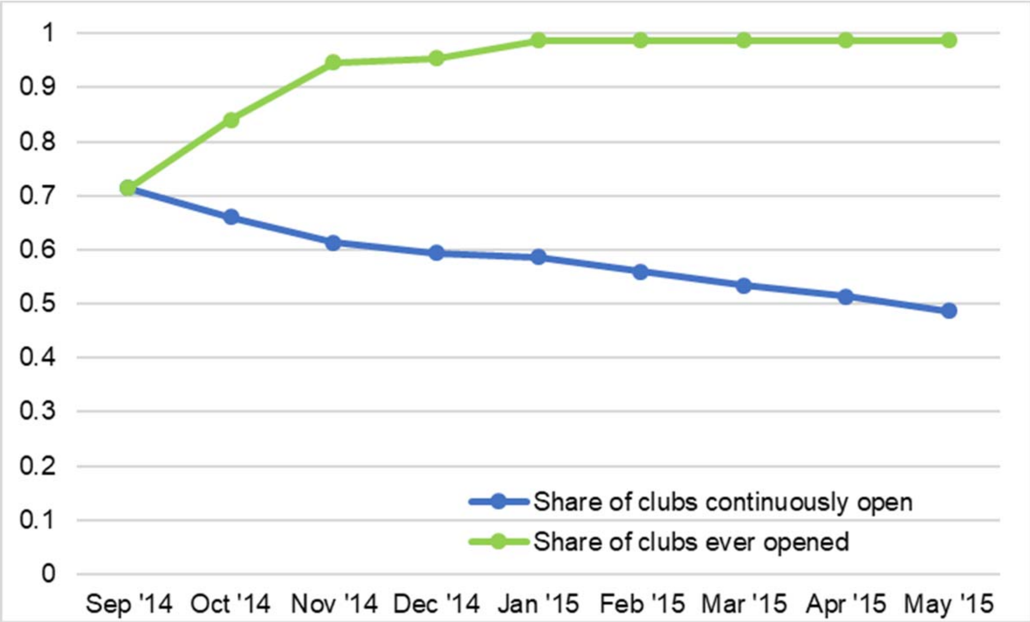


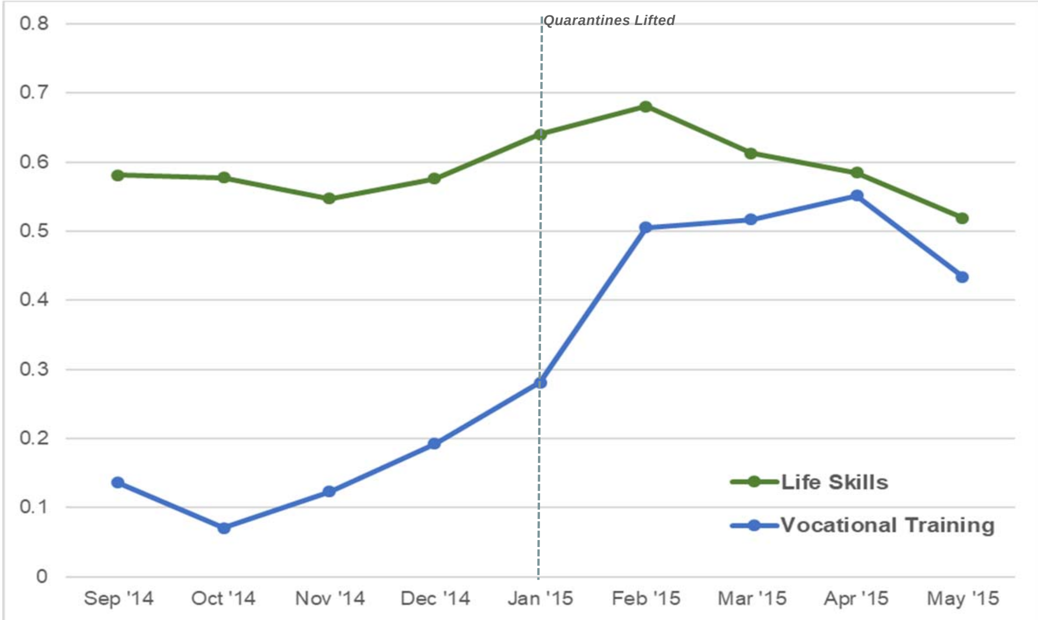
STUDY TIMELINE:
OVERLAYING AN AGGREGATE SHOCK WITH AN RCT



SIERRA LEONE: IMPLEMENTATION OF ELA

[BANDIERA ET AL. 2019]

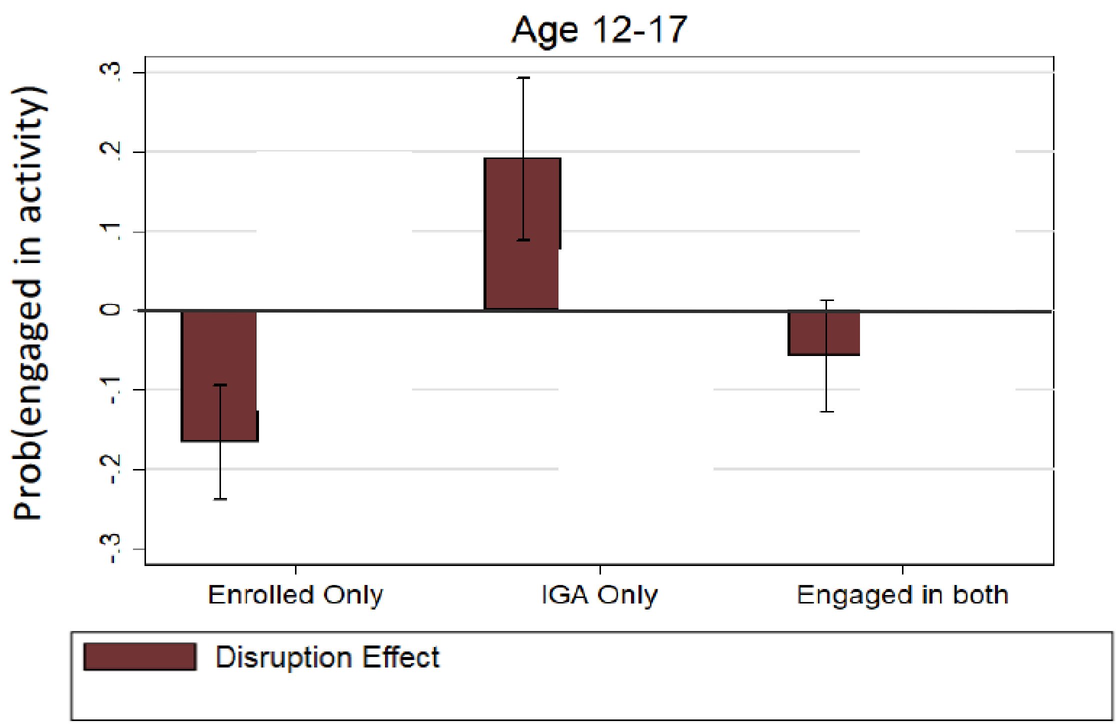




All ELA clubs represent a safe space where girls can go

SIERRA LEONE: RESULTS

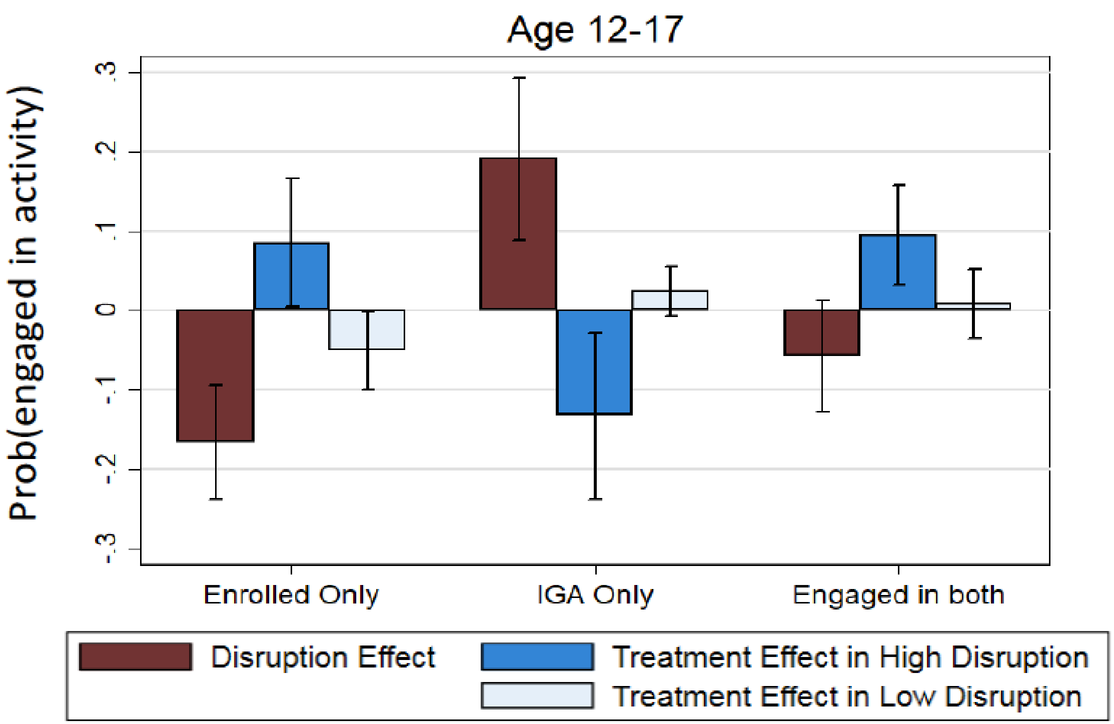
Figure 6: Engagement in Economic Activities



High disruption: speeds up school to work transition

SIERRA LEONE: RESULTS

Figure 6: Engagement in Economic Activities



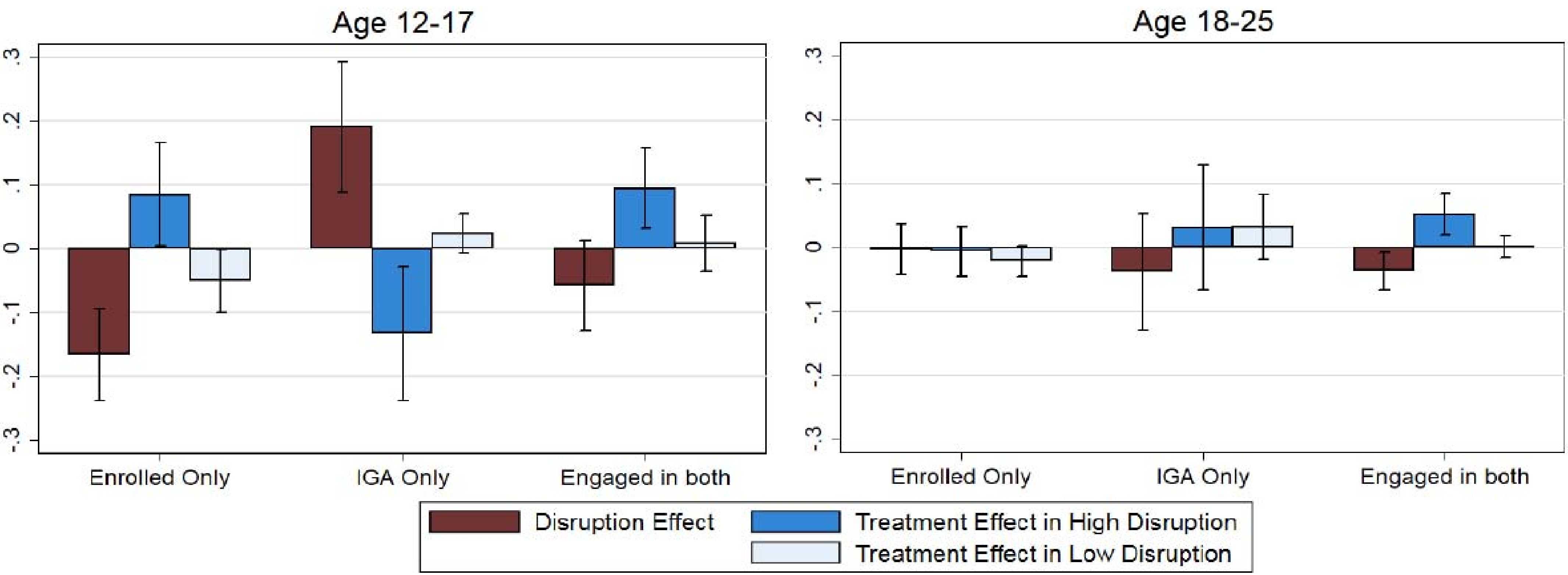
High disruption: speeds up school to work transition

Offset by ELA clubs

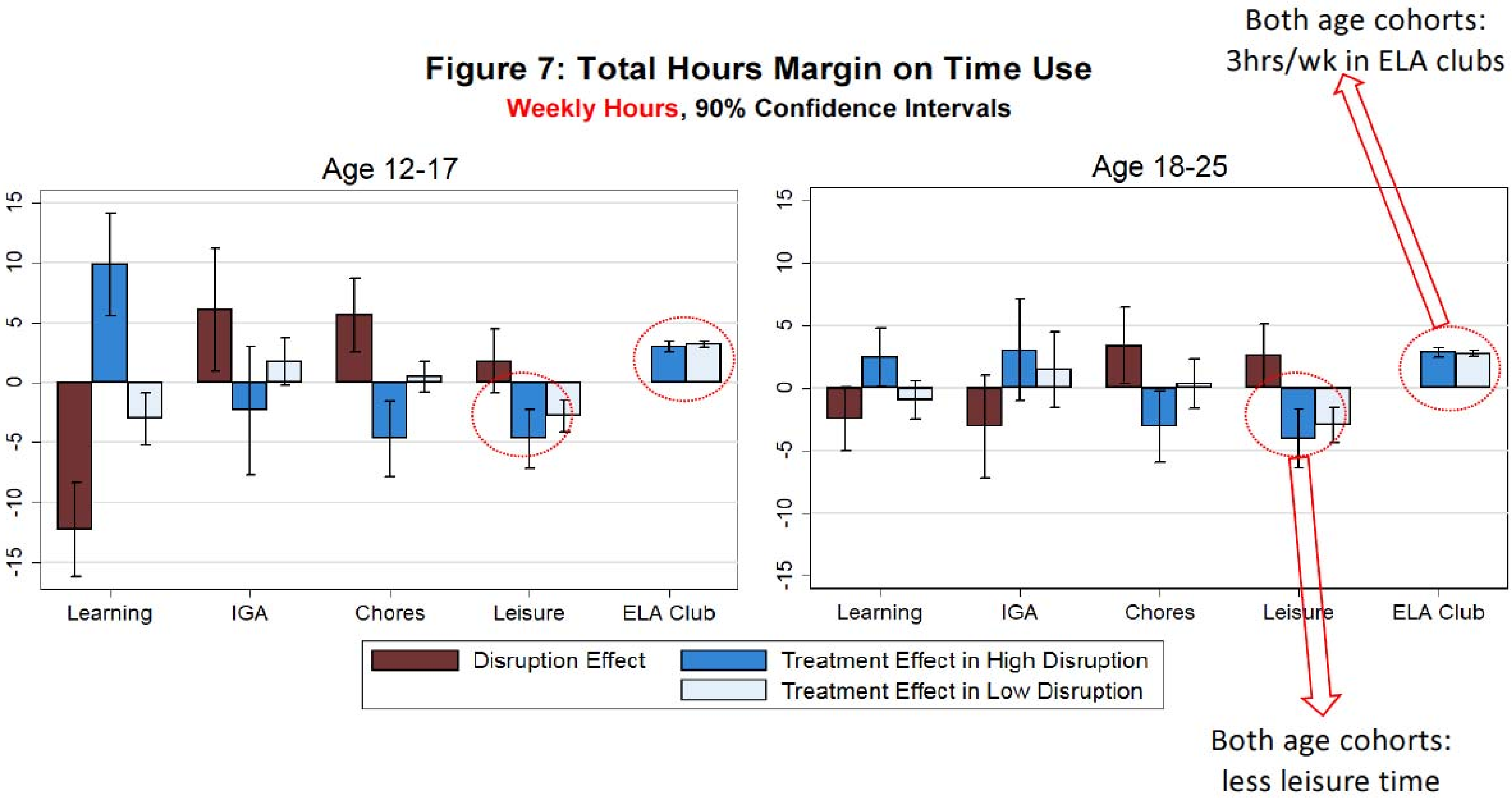
- ***keeps girls in school***
- ***enables girls to combine school and work***

Figure 6: Engagement in Economic Activities

90% Confidence Intervals



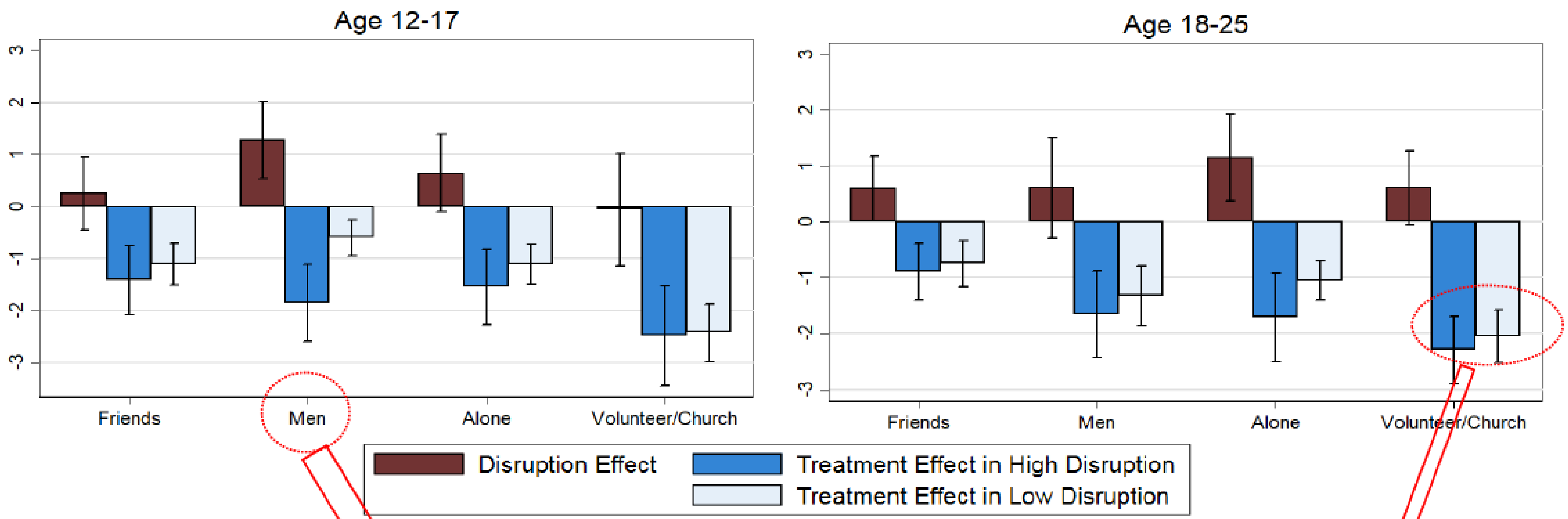
TIME USE


Both age cohorts:
3hrs/wk in ELA clubs
Figure 7: Total Hours Margin on Time Use
Weekly Hours, 90% Confidence Intervals
Age 12-17
Age 18-25
15
10
5
0
-5
-10
-15
Learning
IGA
Chores
Leisure
ELA Club
Disruption Effect
Treatment Effect in High Disruption
Treatment Effect in Low Disruption
Both age cohorts:
less leisure time

LEISURE TIME

Figure 8: Leisure Time Allocation

Weekly Hours, 90% Confidence Intervals



Wording: time spent with men engaged in sexual activity with

Time away from secret societies?

Table 10: Fertility and Risky Behaviors, Among Girls Aged 12-17 at Baseline

OLS estimates, standard errors in parentheses, p-values in braces

	Condom use: Often/Always	Other Contraceptive	Frequency of Sex	Frequency of Unprotected Sex	Pregnancy	Out-of-Wedlock Pregnancy
	(1)	(2)	(3)	(4)	(7)	(8)
Disruption Effect	-.003	-.120*	.868	**1.99*** **	**.107*** **	**.072***
	(.015)	(.070)	(.678)	**(.734)**	**(.036)**	**(.039)**
Treatment Effect in Low Disruption	-.005	-.010	.320	.377	.006	-.010
	(.011)	(.039)	(.520)	(.399)	(.020)	(.017)
Treatment Effect in High Disruption	.013	.102	**-1.01***	**-1.13***	-.043	**-.075** **
	(.016)	(.083)	**(.560)**	**(.738)**	(.039)	**(.038)**
Difference [β3, p-value]	{.333}	{.221}	{.082}	{.066}	{.258}	{.122}
Control Mean at BL	.062	.404	5.25	3.41	.115	.091
Observations	1,456	1,456	1,390	1,046	2,382	2,382

Persistent impact on school enrolment of having a child

Recall: Δenrolment = **+9.7pp**

ELA AND AGGREGATE SHOCKS: LESSONS

- Ebola severely impacts human capital accumulation among young girls
  - speeds up school-to-work transition
- ELA intervention helps to offset this
  - Mechanism: provision of safe space → lower pregnancy → higher return back to school
- ELA provides insurance in time of aggregate shock (Ebola)

- Lessons and future agenda:
  - Men? 6-year follow-up: just completed fieldwork…

3. ON THE ALLOCATION OF HUMAN CAPITAL

- rural LM: limited range of labor market activities (dualism, *Lewis 1954*)
  - insecure wage labor, f(L) vs. combining labor with capital, f(L,K)
- urban LM: search frictions in worker-firm matching process

- rural to urban migration: selection vs. comparative advantage *[Roy 1951, Young 2013]*

URBAN LABOR MARKETS

- youth unemployment/underemployment is a key policy challenge in LICs
- factors driving youth unemployment *[Freeman 1979, Becker 1994, Pissarides 1994]*
  - pre-labor market: young workers lack skills/information
  - barriers to labor market entry: firms lack resources to find/screen/train young workers

- how do workers find jobs? (search process)
- how do workers find 'good' jobs
  - transition from low skill itinerant jobs → high skill/productivity jobs in formal sector
  - in turn, drives fiscal capacity and structural change
    [Gollin 2008, Besley and Persson 2014, La Porta and Schleifer 2014, Jensen 2019]

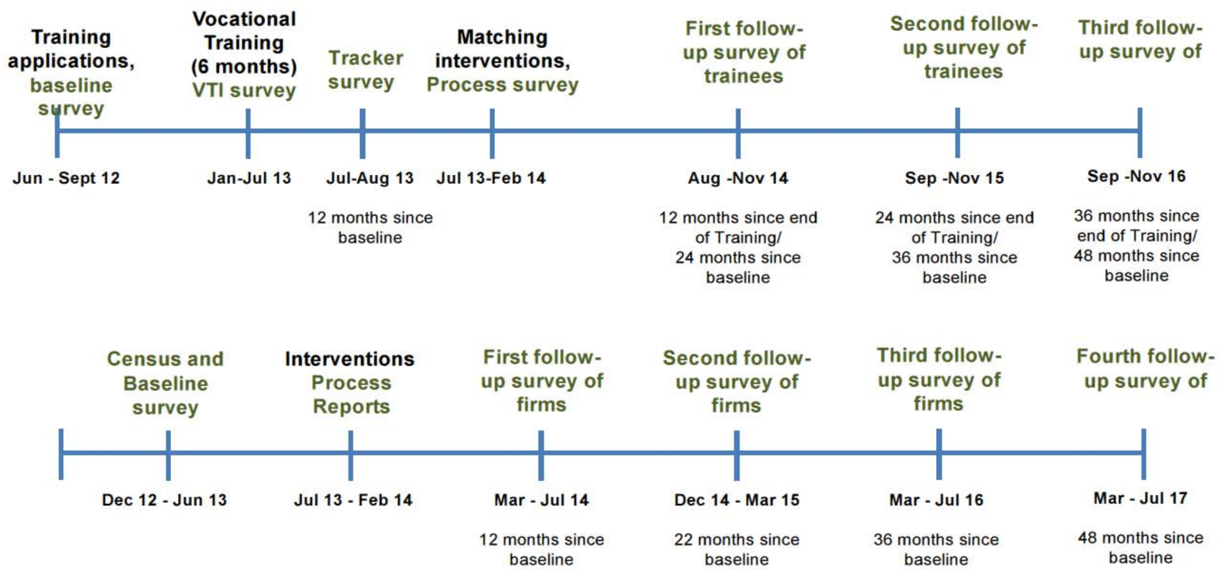
POLICY INTERVENTION: EXAMPLE 3 *[ALFONSI ET AL. 2020]*

- two-sided RCT in urban labor markets, Uganda
- workers: young labor market entrants
- firms: SMEs in eight sectors [manufacturing, services]
- <u>two-sided</u> experimental design: T and C workers; T and C firms
- the RCT measures causal impacts on workers and firms of experimentally varying:
  - vocationally training workers before they enter the labor market [VT]
  - incentivising firms to hire and train workers on-the-job [FT]
- context: Uganda
  - skewed age distribution, youth unemployment key policy issue
- key distinction between VT and FT: VT provided skills are <u>certifiable</u>

Timeline

- baseline sample: 1714 individuals eligible for training
- follow-up surveys cover period **after** subsidy has expired
  - 24, 36 and 48 (12, 24 and 36) months after baseline (training ends/firm placement)

Figure 2: Timeline



RESULTS

- VT workers earnings rise by 34%, FT worker earnings impacts smaller at 24%
- Key mechanism is **dynamic**: UJ transitions much higher for VT workers
- When FT workers fall off the job ladder, it is as if their labor history disappears
  - convergence between C and FT groups over time
  - gap between VT and FT: returns to skills

certification

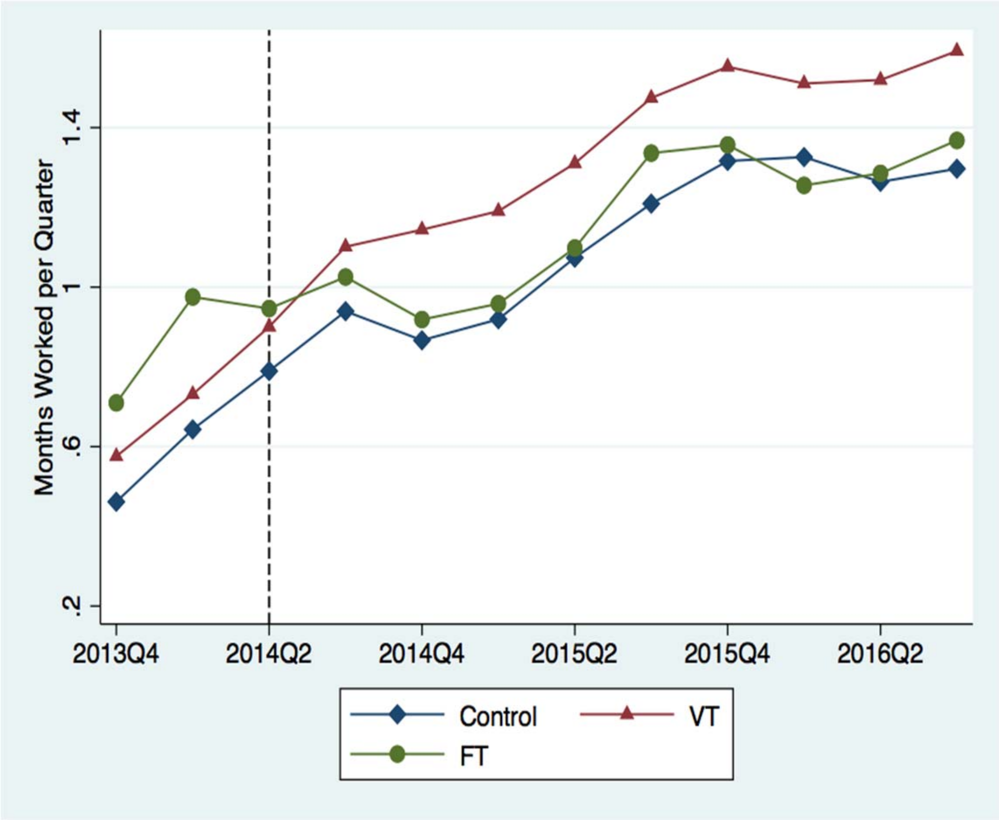
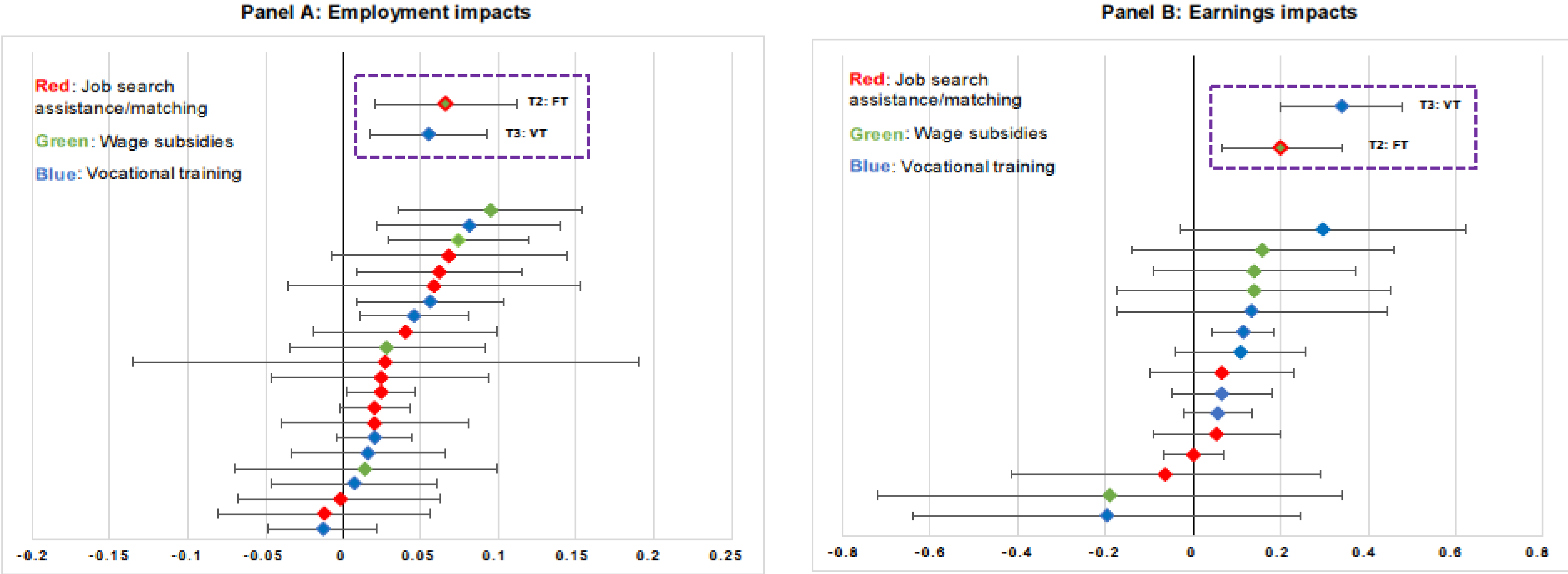


Table 10: Internal Rate of Return

	Firm Trained	Vocationally Trained
	(1)	(2)
Social discount rate = 5%		
Remaining expected productive life of beneficiaries	38 years	38 years
Panel A. External parameters		
Total cost per individual at year 0 [USD]:	**368**	**510**
(i) Training costs (for 6 months)	302	470
(ii) Program overheads costs	31	4
(iii) Foregone earnings (for 6 months) - average at baseline	36	36
Panel B. Estimated total earnings benefits		
2 Benefits/cost ratio	**1.69**	**3.56**
Social discount rate = 10%	0.98	2.06
3 Internal Rate of Return (IRR)	**0.098**	**0.211**
Panel C. Sensitivity		
Sensitivity to different expected remaining productive life of beneficiaries		
Remaining expected productive life = 10 years	**0.001**	**0.166**
Panel D. Programme Costs for IRR to equate social discount rate		
5 Total cost per individual at year 0 [USD]	**624**	**1814**

Figure 7: Comparison of Treatment Impacts to Meta-analysis by McKenzie [2017]



we have documented large impacts of training relative to studies in middle- and high-income countries: **why?**

- sectoral focus: reduced mismatch
- worker selection into evaluation sample, low attrition
- treatment intensity
- VTI quality (interacting with imperfect information of workers)

RURAL LABOR MARKETS

- Labor is the key endowment of the poor, limited occupational choice
- Mechanisms via which expanded access to capital enable individuals to alter their occupational choices and exit poverty
  - $F(L) \longrightarrow F(L,K)$
- Anti-poverty programs fall into two strands:
  - L: education, vocational training, cash transfers conditioned on school attendance…
  - K: banking/savings, microfinance and asset transfer programs

POLICY EXAMPLE 4: BRAC'S ULTRA-POOR PROGRAMME *[BANDIERA ET AL. 2017]*

- Potential beneficiaries: ultra-poor women, identified by communities, verified by BRAC
  - 93% illiterate, 52% own no productive assets, live on 93c per day
- Beneficiaries select from a menu of assets: livestock, small crafts, small retail, vegetable gardens, and commit to retain asset for two years
- Almost all choose a livestock combination [2 cows, 1 cow+2goats, etc.]
- Twin components that relax K and skills constraints:
  - livestock asset transfer: high value [9500TK, about 140USD]
  - livestock specific training: intensive and long lasting [2-years]

RESEARCH DESIGN

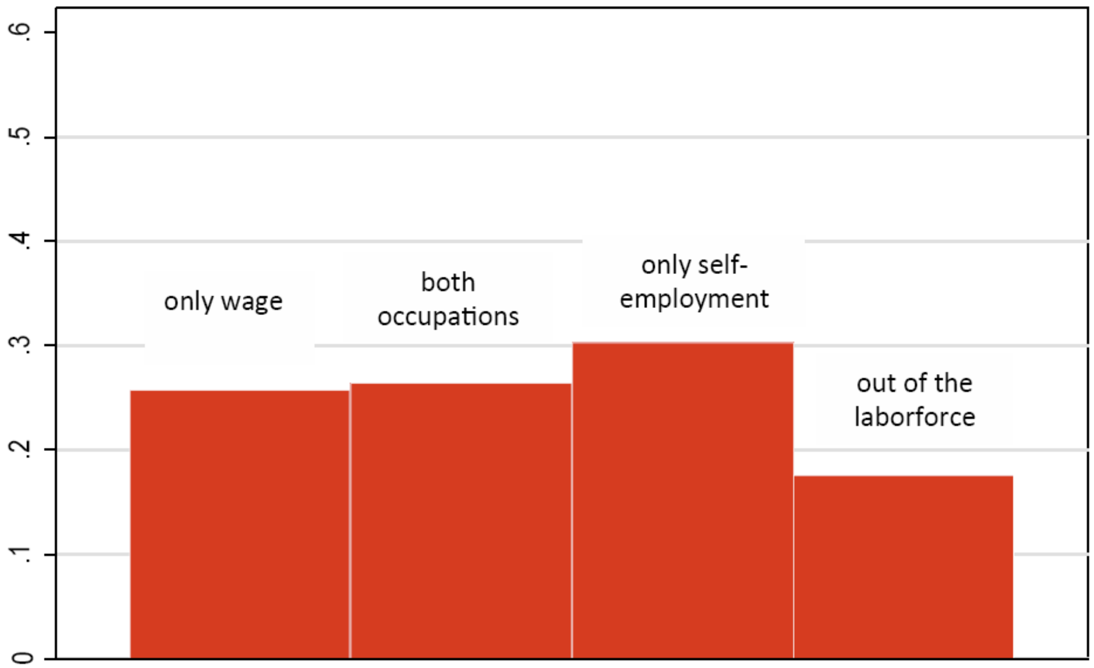
- Sample 20K+ households from 1409 villages in 40 BRAC branch offices in rural Bangladesh

- All villages in 20 branches **randomly assigned** to treatment

- Partial population experiment: survey all beneficiaries and a sample of non-poor households at different points of the wealth distribution

- Explore dynamic effects on treated with two follow-ups: 2, 4, 7 (**and now 11**) years after baseline [2007, 2009, 2011, 2014, 2018]

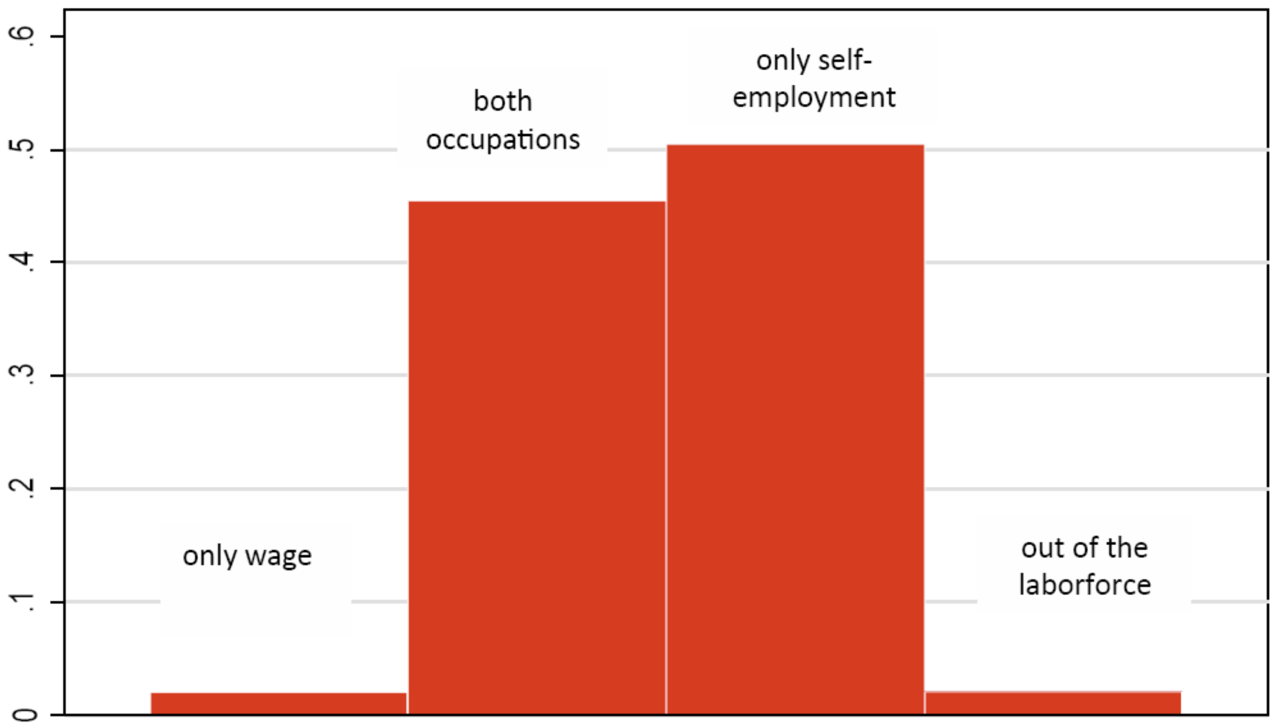
OCCUPATIONAL CHOICES OF THE BENEFICIARIES AT BASELINE



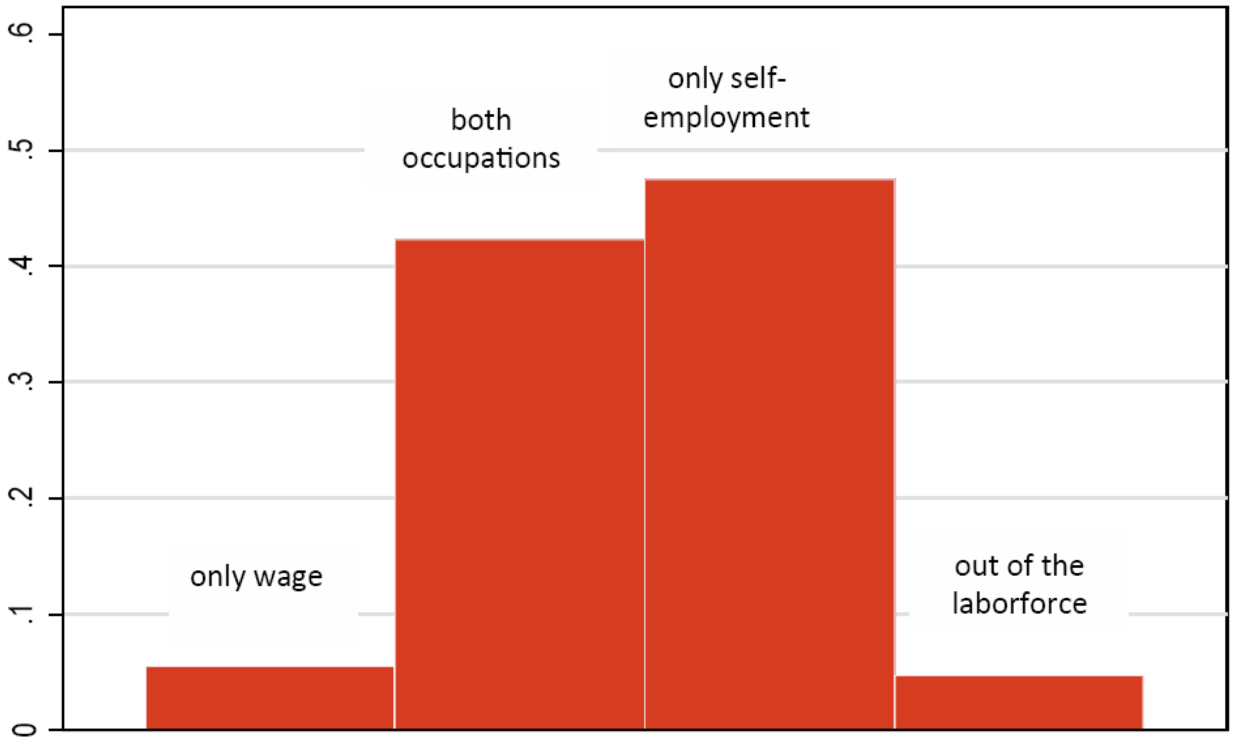
- Textbook *poor: engaged in multiple occupations (mean 2.4), including both wage labor and self-employment, no regular or full-time activities, exposed to earnings seasonality*

- *(How) does this change if they receive business assets and training?*

OCCUPATIONAL CHOICES OF THE BENEFICIARIES TWO YEARS LATER

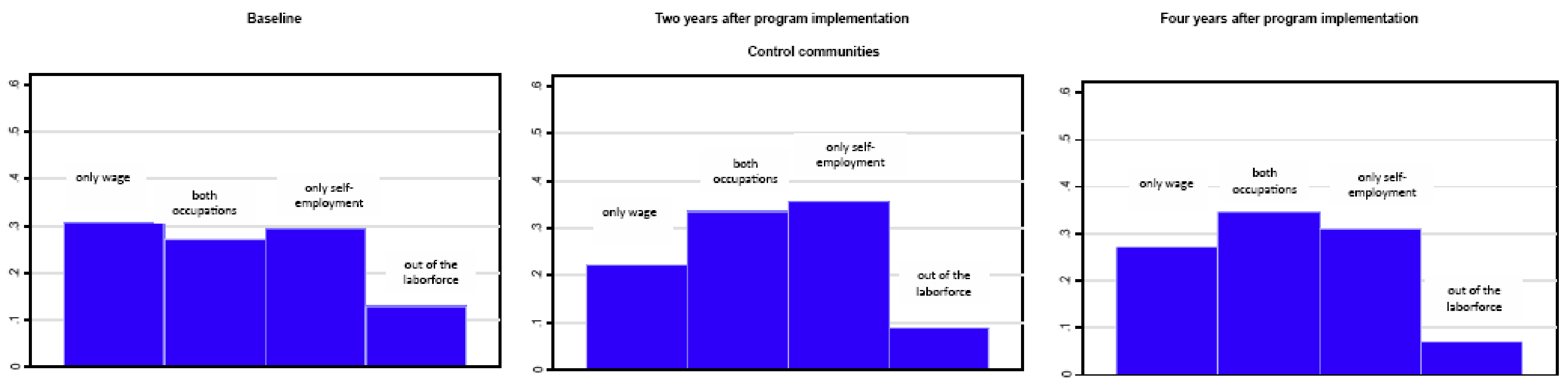


OCCUPATIONAL CHOICES OF THE BENEFICIARIES FOUR YEARS LATER



- Sustained impacts over a four year period
- *Results not driven by endowment effects*

OCCUPATIONAL CHOICES OF THE POOR IN CONTROL COMMUNITIES OVER TIME



- No underlying time trends in occupational choices
- *Captures natural speed of structural change in rural Bangladesh 2007-11*

TRANSFORMATION IN OCCUPATIONAL CHOICE

- Eligible women work more days per year

  – total annual hours worked increase by 19% after 4 years

  - work two more months each year: UP women close gap to wealthiest women on LS

- Labor reallocation: work fewer hours in wage labor (-26%) and more in self-employment (+92%)

- Next tables focuses on outcomes not directly related to occupational choice

  - asset accumulation

  - consumption and well-being

ASSET ACCUMULATION

	(1) Cows	(2) Poultry	(3) Goats	(4) Value of All Livestock (Tk)
Program effect after 2 years	1.07***	2.15***	0.667***	9983***
Program effect after 4 years	1.06***	1.64***	0.415***	10734***
Mean of outcome variable in treated communities at baseline	0.083	1.79	0.147	940.31
Four year impact = Initial Programme Transfer [p-value]	**.541**	**.000**	**.000**	**.000**
Number of eligible poor women	6732	6732	6732	6732
Observations	20196	20196	20196	20196

LAND

	(5) Rents Land For Cultivation	(6) **Owns Land** for Cultivation
Program effect after 2 years	0.069***	0.005
Program effect after 4 years	0.109***	**0.026*** **
Mean of outcome variable in treated communities at baseline	.058	.068
Number of eligible poor women	6732	6732
Observations	20196	20196

CONSUMPTION AND WELL-BEING

	Expenditures			Well Being	
	(1) PCE Non Food	(2) PCE Food	(3) Food Security	(4) Happy [yes=1]	(5) Experience Anxiety [yes=1]
Program effect after 2 years	179***	541***	0.176***	0.031	0.000
Program effect after 4 years	503***	331*	0.081***	0.064**	0.014
Mean of outcome variable in treated communities at baseline	1054	8861.1	.457	0.404	0.531
Number of eligible poor women	6732	6732	6732	6732	6732
Observations	19266	18890	20194	19237	19279

MPC around one third/one half

Earnings gains are being invested (assets, land), saved lent to <u>other</u> households

*Observe **birth of credit markets** in these village economies*

COST-BENEFIT ANALYSIS

- Program costs TK20,700 per household (value of the asset + training) and yields **TK1754** per year (in fourth year)

- Compare to impacts of an equivalent valued unconditional cash transfer: requires assumption on counterfactual return to cash transfers
- Assume depositing the transfer in a savings account and consuming only the interest accrued every year yields **TK932** at 4.5% p.a.

- Possibly other ‘taxes’ to be paid from UCT:
  - cash flows difficult to protect from relatives' claims (kinship taxes)
  - self-control issues

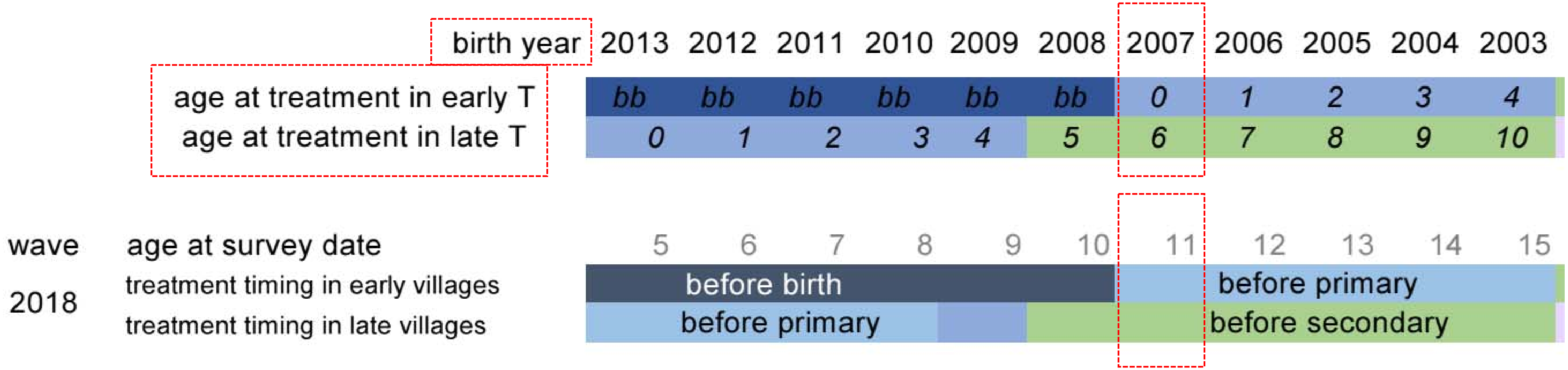
- IRR: 14%
- Replicated across countries [Banerjee et al. 2015]: IRRs between 12 and 20%

COMING FULL CIRCLE... *[BANDIERA ET AL. 2020]*

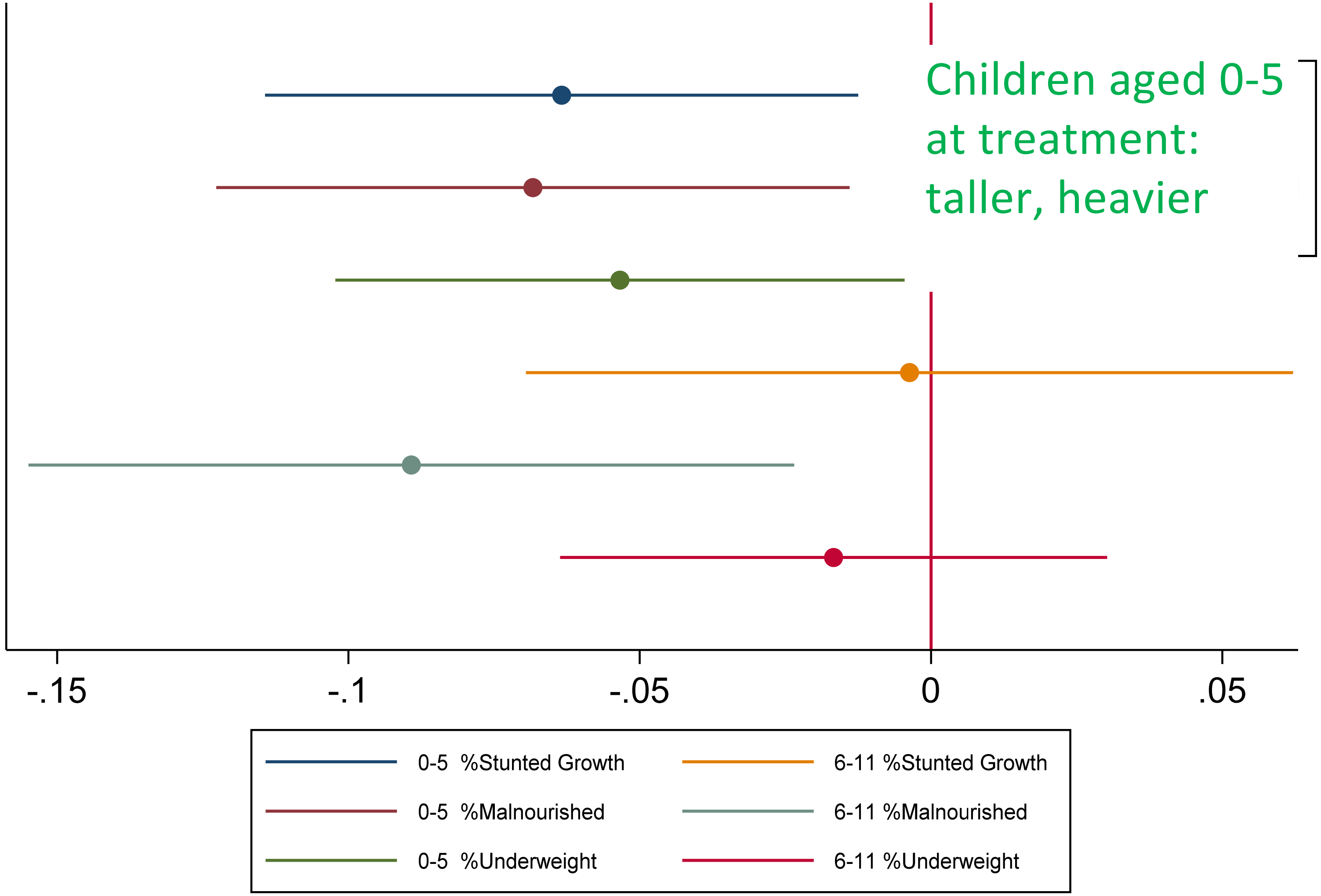
- Now conducting 11 year follow-up survey of treated UP households
- Focus is on HK accumulation and labor market choices of children of women beneficiaries
- most eligible women had young children at baseline
  - 1.4k in utero (10 at endline)
  - 3.2k aged 0-5 (11-16 at endline)
  - 3.4k 6-10 (17-21 at endline)

- Identification: compare individuals in treatment locations who were treated as children to similar age individuals in control locations who were treated when older

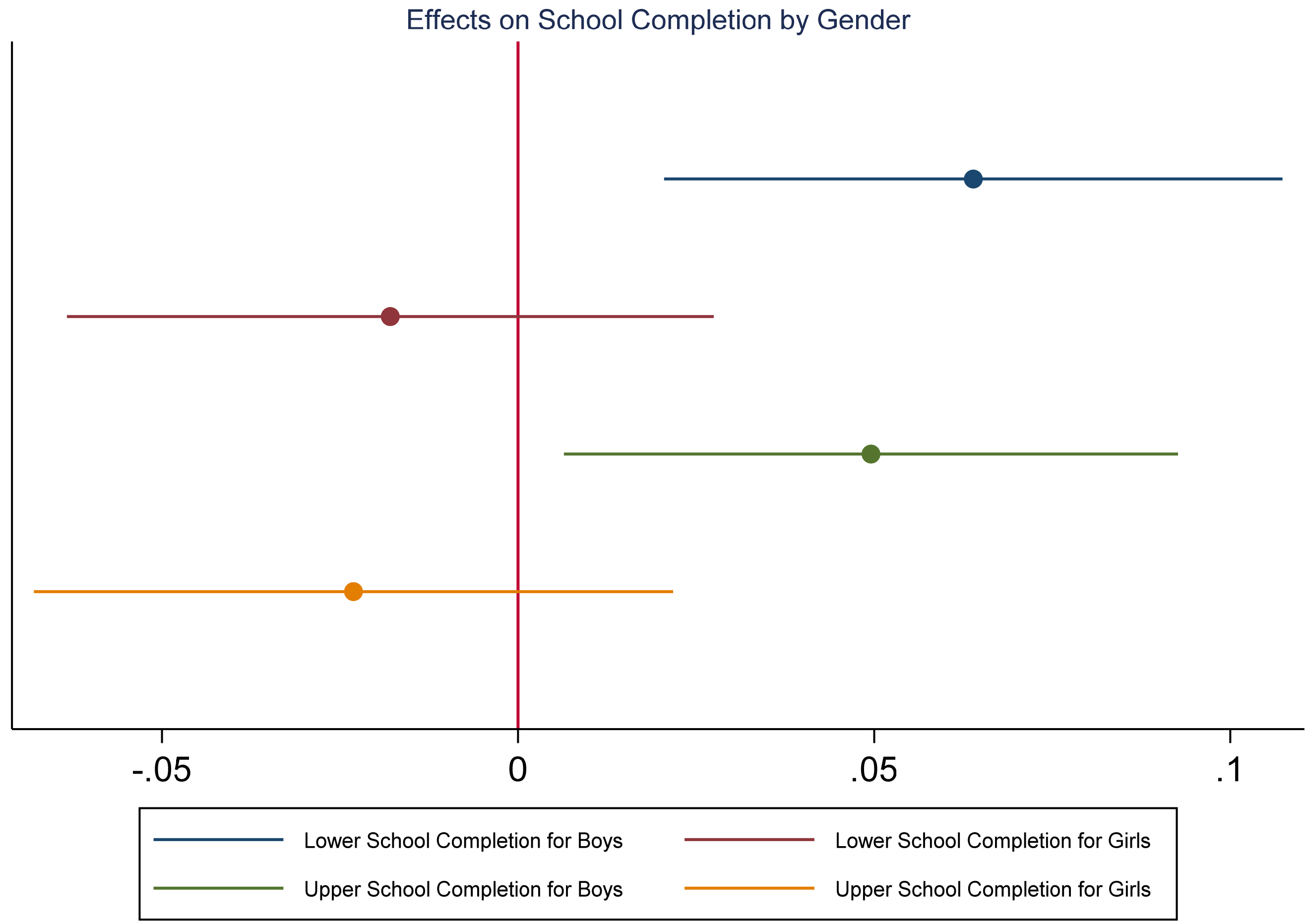
IDENTIFICATION



11 years after treatment, share of stunted and malnourished falls by 6pp



SCHOOL COMPLETION RATES INCREASE FOR BOYS



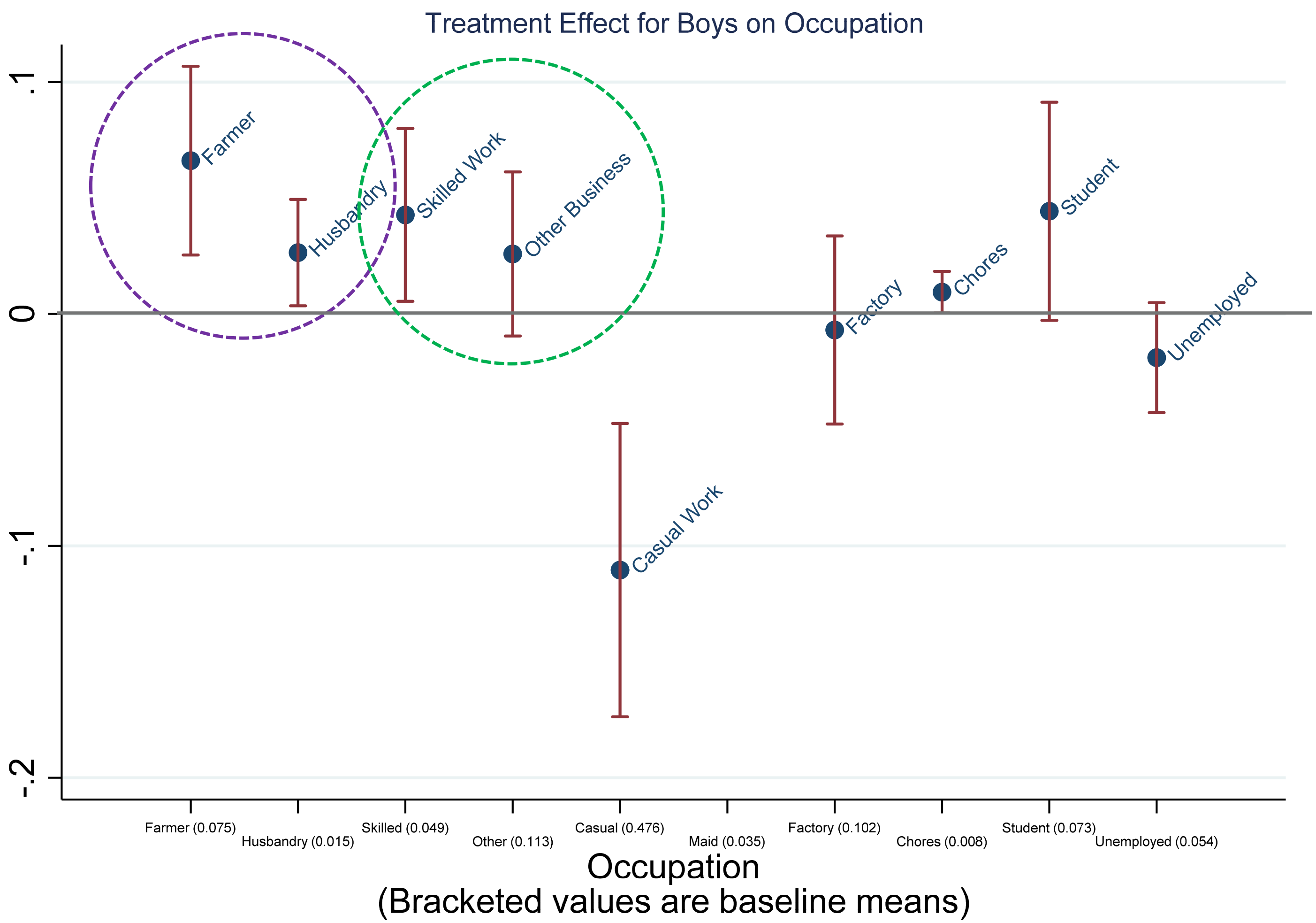
5pp increase in primary completion

(C = .51)

5pp increase in some secondary

(C=.26)

Transforms Occupational Choice for Boys



MY FUTURE AGENDA

- On the **measurement**, **accumulation** and **assignment** of human capital

- **on the demand for good policy**
  - ongoing work on the impact of asset transfer programs to the poor and:
    - preferences for redistribution
    - perceptions of inequality
    - trust in state

- **on the chain reaction of demand to supply side policies** [Oriana’s talk]
  - using RCTs to understand the process of structural change that has taken hundreds of millions out of poverty

THANK YOU!

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