Identifying Constraints to Microenterprise Growth (Based on experiments in Sri Lanka)

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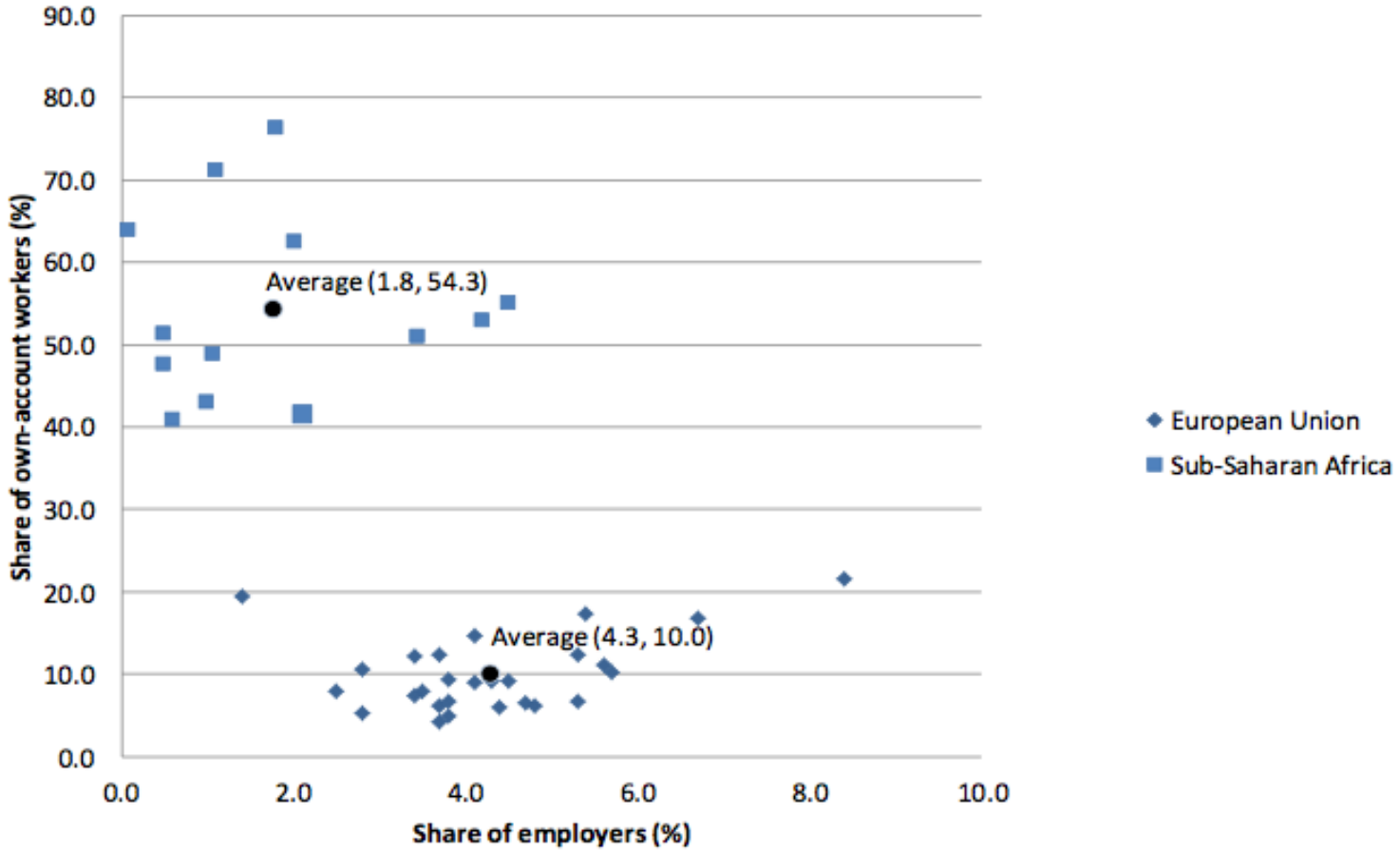
Own account vs. Employers

Figure 3b. Share of employers and own-account workers in total employment, available European Union and low-income and lower-middle-income sub-Saharan African countries, latest years



Source: ILO

Understanding microenterprise dynamics

- The experiments subject the microenterprise owners to a series of shocks (almost all positive shocks). What do we learn from the way they respond to these shocks?
  - Capital constraints? What is MPK? Are firm owners optimising capital stock?
  - Constraints to hiring labour? What is MPL? Are firm owners optimising the use of labour?
  - Can owners be taught to make their businesses more productive? (Karlan and Valdivia 2011; Bloom et al 2012; Drexler, Fischer and Schoar, 2011, etc.)
  - Does informality suppress growth? (e.g., de Soto 1989; Rauch 1991)

Capital, wages and training

- Previous project: Provided capital injections into microenterprises in Sri Lanka
  - Large increases in profits
  - But no change in employment

Capital…effects after 5 years

	Males			
	Monthly real profits (LKR)	Truncated real profits (LKR)	Log real profits	Total labor income (LKR)
Amount × first year since grant	648.2**	685.3**	0.142***	799.7***
	(285.6)	(272.5)	(0.0486)	(278.9)
Amount × second year since grant	625.3	576.4	0.0927	768.3*
	(406.4)	(384.3)	(0.0563)	(391.6)
Amount × third year since grant	749.6*	703.8*	0.114*	867.9**
	(411.5)	(392.8)	(0.0634)	(405.7)
Amount × five to six years since grant	1218*	789.3	0.136**	875.8*
	(622.3)	(499.6)	(0.0637)	(506.5)
Mean for control group	6864	6806	8.55	6455
P value for testing constant effect over time	0.816	0.965	0.629	0.991
Observations	2212	2212	2201	2329

Science, 24 Feb 2012

Capital, wages and training

- Previous project: Provided capital injections into microenterprises in Sri Lanka
  - Large increases in profits
  - But no change in employment
- Data suggest that learning to manage non-family employees is a particularly difficult step to make
  - Management skills? – How to hire, how to manage
  - Types? – How will the owner determine if he/she is an effective manager?
  - Need for a large lump of capital to make the new worker productive?
  - Training required to make a new worker productive?

Project motivation

- This project: examine the reasons why the non-employer to employer transition is so challenging

- We offer selected firms 1 or 2 of the following:
  - Matched savings program (50-100% match rates, 'locked' for 9 months)
  - Training (ILO "Improve Your Business")
  - Incentives to hire new worker (4000 LKR/month, ~50% of unskilled wage)

Project motivation

- Previous work on:
  - Financial constraints
    - De Mel et al (2008, 2009), Fafchamps et al (2011), grants (urban small)
    - Banerjee, Duflo, Glennester and Kinnon (2010); Karlan and Zinman (2010), microfinance (clients)
    - Bandiera et al (2010), grants (rural ultrapoor)
  - Training
    - Karlan and Valdivia (2011), MFI clients Peru
    - Drexler et al (2010) female MFI clients DR
    - Berge et al (2010), MFI clients Tanzania
    - Bruhn and Zia (2011), MFI clients Bosnia-Herzegovina
    - Bloom et al (2012), India, but not microenterprises
  - Incentives to hire
    - ?

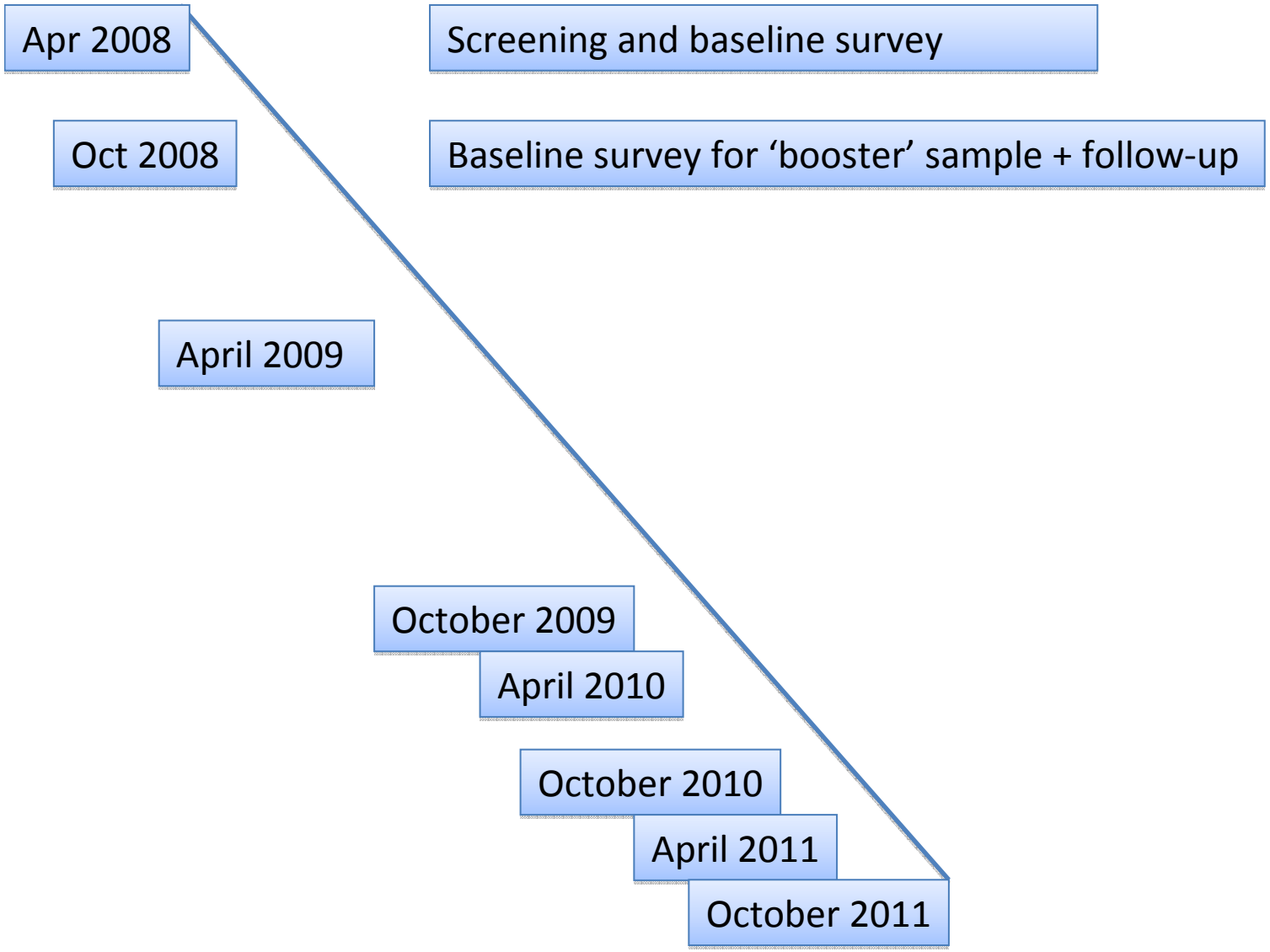
Project motivation

- This project differs in two ways from most of the earlier work:
  - Random sample of microenterprise owners
  - Intervening on three different fronts – also enables us to examine the existence of interactions across the factor inputs.
  - The three interventions are *not* policy interventions. We don't propose them as policies. But we do think that they may help us understand how microenterprise owners think about growth.
    - We can fully identify the production function [$Y = A\,f(K,L)$] of the microenterprises
    - That may help us understand how to design better policies.

Sample

- Sample of 1535 Sri Lankan microenterprise owners
  - Male
  - 18 Urban areas (DS divisions)
    - Colombo (5), Kalutara, Gampaha, Negombo
    - Kandy, (5) Matale, Kurunegala, Kegalle
    - Galle , Matara
  - Selected through door-to-door screening exercise of households in randomly selected GNs
  - aged 20 to 45
  - with 2 or fewer employees at baseline (87% non-employers)

Timeline of project



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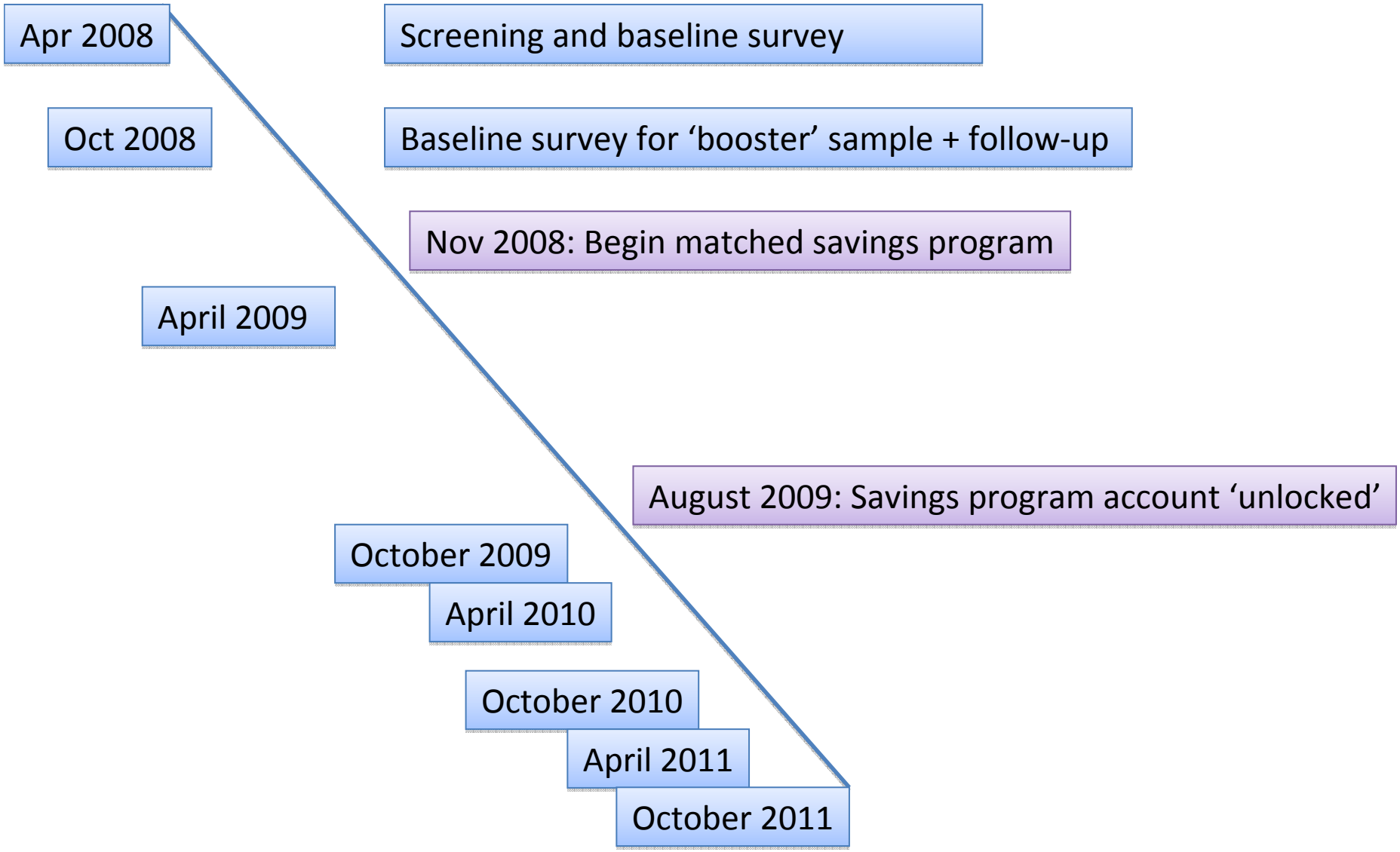

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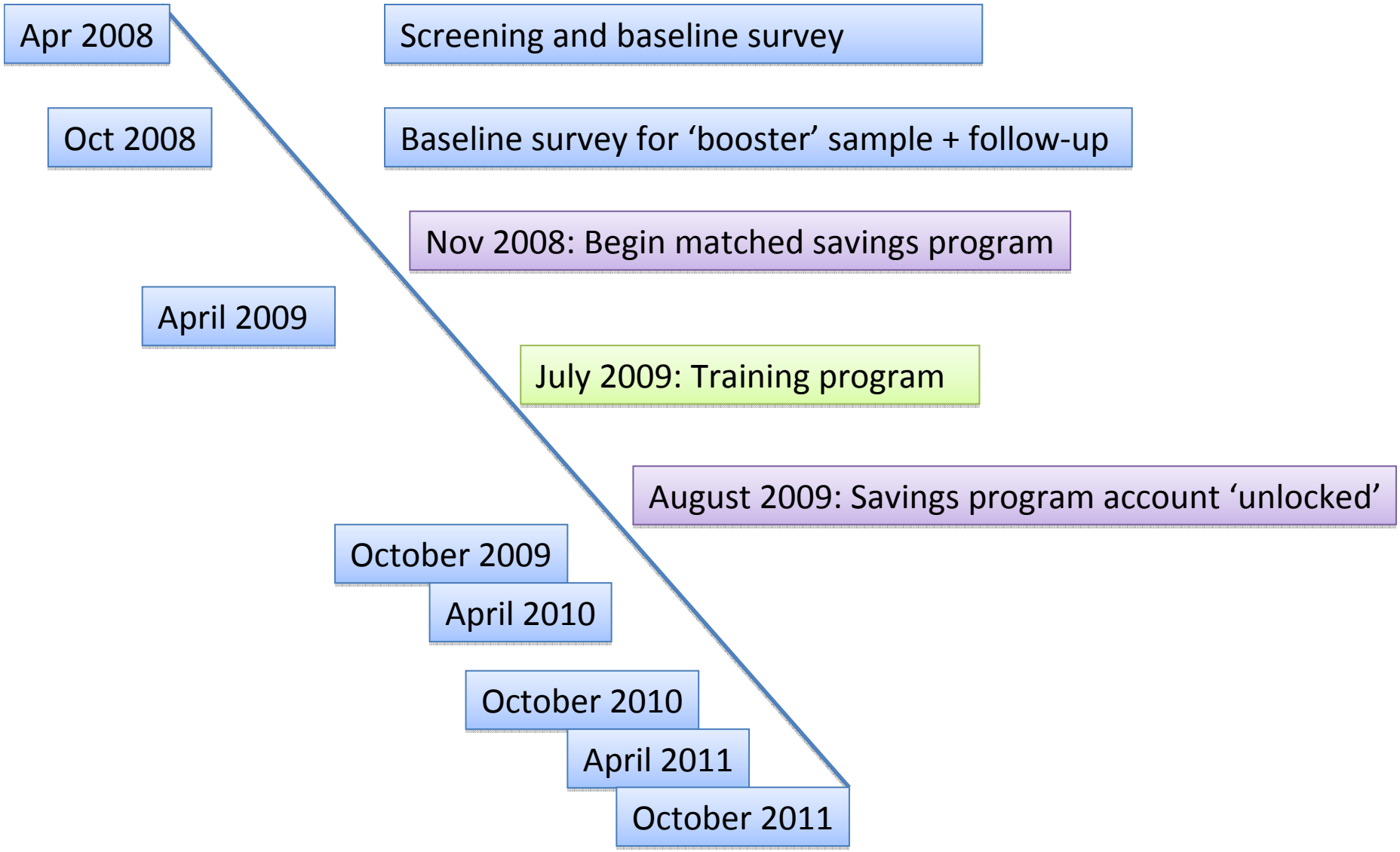

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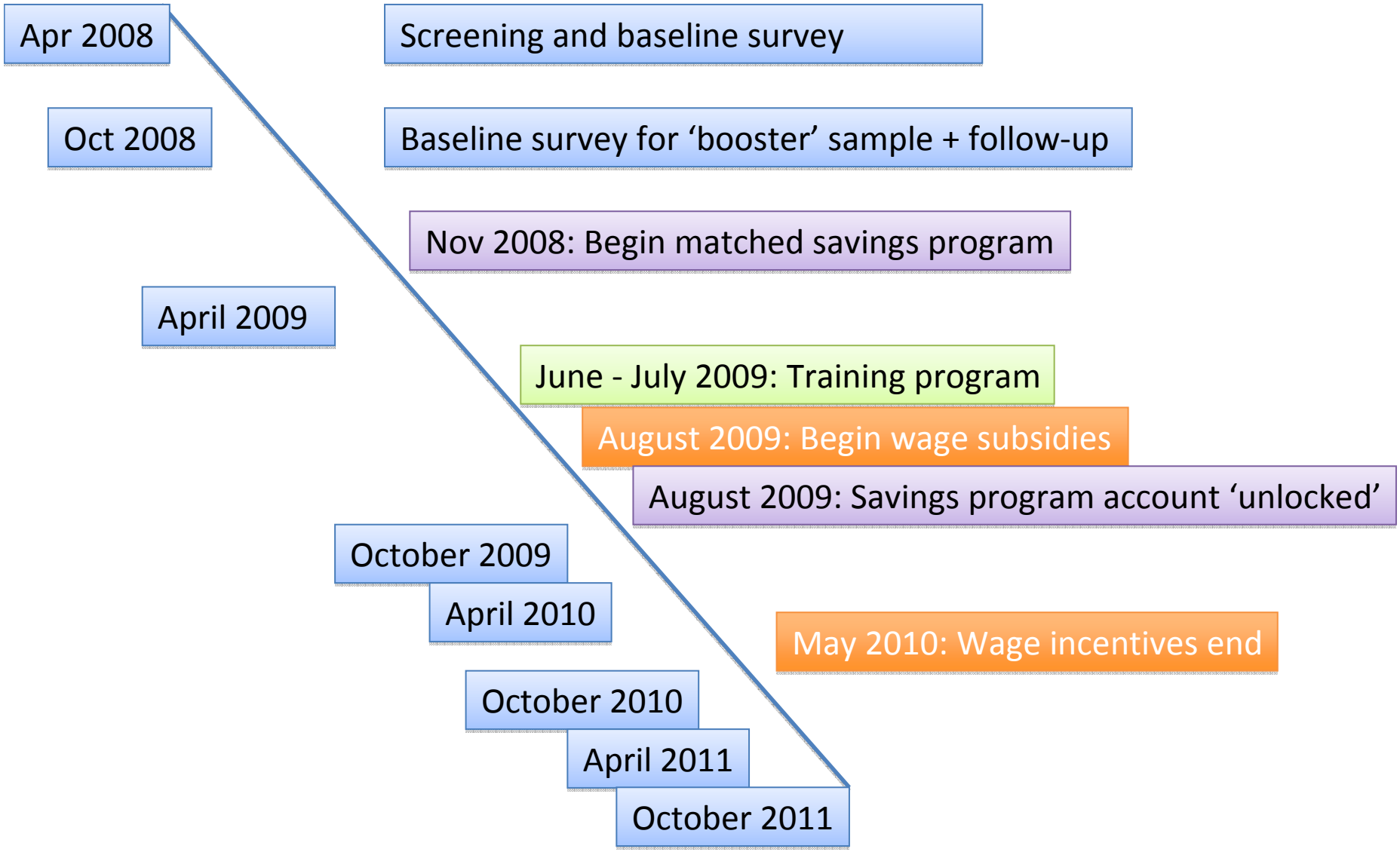


Sample: Random allocation to cells

Intervention 2 \ Intervention 1	None	Savings	Training	Employment
None	287	112	141	250
Savings			150	297
Training		150		298
Employment		297	298	
Total	287	559	589	845

Note: Stratified on retail vs non-retail and region (Colombo area, Kandy area, Galle area).

Take-up: Proportion of those offered

	Number Offered	% Participating
Savings	559	81.4% (455)
Training	589	57.9% (341) (1)
Employment	845	29.2% (247)

(1) Based on the percentage completing the training course. 368 (62.5%) began the training course.

Who takes up: Employment

TABLE 1—DETERMINANTS OF TAKE-UP OF A MICROENTERPRISE WAGE SUBSIDY

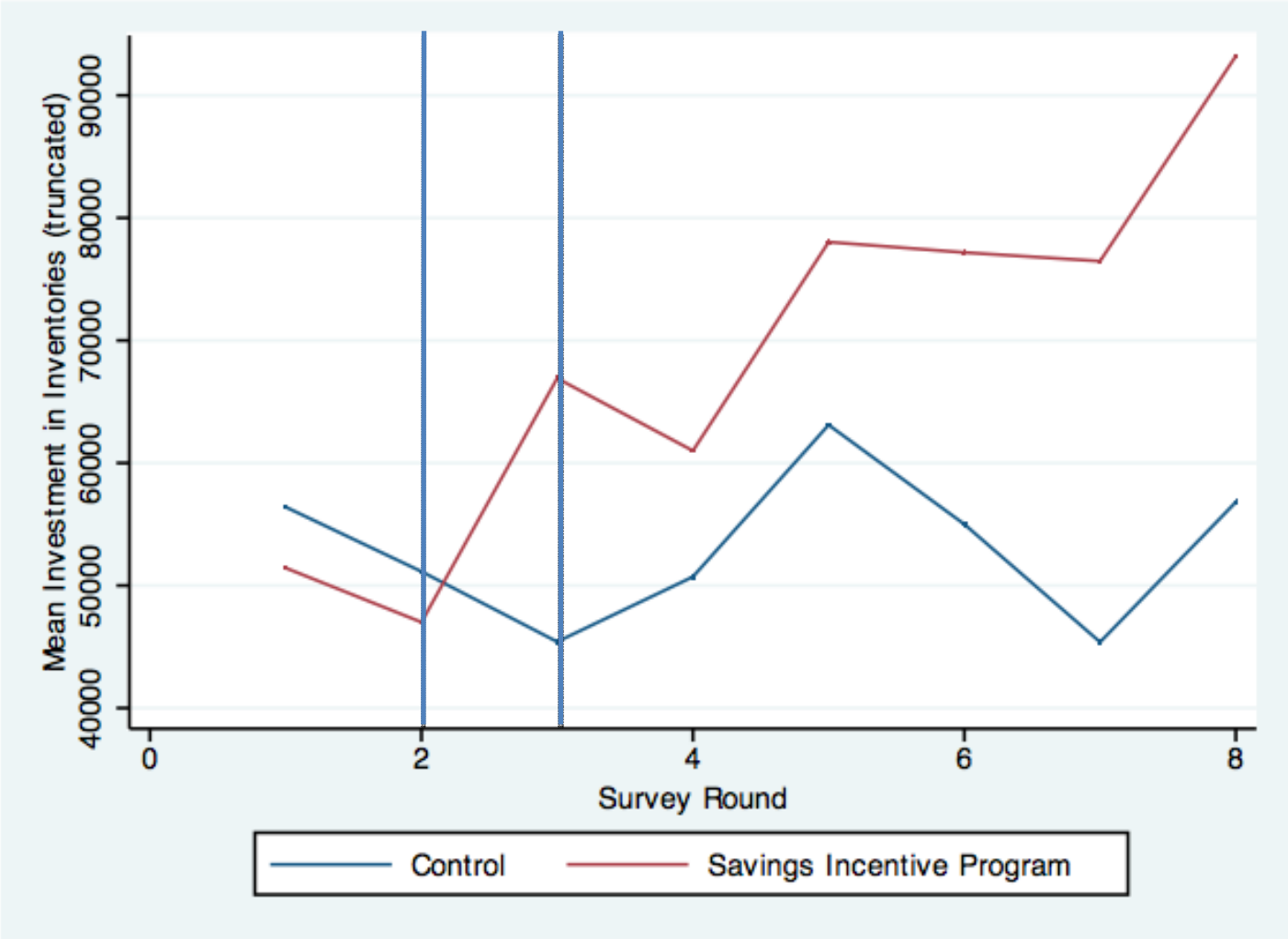
	(1)	(2)	(3)	(4)
Colombo	−0.127***		−0.0969**	−0.104**
	(0.0454)		(0.0464)	(0.0464)
Firm had a paid worker	0.0335		0.0195	0.0163
	(0.0509)		(0.0484)	(0.0480)
Firm had an unpaid worker	0.0819*		0.0737	0.0693
	(0.0488)		(0.0487)	(0.0489)
Firm had above median assets	0.0680**		0.0465	0.0458
	(0.0316)		(0.0313)	(0.0312)
Education of owner (years)		0.0146**	0.00913	0.00960
		(0.00711)	(0.00730)	(0.00720)
Business practices: 2nd quartile		0.0801*	0.0627	0.0657
		(0.0473)	(0.0475)	(0.0476)
Business practices: 3rd quartile		0.114**	0.0750	0.0755
		(0.0539)	(0.0536)	(0.0536)
Business practices: Top quartile		0.202***	0.146***	0.139**
		(0.0526)	(0.0560)	(0.0558)
Says would hire additional worker				0.0645**
				(0.0306)
Observations	772	772	772	772

De Mel et al, May 2010 AER P&P. Based on initial take-up by 22% of the sample.

Expected treatment effects: "1st stage"

- Savings incentives → Capital stock
- Training → Management practices
- Wage subsidies → Labour

Effect of savings program on inventory levels

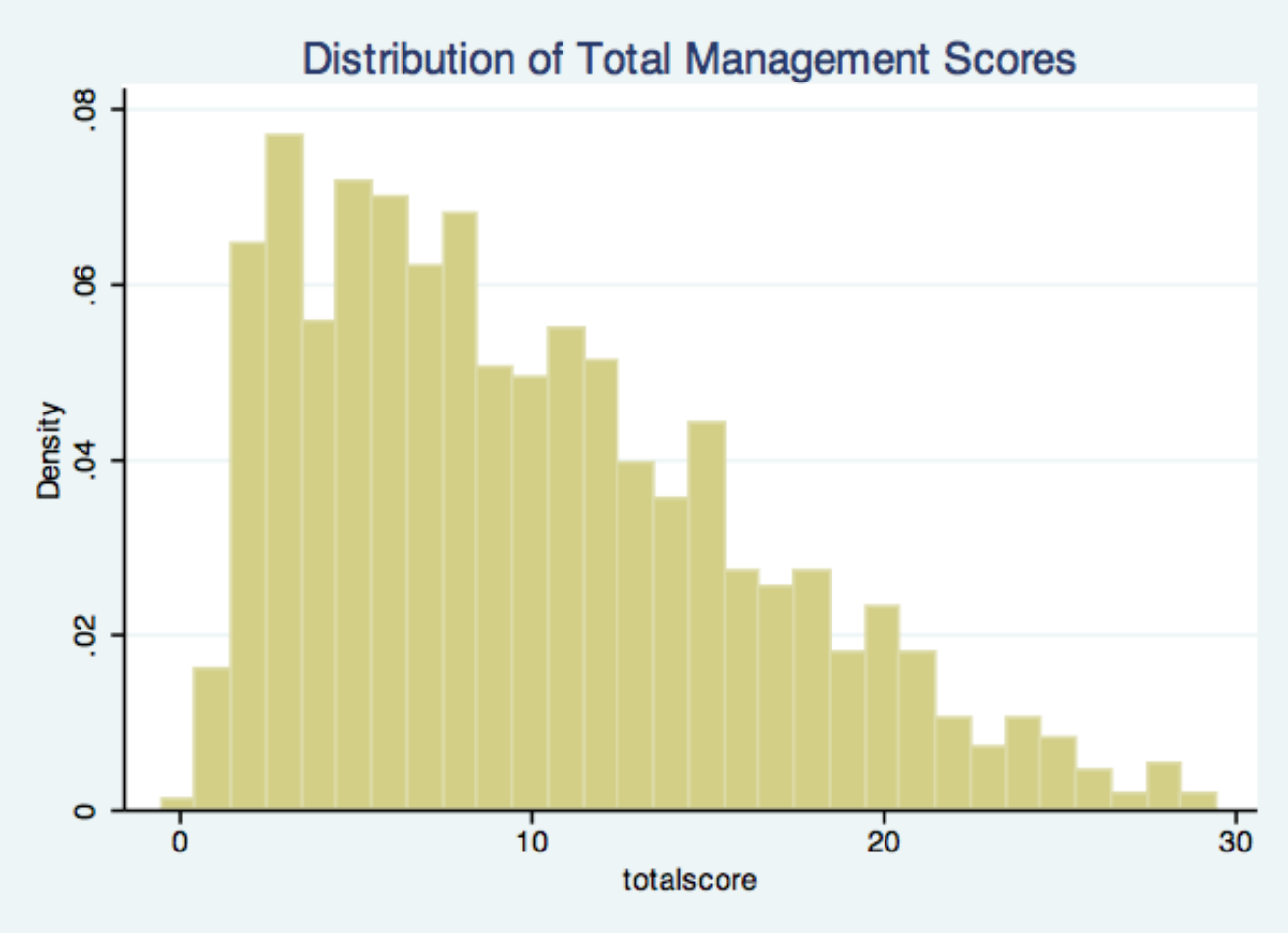


Measuring management practices

- Series of questions about actual business practices:
  - In the last 3 months, have you visited one of your competitor's businesses to see what prices they are charging?
  - In the last 3 months, have you asked your existing customers whether there are any other products they would like you to sell or produce?
  - In the last three months have you attempted to negotiate with a supplier for a lower price on raw materials or goods purchased?
  - How frequently do you run out of stock of inventories or raw materials?
  - Do you keep written business records?
  - Do you have a written budget which tells you how much you have to pay each month for rent, electricity, equipment maintenance, transport, advertising, and other indirect costs of the business?
  - Do you have a target set for sales over the next year?, etc.

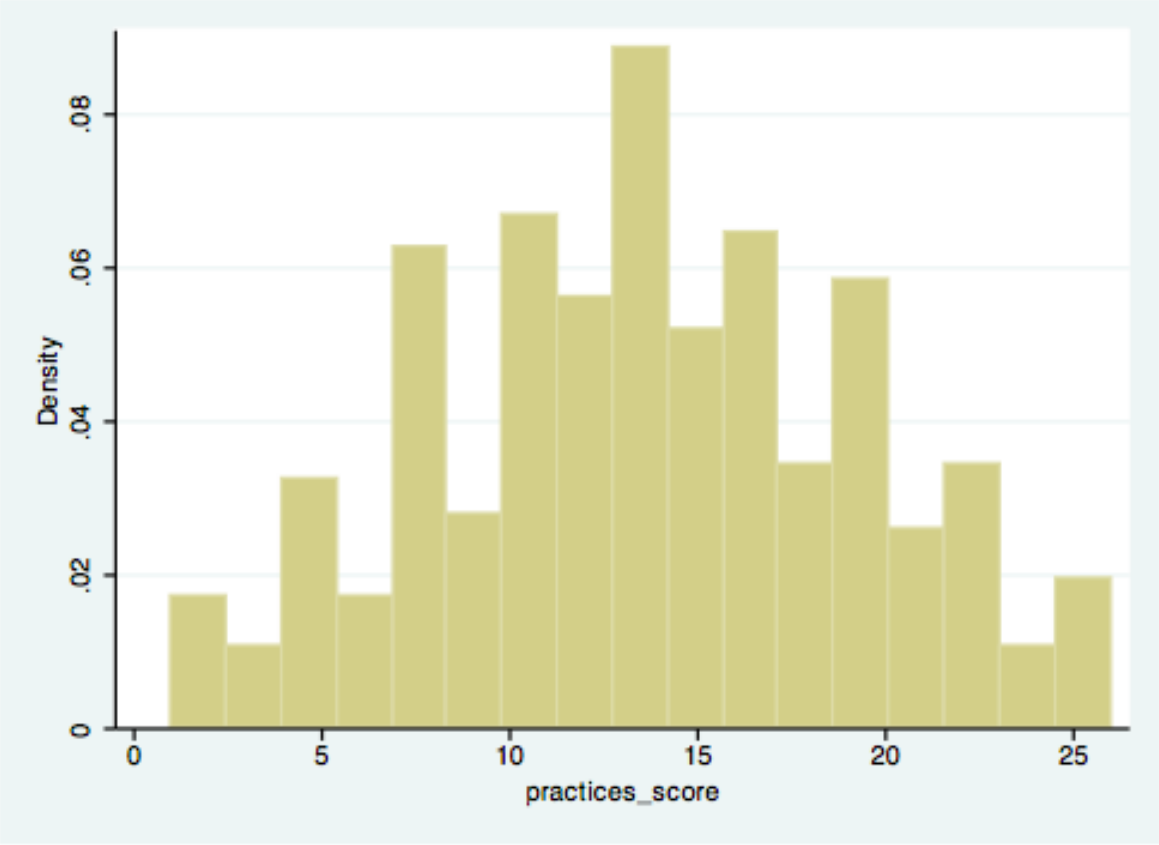
Management practices

Sri Lankan firms, 0-2 employees

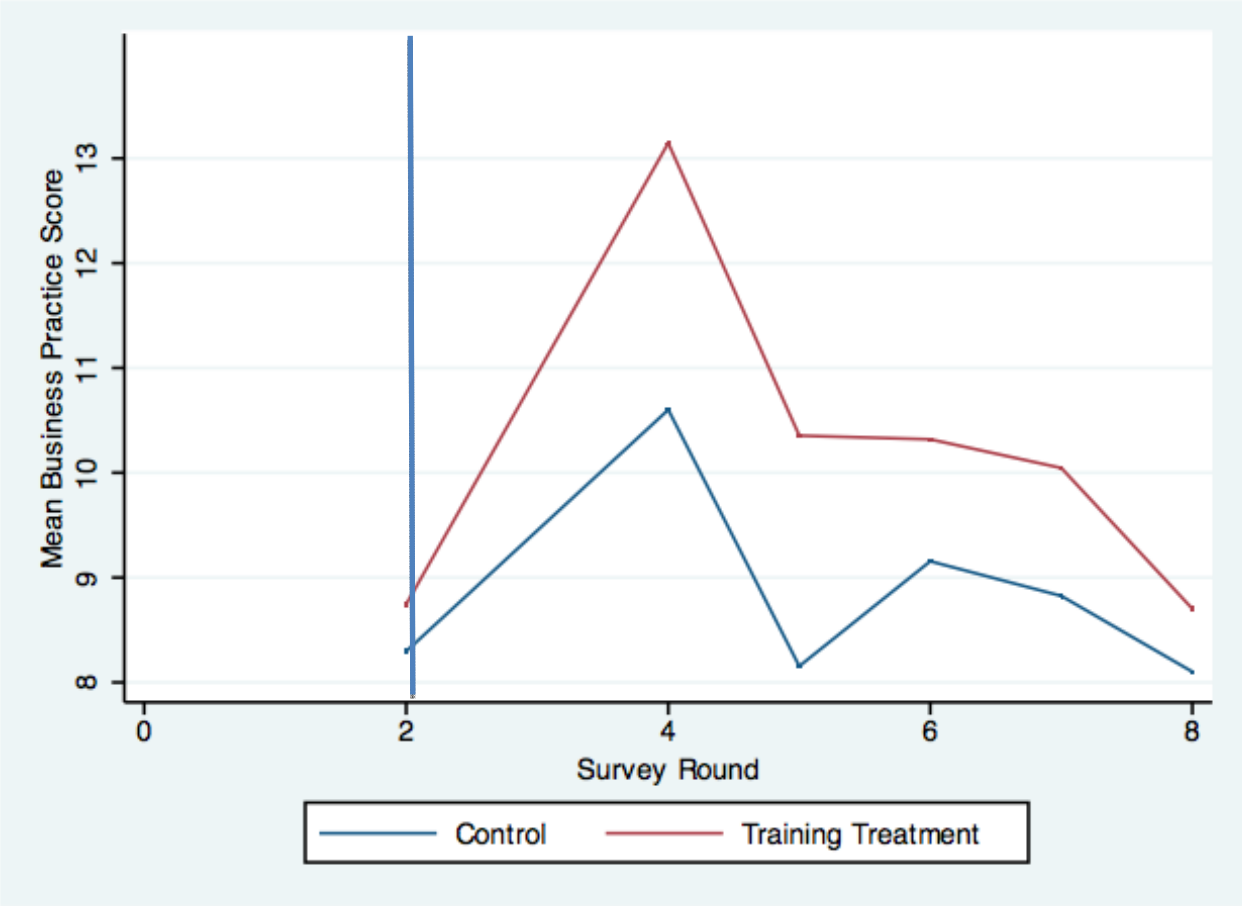


Management practice

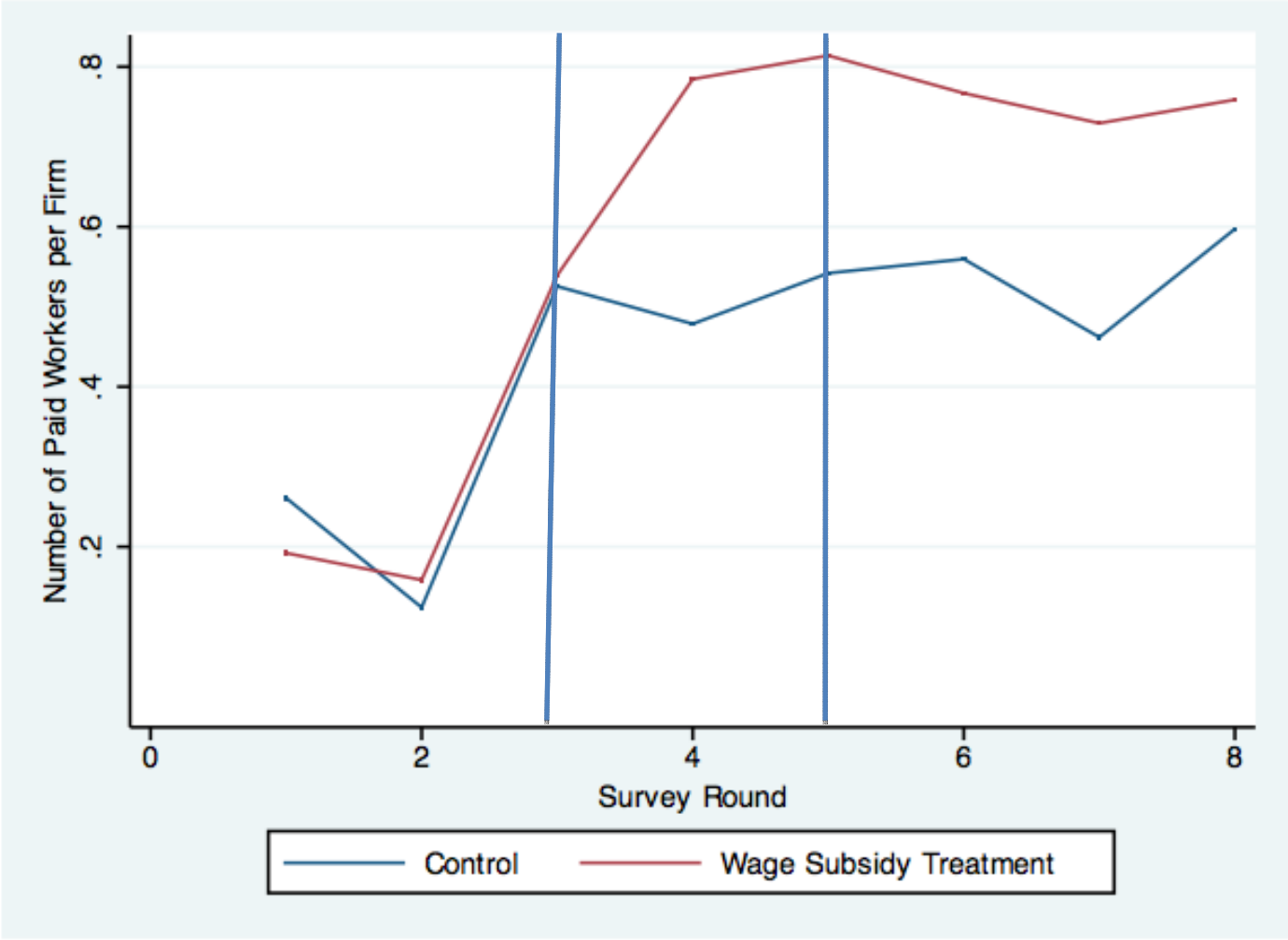
Ghanaian firms, 1-20 employees



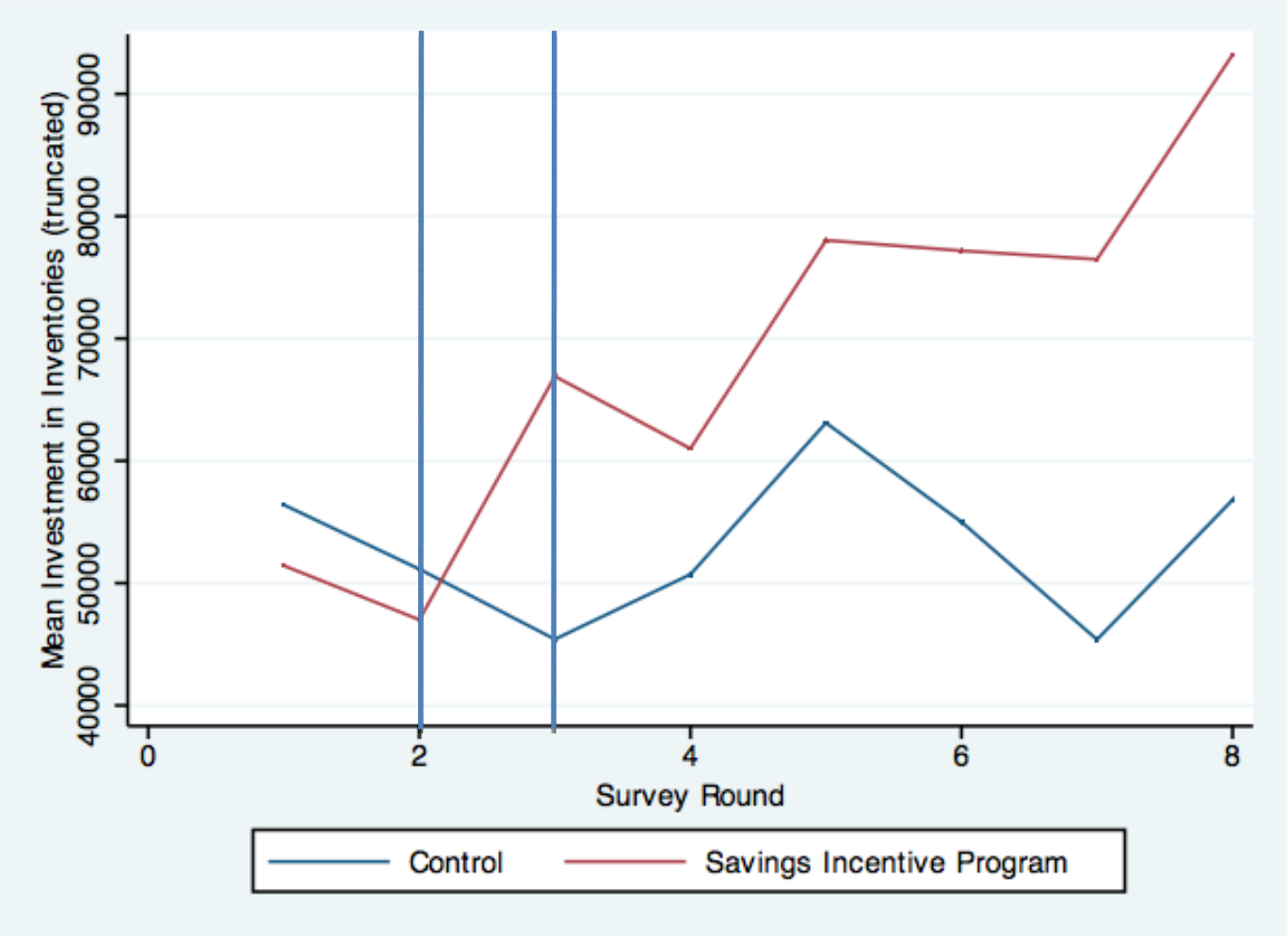
Effect of training on management practices



Effect of wage incentives on number of paid workers



Effect of savings incentives on inventories



Effect of programs on management practices

Management Practices Score							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Management Practices Score (0-30)						
	All rounds	All rounds	Round 4	Round 5	Round 6	Round 7	Round 8
VARIABLES	ANCOVA	FE	FE	FE	FE	FE	FE
Offered Savings Program	0.38*	0.52*	0.38	0.33	0.71*	0.51	0.22
	(0.2)	(0.3)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Offered Wage Subsidies	0.04	0.03	0.28	0.65*	-0.02	-0.64*	-0.72**
	(0.2)	(0.3)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Offered Training	1.00***	0.85***	1.60***	0.93**	0.51	0.75*	0.38
	(0.2)	(0.3)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)
Constant		7.95***	8.51***	8.55***	8.54***	8.55***	8.54***
		(0.3)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Observations	7,756	7,761	2,829	2,791	2,737	2,766	2,730
R-squared	0.299	0.081	0.222	0.032	0.041	0.021	0.007
Number of sheno		1,524	1,524	1,524	1,524	1,524	1,524

Effect of programs on employment

Number of paid workers (truncated at 5)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Paid workers	Paid workers	Paid workers	Paid workers	Paid workers	Paid workers	Paid workers	Paid workers
	All rounds	All rounds	Round 3	Round 4	Round 5	Round 6	Round 7	Round 8
VARIABLES	ANCOVA	FE	FE	FE	FE	FE	FE	FE
Offered Savings Program	0.100*	0.041	-0.088	0.028	0.046	0.146	0.141	0.062
	(0.06)	(0.07)	(0.08)	(0.08)	(0.10)	(0.10)	(0.09)	(0.10)
Offered Wage Subsidies	0.176***	0.188***		0.382***	0.250***	0.220**	0.244***	0.224**
	(0.06)	(0.05)		(0.08)	(0.09)	(0.10)	(0.09)	(0.10)
Offered Training	0.077	0.086*		0.080	0.143	0.288***	0.164*	0.227**
	(0.06)	(0.05)		(0.08)	(0.10)	(0.10)	(0.10)	(0.10)
Observations	7,455	8,269	1,997	2,146	2,073	2,021	2,049	2,013
R-squared	0.104	0.071	0.135	0.251	0.227	0.225	0.195	0.208
Number of sheno		1,488	1,357	1,427	1,398	1,359	1,368	1,356

Effect of programs on inventory level

Inventory levels								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Inventories	Inventories	Inventories	Inventories	Inventories	Inventories	Inventories	Inventories
	All rounds	All rounds	Round 3	Round 4	Round 5	Round 6	Round 7	Round 8
VARIABLES	ANCOVA	FE	FE	FE	FE	FE	FE	FE
Offered Savings Program	16,012.1**	18,836.3***	17,888.8*	15,510.4*	14,962.9	21,800.4**	23,475.1**	31,579.3***
	-6,882	(7,052)	(9,630)	(8,462)	(9,724)	(9,509)	(9,770)	(10,864)
Offered Wage Subsidies	11,395.00	6,170.6		16,971.1**	13,865.7	19,375.7**	4,658.1	15,786.0
	-7,187	(6,098)		(7,964)	(9,982)	(9,275)	(9,587)	(10,684)
Offered Training	1,408.00	-3,152.3		9,667.1	-355.3	7,349.1	1,181.3	2,143.1
	-7,045	(6,187)		(8,137)	(9,955)	(9,224)	(9,407)	(10,234)
Observations	8,132	9,145	2,877	2,864	2,790	2,736	2,767	2,731
R-squared	0.310	0.009	0.005	0.008	0.018	0.018	0.012	0.027
Number of sheno		1,524	1,524	1,524	1,524	1,524	1,524	1,524

Effect of programs on sales

Total Sales, truncated at 99%								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Sales	Sales	Sales	Sales	Sales	Sales	Sales	Sales
	All rounds	All rounds	Round 3	Round 4	Round 5	Round 6	Round 7	Round 8
VARIABLES	ANCOVA	FE	FE	FE	FE	FE	FE	FE
Offered Savings Program	15,214.8***	14,048.6**	4,296.8	13,719.6*	16,761.5**	11,520.9	22,767.4**	29,540.6***
	-5,892	(5,659)	(6,139)	(7,012)	(7,738)	(7,851)	(9,463)	(9,937)
Offered Wage Subsidies	2,503.60	-256.0		3,519.3	-5,536.2	-7,089.1	-2,825.8	1,875.8
	-5,834	(5,213)		(6,338)	(7,002)	(7,382)	(8,572)	(9,216)
Offered Training	5,592.20	3,673.4		3,165.6	-297.8	11,789.1	17,888.1**	11,128.3
	-5,733	(5,083)		(6,340)	(6,972)	(7,776)	(8,702)	(9,093)
Observations	7,855	8,895	2,704	2,831	2,754	2,699	2,746	2,706
R-squared	0.220	0.064	0.016	0.041	0.057	0.080	0.135	0.166
Number of sheno		1,524	1,518	1,521	1,521	1,520	1,520	1,521

Effect of programs on profits

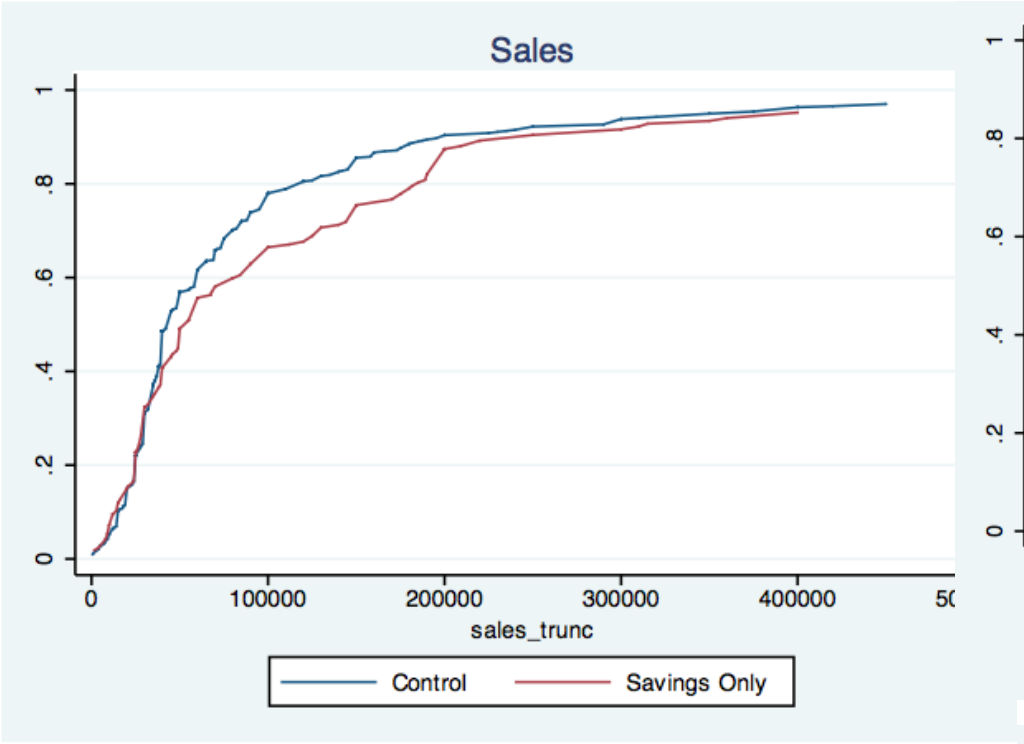
Profits, truncated at 99%								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Profits	Profits	Profits	Profits	Profits	Profits	Profits	Profits
	All rounds	All rounds	Round 3	Round 4	Round 5	Round 6	Round 7	Round 8
VARIABLES	ANCOVA	FE	FE	FE	FE	FE	FE	FE
Offered Savings Program	261.9	720.6	1,395.9	-159.5	803.1	464.6	357.3	889.6
	(712)	(765)	(1,026)	(991)	(1,214)	(1,167)	(1,189)	(1,194)
Offered Wage Subsidies	-161.2	155.0		-176.4	-595.3	-616.4	224.2	-201.8
	(729)	(703)		(932)	(1,147)	(1,104)	(1,117)	(1,151)
Offered Training	32.2	945.3		1,393.2	71.3	-734.4	923.4	1,113.7
	(730)	(696)		(975)	(1,159)	(1,100)	(1,141)	(1,173)
Observations	7,684	8,836	2,658	2,800	2,719	2,670	2,721	2,683
R-squared	0.184	0.074	0.018	0.041	0.070	0.116	0.153	0.240
Number of sheno		1,522	1,510	1,520	1,517	1,514	1,515	1,513

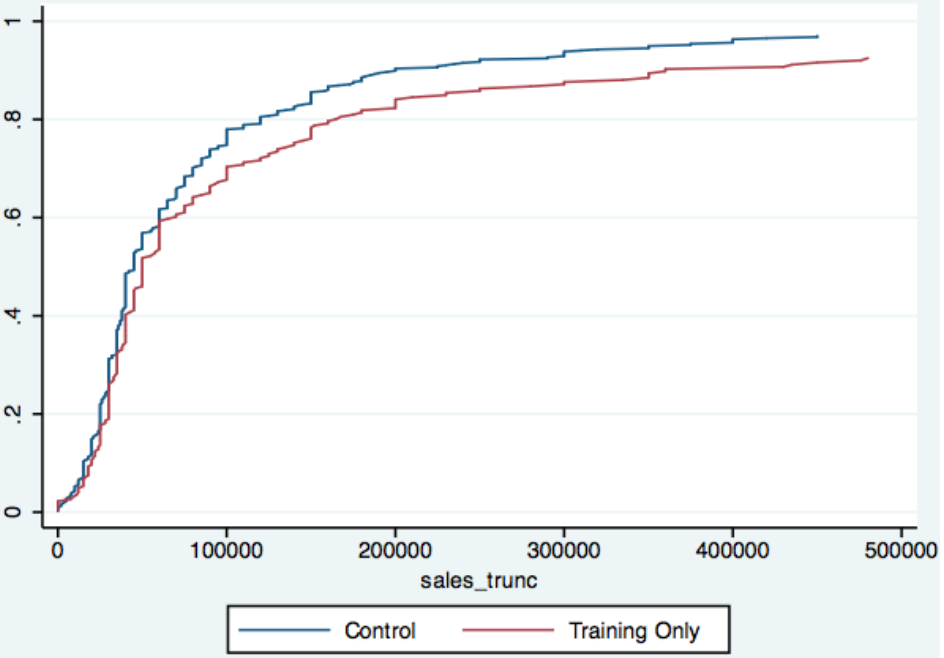
Multiple program interactions

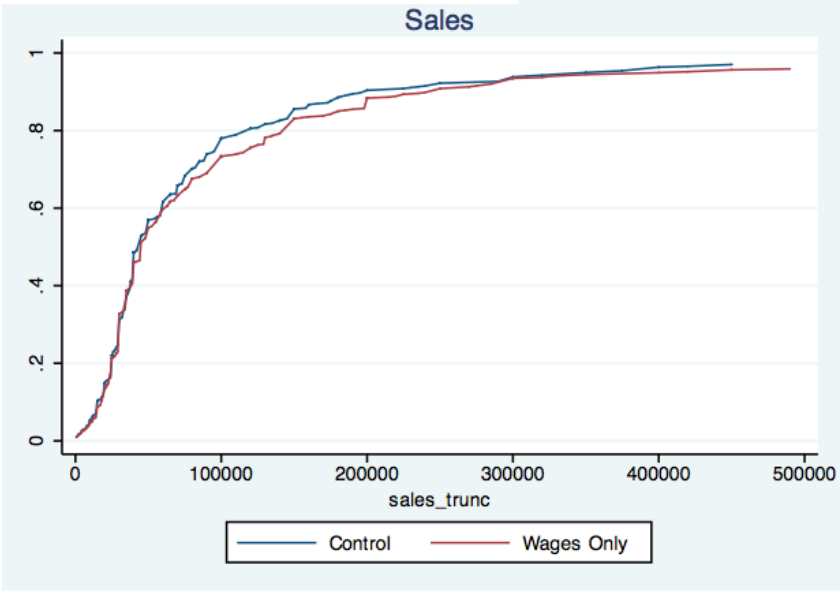
Outcomes allowing for Multiple Program Particiaption				
	(1)	(2)	(3)	(4)
	Paid workers	Inventories	Sales	Profits
	BL + 6-8	BL + 6-8	BL + 6-8	BL + 6-8
VARIABLES	FE	FE	FE	FE
Offered Savings Program	0.23	49,126.0**	33,624.1*	3,991.5*
	(0.2)	(24,952)	(17,520)	(2,165)
Offered Wage Subsidies	0.12	-3,203.6	-4,208.9	1,425.1
	(0.1)	(13,550)	(10,983)	(1,622)
Offered Training	0.21	11,878.3	17,818.5	1,608.4
	(0.2)	(14,907)	(15,927)	(1,826)
Savings + Wages	0.00	-5,143.3	-11,921.5	-4,542.8*
	(0.2)	(28,653)	(21,287)	(2,686)
Savings + Training	-0.21	-57,233.7**	-26,416.1	-4,220.6
	(0.3)	(28,755)	(24,831)	(2,924)
Training + Wages	0.14	15,981.3	2,377.4	-1,562.6
	(0.2)	(20,835)	(19,231)	(2,376)
Observations	4,471	5,186	5,133	5,108
R-squared	0.121	0.015	0.092	0.113
Number of sheno	1,415	1,524	1,522	1,519

Summary of results

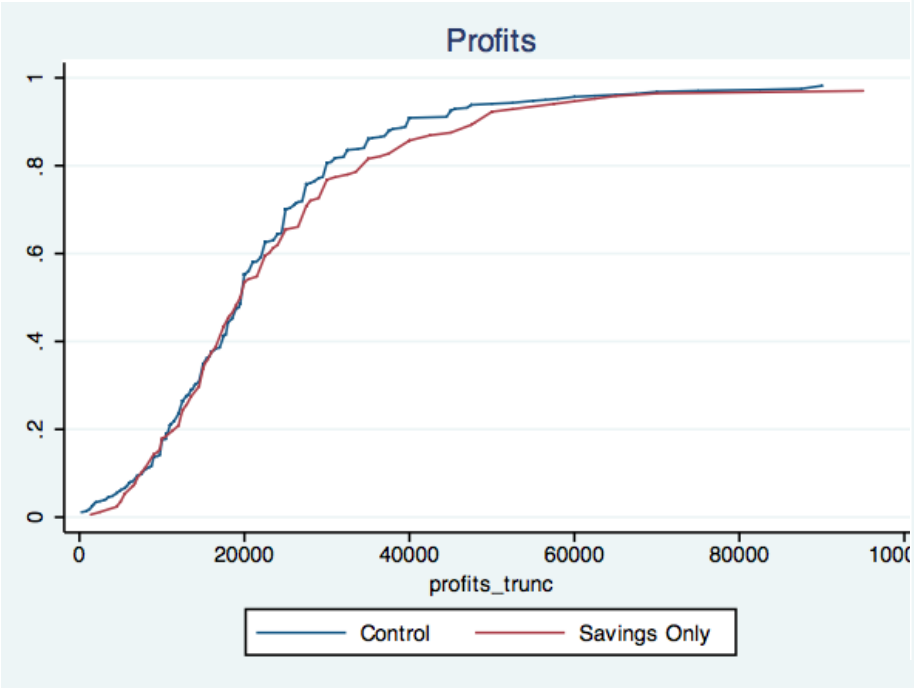
- Savings incentives:
  - Effects on inventory investment and sales
- Wage incentives:
  - Effect on employment, weak effect on inventory investment; weak positive effect at the beginning on management practices which becomes weak negative effect after some delay.
- Training:
  - Effects on management practices and employment, weak delayed effect on sales
- None of the programs seem to impact on profits
- Interactions: mostly negative
- All measured a mean effects (w/ truncated data in some cases). Effects on the distribution?

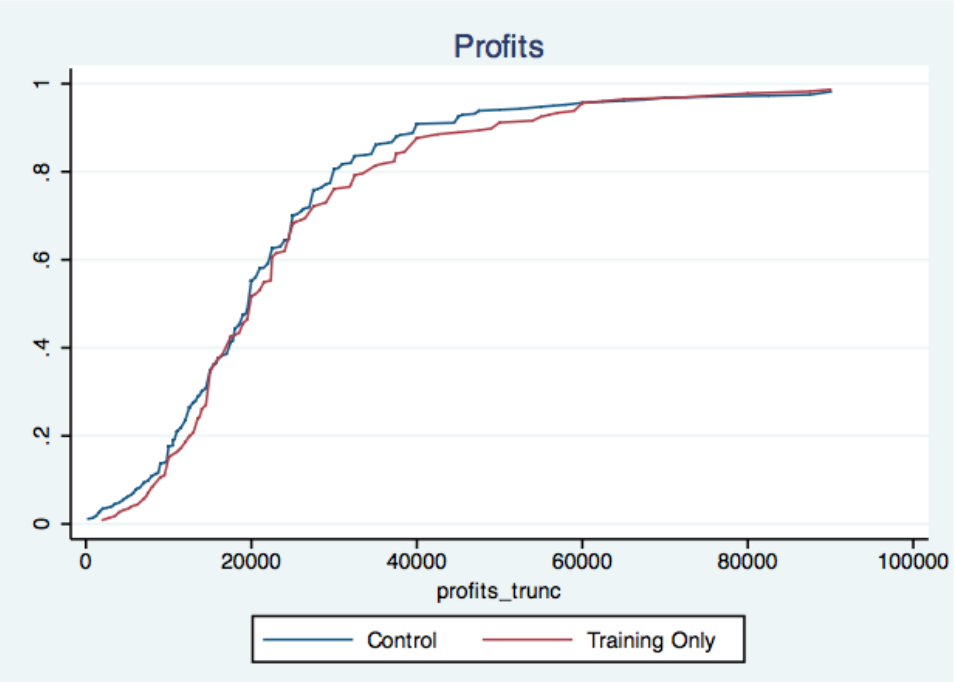


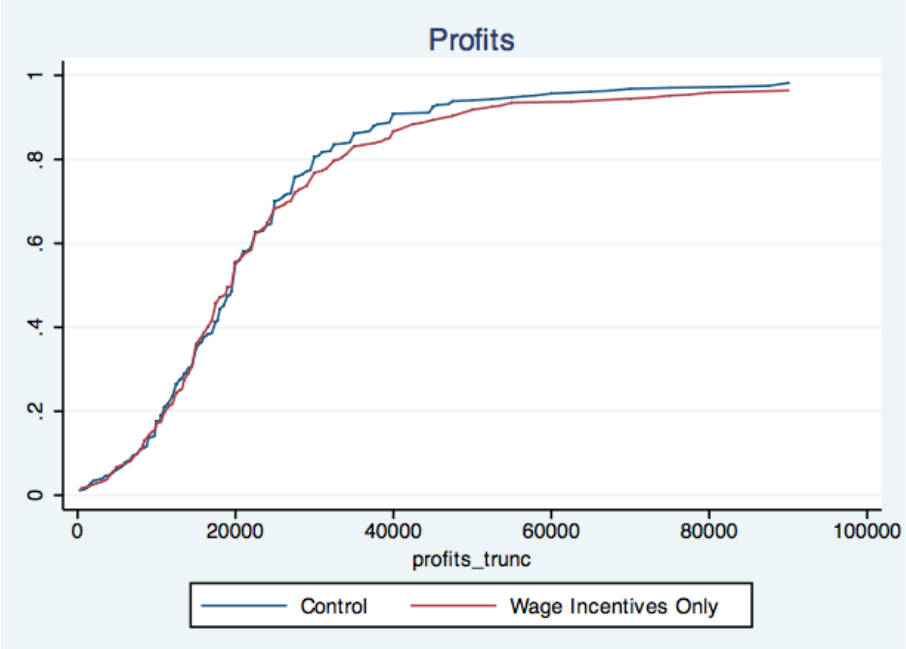




Rounds 7 and 8







Rounds 7 and 8

Distribution of effects

- Savings: effects on sales in the middle of the distribution
- Wages: No effects on sales anywhere in the distribution
- Training: Effects of savings at the top of the distribution

Conclusions and policy

- Some suggestion that the savings program has effects similar to the capital drops: Increases in sales and weak increases in profits.
- Training shows some interesting effects after delay. We need more time to see if these effects are real.
- On the other hand, wage incentives have a lasting effect on employment (not trivial given the number of microenterprises in low- and middle-income countries). But they don’t seem to become more profitable when doing so.