Labor Drops:

Experimental Evidence on the Return to Additional Labor in Microenterprises[#]

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Online Appendices

Appendix 1: Timeline

April 2008 Round 1 - Screening Survey and Baseline I

October 2008: Round 2- Booster Sample and Baseline II

April 2009: Round 3

August 2009: Wage Subsidies Begin

October 2009: Round 4 (During Intervention)

April 2010: Round 5 (During Intervention)

May 2010: Wage Subsidies End

October 2010: Round 6

April 2011: Round 7

October 2011: Round 8

April 2012: Round 9

October 2012: Round 10

April 2013: Round 11

April 2014: Round 12

Supplementary Treatments:

Savings Treatment began November 2008, ended August 2009

Business Training Treatment: June-July 2009

Appendix 2: Further Details on Sampling

About half of our sample for this project comes from a larger panel survey which is representative of all urban areas in Sri Lanka outside the northern province. From this panel survey, we selected 717 male self employed workers with 2 or fewer paid employees in urban areas in Sri Lanka: Colombo, Kandy and the Galle-Matara area. This part of the sample was constructed through a listing exercise conducted in early 2008. We selected a total of 18 Division Secretariat (D.S.) Divisions in the three urban areas. Within each D.S. Division we then selected 10 (in Colombo and Kandy) or 5 (in Galle/ Matara) Grama Niladhara (GN) divisions and listed 50 households starting from a random point.[1] Because we needed a larger sample for the interventions, in October 2008 we selected a set of GNs neighboring those in the original panel survey. We used a similar screening survey to identify male self-employed workers with fewer than 2 paid employees, boosting the sample by 816 individuals. Because of the way they are constructed, both subsamples are representative of the areas from which they are taken. However, there are some differences in the manner of constructing them, so we add a control for the enterprises in the booster sample in each of the regressions.[2]

Appendix 3: Details of Supplementary Interventions and Their Impacts

Savings Intervention: In November 2008, we notified those assigned to the savings treatment that they had been selected to participate in a program designed to encourage them to build savings balances. The participants were not told about the other two interventions in November even if they had been assigned to one of the other two treatments. As a part of the savings incentive program, we offered to make the initial deposit in a savings account at the National Savings Bank (NSB) and then to match deposits made into that account up to a certain limit each month and at a pre-announced match rate. The account would remain 'locked' until 1 August 2009. The

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[1] The G.N. Division is the smallest of the four administrative levels in Sri Lanka: Provinces (9), Districts (25), Divisional Secretariat (DS) Divisions (324), and Grama Niladhari (GN) Divisions (14,008).

[2] We find no differences in the operating characteristics of the enterprises (sales, profits, etc.) but the owners in the original sample have about a half year less schooling and have been in business for about three-quarters of a year longer.

initial match rate was set at 50 percent for deposits of up to 1000 Sri Lankan Rupees (LKR)[3] made by the end of December. The match rate was kept at 50 percent through July, but the maximum amount we would match was increased to 2000 LKR in January and to 4000 LKR in May, 2009. In July, we raised the match rate to 100% and the maximum to 5000 LKR. Finally, just before the accounts were unlocked, we added 5000 LKR to every account, regardless of previous deposit patterns. The participants received regular passbooks for the accounts, and deposits could be made at any NSB branch. But the accounts were all opened through a single branch in Gampola so that the branch manager there was able to ensure that money was withdrawn before 1 August only if the participant faced an emergency situation. After the accounts were unlocked on 1 August, the participants were free to move the accounts to any NSB branch, or to withdraw the money. At that point, we lost access the administrative data, and hence are unable to track when money was withdrawn.

We used this savings treatment instead of pure grants because our funding was constrained, and we hoped that a matched savings program would encourage firms to build a more sizeable lump-sum of financing than we could have provided with grants alone. 79.4% of firms offered the savings treatment set up a bank account. However, only 41 percent of those who got the savings treatment alone made any deposits of their own (49% for those who also got the wage subsidy, and 54% for those who also got business training). The result is that the median firm in the intervention only received the final deposit of 5,000 LKR, while the mean grant received ranged from 6,672 LKR (savings only treatment) to 7,140 LKR (savings plus training treatment). The subsidy received is similar to the average of 5,116 LKR for those offered the wage subsidy treatment, but is much less than the median of 24,000 LKR received by those firms which took up the wage subsidy.

Training Intervention: This treatment was a training program based on the International Labor Organization's *Improve Your Business* (IYB) program. IYB is a five day program intended to generate growth in microenterprises. The modules covered are marketing, buying, costing, stock control, record keeping, and financial planning. We asked that the training also include additional material on hiring and managing employees, as employment generation is a key outcome of interest in the project. The training was provided by the Sri Lankan Business

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[3] 1000 LKR was approximately US$8.75 in mid-2009, $8.85 in mid-2010, $9.14 in mid-2011, and $7.49 in mid-2012.

Development Centre (SLBDC),[4] a Sri Lankan non-profit training institution established in 1984. SLBDC is the most experienced provider of ILO entrepreneurship programs in Sri Lanka, having offered the first training on the island in 2001. All of the SLBDC training staff involved in the project were university qualified and trained under the national-level SIYB training programs conducted by the ILO. Each had a minimum of five years experience delivering SIYB training. Therefore, any failure to find impacts should not be due to low quality trainers or inexperience with the materials. Those selected for training were offered a stipend of 1000 LKR and an additional bonus of 1500 LKR paid at the end if they attended all five days. The stipend was meant to cover transport and the opportunity cost of not working in the business on the training days.

Appendix Table 3 shows that assignment to these supplementary interventions is balanced compared to the control group and wage subsidy only groups in terms of baseline observable characteristics.

To measure the impacts of each of these treatments, we run the following regression for time periods $t=3,...,12$:

$$Y_{i,t} = \alpha + \sum_{j=1}^{6} \beta_{1j} \, Treat_{ji} * Pre_t + \sum_{j=1}^{6} \beta_{2j} \, Treat_{ji} * During_t + \sum_{j=1}^{6} \beta_{3j} \, Treat_{ji} * Year1_t + \sum_{j=1}^{6} \beta_{4j} \, Treat_{ji} * Year2_t + \sum_{j=1}^{6} \beta_{5j} \, Treat_{ji} * Year3to4_t + \sum_{s=4}^{12} \delta_s 1(t = s) + \theta' X_i + \varepsilon_{i,t} \qquad (A.1).$$

We then test three hypotheses:

1) The three different wage subsidy treatments all had the same effect. To do this we test:

a) The impact of the wage subsidy alone was the same as for the wage subsidy combined with either savings or training during the wage subsidy intervention period.

$$\beta_{2wageonly} = \beta_{2wage+savings} = \beta_{2wage+training}$$

b) The impact of the wage subsidy alone was the same as for the wage subsidy combined with either savings or training in each year after the wage subsidy intervention period.

$$\beta_{3wageonly} = \beta_{3wage+savings} = \beta_{3wage+training}, \text{ and}$$

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[4] http://www.slbdc-lk.org/

$$\beta_{4wageonly} = \beta_{4wage+savings} = \beta_{4wage+training}, \text{and}$$

$$\beta_{5wageonly} = \beta_{5wage+savings} = \beta_{5wage+training}$$

2) The wage subsidy alone treatment had the same impact as the savings alone treatment. This helps get at whether the subsidy is just due to receiving a grant. We test this both during, and after, the intervention.

a) $\beta_{2wageonly} = \beta_{2savingsonly}$

b) $\beta_{3wageonly} = \beta_{3savingsonly}$, and $\beta_{4wageonly} = \beta_{4savingsonly}$, and $\beta_{5wageonly} = \beta_{5savingsonly}$

3) There is no interaction between the wage subsidy treatment and either the savings or the training treatments. That is, the impact of receiving both treatments is equal to the sum of the estimated impacts of receiving each treatment individually.

a) $\beta_{2wage+savings} = \beta_{2wage} + \beta_{2savings} \ and \ \beta_{2wage+training} = \beta_{2wage} + \beta_{2training}$

and similarly:

b) $\beta_{3wage+savings} = \beta_{3wage} + \beta_{3savings} \ and \ \beta_{3wage+training} = \beta_{3wage} + \beta_{3training}$

and $\beta_{4wage+savings} = \beta_{4wage} + \beta_{4savings} \ and \ \beta_{4wage+training} = \beta_{4wage} + \beta_{4training}$

and $\beta_{5wage+savings} = \beta_{5wage} + \beta_{5savings} \ and \ \beta_{5wage+training} = \beta_{5wage} + \beta_{5training}.$

Equation A.1 follows our main specifications and estimates impacts over three different periods post-intervention, in order to show the trajectory of impacts.

Appendix Tables A3.2, A3.3., A3.4, and A3.5 then report these results for the outcomes of business survival (as measured by remaining self-employed), having any paid worker, the number of paid workers, and firm profits, respectively. Since estimating equation (A.1.) results in estimating five treatment parameters for each of the six treatment groups, to fit all 30 coefficients into the same table, we use columns (1a) through (1f) to report the impact of each treatment in a separate column. We also then pool all seven rounds of post-wage subsidy intervention surveys to estimate the average post-intervention impact, and report this as the last

row of the table. Note that the wage subsidy only coefficients in column (1a) differ slightly from those in the main text, because we are using the sample with all treatments to estimate the round effects and coefficients on baseline variables, rather than just the wage subsidy only and control samples that is the case in the main text.

Finally, we then also drop the savings only, training only, and training plus savings treatments, and pool together the three treatments which received any wage subsidy. We report this pooled "any wage subsidy" impact in column (2) of each of these tables, which can then be compared to the impacts of the wage subsidy alone reported in the main text.

Consider first the impacts on survival. We see very similar impacts from the wage subsidy treatment combined with either savings or training as with wage subsidies alone, and cannot reject equality of these three impacts. We cannot reject hypotheses 1 or 3 above, and the pooled impact on firm survival using any wage subsidy therefore is similar in magnitude to that using only the wage subsidy. The impacts of the other three treatments (savings only, training only, and savings plus training) are all positive, but smaller in magnitude and not statistically significant when averaged over the post-wage-subsidy intervention period. The savings only treatment increases the likelihood the entrepreneur remains self-employed by 3.0 percentage points in the post-wage-subsidy period (s.e. 3.0 p.p.), which is under half the effect of the wage subsidy alone (6.2 p.p., s.e. 2.2 p.p.). We cannot reject equality of these two effects (p=0.251), but neither can we reject that the wage subsidy treatment has five times the impact on survival as the savings only treatment (p=0.539), in line with the relative magnitudes of the grants received by firms that actually took up the two treatments.

In contrast to the similar impact on survival of the three different wage subsidy treatment groups, we do find some differences between them when it comes to the impacts on employment. The wage subsidy impacts last a bit longer when combined with savings or training, so that we see larger and statistically significant impacts of the combined treatments on having any paid worker, or on the number of paid workers, persist into the second year after treatment. We can reject that all three wage treatments have equal impacts when looking at the round-by-round post-intervention trajectories on having any paid worker, or when looking at the pooled post-intervention impact on the number of workers. As a result, looking at any wage subsidy (column 2) would suggest the impacts on employment last a little longer than we see in the main text

when considering just the wage subsidy treatment alone. Nevertheless, we still obtain similar qualitiative results, in terms of the treatment impact getting smaller over time and no longer being significant in the period three or more years post-intervention. The training alone treatment, and training plus savings treatment appears to have a short-term impact on employment, but this impact also does not persist.

We cannot reject any of the three hypotheses listed above when it comes to firm profits. We get similar magnitudes pooling the three wage subsidy treatments as using the wage subsidy only treatment, although the standard errors are large enough to allow for the combined effects to be twice the size of the subsidy alone.

Appendix Table 3.1: Balance for Supplementary Treatments

	Control Group	Wage Subsidy	Wage Subsidy & Savings	Wage Subsidy & Training	Training Only	Savings Only	F-test p-value
Re-randomized Variables							
Number of Paid Workers	0.19	0.16	0.20	0.15	0.23	0.25	0.511
Education (Years)	10.34	10.25	10.32	10.54	10.52	10.43	0.652
Raven Test Score	3.30	3.34	3.29	3.08	3.28	3.29	0.658
Digitspan Recall Score	6.42	6.36	6.35	6.39	6.27	6.21	0.683
Total Assets	239107	250499	232635	203654	236665	258261	0.432
Total Assets<1500LKR	0.06	0.02	0.03	0.03	0.01	0.05	0.136
Total Assets>935000LKR	0.05	0.06	0.04	0.03	0.04	0.05	0.744
Monthly Profits	13894	14552	14010	12947	13282	13861	0.485
Profit Data Missing	0.03	0.02	0.03	0.03	0.02	0.02	0.626
Monthly Profits<2000LKR	0.06	0.03	0.03	0.04	0.03	0.04	0.898
Monthly Profits>3000LKR	0.05	0.06	0.06	0.04	0.06	0.01	0.001
Business Practices Score	8.29	8.76	8.24	8.59	9.24	8.35	0.448
From booster sample	0.52	0.53	0.54	0.56	0.54	0.46	0.454
Stratification Variables							
Retail Sector	0.39	0.38	0.38	0.38	0.38	0.38	1.000
Colombo	0.47	0.44	0.47	0.46	0.49	0.47	0.898
Kandy	0.47	0.48	0.47	0.47	0.48	0.47	1.000
Additional Variables							
Any paid worker at baseline	0.12	0.10	0.13	0.09	0.15	0.12	0.385
Monthly Sales	41175	52435	49142	41785	46768	34496	0.013
Owner's Age	35.43	35.16	36.19	34.91	34.28	34.38	0.049
Business is Registered for Taxes	0.31	0.32	0.32	0.31	0.31	0.40	0.478
Weekly hours worked	57.94	59.31	60.77	60.41	57.20	59.78	0.496
Sample Size	286	250	297	298	141	112	

Appendix Table 3.2: Treatment Effects on Firm Survival by Treatment Arm

	(1a) Wage Subsidy Only Treatment Effect	(1b) Wage Subsidy + Savings Treatment Effect	(1c) Wage Subsidy + Training Treatment Effect	(1d) Savings Only Treatment Effect	(1e) Training Only Treatment Effect	(1f) Savings + Training Treatment Effect		(2) Any Wage Subsidy Effect
Before Subsidy	-0.006	-0.007	0.019	0.015	0.019	0.009		0.003
	(0.023)	(0.022)	(0.021)	(0.027)	(0.025)	(0.026)		(0.018)
During Subsidy	-0.011	-0.023	-0.003	-0.011	-0.010	-0.000		-0.012
	(0.018)	(0.017)	(0.016)	(0.022)	(0.019)	(0.018)		(0.014)
Year 1 After	0.057***	0.025	0.053**	0.029	0.041	0.026		0.045**
	(0.021)	(0.022)	(0.021)	(0.028)	(0.026)	(0.027)		(0.018)
Year 2 After	0.081***	0.039	0.062**	0.025	0.015	0.043		0.061***
	(0.025)	(0.026)	(0.025)	(0.036)	(0.033)	(0.031)		(0.022)
Year 3-4 After	0.053**	0.056**	0.047*	0.034	0.027	0.034		0.053**
	(0.027)	(0.025)	(0.027)	(0.035)	(0.033)	(0.031)		(0.022)
Pooled Impact After	0.062***	0.042*	0.053**	0.030	0.028	0.034		0.053***
	(0.022)	(0.022)	(0.022)	(0.030)	(0.026)	(0.027)		(0.019)
Sample Size							14376	10626
P-value: all three wage treatments equal during subsidy period							0.504	
P-value: wage only treatment = savings only treatment during subsidy period							0.999	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, during subsidy							0.735	
P-value: all three wage treatments equal one another by round after intervention							0.242	
P-value: wage only treatment = savings only treatment by round after intervention							0.300	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, by round after							0.546	
P-value: pooled impact after equal for all three wage treatments							0.564	
P-value: pooled impact after for wage only treatment = savings only treatment							0.251	
P-value: pooled impact after of wage+saving = wage only + savings only, wage+training=wage only + training only							0.303	

Notes:

Robust standard errors in parentheses, clustered at the firm level. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

Columns 1a-1f are all from the same regression, which uses the full sample of 14,227 observations and estimates separate treatment impacts by treatment group and time period.

The Pooled impact after row shows the impact of pooling the 1 Year, 2 Years, and 3-4 Year after results.

Column 2 shows impacts from a separate regression which pools together the treatments in 1a, 1b, and 1c, and drops the other treatments.

All regressions control for randomization strata, variables used for re-randomization, and survey round dummies.

Appendix Table 3.3: Treatment Effects on Having any Paid Worker by Treatment Arm

	(1a) Wage Subsidy Only Treatment Effect	(1b) Wage Subsidy + Savings Treatment Effect	(1c) Wage Subsidy + Training Treatment Effect	(1d) Savings Only Treatment Effect	(1e) Training Only Treatment Effect	(1f) Savings + Training Treatment Effect		(2) Any Wage Subsidy Effect
Before Subsidy	-0.020	0.027	0.035	0.025	0.023	-0.007		0.015
	(0.036)	(0.036)	(0.037)	(0.048)	(0.045)	(0.044)		(0.030)
During Subsidy	0.129***	0.184***	0.156***	0.018	0.039	0.040		0.158***
	(0.035)	(0.033)	(0.034)	(0.044)	(0.039)	(0.040)		(0.027)
Year 1 After	0.102***	0.152***	0.113***	0.070	0.073*	0.099**		0.124***
	(0.034)	(0.034)	(0.033)	(0.044)	(0.040)	(0.041)		(0.026)
Year 2 After	0.018	0.056	0.089***	0.015	-0.026	0.026		0.057**
	(0.035)	(0.035)	(0.034)	(0.045)	(0.038)	(0.040)		(0.028)
Year 3-4 After	-0.012	0.055*	0.050	-0.016	-0.003	0.003		0.034
	(0.032)	(0.033)	(0.032)	(0.043)	(0.037)	(0.039)		(0.026)
Pooled Impact After	0.029	0.083***	0.079***	0.017	0.012	0.037		0.066***
	(0.029)	(0.030)	(0.029)	(0.038)	(0.034)	(0.035)		(0.024)
Sample Size							13887	10,259
P-value: all three wage treatments equal during subsidy period							0.334	
P-value: wage only treatment = savings only treatment during subsidy period							0.018	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, during subsidy							0.714	
P-value: all three wage treatments equal one another by round after intervention							0.050	
P-value: wage only treatment = savings only treatment by round after intervention							0.871	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, by round after							0.003	
P-value: pooled impact after equal for all three wage treatments							0.152	
P-value: pooled impact after for wage only treatment = savings only treatment							0.760	
P-value: pooled impact after of wage+saving = wage only + savings only, wage+training=wage only + training only							0.637	

Notes:

Robust standard errors in parentheses, clustered at the firm level. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

Columns 1a-1f are all from the same regression, which uses the full sample of 14,227 observations and estimates separate treatment impacts by treatment group and time period.

The Pooled impact after row shows the impact of pooling the 1 Year, 2 Years, and 3-4 Year after results.

Column 2 shows impacts from a separate regression which pools together the treatments in 1a, 1b, and 1c, and drops the other treatments.

All regressions control for randomization strata, variables used for re-randomization, and survey round dummies.

Appendix Table 3.4: Treatment Effects on the Number of Paid Workers by Treatment Arm

	(1a) Wage Subsidy Only Treatment Effect	(1b) Wage Subsidy + Savings Treatment Effect	(1c) Wage Subsidy + Training Treatment Effect	(1d) Savings Only Treatment Effect	(1e) Training Only Treatment Effect	(1f) Savings + Training Treatment Effect		(2) Any Wage Subsidy Effect
Before Subsidy	-0.080	0.024	0.062	0.056	0.075	-0.070		0.001
	(0.082)	(0.085)	(0.089)	(0.114)	(0.117)	(0.099)		(0.070)
During Subsidy	0.188**	0.330***	0.273***	0.103	0.097	0.088		0.266***
	(0.075)	(0.079)	(0.078)	(0.102)	(0.093)	(0.096)		(0.061)
Year 1 After	0.119	0.331***	0.240***	0.144	0.200*	0.223**		0.234***
	(0.078)	(0.086)	(0.086)	(0.117)	(0.111)	(0.105)		(0.068)
Year 2 After	0.045	0.190**	0.210**	0.134	0.075	0.118		0.152**
	(0.080)	(0.086)	(0.082)	(0.119)	(0.109)	(0.104)		(0.066)
Year 3-4 After	-0.028	0.123	0.064	0.090	0.041	0.031		0.055
	(0.083)	(0.089)	(0.082)	(0.127)	(0.107)	(0.107)		(0.069)
Pooled Impact After	0.035	0.201**	0.155**	0.119	0.096	0.111		0.134**
	(0.072)	(0.080)	(0.075)	(0.106)	(0.099)	(0.095)		(0.061)
Sample Size							13887	10,259
P-value: all three wage treatments equal during subsidy period							0.212	
P-value: wage only treatment = savings only treatment during subsidy period							0.415	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, during subsidy							0.933	
P-value: all three wage treatments equal one another by round after intervention							0.117	
P-value: wage only treatment = savings only treatment by round after intervention							0.805	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, by round after							0.636	
P-value: pooled impact after equal for all three wage treatments							0.074	
P-value: pooled impact after for wage only treatment = savings only treatment							0.421	
P-value: pooled impact after of wage+saving = wage only + savings only, wage+training=wage only + training only							0.933	

Notes:

Robust standard errors in parentheses, clustered at the firm level. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

Columns 1a-1f are all from the same regression, which uses the full sample of 14,227 observations and estimates separate treatment impacts by treatment group and time period.

The Pooled impact after row shows the impact of pooling the 1 Year, 2 Years, and 3-4 Year after results.

Column 2 shows impacts from a separate regression which pools together the treatments in 1a, 1b, and 1c, and drops the other treatments.

All regressions control for randomization strata, variables used for re-randomization, and survey round dummies.

Appendix Table 3.5: Treatment Effects on Unconditional Profits by Treatment Arm

	(1a) Wage Subsidy Only Treatment Effect	(1b) Wage Subsidy + Savings Treatment Effect	(1c) Wage Subsidy + Training Treatment Effect	(1d) Savings Only Treatment Effect	(1e) Training Only Treatment Effect	(1f) Savings + Training Treatment Effect		(2) Any Wage Subsidy Effect
Before Subsidy	946	-140	-549	3118*	214	631		64
	(1455)	(1301)	(1178)	(1788)	(1396)	(1680)		(1044)
During Subsidy	675	35	-122	714	1037	762		257
	(1251)	(1182)	(1048)	(1822)	(1279)	(1498)		(954)
Year 1 After	1913*	763	1411	2605	939	682		1400
	(1159)	(1097)	(1035)	(1658)	(1358)	(1297)		(895)
Year 2 After	2108	50	1469	2063	799	2143		1212
	(1477)	(1275)	(1307)	(1786)	(1692)	(1712)		(1118)
Year 3-4 After	1432	923	2114*	1956	1920	1375		1549
	(1219)	(1145)	(1269)	(1647)	(1596)	(1501)		(983)
Pooled Impact After	1756*	629	1730*	2163	1320	1401		1409*
	(1067)	(971)	(1020)	(1443)	(1307)	(1250)		(833)
Sample Size							13359	9,856
P-value: all three wage treatments equal during subsidy period							0.774	
P-value: wage only treatment = savings only treatment during subsidy period							0.983	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, during subsidy							0.548	
P-value: all three wage treatments equal one another by round after intervention							0.689	
P-value: wage only treatment = savings only treatment by round after intervention							0.940	
P-value: wage+savings=wage only + savings only, wage+training = wage only + training only, by round after							0.615	
P-value: pooled impact after equal for all three wage treatments							0.402	
P-value: pooled impact after for wage only treatment = savings only treatment							0.783	
P-value: pooled impact after of wage+saving = wage only + savings only, wage+training=wage only + training only							0.172	

Notes:

Robust standard errors in parentheses, clustered at the firm level. *, **, and *** denote significance at the 10, 5, and 1 percent levels.

Columns 1a-1f are all from the same regression, which uses the full sample of 14,227 observations and estimates separate treatment impacts by treatment group and time period.

The Pooled impact after row shows the impact of pooling the 1 Year, 2 Years, and 3-4 Year after results.

Column 2 shows impacts from a separate regression which pools together the treatments in 1a, 1b, and 1c, and drops the other treatments.

All regressions control for randomization strata, variables used for re-randomization, and survey round dummies.

Unconditional profits are truncated at the 99th percentile, and include zeros for firms which have closed.

Appendix 4: Measurement of Key Variables

Our key outcomes are measured as follows:

Survival: our main measure of survival is defined in terms of whether the individual is self-employed at the time of the survey. This includes those who have shut down their business and started a new one. It is directly measured by asking whether they are engaged in self-employment on the survey, and through direct observation and asking family and neighbors for those firms which attrit. We consider three alternative measures of survival for robustness in Table 4. The first codes firms which attrit as dead if they are closed at the time we last observed them and then are never observed again. The second codes all firms which attrit as closed. A third measure comes from McKenzie and Paffhausen (2017), and attempts to track whether the original firm that was open at baseline remains open. This measure is coded as zero if the owner remains self-employed, but is operating a different firm to the one they began with.

Is the owner employed? This is coded as one if the owner is self-employed, has worked for pay in the last month in wage or paid casual work, or is working overseas.

Number of Paid Workers: this is the number of permanent workers plus the number of casual and daily workers reported on the survey. It is truncated at 5 workers (the 99th percentile) to reduce the influence of outliers, and coded as 0 for firms that do not survive.

Any paid worker: defined as having at least one paid worker.

Added a worker between survey rounds: defined as the number of paid workers in round t exceeding that in round $t-1$. It therefore measures net, rather than gross, worker flows.

Subtracted a worker between survey rounds: defined as the number of paid workers in round t being less than in round $t-1$.

Own hours reported in the business: the number of hours worked in the business in the last week, truncated at the 99th percentile, and coded as 0 for individuals not self-employed.

Number of unpaid workers in the business: Number of unpaid workers reported by the firm owner.

Firm profits: these are monthly, and were asked directly of the owner as "the total income of the business during each of the last month after paying all expenses including wages of employees, but not including any income you paid yourself". This follows the wording and recommendation of De Mel et al. (2009).[5] We consider several transforms of profits to deal with outliers and firm closure. This includes unconditional profits (which put zeroes in for closed firms) truncated at the 99th percentile, the inverse hyperbolic sine of profits, truncated profits conditional on the business operating, and log profits conditional on operation. Nominal values were deflated to real values using the Consumer Price Index for Colombo, gathered by the Sri Lankan Department of Census and Statistics.

Firm sales: these are firm sales in the past month, deflated into real terms using the CPI. As with profits, we consider several transforms of the raw data to account for outliers and firm closure, with the variables defined analogously to profits.

Total income from all work: this is the sum of firm profits, and income from all wage, salary, and casual labor work in the last month, truncated at the 99th percentile. It is zero for individuals who are not employed in any paid work.

Business Practices score:

The *total score* – the composite business practice score -- ranges from a minimum of -1 to a maximum of 29. The total is the sum of the following component scores: the *marketing score*, the *stock score*, the *records score*, and the *financial planning score*.

The *marketing score* ranges from 0 to 7, and it is calculated by adding one point for each of the following that the business has done in the last 3 months:

- Visited at least one of its competitor's businesses to see what prices its competitors are charging
- Visited at least one of its competitor's businesses to see what products its competitors have available for sale
- Asked existing customers whether there are any other products the customers would like the business to sell or produce
- Talked with at least one former customer to find out why former customers have stopped buying from this business
- Asked a supplier about which products are selling well in this business' industry
- Attracted customers with a special offer

[5] De Mel, Suresh, David McKenzie and Christopher Woodruff (2009) "Measuring Microenterprise Profits: Must We Ask How the Sausage Is Made?",*Journal of Development Economics*, 88(1): 19-31.

- Advertised in any form (last 6 months)

The *stock score* ranges from -1 to 2, and it is calculated by subtracting one point

- If the business runs out of stock once a month or more

And adding one point for each of the following that the business has done in the last 3 months

- Attempted to negotiate with a supplier for a lower price on raw material
- Compared the prices or quality offered by alternate suppliers or sources of raw materials to the business' current suppliers or sources of raw material

The *records score* ranges from 0 to 8, and it is calculated by adding one point for each of the following that the business does

- Keeps written business records
- Records every purchase and sale made by the business
- Able to use records to see how much cash the business has on hand at any point in time
- Uses records regularly to know whether sales of a particular product are increasing or decreasing from one month to another
- Works out the cost to the business of each main product it sells
- Knows which goods you make the most profit per item selling
- Has a written budget, which states how much is owed each month for rent, electricity, equipment maintenance, transport, advertising, and other indirect costs to business
- Has records documenting that there exists enough money each month after paying business expenses to repay a loan in the hypothetical situation that this business wants a bank loan

The *financial planning score* ranges from 0-12, and it is calculated by adding up to three points for each of the following two questions

- How frequently do you review the financial performance of your business and analyze where there are areas for improvement
- How frequently do you compare performance to your target
  - o Zero points for "Never"
  - o One point for "Once a year or less"
  - o Two points for "Two or three times a year"
  - o Three points for "Monthly or more often"

And adding one point for each of the following that the business has

- A target set for sales over the next year
- A budget of the likely costs your business will have to face over the next year
- An annual profit and loss statement
- An annual statement of cash flow
- An annual balance sheet
- An annual income/expenditure sheet

Wage worker and SME surveys

We also make use of data from surveys of wage workers and larger firms. The wage worker survey was conducted in all urban areas in Sri Lanka at annual intervals from 2008-2011. The initial sample was drawn from a listing of households in randomly selected Grama Niladhari divisions. The SME survey of larger firm owners selected surveyed firms with between 5 and 250 workers (including the owner). This sample was drawn from a listing of visible enterprises conducted for other purposes by the Sri Lanka office of AC Nielsen. We surveyed owners first in April 2008, and resurveyed in April 2009 and April 2010. The questions from the wage worker and SME surveys that we used in the analysis for this paper are described in the text.

Appendix 5: Round by Round Survey Attrition Rate

Appendix Figure 5 shows the attrition rate by round, in terms of whether we have information on whether the business is still open/the owner is self-employed, and in terms of whether we can measure whether the enterprise has paid workers. Starting in round 7 we added a module which collected information from relatives, friends, and neighboring businesses if the business was not able to be interviewed, resulting in a reduction in attrition at that time. The attrition rate averages 5.6 percent for data on whether the business is operating, and 9 percent for data on whether the business has paid workers. Attrition rates are balanced for treatment and control in most waves, and in the last round we have data on employment for all but 8 percent of firms.

Attrition rate on self-employment data

Legend: SE data - Treat; SE data - control; Employment data - Treat; Employment data - control
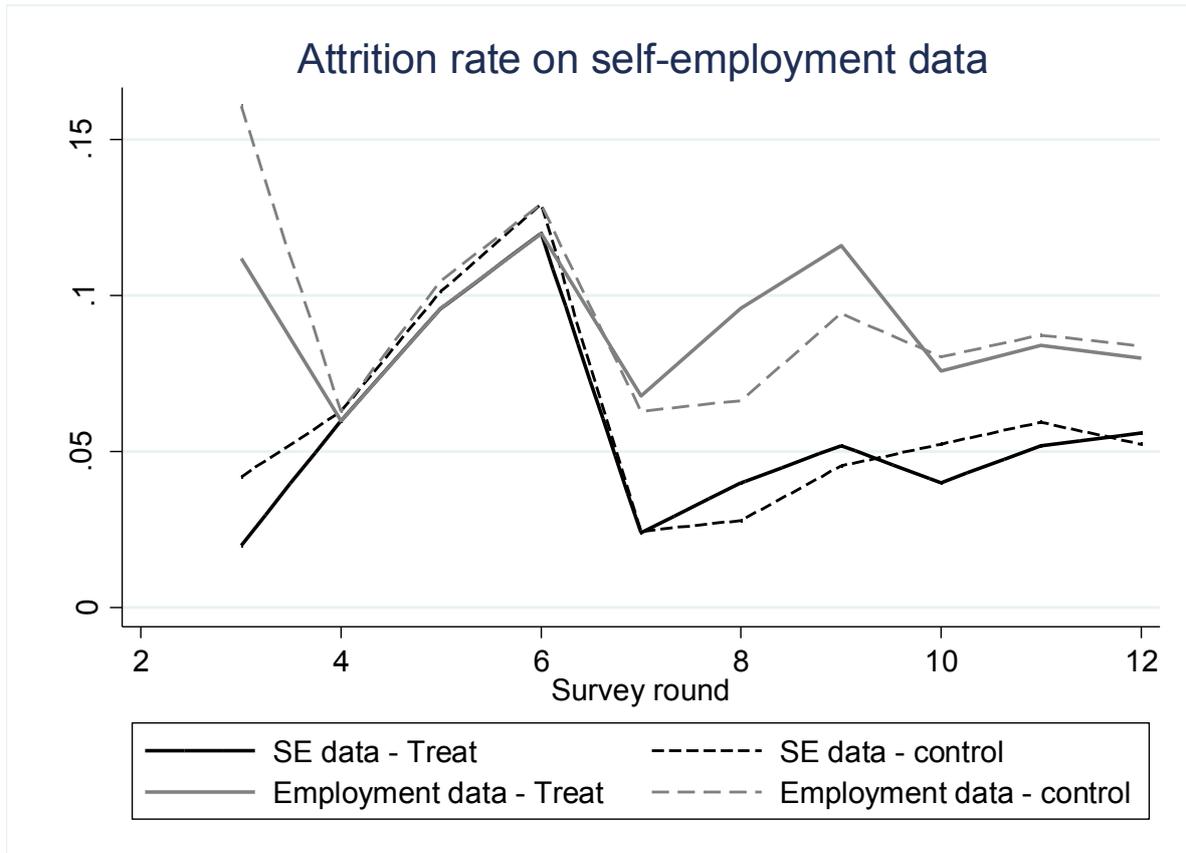
Appendix 6: Does treatment change which firms have workers?

Appendix Table 6.1 compares the baseline characteristics of the subsample of treatment and control firms which have a paid employee in round 4 (during the intervention), and in round 12 (the last survey round). This comparison allows us to see the extent to which the wage subsidy changes which firms have paid workers. We see little selectivity in terms of owner's education, raven, and digit span scores. During the intervention, the firms hiring workers who would not have done so if they were in the control group appear to be smaller (lower profits, lower total assets) and outside of Colombo. However, by the time of the last survey, the profit difference has disappeared, and only the geographic difference remains.

Appendix Table 6.1: Does Treatment Change Which Firms Have Workers?

	Have a Worker in Round 4			Have a Worker in Round 12		
	Control	Treatment	p-value	Control	Treatment	p-value
Number of Paid Workers	0.43	0.27	0.157	0.47	0.30	0.213
Education (Years)	10.17	10.33	0.682	10.60	10.63	0.943
Raven Test Score	3.19	3.23	0.891	3.08	3.08	0.985
Digitspan Recall Score	6.51	6.55	0.858	6.56	6.50	0.816
Total Assets	332819	280911	0.483	320187	349938	0.752
Total Assets<1500LKR	0.01	0.02	0.750	0.03	0.02	0.633
Total Assets>935000LKR	0.09	0.06	0.584	0.10	0.13	0.609
Monthly Profits	20500	15473	0.029	17927	17759	0.953
Profit Data Missing	0.01	0.02	0.750	0.03	0.02	0.633
Monthly Profits<2000LKR	0.03	0.01	0.394	0.07	0.02	0.129
Monthly Profits>30000LKR	0.09	0.07	0.778	0.06	0.08	0.600
Business Practices Score	8.79	10.19	0.146	9.64	10.30	0.541
From booster sample	0.53	0.58	0.523	0.49	0.53	0.602
Retail Sector	0.31	0.34	0.762	0.36	0.28	0.324
Colombo	0.50	0.33	0.024	0.47	0.30	0.037
Kandy	0.46	0.56	0.203	0.44	0.61	0.055
Any paid worker at baseline	0.29	0.18	0.105	0.29	0.17	0.102
Monthly Sales	57161	67089	0.414	49053	61765	0.276
Owner's Age	36.93	35.01	0.046	36.65	35.00	0.122
Business is Registered for Tax	0.37	0.26	0.139	0.35	0.27	0.307
Weekly hours worked	59.20	60.07	0.741	56.83	57.13	0.916

Notes: characteristics are baseline characteristics. P-value compares whether characteristics of firms having a paid worker in round 4 (during the intervention), and in round 12 (last survey) are similar for the treatment and control groups using a t-test of equality of means.

Appendix Figure 6 explores further how the baseline profitability of those hiring workers during the intervention period compares in the treatment and control groups, and to those who already had workers and those who never hired a worker amongst the treatment group. We see the treatment brings into hiring workers firms with lower profits than those hiring workers in the control group, and than those who already had workers in the treatment group. Those hiring workers in the treatment group have a similar baseline profits distribution to those who never hire a worker during the intervention period.

Appendix Figure 6: Treated Firms Hiring Workers During Intervention Were Lower Profit Firms
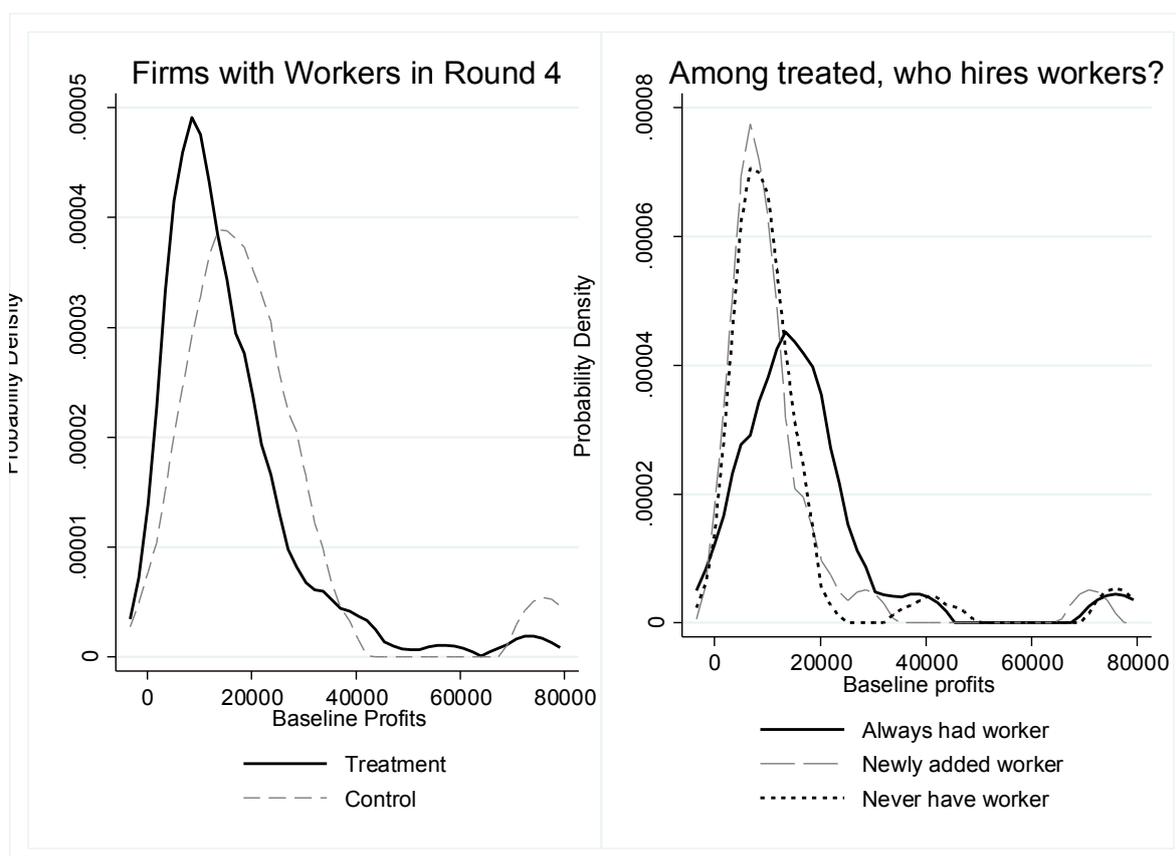
Appendix Table 6.2 then looks within the treatment group to see how the baseline characteristics of those who hire a worker during the intervention period and then reduce employment again compare to those who hire a worker and maintain this new employment level for at least a year after. The same is done for the control group, although only 8 control firms hire a worker and then don't reduce employment again afterwards. We see few significant differences, suggesting that those who keep the worker look quite similar on observable baseline characteristics to those which do not. The one difference is again in terms of geography: although firms in Colombo were less likely to respond to the wage subsidy, those that did hire workers were more likely to keep them on afterwards than those in the other cities.

Appendix Table 6.2: Do the characteristics of firms which hire and keep workers differ from those which hire and let go?

	Wage Subsidy Treatment Group			Control Group		
	Hire and Let Go	Hire and Keep	p-value	Hire and Let Go	Hire and Keep	p-value
Number of Paid Workers	0.23	0.43	0.309	0.36	0.38	0.944
Education (Years)	10.38	9.87	0.434	10.00	10.38	0.683
Raven Test Score	3.11	2.91	0.694	2.91	3.88	0.202
Digitspan Recall Score	6.50	6.17	0.339	6.16	6.88	0.164
Total Assets	287603	244850	0.651	240620	571325	0.132
Total Assets<1500LKR	0.02	0.09	0.110	0.00	0.00	.
Total Assets>935000LKR	0.06	0.04	0.740	0.07	0.13	0.574
Monthly Profits	15167	15036	0.969	17197	19921	0.618
Profit Data Missing	0.02	0.04	0.450	0.00	0.00	.
Monthly Profits<2000LKR	0.02	0.00	0.552	0.04	0.00	0.552
Monthly Profits>30000LKR	0.06	0.04	0.740	0.04	0.00	0.552
Business Practices Score	9.81	8.17	0.315	8.22	10.88	0.227
From booster sample	0.59	0.65	0.627	0.53	0.50	0.865
Retail Sector	0.36	0.17	0.101	0.27	0.63	0.046
Colombo	0.31	0.57	0.032	0.49	0.63	0.487
Kandy	0.58	0.30	0.024	0.44	0.38	0.721
Any paid worker at baseline	0.16	0.13	0.769	0.22	0.25	0.866
Monthly Sales	56787	57263	0.981	49618	61307	0.552
Owner's Age	35.41	34.30	0.509	35.60	38.38	0.250
Business is Registered for Taxes	0.31	0.22	0.393	0.29	0.25	0.826
Weekly hours worked	59.94	58.74	0.770	57.51	62.50	0.482
Sample Size	64	23		45	8	

Notes: Hire and Let go indicates the firm hired a worker during the intervention period (rounds 4 and 5), but then lowered the number of employees compared to the previous round in one of round 4, 5, or 6. Hire and Keep indicates they hired a worker and did not then reduce their number of employees in the first year after the intervention.

Appendix 7: Firms did not significantly adjust Capital Stock when using the subsidy

Our estimation of the marginal product of labor during the subsidy period is made under the assumption that the wage subsidy only affected firm profits through changing labor inputs. A possible threat to this assumption would be if firms also change capital. We test whether capital stock changed during the subsidy period in Appendix Table 7, using two definitions of capital stock. The first measure is just raw materials and inventories, while the second measure is all capital stock excluding land, which adds tools and utensils, machinery and equipment, furniture, business vehicles, and other physical assets to raw materials and inventories. We consider both the levels of these variables truncated at the 99th percentile, as well as the inverse hyperbolic sines.

We cannot reject that there is no impact of the wage subsidy on any of these measures of capital stock. This is consistent with our survey evidence in which only 40 percent of those not hiring workers said they would need capital to make a worker profitable. Taking the point estimate of

6,643 LKR, then if the return to capital is 5 percent per month (as in de Mel et al, 2008), this would imply 332 LKR higher monthly profits. This is only one-eighth to one-tenth of the estimated profit increase in Table 7, suggesting that our estimate of the marginal return to labor is not likely to be driven by adjustments in capital stock. However, we acknowledge that the confidence intervals in both the estimated impact on profits and the estimated impact on capital stock are both wide.

Appendix Table 7: No Significant Impact of the Wage Subsidy on Capital Stock

	Raw Materials and Inventories	Total Capital Stock	Inverse HS Inventories	Inverse HS Capital Stock
Assigned to Treatment	3715	6643	-0.055	0.125
	(9989)	(23487)	(0.245)	(0.328)
Sample Size	984	957	957	984
Control Mean	49356	260662	11.58	7.320

Notes: robust standard errors in parentheses, clustered at the firm level.
*, **, *** denote significance at the 10, 5, and 1 percent levels respectvely,
Regressions control for time fixed effects, randomization strata, and re-randomization controls. Estimation uses survey rounds 4 and 5 only (the period during which the wage subsidy was active). Inverse HS denotes Inverse hyperbolic sine transformation.

Appendix 8: Further Exploration of Heterogeneity for Manufacturing Firms

Appendix Table 8 shows the year-by-year, and pooled, impacts of the wage subsidy on firm survival, employment, and profits, when interacted with manufacturing. We see that, if anything, the survival effect is lower in manufacturing, while manufacturing firms are more likely to add workers during the subsidy period and to keep them afterwards. The interaction impact on profits is negative and insignificant during the subsidy period, but turns positive after the subsidy.

Appendix Table 8: Heterogeneity in Impacts with Respect to Manufacturing

	Remains Self-employed	Any paid worker	Number paid workers	Unconditional Profits
Before Subsidy	-0.005	-0.044	-0.142*	569
	(0.031)	(0.038)	(0.081)	(1749)
During Subsidy	0.018	0.121***	0.091	898
	(0.023)	(0.041)	(0.081)	(1408)
Year 1 After Subsidy	0.075***	0.037	-0.042	1631
	(0.026)	(0.038)	(0.085)	(1300)
Year 2 After Subsidy	0.098***	-0.022	-0.131	68
	(0.031)	(0.040)	(0.084)	(1743)
Year 3 After Subsidy	0.068**	-0.065*	-0.233***	-227
	(0.034)	(0.037)	(0.090)	(1476)
Before Subsidy*Manufacturing	-0.004	0.087	0.201	1249
	(0.045)	(0.083)	(0.190)	(3236)
During Subsidy*Manufacturing	-0.079**	0.037	0.293*	-1077
	(0.038)	(0.075)	(0.167)	(2808)
Year 1 After*Manufacturing	-0.045	0.197***	0.476***	-51
	(0.045)	(0.073)	(0.169)	(2574)
Year 2 After*Manufacturing	-0.043	0.123	0.507***	5042*
	(0.055)	(0.077)	(0.179)	(3043)
Year 3 After*Manufacturing	-0.040	0.165**	0.599***	3999
	(0.056)	(0.069)	(0.184)	(2477)
Pooled effects Afterwards				
After Subsidy	0.079***	-0.024	-0.150*	379
	(0.027)	(0.033)	(0.078)	(1245)
After Subsidy*Manufacturing	-0.042	0.162***	0.538***	3154
	(0.047)	(0.063)	(0.157)	(2230)
Sample Size	5055	4879	4879	4795

Notes: robust standard errors in parentheses, clustered at the firm level.

*, **, *** denote significance at the 10, 5, and 1 percent levels respectvely,

Regressions control for time fixed effects, randomization strata, and re-randomization controls.

Appendix 9: Heterogeneity in Survival Impact

Appendix Figure 9 shows graphically that the control group sample with below median baseline assets dies at a faster rate over time than the control group sample; whereas the death rates for the low asset treated are similar to those of the high asset treated and the high asset control. Column 1 of Appendix Table 9 shows the corresponding treatment regression. The interaction term shows the average survival impact of the wage subsidy is 6.5 percentage points higher for

firms with below median capital when pooled over all post-intervention years (p=0.126), and 8.5 percentage points higher in years 3+ (p=0.106). However, while the firm survival effect is concentrated on these low asset firms, we do not see these positive interaction effects for being employed (column 2), or for total work income (column 3). Thus the higher survival rate is not resulting in significantly better employment outcomes for these low capital firms.

Appendix Figure 9: Heterogeneous Survival Effects by Baseline Capital
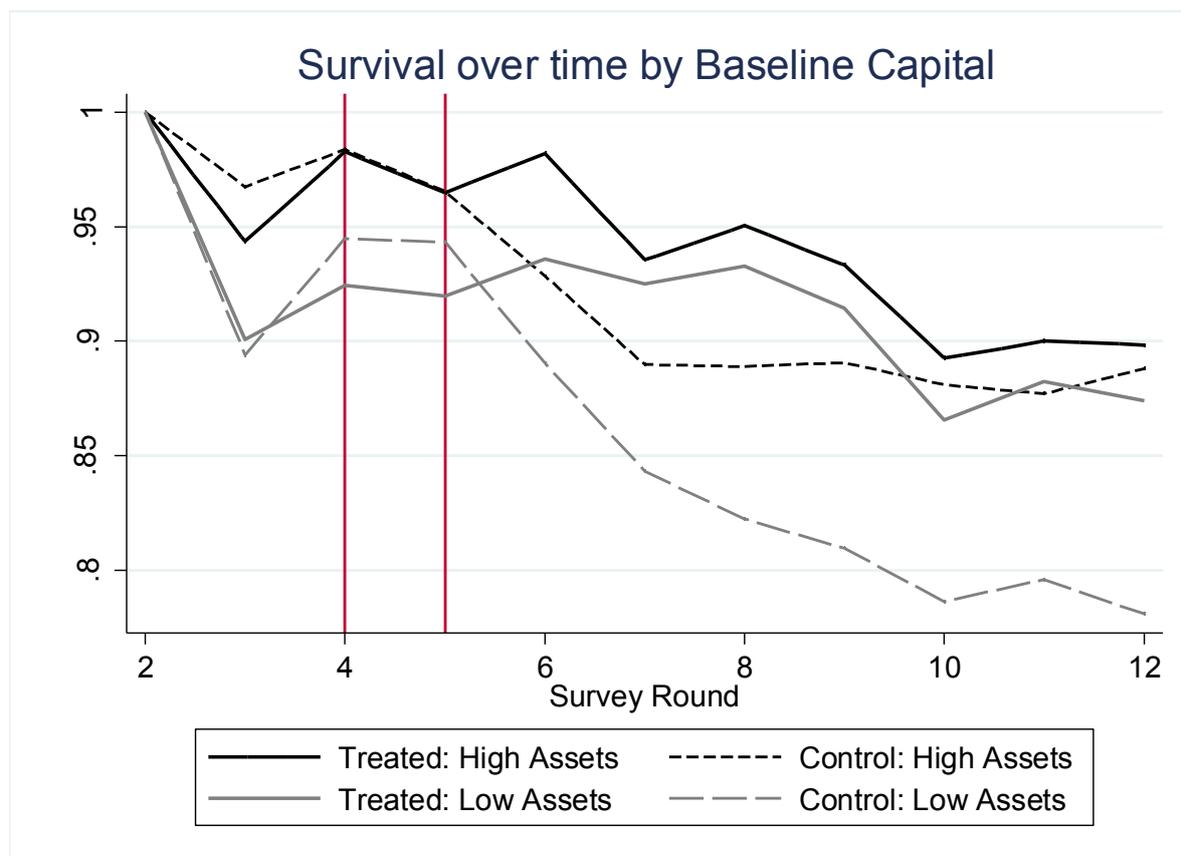
Note: High Asset and Low Asset are defined as having above and below the baseline median capital stock level respectively.

Appendix Table 9: Heterogeneity in Impacts with Respect to Below Median Assets

	Remains Self-employed	Owner is Employed	Total Work Income
Before Subsidy	-0.032	-0.027	481
	(0.026)	(0.026)	(2355)
During Subsidy	-0.005	-0.006	427
	(0.019)	(0.009)	(2236)
Year 1 After Subsidy	0.043	0.031*	2760
	(0.026)	(0.017)	(2113)
Year 2 After Subsidy	0.046	0.012	1147
	(0.032)	(0.026)	(2593)
Year 3 After Subsidy	0.008	0.001	645
	(0.035)	(0.026)	(1906)
Before Subsidy*Below Median Assets	0.046	0.031	756
	(0.045)	(0.045)	(2886)
During Subsidy*Below Median Assets	-0.009	0.004	308
	(0.035)	(0.018)	(2572)
Year 1 After*Below Median Assets	0.029	-0.031	-2723
	(0.041)	(0.025)	(2562)
Year 2 After*Below Median Assets	0.070	-0.020	-1085
	(0.050)	(0.038)	(3242)
Year 3 After*Below Median Assets	0.085	0.020	-856
	(0.053)	(0.041)	(2482)
Pooled effects Afterwards			
After Subsidy	0.029	0.013	1378
	(0.027)	(0.019)	(1744)
After Subsidy*Below Median Assets	0.065	-0.006	-1439
	(0.042)	(0.030)	(2230)
Sample Size	5055	5185	4585

Notes: robust standard errors in parentheses, clustered at the firm level.

*, **, *** denote significance at the 10, 5, and 1 percent levels respectvely,

Regressions control for time fixed effects, randomization strata, and re-randomization controls.