Evaluation of the Impact of the Cadbury Cocoa Partnership
Preliminary Report

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Executive Summary

We have completed a rigorous, five-year evaluation of the impacts of the Cadbury Cocoa Partnership program, begun in 2009, using detailed data gather from surveys of cocoa farmers in over 350 communities in Ghana. The key findings include the following:

- The program has had a positive impact on cocoa farmer incomes, improving total cocoa harvests and prices received by farmers; the program has also markedly improved organizational capacity in participating communities
- The program has had no significant impacts on access to training for farmers, adoption of better farming practices (such as the use of fertilizer), or farm productivity
- The program has had no clear effect on use of child labor on cocoa farms, although the incidence of child labor appears to have decreased generally since 2009
- The program has had no apparent effect on female participation in community organization and has not narrowed differences in incomes between male and female-led households

Overall, the analysis indicates that impacts were perhaps more limited than expected mainly because the program did not provide significantly more access to training for farmers in participating communities. This issue may be addressed as part of the re-design of the program as Cocoa Life if training in good practices can be delivered more effectively. The data does indicate that farmers who did have access to training were markedly more likely than counterparts to use fertilizer and achieved far higher yields.

A. Background and Design

In January 2009 the Harvard research team began working with Cadbury to conduct an evaluation of the Cadbury Cocoa Partnership. The company shared information about the initial phase of the program, including the names and locations of the 100 communities selected for participation, how these villages chosen by the partner organizations (World Vision, CARE, and VSO), and the basic plan and timetable or implementation of the main interventions. Funding for the research was provided by generous grants

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1. Cohort One (Non-Randomized) Evaluation

Between May and November of 2009, the Harvard research team designed and implemented a baseline survey of cocoa farming households in Ghana. The team worked with the Ghana Cocoa Board to access data on cocoa production by location (buying stations), and used that data along with data on roads and infrastructure in a matching analysis to identify two comparison (or "control") communities for each of the 100 ("treated") communities that had been selected as the first cohort participating in the program. For each treatment community we identified a nearby and a more distant control community.

The basic design for the impact evaluation for the first cohort of communities participating in the program is what is known as a "differences-in-differences" approach. We measured baseline conditions and practices in the 100 treated communities and in the "twin" control communities, then measured these outcomes again later (in 2014) to assess whether there was more improvement in treatment vs control communities. This approach provides the best approximation to a more rigorous randomized control trial in cases in which the participating communities have already been selected (non-randomly), allowing us to account for a wide range of factors that might otherwise confound estimates of impact.

We created a detailed survey questionnaire for the head of the household (and the main farmer), gathering data on their farm(s), crops, output, buyers, farming practices, finances, the work done on the farm(s) by each member of the household, the health and education of each member of the household (including work injuries, school attendance, etc.), participation in farmer/community organizations, and more. Each household surveyed was located with handheld GPS. For a third of these, the enumerator accompanied the main farmer to inspect the largest farm, measure the actual size (using GPS), and observe and record the condition of the farm. We also designed a separate questionnaire for the village chief/leader and the school headmaster, and the enumerators recorded observations about the state of roads and public buildings and took tested bacteria levels in the main source of drinking water (using a portable kit). To implement the baseline survey in 2009 we partnered with the University of Ghana. They helped us recruit experienced enumerators from the cocoa growing regions. We hired, trained, and supervised these enumerators.

Our 2009 baseline survey gathered data from almost 3,000 farmers in 335 communities (between 5 and 15 households per community, depending on population size). In early 2010 we worked on data entry and analysis, and in late 2010 we made our first report of the findings to Cadbury. The baseline data indicated that the farmers are much worse off than anyone expected in key dimensions. For example:

- Average income was only 65 cents (US) per person per day
- Cocoa yields were around 350 Kg per hectare on average
- Only 22% of farmers had used fertilizer at all in the previous 12 months
- Farmers lost around 34% of their harvest, on average, to crop disease
- Only 12% of farmers had received any training in the previous 12 months
- In the first month after a 38% rise in the official cocoa price (on Oct 1, 2009), 60% farmers still sold their cocoa to LBCs at the old price; even in the second month after the price rise, 34% of farmers still sold their cocoa at the old price

Taken together, the baseline data suggested there was a large potential for the Cadbury program to have positive impacts for cocoa farmers by provided additional training and encouraging the use of fertilizer and pesticide, and by facilitating farmer organization and Fairtrade certification and enabling farmers to receive the best price possible for their cocoa.

2. Cohort Two (Randomized) Evaluation

In January 2011, we met again with the Cadbury team in Ghana and discussed their plan for expanding the program to include additional communities. The plan involved advertisements in Ghanaian newspapers inviting non-participating communities (in the districts in which the program was already operating) to apply to join the program. This application process was designed to avoid a problem that had become apparent in the initial phase – farmers in some of the initial 100 treatment communities did not seem to be particularly enthusiastic about being chosen for the program, at least in the early stages.

This expansion phase of the program provided an opportunity to conduct a more rigorous evaluation. A major challenge for the differences-in-differences assessment of the impact of the program among the initial 100 participating communities is the potential for what is known as "selection bias". We did our best, using the available data, to match these 100 communities with twin-like control communities, to create a comparison group that is as similar as possible. But a variety of factors went into the selection of these first cohort communities. It is difficult to say for sure that these communities would have experienced the same changes over time as the non-participating communities if they had been left out of the program. If they were selected in part because the program teams expected a larger impact in these locations than elsewhere, the differences we would observe and report would be an upwardly biased assessment of impact.

To overcome this challenge in the expansion phase, we worked with the Cadbury team to implement a simple plan for encouraging a group of (randomly selected) non-participating communities to apply to join the program. In early 2011 we identified a large set of non-participating communities in the chosen districts that were good candidates for the expansion in terms of cocoa production. We used cocoa production and population data to match these communities into twin-like pairs, then randomly selected around 30 of these (one from each well-matched pair) to receive an additional encouragement to apply to join the program around the same time the newspaper advertisements appeared. To administer the encouragement, a Harvard researcher accompanied teams from the program partner organizations on visits to the villages just before the deadline for mailed-in applications. The teams talked to the village leaders about the program and its benefits and gave them a copy of the application form. By generating a higher probability of program participation among a randomly selected sub-sample of communities (without denying access to the program to any communities) this design allows us to eliminate any selection bias in the assessment of the impact of the program among the second cohort of participating villages.

Between April and June of 2014 we conducted the follow-up survey of all the communities surveyed in 2009, including also the additional set of communities (treatment and control) that were included in our study of the 2011 expansion. We again partnered with the University of Ghana, and used a team of the same enumerators who had worked on our 2009 baseline survey. A critical goal was to re-interview as many of the farmers who had participated in our 2009 survey as was possible, so that we could accurately measure changes in outcomes over time among a large sample of farmers.

The follow-up survey gathered data from approximately 3,800 farmers in over 370 communities. We were able to re-interview over 80% of the farmers originally surveyed in 2009 (and frequently they were re-interviewed by the same enumerator who had visited them in 2009). The follow-up survey was a replication of the baseline questionnaire for the head of the household (and the main farmer), gathering the same detailed information about farms, crops, output, buyers, farming practices, finances, work done on the farms, famer organizations, etc. We also replicated the survey of village leaders. In late 2014 and early 2015, the 2014 survey data was checked and entered, merged with the 2009 data, and analyzed.

B. Main Results

For this initial report we have focused on the Key Performance Indicators established by the Mondelez Cocoa Life team, and we describe results of estimates of impact separately for the Cohort One (non-randomized) sample of communities and the Cohort Two (randomized) sample. For the Cohort One study, we compare changes in outcomes from 2009 to 2014 for the treatment communities against changes over the same 5-year period in the matching control communities (these are the "differences-in-differences: estimates). For the Cohort Two study, we compare differences between matching treatment and control communities in 2014 (over 2 years after the treatment communities entered the program in the 2011 expansion). It is worth noting that, while the randomized evaluation design applied for the study of Cohort Two communities is generally considered closest to "best practice" in terms of yielding the most valid estimates of impact, in this case it is somewhat disadvantaged (when compared with the differences-in-differences design for Cohort One) by being limited to a relatively small sample if communities (making estimates less precise) and can assess impact over a relatively short period. The results are summarized in the "Report Card" attached. Below we present the results in more detailed form.

1. Farming

a. Incomes from Cocoa

The evidence indicates that the program has had a significant positive impact among the Cohort One communities between 2009 and 2014. In particular, on average, cocoa income rose by 48.74% (p=0.023) more during this period for farmers in the treated villages when compared with farmers in control villages (see Table 1). This impact seems to have been generated by a positive impact on total cocoa sold and prices received: on average, total cocoa sold (KG) rose by 38.0% (p=0.055) more for farmers in the program villages compared with those in control villages; the price received per KG of cocoa rose on average by GHC 0.132 (p=0.005) more during this period for farmers participating in the program versus counterparts (p=0.005)

Table 1: Impacts on income from cocoa (Cohort One), 2009-14

	Effect	SE	p-value	#obs
Cocoa income (GHC)	45.193	359.086	0.900	1320
Cocoa sold (kg)	93.000	128.281	0.468	1361
Log Cocoa income	0.397	0.175	0.023	1320
Log Cocoa sold	0.322	0.168	0.055	1361
Avg price per KG (GHC)	0.132	0.047	0.005	1362

There are no clear, statistically significant program impacts on incomes among farmers in Cohort Two communities (see Table 2).

Table 2: Impacts on income from cocoa (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
Cocoa income (GHC)	2761.847	3144.271	454.178	291.879	0.120	206
Cocoa sold (kg)	890.982	1037.951	122.911	109.679	0.262	213
Log Cocoa income	7.480	7.450	0.014	0.139	0.922	206
Log Cocoa sold	6.331	6.349	0.014	0.104	0.894	213
Avg price per KG (GHC)	3.330	3.300	-0.032	0.036	0.367	215

b. Farmer organization

The program also appears to have had some positive impact on participation in farmer organizations, though in this case the effects are strongest among Cohort Two communities. For Cohort One communities, the only clear impact is that the percentage of farmers who are members of a certified farmer organization rose by a modest 3.3 percentage points (p=0.067) more among program villages than in control villages (see Table 3).

Table 3: Impacts on farmer organization (Cohort One), 2009-14

	Effect	SE	p-value	#obs
% member of organized group	-0.032	0.076	0.675	1439
#organizational memberships	-0.004	0.099	0.965	1415
% member of farmer group/coop.	0.019	0.041	0.647	1439
% member of certified org.	0.033	0.018	0.067	1439
% hold leadership position in org.	-0.018	0.024	0.462	1439

Among farmers in Cohort Two communities, the positive impacts on organizational capacity are more apparent (see Table 4). Compared with control communities, in the treatment communities the percentage of farmers that were members of an organized group was 15.9 percentage points higher (p=0.006) in 2014, on average organized group memberships among farmers was 0.19 (p=0.007) higher, the percentage of farmers that were members of a farmer cooperative was 22.1 percentage points higher (p=0.000), the percentage of farmers that were members of a certified farmer organization was rose by 14.6 percentage points higher (p=0.000), and even the percentage of farmers that reported they had taken on a leadership position in an organized group was 6.7 percentage points higher (p=0.006).

Table 4: Impacts on farmer organization (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
% member of organized group	0.263	0.429	0.159	0.057	0.006	219
#organization memberships	0.298	0.485	0.186	0.068	0.007	217
% member of farmer group/coop.	0.088	0.295	0.221	0.040	0.000	219
% member of certified org.	0.018	0.152	0.146	0.038	0.000	219
% hold leadership position in org.	0.035	0.095	0.067	0.024	0.006	219

c. Farmer Training

The results are more disappointing for farmer training. For the Cohort One communities, the data indicate that the percentage of farmers in participating communities that received training in the last 12 months has not risen more than it has among farmers in non-participating communities (and neither has the average number of trainings received (see Table 5). Overall, the percentage of farmers who had received training actually changed very little between 2009 and 2014 in these communities.

Table 5: Impacts on farmer training (Cohort One), 2009-14

	Effect	SE	p-value	# obs
% received any training in past year	-0.010	0.071	0.889	1439
# trainings received in past year	-0.184	0.288	0.523	1418

For Cohort Two communities, similarly, participation in the program had no statistically significant impact on the percentage of farmers that received training in the last year. But it does appear that the average number of trainings received in the last year was higher – by 0.78 (p=0.011) – on average among farmers in the treatment communities compared with control communities (see Table 6).

Table 6: Impacts on farmer training (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	# obs
% received any training in past year	0.342	0.467	0.105	0.069	0.129	219
# trainings received in past year	1.044	1.941	0.783	0.308	0.011	214

d. Farming Practices

Perhaps as might be anticipated, the program also does not appear to have had significant impacts on farming practices. If we just focus on weeding and the use of key inputs, practices that can be adjusted relatively quickly (as opposed, say, to planting of new trees), the data show no significant differences in these practices over time among Cohort One treatment and control communities (see Table 7).

Table 7: Impacts on farmer practices (Cohort One), 2009-2014

	Effect	SE	p-value	# obs
# months farm weeded in past	-0.159	0.271	0.558	1439
# months farm fertilized in past	0.106	0.185	0.569	1439
% using fertilizer in past year	0.108	0.081	0.179	1439
% using insecticide in past year	0.075	0.074	0.310	1439
% using herbicide in past year	0.007	0.077	0.929	1439
% using fungicide in past year	0.065	0.080	0.416	1439
% using organic pest. or bio-pest. in past	-0.018	0.019	0.334	1439
% using seed pods in past	-0.028	0.044	0.531	1439
% using seedlings in past year	-0.114	0.047	0.015	1439
% using knapsack sprayer in past	0.033	0.086	0.702	1439
% using motorized mist blower in past	0.040	0.084	0.631	1439

Among Cohort Two communities, the findings are similarly bleak – the average number of months in which farmers weeded during the past year, and the percentage of farmers applying fungicide, were even slightly lower in the communities participating in the program compared with corresponding numbers for control communities (see Table 8).

Table 8: Impacts on farmer inputs (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
# months farm weeded in	3.430	3.000	-0.383	0.202	0.058	219
# months farm fertilized in past	1.123	0.981	-0.148	0.180	0.411	219
% using fertilizer in past	0.500	0.400	-0.091	0.081	0.264	219
% using insecticide in past	0.702	0.648	-0.027	0.073	0.716	219
% using herbicide in past	0.211	0.200	0.024	0.040	0.538	219
% using fungicide in past	0.158	0.105	-0.064	0.038	0.096	219
% using organic pest. or bio-pest. in past	0.035	0.000	-0.035	0.016	0.030	219
% using seed pods in past	0.158	0.181	0.018	0.033	0.580	219
% using seedlings in past	0.061	0.181	0.130	0.040	0.001	219
% using knapsack sprayer in past	0.368	0.333	0.008	0.042	0.851	219
% using motorized mist blower in past	0.421	0.438	0.016	0.040	0.697	219

e. Farm Productivity

There is evidence that the program may have had a positive impact on farm productivity, at least among Cohort One communities, although the estimates of these effects are imprecise (and on the borderline of statistical significance). On average, the total cocoa harvest (KG) rose by 51.13% (p=0.051) more in treated villages than in control villages between 2009 and 2014. More importantly, on average the total cocoa yield (KG/ha.) rose by 36.48% (p=0.08) more in treated villages than control villages (see Table 9).

Table 9: Impacts on farm productivity (Cohort One), 2009-14

	Effect	SE	p-value	#obs
Cocoa harvest (kg)	133.502	119.698	0.265	1408
Cocoa yield (kg/ha.)	36.889	49.555	0.457	1377
Log Cocoa harvest	0.413	0.211	0.051	1408
Log Cocoa yield	0.311	0.178	0.080	1377

For Cohort Two communities, there is no evidence that farm productivity is significantly higher in treatment villages compared with control villages (Table 10).

Table 10: Impacts on farm productivity (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
Cocoa harvest (kg)	857.991	1012.913	116.926	76.571	0.127	213
Cocoa yield (kg/ha.)	419.823	473.710	32.450	37.142	0.382	217
Log Cocoa harvest	6.301	6.257	-0.065	0.096	0.499	213
Log Cocoa yield	5.699	5.695	-0.061	0.086	0.481	217

2. Community

a. Community Capacity

As noted above (Section 1.b), there is evidence that the program has had positive impacts on organizational capacity in the participating communities, with the largest effects in Cohort Two.

b. Women and Training

Focusing on households headed by women (and/or in which a woman was the lead farmer), we have examined program impacts on access to training (in business management as well as farming practices) among women. The sample of such households among farmers surveyed in the study of Cohort Two is too small for us to estimate effects. Among Cohort One communities, the data indicate no clear positive program impacts on access to training for women – the percentage of women that received training in actually business even fell by a little more -- 6.4 percentage points (p=0.055) – in treatment villages than in control communities, though this is borderline in terms of statistical significance (see Table 11).

Table 11: Impacts on training for women (Cohort One), 2009-14

	Effect	SE	p-value	#obs
% received business	-0.064	0.033	0.055	294
% received farm planting/expansion	-0.050	0.049	0.308	294
% received any training in past	-0.018	0.104	0.865	294
# trainings received in past	0.263	0.415	0.527	291

c. Women in Leadership

Examining the same sample of women heads of households (and/or lead farmers) in Cohort One we find no clear evidence of marked positive impacts on female leadership or participation in organizations in the communities. The only bright spot is that the percentage of women that were members of a certified farmer organization rose by a little more -- 4.1 percentage points (p=0.08) – in treatment communities compared with controls, but again this effect is not precisely estimated (see Table 12).

Table 12: Impacts on women in leadership (Cohort One), 2009-14

	Effect	SE	p-value	#obs
% member of organized	-0.036	0.142	0.799	294
#organizational	-0.068	0.186	0.716	290
% member of farmer	0.013	0.057	0.827	294
% member of certified org.	0.041	0.024	0.080	294
% hold leadership position in	0.013	0.012	0.299	294

3. Livelihoods

a. Training in Business and Financial Management (and Application)

There is no evidence that the program has had an impact upon access to training in business or financial management among farmers in Cohort One, or in outcomes (such as access to credit) that would indicate that such training had been applied (see Table 13).

Table 13: Impacts on business and finance training (Cohort One), 2009-2014

	Effect	SE	p-value	#obs
% received business	0.006	0.016	0.724	1439
% own bank account	-0.010	0.063	0.878	1439
total savings (GHC)	8.965	81.029	0.912	1275
log total savings	0.208	0.458	0.649	1275
% received loan in past year	0.054	0.043	0.215	1439
largest loan received in past year	30.067	18.379	0.102	1414
log largest loan received in past	0.390	0.236	0.098	1414

The same conclusion emerges when we examine Cohort Two farmers, where on average, total savings (GHC) was actually 47.48% lower (p=0.096) in the treatment communities versus the control communities (see Table 14).

Table 14: Impacts on business and finance training (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
% received business	0.018	0.000	-0.021	0.010	0.044	219
% own bank account	0.377	0.295	-0.066	0.047	0.160	219
total savings (GHC)	315.179	275.196	-13.354	80.308	0.868	214
log total savings	3.423	2.705	-0.644	0.387	0.096	214
% received loan in past year	0.088	0.105	0.029	0.026	0.270	219
largest loan received in past year	35.135	31.000	0.821	11.703	0.944	211
log largest loan received in past	0.392	0.370	0.042	0.138	0.760	211

b. Income Diversification

For Cohort One communities, there is no evidence that the program has had an impact on income earned by households from sources other than cocoa farming, including income from farming other types of crops or engaging in other (non-agricultural) economic activities (see Table 15).

Table 15: Impacts on income diversification (Cohort One), 2009-14

	Effect	SE	p-value	#obs
Log Income, other crops	-0.272	0.501	0.588	1411
Log Income, other ag.	-0.275	0.197	0.162	1415
Log Income, non-ag.	-0.102	0.344	0.767	1403
Log Total Non-Crop Income	-0.241	0.441	0.584	1402
Income, other crops (GHC)	-275.871	197.047	0.162	1411
Income, other ag. (GHC)	-11.601	9.240	0.209	1415
Income, non-ag. (GHC)	-21.082	54.743	0.700	1403
Total Non-Crop Income (GHC)	-66.855	81.223	0.410	1402

By contrast, when we examine Cohort Two communities, the program appears to have had more significant positive impacts. In particular, on average, income from other agricultural activities was 47.11% (p=0.02) higher in treatment communities, income from non-agricultural activities was 115.98% (p=0.011) higher, and total non-crop income was 116.63% (p=0.018) higher (see Table 16).

Table 16: Impacts on income diversification (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
Log Income, other crops	3.092	2.955	-0.173	0.337	0.607	215
Log Income, other ag.	0.174	0.539	0.386	0.166	0.020	216
Log Income, non-ag.	1.892	2.752	0.770	0.302	0.011	211
Log Total Non-Crop Income	2.611	3.507	0.773	0.326	0.018	212
Income, other crops (GHC)	416.327	727.529	279.393	169.573	0.099	215
Income, other ag. (GHC)	4.973	26.243	22.184	10.211	0.030	216
Income, non-ag. (GHC)	212.798	372.245	142.102	48.007	0.003	211
Total Non-Crop Income (GHC)	319.064	492.049	137.564	63.939	0.031	212

4. Youth

a. Child Labor

To report on the incidence of child labor here, we focus on the core measures of the number of hours per week worked by children 17 and under, 14 and under, and 12 and under. These age thresholds identified in the ILO's official definition of child labor: A child under 12 who is economically active for 1 or more hours per week, a child 14 and under who is economically active for at least 14 hours per week, or a child 17 and under who is economically active for at least 43 hours per week. We examine whether a household meets this definition (for any children in the household) and then examine average hours worked by children in the different age groups both on and off the family farm. (We have prepared a separate, more detailed report on child labor in cocoa farming in Ghana that also examines data on hazardous forms of work, work-related illness and injury, and school attendance).

The evidence on Cohort One communities indicates that that the program has not had significant impacts on the use of child (see Table 17).

Table 17: Impacts on child labor (Cohort One), 2009-14

	Effect	SE	p-value	#obs
% using child labor on farm, ages 5-17	-0.055	0.044	0.213	1432
% using child labor on or off farm, ages 5-17	-0.049	0.045	0.279	1433
# hours worked per child on farm, ages 5-17	-0.053	0.534	0.921	1406
# hours worked per child on farm, ages 5-14	-0.538	0.360	0.135	1406
# hours worked per child on farm, ages 5-12	0.006	0.217	0.978	1406
# hours worked per child on or off farm, ages 5-17	-0.039	0.534	0.942	1401
# hours worked per child on or off farm, ages 5-14	-0.506	0.347	0.144	1403
# hours worked per child on or off farm, ages 5-12	0.006	0.217	0.978	1406
% received child labor sens. training in past year	-0.008	0.013	0.510	1439

It should be pointed that, overall, across the treatment and control communities, the percentage of cocoa farming households using child labor in any form (i.e. meeting the ILO definition for any children) has declined significantly from 13.52% in 2009 to 9.26% in 2014.

The findings for the Cohort Two communities are quite similar. There is a possibility that the number of hours worked per child on the cocoa farm for children ages 5-17 was actually slightly higher -- 0.532 (p=0.065) – on average among treatment versus control communities, but this effect is not statistically significant as standard levels (see Table 18).

Table 18: Impacts on child labor (Cohort Two), 2011-14

	Control mean	Treated	Effect	SE	p-value	#obs
% using child labor on farm, ages 5-17	0.096	0.08	0.004	0.024	0.856	219
% using child labor on or off farm, ages 5-17	0.105	0.09	0.009	0.025	0.715	219
# hours worked per child on farm, ages 5-17	1.392	1.72	0.532	0.288	0.065	218
# hours worked per child on farm, ages 5-14	0.554	0.70	0.192	0.136	0.159	217
# hours worked per child on farm, ages 5-12	0.277	0.25	0.013	0.098	0.894	217
# hours worked per child on or off farm, ages 5-17	1.546	1.73	0.395	0.309	0.201	216
# hours worked per child on or off farm, ages 5-14	0.649	0.70	0.105	0.170	0.536	216
# hours worked per child on or off farm, ages 5-12	0.270	0.25	0.020	0.098	0.838	216
% received child labor sens. training in past year	0.000	0.01	0.009	0.007	0.173	219

b. Children in School

There is no evidence that the program has had an effect on school enrolment (or attendance) in either cohort (see Tables 19 and 20).

Table 19: Impacts on education (Cohort One), 2009-2014

	Effect	SE	p-value	#obs
% children enrolled (ages 5-21)	-0.037	0.047	0.428	1024
average years schooling in HH	0.399	0.329	0.225	1335

Table 20: Impacts on education (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
% children enrolled (ages 5-21)	0.888	0.859	-0.032	0.021	0.135	149
average years schooling in HH	7.283	7.368	0.046	0.298	0.877	202

c. Youth Training

There is some evidence that the program increase access to training among youth in Cohort One communities. In particular, the percentage of youth (aged between 15 and 35) who received any training in the past year rose by 32.3 percentage points (p=0.02) more in treatment communities compared with control communities, and the number of trainings received by youth in the past year

rose by 1.16 more (p=0.05) on average in treatment communities (see Table 21). The sample of young heads of households (or lead farmers) in is too small for us to examine impact on this dimension for Cohort Two.

Table 21: Impacts on training for youth ages 15-35 (Cohort One), 2009-14

	Effect	SE	p-value	# obs
% received any training in past	0.323	0.138	0.020	173
# trainings received in past	1.163	0.592	0.050	170

d. Youth in Farming

The program does not appear to have had an impact on participation by youth in cocoa farming, on whether farmers recommend farming to their children, and whether children in farming families plan to continue to grow cocoa (see Table 22).

Table 22: Impacts on youth labor, ages 15-35 (Cohort One), 2009-14

	Effect	SE	p-value	# obs
% youth in HH worked on cocoa farm	0.001	0.058	0.991	1049
# youth in HH worked on cocoa	0.016	0.146	0.912	1427
# hours of youth labor on cocoa	0.660	3.030	0.828	1404
# hours per youth of youth labor on cocoa	0.703	1.840	0.702	1411
# children left cocoa	-0.018	0.220	0.935	1366
% farmers said any children plan to cocoa	-0.093	0.070	0.188	997
% farmers would recommend children cocoa	-0.081	0.084	0.335	1117

The results are similar among Cohort Two communities, although there is some indication that the percentage of farmers reporting whether any children plan to go into cocoa farming was 11.9 percentage points (p=0.004) lower in treatment versus control communities (see Table 23).

Table 23: Impacts on youth labor, ages 15-35 (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	# obs
% youth in HH worked on cocoa farm	0.767	0.755	0.012	0.040	0.758	153
# youth in HH worked on cocoa	0.956	0.923	0.064	0.103	0.536	217
# hours of youth labor on cocoa	19.123	17.135	-0.106	2.762	0.970	218
# hours per youth of youth labor on cocoa	10.480	10.960	1.502	1.348	0.265	219
# children left cocoa	0.679	0.610	-0.086	0.199	0.664	217
% farmers said any children plan to cocoa	0.282	0.189	-0.119	0.041	0.004	168
% farmers would recommend children cocoa	0.279	0.360	0.047	0.046	0.317	175

5. Environment

a. Training in Sustainability

Among Cohort One, there appears to be no clear impact of the program on training in sustainable farm management (see Table 24).

Table 24: Impacts on training in sustainable practices (Cohort One), 2009-14

	Effect	SE	p-value	#obs
% received envir. and deforest. training	-0.005	0.006	0.470	1439
% received planting/farm expansion training	-0.036	0.044	0.407	1439
% received farm maintenance training	0.059	0.054	0.273	1439
% received training in applying fert./pest.	-0.022	0.023	0.348	1439

The news is a little better among Cohort Two communities where the percentage of farmers that received farm maintenance training in the past year was 10.0 percentage points (p=0.035) higher in treatment communities and the percentage that received training in the application of fertilizer and pesticides was 8.0 percentage points (p=0.022) higher (see Table 25).

Table 25: Impacts on training in sustainable practices (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
% received envir. and deforest. training	0.009	0.000	-0.012	0.008	0.171	219
% received planting/farm expansion training	0.096	0.067	-0.031	0.038	0.412	219
% received farm maintenance training	0.184	0.286	0.100	0.048	0.035	219
% received training in applying fert./pest.	0.035	0.124	0.080	0.035	0.022	219

b. Sustainability Practices

There is no evidence that the program had an impact on the adoption of more sustainable farming practices among Cohort One communities (see Table 26).

Table 26: Impacts on sustainable practices (Cohort One), 2009-14

	Effect	SE	p-value	#obs
% of farmers organic certified	0.008	0.010	0.413	1439
% harvest lost due to problems	0.007	0.029	0.819	1366
% farmers plantings trees in rows	-0.019	0.070	0.783	1439
% farmers planting shade trees	-0.095	0.061	0.119	1439
% made invest. in bldg/veh/drain in past year	-0.005	0.040	0.910	1439

Again, the news is slightly better for Cohort Two, although the direct evidence is scant. The percentage of farmers that made investments in buildings, vehicles, or drainage systems in the past year was 11.2 percentage points (p=0.023) higher in treatment communities (see Table 27).

Table 27: Impacts on sustainable practices (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
% of farmers organic certified	0.009	0.019	0.014	0.011	0.208	219
% harvest lost due to problems	0.259	0.249	0.005	0.022	0.819	219
% farmers plantings trees in rows	0.167	0.219	0.027	0.046	0.557	219
% farmers planting shade trees	0.763	0.705	-0.048	0.031	0.118	219
% made invest. in bldg/veh/drain in past year	0.044	0.152	0.112	0.049	0.023	219

c. Shade Trees

There is no evidence that the program has had an effect on the planting and maintenance of shade trees on the cocoa farms in either cohort (see Tables 28 and 29).

Table 28: Impacts on shade trees (Cohort One), 2009-14

	Effect	SE	p-value	#obs
% farmers planting shade	-0.095	0.061	0.119	1439

Table 29: Impacts on shade trees (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
% farmers planting shade	0.763	0.705	-0.048	0.031	0.118	219

d. Soil Improvement

The data also provide no clear evidence that the program led to adoption of better soil improvement practices (including use of fertilizer, weed control, and planting of new trees) in Cohort One and Cohort Two communities.

Table 30: Impacts on soil improvement practices (Cohort One), 2009-14

	Effect	SE	p-value	#obs
# months farm weeded in past	-0.159	0.271	0.558	1439
# months farm fertilized in past	0.106	0.185	0.569	1439
% using fertilizer in past year	0.108	0.081	0.179	1439
% using organic pest. or bio-pest. in past	-0.018	0.019	0.334	1439
% using seed pods in past	-0.028	0.044	0.531	1439
% using seedlings in past year	-0.114	0.047	0.015	1439

Table 31: Impacts on soil improvement practices (Cohort Two), 2011-14

	Control mean	Treated mean	Effect	SE	p-value	#obs
# months farm weeded in past	3.430	3.000	-0.383	0.202	0.058	219
# months farm fertilized in past	1.123	0.981	-0.148	0.180	0.411	219
% using fertilizer in past year	0.500	0.400	-0.091	0.081	0.264	219
% using organic pest. or bio-pest. in past	0.035	0.000	-0.035	0.016	0.030	219
% using seed pods in past	0.158	0.181	0.018	0.033	0.580	219
% using seedlings in past year	0.061	0.181	0.130	0.040	0.001	219

C. Conclusions

Overall, the evaluation indicates that the Cadbury Cocoa Partnership program, in its original form, has had significant positive impacts for cocoa farmers in Ghana. It appears to have generated an increase in cocoa farmer incomes (equating to an additional income of over GHC 400 annually), improving total cocoa harvests and prices received by farmers (an additional lift in price of GHC 0.3 per kilogram) in the first Cohort participating since 2009. The program has also markedly improved organizational capacity in participating both Cohort One and Cohort Two communities.

The evidence indicates that positive impacts were perhaps more limited than expected mainly because the program did not provide significantly more access to training for farmers in participating communities. If the delivery of training can be improved as part of the development of the Cocoa Life program, and training in good practices can be delivered more effectively, the potential for much larger positive impacts is large. The data indicates that farmers who did have access to training were markedly more likely than counterparts to use fertilizer and achieved far higher yields.