The impacts of union-led training on working conditions. Experimental evidence from Mozambique.

Lauro Carnicelli, Tuomas Kosonen, and Jukka Pirttilä [*]

December 15, 2022

Abstract

This report evaluates the impact of union-led training financed by SASK in Mozambique. For that purpose, a randomized control trial was conducted where union representatives attended a two-day training activity about labor law, recruiting strategies, union organization, and negotiation skills. Results indicate that the treatment increased hours worked and salaries. The unionization level remained stable in the treatment group, while a drop was observed in the control group. We also find evidence about the presence of spillover effects, where workers of treated firms who did not themselves participate in the training also had an increase in working hours and wages, possibly due to training of their union representatives. We also find some evidence of positive effects on working conditions, with a decrease in work without pay.

JEL Codes: J51, J81, O12
Keywords: unions, developing countries, working conditions

1 Introduction

Decent working conditions are high on the agenda of international development. One of the United Nations development goals is to "promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all"[1]. Decent work is also one of the main goals of the International Labour Organization, ILO. The World Bank, in its 2013 World Development Report, argues that many different ways of organizing labor-market regulation can be conducive to favorable employment developments. There is also a role for trade unions, which aim at improving the work conditions and salary of their members. They also represent the voice of employees to employers (Freeman (2010)).

Worker's well-being is one of the central goals of trade unions. This is no different for The Trade Union Solidarity Center of Finland (SASK) that have as their main objective

---

[1]SASK objectives available at `https://www.sask.fi/in-english/`. United Nations sustainable development goals available at `https://sdgs.un.org/goals`

"to promote decent work and living wages for everyone". This report presents results from an impact study of the union training program financed by SASK in Mozambique. Our paper uses a randomized control trial (RCT) to study the impact of union led training targeted at union representatives from local firms on worker's well-being. The RCT we implemented randomized union representatives into receiving a two-day training activity about labor law, recruiting of new union members, organization of the union, and negotiation skills. The RCT method was based on Banerjee and Duflo (2009)[2].

We conducted a baseline survey in the summer of 2019 before the treatment and an end-line survey in the fall of 2022, some two years after the treatment. The training took place between November 2020 and May 2021. Our results are based on comparing the treatment and control groups before and after the training in these survey data, as well as exam results conducted right before and after the training. The main results are on working hours and salaries, and are based on the baseline and end-line surveys. The baseline survey aimed at interviewing four workers from each firm with one of them being an union representative. The surveys were conducted in-person at the workplace. We collected the phone number for everyone as part of the baseline survey. The end-line survey was conducted by phone.

We find as our main result that salaries and working hours increased in a statistically significant manner as a result of two-day training. We also find that the level of unionization remained stable in the treatment group, while it declined in the control group. We do not find any statistically significant effect on having injury or illness, having professional education, having safety instructions in the workplace, on hourly wages or on being exposed to discrimination.

In summary, our results find positive effect from a two-day training on salaries and working hours. These can be seen as intriguingly large effects from a two-day training. Naturally, we are interested in the mechanism that led to this large effect. The test that was conducted before and after the training suggests that at least the participants learned new things in the training. The tests asked about labor-law and other contents that were part of the training curriculum. The test results on average improved significantly from the test conducted before the training to the one conducted right after the two-day training ended.

Another potential mechanism is that the social connection from the group participating to training led to improved outcomes later. While we cannot completely rule this mechanism out, we do observe increases in the salary and working hours of those that themselves did not participate in the training. They are employed in the same firm as the union representative who did participate in the training. This suggests that the union representative got better at negotiating higher salary for their co-workers after having received the training. The result for those that did not participate in the training is not consistent with a direct network or other non-educational effect being behind the result.

Our research design did not go completely according to the initial plan. One major reason was the Covid-19 pandemic and the ensuing restrictions limiting the possibilities to perform the training and surveys in person. During our study period there were also cyclone Idai in Mozambique which meant that we needed to drop the affected geographical regions from the study. Another problem was that SASK and some of the labor unions that were part of our treatment had a conflict and ended their co-operation during our study period. These issues might had led the unions to co-operate already in the planning

---

[2]For a more recent review of results in development economics using the RCT methodology, see Bouguen et al. (2019)

phase somewhat reluctantly with the researchers. This is one reason why we could not increase the sample size of the treatment group more. Faced with these challenges, it might seem surprising that we in the end managed to randomize individuals into treatment. But we are quite confident in that the training actually took place, because we have the test results conducted right before and after training. The tests were conducted by a survey firm that is not directly associated with the labor unions and gives evidence that the training took place.

As evidenced by the literature review in Kangasniemi and Pirttilä (2013), the evidence on the impacts of unions on developing countries is largely lacking. Peetz and Alexander (2013) review through the presentation of several Australian surveys that union training can increase union representative's activism. In their review covering various disciplines, Pereira et al. (2019) note that much of the empirical work on decent work is descriptive, and they call for more research about the determinants of improved work conditions. A similar conclusion is reached by Doucouliagos et al. (2018), who argue that more (quasi-) experimental work on the union impacts would be needed. There is some work regarding interventions focusing on the employer side. Bertrand and Crépon (2021) using the RCT methodology in South Africa reached the conclusion that teaching labor laws to employers lead to an increase in employment and a decrease in the perception that labor regulation can hinder hiring.

This report is more closely related to an unpublished study of union led training financed by SASK in Zambia presented in Kangasniemi and Pirttilä (2016) and Landy et al. (2017). This Zambian training activity was not an RCT, rather the training activity was provided for non-randomly selected workers. The authors show that the training activities managed to decrease discrimination rates with relation to wages and assignment of duties. This is consistent with the findings of Freeman (2010) that shows that unions can also affect non-wage outcomes.

2   The Mozambican context

As noted by Gradín and Tarp (2019) Mozambique was the poorest country in the world by the end of its civil war in 1992. GDP per capita was 386 US$386(2011 PPP) in 1990 according to the World Bank. There was economic growth since the beginning of the Democratic era in 1994 and the latest data shows that GDP per capita reached US$ 1221(2017 PPP) in 2021. This value places Mozambique in the 194th position in a list of 200 countries. At the same time, income is quite concentrated. The Gini index was 54 in 2014 (where 100 represents perfect inequality). Furthermore, 62.4% in 2014 lived with less than US$1.90(2011 PPP) per day.

Table 1 presents a few descriptive statistics about Mozambique. The country has a total population of 29.5 million inhabitants and a working age population of 15.4 million. Normally, developing countries have a high level of informal work. Mozambique is no exception, and 86.7% of the non-agricultural employment is informal. At the same time, there is a low level of urbanization in the country, since the share of the population living in cities is just 36%.

Mozambique has a system of minimum wages by sector. There are 12 sectors and sub-sectors and each has its own minimum wage that goes from 4390 MZN (62.7 EUR) in the agriculture sector to 12760 MZN (182 EUR) in the banking sector. The minimum wages are negotiated with representatives of the Government, the unions and the employers. Even though the informal sector corresponds to the majority of the Mozambican economy,

the empowerment of union may enhance the life of all workers. Boeri et al. (2011) studying the Brazilian economy show that raises of the minimum wage in the formal sector is followed by an increase in wages in the informal sector. Freeman (2010) also find spillovers of minimum wage increases to the informal sector. In this sense, the impact of SASK's activities could extrapolate to the formal sector, where the unions focus their activities.

Table 1: Statistical description of Mozambique

Variable	date	
Population	2018	29.5 million
Population ages 15-64	2018	15.4 million
Labor force	2018	12.8 million
Informal employment (% of non-agricultural employment)	2015	86.7
GDP per capita, PPP (current $)	2018	$ 1328
Gini index	2014	54
Poverty headcount ratio at $1.90 a day (2011 PPP)	2014	62.4
Urban population (%)	2018	36.0
Life expectancy at birth (years)	2017	59.3
Mortality rate, infant (per 1,000 live births)	2018	54
Literacy rate (% of people ages 15 and above)	2017	60.7

Source: World Bank

3 Our RCT Design

3.1 Unions and provinces

This section describes the sample used in the study. Five unions were contacted to participate in the study (SINTICIM, SINTIHOTS, SINTIME, SINTIQUIAF, and SINTRAT). Table 3 lists the unions and their respective sectors. Each union was asked to provide the number of affiliated firms by province. Given the number presented by the unions, the provinces of Maputo, Nampula, Tete and Sofala were chosen to be part of the survey. Given the natural disaster resulting from the passage of the cyclone Idai in the province of Sofala and its capital city of Beira, the province had to be dropped from the survey since most of the infrastructure of the region was destroyed and there was high uncertainty about the possibility of interviewing the workers. Figure 1 provides a map of Mozambique with the highlighted provinces that participated in the baseline survey.

Table 2 presents labor market statistics and educational attainment levels from the studied provinces and at the national level. The population of the three provinces correspond to 44% of the total population of the country. The labor force statistics are remarkably similar across the provinces. The employment rate, defined as the number of employed people divided by total population, is around 55% for prime age individuals (with age between 20 and 54) and 50% for those with more than 15 years of age. It's worth noting that the employment rate in Maputo is just 45%. This can be explained by the fact that the educational level in the capital region is much higher than in Nampula and Tete. 55% of the population of Mozambique with more 30 years of age has never

Table 2: Labor market and educational statistics by Province

	Mozambique	Maputo	Nampula	Tete
Population (millions)	27.9	3.6	6.1	2.7
More than 15 years				
Population (millions)	14.36	1.93	2.79	1.33
Employment rate	50.3%	45.8%	51.2%	51.8%
Labor force Participation	64.1%	60.5%	64.8%	65.7%
Unemployment rate	21.5%	24.3%	21.0%	21.2%
Prime age (20-54)				
Population (millions)	9.72	1.37	1.93	0.91
Employment rate	55.6%	54.5%	55.2%	56.4%
Labor force Participation	69.8%	70.4%	68.8%	70.3%
Unemployment rate	20.3%	22.6%	19.8%	19.8%
Highest educational level for adults with more than 30 years				
No education	55.1%	27.4%	60.5%	62.2%
Primary or less	32.4%	43.2%	31.0%	27.8%
Secondary	10.5%	22.9%	7.5%	9.0%
Tertiary or more	2.0%	6.5%	1.1%	1.0%

Source: 2017 census available at `http://www.ine.gov.mz/iv-rgph-2017`

Table 3: Unions presented in the baseline survey and their sector

Union	Sector
SINTICIM	Construction, Wood and Mines
SINTIHOTS	Hotel Industry and Related
SINTIME	Metallurgy, Metal Mechanics and Energy
SINTIQUIAF	Chemical and Allied Industries
SINTRAT	Road Transport

Figure 1: Provinces that participated in the study
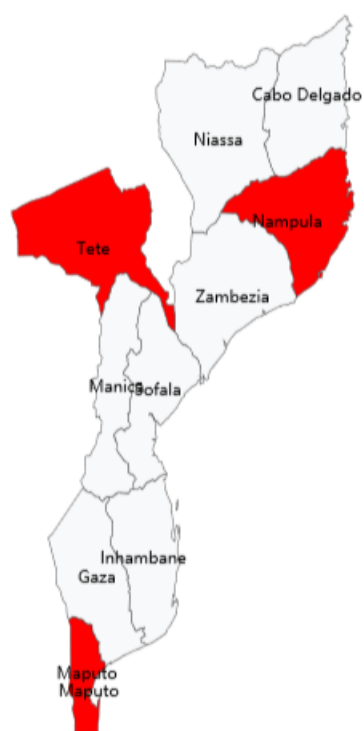
been to school. This share drops to 27.4% in Maputo. 22.9% have completed secondary education in Maputo, while this only the case for 10.5% of the relevant population at the national level.

The capital region of Maputo is much more developed than the other regions of the country. This can be seen in Figure 2 that shows the Provincial GDP per capital in 2020 US$. The GDP per capita in provinces of Nampula and Tete are below 500 US$ and the GDP per capital in the Province and City of Maputo and 3 and 4 times higher.

3.2 Surveys

Once the Unions and the regions were selected, we asked the unions to provide us a list of firms with unionized workers that had never participated in previously in SASK educational activities. The list contained 353 firms. From those 35 firms were closed, 27 refused to answer the questionnaire and in 34 other cases the interviews were not made because of miscellaneous issues like, for example, the lack of proper contact details. The left panel of Table 4 presents the number of interviewed[3] firms by region and union. In total, there were 251 firms interviewed. The Maputo region had two thirds of the interviews and the province of Tete only 31. SINTIHOTS was the union with the highest number of interviewed firms, 79, while SINTIQUIAF only had 28 firms in our sample.

We had a goal to interview 4 workers by firm, including the union representative. This was not always possible. The survey contains 18 firms (7.1%) with less than 4 answers. There are also 8 cases where 5 answers were collected by firm. In total 974 workers were interviewed. The interviews were conducted from May to October 2019. According to

---

[3]Both baseline and end-line surveys were conducted with the help of Intercampus.

Figure 2: GDP per capita by province in 2020

Source: INE (National institute of statistics)
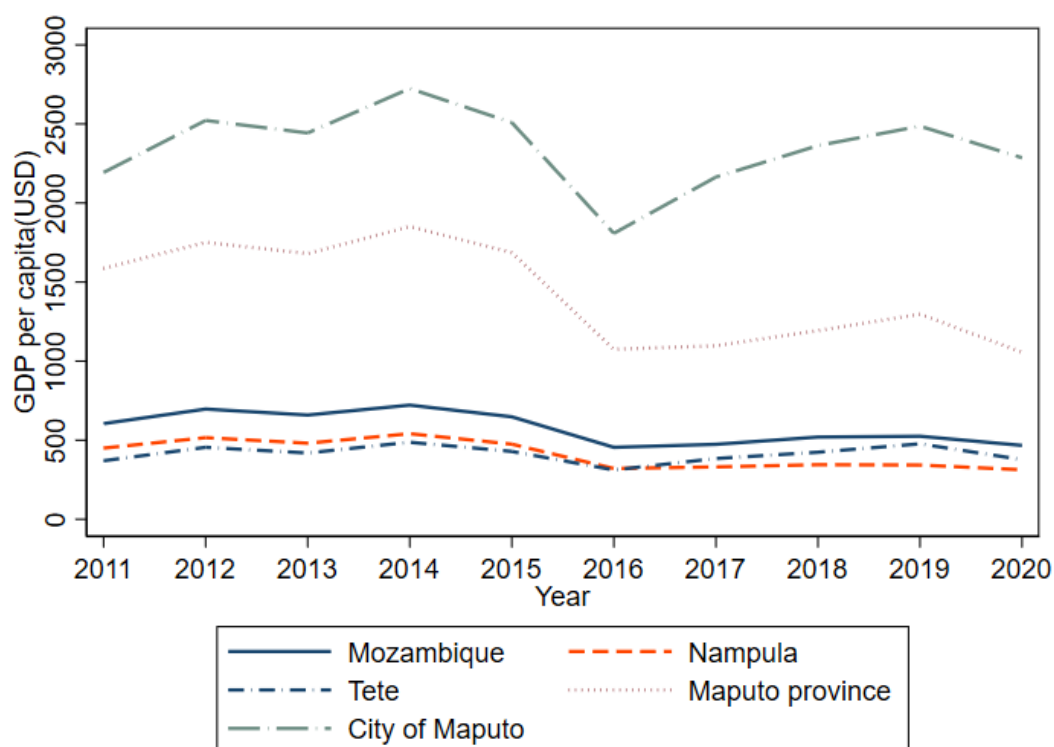
Table 5, on average, 3.9 workers were interviewed by each firm.

Table 4: Number of firms by region, union, and survey

| | Baseline | | | | End-line | | | |
	Maputo	Nampula	Tete	Total	Maputo	Nampula	Tete	Total
SINTICIM	28	11	11	50	26	13	10	49
SINTIHOTS	60	13	6	79	57	13	7	77
SINTIME	26	4	4	34	26	5	4	35
SINTIQUIAF	28	0	0	28	28	1	0	29
SINTRAT	25	25	10	60	26	21	10	57
Total	167	53	31	251	163	53	31	247

Table 5: Average number of answers by firm

| | Baseline | | | | End-line | | | |
	Maputo	Nampula	Tete	Total	Maputo	Nampula	Tete	Total
SINTICIM	3.5	4.0	3.8	3.7	2.7	3.1	3.2	2.9
SINTIHOTS	4.0	4.0	4.0	4.0	2.6	2.8	3.6	2.7
SINTIME	4.0	4.0	4.3	4.1	3.0	3.2	3.5	3.1
SINTIQUIAF	3.9			3.9	2.7	2.0		2.7
SINTRAT	4.0	3.9	2.9	3.8	2.8	2.7	1.9	2.6
Total	3.9	4.0	3.6	3.9	2.7	2.8	2.9	2.8

When the baseline was completed, we did the randomization. That is, We randomly selected firms to be in the treatment and control groups. Table 6 presents the average of several variables in the control and treatment groups. The table also presents the difference of the averages and its statistical significance. As we can see in the baseline survey, out of the 15 variables presented, only one is statistically different means at 5% confidence interval. This is a good indication that the variables are well-balanced.

Table 6: Balance of variables

Baseline					
	Control	Treatment	Difference	Std Error	p-value
Age	39.68	40.11	-0.42	1.14	0.71
Male	75.57	83.69	-8.12	4.29	0.06
Maputo	68.32	68.79	-0.47	4.86	0.92
Nampula	28.24	19.86	8.39	4.53	0.07
Tete	3.44	11.35	-7.91	2.49	0.00
Some tertiary (%)	6.49	7.80	-1.31	2.66	0.62
Complete tertiary (%)	5.34	2.13	3.22	2.10	0.13
Some primary (%)	9.54	7.80	1.74	2.99	0.56
Complete primary (%)	12.60	9.93	2.67	3.36	0.43
Complete secondary (%)	29.39	36.88	-7.49	4.87	0.12
Some secondary (%)	36.64	35.46	1.18	5.03	0.81
Managers (%)	2.67	4.96	-2.29	1.91	0.23
Unskilled manual (%)	25.95	19.15	6.81	4.43	0.13
Skilled manual (%)	44.66	54.61	-9.95	5.21	0.06
Professionals (%)	26.72	21.28	5.44	4.51	0.23

End-line	Control	Treatment	Difference	Std Error	p-value
Age	42.56	42.70	-0.14	1.36	0.92
Male	76.07	85.71	-9.64	5.00	0.06
Maputo	65.03	66.67	-1.64	5.96	0.78
Nampula	31.29	20.95	10.34	5.56	0.06
Tete	3.68	12.38	-8.70	3.18	0.01
Some tertiary (%)	4.91	6.67	-1.76	2.89	0.54
Complete tertiary (%)	7.36	4.76	2.60	3.06	0.40
Some primary (%)	13.50	8.57	4.93	4.01	0.22
Complete primary (%)	9.82	9.52	0.29	3.72	0.94
Complete secondary (%)	32.52	33.33	-0.82	5.90	0.89
Some secondary (%)	31.90	37.14	-5.24	5.94	0.38
Managers (%)	12.27	8.57	3.70	3.90	0.34
Unskilled manual (%)	27.61	31.43	-3.82	5.70	0.50
Skilled manual (%)	36.81	34.29	2.52	6.02	0.68
Professionals (%)	23.31	25.71	-2.40	5.38	0.66

From the 26th of August 2022 to 14th of September 2022, the end-line survey was conducted. All the 974 workers who answered the baseline survey were called by phone to answer the end-line survey. We collected 668 answers, that corresponds to an answer rate of 68%.

The original idea was to visit the firms and collect the answers in person. This would allow us to keep the cluster size of 4 workers per firm in the end-line survey by replacing unavailable workers with other workers of that firm. However, the relationship with four of the unions in the sample were severed between the date of the training activities and the end-line survey. This made the enumerators access to the workers almost impossible. Therefore, we chose to conduct the end-line survey by phone by contacting all those that answered the baseline survey.

The right panel of Table 4 presents the number of firms surveyed by union and province in the end-line survey. Workers from 247 firms answered the survey, while the baseline survey had 251 firms. In the baseline survey, each firm had an average of 3.9 answers. This figure dropped to 2.8 in the end-line survey, according to Table 5. Therefore, there was no significant drop in statistical power, since the firm cluster is the most important statistical unit. The minimum detectable effect(MDE) for salaries, for example, increase from 8% to 17%. The MDE went from 9% to 17% for hours worked. And, with relation to binary variables, the MDE went from 6.9% to 11%.

Table 8 presents the average and standard deviation, in parentheses, of several demographic variables across the three provinces studied. Two thirds of the answers came from the capital region of Maputo. Workers were on average 42 years old, 81% were male, and 75% of them were unionized. The average monthly salary was 15k MZN (214EUR) with a working week of 43 hours. Table 6 also presents the comparison of averages between the end-line and baseline survey. We observe a 1.5 p.p. decrease in unionization. That is, there was an increase in the proportion of survey respondents that are members of a trade union. Furthermore, there is an increase of 11% in wages [4]. Additionally, the average hours worked per week dropped by 1.6 hours.

3.3 Treatment

The treatment consisted of two days of training given by the union deputies that would normally conduct such training. The content of the training sessions were concentrated in four topics. Labor law; recruiting of new union members; organization of the union, and negotiation skills.

Each union was given a list of firms, and their respective union representatives, that were to be invited to the training. The list of treated firms were chosen randomly. Together with the list, each union received a letter with instructions explaining how things were going to proceed and that the treated firms could not participate in any other union training. There was also attached a list of firms from the randomly selected control group that were not allowed to participate in any sort of training until the end of the study[5].

Between November 2020 and May 2021 [6], 9 Training modules were organized. Each module consisted of two days of lectures. Four topics were discussed, labor law, the recruiting of new union members, union organization, and negotiation skills. This is the content that is normally used in training activities. The moderators of the activity were the ones usually tasked with doing this kind of activity, and, therefore, were familiar with teaching the content listed above. The courses were designed to be as similar as

---

[4]According to Mozambican statistical agency(INE), inflation between June/2019 and June/2022 was 20%

[5]All communications with the unions were made in Mozambican Portuguese with the help of Simião Simbine

[6]The training activities were supposed to start at the beginning of 2020, but had to be delayed because of the COVID-19 pandemic.

Table 7: Demographics by region (Baseline survey)

	Total	Maputo	Nampula	Tete
Age	39.59	40.47	37.54	38.30
	(10.65)	(10.41)	(11.29)	(10.24)
Male	78.64	76.38	83.81	82.14
	(41.00)	(42.51)	(36.92)	(38.47)
Salary	13450.5	14113.0	8634.9	17391.4
	(11851.2)	(12769.1)	(5094.5)	(11913.3)
Hours	45.06	46.22	42.15	43.74
	(12.28)	(10.77)	(15.66)	(12.43)
Unionization (%)	75.98	82.36	55.24	77.68
	(42.75)	(38.14)	(49.84)	(41.83)
Regular salary (%)	68.48	68.10	73.81	60.71
	(46.48)	(46.65)	(44.07)	(49.06)
Some tertiary (%)	8.214	8.742	7.619	6.250
	(27.47)	(28.27)	(26.59)	(24.31)
Complete tertiary (%)	5.441	5.521	5.238	5.357
	(22.70)	(22.86)	(22.33)	(22.62)
Some primary (%)	7.803	8.742	5.714	6.250
	(26.84)	(28.27)	(23.27)	(24.31)
Complete primary (%)	10.27	10.28	10.95	8.929
	(30.37)	(30.39)	(31.30)	(28.64)
Complete secondary (%)	34.70	30.67	41.90	44.64
	(47.63)	(46.15)	(49.46)	(49.94)
Some secondary (%)	33.57	36.04	28.57	28.57
	(47.25)	(48.05)	(45.28)	(45.38)
Managers (%)	3.080	3.988	1.905	0
	(17.29)	(19.58)	(13.70)	(0)
Unskilled manual (%)	22.59	27.15	12.38	15.18
	(41.84)	(44.51)	(33.02)	(36.04)
Skilled manual (%)	48.46	47.55	49.05	52.68
	(50.00)	(49.98)	(50.11)	(50.15)
Professionals (%)	25.87	21.32	36.67	32.14
	(43.82)	(40.99)	(48.30)	(46.91)
Observations	974	652	210	112

Standard deviation in parenthesis

Table 8: Demographics by region (end-line survey)

	Total	Maputo	Nampula	Tete
Age	42.70	43.64	40.88	40.94
	(10.70)	(10.65)	(10.55)	(10.66)
Male	81.44	79.68	82.64	88.37
	(38.91)	(40.28)	(38.01)	(32.24)
Salary	14982	15489	10089	22141
	(16536)	(17219)	(5984)	(23228)
Hours	43.41	42.94	43.86	44.99
	(11.84)	(11.21)	(14.67)	(9.358)
Unionization (%)	74.55	75.57	64.58	86.05
	(43.59)	(43.02)	(47.99)	(34.85)
Regular salary (%)	74.10	73.06	75.69	76.74
	(43.84)	(44.42)	(43.04)	(42.49)
Some tertiary (%)	6.886	7.306	5.556	6.977
	(25.34)	(26.05)	(22.99)	(25.62)
Complete tertiary (%)	7.784	8.447	6.250	6.977
	(26.81)	(27.84)	(24.29)	(25.62)
Some primary (%)	10.33	12.33	7.639	4.651
	(30.46)	(32.91)	(26.65)	(21.18)
Complete primary (%)	10.03	10.73	7.639	10.47
	(30.06)	(30.99)	(26.65)	(30.79)
Complete secondary (%)	33.38	29.68	41.67	38.37
	(47.19)	(45.74)	(49.47)	(48.91)
Some secondary (%)	31.59	31.51	31.25	32.56
	(46.52)	(46.51)	(46.51)	(47.13)
Managers (%)	9.431	8.676	11.11	10.47
	(29.25)	(28.18)	(31.54)	(30.79)
Unskilled manual (%)	29.19	27.63	34.72	27.91
	(45.50)	(44.77)	(47.77)	(45.12)
Skilled manual (%)	34.13	37.44	25	32.56
	(47.45)	(48.45)	(43.45)	(47.13)
Professionals (%)	27.25	26.26	29.17	29.07
	(44.56)	(44.05)	(45.61)	(45.67)
Observations	668	438	144	86

Standard deviation in parenthesis

possible to the usual training financed by SASK. Table 51 presents a summary of the union representative's self assessed knowledge on the four abovementioned topics. About half of the union representatives in the baseline survey and 40% of the union representatives in the end-line survey said to have at least sufficient knowledge on the topics discussed in the courses.

Each participant of the training activities answered two tests. The first test was answered at the beginning of the activities of the first day of training. The second test was answered by the end of the second day of activities. The tests were part of the activities and were meant to map the knowledge of the workers regarding the content of the courses. Furthermore, by comparing the results of the first and second exam, we were able to assess how much the workers had learned in the training activities.

Each test was composed by ten multiple choice questions. The questions were written by the union members that are used to teach in these activities. Therefore, they know what is normally taught. They are familiar with the educational level of the workers and how to communicate with them.

Table 9: Summary of the exam results

|	Mean	Median	St. Dev.	min	max	Obs.
1$^{\text{st}}$ exam	6.65	7	1.90	1	10	181
2$^{\text{nd}}$ exam	7.19	7	1.69	0	10	181

Table 9 presents the summary statistics of the two exams. The table only contains statistics of the workers that answered both exam[7]. Union deputies, that work exclusively to the unions, were excluded of all statistics if not explicitly stated otherwise. From the 10 questions of the exam, workers answered correctly 6.65 questions on the first exam, and 7.19 on the second exam. An average increase of 0.54 points. Figure 3a presents the score distribution of the two exams. We observe a slight shift of the distribution to the right, which results in an increase in the average score. Figure 3b presents the score gain of each worker. Positive values represent an increase in the test score in the second exam. Most workers had the same score in both tests. However, we see that there is more mass in the positive values. Hence, most of the workers increased their score when compared to their first exam.

To understand better the magnitude of the effect of the trainings activities on the worker's knowledge, we standardize the test scores. That is, each score was subtracted by the mean and divided by the score standard deviation. Therefore, the standardized the test score distribution has mean zero and the standard deviation of one. Table 10 presents the regression of the standardized score difference between the two exams. The first column presents the results with all the test results. The second column presents the results for the regression without the union deputies. We can see that the average score in the first exam drops when we exclude the union deputies, since they are supposed to know very well the content of the courses. Furthermore, the courses make the score go up by 0.27 standard deviations when the union deputies are included. Which is a smaller increase than the one of 0.3 standard deviations observed in the second column. All the differences are statistically significant at 1%.

Given the above analysis of the test results, we can conclude that the training activities did have a positive impact on the worker's knowledge of the four topics discussed in the

---

[7]A few workers did not participate in the first or second day of activities

Figure 3: Test score

(a) Distribution

(b) Gain from 1st exam
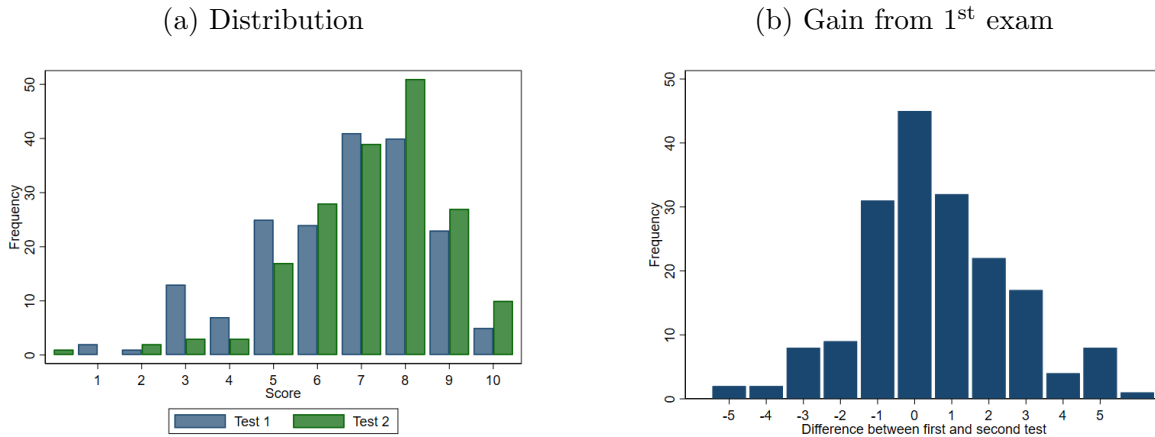
activities. Hence, the effects on the labor market variables presented in the next section can be explained, at least in part, by the information and insights acquired by workers in the training activities.

Table 10: Standardized test results

Standardized result	(1) All workers	(2) Union deputies excluded
2nd exam	0.276***	0.299***
	(0.0957)	(0.104)
Constant	-0.0634	-0.149*
	(0.0717)	(0.0778)
Observations	416	362
R-squared	0.020	0.022

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4 Results

This section describes and discusses the results of the study. Given our randomized control trial (RCT) methodology[8], a simple mean comparison would indicate if the training activities did have an impact in the desired outcome variable. However, we are able to have more insightful and precise results with a difference in differences(DiD) or a panel data with fixed effect regressions. Furthermore, the DiD estimator will take into account any difference in observables in the treatment groups. The fixed effects, either by workers or firm, would take into account the possible unobserved factors that did not get balanced with the randomization.

The DiD regression has the following functional form

---
[8]The trial is registered at AEA RCT Registry with id AEARCTR-0009943.

$$y_i = \alpha + \beta_1(Treated \times Endline) + \beta_2 Treated_i + \beta_3 Endline_i + \gamma X_i + \epsilon_i \qquad (1)$$

where y_i is the outcome variable, $(Treated \times Endline)$ is the interaction dummy between the treatment dummy and the end-line dummy. β_1 is the coefficient that shows the effect of the training activities. X_i is a set of covariates like age category, union, region, and education.

Figure 4 presents a graphical representation of how the average of selected variables evolved in the treatment and control groups. Each panel corresponds to a single outcome variable. The blue bars show the average evolution of the treatment group between the baseline and end-line survey.The black bars represent the average evolution of the control group. These pictures can bring intuition about what happened with both groups and the role of the training activities. Figure 4d tells us that firms in the control group lost union members, while the level of unionization in the treatment group remain constant. Furthermore, Figure 4a shows that salaries increased in the treatment group and decreased in the control group. Furthermore, we could argue that the drop of work related injuries and illnesses presented in Figure 8b could be attributed to the significant drop in hours worked by the control group (Figure 4b). It is worth noting that the DiD methodology used takes into account the movements of both groups. Figure 5 presents a summary of the main finding of the DiD methodology.

Table 11 presents the estimation results of the treatment on log salary.Columns 1 to 3 present the DiD regressions without and with different sets of control variables. Column 4 presents the results of a regression with worker fixed effects and the last column the results of a regression with firm fixed effects. All the following tables with regression results have the same layout.

All the model specifications present a similar result in Table 11. They suggest that the training activities had a positive impact of 14% to 21% on the salaries of the workers of treated firms. Figure 6 presents the kernel densities of salaries for the treatment and control groups in panel (a) and (b) respectively. Panel (a) shows that there was a clear shift to the right in the salary distribution from the baseline to the end-line survey. However, this is not the case for the control group in panel (b), where the only observable difference is a spike in the distribution that is slightly to the right. Furthermore, Figure 4a present the average salary evolution on the treatment and control groups.

The results presented at Table 22 and Table 23 show how the training activities affected the salaries of those that participated and those that work at the firms that were selected but did not personally attend the activities, respectively. The estimated coefficients in Table 23 show that those that did not attend the courses, but work in firms where one worker participated in the courses, had a salary increase that is similar to the ones presented in Table 11. This indicates that training the union representative can generate spillover effects to all the workers of that firm. The coefficients of the regressions in Table 22 are positive but not significant. The lack of statistical power can explain the lack of statistical significance, since there is a reduced number of workers who participated in relation to those that did not participate. Furthermore, the coefficients of the two tables are not statistically different from each other.

Table 12 and Table 14 give important insights on how the training activities had a positive effect on wages. Table 12 presents the estimation result on average hours worked per week. The several estimation results suggest that the training activities increased the number of hours worked by 19%. Figure 7 presents the kernel density of weekly hours worked for the treatment and control groups. In panel a there is a clear shift of the

14

Figure 4: Average evolution

(a) Salaries

(b) Hours

(c) Number of workers

(d) Unionization

(e) Number of union workers

(f) Professional education
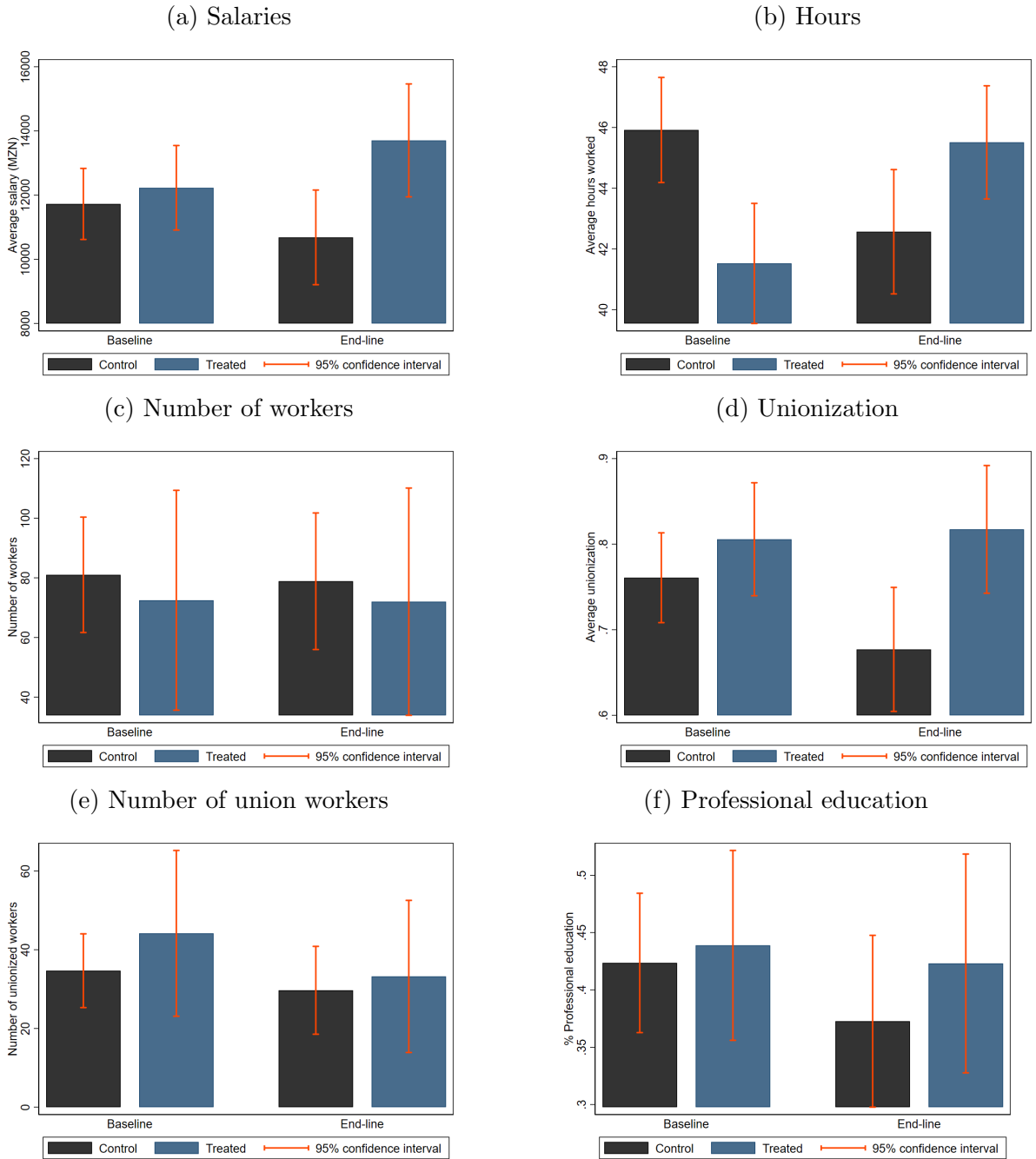
Figure 5: Summary of main results
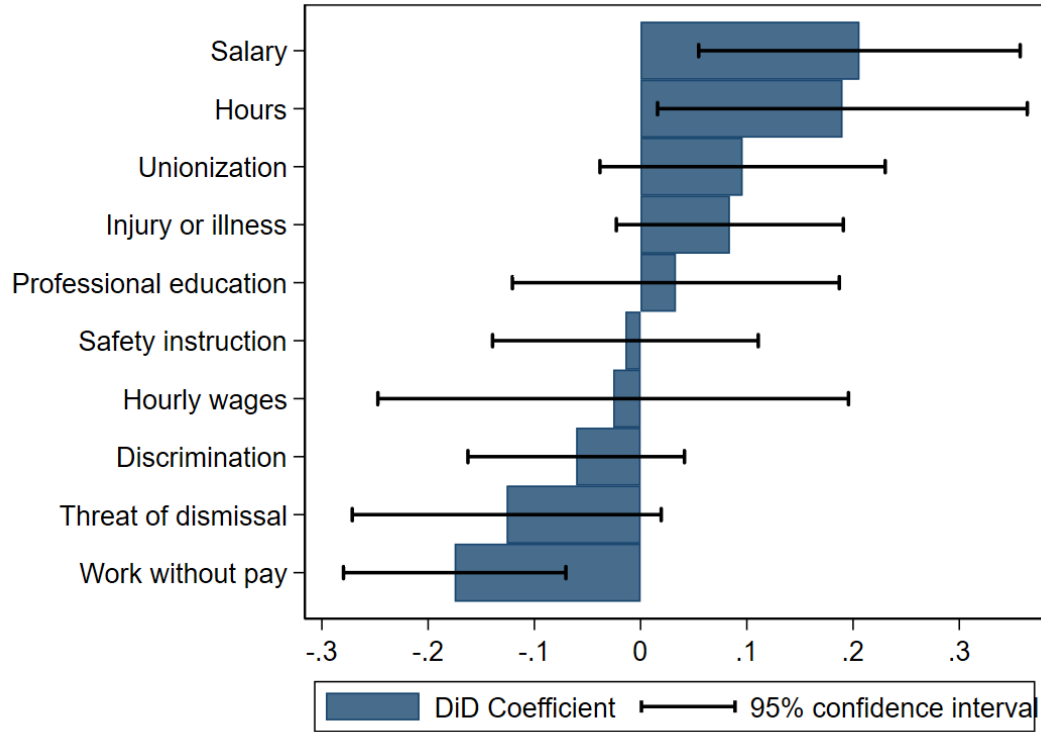
Note: Bars represent the estimated DiD coefficient of model (3) that includes firms and demographic controls

Figure 6: Salary distribution

(a) Treatment group

(b) Control group
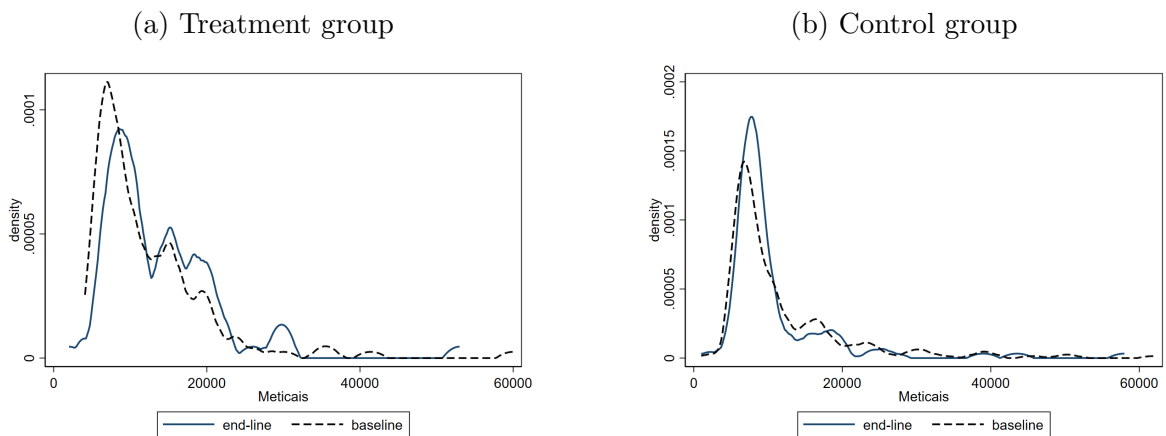
Table 11: Regression on salaries

VARIABLES	(1) salary	(2) salary	(3) salary	(4) salary	(5) salary
Treated x End-line	0.204***	0.210***	0.206***	0.147**	0.147*
	(0.0713)	(0.0733)	(0.0772)	(0.0667)	(0.0840)
Treated	0.0749	0.0169	0.00430		-0.327***
	(0.0891)	(0.0804)	(0.0730)		(0.0393)
End-line	-0.0598	-0.0451	-0.0820	0.0221	0.0173
	(0.0564)	(0.0571)	(0.0801)	(0.0504)	(0.0581)
Constant	9.190***	9.211***	9.246***	9.199***	9.094***
	(0.0571)	(0.103)	(0.141)	(0.0112)	(0.0249)
Observations	549	549	549	549	549
R-squared	0.025	0.108	0.258	0.063	0.573
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				384	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 12: Regression on hours

Hours	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.198**	0.196**	0.190**	0.203**	0.197*
	(0.0884)	(0.0914)	(0.0888)	(0.0910)	(0.105)
Treated	-0.155*	-0.177**	-0.175**		-0.189***
	(0.0844)	(0.0861)	(0.0846)		(0.0503)
End-line	-0.0258	-0.0236	-0.00402	-0.0319	-0.0113
	(0.0355)	(0.0363)	(0.0333)	(0.0386)	(0.0395)
Constant	3.797***	3.795***	3.812***	3.741***	3.780***
	(0.0294)	(0.0620)	(0.0861)	(0.0157)	(0.0132)
Observations	634	634	634	634	634
R-squared	0.035	0.096	0.111	0.055	0.418
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				396	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

distribution to the right. Table 24 and Table 25 present the results for when we do the regression on hours, splitting the treatment sample between those that did and did not take the courses. There is also evidence of spillover effects also regarding hours worked. Table 28 show the results on hourly wages. That is, we divide the monthly salary by the total number of hours worked in a month. The estimation results are quite precise zeros and, therefore, we could conclude that the increase in monthly salary is derived entirely by the increase in hours worked.

Figure 4c presents the evolution of the number of workers by firm. This number was acquired by the asking the union of each firm how many people worked there. Therefore, these figures are prone to measurement error, since the union representative cannot check the human resources archives to get the exact number of people that work at a given plant. Table 13 presents the results of the regression on the log of the number of worker. The estimation shows that there was no effect of the treatment on the total number of worker in a firm.

Figure 7: Hours distribution

<div align="center">(a) Treatment group   (b) Control group</div>
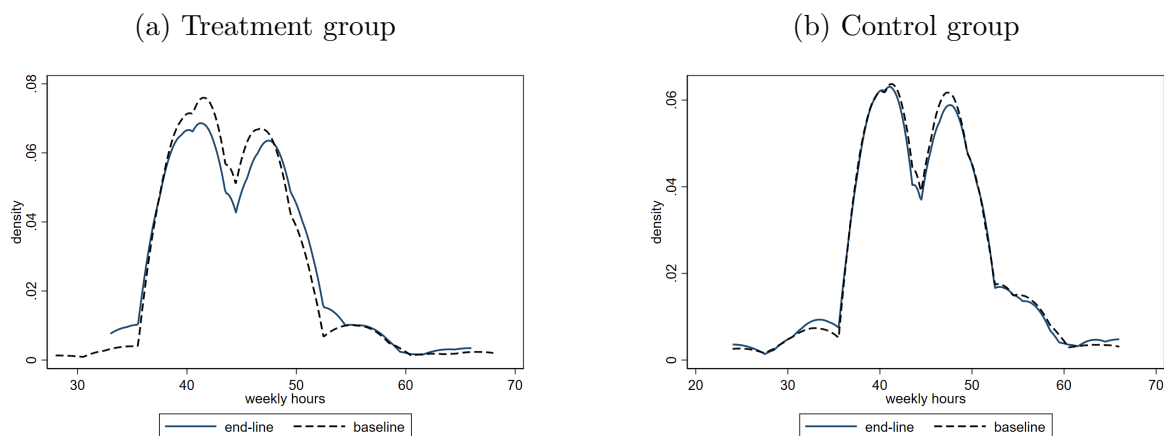
Table 14 presents the results for unionization, that is, the proportion of survey respondents that are unionized. There is some evidence that the treatment had a positive impact on unionization. However, the coefficient of the end-line variable consistently negative and has a magnitude of 8%. There is a drop in unionization in the control group by the time of the end-line survey. Figure 4d shows that the average unionization in the control group fell, while there was a slight increase in the unionization level of the treatment group. In this sense, we could argue that the main effect of the training activities was to avoid the decline in unionization that was observed in the control group.

Table 26 presents the regression results on unionization, but with the treatment group composed only with the workers who participated in the training activities. The results are stronger, with statistically significant coefficients, suggesting that the training activities are specially affective for unionization of those that attend the courses. The effect of the training activities on those that were indirectly treated, presented in Table 27, are positive but non-significant. The estimates are below minimum detectable effect since the sample is reduced.

Table 31 and Table 32 present the results of the regression on the log of unionized workers at the firms, and the proportion of unionized workers at the firm. These variables are estimates given by the union representatives. The results do not indicate that the share of unionized workers increased in the firm.

Table 13: Regression on number of workers

Number of workers	(1)	(2)	(3)	(4)	(5)
TE	-0.0137	-0.0789	0.0227	0.0824	-0.0455
	(0.187)	(0.176)	(0.217)	(0.145)	(0.190)
Treated	-0.200	-0.200	-0.217		0.285***
	(0.179)	(0.185)	(0.172)		(0.0624)
End-line	-0.0977	-0.0401	-0.292	-0.0665	-0.0106
	(0.153)	(0.147)	(0.189)	(0.138)	(0.165)
Constant	4.050***	4.015***	4.131***	3.942***	3.258***
	(0.103)	(0.234)	(0.375)	(0.0387)	(0)
Observations	183	183	183	183	183
R-squared	0.018	0.105	0.167	0.010	0.912
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				143	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 14: Regression on unionization

Is unionized	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0930	0.0877	0.0960	0.148**	0.112
	(0.0702)	(0.0691)	(0.0685)	(0.0722)	(0.0758)
Treated	0.0475	0.0230	0.00728		0.0932**
	(0.0552)	(0.0511)	(0.0521)		(0.0357)
End-line	-0.0819*	-0.0795*	-0.0765	-0.108**	-0.0852*
	(0.0475)	(0.0479)	(0.0555)	(0.0457)	(0.0499)
Constant	0.757***	0.766***	0.753***	0.776***	0.894***
	(0.0375)	(0.0735)	(0.108)	(0.0142)	(0.0214)
Observations	656	656	656	656	656
R-squared	0.014	0.058	0.087	0.032	0.346
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 15 and Table 16 show that the training activities had no statistical impact, given the study's power, on the amount of professional and safety training received by workers. Figure 4f and Figure 8a show that both control and treatment group decreased the amount of training to workers. This might be an effect of the COVID-19 pandemic that brought many restrictions, and a substantial decrease in the world's and Mozambican economic activity.

The coefficients of the regressions on Table 17 would suggest that the training activities had a positive impact on work related injuries and illnesses. However, we need to understand the mechanism behind this positive result. Work related injuries and illnesses can be affected by the number of hours worked. Therefore, the fact that, on average, workers from the treated firms work more than those from control firms can be a possible explanation for why we observe this increase in work relate injuries and illnesses.

Table 15: Regression on Professional education

Professional education	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0312	0.0298	0.0332	0.0153	0.0450
	(0.0765)	(0.0761)	(0.0785)	(0.0780)	(0.0813)
Treated	0.0113	0.0454	0.0295		0.0526
	(0.0696)	(0.0663)	(0.0674)		(0.0380)
End-line	-0.0485	-0.0426	-0.0620	-0.0253	-0.0508
	(0.0516)	(0.0505)	(0.0631)	(0.0524)	(0.0565)
Constant	0.424***	0.241***	0.296**	0.421***	0.450***
	(0.0432)	(0.0683)	(0.121)	(0.0157)	(0.0242)
Observations	656	656	656	656	656
R-squared	0.002	0.060	0.084	0.001	0.329
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 18 presents the results on discrimination. The coefficients are negative but not statistically significant. However, the Minimum detectable effect[9] is around 4% given the control average of 12.5% of workers that had suffered discrimination. Therefore, there is at most a weak negative effect of the training activities on discrimination.

The survey also asked workers to whom they turn to in case of a series of situation like, payment problem, health and safety, and dismissal concerns. Table 36 presents the share of workers that turn to the unions for help. The table summarizes the answers of both surveys and divides the workers into the control and treatment groups. Concerns about dismissal are the leading cause for a worker to reach out to the union. 34% of

---

[9]The MDE was computed for a power of 0.8 and a within cluster correlation of 0.5. Hence, any slight deviation of those parameters would make the coefficients non-detectable

Table 16: Regression on safety instruction

Safety instruction	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.0205	-0.0178	-0.0143	-0.0520	-0.0218
	(0.0657)	(0.0658)	(0.0638)	(0.0748)	(0.0726)
Treated	-0.0360	-0.0348	-0.0341		-0.0567
	(0.0578)	(0.0570)	(0.0522)		(0.0343)
End-line	-0.0511	-0.0549	-0.0596	-0.0380	-0.0535
	(0.0412)	(0.0413)	(0.0531)	(0.0446)	(0.0461)
Constant	0.282***	0.304***	0.487***	0.269***	0.594***
	(0.0361)	(0.0799)	(0.105)	(0.0144)	(0.0197)
Observations	656	656	656	656	656
R-squared	0.007	0.031	0.092	0.014	0.284
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 17: Regression on Work related injury or illness

Work related injury or illness	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0869	0.0864	0.0840	0.0359	0.0945
	(0.0537)	(0.0531)	(0.0545)	(0.0543)	(0.0574)
Treated	-0.0892**	-0.0988**	-0.0933**		-0.182***
	(0.0411)	(0.0422)	(0.0419)		(0.0266)
End-line	-0.101**	-0.101***	-0.0576	-0.0759**	-0.112***
	(0.0386)	(0.0386)	(0.0467)	(0.0372)	(0.0417)
Constant	0.220***	0.271***	0.322***	0.185***	0.191***
	(0.0283)	(0.0495)	(0.0904)	(0.0110)	(0.0179)
Observations	656	656	656	656	656
R-squared	0.017	0.033	0.063	0.021	0.214
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 18: Regression on discrimination

Discrimination	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.0607	-0.0634	-0.0606	-0.0690	-0.0602
	(0.0528)	(0.0528)	(0.0520)	(0.0530)	(0.0587)
Treated	0.0134	0.0169	0.0172		-0.256***
	(0.0401)	(0.0400)	(0.0398)		(0.0273)
End-line	0.0152	0.0170	-0.0239	0.0190	0.0107
	(0.0368)	(0.0366)	(0.0461)	(0.0365)	(0.0418)
Constant	0.110***	0.122***	0.132*	0.115***	0.281***
	(0.0250)	(0.0357)	(0.0701)	(0.0108)	(0.0179)
Observations	656	656	656	656	656
R-squared	0.003	0.016	0.026	0.007	0.202
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

those that answered the end-line survey said that they would contact the unions in this situation. Matters regarding discrimination, payment and working hours are also among the main reasons why workers contact the unions.

When comparing the answers of the baseline and end-line survey, we see an increase in the proportion of workers that would contact the union in all the cases listed. The largest increase in possible contacts with the unions were related to payment, and working hours. The share of workers that would contact the unions in case of payment issues went from 15% in the baseline survey to 29% in the end-line survey. Regarding hours worked, the share increased to 22% from 12% in the baseline.

The regressions to quantify the impact of the training activities on the probability of the workers to contact the union in case of issues are shown in Table 37 to Table 43. There is no indication on the regression results that the training activities increase the proportion of workers that turn to the unions when there is some problem or question. The coefficient regarding contacting the unions with respect to matters of hours worked, discrimination and dismissal are positive and statistically significant. However, the other specifications are all non-significant. Therefore, it is prudent to infer that the training activities did not affect the workers' behavior in this particular matter.

Table 44, in subsection A.2, presents the share of workers that suffered or witnessed a set of workplace abuses. In general, there was an overall deterioration of working conditions when comparing the two surveys. 30% of the end-line sample reported the existence of overtime work above an acceptable limit. This represents a 10 percentage point increase when compared to the baseline survey. Those that worked without pay increased from 5% to 12%. The number of firms with underage employees doubled to

10%. Furthermore, the incidence of threats of dismissal increased from 18% to 24%.

Table 19: Work without pay

Work without pay	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.164***	-0.161***	-0.175***	-0.137***	-0.154***
	(0.0515)	(0.0518)	(0.0534)	(0.0501)	(0.0562)
Treated	0.0421	0.0350	0.0441		-0.218***
	(0.0413)	(0.0410)	(0.0411)		(0.0266)
End-line	0.137***	0.133***	0.147***	0.127***	0.130***
	(0.0314)	(0.0317)	(0.0392)	(0.0318)	(0.0349)
Constant	0.0514***	0.0669	0.118	0.0668***	0.230***
	(0.0151)	(0.0444)	(0.0732)	(0.00987)	(0.0150)
Observations	655	655	655	655	655
R-squared	0.034	0.051	0.074	0.059	0.272
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				397	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

According to the regression results presented in Table 45 to Table 50, the training activities had a positive impact on the working conditions when regarding work without pay, and a weakly significant impact on the Threat of dismissal. Table 19 shows that the treatment decrease, in around 12% to 16%, the probability of working without pay. Table 49 shows that the treatment decreased the threat of dismissal in 13% according to the Difference-in-Differences models.

subsection A.3, in the appendix, presents the summary statistics of regression results on the union representative's knowledge about the four topics taught in the training activities. All four regressions showed that the training activities did not increase the union representatives' self accessed knowledge. This seems to contradict the exam results of the previous section that showed that the courses increase the knowledge of workers in 0.3 standard deviations. The fact that the knowledge is self accessed, and that the concept of "at least adequate knowledge of" may vary from person to person, can increase the noise of the measurement, turning the estimated coefficient non-significant.

Table 20 describes the difference between the log salaries of unionized and non-unionized workers. The regression results presented in column 4 is the preferred estimate since there are controls for education, age, union, and region. It shows that the union wage premium is of 10% for this sample. Note that the estimated wage premium only refers to the difference between unionized and non-unionized workers within the studies' sample of firms, and not for Mozambique. Kerr and Wittenberg (2021) estimates a union wage premium of 25% to 35% for representative sample in South Africa.

Table 20: Union wage premium

Wage premium	(1)	(2)	(3)	(4)
Is unionized	0.229***	0.169***	0.110**	0.0979**
	(0.0763)	(0.0539)	(0.0496)	(0.0435)
Constant	9.148***	9.162***	9.257***	9.314***
	(0.0651)	(0.0501)	(0.0893)	(0.0954)
Observations	440	1,339	1,339	1,339
R-squared	0.020	0.013	0.118	0.280
Firm controls	No	No	Yes	Yes
Demographic controls	No	No	No	Yes

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.1 COVID-19

This section describes how the COVID-19 pandemic affected the study and what was its impact on our sample. The training activities were planned to happen in the first semester of 2020. Given the lockdowns and the concern for the safety of workers, the activities were postponed. Questions about the pandemic were added to the end-line survey. Table 21 presents summary statistics of how the respondents of the survey were affected by the pandemic. 13% of the workers had COVID-19. 23% of workers in Mozambique, and 30% of those in Tete, had to miss work because of the pandemic. 28% had their salaries affected, while 40% had the number of working hours changed.

Table 21: COVID-19 in Mozambique

	Total	Maputo	Nampula	Tete
Had COVID	0.130	0.137	0.0972	0.151
	(0.337)	(0.344)	(0.297)	(0.360)
Family had COVID	0.136	0.162	0.0556	0.140
	(0.343)	(0.369)	(0.230)	(0.349)
Missed work	0.232	0.231	0.194	0.302
	(0.422)	(0.422)	(0.397)	(0.462)
Salary affected	0.283	0.304	0.236	0.256
	(0.451)	(0.460)	(0.426)	(0.439)
Hours affected	0.415	0.475	0.257	0.372
	(0.493)	(0.500)	(0.438)	(0.486)
Observations	668	438	144	86

Standard deviation in parenthesis

Notice that the COVID-19 pandemic may have had a bigger effect on the treatment group. Since the result indicates that they work more, they could have been more exposed to the virus. However, this is not supported by the data as seen in Table 29. Since we

only have pandemic related questions on the end-line survey, the only method available and the one reported on the table is the simple OLS regression. The results show that treatment and control were similarly affected by the pandemic.

5 Conclusions

The goal of this study was to evaluate the impact of union-led training for union representatives on workers' working conditions. For that purpose, we designed a randomized control trial where firms randomized into treatment had one of their workers participate in a two-day training organized by the unions and financed by SASK, typically being the union representative. Workers from five unions across three Mozambican provinces had training about labor law, recruiting of new union members, organization of the union, and negotiation skills.

We also conducted exam tests right before and after the training took place. The evaluation of the test showed that the worker's score improved by 0.3 standard deviations, that corresponds to a 0.5 points from a baseline of seven out of ten. This indicates that the training strengthened the knowledge of the participants on the topics the training was about.

To estimate the impact of the training treatment, we used the differences-in-differences methodology, which compares outcomes of those from the treated firms with those from firms in the control group before and after the training. Although we have randomized treatment, the number of observations in the treatment group is so small that we are more confident in the DiD estimates rather than just the difference of treatment and control groups in the end-line survey.

The results indicate that the treated group had a slight increase in salaries, while the control group had a loss in salaries. Furthermore, the treated workers had an increase in the number of hours worked. This could be explained by the positive impact of the treatment on unionization. The treated firms were able to maintain the same level of unionization, while the control group experienced a drop in the proportion of respondents that were unionized. The treatment also decreased the share of workers that reported having worked without pay.

Our results suggest that there were spillover effects for wages and hours worked for those who did not participate in the training themselves, but a union representative from their firm did. Hence, the strategy of training union representatives can have firm wide effects like the increase in monthly salaries and working hours. However, this evidence is less strong regarding the probability of being unionized. This muted spillover effect on unionization suggests that teaching union representatives about recruiting methods may not be enough. Unions may need to implement other measures, that were not analyzed in this article, in order to increase unionization. Like, for example, firm wide activities that increase the sense of community and make the unions more present in the workers lives. Finally, there was no discernible difference on how the COVID-19 pandemic affected the treatment and control group.

The study had several implementation problems like a cyclone, a pandemic, and the breaking of relations with the unions. This affected the number of provinces studied, the timing of the treatment, and the size and attrition level of the end-line survey. Despite all these difficulties, the study also managed to make a description of working conditions in three Mozambican provinces. And, more importantly, the study had enough statistical power to causally detect the effects of the training activities on important aspects of the

worker's life.

References

BANERJEE, A. V. AND E. DUFLO (2009): "The experimental approach to development economics," *Annu. Rev. Econ.*, 1, 151–178.

BERTRAND, M. AND B. CRÉPON (2021): "Teaching labor laws: Evidence from a randomized control trial in south africa," *American Economic Journal: Applied Economics*, 13, 125–49.

BOERI, T., P. GARIBALDI, AND M. RIBEIRO (2011): "The lighthouse effect and beyond," *Review of income and Wealth*, 57, S54–S78.

BOUGUEN, A., Y. HUANG, M. KREMER, AND E. MIGUEL (2019): "Using randomized controlled trials to estimate long-run impacts in development economics," *Annual Review of Economics*, 11, 523–561.

DOUCOULIAGOS, H., R. B. FREEMAN, P. LAROCHE, AND T. STANLEY (2018): "How credible is trade union research? Forty years of evidence on the monopoly–voice trade-off," *ILR review*, 71, 287–305.

FREEMAN, R. B. (2010): "Labor regulations, unions, and social protection in developing countries: Market distortions or efficient institutions?" *Handbook of development economics*, 5, 4657–4702.

GRADÍN, C. AND F. TARP (2019): "Investigating growing inequality in Mozambique," *South African Journal of Economics*.

KANGASNIEMI, M. AND J. PIRTTILÄ (2016): "Evaluation of development co-operation to strengthen trade unions in Zambia–a methodological approach and results from a baseline study," .

KANGASNIEMI, M. AND J. PIRTTILÄ (2013): "Trade unions in the south and cooperation between unions in the South and in the North: A survey of the economics literature," *Labour Institute for Economic Research, Working paper*, 285.

KERR, A. AND M. WITTENBERG (2021): "Union wage premia and wage inequality in South Africa," *Economic Modelling*, 97, 255–271.

LANDY, F., M. KANGASNIEMI, AND J. PIRTTILÄ (2017): "How can one make work decent?Evidence from a trade-union led intervention in Zambia," *Labour Institute for Economic Research, Working paper*, 316.

PEETZ, D. AND M. ALEXANDER (2013): "A synthesis of research on training of union delegates," *Industrial Relations Journal*, 44, 425–442.

PEREIRA, S., N. R. DOS SANTOS, AND L. PAIS (2019): "Empirical research on decent work: A literature review," .

A Appendix

Appendix presents extra summary statistics and results to support the conclusion of the report. ´

Figure 8 presents the average evolution of four outcome variables. Table 22 to Table 27 present the evidence on spillover effects. The following table present the estimation results regarding hourly wages, the effects of COVID-19, the number of union workers, the presence of health insurance, at the unionization level at the firm.

Figure 8: Average evolution

(a) Safety instruction

(b) Injury or illness

(c) Suffered discrimination

(d) Health insurance
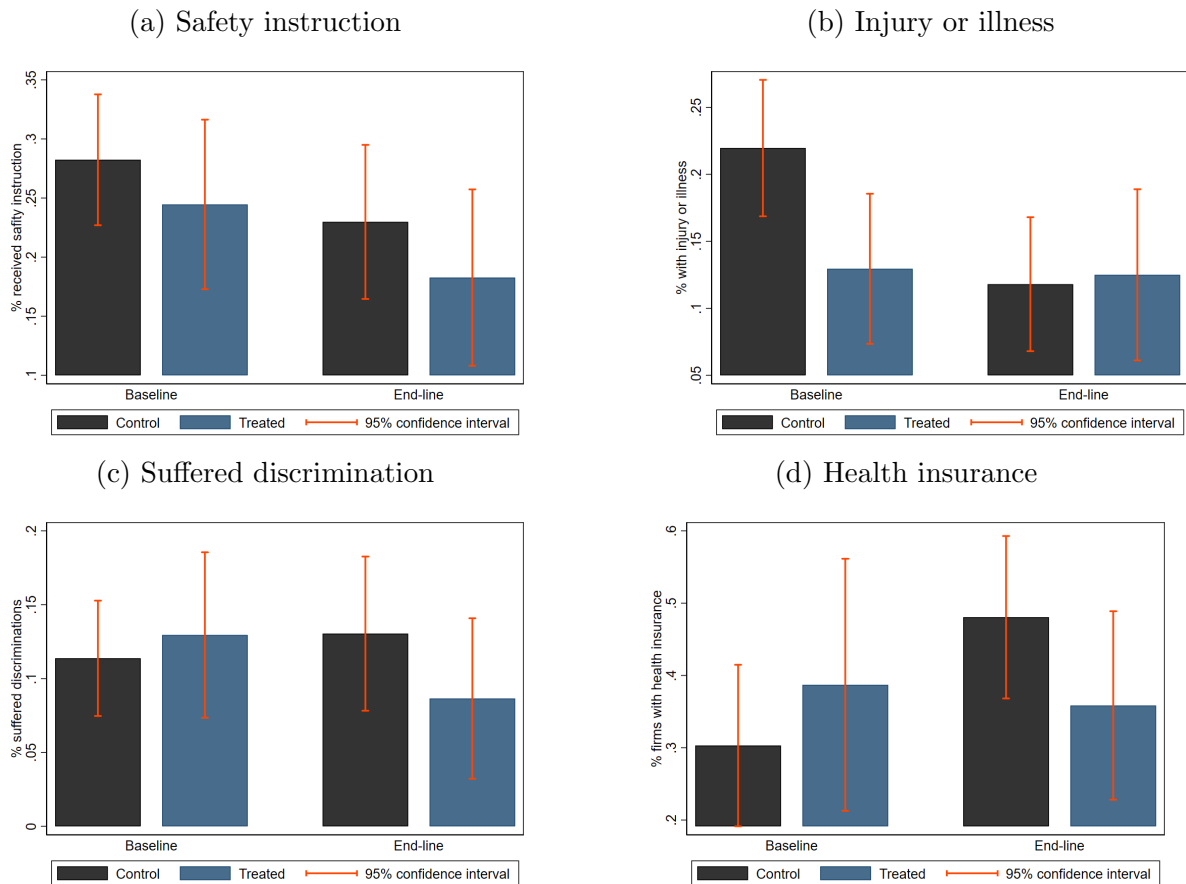
Table 22: Regression on salaries only with those that participated in the courses

salary	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.105	0.0915	0.0930	0.102	0.106
	(0.117)	(0.117)	(0.105)	(0.0709)	(0.0824)
Treated	0.130	0.0883	-0.00339		-0.192***
	(0.129)	(0.122)	(0.123)		(0.0382)
End-line	-0.0586	-0.0352	-0.0629	0.0221	0.0182
	(0.0562)	(0.0564)	(0.0925)	(0.0505)	(0.0596)
Constant	9.189***	9.221***	9.314***	9.175***	9.093***
	(0.0571)	(0.119)	(0.162)	(0.0142)	(0.0256)
Observations	377	377	377	377	377
R-squared	0.010	0.082	0.250	0.011	0.585
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				265	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 23: Regression on salaries only with those that did not participate in the courses

salary	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.189**	0.197**	0.210**	0.128*	0.130
	(0.0778)	(0.0795)	(0.0854)	(0.0762)	(0.0921)
Treated	0.0782	0.0176	0.00157		-0.274***
	(0.0891)	(0.0805)	(0.0739)		(0.0344)
End-line	-0.0586	-0.0447	-0.0957	0.0221	0.0182
	(0.0561)	(0.0569)	(0.0825)	(0.0504)	(0.0579)
Constant	9.189***	9.208***	9.258***	9.200***	9.093***
	(0.0570)	(0.103)	(0.141)	(0.0117)	(0.0248)
Observations	540	540	540	540	540
R-squared	0.021	0.106	0.254	0.040	0.569
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				385	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 24: Regression on hours only with those that participated in the courses

Hours	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.228*	0.227*	0.226*	0.250*	0.229
	(0.129)	(0.131)	(0.131)	(0.141)	(0.157)
Treated	-0.171	-0.189	-0.204*		-0.0176
	(0.117)	(0.117)	(0.119)		(0.0769)
End-line	-0.0258	-0.0228	-0.0251	-0.0319	-0.0113
	(0.0356)	(0.0364)	(0.0336)	(0.0387)	(0.0406)
Constant	3.797***	3.780***	3.703***	3.783***	3.780***
	(0.0295)	(0.0492)	(0.0697)	(0.0141)	(0.0135)
Observations	436	436	436	436	436
R-squared	0.016	0.045	0.065	0.034	0.361
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				276	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 25: Regression on hours only with those that didn't participate in the courses

Hours	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.192**	0.192**	0.187**	0.186*	0.194*
	(0.0877)	(0.0920)	(0.0891)	(0.0950)	(0.109)
Treated	-0.152*	-0.176**	-0.173**		-0.0946**
	(0.0834)	(0.0853)	(0.0839)		(0.0362)
End-line	-0.0258	-0.0236	-0.00380	-0.0319	-0.0113
	(0.0355)	(0.0363)	(0.0331)	(0.0386)	(0.0396)
Constant	3.797***	3.794***	3.813***	3.745***	3.780***
	(0.0295)	(0.0623)	(0.0870)	(0.0147)	(0.0132)
Observations	619	619	619	619	619
R-squared	0.034	0.098	0.112	0.044	0.435
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 26: Regression on unionization only with those that participated in the courses

Is unionized	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0858*	0.0800*	0.0911*	0.108**	0.0873*
	(0.0472)	(0.0475)	(0.0505)	(0.0457)	(0.0509)
Treated	0.239***	0.204***	0.155***		0.105***
	(0.0374)	(0.0395)	(0.0477)		(0.0218)
End-line	-0.0858*	-0.0832*	-0.0699	-0.108**	-0.0873*
	(0.0472)	(0.0473)	(0.0596)	(0.0457)	(0.0509)
Constant	0.761***	0.791***	0.629***	0.789***	0.895***
	(0.0374)	(0.0817)	(0.120)	(0.0161)	(0.0218)
Observations	455	455	455	455	455
R-squared	0.040	0.081	0.111	0.045	0.402
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				278	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 27: Regression on unionization only with those that did not participate in the courses

Is unionized	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0577	0.0557	0.0693	0.156*	0.0884
	(0.0741)	(0.0721)	(0.0722)	(0.0814)	(0.0793)
Treated	0.0464	0.0217	0.00586		0.105***
	(0.0549)	(0.0506)	(0.0517)		(0.0296)
End-line	-0.0858*	-0.0832*	-0.0789	-0.108**	-0.0873*
	(0.0471)	(0.0475)	(0.0552)	(0.0457)	(0.0498)
Constant	0.761***	0.772***	0.758***	0.772***	0.895***
	(0.0373)	(0.0738)	(0.109)	(0.0146)	(0.0213)
Observations	641	641	641	641	641
R-squared	0.012	0.058	0.085	0.032	0.348
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				400	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 28: Regression on hourly wages

Hourly wage	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.0493	-0.0431	-0.0258	-0.0897	-0.109
	(0.115)	(0.115)	(0.113)	(0.136)	(0.144)
Treated	0.245**	0.212*	0.195*		-0.108
	(0.103)	(0.112)	(0.106)		(0.0668)
End-line	0.00247	0.00136	-0.110	0.0532	0.0618
	(0.0667)	(0.0671)	(0.0871)	(0.0766)	(0.0730)
Constant	3.990***	4.029***	4.068***	4.074***	3.910***
	(0.0623)	(0.107)	(0.158)	(0.0204)	(0.0243)
Observations	535	535	535	535	535
R-squared	0.034	0.053	0.175	0.005	0.492
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				381	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 29: Regression on COVID-19 and its effects

VARIABLES	(1) Had COVID	(2) Family had COVID	(3) Missed work	(4) Salary affected	(5) Hours affected
Difference	-0.0501	0.0103	-0.0190	0.0191	0.0418
	(0.0430)	(0.0374)	(0.0461)	(0.0749)	(0.0733)
Constant	0.137***	0.106***	0.194***	0.263***	0.356***
	(0.0318)	(0.0219)	(0.0316)	(0.0430)	(0.0448)
Observations	263	263	263	263	263
R-squared	0.006	0.000	0.001	0.000	0.002

Note: Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 30: Regression with controls on COVID-19 and its effects

VARIABLES	(1) Had COVID	(2) Family had COVID	(3) Missed work	(4) Salary affected	(5) Hours affected
Difference	-0.0496	0.0219	-0.0162	0.0491	0.0540
	(0.0442)	(0.0376)	(0.0473)	(0.0660)	(0.0616)
Constant	0.287**	0.136*	0.323**	0.00704	0.224
	(0.110)	(0.0802)	(0.148)	(0.161)	(0.168)
Observations	263	263	263	263	263
R-squared	0.105	0.083	0.084	0.197	0.172
Controls	Yes	Yes	Yes	Yes	Yes

Note: Clustered at firm level standard errors in parentheses.*** p<0.01, ** p<0.05, * p<0.1.
Note: Controls include Union, region, education, sex, and age dummies.

Table 31: Regression on the number of union workers

Number of unionized workers	(1)	(2)	(3)	(4)	(5)
TE	-0.229	-0.302	-0.268	-0.219	-0.294
	(0.307)	(0.317)	(0.342)	(0.368)	(0.462)
Treated	0.167	0.199	0.203		0.581**
	(0.234)	(0.233)	(0.231)		(0.231)
End-line	-0.120	-0.0465	-0.106	0.164	-0.0664
	(0.191)	(0.211)	(0.294)	(0.295)	(0.307)
Constant	3.035***	2.661***	2.264***	2.960***	3.016***
	(0.144)	(0.229)	(0.504)	(0.0925)	(0.154)
Observations	182	182	182	182	182
R-squared	0.011	0.107	0.163	0.011	0.689
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				142	

Outcome variable is the number of union workers of the firm according to the union representative. Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 32: Regression on unionization at the firm

Unionization UR	(1)	(2)	(3)	(4)	(5)
TE	-0.0927	-0.0686	-0.0924	-0.0599	-0.0924
	(0.0929)	(0.0907)	(0.0877)	(0.111)	(0.142)
Treated	0.121*	0.135*	0.162**		-0.350***
	(0.0708)	(0.0709)	(0.0643)		(0.0693)
End-line	0.0120	0.0139	0.0607	0.0784	0.0584
	(0.0581)	(0.0560)	(0.0702)	(0.0873)	(0.0969)
Constant	0.518***	0.393***	0.0540	0.526***	1***
	(0.0448)	(0.0666)	(0.140)	(0.0266)	(0)
Observations	180	180	180	180	180
R-squared	0.015	0.113	0.221	0.028	0.688
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				142	

Outcome variable is the unionization level of the firm according to the union representative. Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 33: Regression on health insurance

Health insurance	(1)	(2)	(3)	(4)	(5)
TE	-0.196	-0.204	-0.228*	-0.0424	-0.188
	(0.127)	(0.129)	(0.132)	(0.159)	(0.186)
Treated	0.0673	0.0390	0.0133		-0.410***
	(0.104)	(0.104)	(0.108)		(0.112)
End-line	0.173**	0.177**	0.157*	0.133	0.214*
	(0.0782)	(0.0776)	(0.0797)	(0.114)	(0.117)
Constant	0.308***	0.120	0.333	0.319***	0.393***
	(0.0579)	(0.0733)	(0.201)	(0.0466)	(0.0587)
Observations	228	228	228	228	228
R-squared	0.021	0.088	0.129	0.040	0.537
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				176	

Outcome variable is an indicator variable about if the firm has health insurance according to the union representative. Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$ Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 34: Firms and union representatives by survey

	Baseline			End-line		
	Total	Control	Treatment	Total	Control	Treatment
Collective agreement	0.619	0.556	0.677	0.713	0.707	0.679
	(0.487)	(0.501)	(0.475)	(0.453)	(0.458)	(0.471)
Number of workers	86.30	81.86	72.48	82.16	79.73	72
	(109.8)	(81.99)	(104.8)	(99.90)	(83.27)	(115.1)
Number of unionized workers	37.97	34.43	44.16	30.25	29.70	33.21
	(44.68)	(39.44)	(59.83)	(43.04)	(44.11)	(64.66)
Health insurance	0.353	0.317	0.387	0.413	0.480	0.358
	(0.479)	(0.469)	(0.495)	(0.493)	(0.503)	(0.484)
Unionization UR	0.540	0.507	0.630	0.526	0.529	0.545
	(0.343)	(0.360)	(0.312)	(0.364)	(0.361)	(0.375)
Observations	218	63	31	317	75	53

Standard deviation in parenthesis

Table 35: Demographics by type of treatment(end-line survey)

	Total	Control	Indirectly treated	Treated
Age	42.70	42.56	41.49	48.16
	(10.70)	(10.47)	(11.50)	(10.39)
Male	0.814	0.761	0.826	1
	(0.389)	(0.428)	(0.382)	(0)
Unionization (%)	74.55	68.10	77.91	100
	(43.59)	(46.75)	(41.73)	(0)
Salary	14982.6	11069.5	13864.3	12542.3
	(16536.4)	(8682.7)	(8108.1)	(5007.3)
Hours	43.41	42.55	45.33	46.42
	(11.84)	(12.84)	(10.07)	(7.018)
Maputo	0.656	0.650	0.651	0.737
	(0.475)	(0.478)	(0.479)	(0.452)
Nampula	0.216	0.313	0.221	0.158
	(0.412)	(0.465)	(0.417)	(0.375)
Tete	0.129	0.0368	0.128	0.105
	(0.335)	(0.189)	(0.336)	(0.315)
Some tertiary (%)	6.886	4.908	6.977	5.263
	(25.34)	(21.67)	(25.62)	(22.94)
Complete tertiary (%)	7.784	7.362	4.651	5.263
	(26.81)	(26.20)	(21.18)	(22.94)
Some primary (%)	10.33	13.50	9.302	5.263
	(30.46)	(34.27)	(29.22)	(22.94)
Complete primary (%)	10.03	9.816	11.63	0
	(30.06)	(29.84)	(32.24)	(0)
Complete secondary (%)	33.38	32.52	32.56	36.84
	(47.19)	(46.99)	(47.13)	(49.56)
Some secondary (%)	31.59	31.90	34.88	47.37
	(46.52)	(46.75)	(47.94)	(51.30)
Managers (%)	9.431	12.27	6.977	15.79
	(29.25)	(32.91)	(25.62)	(37.46)
Unskilled manual (%)	29.19	27.61	33.72	21.05
	(45.50)	(44.84)	(47.55)	(41.89)
Skilled manual (%)	34.13	36.81	32.56	42.11
	(47.45)	(48.38)	(47.13)	(50.73)
Professionals (%)	27.25	23.31	26.74	21.05
	(44.56)	(42.41)	(44.52)	(41.89)
Observations	668	163	86	19

Standard deviation in parenthesis

A.1 Help from the Union for different situations

This section presents the summary statistics and estimation results about the share of workers that contact the unions in case of problems, issues or questions about payment, working hours, leave, health and safety, content of the job, discrimination, and dismissal.

Table 36: Share of workers that contact union in case of problems

	Baseline			End-line		
	Total	Control	Treatment	Total	Control	Treatment
Pay	0.158	0.130	0.277	0.290	0.282	0.362
	(0.365)	(0.337)	(0.449)	(0.454)	(0.451)	(0.483)
Hours	0.122	0.126	0.184	0.223	0.196	0.343
	(0.328)	(0.332)	(0.389)	(0.417)	(0.398)	(0.477)
Leave	0.0996	0.115	0.156	0.123	0.129	0.162
	(0.300)	(0.319)	(0.364)	(0.328)	(0.336)	(0.370)
Health and safety	0.104	0.103	0.142	0.163	0.178	0.267
	(0.305)	(0.305)	(0.350)	(0.370)	(0.384)	(0.444)
Content of the job	0.102	0.107	0.149	0.148	0.153	0.229
	(0.302)	(0.310)	(0.357)	(0.356)	(0.361)	(0.422)
Discrimination	0.164	0.168	0.220	0.302	0.288	0.419
	(0.371)	(0.375)	(0.416)	(0.460)	(0.454)	(0.496)
Dismissal	0.290	0.252	0.333	0.346	0.301	0.400
	(0.454)	(0.435)	(0.473)	(0.476)	(0.460)	(0.492)
Observations	974	262	141	668	163	105

Standard deviation in parenthesis

Table 37: Turn to Union in case of problem with payment

	(1)	(2)	(3)	(4)	(5)
	Turn to Union in case of problem with payment				
Treated x End-line	-0.0713	-0.0743	-0.0731	-0.0482	-0.105
	(0.0822)	(0.0827)	(0.0826)	(0.0935)	(0.0927)
Treated	0.149**	0.144**	0.152**		0.256***
	(0.0593)	(0.0592)	(0.0581)		(0.0440)
End-line	0.148***	0.148***	0.128**	0.158***	0.155***
	(0.0509)	(0.0513)	(0.0581)	(0.0573)	(0.0570)
Constant	0.133***	0.135***	0.138	0.180***	0.219***
	(0.0273)	(0.0478)	(0.0865)	(0.0182)	(0.0244)
Observations	656	656	656	656	656
R-squared	0.041	0.051	0.075	0.051	0.290
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 38: Turn to Union in case of problem with hours worked

	(1)	(2)	(3)	(4)	(5)
	Turn to Union in case of problem with hours				
Treated x End-line	0.0808	0.0773	0.0899	0.100	0.0645
	(0.0705)	(0.0711)	(0.0706)	(0.0726)	(0.0773)
Treated	0.0590	0.0463	0.0480		-0.752***
	(0.0456)	(0.0422)	(0.0421)		(0.0367)
End-line	0.0706*	0.0687	0.0546	0.0696	0.0724
	(0.0412)	(0.0422)	(0.0520)	(0.0458)	(0.0466)
Constant	0.129***	0.0809*	-0.0346	0.148***	0.683***
	(0.0297)	(0.0448)	(0.0692)	(0.0142)	(0.0200)
Observations	656	656	656	656	656
R-squared	0.032	0.050	0.087	0.052	0.297
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 39: Turn to Union in case of problem with leave

	(1)	(2)	(3)	(4)	(5)
	Turn to Union in case of problem with leave				
Treated x End-line	-0.00797	-0.0134	-0.0155	-0.0316	-0.0278
	(0.0537)	(0.0540)	(0.0556)	(0.0521)	(0.0567)
Treated	0.0418	0.0327	0.0436		-0.559***
	(0.0478)	(0.0444)	(0.0424)		(0.0264)
End-line	0.0136	0.0139	-0.00867	0.0316	0.0142
	(0.0359)	(0.0362)	(0.0402)	(0.0387)	(0.0400)
Constant	0.118***	0.107**	0.0217	0.129***	0.565***
	(0.0280)	(0.0470)	(0.0735)	(0.0109)	(0.0172)
Observations	656	656	656	656	656
R-squared	0.003	0.031	0.071	0.003	0.341
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 40: Turn to Union in case of problem with health and safety

	(1)	(2)	(3)	(4)	(5)
	Turn to Union in case of problem with health and safety				
Treated x End-line	0.0515	0.0475	0.0501	0.0477	0.0336
	(0.0541)	(0.0546)	(0.0545)	(0.0598)	(0.0595)
Treated	0.0390	0.0272	0.0341		-0.737***
	(0.0466)	(0.0412)	(0.0379)		(0.0285)
End-line	0.0754**	0.0748**	0.0376	0.0823**	0.0792**
	(0.0314)	(0.0318)	(0.0395)	(0.0338)	(0.0335)
Constant	0.106***	0.0845**	0.165*	0.118***	0.680***
	(0.0253)	(0.0394)	(0.0927)	(0.0113)	(0.0143)
Observations	656	656	656	656	656
R-squared	0.024	0.044	0.076	0.048	0.351
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 41: Turn to Union in case of problem about the content of the job

	(1)	(2)	(3)	(4)	(5)
	Turn to Union in case of problem about the content of the job				
Treated x End-line	0.0344	0.0319	0.0411	0.0394	0.0220
	(0.0638)	(0.0643)	(0.0651)	(0.0629)	(0.0680)
Treated	0.0424	0.0407	0.0360		-0.728***
	(0.0498)	(0.0462)	(0.0451)		(0.0327)
End-line	0.0464	0.0458	-0.00295	0.0506	0.0443
	(0.0353)	(0.0356)	(0.0422)	(0.0374)	(0.0371)
Constant	0.110***	0.129**	0.0881	0.123***	0.695***
	(0.0272)	(0.0548)	(0.0751)	(0.0121)	(0.0159)
Observations	656	656	656	656	656
R-squared	0.014	0.028	0.062	0.021	0.329
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 42: Turn to Union in case of problem with discrimination

	(1)	(2)	(3)	(4)	(5)
	Turn to Union in case of problem with discrimination				
Treated x End-line	0.101	0.0997	0.106	0.0997	0.0906
	(0.0680)	(0.0680)	(0.0671)	(0.0727)	(0.0757)
Treated	0.0448	0.0363	0.0326		-0.267***
	(0.0573)	(0.0578)	(0.0590)		(0.0357)
End-line	0.109**	0.107**	0.0658	0.120***	0.103**
	(0.0428)	(0.0431)	(0.0497)	(0.0443)	(0.0487)
Constant	0.173***	0.176***	0.219**	0.185***	0.670***
	(0.0329)	(0.0574)	(0.0985)	(0.0141)	(0.0209)
Observations	656	656	656	656	656
R-squared	0.041	0.053	0.071	0.084	0.330
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 43: Turn to Union in case of problem with dismissal

	(1)	(2)	(3)	(4)	(5)
	Turn to Union in case of problem with dismissal				
Treated x End-line	0.0356	0.0314	0.0356	0.0384	0.0356
	(0.0846)	(0.0867)	(0.0846)	(0.0884)	(0.0953)
Treated	0.0784	0.0532	0.0601		-0.448***
	(0.0694)	(0.0652)	(0.0656)		(0.0456)
End-line	0.0388	0.0405	0.0106	0.0316	0.0290
	(0.0478)	(0.0487)	(0.0557)	(0.0504)	(0.0535)
Constant	0.255***	0.231***	0.139	0.286***	0.416***
	(0.0367)	(0.0570)	(0.115)	(0.0168)	(0.0229)
Observations	656	656	656	656	656
R-squared	0.013	0.035	0.053	0.007	0.290
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				398	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

A.2   Abuses

This section presents the summary statistics of the Share of workers that witnessed or experienced a list of work related abusive behavior from the firm. This includes working overtime above an acceptable limit, work without pay, hiring of underage employees, payment withheld, being asked to perform hazardous tasks without proper protection, threats of dismissal, and work with limited freedom. It also shows estimation results on how the treatment affected the prevalence of the above-mentioned abuses.

Table 44: Share of workers that witnessed or experienced abuses

	Baseline			End-line		
	Total	Control	Treatment	Total	Control	Treatment
Work overtime	0.198	0.252	0.158	0.305	0.350	0.308
	(0.399)	(0.435)	(0.366)	(0.461)	(0.478)	(0.464)
Work without pay	0.0573	0.0512	0.0935	0.127	0.188	0.0673
	(0.232)	(0.221)	(0.292)	(0.334)	(0.392)	(0.252)
Hire of underage employees	0.00530	0.0118	0	0.0106	0.0125	0.0192
	(0.0727)	(0.108)	(0)	(0.103)	(0.111)	(0.138)
Payment withheld	0.0509	0.0591	0.0719	0.100	0.144	0.0865
	(0.220)	(0.236)	(0.259)	(0.300)	(0.352)	(0.283)
Hazardous tasks without protection	0.150	0.201	0.165	0.149	0.163	0.144
	(0.357)	(0.401)	(0.373)	(0.356)	(0.370)	(0.353)
Threat of dismissal	0.178	0.201	0.209	0.243	0.325	0.202
	(0.383)	(0.401)	(0.408)	(0.429)	(0.470)	(0.403)
Work with limited freedom	0.128	0.161	0.101	0.217	0.263	0.163
	(0.335)	(0.369)	(0.302)	(0.413)	(0.441)	(0.372)
Observations	943	254	139	659	160	104

Standard deviation in parenthesis

Table 45: Beyond acceptable overtime work

Work overtime	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0462	0.0469	0.0394	0.0593	0.0333
	(0.0693)	(0.0699)	(0.0678)	(0.0729)	(0.0775)
Treated	-0.0907	-0.0837	-0.0699		-0.310***
	(0.0562)	(0.0544)	(0.0534)		(0.0356)
End-line	0.103*	0.107**	0.164***	0.0892	0.109*
	(0.0523)	(0.0526)	(0.0619)	(0.0576)	(0.0593)
Constant	0.249***	0.205***	0.264**	0.219***	0.239***
	(0.0397)	(0.0606)	(0.112)	(0.0157)	(0.0254)
Observations	655	655	655	655	655
R-squared	0.024	0.041	0.059	0.036	0.291
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				397	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 46: Hired underage workers

Hire of underage employees	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0185	0.0178	0.0164	0.0198	0.0210
	(0.0183)	(0.0181)	(0.0167)	(0.0188)	(0.0202)
Treated	-0.0119	-0.0172	-0.0160		-0.0104
	(0.00877)	(0.0111)	(0.0110)		(0.00951)
End-line	0.000721	-2.46e-05	-0.0157	0	-0.00102
	(0.0126)	(0.0130)	(0.0111)	(0.0128)	(0.0133)
Constant	0.0119	0.0116	0.0231	0.00754**	0.000438
	(0.00877)	(0.0125)	(0.0235)	(0.00380)	(0.00568)
Observations	655	655	655	655	655
R-squared	0.004	0.028	0.047	0.007	0.184
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				397	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 47: Payment withheld

Payment withheld	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.0708	-0.0699	-0.0732	-0.0503	-0.0656
	(0.0573)	(0.0571)	(0.0573)	(0.0635)	(0.0619)
Treated	0.0127	0.00148	-0.000438		-0.258***
	(0.0381)	(0.0368)	(0.0373)		(0.0292)
End-line	0.0854**	0.0832**	0.0887**	0.0701*	0.0762*
	(0.0348)	(0.0346)	(0.0383)	(0.0385)	(0.0394)
Constant	0.0593***	0.0616	0.0916	0.0669***	0.253***
	(0.0185)	(0.0443)	(0.0712)	(0.0123)	(0.0169)
Observations	655	655	655	655	655
R-squared	0.014	0.027	0.045	0.017	0.242
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				397	

Clustered at firm level standard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 48: Dangerous work without safety equipment

Hazardous tasks without protection	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0129	0.00873	-0.000292	0.0439	0.0292
	(0.0592)	(0.0590)	(0.0598)	(0.0616)	(0.0646)
Treated	-0.0322	-0.0476	-0.0401		-0.297***
	(0.0576)	(0.0519)	(0.0516)		(0.0305)
End-line	-0.0341	-0.0338	-0.0188	-0.0637	-0.0501
	(0.0383)	(0.0377)	(0.0393)	(0.0426)	(0.0416)
Constant	0.198***	0.228***	0.217**	0.193***	0.307***
	(0.0336)	(0.0595)	(0.0889)	(0.0125)	(0.0178)
Observations	655	655	655	655	655
R-squared	0.003	0.038	0.063	0.011	0.317
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				397	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 49: Threat of dismissal

Threat of dismissal	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.126*	-0.128*	-0.126*	-0.112	-0.118
	(0.0724)	(0.0724)	(0.0742)	(0.0833)	(0.0833)
Treated	0.00705	0.00419	-0.00153		-0.0919**
	(0.0564)	(0.0540)	(0.0508)		(0.0387)
End-line	0.119**	0.121**	0.149**	0.102*	0.111*
	(0.0513)	(0.0512)	(0.0608)	(0.0571)	(0.0593)
Constant	0.202***	0.218***	0.203**	0.209***	0.0954***
	(0.0342)	(0.0647)	(0.101)	(0.0169)	(0.0254)
Observations	655	655	655	655	655
R-squared	0.014	0.020	0.044	0.019	0.273
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				397	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 50: Work with limited freedom

Work with limited freedom	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.0331	-0.0379	-0.0294	-0.0524	-0.0410
	(0.0658)	(0.0650)	(0.0641)	(0.0717)	(0.0739)
Treated	-0.0613	-0.0779*	-0.0895**		-0.273***
	(0.0484)	(0.0436)	(0.0426)		(0.0339)
End-line	0.0958*	0.0975*	0.0463	0.102*	0.110*
	(0.0510)	(0.0504)	(0.0590)	(0.0538)	(0.0573)
Constant	0.162***	0.0783	0.115	0.140***	0.239***
	(0.0342)	(0.0540)	(0.0900)	(0.0151)	(0.0245)
Observations	655	655	655	655	655
R-squared	0.020	0.047	0.066	0.027	0.296
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				397	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

A.3   Union representative knowledge

This section presents describes the self assessed knowledge of union representatives. It shows the share of union representatives that think that their knowledge in labor law, recruiting, the organization of the union, and negotiation skills is at least acceptable. The section also presents the effects of the training activities on the union representative's knowledge.

Table 51: Share of union representatives that have knowledge of:

	Baseline			End-line		
	Total	Control	Treatment	Total	Control	Treatment
Labor law	0.491	0.431	0.531	0.374	0.390	0.481
	(0.501)	(0.499)	(0.507)	(0.485)	(0.491)	(0.504)
Recruiting	0.504	0.400	0.500	0.417	0.364	0.556
	(0.501)	(0.494)	(0.508)	(0.494)	(0.484)	(0.502)
Union organization	0.540	0.492	0.594	0.442	0.416	0.463
	(0.499)	(0.504)	(0.499)	(0.497)	(0.496)	(0.503)
Negotiation skills	0.522	0.431	0.625	0.417	0.286	0.463
	(0.501)	(0.499)	(0.492)	(0.494)	(0.455)	(0.503)
Observations	224	65	32	321	77	54

Standard deviation in parenthesis

Table 52: Union representative knowledge of labor law

Labor law	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.0199	-0.0284	-0.00596	0.133	-0.0193
	(0.130)	(0.135)	(0.133)	(0.168)	(0.194)
Treated	0.121	0.141	0.115		0.187
	(0.107)	(0.107)	(0.108)		(0.117)
End-line	-0.0346	-0.0302	-0.00977	-0.133	-0.0442
	(0.0803)	(0.0821)	(0.103)	(0.114)	(0.125)
Constant	0.424***	0.316***	0.516**	0.490***	0.522***
	(0.0615)	(0.0952)	(0.208)	(0.0481)	(0.0625)
Observations	231	231	231	231	231
R-squared	0.013	0.054	0.105	0.027	0.505
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				178	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 53: Union representative knowledge of negotiation skills

Negotiation skills	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.00996	-0.0246	0.00803	0.0565	-0.00544
	(0.127)	(0.130)	(0.127)	(0.171)	(0.183)
Treated	0.197*	0.195*	0.164		0.0322
	(0.105)	(0.103)	(0.112)		(0.109)
End-line	-0.154*	-0.157*	-0.180*	-0.1000	-0.172
	(0.0810)	(0.0835)	(0.0988)	(0.110)	(0.123)
Constant	0.439***	0.480***	0.695***	0.468***	0.0858
	(0.0618)	(0.0925)	(0.196)	(0.0482)	(0.0615)
Observations	231	231	231	231	231
R-squared	0.055	0.082	0.136	0.017	0.562
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				178	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 54: Union representative knowledge of union organization

Union organization	(1)	(2)	(3)	(4)	(5)
Treated x End-line	-0.0489	-0.0663	-0.0481	0.0696	0.00622
	(0.128)	(0.132)	(0.124)	(0.163)	(0.183)
Treated	0.106	0.109	0.0690		0.684***
	(0.106)	(0.100)	(0.101)		(0.113)
End-line	-0.0844	-0.0896	-0.0962	-0.200**	-0.131
	(0.0731)	(0.0755)	(0.0977)	(0.0998)	(0.103)
Constant	0.500***	0.546***	0.803***	0.578***	0.0656
	(0.0623)	(0.0945)	(0.206)	(0.0452)	(0.0515)
Observations	231	231	231	231	231
R-squared	0.015	0.080	0.155	0.084	0.540
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				178	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.

Table 55: Union representative knowledge of recruiting

Recruiting	(1)	(2)	(3)	(4)	(5)
Treated x End-line	0.0939	0.0801	0.0936	0.284*	0.185
	(0.133)	(0.136)	(0.127)	(0.162)	(0.189)
Treated	0.106	0.109	0.0665		0.224*
	(0.107)	(0.105)	(0.101)		(0.115)
End-line	-0.0455	-0.0492	-0.0448	-0.0667	-0.0877
	(0.0818)	(0.0842)	(0.110)	(0.106)	(0.118)
Constant	0.409***	0.412***	0.790***	0.416***	0.0438
	(0.0612)	(0.0940)	(0.186)	(0.0459)	(0.0589)
Observations	231	231	231	231	231
R-squared	0.027	0.072	0.178	0.064	0.539
Firm controls	No	Yes	Yes	No	No
Demographic controls	No	No	Yes	No	No
Worker FE	No	No	No	Yes	No
Firm FE	No	No	No	No	Yes
Number of workers				178	

Clustered at firm level standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Models (1) to (3) are DiD regressions. Model (4) is regression with worker fixed effects. Model (5) is a regression with firm fixed effects. Firm controls include Union and region dummies. Demographic dummies include education, sex, and age dummies.