

# Effects of the post-Rana Plaza responses on garment sector workers in Bangladesh

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## *Rana Plaza in April 2013*



Over 1000 dead; worst garment sector disaster ever and worst industrial disaster since 1984 (Reuters 2017)

# Rebuilding and reforming

## Rana Plaza collapse: 38 charged with murder over garment factory disaster

Three defendants also charged for helping complex owner Sobel Rana flee after incident in which five garment factories fell in 2013, killing 1,135 people



▲ Sobel Rana, owner of the collapsed Rana Plaza building in Bangladesh, is escorted by security personnel ahead of a court appearance in Dhaka in July 2013. Photograph: Reuters (in Zaman/IF/Getty Images)

A court in Bangladesh has formally charged 38 people with murder in connection with the 2013 collapse of the Rana Plaza building which killed 1,135 people in the country's worst industrial disaster

**ACCORD**  
on Fire and Building Safety in Bangladesh



**ALLIANCE**  
FOR BANGLADESH WORKER SAFETY

## Bangladesh garment workers set for 77% pay rise

Factory owners who initially opposed demands for higher minimum wage agree to increase after PM's intervention



▲ Workers in Bangladesh's garment industry will see paid a minimum of \$33 a month. Photograph: Shutterstock.com/ChrisLarkin

Wages for Bangladeshi garment factory workers are set to rise after owners said they had agreed to a proposed 77% increase in the minimum wage.

Key question: did these responses help workers?

## *Buyer pressure in export manufacturing worldwide*

- ▶ Context: many countries with large factories also have weak enforcement capacity
- ▶ Anti-sweatshop campaigns and attention to fair labor products in many countries
- ▶ Harrison and Scorce (2010) found that anti-sweatshop campaigns raised wages in textile factories in Indonesia in the early 1990's
  - ▶ Similar effects in an increasingly competitive global marketplace?
  - ▶ Effects on non-wage aspect of jobs?

## *This paper*

- ▶ Use five rounds of Bangladesh Labor Force Survey, from 2003 to 2015
- ▶ Difference-in-difference compares garment/textile sector to other light manufacturing
- ▶ Preliminary results
  - ▶ Wages up on average 7.6%, but...
  - ▶ Some concern that women's wages dropped by 2015
  - ▶ Hours of work up in the short run, but then back to baseline
  - ▶ No clear evidence of increase in non-wage benefits

# *Outline*

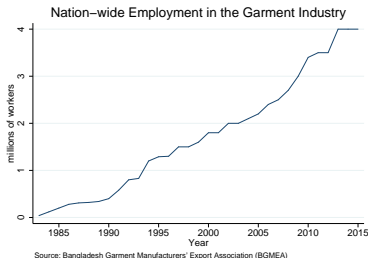
Post-Rana Plaza Reforms

Data and Empirical Strategy

Difference-in-difference estimates

## Setting the stage, pre-Rana Plaza

- ▶ Employment growth fueled by internal migration
- ▶ Workers, especially migrants may not have complete information about working conditions upon beginning work (Boudreau et al 2017)
- ▶ Had been some smaller tragedies and resulting protests (e.g. Tazreen fire in 2012), but limited government or buyer response

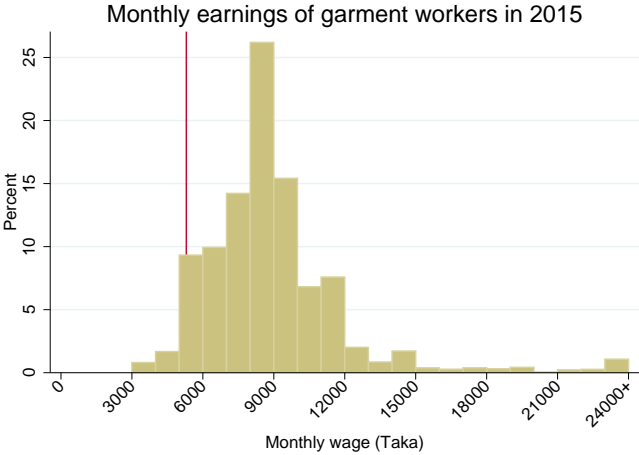


## *Minimum wage increase in December 2013*

- ▶ Garment sector one of few sectors with a statutory minimum wage
- ▶ Had been at BDT 3000 (USD 38) per month since 2010
- ▶ Workers and allies lobbied for a “living wage” of BDT 9500 (USD 120)
- ▶ Eventually compromised at BDT 5300 (USD 68)



*Binding, but not strongly so*



## *Push towards better conditions*

- ▶ Primarily prompted by buyers
  - ▶ Audits and pushes to rectify problems in principal factories (with whom they deal directly)
  - ▶ Less of a “blind eye” to subcontracting into smaller factories where (anecdotally) conditions were often worse
- ▶ Buyers created Accord (European buyers) and Alliance (American buyers) in 2013
  - ▶ Voluntary participation by firms and limited (formal) enforcement capacity
  - ▶ Some help with remediation financing, but most of cost borne by factory
- ▶ In response to cost of compliance, some factories reduced output, or closed

## *Potential channels for impacts on workers*

- ▶ Extensive margin: fewer jobs. Harder to identify but will present suggestive evidence from single-difference.
- ▶ Intensive margin
  - ▶ Wages
    - ▶  $\uparrow$  through minimum wage increase or pressure to raise wages
    - ▶  $\downarrow$  through potential reduced profit-sharing
  - ▶ Hours
    - ▶  $\uparrow$  through reduced subcontracting (for a fixed demand from retailers)
    - ▶  $\downarrow$  if lower demand from retailers (but minimal reductions on extensive margin)

# *Outline*

Post-Rana Plaza Reforms

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# Data

## Labor Force Surveys

Pre-Treatment Time Periods	2003, 2005, 2010, 2013 Q1
Drop	2013 Q2
Post-Treatment Time Periods	2013 Q3 and Q4, 2015

- ▶ Large sample size: over 100,000 adults in each survey; over 300,000 in 2015
- ▶ Each taken over the course of a year (mitigates concerns about seasonality)
- ▶ Wages and hours each round; working conditions measures primarily in 2010 onwards

## Identification strategy

For outcome  $Y$  for worker  $i$  in division  $j$  at time  $t$ :

$$Y_{ijt} = \gamma \text{Garment}_{ijt} + \beta \text{Garment}_{ijt} \times \text{PostRanaPlaza}_t \quad (1) \\ + \delta_{jt} + \text{Female}_{ijt} \times \lambda_t + \text{Urban}_{ijt} \times \lambda_t + \varepsilon_{ijt}$$

Key choice: what is control group? We use other light manufacturing industries. Primarily, food processing and wooden furniture/products. [▶ details](#)

## *Spillovers to control group?*

- ▶ Also “treated” by responses to Rana Plaza?
  - ▶ We think unlikely. Activism was closely targeted to garment sector.
- ▶ Labor supply shifts?
  - ▶ Suggestive evidence any extensive margin effects were short-lived.

## Summary statistics of estimation sample

	Garments		Other Light Manufacturing	
	Female	Male	Female	Male
age	26.21	31.23	31.52	33.60
education (years)	4.78	6.11	3.74	4.68
married	0.678	0.686	0.674	0.716
urban	0.560	0.424	0.316	0.362
year = 2003	0.149	0.103	0.182	0.234
year = 2005	0.096	0.135	0.032	0.070
year = 2010	0.170	0.316	0.200	0.248
year = 2013	0.318	0.178	0.455	0.188
year = 2015	0.267	0.268	0.132	0.260
N	8021	10664	1573	6743



# *Outline*

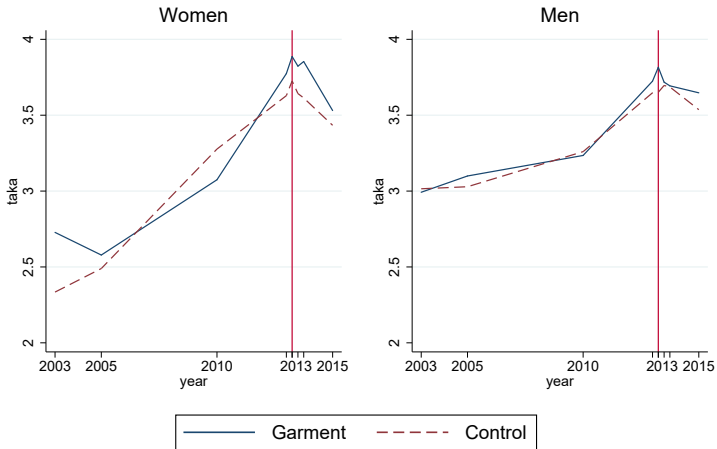
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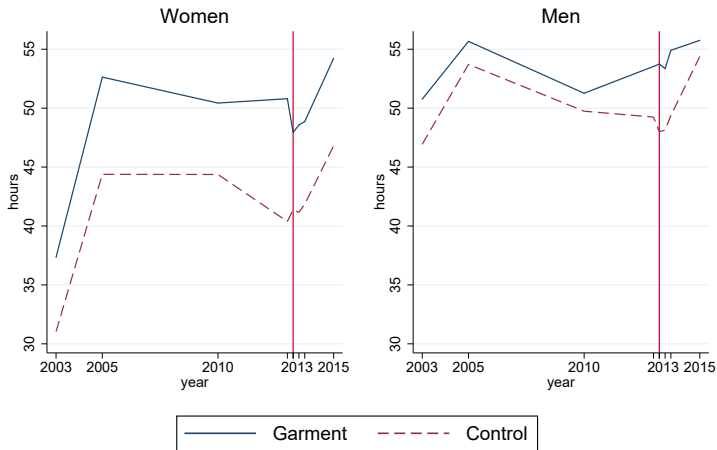
## Diff-in-diff graphically: Wages

### Hourly Wage of Garment Workers vs Other Light Manufacturing Workers



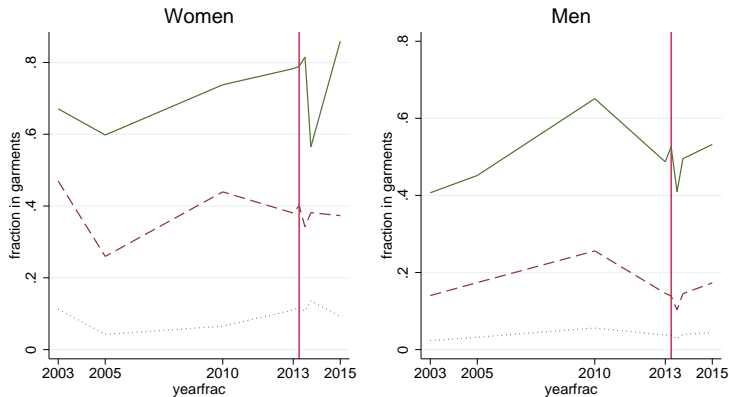
## Diff-in-diff graphically: Hours

### Hours of Garment Workers vs Other Light Manufacturing Workers



# Initial extensive margin effects dissipate by 2015

## Percent of workers in garments over time



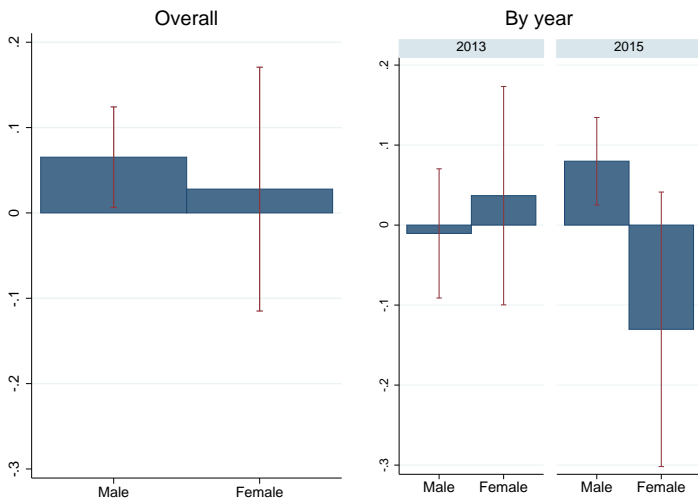
..... Fraction of Employed Workers  
—— Fraction of Light Manufacturing  
- - - - Fraction of Wage Workers

## Diff-in-diff treatment effects: Hourly wage

Dependent Variable = Log(hourly wage)				
Garment	0.018 [0.028]	-0.012 [0.024]	0.018 [0.028]	0.001 [0.023]
Garment X Post	0.076** [0.033]	0.065** [0.030]	0.077* [0.041]	-0.010 [0.041]
Garment X Post X 2015			-0.002 [0.037]	0.090** [0.037]
Garment X Female		0.173*** [0.065]		0.199*** [0.060]
Garment X Female X Post		-0.037 [0.075]		0.047 [0.077]
Garment X Female X Post X 2015				-0.257*** [0.079]
Observations	27,001	27,001	27,001	27,001
R-squared	0.291	0.303	0.291	0.278

Notes: Sample includes individuals in garments/textiles or light manufacturing (ISIC-3 codes 1000-1300, 1500-1600, and 3100-3200). Sampling weights included. Standard errors clustered at the primary sampling unit: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

# Marginal effects on wages

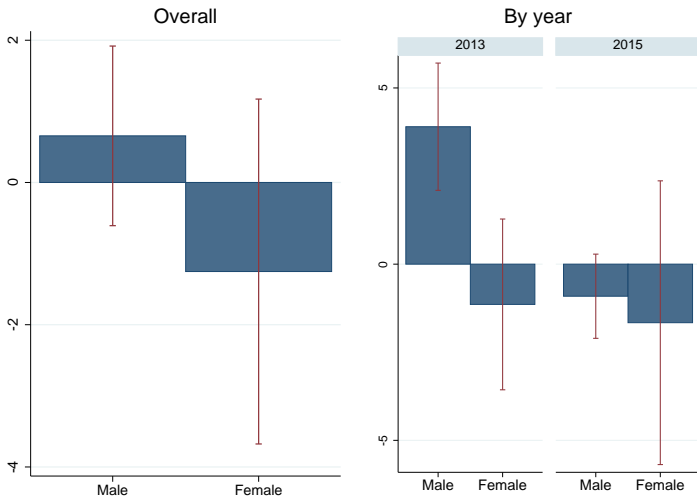


## Diff-in-diff treatment effects: Hours

Dependent Variable = Weekly Hours of Work				
Garment	2.200*** [0.418]	1.134*** [0.393]	2.200*** [0.418]	0.938** [0.386]
Garment X Post	0.276 [0.651]	0.655 [0.644]	3.092*** [0.828]	3.900*** [0.921]
Garment X Post X 2015			-4.648*** [0.973]	-4.810*** [0.960]
Garment X Female		4.346*** [0.871]		4.744*** [0.915]
Garment X Female X Post		-1.908 [1.264]		-5.042*** [1.446]
Garment X Female X Post X 2015				4.291** [2.042]
Observations	27,001	27,001	27,001	27,001
R-squared	0.177	0.186	0.179	0.155

*Notes: Sample includes individuals in garments/textiles or light manufacturing (ISIC-3 codes 1000-1300, 1500-1600, and 3100-3200). Sampling weights included. Standard errors clustered at the primary sampling unit: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

## Marginal effects on hours





## Diff-in-diff treatment effects: Paid Sick Leave

Dependent Variable = 1 (Paid Sick Leave)				
Garment	0.124*** [0.017]	0.116*** [0.017]	0.124*** [0.017]	0.114*** [0.016]
Garment X Post	-0.043** [0.022]	-0.033 [0.024]	-0.028 [0.037]	0.026 [0.047]
Garment X Post X 2015			-0.025 [0.034]	-0.067 [0.045]
Garment X Female		0.031 [0.025]		0.019 [0.022]
Garment X Female X Post		-0.034 [0.032]		-0.073 [0.051]
Garment X Female X Post X 2015				0.076 [0.048]
Observations	27,001	27,001	27,001	27,001
R-squared	0.189	0.195	0.189	0.168

*Notes: Sample includes individuals in garments/textiles or light manufacturing (ISIC-3 codes 1000-1300, 1500-1600, and 3100-3200). Sampling weights included. Standard errors clustered at the primary sampling unit: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$*

## Diff-in-diff treatment effects: Maternity Leave

Dependent Variable = 1 (Maternity Leave)				
Garment	0.157*** [0.020]	0.135*** [0.018]	0.157*** [0.020]	0.127*** [0.016]
Garment X Post	-0.006 [0.025]	-0.012 [0.024]	0.107** [0.042]	0.130*** [0.043]
Garment X Post X 2015			-0.185*** [0.038]	-0.179*** [0.040]
Garment X Female		0.068 [0.042]		0.067* [0.037]
Garment X Female X Post		0.021 [0.052]		-0.067 [0.067]
Garment X Female X Post X 2015				0.020 [0.057]
Observations	21,413	21,413	21,413	21,413
R-squared	0.216	0.228	0.220	0.188

Notes: Sample includes individuals in garments/textiles or light manufacturing (ISIC-3 codes 1000-1300, 1500-1600, and 3100-3200). Sampling weights included. Standard errors clustered at the primary sampling unit: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## *Preliminary conclusions*

- ▶ Effects vary considerably by gender
  - ▶ On average, wage gains
  - ▶ But women appear to be hurt by 2015
  - ▶ Males worked increased hours in the short run
- ▶ No clear evidence of increased non-wage benefits
- ▶ Next steps
  - ▶ Confirm estimates similar with synthetic control
  - ▶ Suggestive evidence on injury reports (only 2013 onwards)?
  - ▶ Just received 2016 LFS

# What are these control industries specifically?

ISCI 3 code	number of workers	pct of control group	ISCI 3 code	number of workers	pct of control group
1010	1	0.01	Manu. of veneer sheets, plywood, boards	1	0.01
1030	1	0.01	Manu. of builders' carpentry & joinery	2	0.02
Crude petroleum production	18	0.2	Manufacture of wooden containers	13	0.14
Extraction of natural gas	3	0.03	Basic chemicals, ex. fert. & nitro. com	3	0.03
Incidental to oil & gas ext. excluding	13	0.14	Manu. of other chemical products n.e.c	387	4.28
1156	1	0.01	3610	446	4.93
Prep. & pre. of meat & meat products	119	1.32	Wooden furniture and fixtures	1,073	11.86
Pro. & pre. of fish & fish products	132	1.46	Manu. of cane & bamboo furniture	99	1.09
Pro. & pre. of fruits & vegetables	12	0.13	Manufacture of chicks	17	0.19
Manu. inedible veg. oil, animal oil & f	72	0.8	3614	2	0.02
Edible veg. oil except hydro. veg. oil	46	0.51	Manu. of metal furniture & fixtures	96	1.06
Manufacturing of dairy products	328	3.63	Signs & advertising displays (non-electr	22	0.24
Grain milling except rice milling	277	3.06	3619	5	0.06
Manu. of starches & starch products	64	0.71	Wood, cane & bamboo handicrafts	448	4.95
Manufacture of prepared animal feeds	73	0.81	Paper and paper products handicrafts	11	0.12
Bone crushing	4	0.04	3623	1	0.01
Rice milling	637	7.04	China, ceramic & glass handicrafts	26	0.29
Grain Mill Products n.e.c	25	0.28	Metal decorative handicrafts	6	0.07
Bakery Products	236	2.61	Textile & sewing decorative handicrafts	258	2.85
Sugar	101	1.12	Bangles (except of precious metal)	4	0.04
Cocoa, chocolate, sugar confectionery	528	5.84	Brooms and brushes	1	0.01
Macaroni, noodles, couscous & related	62	0.69	Decorative handicrafts n.e.c	44	0.49
1545	3	0.03	3655	1	0.01
Processing of tea and coffee	31	0.34	Manu. of jewellery & related articles	411	4.54
Blending of tea and coffee	115	1.27	Manufacture of musical instruments	2	0.02