Impact of large-scale refugee influx on the host country's labor market: Evidence from Rohingya refugees in Bangladesh

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Background

Refugee and displaced people are ever increasing around the world, and so are the concerns and research.
Refugees and other people of the world in need of international protection

- Low- and middle-income countries host 71%
- Least Developed Countries provide asylum to 25%
- Neighboring countries host about 66%

In 2017, more than 700,000 Rohingya fled Myanmar to escape a violent military operation against them and poured into Bangladesh

- The refugee has been concentrated in the border district of Cox's Bazar
- The number of refugee is equivalent to 40% of the district's population of 2.8 million

Background

- The flow of refugees has implications for themselves, as well as for the local socio-economic factors
- While refugees draw high attention in research due to its humanitarian reasons
  - Host communities and economies used to be less addressed
  - Recently, literature on host is growing, particularly on Europe
- This research contributes to the literatue on **host economy and focuses on developing country**

Literature

Impact of refugees on the local labor market

- Card (1990), Foged and Peri (2016), Peri and Yasenov (2019), Akgündüz and Torun (2020), Verme and Schuettler (2021)

General equilibrium effect of immigrants/refugee influx

- Iftikhar and Zaharieva (2019), Monras (2020), Abramitzky et al. (2023)

The case of the Rohingya in Bangladesh: An unexpected massive shock to the labor market and other outcomes

- Labor market (Hussam et al., 2022), food prices (Alam et al., 2022), forest loss (Dampha et al., 2022), Night light, job formality, access to aid, food consumption (Urbina et al., 2024), attitude towards refugee (Higuchi et al., 2025)

We empirically investigate how the localized refugee inflow affects the entire labor market


India
Bangladesh
Myanmar
Cox's Bazar
Rakhine
State

This study

- This study examines the impacts of refugee influx on host country's labor market
  - Employment
  - Labor force participation (LFP)
  - Workplace accident (wpa)
  - Income
- Compares Cox's Bazar districts with other districts in Bangladesh
- Compares Cox's Bazar districts with other districts in Chittagong division

Result summary

Likelihood of employment declined in Cox's Bazar

- Mainly for female and substantially more for low skilled female; decline is strongest for 26-45 age group
- However, employment increased for low educated male

Labor force participation increased in Cox's Bazar

- LFP increased mainly for educated male and female, and for female, LFP is positive until age 35
- LFP increased for almost all education group

Monthly income increased in the Cox's Bazar

- Income significantly increased only for low skilled male

Data

Use four years' quarterly labor forces surveys (QLFS)

- QLFS: 2015-16, 2016-17, 2022, 2023
- 8 quarters before and 8 quarters after August 2017 influx

Table 1: Summary statistics of data

Year	Mean				Number of nonmissing values				Median
	Emp	LFP	Income	wpa	Emp	LFP	Income	wpa	Income
All									
2016	.476	.566	13081	.041	337,481	343,832	78,081	170,750	11000
2017	.482	.565	13452	.033	335,084	336,996	80,569	181,765	10000
2022	.443	.589	13209	.042	349,836	349,836	80,509	163,034	11000
2023	.452	.587	14019	.025	349,641	349,641	79,809	168,052	12000
Cox's Bazar									
2016	.472	.567	11155	.156	3,214	3,278	714	1,726	11000
2017	.514	.539	11606	.063	2,992	3,006	687	1,607	10000
2022	.425	.747	16246	.020	2,823	2,823	614	1,221	16300
2023	.391	.669	12693	.005	2,866	2,866	654	1,152	12600
Others									
2016	.475	.566	13098	.039	334,267	340,554	77,367	169,024	11000
2017	.481	.565	13468	.033	332,092	333,990	79,882	180,158	10000
2022	.443	.587	13186	.041	347,013	347,013	79,895	161,813	11000
2023	.452	.586	14030	.024	346,775	346,775	79,155	166,900	12000

Notes: (Emp) employment in the last week (0/1); (LFP) Labor force participation; (Income) last month's income from the main job in Taka; (WPA) occurrence of workplace accident in the last year (0/1).

Methods

We apply a difference-in-difference strategy to identify the causal impact of refugee on the local labor market. The general regression for the difference-in-difference is

$$Y_{ijt} = \alpha_0 + \alpha_1 Treat_j + \alpha_2 Post_t + \alpha_3 (Treat_j \times Post_t) + \mu_j + \lambda_t + X_{ijt} + \epsilon_{ijt}$$

- i represents the individual, j the district, and t the survey wave pre-period or post-period of influx.
- X_{ijt} is individual characteristics including age, sex, education
- μ_j district fixed effect absorbing all time-invariant factors of district j
- λ_t time fixed effect absorbing all shocks common to all individuals in period t)
- ϵ are clustered standard errors at the district level

We present event study plots for Chittagong division to observe the pre-period common trend

Regression results overall (age≥15)

- Likelihood of employment declined in Cox's Bazar (Table 2)
- Likelihood of LFP increased in Cox's Bazar (Table 3)
- Total employment increased (LFP 0.11↑, emp 0.08↓)
- Monthly income of employed people increased (Table 4)
- Likelihood of yearly workplace accident decreased (Table 5)

Regression: Employment

Table 2: Diff-in-Diff estimates of employment status (0/1)

VARIABLES	(1) emp	(2) emp	(3) emp	(4) emp	(5) emp	(6) emp	(7) emp
Cox's Bazar	0.01**	0.01	0.02**	0.03**			
	(0.01)	(0.01)	(0.01)	(0.01)			
Post	-0.03***	-0.03***	-0.03***	-0.04***	-0.03***		
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)		
Cox× Post	-0.05***	-0.05***	-0.07***	-0.07***	-0.08***	-0.08***	-0.15***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age			0.04***	0.04***	0.04***	0.04***	0.01***
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Agesq			-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Education				0.00*	-0.01***	-0.01***	-0.00***
				(0.00)	(0.00)	(0.00)	(0.00)
Sex(fem)					-0.57***	-0.57***	-0.28***
					(0.01)	(0.01)	(0.02)
LFP							0.65***
							(0.02)
Observations	1,372,042	1,372,016	1,372,016	1,371,919	1,371,919	1,371,919	1,371,919
Model	OLS	OLS	OLS	OLS	Fe District	Fe D&Q	Fe D&Q
SE cluster	None	District	District	District	District	District	District
Number of zlm					64		

Notes: Standard errors are in parentheses. (∗) indicates level of significance: one percent level *** (p<0.01), five percent level ** (p<0.05), and 10 percent level * (p<0.1).

Regression: Labor force participation

Table 3: Diff-in-Diff estimates of LFP status (0/1)

VARIABLES	(1) LFP	(2) LFP	(3) LFP	(4) LFP	(5) LFP	(6) LFP
Cox's Bazar	-0.01	-0.01	-0.02**		-0.02***	
	(0.01)	(0.01)	(0.01)		(0.01)	
Post	0.02**	0.02*	0.02**	0.02**		
	(0.01)	(0.01)	(0.01)	(0.01)		
Cox×Post	0.13***	0.12***	0.11***	0.11***	0.11***	0.11***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age		0.04***	0.04***	0.04***	0.04***	0.04***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Agesq		-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Sex(fem)			-0.46***	-0.46***	-0.46***	-0.46***
			(0.01)	(0.01)	(0.00)	(0.01)
Education			-0.01***	-0.01***	-0.01***	-0.01***
			(0.00)	(0.00)	(0.00)	(0.00)
Observations	1,380,279	1,377,379	1,377,282	1,377,282	1,377,282	1,377,282
Model	OLS	OLS	OLS	Fe District	Fe Quarter	Fe D&Q
SE cluster	District	District	District	District	none	District
Number of YQ					16	
Number of zlm				64		

Notes: Standard errors are in parentheses. (∗) indicates level of significance: one percent level *** (p<0.01), five percent level ** (p<0.05), and 10 percent level * (p<0.1).

Regression: Monthly income

Table 4: Diff-in-Diff estimates of monthly income (BDT)

VARIABLES	(1) Inc	(2) Inc	(3) Inc	(4) Inc	(5) Inc	(6) Inc
Cox's Bazar	-1,947.1***	-1,705.7***	310.7		317.9	
	(403.1)	(385.4)	(236.5)		(509.1)	
Post	286.8	93.9	-407.6	-425.0		
	(391.7)	(384.8)	(298.5)	(289.8)		
Post×Cox	2,731.2***	2,582.2***	4,091.8***	4,064.8***	4,073.4***	4,021.9***
	(391.7)	(375.5)	(306.5)	(284.2)	(737.0)	(281.0)
Age		689.7***	529.3***	535.8***	529.8***	536.1***
		(49.1)	(31.0)	(31.5)	(13.9)	(31.4)
Agesq		-7.6***	-4.8***	-4.8***	-4.8***	-4.8***
		(0.5)	(0.3)	(0.3)	(0.2)	(0.3)
Sex(fem)			-1,557.9***	-1,915.4***	-1,570.8***	-1,928.3***
			(201.7)	(310.5)	(84.6)	(311.2)
Education			984.1***	973.3***	983.3***	972.6***
			(59.6)	(56.0)	(6.3)	(56.0)
Observations	314,156	314,156	314,148	314,148	314,148	314,148
Model	OLS	OLS	OLS	Fe District	Fe Quarter	Fe D&Q
SE cluster	District	District	District	District	none	District
Number of YQ					16	
Number of zlm				64		

Notes: Standard errors are in parentheses. (∗) indicates level of significance: one percent level *** (p<0.01), five percent level ** (p<0.05), and 10 percent level * (p<0.1).

Regression: Workplace accident

Table 5: Diff-in-Diff estimates of occurrence of accident last year (0/1)

VARIABLES	(1) wpa	(2) wpa	(3) wpa	(4) wpa	(5) wpa	(6) wpa
Cox's Bazar	0.07***	0.08***	0.07***		0.07***	
	(0.00)	(0.00)	(0.00)		(0.00)	
Post	-0.00	-0.00	-0.00	-0.00		
	(0.01)	(0.01)	(0.01)	(0.01)		
Post× Cox	-0.09***	-0.09***	-0.10***	-0.10***	-0.10***	-0.10***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)
Age		0.00***	0.00***	0.00***	0.00***	0.00***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Agesq		-0.00***	-0.00***	-0.00***	-0.00***	-0.00***
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Sex(fem)			-0.03***	-0.03***	-0.03***	-0.03***
			(0.00)	(0.00)	(0.00)	(0.00)
Education			-0.00***	-0.00***	-0.00***	-0.00***
			(0.00)	(0.00)	(0.00)	(0.00)
Observations	683,591	683,591	683,567	683,567	683,567	683,567
Model	OLS	OLS	OLS	Fe District	Fe Quarter	Fe D&Q
SE cluster	District	District	District	District	none	District
Number of YQ					16	
Number of zlm				64		

Notes: Standard errors are in parentheses. (∗) indicates level of significance: one percent level *** (p<0.01), five percent level ** (p<0.05), and 10 percent level * (p<0.1).

Heterogeneity by skills and sex (age≥25)

Students in school maybe truncated out of sample for the labor market variables, so we here consider individuals aged ≥ 25

- Decline in employment is lower for male, more so in high educated male
- Decline in employment is higher in female, more so in low or no education group
- Labor force participation increased mainly for educated male and female
- Income increased for low educated, mainly male and slightly female
- Workplace accident declined for all, largely low educated male

Regression: male, age $\geq$ 25

Table 6: Diff-in-Diff estimates by education (male, age$\geq$25)

	High skill (edu$\geq$10)				Low skill (edu$<$10)			
VARIABLES	empH	LFH	incH	wpaH	empL	LFL	incL	wpaL
Post$\times$ Cox	-0.02***	0.06***	-1,119	-0.07***	-0.04***	-0.00	3,271***	-0.15***
	(0.01)	(0.00)	(813)	(0.01)	(0.01)	(0.00)	(274)	(0.01)
Age	0.05***	0.04***	1,423***	0.00**	0.02***	0.03***	225***	0.00**
	(0.00)	(0.00)	(108)	(0.00)	(0.00)	(0.00)	(20.32)	(0.00)
Agesq	-0.00***	-0.00***	-13***	-0.00**	-0.00***	-0.00***	-3***	-0.00***
	(0.00)	(0.00)	(0.85)	(0.00)	(0.00)	(0.00)	(0.21)	(0.00)
Edu	-0.01***	-0.00***	2,036***	-0.00***	0.00***	0.00**	310***	-0.00***
	(0.00)	(0.00)	(232)	(0.00)	(0.00)	(0.00)	(14.69)	(0.00)
Observations	136,244	136,382	61,479	115,687	358,160	358,697	132,875	310,315
Model	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q
SE cluster	District	District	District	District	District	District	District	District

Notes: Standard errors are in parentheses. (*) indicates level of significance: one percent level *** (p$<$0.01), five percent level ** (p$<$0.05), and 10 percent level * (p$<$0.1).

Regression: female, age $\geq$ 25

Table 7: Diff-in-Diff estimates by education (female, age$\geq$25)

	High skill (edu$\geq$10)				Low skill (edu$<$10)			
VARIABLES	empH	LFH	incH	wpaH	empL	LFL	incL	wpaL
Post$\times$Cox	-0.08***	0.07***	-20,111***	-0.04***	-0.20***	0.02	938*	-0.01*
	(0.01)	(0.01)	(708)	(0.00)	(0.02)	(0.02)	(535)	(0.00)
Age	0.03***	-0.01***	827***	0.00	0.00	-0.01***	120***	0.00
	(0.00)	(0.00)	(146)	(0.00)	(0.00)	(0.00)	(38)	(0.00)
Agesq	-0.00***	0.00***	-5.38***	-0.00	-0.00***	0.00**	-1.25***	-0.00
	(0.00)	(0.00)	(1.71)	(0.00)	(0.00)	(0.00)	(0.38)	(0.00)
Edu	0.04***	0.03***	1,509***	-0.00*	-0.01***	-0.01***	358***	-0.00**
	(0.00)	(0.00)	(125)	(0.00)	(0.00)	(0.00)	(26)	(0.00)
Observations	89,785	89,941	13,676	22,564	402,201	403,701	33,956	108,705
Model	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q
SE cluster	District	District	District	District	District	District	District	District

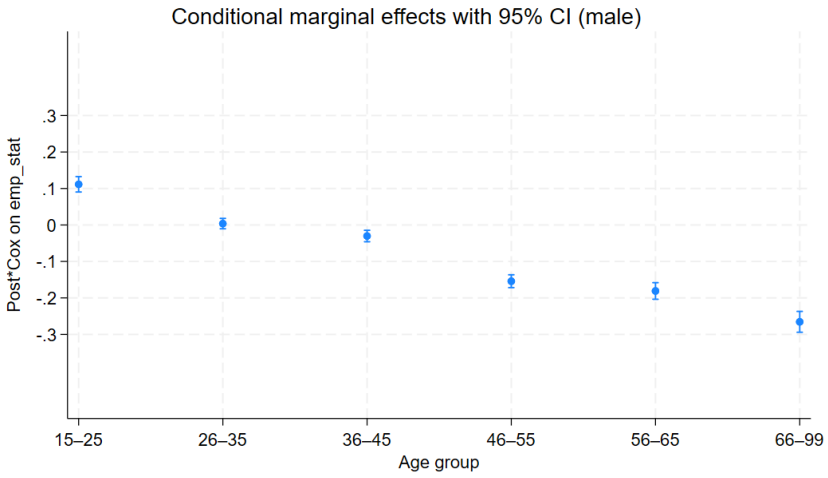
Notes: Standard errors are in parentheses. (*) indicates level of significance: one percent level *** (p$<$0.01), five percent level ** (p$<$0.05), and 10 percent level * (p$<$0.1).

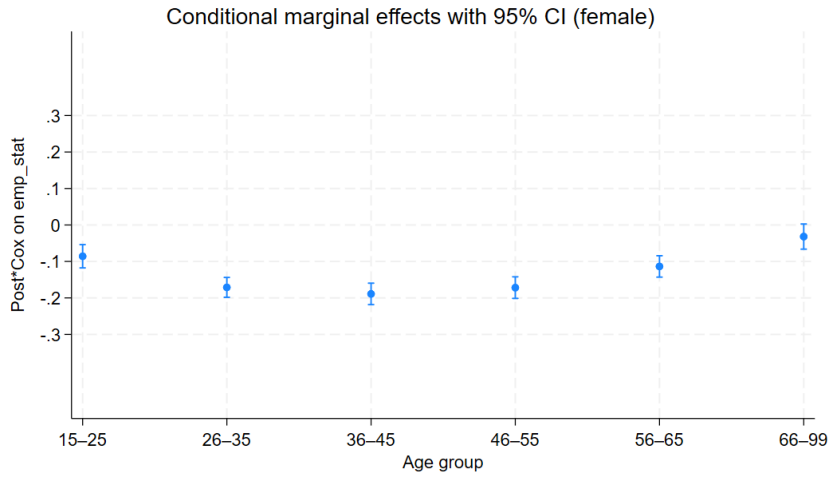
Heterogeneity by age

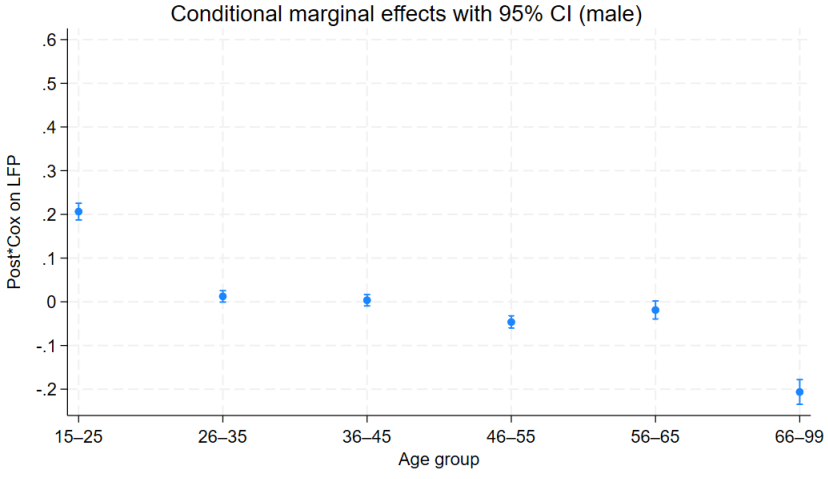
Decomposing by age group

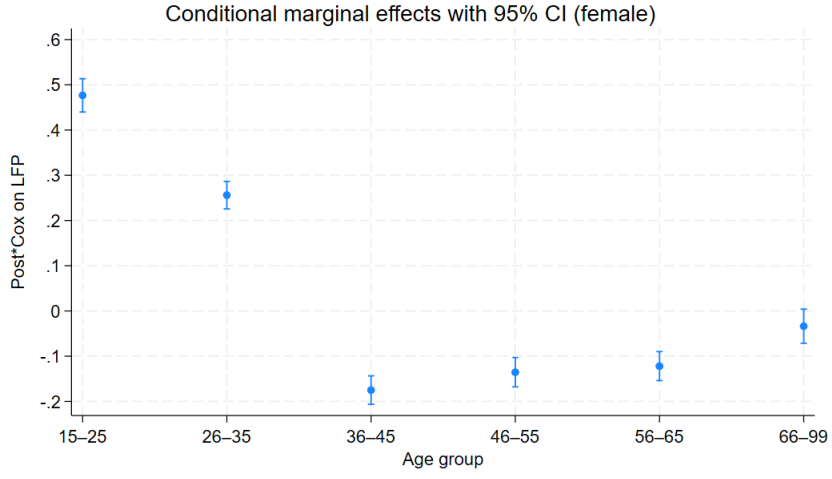
- Male employment increased for age 15-25, and decreased for all other groups, more for higher ages
- Female employment all negative
- Male LFP increased for age group 15-25
- Female LFP increased for age groups 15-35 and beyond negative
- Excluding one exception, income is lower for higher age groups, both for male and female
- Workplace accident is similar for all age groups, but comparatively better for female

Emp and LFP by age group for male and female

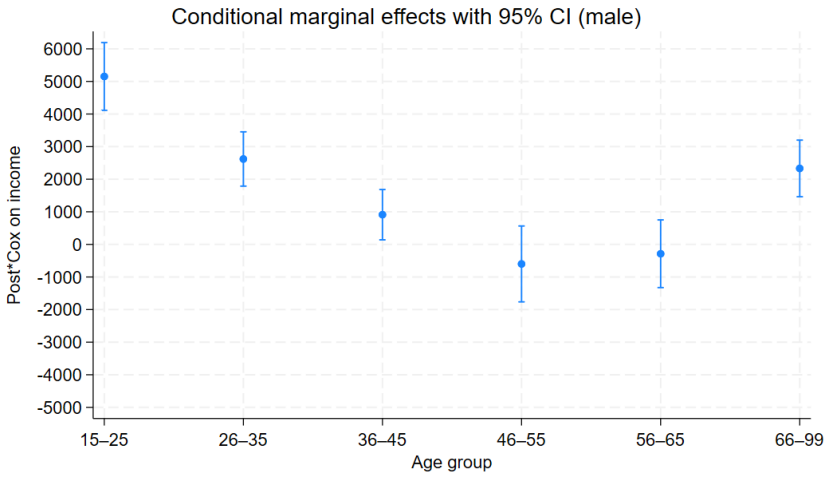


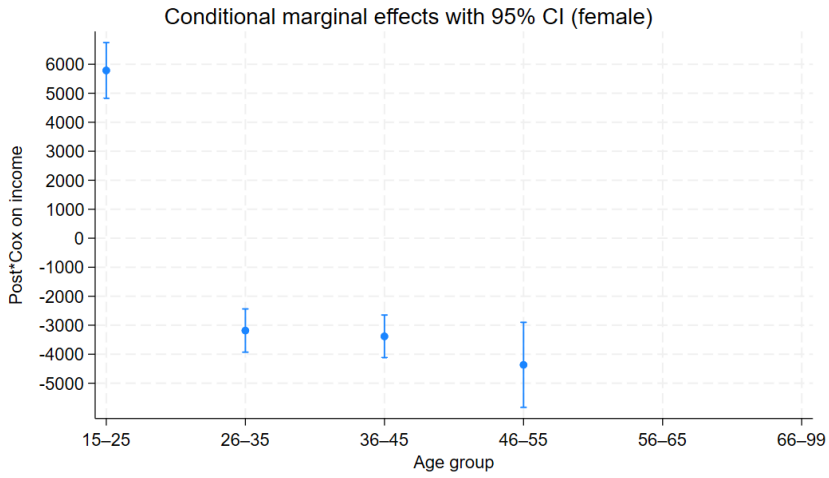


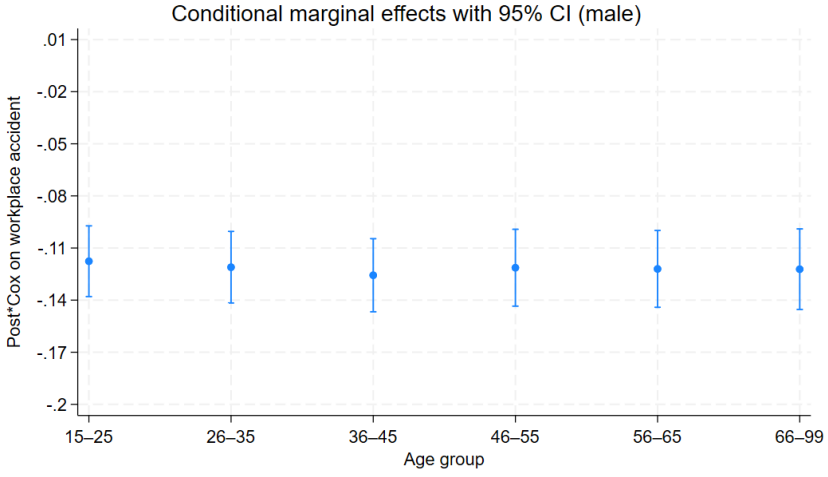


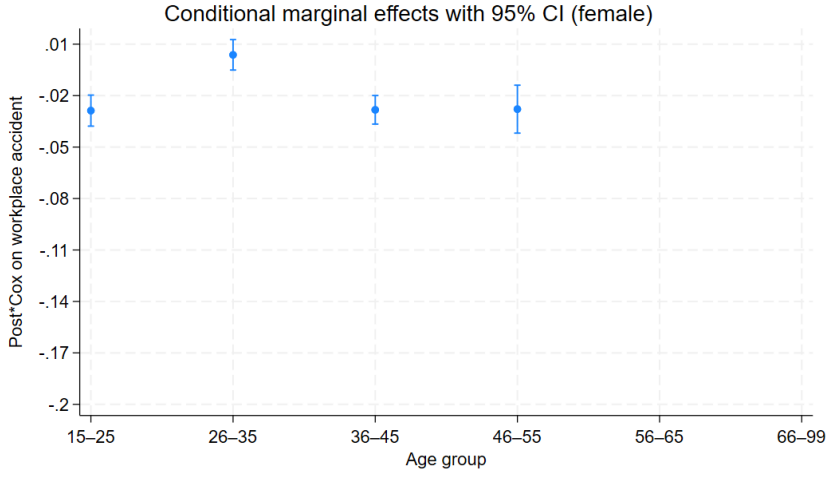


Income and wpa by age group for male and female







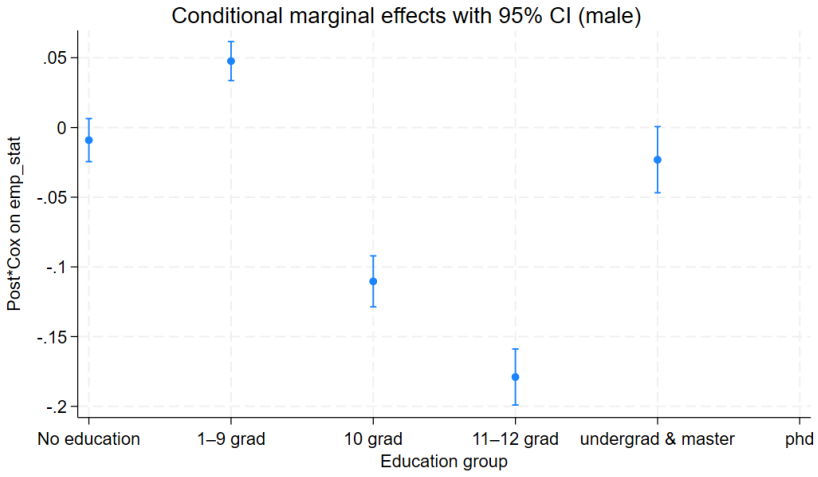


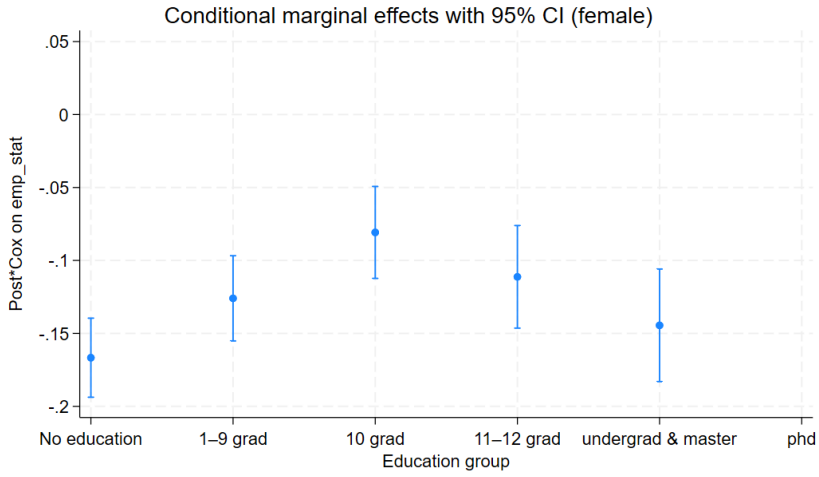
Heterogeneity by education

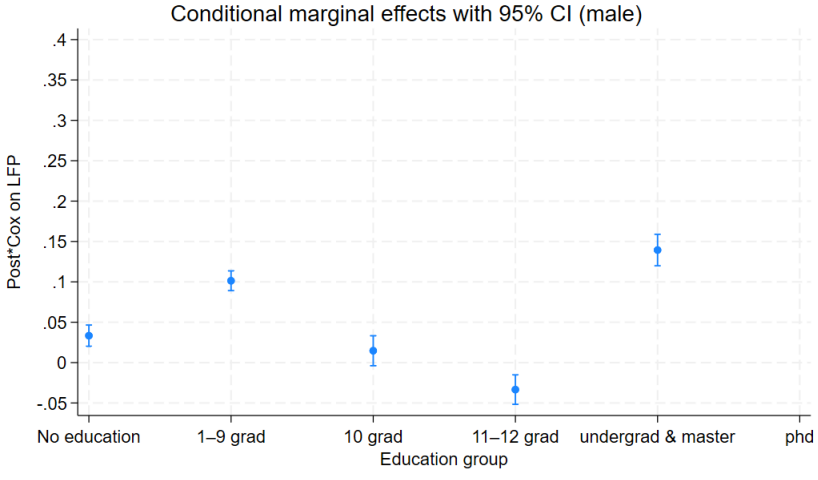
Decomposing by education group

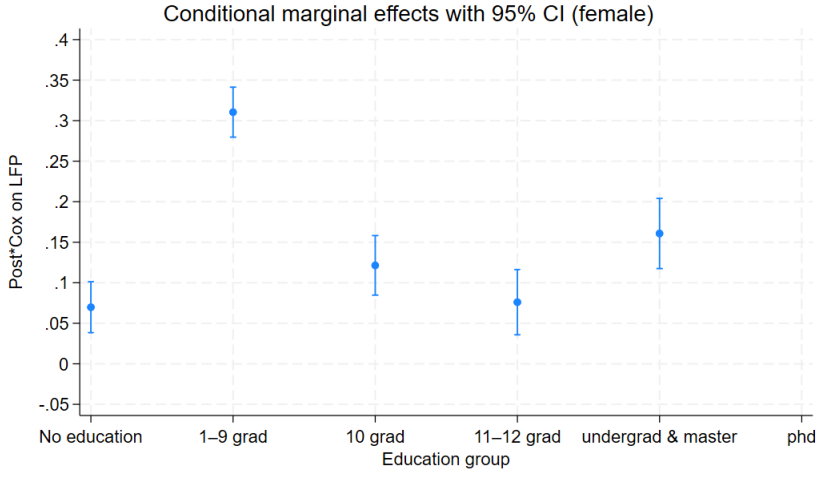
- Change in employment for male is positive only education 1-9 grade, for female all negative
- Change in LFP is positive for all education group for both male and female except male education group 11-12 grade
- Income is lower for higher education groups
- Workplace accident does not vary much by education group, similarly declined for male and similar positive for female

Emp and LFS by education group for male and female

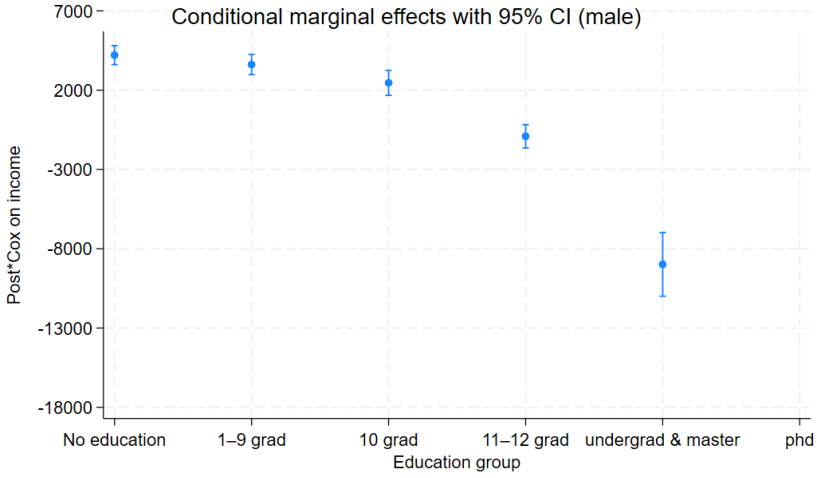


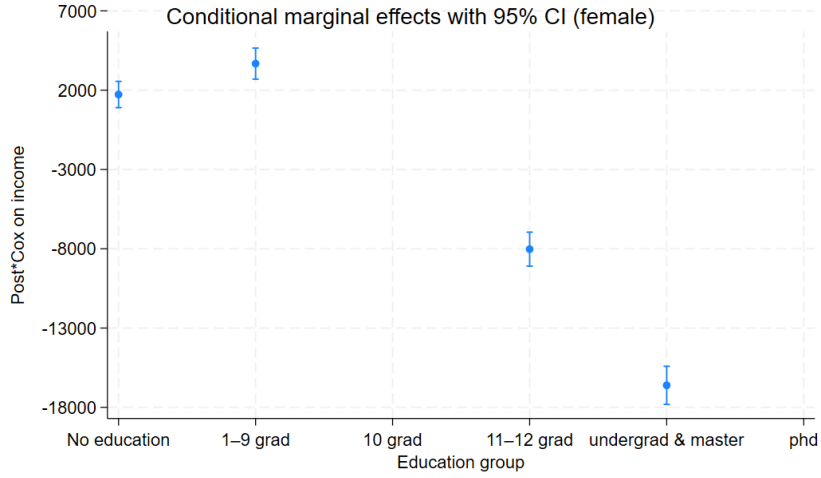


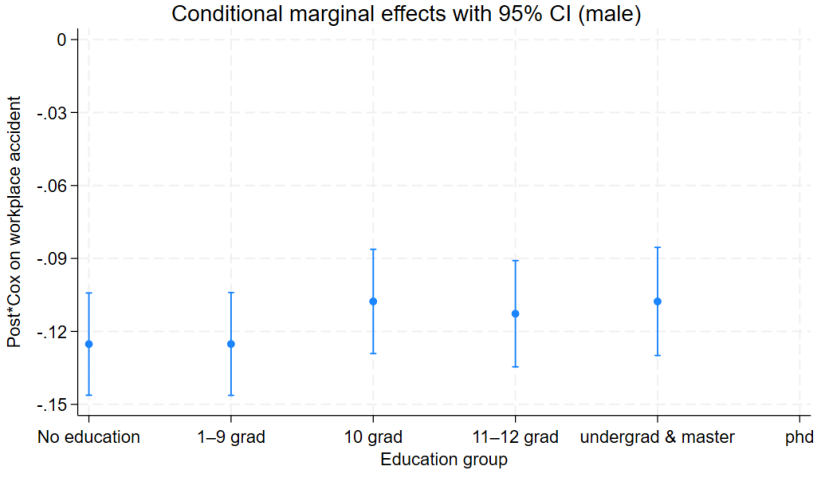


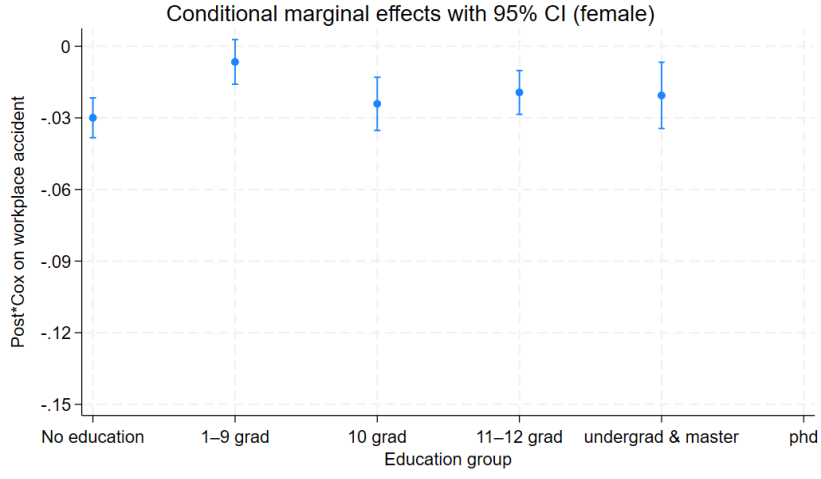


Income and wpa by edu group for male and female









Regression: Chittagong division

Table 8: Diff-in-Diff estimates in Chittagong division

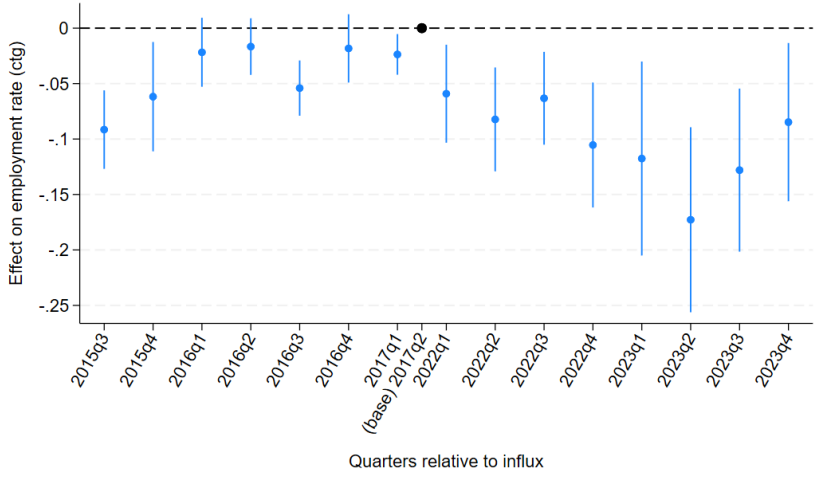
VARIABLES	Emp	LFP	Inc	wpa
Post×Cox	-0.07**	0.12***	4,015.70***	-0.10***
	(0.02)	(0.02)	(1,256.26)	(0.02)
Age	0.04***	0.04***	496.66***	0.00**
	(0.00)	(0.00)	(65.23)	(0.00)
Agesq	-0.00***	-0.00***	-4.35***	-0.00***
	(0.00)	(0.00)	(0.77)	(0.00)
Edu	-0.01***	-0.01***	925.92***	-0.00***
	(0.00)	(0.00)	(36.75)	(0.00)
Sex(fem)	-0.57***	-0.42***	-2,109.54**	-0.03**
	(0.02)	(0.03)	(767.52)	(0.01)
Observations	237,150	238,128	49,127	108,739
Model	Fe D&Q	Fe D&Q	Fe D&Q	Fe D&Q
SE cluster	District	District	District	District

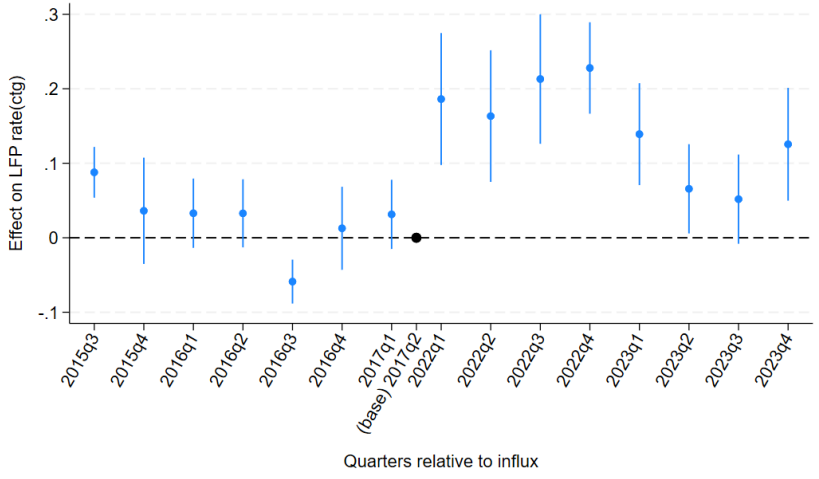
Notes: Standard errors are in parentheses. Asterisk indicates level of significance: one percent level *** (p<0.01), five percent level ** (p<0.05), and 10 percent level * (p<0.1).

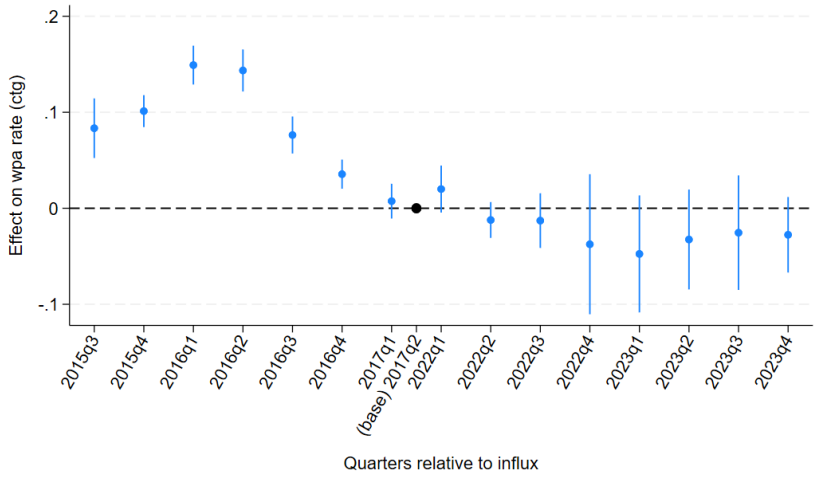
Regression: Chittagong division

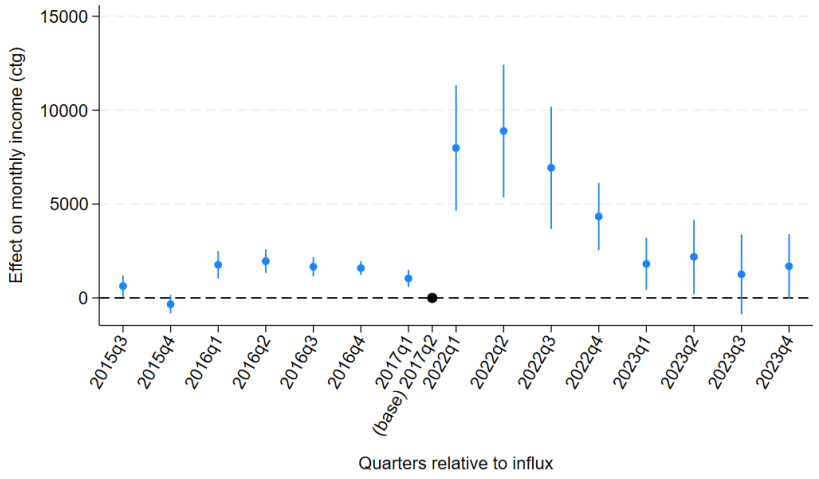
- Zoom into Chittagong division to narrow down control districts
  - Overall direction of the result remains unchanged
  - Magnitudes differ slightly

Event study: Chittagong









Notes:

Event study: validity of the diff-in-diff design

Apart from various heterogeneity checks above, we present event study plot to observe the common trend

- Although variables do not show strict common trend, they provide good sense of pretrend
  - Employment status variable slightly diverge from zero for a few points
  - LFP shows common trend except two points
  - Income is not statistically zero but economically very close to zero
  - Workplace accident is far away from common trend
- We trust wpa estimates the least
- Other estimates appear to be reasonable. However, we are still thinking what other robustness checks can be applied.

Summary and interpretation

Likelihood of employment declined in Cox's Bazar

- Mainly for female and substantially more for low skilled female; decline is strongest for 26-45 age group. However, employment increased for low educated male.
  - Increasing opportunities for low skilled work such as driving
  - When there is a disruption in the market, women give up work

Labor force participation increased in Cox's Bazar

- LFP increased for almost all education group, and for female, LFP is positive until age 35

Monthly income increased in the Cox's Bazar

- Income significantly increased only for low skilled male

Summary and interpretation

- Presence of international organizations and awareness may have contributed to the increasing LFP and declining accident
  - however, given the pre-period trend, causal relation is not much convincing
- Market mechanism acted might be: $\Uparrow$Commodity market (e.g. good price$\uparrow$)$\Rightarrow\Uparrow$Labor demand$\Rightarrow\Uparrow$Wage$\Rightarrow\Uparrow$Labor supply
- It is worth investigating any sectoral response and composition, e.g., service$\Uparrow$

Conclusion

- Refugee influx has an impact in the labor market equilibrium
- Further investigation is required to understand the mechanisms

Shortcomings

- Common trends do not hold strictly
- Cannot evaluate immediate impact after the shock due to the lack of data

Thank you!

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