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Abstract

By the end of the Second Intifada, which took place during the 2000-2004 period, the Palestinian government disproportionately expanded security personnel, overwhelmingly hiring males. This expansion has come at the expense of employing young educated females in the public education. In this paper, I utilize the employment decline in public education as a quasi-natural experiment to examine the causal effect of changes in labor demand on the labor force participation of the latter cohort The findings show that the employment contraction of public education decreases the probability of their labor force participation.

Keywords: Public Employment, Labor Demand, Female Labor Force Participation. **JEL Classifications: J**4

1. Introduction

Existing literature documents cross country differences in female labor force participation rate (LFPR) (see Verick 2014). A large strand of research has been devoted to explain this phenomenon and relate it to economic development (Polachek 2006; Verick 2014; Kluve and Schmitz 2014). Economists often look at the supply side effect, mainly highlighting the role of societal and cultural barriers (see Olsen *et al* 2006 and Neff *et al* 2012); lack of crèches and institutional child support for female workers (see Bick 2010); spouse's level of income; expected market wage; and fertility (See klasen and Pieters 2012).

At the demand side, researchers often address the impact of sectoral changes (Verdugo and Allegre (2017), demand shocks from natural resources (Maurer and Potlogea (2017), and trade integration (see Gaddis and Pieters 2017). In this research, I revisit the linkages between labor demand and female LFP, emphasizing the impact of public employment. Notably, public sector is considered a main employing sector for educated females both in developed and developing countries (see Anghel et al 2011; ILO 2007). This indicates that labor demand shocks in the public sector may have sizable effect on females' labor market outcomes.

Surprisingly, few papers links public employment to female labor force participation (LFP) (see Rosen 1996; Gornick and Jacobs 1998; Anghel et al 2011; Assaad et al 2018). To date, little research, if any, attempts test if such a linkage is causal, possibly constrained with estimation challenges, i.e., simultaneity concerns. This paper fills this gap. Toward the end of the Second Intifada, which took place during the 2000-2004 period, the Palestinian government expanded employment of security personnel, possibly to restore stability and off-set negative labor market effects of restricting access to the Israeli labor market (Cali et al 2014). The expansion of security employment has come at the expense of other public sub-sectors, mainly education. Figure (1)¹ shows that the share of public workers employed in education has decreased by the end of 2004 at the time when the corresponding share of security personnel has expanded.

Public education is considered the main employer for educated females in the West Bank. Females prefer work in the public education sector due to shorter working hours, long paid vacations, and generous maternity leave; factors that are more prone to societal and family values (see Assaad et al 2018). In 2004, right before expanding the employment of security personnel, public education generated employment for 39% of all educated females. Therefore, it is expected that the negative demand shock in public education would decrease job opportunity for this cohort (see more discussion in section 2) and potentially drive some of them out of labor market. This paper utilizes the employment decline in public education as quasi-natural experiment to examine the extent to which the decrease in labor demand causally affects LFP for educated females. The underlying theoretical reasoning is borrowed from the theory of discouraged worker effect (Becker 1965; Mincer 1966; Dernburg 1966). It states that labor supply is higher (lower) when labor market is tight (slack). With poor labor market conditions

¹ All figures are presented in the appendix.

(e.g. recession) workers give up on searching for jobs and become discouraged as the utility associated with the search is lower than the utility of remaining out of the labor force (see Cahuc and Zylberberg, 2004; Benati 2001; Ehrenberg and Smith 1988; Dagsvik 2013).

To establish causal linkages between demand shock and LFP for educated females, I employ difference in difference (Diff-in-Diff) estimation technique. The identification assumption is that educated females in localities that heavily relied on public-education employment before the shock will disproportionately experience lower LFP. The validity of this identification is majorly based on two conditions; employment opportunity in public education should diminish for educated females and that all localities share same LFP trend prior to the shock. We provide evidence that both conditions are valid.

I draw up on labor force data collected and published by the Palestinian census Bureau of Statistics (PCBS). The time span of the analysis extends from 1999 until 2012 and is limited to the West Bank. In 2007, Hamas militarily controlled Gaza, forming a separate government and leading to a different public employment scheme. Since then, Israel has imposed blockade and waged three consecutive wars against the people of Gaza, causing a deep recession and diverging the economy away from the West Bank (see World Bank 2007, 2010). These shocks might be hard to empirically control for.

The findings of this paper show that the decrease in demand for public education causally decreased probability of joining labor market for educated females. The findings also show that the effect is limited to young educated. This conclusion is robust to a number of placebo tests, showing that the documented effect is not confounded by other factors or underestimated by commuting effect

The remaining of the paper is organized as follows; section 2 presents main descriptive statistics and tracks labor market outcomes for educated females with emphasize on employment decreases in public education. Section 3 discusses Diff-in-Diff methodology and model specifications. Section 4 and 5 presents main results and robustness check. The paper concludes in section 6.

2. Demand Shocks and Labor Market Outcomes for Educated females

In this section, I aim at exploring the main aspects that identify changes in labor market conditions for educated females during the study period. In doing so, I utilize data from PCBS's labor force survey (LFS) that is nationally representative and collected quarterly covering over 7000 households in WBG. The LFS includes rich socioeconomic and employment information of household members, such as age; sex; education attainment; place of residence; place of work; employment status; type of employment; wages, among other factors.

To better emphasize labor market outcomes for educated females, I shed light on LFPR for all cohorts based on sex, age, and level of education. The data exhibits poor labor market performance for females. Over the study period, their LFPR averaged about 22% relative to 87%

for males. Still, differentiating individuals by level of education unfold an interesting pattern for educated females. Their average LFPR amounted to 69.5% as oppose to 14% for the low educated. This, however, contrasts with male case in which education is less relevant; LFPR for the low educated males is 86.5% as oppose to 91% for the educated males.

In the end of 2000, the Second Intifada broke out and economic conditions substantially deteriorated. As violence level intensified, Israel severely restricted internal and external mobility across the West Bank areas and banned access to its labor market for a large section of Palestinian commuters (Cali and Miaari 2018; Fallah 2017; Mansour 2010). During the first two year of the Second Intifada, share of commuters declined from 25% in 1999 to 12%. As a result, unemployment rate rose to unprecedented level of 28%.

By the end of 2004, the intensity of the Second Intifada sizably diminished. Israel gradually lifted closure on the West Bank and eased access to its labor market. Directly, labor market conditions improved, unemployment rate declined, though never reached the initial level, and LFPR started to recover. Still, differentiating individuals based on sex, age, and level of education, the analysis show that improvement in labor market conditions did not benefit young educated females. Mainly between 2003 and 2007, LFPR declined from 85% to 71% and unemployment rate doubled to 41% (See Figure 2 and3 for LFPR as well as Figure 4 and 5 for unemployment rate). Throughout the remaining of this paper, we identify young cohort as those with an age boundary of 19-29 years old versus 30-64 years old for the older cohort.

By the end of the Second Intifada, the Palestinian government disproportionately expanded employment of security personnel, overwhelmingly hiring males, possibly to quell tension in the occupied Palestinian territories and curb rising unemployment rate (Cali et al 2014). Between 2003 and 2008, the employment share of this sub-sector rose from 20% to 28%.² This expansion has come at the expense of employment in other public sub-sectors, namely public education, which was affected the most. i.e., jobs allocated to public education have declined. Figure (1) shows that employment share of public education dropped from 40% in 2003 to about 33% in 2005. Though it rose slightly in the following years, but never reached near the initial share. Markedly, public education is a main employer of educated females. In 2004, right before expanding the employment of security personnel, public education sector generated employment for 39% of all educated females, making up 65% of all educated females employed in the public sector.

To this end, the contraction of education employment in the public sector represents a negative demand shock for educated females. To formally show this, I measured locality share of educated females in public employment relative to overall public employment (henceforth referred to as share of educated females in public education). This measure is regressed against year dummies, locality dummies, as well as year-district fixed effect, and place of residence

²² Trend changes in security personnel are not reported after 2008 as data on type of employment is not sufficiently disaggregated for those years.

(urban, rural, and refugee camp)-year fixed effects. The results, reported in Table (1),³ show that the share of educated females employed in public education decreased right after the expansion of security personnel and lasted until 2010. Thus, the demand decreases in public education is expected to limit job opportunity for educated females and hence drive some of them out of the labor market. The empirical analysis of this paper is devoted to test this hypothesis.

The period of analysis spans between 1999 and 2012; covering an extended period that allows test the validity of the Diff-in-Diff method. The geographical unit of analysis is localities and time unit of analysis is year. We utilize data from unbalanced panel of 83 localities, including a sample of 22,467 educated females.

2.1. Empirical Model

I utilize a Diff-in-Diff method to estimate the effect employment decline in public education on the LFP of educated females in the West Bank. The Diff-in-Diff model is estimated using the following linear probability model:

$$Lf_{ilt} = \alpha + \delta(Sh1999_l) * period + T_t + \eta_l + \lambda_{dt} + controls_{ilt} + e_{ilt}....(1)$$

The dependent variable is dichotomous taking a value of one for an educated female "*i*" whose age is between 19-64 years old, lives in locality l, and observed in year t. The value of the dependent variable takes zero if educated females are reported out of labor force. The treatment variable "*Sh*1999₁" is continuous, measured as an interaction between a *period* dummy with a base line (1999) share of the educated female employed in public education, which is measured relative to all public employees in a given locality. The *period* dummy reflects the time of the shock, taking 1 for the years following 2004 and zero for earlier years.

The identification assumption of the treatment estimate is that LFP will be lower for educated females in localities that heavily rely on public education as a main source of employment prior to the shock. Therefore, the treatment estimate " δ " measures the effect of increases in the share of public education in 1999 on probability of LFP for educated females post the shock. A main validity assumption of estimating the treatment effect is that the share of public education varies across localities. Descriptive analysis shows that it indeed varies ranging from 9.8%, for the 10th percentile to 23% and 34% for the 50th and 75th percentiles, respectively.

The vector η_l includes locality fixed effects and vector T_t includes year dummies. The control variables include individual characteristics, specified as dummy variables, covering age, marital status, refugee status, and education degree. The model also includes locality level variables. In particular, I interacted the *period* dummy with two base line locality characteristics. The first is the share of educated females employed in the private service sector. This is to ensure that the treatment variable is not capturing demand shocks from other sectors that generate employment for educated females (see Fallah et al 2018). The second is the share of educated females, which

³ All tables are presented in the appendix.

is included to capture effects of locality differences in human capital. Finally, the model controls for district-year fixed effect, λ_d to account for time varying unobserved factors that changes overtime and across districts but are common to localities in these geographies. In the same fashion, the model controls for place of residence-year fixed effects (π_{rt}). Place of residence is classified into urban, rural, and refugee camps. The model is estimated assuming that error terms are e_{ilt} are clustered at the locality level. Descriptive statistics of the explanatory variables are presented in Table (2).

3. Results

Model (1) will be firstly estimated using the entire sample including all educated females (overall sample model). To distinguish the differential effect of the new labor market entrants, the model will then be separately estimated for the young and older educated females.⁴ It is expected that young educated females (new labor market entrants) will be disproportionately affected. In 2002, prior to the shock, unemployment rate for this cohort amounted to 27% as opposed to 7% for the older cohort. Therefore, with the decline in employment demand for public education, job opportunity of the young educated females is expected to be disproportionately limited, leading to a greater tendency to leave the labor market. Furthermore, I will provide two stage estimates. In the first stage, I will limit the period of analysis until 2010. In the second, I expand it to cover the entire period (1999-2012).⁵ This allows examining the extent of demand effect as the negative shock diminishes. The second stage estimates will be discussed in the robustness check section.

The first stage estimates of the overall sample model are reported in Table (3). The estimates of a parsimonious version of model (1) are presented in Column (1) in which all variables are included, except for individual controls as well as initial locality characteristics. Column (2) reports the full model (the preferred model) including all variables as specified in model (1). The results show that the treatment estimate of the parsimonious model is negative and statistically significant at 1% level. When including all control variables, the treatment estimate remains negative and significant. Though the magnitude of the estimate drops from -0.33 to -0.25. The estimate of the latter indicates that increasing the share of educated females in public education by 10% in 1999 decreases probability of joining the labor force by 2.5 percentage points.

Now, I turn to test whether the decrease in public employment for educated females have differential effect across age cohorts. To save space, the analysis is limited to estimating the full model. The results, reported in Table (4), show that the sign of the treatment coefficient is

⁴ Prior to the employment decline in public education, in 2004, the share of educated males employed in the public education sector made up only 14% of the total employment for this cohort. Therefore, it is less likely that the negative demand shock in public education would affect LFP for this cohort. Consistently, I estimated a similar regression to model (1) in which the treatment variable measures locality's share of educated males employed in public education relative to the total public employment. The results, unreported, show no statistically significant effect on LFP for this cohort. The same conclusion holds true even when measuring treatment variable as specified in model (1).

⁵ The empirical analysis is limited to 2012, as data are not readily available at the locality level for later years.

negative but only significant for the young cohort. The underlying estimate of the latter indicates that increasing the share of educated females in public employment by 10% in 1999, probability of labor force participation decreases by 4.4 percentage points. With this, the findings provide evidence that the decrease in employment demand for public education has negative effect on LFP for educated females in which the effect is limited to the young cohort.

Still, a main validity assumption of utilizing the Diff-in-Diff model is that both control and treated group have same LFP trend prior to the shock. To test this hypothesis, I estimate a generalized version of model (1), allowing treatment effect to vary by years. The results, exhibited in Table (4), separately report the estimates for the full sample, young educated females, and older educated females. Consistent with parallel trend assumption, the treatment estimate for the three models is insignificant for all years prior to the shock. Markedly for the young educated cohort, the negative effect on LFP persists across all years during the treatment period. As for the older educated females, the treatment estimates are statistically insignificant across the board.

4. Robustness Check

In this section I explore a number of concerns that may threaten the validity of the reported estimates. These concerns include commuting and confounding factor effects. As for the former, the employment decrease in public education may induce educated females in highly affected localities to seek employment in other localities. This is expected to bias the treatment estimate downward. To explore this venue, one would ideally use data that identify localities where individuals would search for employment. Unfortunately, this kind of data is not available.

Alternatively, I utilize place of work data to examine if educated females tend to change place of work as an outcome of the shock.⁶ I estimate a generalized Diff-in-Diff model of model (1), with few modifications. The model controls for workers' type of economic activities and the dependent variable is now measured as a dummy variable that takes a value of one if an educated female works in same locality of residence and zero otherwise. Due to data constraints, I limit the analysis to 2001-2012 period. Consistent with above analysis, I estimate separate regressions for the young and older educated females. The estimates, reported in Table (5), show that probability to change place of work across localities does not change as a result of the shock for both cohorts. The treatment estimate is statistically insignificant for all the years following the shock. The results also support the parallel trend assumption. This indicates that commuting effect plays no role in shaping the estimates.

As for the confounding factor concern, it is possible that the negative effect on LFP is correlated with other locality characteristics that are not accounted for in the model. One aspect of this concern is that labor market conditions deteriorated in localities that were highly exposed to public education shock. In such a scenario, LFP would also decrease for other cohorts that are

⁶ Prior to the decline in the employment share of public education, 41% of employed educated females work in the same locality of residence.

less affected by the shock. In such a case the linkages between decrease in public employment and decline in LFP is spurious.

To test for this hypothesis, I run a couple of Placebo test in which model (1) will be separately estimated for low educated cohorts; including young-female cohort; older-female cohort; young-male cohort; older-male cohort. Descriptive statistics show that for each of these cohorts, less than 1% is employed in public education, relative to own overall employment. Since public education generates few jobs for all these cohorts, it is less likely that negative demand shocks in public education would affect their LFP. Put differently, for the documented effect of public education to be valid, low educated cohorts should not be affected, all else equal.

The results are reported in Table (6). Columns (1) and (3) report the results of the young and older low educated females. The treatment estimate is negative but statistically insignificant for both models. Columns (2) and (4) report the underlying estimates of a generalized form of model (1), showing that the parallel trend assumption holds for both cohort models. The corresponding treatment estimates of the low educated male cohorts are presented in Columns (4) and (7). The estimates are positive but statistically insignificant. Nevertheless, the estimates reported in Columns (5) and (8) show that the parallel trend assumption is violated for both male models. While the latter finding may cast doubt on the validity of using Diff-in-Diff technique, the overall conclusion of the placebo tests suggest that the reported findings of the young educated females do not pick other confounding effects.

As a last robustness check, I extend the study period until 2012. As indicated above, the decline in the employment share of public education for young educated females have lasted until the end of 2010 and then bounced back in 2011 and 2012 to same level to the baseline period (1999). A diminished LFP effect of public education in the extended period would further testify that the reported estimate of the young educated females causally reflects the treatment effect. To pursue this venue, I re-estimate a generalized version of model (1) for young and older educated females using data from the entire period (1999-2012). Consistent with above argument, the treatment estimate for the young educated females, reported in Column (1) of Table (7), becomes statistically insignificant in 2011 and 2012. Also, the corresponding estimates for the older educated females do not change; remain statistically insignificant (see Column 2 of the same table).

5. Conclusion

Upon the end of the Second Intifada, the Palestinian government expanded employment of security personnel at the expense of other public employment, namely education, which is a main employer for educated females. I utilize this shock as a quasi-natural experiment to examine the effect of labor demand shock on LFP of educated females. Using Diff-in-Diff estimation technique, the findings show that decreases in public education causally reduce the probability of joining the labor market. The findings show that the effect is limited to young educated females. The main policy implication of this paper is that austerity measures may have repercussions on

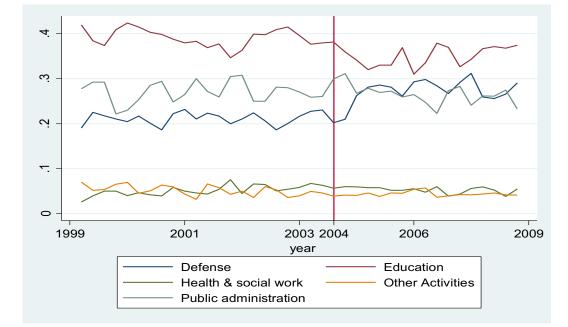
LFP for educated females in countries that disproportionately rely on public sector to employ this cohort.

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Appendix





Notes: This figure plots overtime changes in share of workers across public subsectors. Source of data is PCBS's Labor Force Survey, 1999-2008.

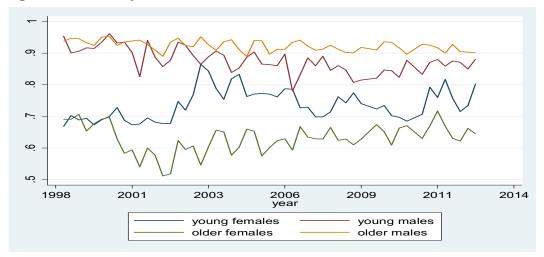


Figure 2. Quarterly LFPR for Educated Cohorts 1999-2012

Notes: This figure plots overtime changes in LFPR by age and gender for educated individuals. Source of data is PCBS's Labor Force Survey, 1999-2012. Young cohort includes individuals with age boundary of 19 and 29, while older cohort includes individuals with age boundary of 30 and 54. Educated cohorts are defined as those with tertiary education.

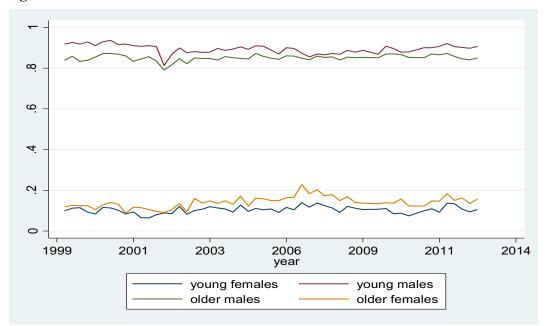


Figure 3. LFPR for Low Educated Cohorts 1999-2008

Notes: This figure plots overtime changes in LFPR by age and gender for low educated individuals. Source of data is PCBS's Labor Force Survey, 1999-2012. Young cohort includes individuals with age boundary of 19 and 29, while older cohort includes individuals with age boundary of 30 and 64. Educated cohorts are defined as those with no tertiary education.

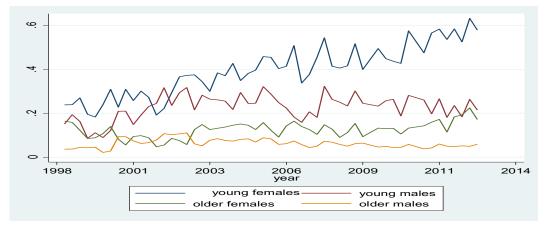


Figure 4. Unemployment Rate for Educated Cohorts 1999-2012

Notes: This figure plots overtime changes in unemployment rate by age and gender for educated individuals. Source of data is PCBS's Labor Force Survey, 1999-2012. Young cohort includes individuals with age boundary of 19 and 29, while older cohort includes individuals with age boundary of 30 and 64. Educated cohorts are defined as those with tertiary education.

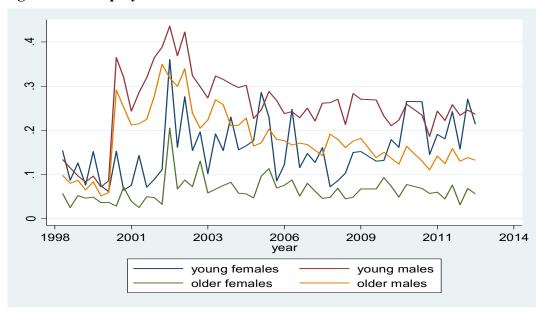


Figure 5. Unemployment Rate for Low Educated Cohorts 1999-2012

Notes: This figure plots overtime changes in unemployment rate by age and gender for low educated individuals. Source of data is PCBS's Labor Force Survey, 1999-2012. Young cohort includes individuals with age boundary of 19 and 29, while older cohort includes individuals with age boundary of 30 and 64. Educated cohorts are defined as those with no tertiary education.

Variables	Model
Treatment Effect- Year by Year	
2000	-0.088
	(0.058)
2001	-0.034
	(0.048)
2002	-0.090*
	(0.046)
2003	-0.040
	(0.055)
2004	-0.023
	(0.059)
2005	-0.086
	(0.054)
2006	-0.107**
	(0.046)
2007	-0.135***
	(0.044)
2008	-0.096*
	(0.051)
2009	-0.080*
	(0.045)
2010	-0.076*
	(0.045)
2011	-0.031
	(0.047)
2012	-0.030
	(0.060)
	(0.000)
District-Year fixed effects	Yes
Place of Residence fixed effects	Yes
Constant	0.264***
	(0.057)
Observations	1,738
R-squared	0.549
Pobust standard errors in parentheses	

 Table 1. Decline in Share of Public Education for Educated Females 1999-2012

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

			~		
Variable	Obs	Mean	Std. Dev.	Min	Max
1999 share of educated females in					
public education	88	0.251443	0.153263	0.047689	0.751033
1999 share of educated females	88	0.117218	0.074644	0.005993	0.373169
1999 share of employed educated					
cohort in Services	77	0.391357	0.18331	0.053009	0.840883
			Education		
marital Status	percent		attainment	percent	_
Share of Single (never married)			Diploma		
educated females	46.89		degree	35.51	
			Bachelor		
Share of married educated females	47.09		degree	63.08	
Others	6.02		High diplom	0.16	
			Master degree	1.11	
			PhD degree	0.13	
Labor force participation	percent				
Share of educated females join labor		-			
market	75.89				
Share of educated females out of labor					
market	24.11				

Table 2. Descriptive Statistics for Model Variables

	(1)	(2)	(3)
VARIABLES	Parsimonious Model	Full Model	Full Model-By year
Treatment Variable post shock	-0.330***	-0.253***	
	(0.084)	(0.087)	
Treatment Effect- Year by Year			
2000			-0.039
			(0.184)
2001			0.011
			(0.194)
2002			0.054
			(0.180)
2003			-0.085
			(0.192)
2004			0.002
			(0.182)
2005			-0.245
			(0.199)
2006			-0.466**
			(0.178)
2007			-0.273
			(0.194)
2008			-0.337*
			(0.186)
2009			-0.212
			(0.259)
2010			-0.159
			(0.177)
Share of educated females	No	0.337***	0.339***
		(0.124)	(0.126)
Share of employed educated females in			
service sector	No	-0.110*	-0.096
		(0.066)	(0.066)
— • • • •			
Education attainment			
Bachelor degree	No	0.181***	0.181***
		(0.011)	(0.011)
High diploma	No	0.274***	0.274***
		(0.038)	(0.038)
Master degree		0.297***	0.297***
	No	(0.025)	(0.025)
PhD degree		0.253***	0.253***
	No	(0.075)	(0.075)
District-Year fixed effects	Yes	Yes	Yes
		Yes	Vac
Place of Residence fixed effects	Yes	165	Yes
Place of Residence fixed effects Age, Refugee status, marital status	Yes No	Yes	Yes

Table 3. Effect Decrease in Public Education on LFP for Educated Females

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

	(1)		(2)	(3)	(4) Older
VARIABLES	Young coh	ort	Young cohort	Older cohort	Cohort
Treatment Variable post shock	-0.442***			-0.057	
-	(0.106)			(0.124)	
Treatment Effect- Year by Year					
2000			-0.104		0.136
2001			(0.259)		(0.284)
2001			-0.110		0.018
2002			(0.270)		(0.293)
2002			-0.140		0.083
2003			(0.261) -0.368		(0.282) -0.052
2005			(0.293)		(0.260)
2004			-0.086		-0.060
2001			(0.228)		(0.293)
2005			-0.486*		-0.010
			(0.253)		(0.303)
2006			-0.811***		-0.241
			(0.292)		(0.263)
2007			-0.512**		-0.201
			(0.247)		(0.275)
2008			-0.688***		-0.074
			(0.193)		(0.306)
2009			-0.651**		0.056
			(0.286)		(0.312)
2010			-0.464*		0.097
		0.200*	(0.251)	0.202*	(0.216)
Share of educated females		0.380*	0.384*	0.302*	0.312*
	4	(0.212)	(0.216)	(0.163)	(0.163)
Share of employed educated females in service s	ector	-0.026	-0.022	-0.196**	-0.170*
Education attainment		(0.090)	(0.095)	(0.091)	(0.086)
Bachelor degree		0.168***	0.167***	0.195***	0.195***
Bucheror degree		(0.014)	(0.014)	(0.016)	(0.016)
High diploma		0.255**	0.250**	0.278***	0.277***
		(0.122)	(0.122)	(0.047)	(0.047)
Master degree		0.234***	0.236***	0.330***	0.329***
		(0.063)	(0.064)	(0.024)	(0.024)
PhD degree		0.011	0.007	0.298***	0.300***
		(0.155)	(0.156)	(0.081)	(0.081)
District-Year fixed effects		Yes	Yes	Yes	Yes
Place of Residence fixed effects		Yes	Yes	Yes	Yes
Age, Refugee status, marital status		Yes	Yes	Yes	Yes
Observations		6,641	6,641	10,612	10,612
R-squared		0.242	0.243	0.207	0.208

Table 4. Effect Decrease in Public Education on LFP for Educated Females- Young vs. **Older Cohorts**

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

Females		
	Young females	Older females
VARIABLES	(1)	(2)
Treatment Effect- Year by Year	14 501	0.154
2000	-14.581	-9.154
2001	(11.488)	(7.244)
2001	-14.712	-9.312
2002	(11.519)	(7.259)
2002	-15.473	-9.425
2002	(11.479)	(7.199)
2003	-14.972	-9.604
2004	(11.496)	(7.199)
2004	-14.878	-9.734
2005	(11.456)	(7.203)
2005	-14.818	-9.338
2007	(11.488)	(7.236)
2006	-14.579	-9.432
2007	(11.471)	(7.256)
2007	-14.765	-9.162
2000	(11.478)	(7.164)
2008	-14.975	-9.063
2009	(11.497)	(7.244)
2009	-14.853 (11.526)	-9.151 (7.260)
	(11.520)	(7.200)
Share of educated females	-0.246	-0.151
Shure of educated fermines	(0.411)	(0.258)
Share of employed educated females in		(0.250)
service sector	-0.360**	-0.023
	(0.169)	(0.129)
Education attainment		
Bachelor degree	-0.070***	-0.008
-	(0.027)	(0.017)
High diploma	-0.119*	-0.132**
	(0.070)	(0.062)
Master degree	-0.120**	-0.018
-	(0.053)	(0.048)
PhD degree	-0.288**	-0.049
	(0.125)	(0.076)
District-Year fixed effects	Yes	Yes
Place of Residence linear trend	Yes	Yes
Age, Refugee status, marital status	Yes	Yes
Constant	4.026	2.546
	(2.881)	(1.854)
Observations	2,458	5,050
R-squared	0.541	0.535
N-squattu	0.341	0.555

 Table 5. Effect of Employment Decline in Public Education on Commuting for Educated

 Females

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(1) Young Females	(2) Young females	(3) Older females	(4) Older females	(5) Young males	(6) Young males	(7) Older males	(8) Older Males
Treatment Variable post shock	0.040 (0.065)		-0.001 (0.057)		-0.025 (0.036)		-0.044 (0.044)	
Treatment Effect- Year by Year 2000	(0.000)	-0.100	(0.007)	0.037	(0.050)	-0.043	(0.011)	-0.139**
2001		(0.070) 0.096		(0.056) 0.080		(0.088) 0.091		(0.066) -0.125*
2002		(0.068) 0.022		(0.051) 0.027		(0.082) -0.119		(0.066) -0.123*
2003		(0.091) -0.070 (0.102)		(0.072) 0.044 (0.068)		(0.109) -0.171* (0.089)		(0.071) -0.064 (0.072)
2004		(0.102) 0.002 (0.092)		(0.068) -0.065 (0.060)		(0.089) -0.202** (0.092)		(0.072) -0.122* (0.068)
2005		-0.129 (0.106)		(0.000) -0.054 (0.071)		(0.092) -0.136 (0.089)		-0.104 (0.064)
2006		0.166* (0.093)		-0.059 (0.085)		-0.049 (0.089)		-0.114^{*} (0.064)
2007		-0.034 (0.107)		-0.023 (0.091)		-0.011 (0.102)		-0.192** (0.077)
2008		-0.126 (0.122)		0.120 (0.093)		-0.016 (0.121)		-0.226** (0.076)
2009		0.116 (0.128)		0.074 (0.056)		-0.105 (0.119)		-0.075 (0.108)
2010		0.126 (0.093)		0.076 (0.074)		-0.195* (0.099)		-0.166* (0.093)
Share of educated females	0.022 (0.110)	0.012 (0.111)	-0.216** (0.092)	-0.216** (0.091)	-0.071 (0.100)	-0.059 (0.101)	-0.189*** (0.070)	-0.192** (0.070)
Share of employed educated females in service sector	0.134*** (0.046)	0.140*** (0.045)	0.079* (0.042)	0.088** (0.042)	0.058** (0.028)	0.047* (0.028)	0.001 (0.031)	0.002 (0.030)
Education Attainment Bachelor degree	-0.112***	-0.112***	-0.003	-0.003	-0.568***	-0.568***	-0.123***	-0.123**
High diploma	(0.021) -0.134*** (0.021)	(0.021) -0.135***	(0.008) 0.003 (0.010)	(0.009) 0.003 (0.010)	(0.035) -0.628***	(0.035) -0.628*** (0.024)	(0.024) -0.189***	(0.024) -0.189**
Master degree	(0.021) -0.152*** (0.021)	(0.021) -0.153*** (0.021)	(0.010) -0.014 (0.010)	(0.010) -0.014 (0.010)	(0.034) -0.647*** (0.032)	(0.034) -0.647*** (0.033)	(0.023) -0.202*** (0.023)	(0.023) -0.202** (0.023)
PhD degree	-0.169*** (0.023)	-0.169*** (0.023)	-0.052*** (0.014)	- 0.052*** (0.014)	-0.589*** (0.035)	-0.589*** (0.035)	-0.205*** (0.023)	-0.205** (0.024)
District-Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Place of Residence fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age, Refugee status, marital status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.981*** (0.041)	1.982*** (0.041)	1.752*** (0.027)	1.752*** (0.027)	1.775*** (0.057)	1.775*** (0.057)	1.434*** (0.031)	1.434** (0.030)
Observations	27,913	27,913	62,804	62,804	28,275	28,275	48,372	48,372
R-squared	0.116	0.117	0.078	0.078	0.123	0.124	0.179	0.179

Table 6. Effect Decrease in Public Education on LFP for Low Educated Cohorts-Placebo Tests

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

VARIABLES	(1) Young females	(2) Older females
Treatment Effect- Year by Year		
2000	-0.133	0.123
2000	(0.253)	(0.278)
2001	-0.176	0.066
2001	(0.273)	(0.290)
2002	-0.166	0.173
2002	(0.256)	(0.279)
2003	-0.390	0.007
2005	(0.294)	(0.261)
2004	-0.102	-0.033
2004	(0.225)	(0.295)
2005	-0.474*	0.055
2003	(0.257)	(0.293)
2007	-0.807***	
2006		-0.197
2007	(0.286) -0.501**	(0.256)
2007		-0.147
2000	(0.250)	(0.274)
2008	-0.720***	0.005
2000	(0.194)	(0.314)
2009	-0.682**	0.096
2010	(0.270)	(0.324)
2010	-0.467*	0.136
	(0.256)	(0.225)
2011	-0.047	0.097
	(0.212)	(0.338)
2012	-0.026	-0.012
	(0.281)	(0.325)
Share of educated females	0.253	0.170
	(0.162)	(0.136)
Share of employed educated females in service sector	-0.050	-0.170**
	(0.073)	(0.072)
Education attainment		
Bachelor degree	0.159***	0.208***
	(0.018)	(0.015)
High diploma	0.309***	0.329***
	(0.095)	(0.036)
Master degree	0.290***	0.335***
	(0.050)	(0.024)
PhD degree	0.009	0.320***
	(0.147)	(0.058)
District-Year fixed effects	Yes	Yes
Place of Residence fixed effects	Yes	Yes
Age, Refugee status, marital status	Yes	Yes
Constant	0.977***	0.799***
Constant	(0.125)	(0.098)
	(0.123)	(0.070)
Observations	8,503	13,608
R-squared	0.222	0.200
n-squared	0.222	0.200

Table 7. Effect Decrease in Public Education on LFP for Educated Females-Extended Period

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