

# Do wage subsidies alleviate employment discrimination against women?: The case of Turkey

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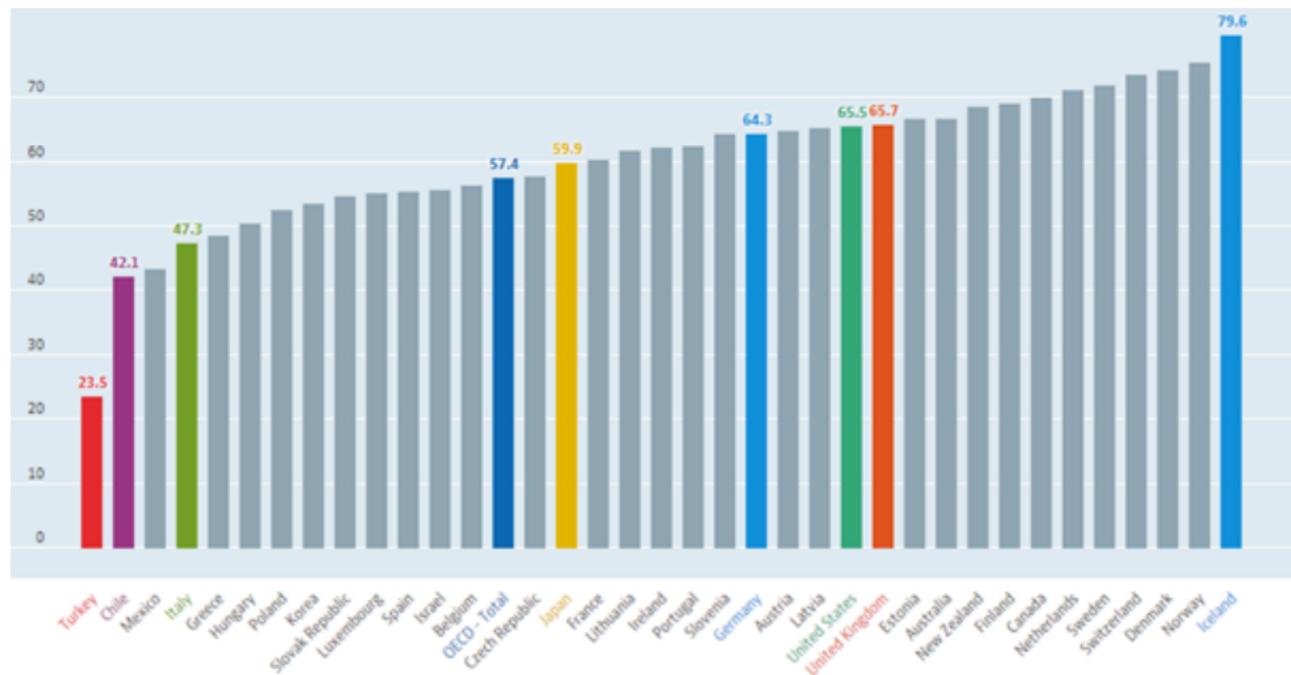
May 26, 2020

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- Employment discrimination exists when minority or female employees are treated differently than similarly productive whites or men ([Gwartney et al., 2014](#)).
- This discrimination restricts employment and earnings opportunities compared to others of similar productivity. Gender differences in the labor market concern not only wages but also hiring decisions ([Reuben et al., 2014](#)).

# Motivation

Figure: Employment Rates in OECD Countries (Women, % of Working Age Population), 2008



In [July 2008](#), Turkish Government initiated an active labor market program (Law [4447](#) Provisional Article [7](#), [2008](#)) to subsidize the employers' social security contributions for all women above [18](#) years old and young men aged between [18](#) and [29](#) years old.

- This incentive has been applied up to [5](#) years to eligible firms.

After that new incentive program was initiated by Law [4447](#) (Provisional Article [10](#)) with a new arrangement in February [2011](#) which included some of the men over [29](#) years of age.

# Employment Subsidy Programs in Turkey

The main incentives are:

- ➊ Additional Employment Support (Law [4447](#) Provisional Article 7)
- ➋ Incentive for Young and Women's Employment and Men's Employment with Professional Certificate (Law [4447](#) Provisional Article 10)
- ➌ Five-Point Discount (Law [5510](#))
- ➍ Incentives to Employers Recruiting Unemployment Beneficiaries (Law [5921](#))
- ➎ Incentive of Disabled Employment (Law [4857](#))
- ➏ R&D Insurance Premium Incentive (Law [5746](#))
- ➐ Insurance Premium Incentive for Cultural Investments and Initiatives (Law No. [5225](#))

# Employment Subsidy Programs in Turkey

**Table:** Data on Beneficiaries of Some Incentive Laws

		2008	2009	2010	2011	2012	2013
<b>Law 5510</b>	<i>Workplace</i>	632,280	749,196	858,674	989,367	1,050,731	1,174,209
	<i>Men</i>	3,806,139	4,214,019	4,883,944	5,092,488	5,380,789	6,437,338
	<i>Women</i>	1,153,270	1,272,175	1,474,566	1,709,299	1,884,739	2,262,463
<b>Law 4447/7</b>	<i>Workplace</i>	11,172	22,619	26,878	15,740	9,059	5,521
	<i>Men</i>	16,090	30,133	29,835	14,457	7,478	4,391
	<i>Women</i>	15,652	31,482	33,395	18,012	9,471	5,311
<b>Law 4447/10</b>	<i>Workplace</i>	-	-	-	65,258	102,974	129,185
	<i>Men</i>	-	-	-	74,167	100,567	112,058
	<i>Women</i>	-	-	-	73,424	118,705	145,991
<b>Law 5225</b>	<i>Workplace</i>	-	-	-	13	14	18
	<i>Men</i>	-	-	-	177	173	212
	<i>Women</i>	-	-	-	213	233	250
<b>Law 5746</b>	<i>Workplace</i>	540	828	1,119	1,586	1,810	2,135
	<i>Men</i>	7,017	13,077	16,295	21,248	24,813	24,410
	<i>Women</i>	1,875	3,584	4,360	5,588	6,713	7,232

# Aim of the paper

We investigate the issue of employment discrimination against women in Turkey by analyzing the periods before and after employment subsidy programs to assess the size of any differential and how it might have changed over time.

- In this study, we use the Turkish Household Labor Force Survey (**HLFS**) micro data, which is compiled and published by the Turkish Statistical Institute (**TURKSTAT**).
- **HLFS** is the main data source that provides information about those employed; economic activity, occupation, employment status and working hours, while the unemployed; search for job search time.
- This survey is being implemented in order to compile information about their work in Turkey with the supply side of the labor market.
- **HLFS** has been applied in each month since **2000** to the households selected according to the two-stage stratified clustered probability sample involving eight subsamples.
- Based on address, a rotation pattern is formed to ensure a **50** percent of overlap between two consecutive periods and in the same periods of the two consecutive years and **8** subsamples have been used at each period.
- The households, which are the final sampling unit, have been visited four times in **18** months time period.
- Monthly sample size of the survey is approximately **13,000**.
- In **HLFS**, all private households who are living in the territory of Republic of Turkey are covered.
- Residents of schools, dormitories, kindergartens, rest homes for elderly persons, special hospitals, military barracks and recreation quarters for officers are not covered.

- [Uysal \(2013\)](#) uses Turkish Household Labor Force Survey ([HLFS](#)) macro data and the employment status of the target group and men over [30](#) years of age are compared with a DD method over time. She finds that incentives affect positively the registered employment of married women who are not high school graduates.
- [Balkan et al. \(2014\)](#) analyze whether the employment incentive program implemented in [2008](#) influences the employment chance of the target group using the HLFS micro data set covering [2004-2011](#) period.
- [Balkan et al. \(2016\)](#) use the Survey of Income and Living Conditions ([SILC](#)) panel data set covering [2006-2012](#) period. Using the panel dimension of the data, they suggest that employment subsidies help women to transition into the formal sector. They propose that employment subsidies increase the employability of women and decrease their informality and unemployment probability.

In most of the studies, older men (of age 30 and above) who are not given an employment subsidy are the control group and the rest (i.e., the target groups) are in the treatment group.

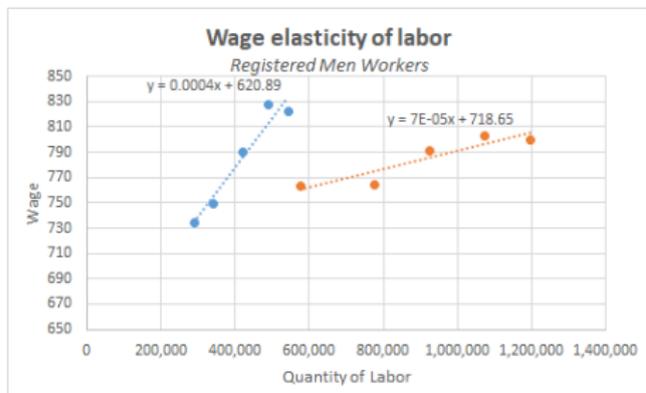
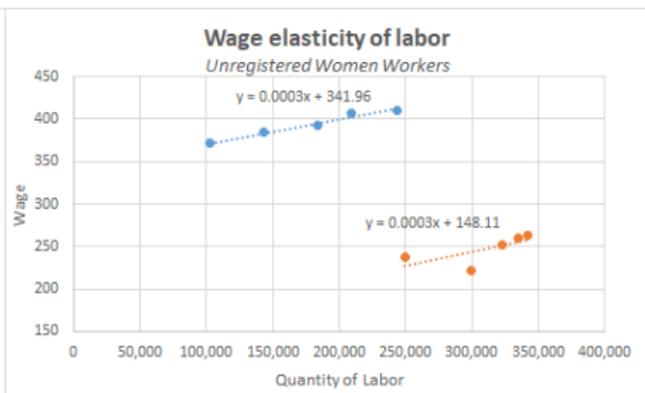
However using men as a control group is problematic.

# Model Decision

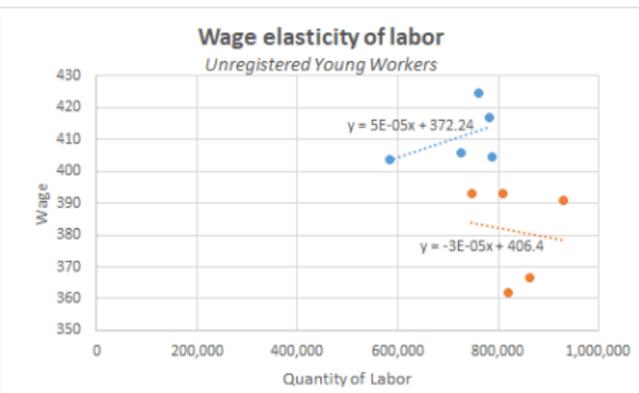
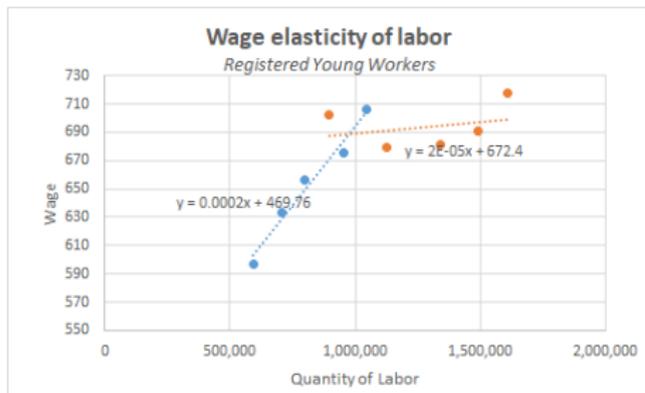
Assume that men and women are inputs in production.

- When wage of a woman decreases to the employer due to subsidy, one input becomes relatively cheaper.
- Substitution effect implies that employers should substitute women for men. However, when one input becomes cheaper there is also scale effect because marginal cost of production decreases and firm will increase both inputs.
- Therefore, the firm will increase its demand for women but the effect of the subsidy on the employment of men is ambiguous since substitution effect implies that employment of men should decrease and scale effect implies that employment of men should increase.
- Hence using men as a control group is problematic, since employment of men is also affected from the subsidy and in an ambiguous way.
- If we use the informal sector as a control group and assume elastic supply of labor, input prices remain constant in the informal sector and hence we do not expect any change in the gender composition in the informal sector.

# Model Decision



# Model Decision



Some of the results that we present below obtained from estimating equations with the following general form:

$$G_i = \alpha + \beta S_i + \rho S_i \times F_i + \gamma X + \lambda_1 Time + \lambda_2 Time \times i + \varepsilon_i \quad (1)$$

where  $G$  is a dummy variable that takes value 1, 2 and 3 if the last hired worker is women, young and men respectively.  $S$  is also a dummy variable that takes value 1 for the observations in the subsidy period.  $F$  denotes the formality of a job. The  $X$  includes occupation dummies, formality of a job, a variety of variables for hiring requirements of jobs, one-digit industry, firm size and geographic location.

Despite the controls described above, our results still might be driven by occupation specific unobserved factors. To deal with this, we include interactions between subsidy period and occupation in some of our estimated equations:

$$G_i = \alpha + \beta S_i + \rho_1 S_i \times F_i + \rho_2 S_i \times O_i + \gamma X + \lambda_1 Time + \lambda_2 Time \times i + \varepsilon_i \quad (2)$$

where  $O$  represents a dummy variable for a set of occupation dummies. If we assume that, any effects of subsidy policy on hiring into informal jobs reflect only unobserved heterogeneity and not policy effect, then the coefficient of  $S_i \times F_i$  yields an estimate of the effect of subsidy policy on the hiring of women in the formal sector.

Finally we can have a “difference-in-differences-in-differences” (DDD) estimates of gender discrimination from the coefficient on the interaction between subsidy, formality and occupation:

$$G_i = \alpha + \beta S_i + \rho_1 S_i \times F_i + \rho_2 S_i \times O_i + \rho_3 O_i \times F_i \\ + \sigma S_i \times O_i \times F_i + \gamma X + \lambda_1 Time + \lambda_2 Time \times i + \varepsilon_i \quad (3)$$

**Table:** The Share of Women in Newly Hired Workers: Means (Standard Errors)

	<b>Pre-Policy</b>	<b>Post-Policy</b>	<b>Difference</b>
<b>All jobs</b>	0.0968	0.1262	0.0294*** (0.0003)
<b>By Registration of Firm:</b>			
<b>Informal</b>	0.1212	0.1580	0.0368*** (0.0005)
<b>Formal</b>	0.0700	0.1070	0.0370*** (0.0005)
<b>Difference</b>	-0.0512*** (0.0005)	-0.0510*** (0.0004)	0.0002 (0.0002)

(1) All means are sample-weighted.

(2) Standard errors appear in parentheses.

(3) The sample size is 229,587.

(4) \* significant at the .1 level, \*\* significant at the .05 level,

\*\*\* significant at the .01 level or lower.

# Results-Model 1

**Table:** Effect of Subsidy Policy on Gender of Last Hire: By Formality (DD Estimates)

	Young		Women		Men	
	1	2	1	2	1	2
<b>subsidy</b>	-0.038*** (0.0006)	-0.038*** (0.0007)	-0.019*** (0.0004)	-0.022*** (0.0004)	0.057*** (0.0006)	0.060*** (0.0006)
<b>formality</b>	0.075*** (0.0008)	0.098*** (0.0008)	-0.052*** (0.0004)	-0.070*** (0.0005)	-0.023*** (0.0007)	-0.028*** (0.0007)
<b>subsidy × formality</b>	0.005*** (0.0005)	0.003*** (0.0005)	0.011*** (0.0003)	0.013*** (0.0004)	-0.016*** (0.0005)	-0.016*** (0.0005)
$R^2$	0.105		0.065			

(1) All means are sample-weighted.

(2) Standard errors appear in parentheses.

(3) The sample size is 229,587.

(4) \* significant at the .1 level, \*\* significant at the .05 level, \*\*\* significant at the .01 level or lower.

Column 1 estimates include controls for firm size, hiring requirements (percentage of college graduates etc.), occupation dummies, sector dummies and location dummies. Column 2 estimates exclude only location dummies from controls.

# Results-Model 2

Table: Effect of Subsidy Policy on Gender of Last Hire: By Formality or Occupation

	Young		Women		Men	
	1	2	1	2	1	2
subsidy	-0.028***	-0.027***	-0.019***	-0.025***	0.048***	0.052***
	-0.0007	-0.0007	-0.0004	-0.0005	-0.0006	-0.0006
formality	0.078***	0.103***	-0.050***	-0.067***	-0.028***	-0.036***
	-0.0008	-0.0008	-0.0005	-0.0005	-0.0007	-0.0007
subsidy × formality	0.002***	0.0000	0.010***	0.010***	-0.012***	-0.009***
	-0.0005	-0.0006	-0.0003	-0.0004	-0.0005	-0.0005
<b>subsidy × occupation:</b>						
high skilled white collar	0.007***	0.014***	0.004***	0.012***	-0.011***	-0.026***
	-0.0008	-0.0008	-0.0005	-0.0006	-0.0008	-0.0008
low skilled white collar	-0.002***	0.0000	0.014***	0.025***	-0.011***	-0.025***
	-0.0006	-0.0006	-0.0004	-0.0004	-0.0006	-0.0006
high skilled blue collar	-0.027***	-0.032***	-0.021***	-0.025***	0.048***	0.057***
	-0.0007	-0.0007	-0.0003	-0.0004	-0.0006	-0.0006
$R^2$	0.106	0.065				

(1) All means are sample-weighted.

(2) Standard errors appear in parentheses.

(3) The sample size is 229,587.

(4) \* significant at the .1 level, \*\* significant at the .05 level, \*\*\* significant at the .01 level or lower.

# Results-Model 3

Table: Effect of Subsidy Policy on Gender of Last Hire: By Formality and Occupation

	Young		Women		Men	
	1	2	1	2	1	2
subsidy	-0.011***	-0.011***	-0.028***	-0.034***	0.038***	0.045***
	-0.0008	-0.0008	-0.0004	-0.0005	-0.0007	-0.0007
formality	0.104***	0.137***	-0.056***	-0.076***	-0.047***	-0.061***
	-0.001	-0.001	-0.0006	-0.0007	-0.0009	-0.0009
subsidy × formality	-0.030***	-0.031***	0.024***	0.030***	0.006***	0.001
	-0.0008	-0.0008	-0.0005	-0.0005	-0.0007	-0.0007
<b>formality × subsidy × occupation:</b>						
high skilled white collar	0.023***	0.029***	0.011***	0.005***	-0.034***	-0.034***
	-0.0018	-0.0018	-0.0012	-0.0013	-0.0016	-0.0016
low skilled white collar	0.067***	0.068***	-0.023***	-0.034***	-0.044***	-0.034***
	-0.0012	-0.0012	-0.0005	-0.0006	-0.0011	-0.0011
high skilled blue collar	0.050***	0.041***	-0.035***	-0.045***	-0.015***	0.003*
	-0.0012	-0.0013	-0.0006	-0.0008	-0.0011	-0.0012
R <sup>2</sup>	0.106	0.066				

(1) All means are sample-weighted.

(2) Standard errors appear in parentheses.

(3) The sample size is 229,587.

(4) \* significant at the .1 level, \*\* significant at the .05 level, \*\*\* significant at the .01 level or lower.

- We have reached a conclusion that the DD estimates show significant effects of the subsidy programs on the discrimination faced by women.
- Law 4447 Provisional Articles 7 and 10 help to decrease discrimination faced by women especially in the low-skilled blue-collar jobs and high-skilled white-collar jobs.
- We have found that these wage subsidies result on average a 1.0 percentage points increase and at most, a 3.5 percentage points increase in the share of women in newly hired workers.
- Our results seem to be parallel with the existing literature in Turkey. Similar to them, the formal job accessibility of the women increased with the introduction of the employment subsidy programs.

Thank you  
for listening