GENDER WAGE GAP AND INTERNATIONAL TRADE: EVIDENCE FROM TURKEY (Preliminary Draft)

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Gender Wage Gap

- It is the difference between the median earnings of women relative to that of men.
- The global gender wage gap is around 16%. (ILO, 2018)
- Reducing gender inequality can lead to better socio-economic conditions in the country. (Wei, Yang, Liu, and Wu, 2013)
- Closing the gender wage gap could bring as much as $160 trillion to the global economy. (Wodon and De La Briere, 2018)

Gender Wage Gap and International Trade

- Several studies based on neo-classical theories find that being more engaged in international trade can reduce the gender wage gap, especially in developing countries.

Theory 1

- Becker's (1957) theory of discrimination.
- When gender discriminating firms face higher competitiveness through international trade, it becomes costlier on them to pay higher male wages.

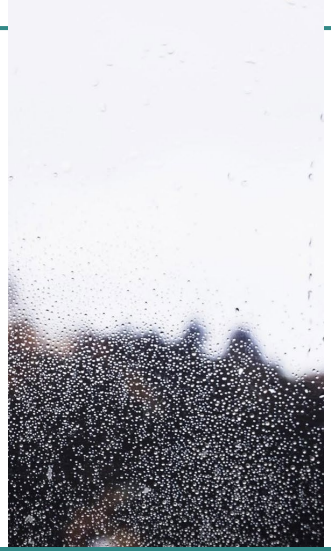
$$w_m = w^* + d$$
$$w_f < w^* + d$$
$$w_f < w_m$$

where:
w_m = men's wage
w^* = market wage
w_f = women's wage
d = discrimination coefficient

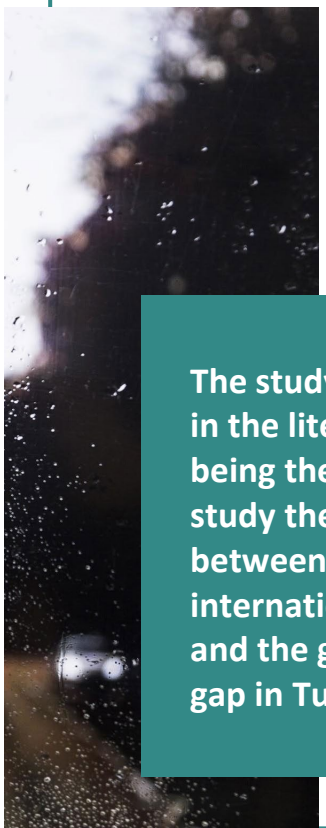
Theory 2

- International trade can increase the gender wage gap (Boler, Javorcik, and Ultveit-Moe, 2018).
- Firms that become exporting firms will demand higher flexibility and more commitment from their workers, as they are now working longer hours or across time zones.

1 - To investigate the gender wage gap present in Turkey's manufacturing sector.



2 - To examine the relationship between the gender wage gap and international trade.



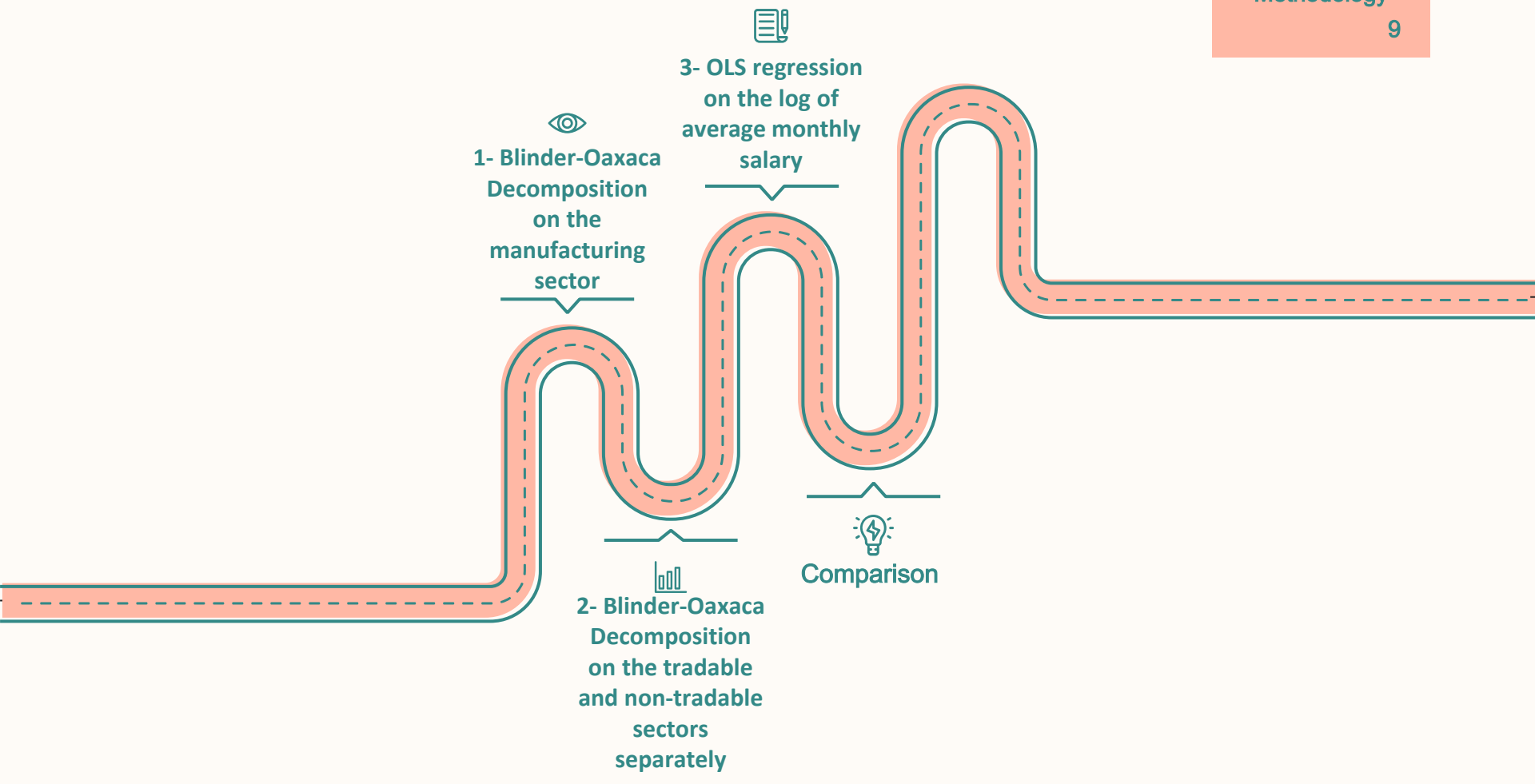
The study fills the gap in the literature by being the first to study the relationship between international trade and the gender wage gap in Turkey.

Data

- This study uses data from the Structure of Earnings Survey (SES), which is conducted by the Turkish Statistical Institute (TURKSTAT).
- It covers three years: 2006, 2010, 2014, and includes 659,952 observations.

Data

- 66% of the employees in the data set are male and 24% are female.
- Basic monthly salary: Males: 1361 TL Females: 1417 TL
- Female workers are better educated and at higher levels of the job ladder.
- 62% of employees in the data work in the non-tradable sectors. They earn more and have a higher average educational attainment than the workers in the tradable sectors.


3- OLS regression on the log of average monthly salary
1- Blinder-Oaxaca Decomposition on the manufacturing sector
2- Blinder-Oaxaca Decomposition on the tradable and non-tradable sectors separately
Comparison

To see whether there exists a gender wage gap in the data, we use the Blinder-Oaxaca decomposition (Blinder 1973; Oaxaca 1973).

The method decomposes the gender wage gap into three components:

- the gender wage gap due to employee endowments or characteristics,
- the gap due to unexplained reasons or due to factors not normally associated with differences in wages,
- and the gap due to an interaction of the first two components.

The decomposition is formulated as follows

Male and female average wages:

$$Y_m = \beta_{0m} + \beta_{1m} x_m$$

$$Y_f = \beta_{0f} + \beta_{1f} x_m$$

The gap between the male and female average wages is:

$$Y_m - Y_f = (\beta_{0m} - \beta_{0f}) + (\beta_{1m} x_{1m} - \beta_{1f} x_{1f})$$

$$= G_0 + G_1$$

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$$= G_0 + G_1$$

- G_0 is the differences in the intercepts and G_1 is the differences in x_1 and β_1.
- We decompose G_1 to see how much of the overall wage gap is due to the x (characteristics) (explained component) and how much of it is due to the β (coefficients) (unexplained component).

$$Y_m - Y_f = \Delta x\, \beta_f + \Delta\beta\, x_m = E + (C + CE)$$

To analyze the relationship between the gender wage gap and international trade, we:

1. Apply the Blinder-Oaxaca decomposition on the tradable and non-tradable sectors separately and then compare the discrimination coefficient in each.
2. Run an OLS regression on the log of basic average monthly salary.

For the OLS regression, we form two dummy variables:

1. Female: where female employees is 1, and male employees is 0.
2. Trade: where the tradable sectors is 1, and non-tradable sectors is 0.

We then interact the two variables to get four categories:

1. Female-trade: the female employees in the tradable sectors.
2. Male-trade: the male employees in the tradable sectors.
3. Female-non-trade: female employees in the non-tradable sectors.
4. Male-non-trade: It is the constant and represents male employees in the non-tradable sectors.

$$\mathbf{lnW_{ij} = X_{ij} + X_1\beta_1 + X_2\,\beta_2 + X_3\,\beta_3 + u}$$

where:

- i = individual
- j = industry
- lnW_{ij} = the natural logarithm of monthly wage for worker i employed in industry j.
- X_{ij} = Individual controls: age, age squared, tenure, education level, collective bargaining coverage, administrative responsibility (occupation, firm size, industry type)
- X_1 = female-trade
- X_2 = female-nontrade
- X_3 = male-trade
- u = the constant, male-non-trade

Gender Wage Gap in Turkey's Manufacturing Industry

Table 5: Summary of decomposition results: tradable + non-tradable

Mean prediction of female wages	6.973
Mean prediction of male wages	6.934
Raw differential (female - male)	0.039
- due to endowments (E)	0.065
- due to coefficients (C)	-0.034
- due to interaction (CE)	0.008

Gender Wage Gap in Turkey's Manufacturing Industry

Table 6: Decomposition results for variables: tradable + non-tradable

Variables	(E)	(C)	(CE)
trade	0.006	-0.005	0.001
age	-0.074	0.545	-0.043
agesq	0.044	-0.292	0.044
cpa	-0.009	-0.004	0.002
tenure	-0.020	0.015	-0.003
edu	0.090	0.041	0.010
admin	-0.004	0.001	-0.000
year	0.031	-9.341	-0.001
occ	yes	yes	yes
firm	yes	yes	yes
industry	yes	yes	yes
Constant	0.000	9.008	0.000
Total	0.065	-0.034	0.0038

Gender Wage Gap in the Tradable Sectors

Table 7: Summary of decomposition results: tradable

Mean prediction of male wages	6.836
Mean prediction of female wages	6.756
Raw differential (male-female)	0.080
- due to endowments (E)	0.033
- due to coefficients (C)	0.042
- due to interaction (CE)	0.005

Gender Wage Gap in the Tradable Sectors

Table 8: Decomposition results for variables: tradable

Variables	(E)	(C)	(CE)
age	0.052	-0.148	-0.010
agesq	-0.036	0.122	0.016
cpa	0.015	-0.003	-0.002
tenure	0.026	0.002	0.001
edu	-0.032	-0.008	0.001
admin	0.003	0.003	0.000
year	0.004	1.292	0.000
occ	yes	yes	yes
firm	yes	yes	yes
industry	yes	yes	yes
Constant	0.000	-1.218	0.000
Total	0.033	0.042	0.005

Gender Wage Gap in the Non-tradable Sectors

Table 9: Summary of decomposition results: non-tradable

Mean prediction of female wages	7.064
Mean prediction of male wages	6.998
Raw differential (female-male)	0.066
- due to endowments (E)	0.089
- due to coefficients (C)	-0.032
- due to interaction (CE)	0.009

Gender Wage Gap in the Non-tradable Sectors

Table 10: Decomposition results for variables: non-tradable

Variables	(E)	(C)	(CE)
age	-0.096	0.702	-0.062
agesq	0.062	-0.360	0.061
cpa	-0.006	-0.008	0.002
tenure	-0.015	0.019	-0.003
edu	0.113	0.053	0.013
admin	-0.005	0.002	-0.000
year	0.036	-9.841	-0.002
occ	yes	yes	yes
firm	yes	yes	yes
industry	yes	yes	yes
Constant	0.000	9.402	0.000
Total	0.089	-0.032	0.009

Table 11: Regression results

	(1)	(2)	(3)	(4)
VARIABLES	Model 1	Model 2	Model 3	Model 4
male in trade	-0.0618***	-0.0499***	-0.0450***	-6.91e06
	(0.00130)	(0.00136)	(0.00133)	(0.00414)
female in non-trade	-0.0207***	-0.0264***	-0.0263***	-0.0192***
	(0.00160)	(0.00157)	(0.00153)	(0.00153)
female in trade	-0.104***	-0.0976***	-0.0960***	-0.0335***
	(0.00224)	(0.00220)	(0.00214)	(0.00455)
age	0.0304***	0.0286***	0.0281***	0.0259***
	(0.000385)	(0.000376)	(0.000365)	(0.000358)
age squared	-0.000286***	-0.000280***	-0.000263***	-0.000241***
	(5.17e-06)	(5.04e-06)	(4.90e-06)	(4.80e-06)
cpa	0.197***	0.215***	0.117***	0.0804***
	(0.00197)	(0.00193)	(0.00196)	(0.00198)
tenure	0.0283***	0.0285***	0.0241***	0.0223***
	(0.000128)	(0.000126)	(0.000125)	(0.000124)
education	0.144***	0.106***	0.0955***	0.0866***
	(0.000407)	(0.000475)	(0.000466)	(0.000466)
admin	0.275***	0.143***	0.142***	0.131***
	(0.00167)	(0.00182)	(0.00177)	(0.00175)
year	0.0958***	0.0957***	0.0919***	0.0914***
	(0.000171)	(0.000171)	(0.000168)	(0.000172)
occupation	No	Yes	Yes	Yes
firm	No	No	Yes	Yes
industry	No	No	No	Yes
constant	-186.8***	-186.8***	-178.4***	-177.4***
	(0.344)	(0.344)	(-0.338)	(0.345)
observations	660,204	660,204	660,204	660,204
r-squared	0.540	0.563	0.587	0.606

Table 12: Regression results: gender wage gap

	Model 1	Model 2	Model 3	Model 4
Tradable GWG	0.0422	0.0471	0.051	0.0334
Non-tradable GWG	0.0207	0.0264	0.0263	0.0192

This result is similar to what was found by Boler et al. (2017), and Menon and Rogers (2009).

Boler et al. (2018)	reasoning for the positive relationship between trade and the wage gap, was that working across large time zones increases demand for male workers who are seen as more flexible than women.
Menon and Rogers (2009)	an increase in the gender wage gap through international trade happens due to a skill-biased technological change.

Country	Time Zones
Turkey's top exporting destinations	
1. Germany	GMT+2
2. United Kingdom	GMT+1
3. Italy	GMT+2
4. United Arab Emirates	GMT+4
5. Iraq	GMT+3
6. United States	GMT-4 (in Washington DC)
7. France	GMT+2
8. Spain	GMT+2
9. Belgium-Luxembourg	GMT+2
10. Poland	GMT+2
Turkey's top importing origins	
1. China	GMT+8
2. Germany	GMT+2
3. Russia	GMT+3 (Moscow)
4. Italy	GMT+2
5. United States	GMT-4 (in Washington DC)
6. France	GMT+2
7. United Kingdom	GMT+1
8. Switzerland	GMT+2
9. Spain	GMT+2
10. United Arab Emirates	GMT+3

Boler et al. (2018)

- also suggest that some countries with more conservative attitudes may prefer to communicate with male employees.

- propose that in an environment of tough competition only the most profitable firms survive. They are also the firms most able to discriminate.

- Menon and Rogers (2009) find that in less capital intensive industries the wage gap reduced, while in the more concentrated industries it increased.
- Instead of in-firm discrimination, there is wider discrimination present in the country
- propose policies on promoting female education to increase the number of skilled female labor.

We can propose that cultural values and ideas on female roles, can be a reason for the gender wage gap present.

- There is a 2.6% GWG present in the manufacturing sector in Turkey. T
- The GWG is higher in the tradable sectors than in the non-tradable sectors.
- Regression results: 3% in the tradable sectors, 2% in the non-tradable sectors. Decomposition results: 4% in the tradable sectors, 3% in the non-tradable sectors.
- In the tradable sectors, male workers are earning higher than what they should be earning. In the non-tradable sectors, female workers are earning less than what they should be earning.

- Policy suggestions would be to promote a culture of salary transparency and provide social support for working mothers, as well as subsidies for those companies that accommodate to working mother.

- Including firm profitability as a control variable
- Future research is needed to study through what mechanisms does international trade worsen the gender wage gap.

Thank you!