Mind The Gap: Public and Private Wages in Turkey

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What You will Learn

- Is there a wage gap? For whom?
- How big is the wage gap?
- How are public and private sector workers different?
- Why are OLS estimations overestimating the wage gap?
- Why should one prefer propensity score matching estimates?

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BASINDA GÜVEN

Şansları onda bir!

Çoğu üniversite mezunu gençler, Adalet Bakanlığı'nın açtığı kadroya girebilmek için İzmir Adliyesi'ne gitti. Gençler; katiplik, gardiyanlık, şoförlük, teknisyenlik, sıhhi tesisatçılık yapacak

Şansları onda bir!

İzmir'de, Adalet Bakanlığı'nca açılan sözleşmeli ve kadrolu memur kadrosuna, Türkiye'nin 81 ilinden gelen lise ve üniversite mezunu 6 bin 144 kişi başvurdu. İnfaz koruma memuru (gardiyan) ya da katip olmak için sınava girmek isteyenler, boy-kilo kontrolü için Adliye Sarayı koridorlarında uzun kuyruklar oluşturdu.
Adli Yargı Komisyonu'nca düzenlenen sınavlar sonunda, bu yıl, sıhhı tesisatçı, metal işleri, kaloriferci, ziraat teknisyeni, otomotiv teknisyeni, inşaat teknisyeni, bilgiyasar teknisyeni, gardiyan, katip ve şoför kadroları için toplam 574 kişi alınacağı belirtildi. KPSS'den 70 ve üzerinde puan alan sözleşmeli ve kadrolu memur adayları, 27 Ocak'tan sonra bölümlerine göre yapılacak olan sözlü ve yazılı sınavlara girecek. Bayanlarda 165 cm, erkeklerde ise 175 cm'den az olmama kaydı aranan adaylar, 31 Ocak'ta ise sözlü mülakata katılacak.

En büyük talep katipliğe

İş başvurusunda rekor başvuru, bayanlardan geldi. Adliyede katip olmak isteyen 590 kişi, 8 kişilik kadroya girmek için yarışacak. Yoğunlukta ikinci sırayı, şoförler aldı. 149 kişi, 11 sözleşmeli şoförden biri olabilmek için başvuruda bulundu. Çoğunluğunu üniversite mezunların oluşturduğu memur adaylarından en şansız olanlar ise bilgisayar teknisyenliği için başvuranlar. Yalnızca 1 kişinin alınacağı bu kadro için 37 kişi başvurdu..

Why Public Sector?

- Job security
- Fringe benefits
- More stable and shorter working hours
- A better working environment
- Higher WAGES?

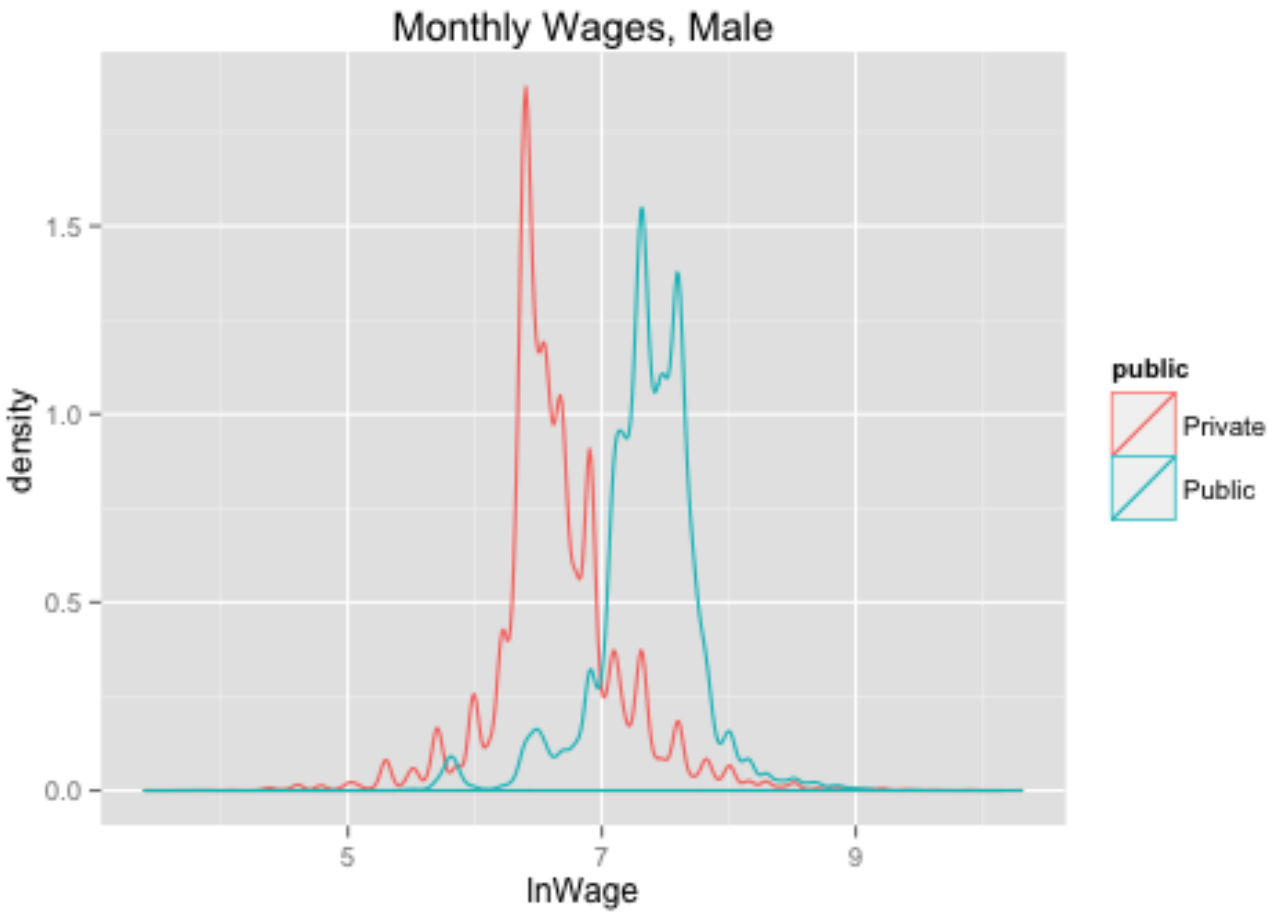
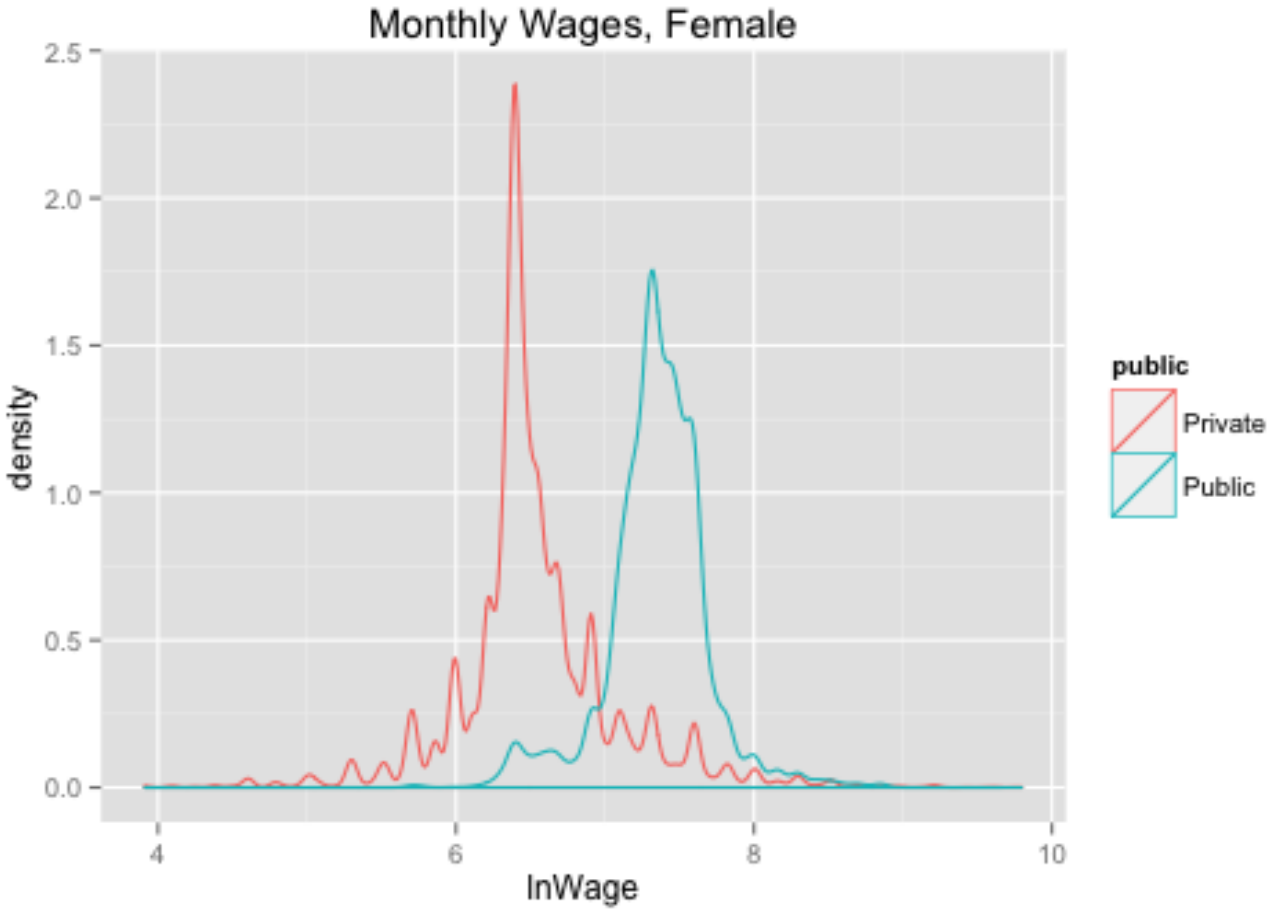

Monthly Wages, Male
density
1.5
1.0
0.5
0.0
5
7
9
lnWage
public
Private
Public

Table: Raw Wage Differences

	Male		Female	
	Public	Private	Public	Private
Average Monthly Wage	7.353	6.637	7.347	6.534
Median Monthly Wage	7.378	6.551	7.346	6.446
Standard Deviation	0.417	0.506	0.344	0.537
University and 40-45 age	7.619	7.424	7.473	7.215
University and 25-30 age	7.573	7.615	7.487	7.474


Monthly Wages, Female
density
2.5
2.0
1.5
1.0
0.5
0.0
4
6
8
10
lnWage
public
Private
Public

- Search and matching are different in the public sector
- Screening and promotion are different
- Politics matter
- Unions are stronger in public sector

- US and EU wage gap on the order of % 5-10
- In Latin America there is even a wage penalty in the private sector
- A high wag gap in Greece

Findings in Turkey

- Tansel (2005) finds wage premiums, except for university graduates
- Akhmenodjov and Izgi (2012) find a premium of more than % 40
- San and Polat (2012) using selection corrected quantile estimations find a wage of more than % 50.
- Gürbüz and Polat (2014) find wage gaps in the range between % 30 - % 90 (?)

Data and Descriptions

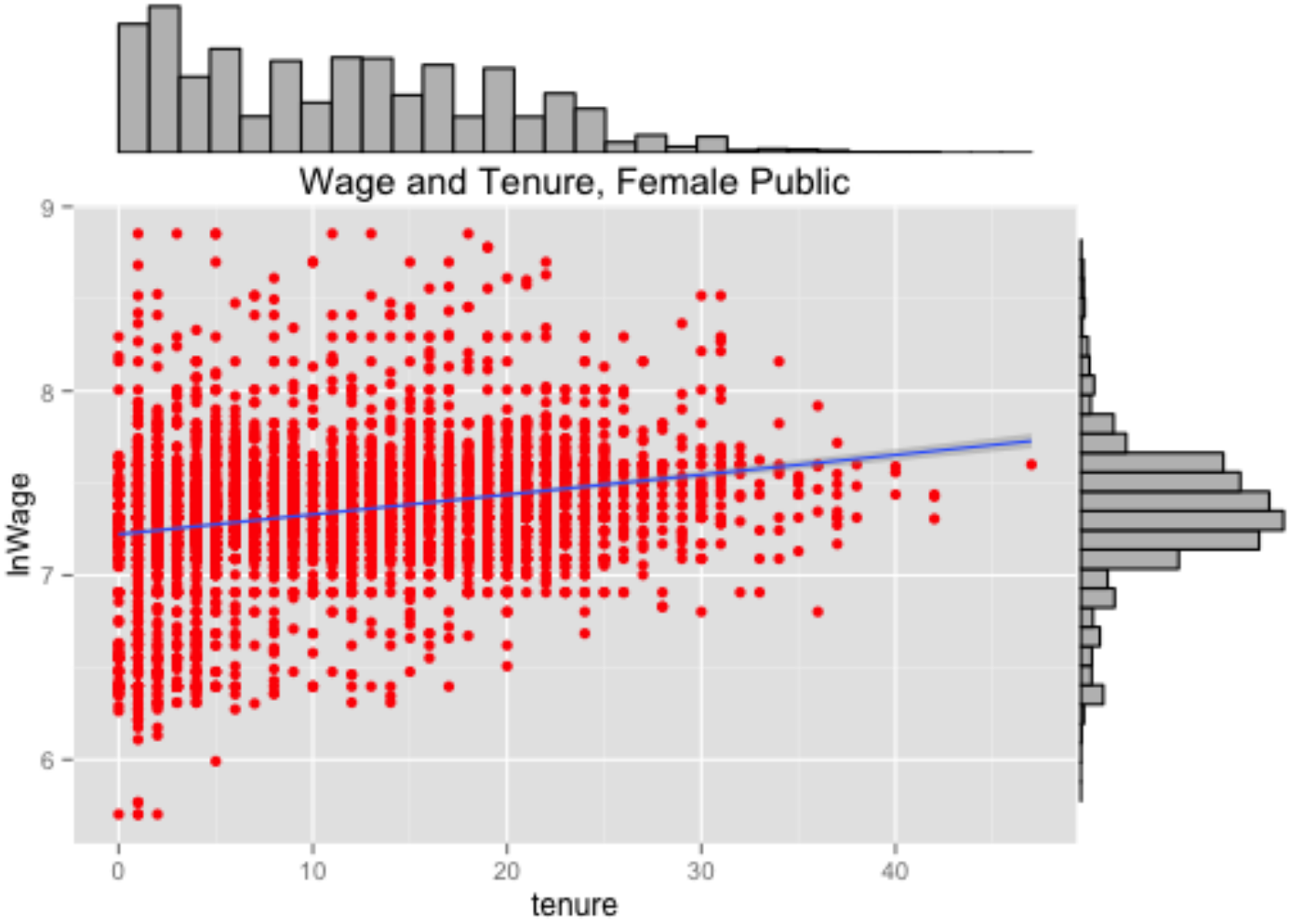
- Household Labor Force Survey, 2010
- Select wage-labor (remove unpaid family worker, self-employed and employers)
- Select observations with positive wages
- Remove temporary workers
- Remaining dataset is sufficiently large

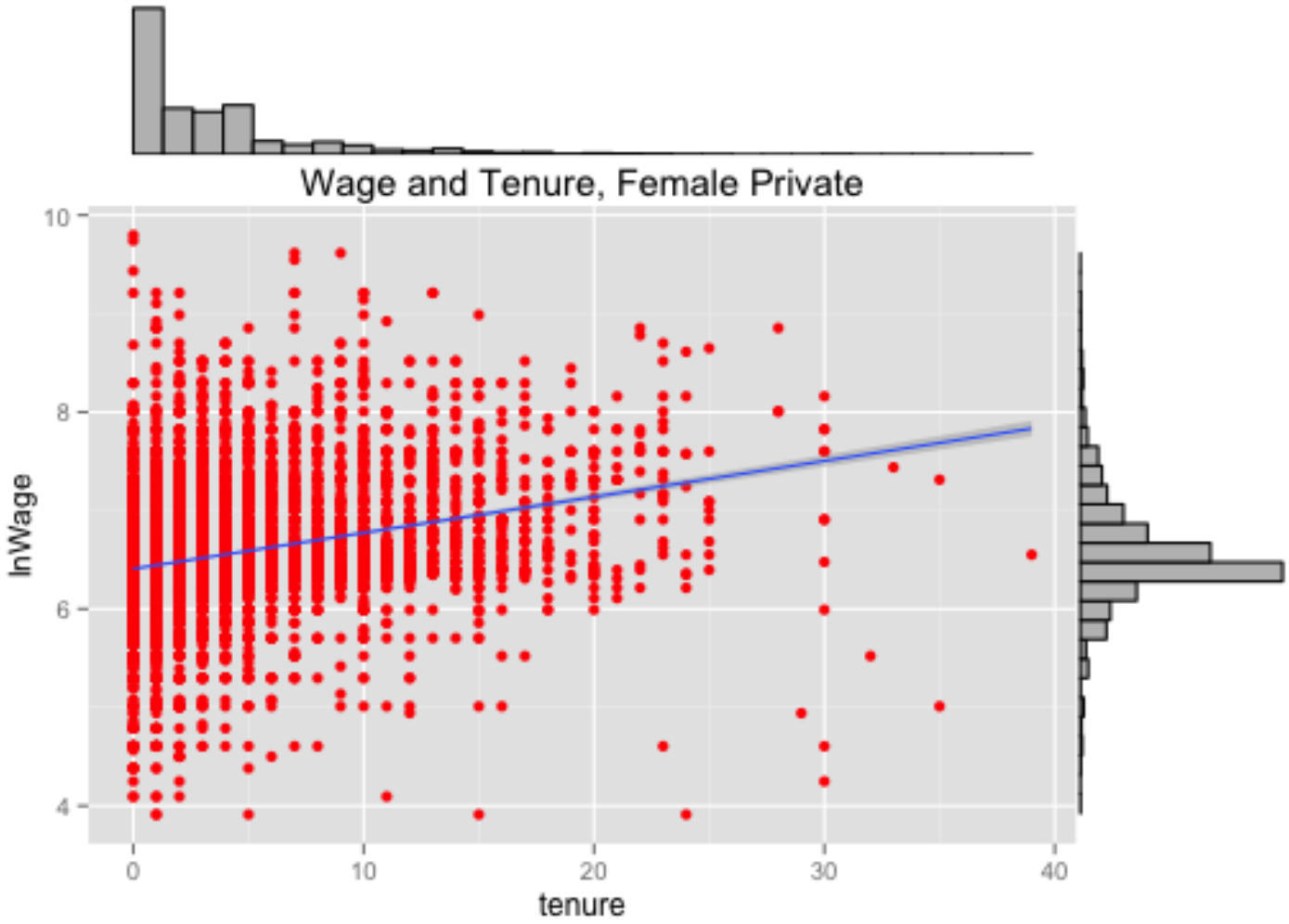
Table 1: Descriptive Summary Statistics

Variables	Pri. Men	Pub. Men	Pri. Women	Pub. Women
Age 20-24	0.157	0.185	0.14	0.199
Age 25-29	0.118	0.186	0.101	0.169
Age 30-34	0.083	0.20	0.055	0.105
Age 34-39	0.038	0.117	0.023	0.035
Firm 1-9	0.390	0.095	0.33	0.061
Firm 10-24	0.121	0.098	0.135	0.123
Firm 25-49	0.171	0.226	0.194	0.256
Firm 50-99	0.208	0.334	0.227	0.312
Firm 100-249	0.050	0.092	0.051	0.09
Firm 250+	0.061	0.155	0.062	0.157
Istanbul	0.194	0.053	0.246	0.088
Formal	0.764	0.975	0.764	0.999
HHsize	1.857	1.199	2.659	2.088
Migrant	0.380	0.485	0.389	0.653
Primary	0.615	0.227	0.448	0.025
High School	0.273	0.258	0.308	0.163
University	0.111	0.516	0.245	0.812
Married	0.714	0.893	0.464	0.707
Admin	0.066	0.184	0.056	0.09
Tenure	4.964	14.480	3.453	11.578
Network	0.138	0.006	0.16	0.008
Hours	56.14	43.05	51.40	39.42

- Public sector workers are older, more educated, more likely to be married and be migrant.
- They are almost all formal.
- The average tenure of public male workers is substantially greater than the private sector worker.
- They work in larger firms and they are more likely to hold an administrative position.
- The public workers are less likely to live and work in Istanbul compared to the private sector workers.

- The striking difference among public and private sector female workers is in human capital.
- The share of university graduates in public sector is % 81 whereas it is only % 24 in the private sector.
- Moreover, for less educated (primary school or less) the ratios also differ dramatically, only % 2 in the public sector in contrast to % 45 in the private sector.
- They are also older and their tenure is greater.
- One third of the women in the private sector work in micro firms (with less than 10 workers).


Wage and Tenure, Female Public
lnWage
tenure
9
8
7
6
0
10
20
30
40


Wage and Tenure, Female Private
lnWage
tenure
10
8
6
4
0
10
20
30
40

Empirical Strategies and Results

- What would have been the wage gap if the workers in the public sector were employed in the private sector.
- However, the counterfactual observations are naturally unobtainable.
- The benchmark is simply treat public sector as a dummy variable and find the returns on being in the public sector.
- First, the distribution is non-random. There is a selection bias.
- Second, there can be endogeneity issues as working in the public sector can be correlated with some unobservable characteristics (i.e. being diligent) that could affect wage earnings.

- Correct for the selection by first having a maximum likelihood regression and specifying Mills Ratios and then including these terms in OLS regressions specific for each sector.
- Use Oxaca-Blinder decomposition is used for to account for the differences in wage gaps between the two sectors due to the observable covariates.
- The same two step method can also be applied for the quantile regressions if one thinks that the relations between the wages and the observables are non-linear.

- Matching methods are more superior when selection variables are either hard to find or not fully exogenous.
- In the literature, household size, household income or health conditions are used as selection variables.
- These variables are not really exogenous.

Benchmark OLS Results

- The benchmark method is straightforward linear estimation of the log monthly wage on various covariate variables and a dummy variable for working in the public sector.
- We run three regressions. The first one is for the pooled sample. The second one is for the men and the third one is for the women.
- We find that there appears a rather large wage gap, about % 30-35
- Percentage findings are derived through the simple calculation, $e^{\beta} - 1$
- Our OLS results for the public-private wage gap are smaller than the findings in the Turkish context.

Table 2: OLS Models

	All	Men	Women
(Intercept)	6.25^{***}	6.25^{***}	6.11^{***}
	(0.01)	(0.01)	(0.03)
public	0.30^{***}	0.28^{***}	0.31^{***}
	(0.00)	(0.00)	(0.01)
female	-0.10^{***}		
	(0.00)		
married	0.07^{***}	0.09^{***}	0.04^{***}
	(0.00)	(0.01)	(0.01)
formal	0.27^{***}	0.23^{***}	0.26^{***}
	(0.00)	(0.00)	(0.01)
tenure	0.01^{***}	0.01^{***}	0.01^{***}
	(0.00)	(0.00)	(0.00)
HHsize	-0.04^{***}	-0.03^{***}	-0.04^{***}
	(0.00)	(0.00)	(0.00)
migrant	0.06^{***}	0.05^{***}	0.06^{***}
	(0.00)	(0.00)	(0.01)
regular	0.05^{***}	-0.02	0.15^{***}
	(0.01)	(0.01)	(0.02)
admin	0.22^{***}	0.22^{***}	0.27^{***}
	(0.00)	(0.01)	(0.01)
high	0.16^{***}	0.15^{***}	0.20^{***}
	(0.00)	(0.00)	(0.01)
univ	0.51^{***}	0.50^{***}	0.52^{***}
	(0.00)	(0.00)	(0.01)
Age 20-24	0.07^{***}	0.06^{***}	0.08^{***}
	(0.00)	(0.01)	(0.01)
Age 25-29	0.08^{***}	0.08^{***}	0.08^{***}
	(0.00)	(0.01)	(0.01)
Age 30-34	0.08^{***}	0.08^{***}	0.06^{***}
	(0.01)	(0.01)	(0.01)
Age 35-39	0.07^{***}	0.07^{***}	0.04^{***}
	(0.01)	(0.01)	(0.01)
Age 40-44	0.06^{***}	0.05^{***}	0.06^{***}
	(0.01)	(0.01)	(0.02)
Firm 10-24	0.06^{***}	0.10^{***}	0.10^{***}
	(0.00)	(0.01)	(0.01)
Firm 25-49	0.08^{***}	0.11^{***}	0.09^{***}
	(0.00)	(0.00)	(0.01)
Firm 50-99	0.08^{***}	0.14^{***}	0.12^{***}
	(0.00)	(0.00)	(0.01)
Firm 100-249	0.12^{***}	0.18^{***}	0.15^{***}
	(0.01)	(0.01)	(0.01)
Firm 250 +	0.17^{***}	0.24^{***}	0.17^{***}
	(0.01)	(0.01)	(0.01)
Regional Dummies	Included	Included	Included
R^2	0.61	0.60	0.67
Adj. R^2	0.61	0.60	0.67
Num. obs.	76590	59345	17245

$^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$

Propensity Score Matching

- The matching procedure tries to solve for the counterfactual problem by selecting a control group from the nontreated group such that the selected control group is as similar as possible to the treatment group based on observable covariates
- High dimensionality of covariates can be a problem.
- Treated and nontreated observations in the selected control group with the same (or very close) value of propensity scores have the same distribution of the observed covariates X and satisfy the balancing argument.

Table 3: Mean values of Propensity Scores Before and After Nearest Neighbor Matching

	Before Matching		After Matching	
	Treated	Control	Treated	Control
Men	0.7	0.1	0.499	0.494
Women	0.77	0.09	0.57	0.56

- The variables used in the construction of propensity scores are listed in the probit regression.
- Propensity scores for public sector workers, for both men and women, are in the order of more than 7 times higher than the private sector workers before matching.

Table 6: Probit Regression for Propensity Score Matching

	Men	Women
(Intercept)	-1.42^{***}	-1.92^{***}
	(0.15)	(0.54)
formal	1.20^{***}	3.64^{***}
	(0.07)	(0.47)
married	-0.27^{***}	0.15^{*}
	(0.06)	(0.06)
tenure	0.12^{***}	0.16^{***}
	(0.00)	(0.01)
HHsize	-0.22^{***}	-0.20^{***}
	(0.02)	(0.04)
network	-1.35^{***}	-1.29^{***}
	(0.11)	(0.18)
migrant	0.57^{***}	0.85^{***}
	(0.03)	(0.06)
hours	-0.11^{***}	-0.17^{***}
	(0.00)	(0.01)
admin	-0.17^{***}	-0.93^{***}
	(0.05)	(0.10)
high	0.57^{***}	1.40^{***}
	(0.04)	(0.12)
univ	1.99^{***}	2.66^{***}
	(0.04)	(0.11)
Age 20-24	0.10	-0.06
	(0.05)	(0.08)
Age 25-29	0.44^{***}	-0.18
	(0.06)	(0.10)
Age 30-34	0.52^{***}	-0.13
	(0.06)	(0.12)
Age 35-39	0.77^{***}	-0.10
	(0.07)	(0.15)
Age 40-44	0.97^{***}	-0.93^{***}
	(0.08)	(0.22)
Firm 10-24	0.70^{***}	0.74^{***}
	(0.06)	(0.12)
Firm 25-49	1.02^{***}	1.06^{***}
	(0.05)	(0.11)
Firm 50-99	1.13^{***}	1.10^{***}
	(0.05)	(0.10)
Firm 100-249	1.16^{***}	1.51^{***}
	(0.07)	(0.13)
Firm 250 +	1.44^{***}	1.78^{***}
	(0.06)	(0.12)
AIC	29677.45	7942.66
BIC	30118.02	8322.67
Log Likelihood	-14789.73	-3922.33
Deviance	29579.45	7844.66

- Formality, age, education and firm size matter for selection into the public sector
- There are obviously non-observable characteristics
- However, conditional on non-observables the goal is the match the treated and control group based on the propensity scores derived from the selection regression

Table 4: Nearest Neighbor, Mahalonobis and Caliper Matching Models

		All	Men	Women
Nearest N.	ATT Estimate	0.14	0.14	0.15
	Standard Errors	0.005	0.005	0.009
	T-stat	18.04	16.87	16.79
Mahalonobis	ATT Estimate	0.14	0.157	0.162
	Standard Errors		0.004	0.008
	T-stat		32.6	19.4
Caliper (0.1)	ATT Estimate		0.171	0.22
	Standard Errors		0.06	0.01
	T-stat		32.7	19.5
	No obs. Treated	19938	14799	5139
	No obs. Matched	19938	14799	5139
	Total No obs.	76590	59345	17245

Table 5: Matching Balance for Men

Variables	Before Matching		T-test	After Matching		T-test
	Public	Private		Public	Private	
University	0.516	0.11	2.22e-16	0.516	0.516	1
High School	0.257	0.273	0.0001	0.257	0.257	1
Firm 100-249	0.092	0.049	2.22e-16	0.092	0.092	1
Firm 250 +	0.154	0.06	2.22e-16	0.154	0.154	1
Formal	0.974	0.764	2.22e-16	0.974	0.974	1
Admin	0.183	0.065	2.22e-16	0.183	0.183	1
Tenure	14.48	4.964	2.22e-16	14.48	14.296	2.22e-1

Conclusion

- The appeal of the public sector can not be the monthly wages.
- The endowments of the public sector workers are much better.
- Relative job security and other non-material benefits should be really important
- Considering the social benefit and externalities, should the gap vanish?