Occupational Regulation in the European Union: Coverage and Wage Effects

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Occupational Regulation in the EU

Questions:

1. What's the prevalence of occupational regulation in the EU?

2. What is its impact on (mean) wages?

3. …….on the wages of women & migrants

4. …….on wage inequality?

Data: EU Survey of Regulated Occupations

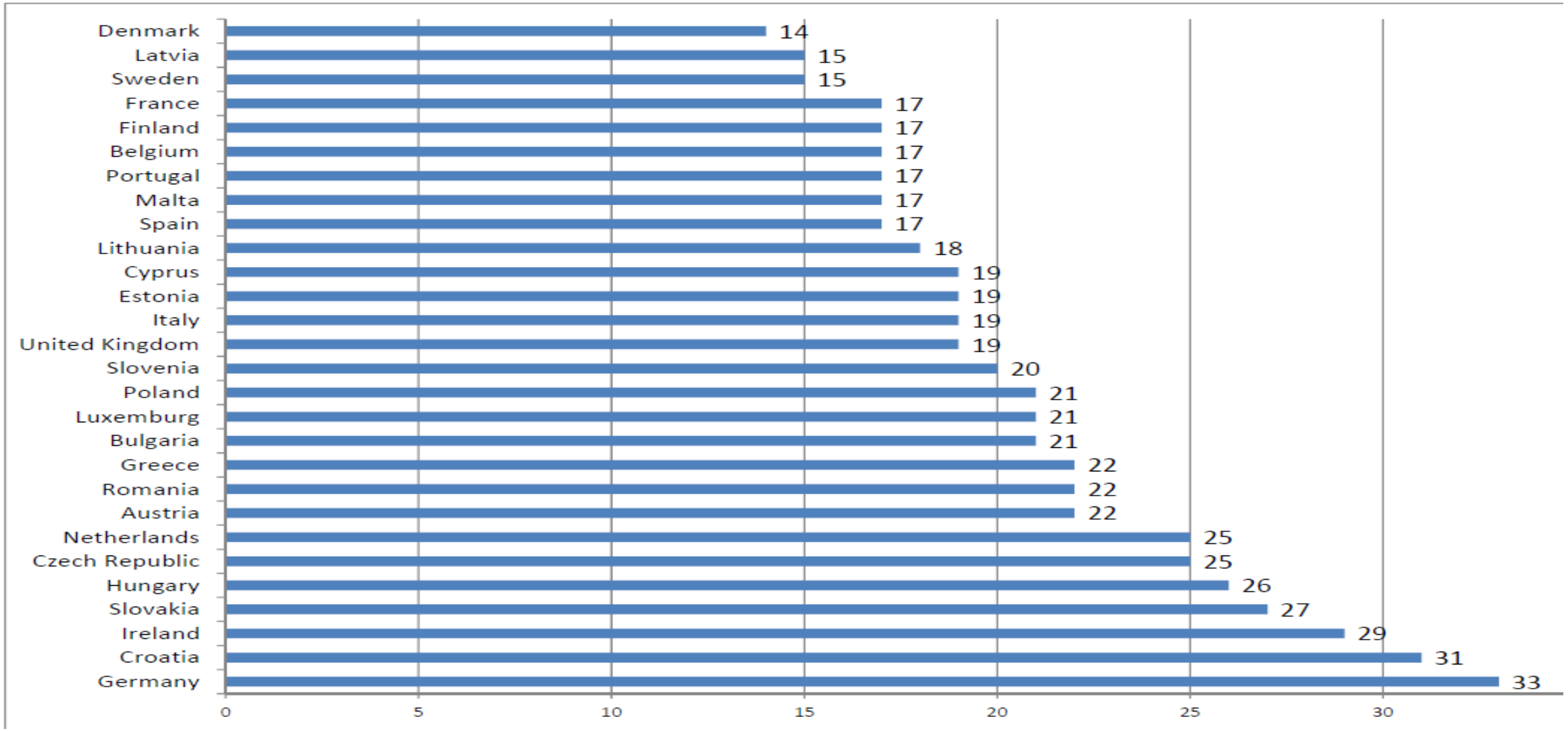
First ever survey on occupational regulation in the EU.

- Carried out by TNS between 31st March and 14th April 2015.
- Covers the EU labor force (28 member states).
- Telephone interviews (Computer Assisted Telephone Interviews)
- Sample of 26,640 workers (about 1,000 for each country, 500 for very small ones)
- Respondent-reported measure of licensing & certification

Prevalence

	Proportion	Std. Error
Licensed	0.22	0.0048
Certified	0.21	0.0046

EU Prevalence, %



Empirical analysis of wage effects

Effect on mean wage:

1. Wage regression:

$$Y_i = b_0 + b_1 Licensed_i + X_i b_2 + u_i$$

2. Oaxaca-Blinder decomposition:

   Separate wage regressions for two groups $g = L, N$

$$Y_{gi} = \beta_{g0} + X_{gi}\beta_{g1} + u_{gi},$$

$$\bar{Y}_L - \bar{Y}_N = \underbrace{(\bar{X}_L - \bar{X}_N)\hat{\beta}_{N1}}_{Composition\ Effect} + \underbrace{(\hat{\beta}_{L0} - \hat{\beta}_{N0}) + \bar{X}_L(\hat{\beta}_{L1} - \hat{\beta}_{N1})}_{Wage\ Structure\ Effect}$$

Effect on the entire distribution of wages:

3 DiNardo-Fortin-Lemieux (1996) decomposition (semiparametric approach).

1. Wage Regressions

	(1)	(2)	(3)	(4)
Licensed	0.0911***	0.0388***	0.0335**	0.0378**
	(0.0223)	(0.0146)	(0.0148)	(0.0150)
Individual controls		yes	yes	yes
Country fe		yes	yes	yes
Occupation fe		yes	yes	
Industry fe			yes	yes
Occ.fe(2digit)			yes	yes
N	16,156	16,041	16,041	15,875
R2	0.002	0.699	0.705	0.710

Controls: union membership, gender, age, education f.e. (6 categories), work experience, work exp.^{2}, employment status f.e. (private employee, public employee, self-emplyed, self-employed with employees).

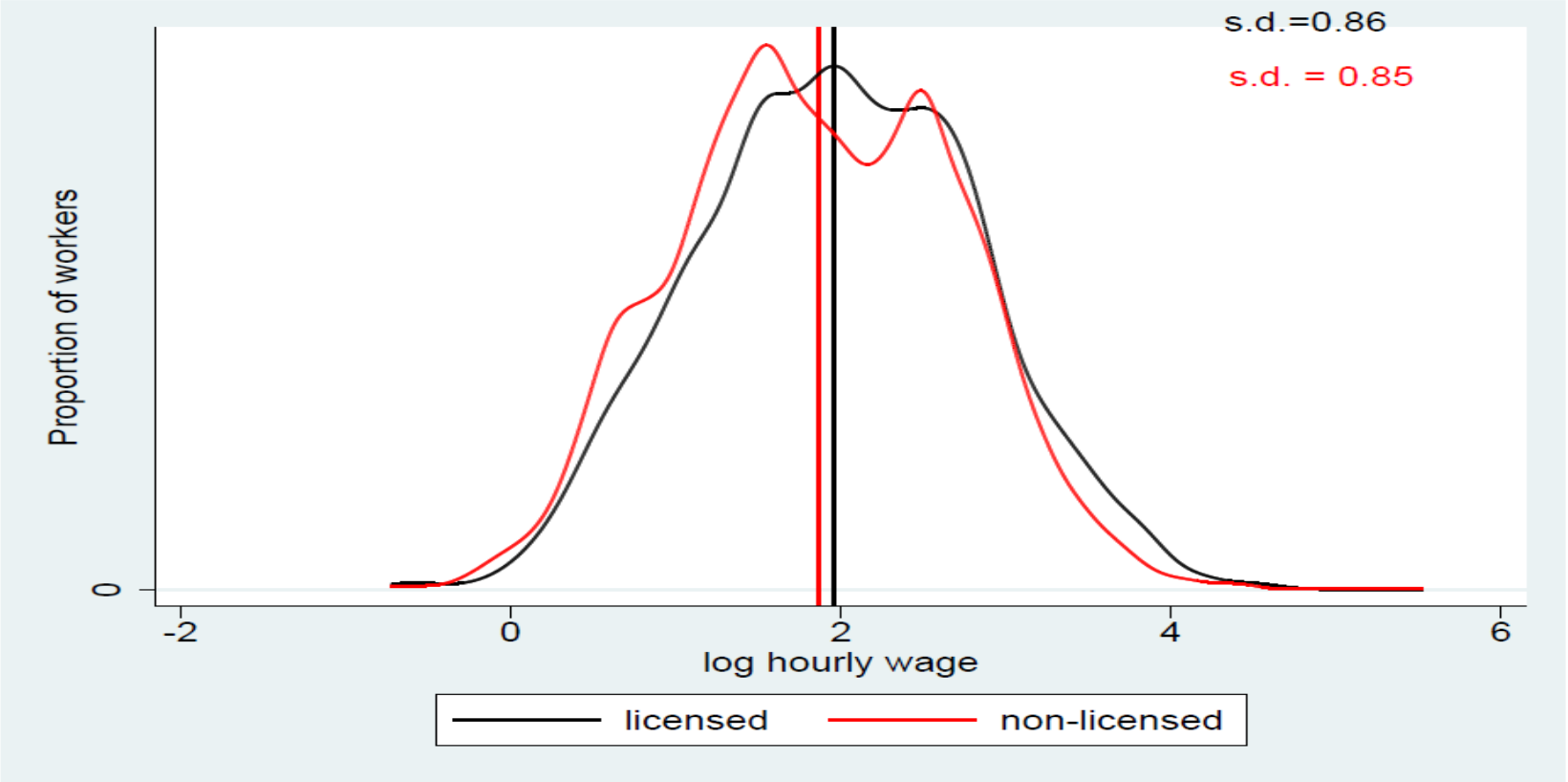
O-B decomposition: Composition Effect

	(1) Coef.	(2) Std. Err.	(3) %
Predicted log wage licensed ($\bar{Y}_L$)	2.1667	0.0193	
Predicted log wage non-licensed ($\bar{Y}_N$)	2.0778	0.0108	
Difference $\bar{Y}_L - \bar{Y}_N$	**0.0890**	**0.0221**	**100.0**
Composition effect $(\bar{X}_L - \bar{X}_N)\hat{\beta}_{N1}$			
attributable to:			
Union	-0.0024	0.0020	
Age	0.0067	0.0028	
Work experience and exp.^{2}	0.0160	0.0040	
Gender	0.0033	0.0021	
Education f.e.	0.0011	0.0051	
Occupation f.e.	0.0102	0.0065	
Industry f.e.	0.0071	0.0087	
Empl. status f.e.	0.0045	0.0076	
Country f.e.	0.0105	0.0166	
Total	**0.0569**	**0.0203**	**64.0**

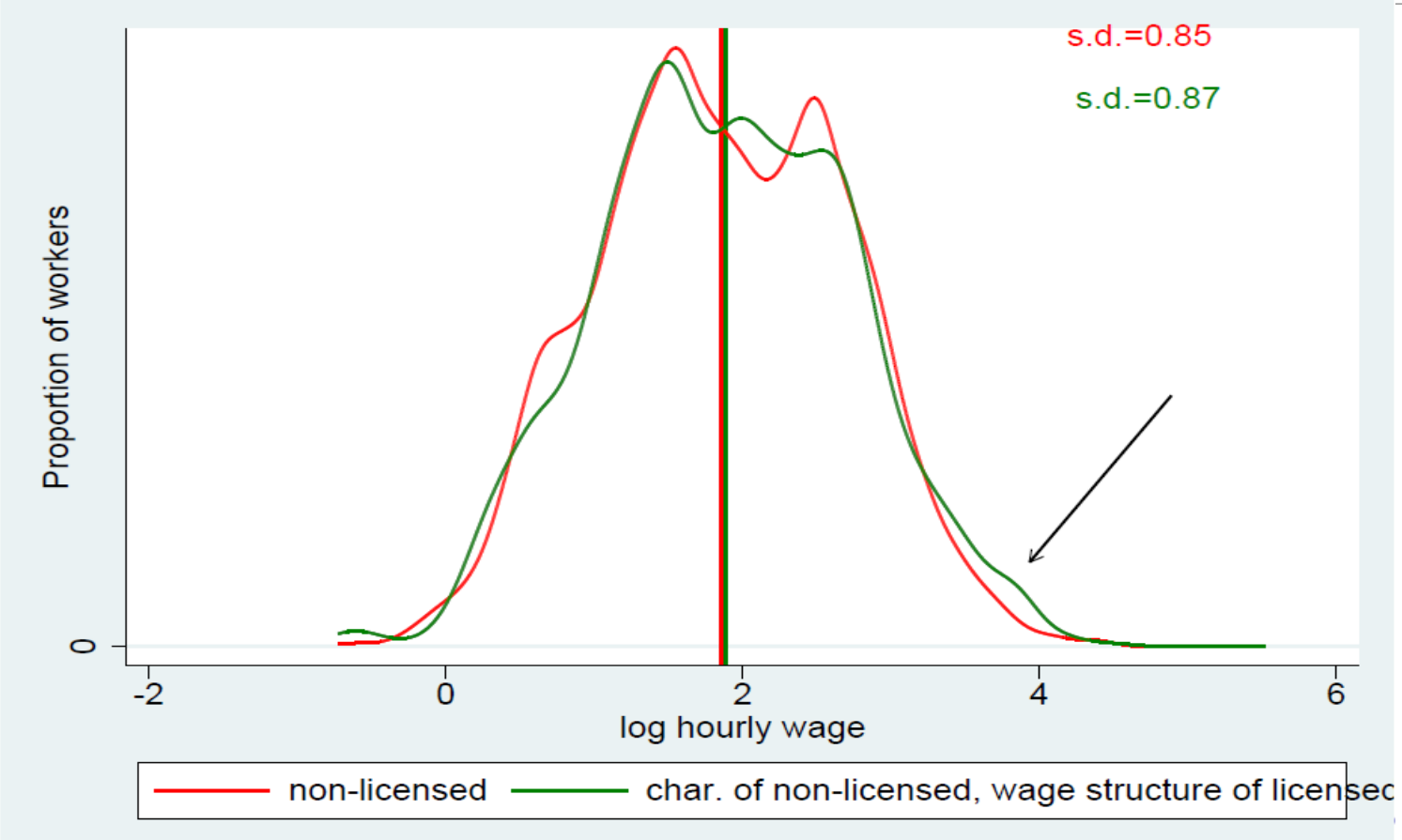
O-B decomposition: Wage Structure Effect

	(1) Coef.	(2) Std. Err.	(3) %
Wage structure effect $(\hat{\beta}_{L0} - \hat{\beta}_{N0}) + \bar{X}_L(\hat{\beta}_{L1} - \hat{\beta}_{N1})$ attributable to:			
Union	-0.0135	0.0075	
Age	-0.1179	0.0651	
Work experience and exp.^{2}	0.0212	0.0251	
Gender	-0.0151	0.0160	
Education f.e.	-0.1257	0.1057	
Occupation f.e.	0.1344	0.0590	
Industry f.e.	-0.1202	0.0935	
Empl. status f.e.	0.0012	0.0155	
Country f.e.	-0.0150	0.0360	
Constant	0.2826	0.1805	
Total	**0.0320**	**0.0163**	**36.0**

3. DFL decomposition: Wage distributions



DFL decomposition: The wage structure effect



Empirical Analysis of Wage Effects: Women

$$\ln w_i = \beta_0 + \beta_1 Female_i + \sum_{j=1}^{3} \delta_j Institution_i$$

$$+ \sum_{j=1}^{3} \gamma_j Female_i \times Institution_i + \beta_2 SelfEmployed_i$$

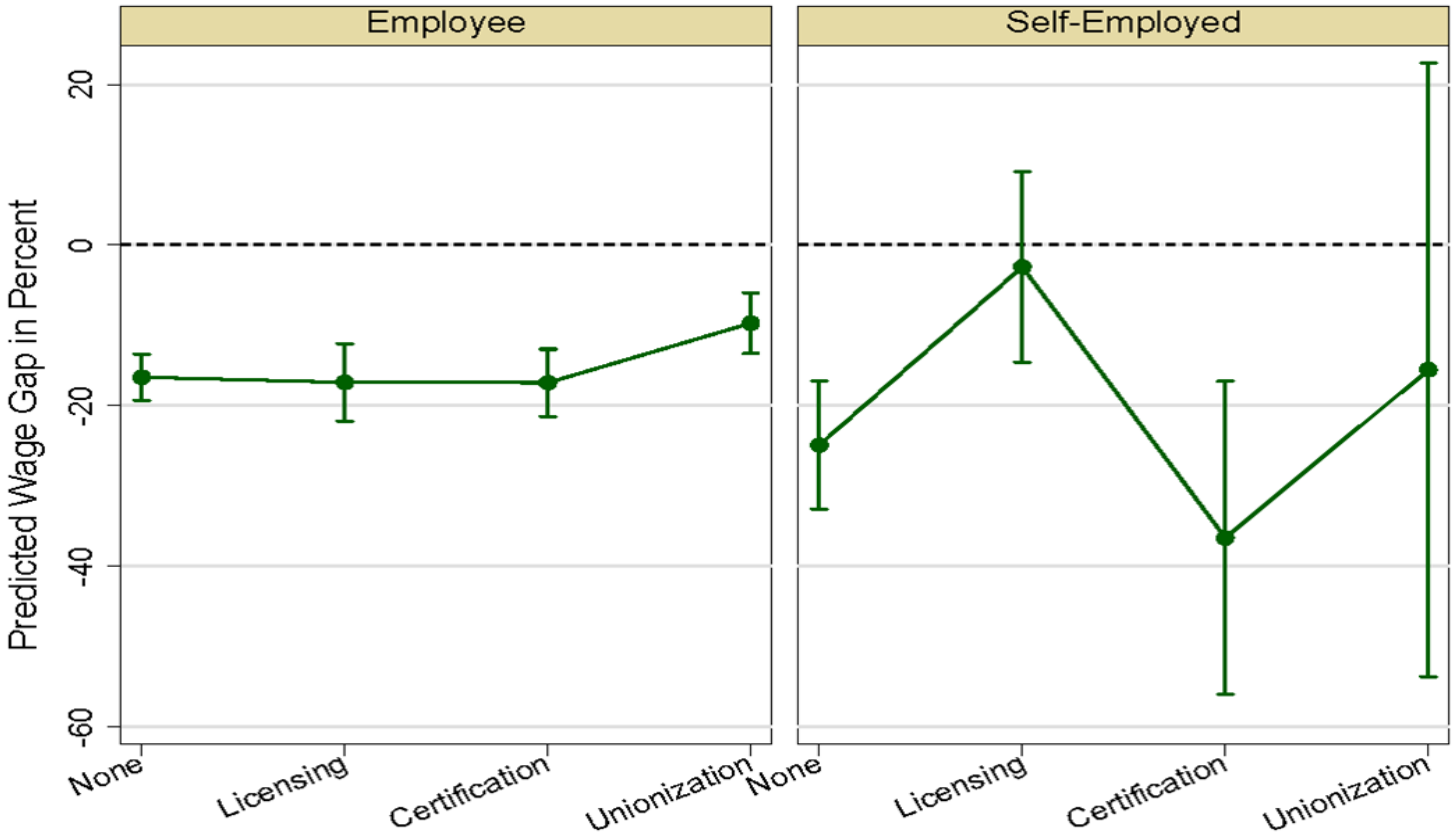
$$+ \beta_2 Female_i \times SelfEmployed_i$$

$$+ \sum_{j=1}^{3} \eta_j SelfEmployed_i \times Institution_i$$

$$+ \sum_{j=1}^{3} \zeta_j Female_i \times SelfEmployed_i \times Institution_i$$

$$+ \beta_3 X_i + FE_{Country} + FE_{Occupation} + \varepsilon_i,$$

Gender wage gap, by institution and employment status



Percentage points effects of licensing on wages

Marginal Effects	Licensing
Female	6.803** (1.873)
Male	4.404* (1.838)
Female X Self-Employed	22.709** (6.588)
Male X Self-Employed	0.535 (5.513)
Female X Employees	4.512* (1.682)
Male X Employees	5.152** (1.840)

Note: Standard errors in parentheses computed using the Delta method. Significance level: *** p<0.01, ** p<0.05, * p<0.1.

Proportion of females in licensed occupations

	(1)	(2)	(3)
Licensed	-0.062***	-0.071***	-0.074***
	(0.015)	(0.019)	(0.026)
Certified		-0.043***	-0.057**
		(0.010)	(0.024)
Union		-0.001	-0.052
		(0.010)	(0.035)
Self-employed		0.000	-0.065**
		(0.000)	(0.026)
Individual controls	YES	YES	YES
Firm Size	YES	YES	YES
Occupational control (1-digit)	YES	YES	YES
Industry control	YES	YES	YES
Country f.e.	YES	YES	YES
Observation	19,985	19,985	19,985

Note: marginal effects of probit models, in columns (2) and (3) at *self-employed* equal to zero and one, respectively. The dependent variable is the probability of being female. Standard errors are in parenthesis. Significance level: *** p<0.01, ** p<0.05, * p<0.1.

Empirical Analysis of Wage Effects: Migrants

$$\begin{aligned} ln\, w_i = {} & \beta_0 + \beta_1 Lic_i + \beta_2 Cert_i + \beta_3 Imm_i + \beta_4 Lic_i \times Imm_i \\ & + \beta_5 Cert_i \times Imm_i + \beta_6 X_i + FE_{Country} \\ & + FE_{Occupation} + \varepsilon_i \end{aligned}$$

	Log(wage)			
	(1)	(2)	(3)	(4)
Immigrant	-0.109***	-0.109***	-0.085***	-0.082***
	(0.020)	(0.019)	(0.019)	(0.019)
Licensed	0.067***	0.048***	0.043***	0.040***
	(0.010)	(0.010)	(0.010)	(0.010)
Certified	0.041***	0.030***	0.022**	0.022**
	(0.011)	(0.011)	(0.011)	(0.011)
Union	0.032***	0.042***	0.034***	0.031***
	(0.009)	(0.010)	(0.009)	(0.009)
Immigrant x licensed	0.080**	0.097***	0.096**	0.090**
	(0.038)	(0.038)	(0.039)	(0.039)
Immigrant x certified	0.046	0.055	0.050	0.045
	(0.036)	(0.036)	(0.034)	(0.034)
Immigrant x union	-0.002	-0.021	-0.010	-0.008
	(0.030)	(0.030)	(0.028)	(0.028)
Individual controls	YES	YES	YES	YES
Country fixed effect	YES	YES	YES	YES
Occupation control (3 digits)			YES	YES
Industry control				YES
Constant	1.188***	1.049***	0.911***	0.760***
	(0.065)	(0.064)	(0.070)	(0.075)
Observations	16,001	16,001	15,453	15,453
R-squared	0.734	0.745	0.772	0.774

Note: Table reports the OLS estimates of wage determinants. Dependent variable is the log of monthly wage. Omitted indicator variables: native workers. Robust standard errors in parentheses. Significance level: *** p<0.01, ** p<0.05, * p<0.1.

Proportion of Migrants in Licensed Occupations

	(1)	(2)	(3)
Licensed	-0.130***	-0.128***	-0.086**
	(0.034)	(0.034)	(0.041)
Certified	-0.014	-0.013	-0.026
	(0.035)	(0.036)	(0.039)
Union		-0.34	-0.05
		(0.030)	(0.025)
Individual controls	NO	YES	YES
Firm Size	NO	YES	YES
Occupational control (1-digit)	NO	YES	YES
Industry control	NO	YES	YES
Country f.e.	NO	YES	YES
Observations	19,985	19,985	19,985

Note: linear probit model results. The dependent variable is the probability of being migrants. Omitted variables include female, primary education, working in private sector. standard errors are in parenthesis. significance level: *** p<0.01, ** p<0.05, * p<0.1.

Conclusions (I)

- **Prevalence** of licensing: 22% of workers
- **Wage gap**: 0.09 log points (4% adjusted- but heterogeneity by occupation, education)
- **Composition effect**: 0.06 log points
- **Wage structure effect**: 0.03 long points
- **Wage inequality**: wage structure effect increases the s.d. of wages by about 0.02 log points (2.3%)

Conclusions (II)

- **Gender**: Female licensing wage premium corrects *some* of gender wage gap, but mainly driven by self-employed. Women less likely to be working in licensed occupations
- **Migrants:** Licensing corrects for wage penalty associated with migration. Migrants less likely to be working in licensed occupations.

Potential mechanisms:

- Better human capital signalling & matching
- Less statistical discrimination when productivity hard to observe
- Positive selection effect: more productive women & migrants enter licensed occupations so pay is higher
- Women (intermitted labour market participation) and Migrants (if they anticipate repatriation) less likely to enter licensed occupations as HK investments will not be recouped