

Regulated occupations in Italy: Extent and labor market effects

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Bank of Italy

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- Very large incidence:
 - Recent estimates establish that 29% of US workers and 22% of EU ones are employed in regulated occupations
 - Share is also rapidly growing (Kleiner and Krueger, 2013)
- Major potential effects:
 - prices of work and services \uparrow because R restricts labor supply in given markets
 - competitive advantage for incumbents, limits possibility of efficient firms to grow and inefficient ones to exit
 - inefficient matching between workers and jobs and reduced resilience of the economy through limited occupational and geographical mobility
 - effects on downstream markets (Barone & Cingano, 2011)
- Underinvestigated in economic literature (Kleiner, 2000 and 2017)



- 1 Build a set of novel indicators of regulation
 - Extensive margin: regulated or not (and starting year)
 - Intensive margin: two *levels* of regulation + type and strictness of regulation (i.e., education and training requirements, existence of an entry exam and restrictions on market conduct)
- 2 Descriptive assessment of the extent of regulated occupations in Italy and of the characteristics of the workers involved and their labor market outcomes
- 3 Causal impact of (de)regulation on the labor market, focus on:
 - Occupational mobility
 - Wages



- 1 Institutional setting
- 2 Data and variables
- 3 Descriptive evidence
- 4 Regression analysis
- 5 Causal estimates
- 6 Conclusions

Institutional setting



① *Professioni ordinistiche:*

Regulated occupations which require enrollment to a professional body and are subject to stricter rules of conduct and entry requirements

- 28 professional bodies in Italy
- Over 2 million workers enrolled
- Ex. lawyers, journalists, architects...



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- About 60% of licensed workers
- Ex. Taxi drivers, hairdressers, laundry and dry-cleaning workers...



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• Both object of reforms in early 2000s

- ① 2006: abolished minimum prices, reduced restrictions to advertising and to inter-professional cooperation
- ② 2011(2012): eliminated tariffs, put a cap on training requirements

Data and variables



- Directive 2005/36/EC established that MS were to identify all regulated occupations
- Goal: ensure mutual recognition of qualifications across MS and assess whether regulation was necessary and proportionate
- EC created a *census* of all regulated occupations across MS
 - Ita: 180 occupations
 - EU-15 average: 170 (lowest Sweden 90, highest France 258)



- Quarterly survey data, 1995-2017
- Identify occupations at 4-digit ISCO level
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- Quarterly survey data, 1995-2017
- Identify occupations at 4-digit ISCO level
- Classify as regulated those that are included in the EC database
 - Identify about 500 4-digit ISCO occupations, 93 regulated
 - Cross-validate with [Koumenta & Pagliero, 2016](#)
 - Validate using supplementary information



- 1 Rank regulated ISCO occupations on the basis of number of people employed in LFS

3. Regulation Indicators



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- 3 For this subset of regulated occupations, we *qualify* the applicable regulation:
 - 1 Formal entry (state) exam to access and practice the profession (i.e. a professional exam)
 - 2 Individual requirements in terms of education and training: what degree(s) to practice the profession, total length of education/training
 - 3 Strictness of conduct regulation: OECD style index on a 0-6 scale - based on five different domains of conduct regulation [▶ details](#)



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 - 3 Strictness of conduct regulation: OECD style index on a 0-6 scale - based on five different domains of conduct regulation [▶ details](#)
- 4 Moreover we identify the year of introduction of the relevant regulation

Descriptive statistics for regulation indicators

	Other regulated	<i>Ordinistiche</i>	Total regulated
Entry restrictions			
Compulsory examination	0.627 (0.484)	0.899 (0.301)	0.750 (0.433)
Education and training requirements			
Secondary education degree is compulsory	0.483 (0.500)	1.000 (0.000)	0.717 (0.451)
Tertiary education degree is compulsory	0.282 (0.451)	0.676 (0.469)	0.460 (0.499)
Length of tertiary education degree (years)	1.224 (2.006)	2.912 (2.314)	1.988 (2.308)
Apprenticeship is compulsory	0.517 (0.500)	0.648 (0.478)	0.576 (0.494)
Length of apprenticeship (years)	1.041 (1.142)	1.474 (1.661)	1.237 (1.416)
Professional training is compulsory	0.454 (0.498)	0.201 (0.401)	0.340 (0.474)
Length of professional training (years)	0.372 (0.720)	0.402 (0.803)	0.386 (0.758)
Minimum years of training	4.227 (3.881)	9.386 (3.034)	6.560 (4.359)
Conduct regulation			
Conduct indicator	0.751 (0.433)	3.343 (1.281)	1.923 (1.584)
Observations	482	398	880

Notes: Standard deviations in parentheses. Number of observations is computed as: $N = P \times T$, i.e., number of regulated occupations (44) multiplied by the number of years (20).

- Large variation in requirements across occupations
- *Ordinistiche* imply stricter requirements under all three dimensions

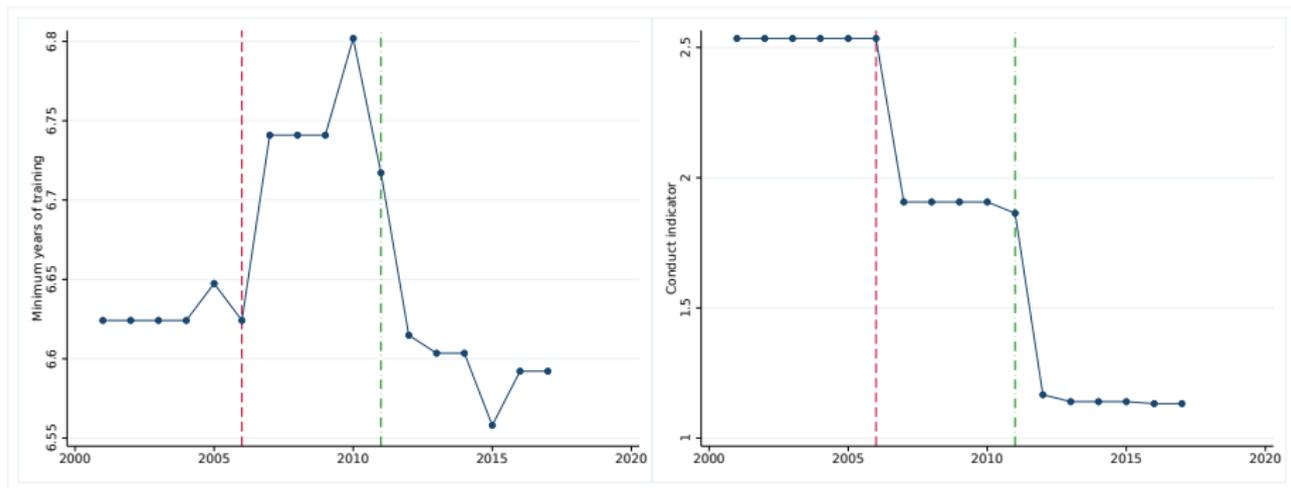
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Changes in regulation, by type of regulation

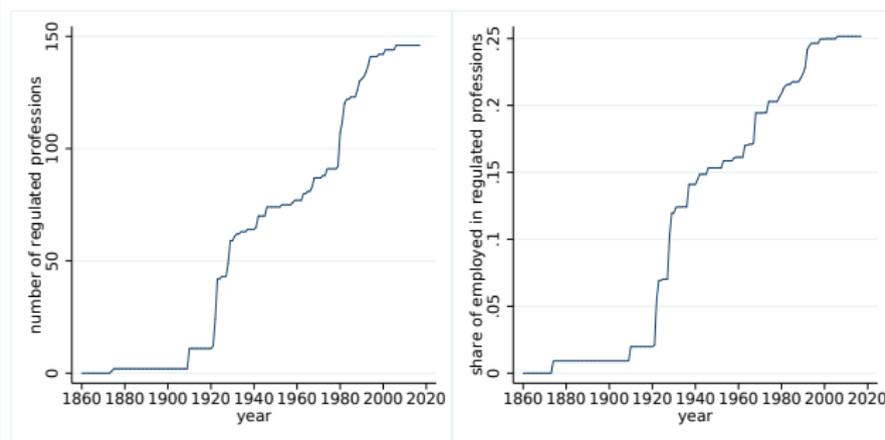


Notes: Authors' elaborations on regulation indicators.

- Regulation requirements changed over time
- Particular effort on reducing conduct (Bersani 2006 and Monti 2011)

Descriptive evidence

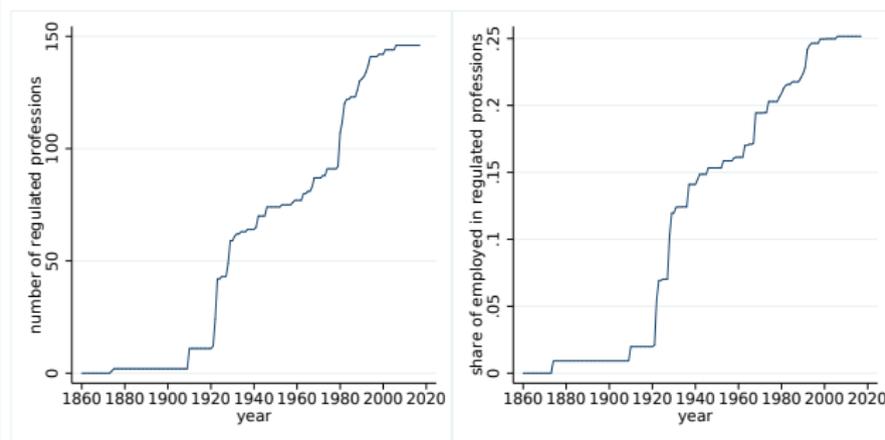
Long-run trends in regulation



Notes: Authors' elaborations on regulation indicators and LFS data. The lines represent the number of regulated occupations (left panel) and the number of workers in regulated occupations (right panel), obtained assuming that the number of workers in each profession remained constant over the entire period. The period is 1860-2017.

- Incidence of regulation increased massively over time (number of occupations and of people in it)
- Trend driven by self-employed and *professioni ordinarie* 

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- Incidence of regulation increased massively over time (number of occupations and of people in it)
- Trend driven by self-employed and *professioni ordinistiche* 
- As of today: 5.4M workers, 24% of employment (11% in *ordinistiche*)
- Over 50% of graduates (almost 1/3 in *ordinistiche*)

- Sectoral composition: 27% health (↑), 20% education (↓), 16% business (↑)
- Geographical distribution: more in the South and metropolitan areas, i.e. areas with higher incidence of services
- Demographic and socio-economic characteristics: more women, older, more educated, higher wages, more self-employed

	(1)	(2)	(3)
	Non regulated	Regulated	Δ
Female	0.392 (0.488)	0.502 (0.500)	-0.110***
Age	42.056 (10.79)	43.685 (10.42)	-1.629***
Tertiary education	0.093 (0.290)	0.402 (0.490)	-0.309***
South	0.297 (0.457)	0.333 (0.471)	-0.036***
Self-employed	0.224 (0.417)	0.329 (0.470)	-0.104***
log wage	7.017 (0.487)	7.209 (0.421)	-0.192***



- Exploit longitudinal dimension of LFS (2004-2017)
- Restrict sample to keep those observed twice with a one year lag (- \approx 20%) [▶ table](#)

- Define:

$$Entry_{ipt} = \mathbb{1}(P_{it} \neq P_{it-1})$$

- P_{it} = occupation held by individual i at time t (including non-employment)
- **Caveat** discontinuity in 2011 due to change in classification

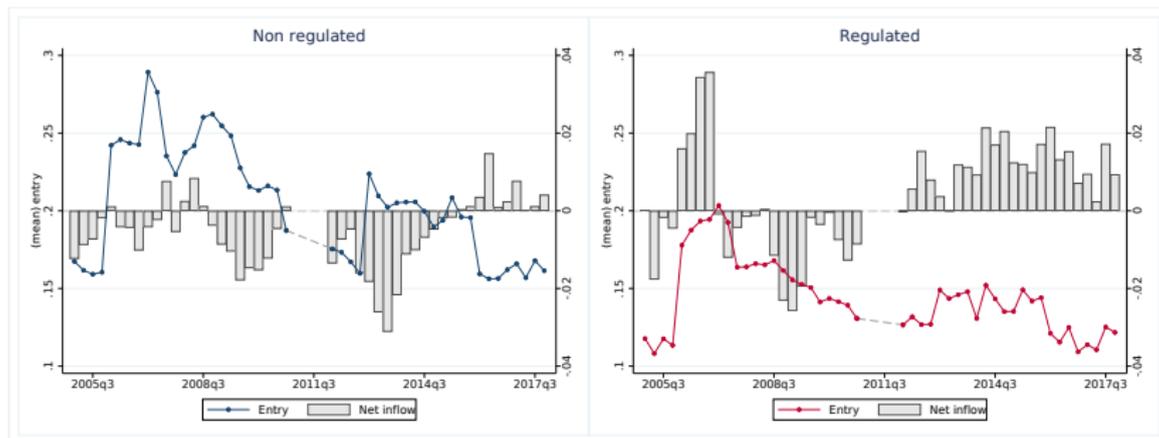


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- Mobility much higher in non-regulated occupations
- For all occupations - but more for non-regulated ones - mobility decreased with recession
- The net inflow has been generally positive in regulated occupation and not in the others

Transition matrix for job movers



$t \backslash t + 1$	Non-employment	Non-regulated	Regulated	<i>Ordinistiche</i>	Total
Non-employment	-	81.66	12.19	6.15	100 [9.42]
Non-regulated	42.49	50.21	4.70	2.59	100 [19.47]
Regulated	44.78	35.83	15.45	3.94	100 [13.47]
<i>Ordinistiche</i>	38.06	37.38	10.20	14.36	100 [9.52]
Total	30.14	57.78	7.92	4.16	100 [14.08]

Notes: Sample is restricted to individuals who reported a different professional status between two consecutive years, i.e., “job movers”. The numbers in brackets indicate the share of job movers in each category.

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- Significantly lower mobility for regulated occupations, especially *ordinistiche*
- Very low entry rates in RO, especially for job-to-job transitions
- Very little mobility *within* regulated (for *ordinistiche* typically within the same professional chamber)

Regression analysis

	(1)	(2)	(3)	(4)	(5)	(6)
	Entry				Entry from other job	Entry from non-employment
Regulated	-0.048*** (0.011)	-0.051*** (0.011)	-0.040*** (0.010)	-0.040*** (0.009)	-0.037*** (0.008)	-0.018*** (0.006)
Female	0.016* (0.009)	0.019** (0.009)	0.016** (0.007)	0.016** (0.007)	-0.003 (0.005)	0.024*** (0.004)
Age	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	-0.001*** (0.000)	-0.005*** (0.000)
Secondary Education	-0.026*** (0.008)	-0.023*** (0.008)	-0.011* (0.006)	-0.011* (0.006)	0.006** (0.003)	-0.017*** (0.003)
Tertiary Education	-0.011 (0.011)	-0.010 (0.011)	0.013 (0.009)	0.013 (0.008)	0.011* (0.006)	-0.008 (0.005)
Self-employed _{t-1}	-0.080*** (0.012)	-0.080*** (0.012)	-0.106*** (0.014)	-0.107*** (0.014)	0.006 (0.007)	
Fixed term _{t-1}	-0.041*** (0.014)	-0.045*** (0.015)	-0.053** (0.020)	-0.052** (0.020)	0.090*** (0.008)	
Observations	1,138,682	1,138,682	1,138,682	1,138,682	1,138,682	1,138,682
Year FE	y	y	y	y	y	y
Quarter FE	y	y	y	y	y	y
Province FE		y	y	y	y	y
Sector FE			y	y	y	y
Sector/Year FE				y	y	y

Notes: Controls: female, age, secondary education, tertiary education, self-employed, employed with a fixed term contract. Robust standard errors clustered at occupation level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

- Entry from regulated occupations about 4 p.p. lower

	(1)	(2)	(3)	(4)	(5)	(6)
	Entry				Entry from other job	Entry from non-employment
Regulated	-0.048*** (0.011)	-0.051*** (0.011)	-0.040*** (0.010)	-0.040*** (0.009)	-0.037*** (0.008)	-0.018*** (0.006)
Female	0.016* (0.009)	0.019** (0.009)	0.016** (0.007)	0.016** (0.007)	-0.003 (0.005)	0.024*** (0.004)
Age	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	-0.006*** (0.000)	-0.001*** (0.000)	-0.005*** (0.000)
Secondary Education	-0.026*** (0.008)	-0.023*** (0.008)	-0.011* (0.006)	-0.011* (0.006)	0.006** (0.003)	-0.017*** (0.003)
Tertiary Education	-0.011 (0.011)	-0.010 (0.011)	0.013 (0.009)	0.013 (0.008)	0.011* (0.006)	-0.008 (0.005)
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Year FE	y	y	y	y	y	y
Quarter FE	y	y	y	y	y	y
Province FE		y	y	y	y	y
Sector FE			y	y	y	y
Sector/Year FE				y	y	y

Notes: Controls: female, age, secondary education, tertiary education, self-employed, employed with a fixed term contract. Robust standard errors clustered at occupation level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

- Entry from regulated occupations about 4 p.p. lower
- Higher barriers for job-to-job than for non-employment-to-job

	(1)	(2)	(3)	(4)	(5)
	Entry				
<i>Ordinistiche</i>	-0.057*** (0.015)				
Other regulated	-0.029** (0.013)				
Years of training		-0.006*** (0.001)			-0.006*** (0.002)
Compulsory examination			-0.023* (0.013)		0.018 (0.015)
Conduct indicator				-0.020*** (0.005)	-0.006 (0.006)
Observations	1,138,682	1,123,700	1,123,700	1,123,700	1,123,700
Controls	y	y	y	y	y
Quarter FE	y	y	y	y	y
Province FE	y	y	y	y	y
Sector/Year FE	y	y	y	y	y

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- Stricter barriers for *ordinistiche*



$$\log(w_{ipt}) = \alpha + \beta Reg_{pt} + \gamma' X_{it} + \phi_t + \Phi + \epsilon_{ipt}$$

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	(1)	(2)	(3)	(4)
	log wage			
Regulated	0.099*** (0.048)	0.103*** (0.048)	0.089*** (0.033)	0.089*** (0.033)
Female	-0.316*** (0.044)	-0.326*** (0.043)	-0.246*** (0.015)	-0.245*** (0.015)
Age	0.009*** (0.001)	0.010*** (0.001)	0.008*** (0.001)	0.008*** (0.001)
Secondary Education	0.193*** (0.030)	0.190*** (0.029)	0.143*** (0.021)	0.143*** (0.021)
Tertiary Education	0.427*** (0.049)	0.428*** (0.048)	0.356*** (0.042)	0.355*** (0.041)
Fixed term _{t-1}	-0.262*** (0.023)	-0.244*** (0.017)	-0.216*** (0.013)	-0.216*** (0.013)
Observations	1,161,909	1,161,909	1,161,909	1,161,909
Year FE	y	y	y	
Quarter FE	y	y	y	y
Province FE		y	y	y
Sector FE			y	
Sector/Year FE				y

Notes: Robust standard errors clustered at occupation level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

▶ Heterogenous effects

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▶ Heterogenous effects

	(1)	(2)	(3)	(4)	(5)
	log wage				
<i>Ordinistiche</i>	0.178*** (0.045)				
Other regulated	0.030 (0.039)				
Years of training		0.017*** (0.005)			0.017** (0.007)
Compulsory examination			0.051 (0.037)		-0.039 (0.028)
Conduct indicator				0.066*** (0.018)	0.014 (0.018)
Observations	1,161,909	1,145,694	1,145,694	1,145,694	1,145,694
Controls	y	y	y	y	y
Quarter FE	y	y	y	y	y
Province FE	y	y	y	y	y
Sector/Year FE	y	y	y	y	y

Notes: Controls: female, age, secondary education, tertiary education, self-employed, employed with a fixed term contract. Robust standard errors clustered at occupation level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

- Higher returns for *ordinistiche*

Causal estimates



- Exploit variation in regulation induced by 2011 Monti reform
 - lowered some entry requirements (for all regulated)
 - abolished tariffs (for *ordinistiche* only)
 - loosened limits on advertising (for all regulated)



- Exploit variation in regulation induced by 2011 Monti reform
 - lowered some entry requirements (for all regulated)
 - abolished tariffs (for *ordinistiche* only)
 - loosened limits on advertising (for all regulated)
- Focus on 2009-2014 time window (± 3 years from the reform)
- Diff-in-diff design with 2 treatment groups: *ordinistiche* and other regulated
- Control group is either all other workers or high-skill professionals only (ISCO 2-3)
- Look at both entry and earnings (\leftrightarrow related)

Effects of Monti reforms on entry rates.

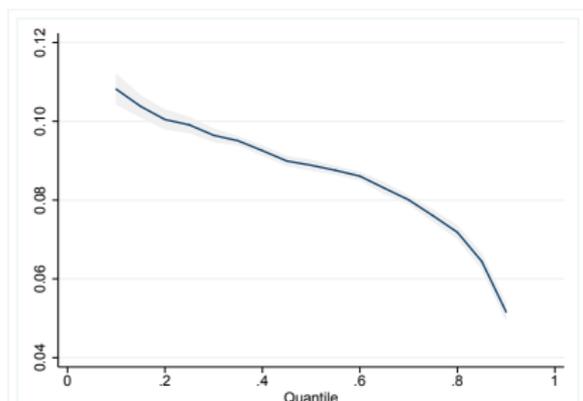
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Entry				log wage			
<i>Ordinistiche</i>	-0.087*** (0.020)		-0.024 (0.016)		0.175*** (0.038)		0.095** (0.038)	
Other regulated	-0.053*** (0.018)				0.017 (0.040)			
<i>Ordinistiche</i> × Post-2011	0.042*** (0.016)	0.040*** (0.015)	-0.003 (0.009)	-0.007 (0.008)	0.006 (0.011)	0.003 (0.008)	-0.019* (0.010)	-0.021*** (0.007)
Other regulated × Post-2011	0.041*** (0.014)	0.043*** (0.014)			0.026 (0.024)	0.011 (0.011)		
Observations	558486	558486	172639	172639	831159	831159	249325	249325
Time window (years)	±3	±3	±3	±3	±3	±3	±3	±3
Sample	ALL	ALL	2&3	2&3	ALL	ALL	2&3	2&3
R ²	0.062	0.069	0.058	0.070	0.391	0.455	0.310	0.372
Controls	y	y	y	y	y	y	y	y
Year FE	y	y	y	y	y	y	y	y
Quarter FE	y	y	y	y	y	y	y	y
Province FE	y	y	y	y	y	y	y	y
Sector/Year FE	y	y	y	y	y	y	y	y
Occupation FE		y		y		y		y

Notes: Controls: female, age, secondary education, tertiary education, employed with a fixed term contract. Robust standard errors clustered at occupation level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

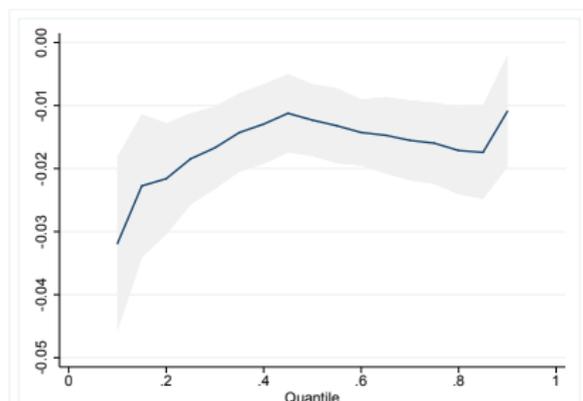
- Only for *ordinistiche* (direct) effect on earnings

- Estimate the returns to regulation and the impact of the reform along the wage distribution

Returns to regulation



Effects of Monti reform on wages of employees



Notes: The solid line represents the quantile estimates with the shaded grey area depicting a 90 percent pointwise confidence band.

- Regulation “protects” workers at the lower tail of the distribution
- **Caveat** employees only → downward bias?



- Resort to Tax Authority aggregate data (sectoral studies)
- Select “similar” control group (services, cognitive and non-routine tasks)

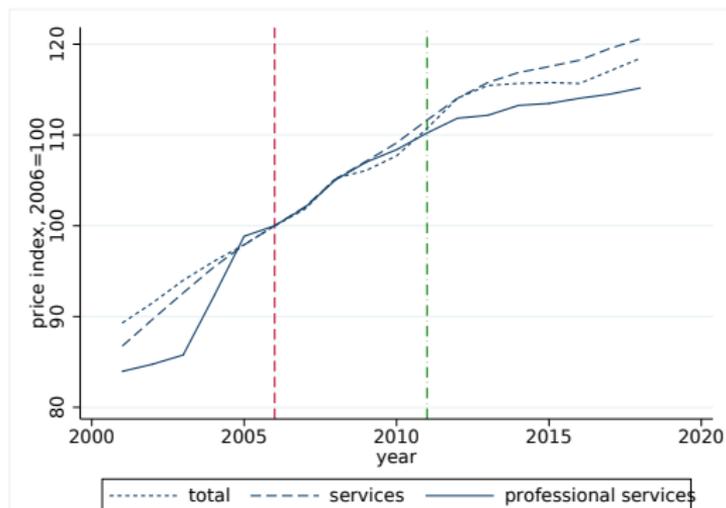
	(1)	(2)	(3)	(4)
	log wage			
<i>Ordinistiche</i>	0.388*** (0.086)		0.381*** (0.066)	
<i>Ordinistiche</i> × Post-2011	-0.104 (0.141)	-0.096*** (0.032)	-0.131 (0.108)	-0.126*** (0.030)
Observations	144	144	240	240
Time window (years)	±3	±3	±5	±5
R^2	0.156	0.984	0.143	0.972
Occupation FE		y		y
Year FE	y	y	y	y
Weighted	y	y	y	y

Notes: Authors' elaborations on data from the Ministry of Economics and Finance. The unit of observation is a specific occupation and observations are weighted by the size of each occupation. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

- Wage premium reduced by 25-33%



- National Institute of Statistics on prices charged for some specific services (legal, accounting)



Notes: Authors' elaborations on ISTAT data. The lines represent the price indexes (2006=100) for different groups of goods and services. The red dashed line indicates the year when the Bersani reform was passed (2006), the green dashed-dotted line the year in which the Monti reform was passed (2011). The reforms were effective starting the following year.

- Growth of prices of regulated professional services slowed down with the two reforms

Conclusions



① Main findings:

- Almost one fourth of employed, 5.4M, work in regulated occupations
- 10% in *professioni ordinistiche*
- This share has increased by over 30% since the 90's
- Regulated occupations are associated to a lower occupational mobility, over half of this raw difference explained by regulation
- Regulated occupations enjoy a wage premium of about 9%, *professioni ordinistiche* of about 18%
- Liberalization reforms of early 2000s:
 - increased entry in regulated occupations
 - lowered the wage premium, especially for the lower tail of the wage distribution
 - lowered the prices charged for professional services

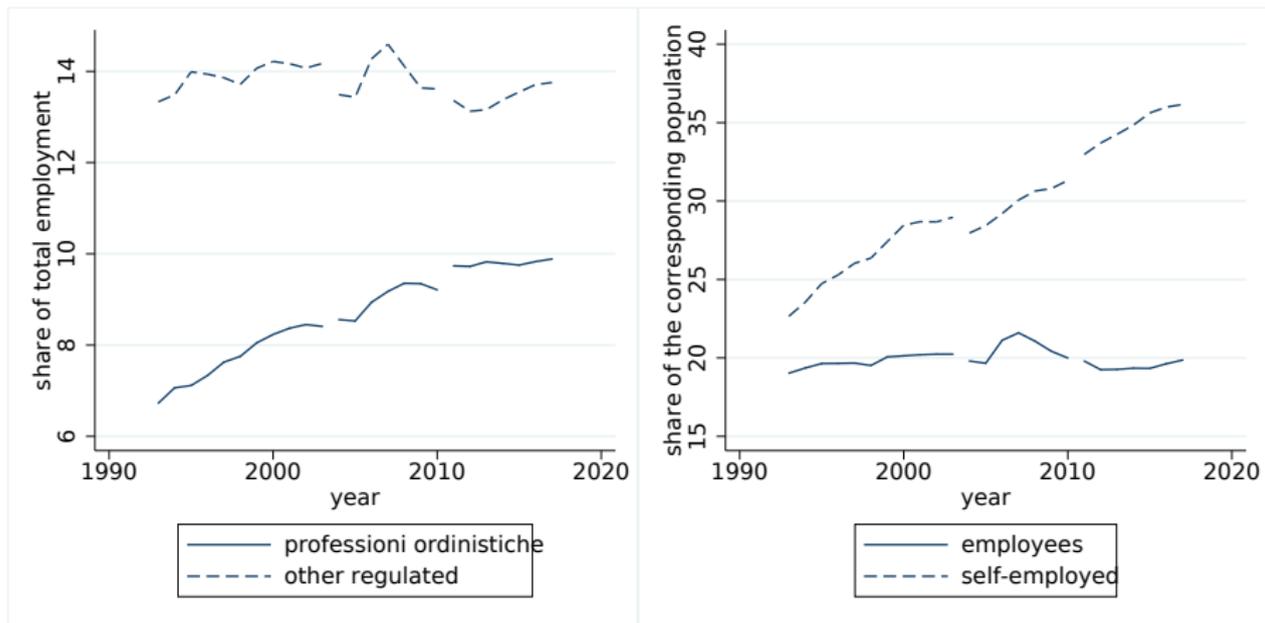
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2 Agenda for future research:

- More on sorting and earnings using administrative data (Istat-Bol)
- Effects of regulation on firms productivity and market structure (Istat-Bol)

Workers in regulated occupations by type of employment



Notes: Authors' elaborations on LFS data. The two lines in the left panel represent the share (over total employment) of workers employed in *professioni ordinistiche* (solid line) and other regulated occupations (dashed line). The two lines in the right panel represent the share of workers employed in regulated occupations as employees (solid line) or self-employed (dashed line), with respect to the corresponding population. The regulatory environment is considered as fixed. Discontinuities in the series are due to changes (in 2004 and in 2011) in the classification of occupations.

Returns to regulation, heterogeneous effects

	(1)	(2)	(3)	(4)	(5)
	log wage				
x:	Public sector	South	Female	Under 35	Tertiary Education
Regulated	0.068** (0.032)	0.074** (0.032)	0.102*** (0.035)	0.053* (0.029)	0.092** (0.036)
Regulated \times x	0.059 (0.032)	0.052*** (0.009)	-0.059*** (0.014)	0.076** (0.024)	-0.011 (0.040)
Observations	1,161,907	1,161,907	1,161,907	1,161,907	1,161,907
Controls	y	y	y	y	y
Quarter FE	y	y	y	y	y
Province FE	y	y	y	y	y
Sector/Year FE	y	y	y	y	y

Notes: Controls: female, age, secondary education, tertiary education, employed with a fixed term contract. Robust standard errors clustered at occupation level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

- No extra premium in public sector
- Higher premium in South
- Higher premium for men but regulation reduces gender pay gap
- Higher returns for younger professionals
- No difference depending on educational level

back

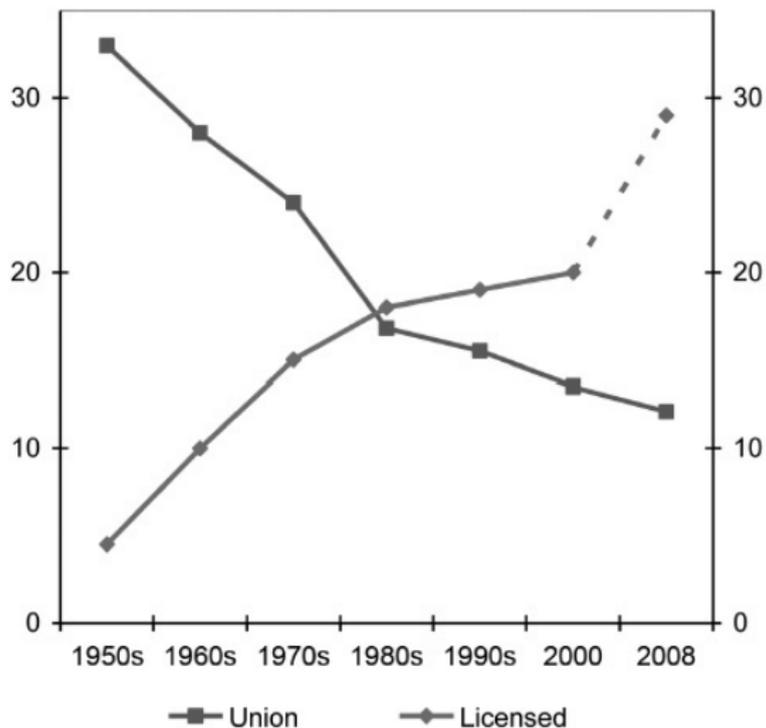


FIG. 1.—Comparisons in the time-trends of two labor market institutions: licensing and unionization. Dashed line shows the value from state estimates of licensing to the Gallup Survey and Westat Survey results, and the union membership estimates are from the CPS. Color version available as an online enhancement.