Earnings Gaps Between Regulated and Unregulated Workers Along the Distribution: Evidence from Italy

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Abstract

Regulated occupations are receiving growing attention due to their increasing relevance in contemporary economies (22% of workers in the EU and 29% in the US are subject to some form of regulation). However, also because of data limits, both labour income distribution among regulated workers and earnings gaps between workers in regulated and unregulated jobs have been scantly investigated. astting from this background, and by using an innovative panel dataset developed merging survey and administrative information, this paper focuses on the case of Italy with a twofold aim: first, analyse levels and trends of the income distribution of liberal professionals, also in comparison with non-regulated workers with similar skills; second, exploit liberalisation reforms to identify the source of the possible earnings gap between regulated and unregulated workers. To this aim, applying a difference-in-differences methodology, longitudinal incomes of professionals belonging to the four mentioned categories will be compared to those of managers who hold a tertiary degree to observe whether the reduction in the regulation changed earnings differentials between the two groups of workers both at the mean and at the various percentiles of the earnings distribution.

Keywords: regulated occupations, self-employed professionals, earnings gaps, earnings premium, labour market institutions

JEL Classification: J44, J31, J48

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1 Introduction

Regulated professions are the object of a growing strand of economic literature (e.g., Kleiner, 2000; Kleiner and Kudrle, 2000; Kleiner and Krueger, 2010, 2013; Koumenta et al., 2014; Koumenta and Pagliero, 2016, 2019; Kleiner et al., 2016; Koumenta et al., 2018; Gittleman et al., 2018; Mocetti et al., 2020, 2021). They are receiving increasing attention due to their relevance in modern economies, given that 22% of workers in the European Union (Koumenta and Pagliero, 2019) and 29% in the United States (Kleiner and Krueger, 2013) are involved in licensing or some other form of regulation. Amid occupational regulations, licensing is the most restrictive since it prevents non-licensed individuals from practising a given profession (Koumenta et al., 2014). Self-employed liberal professionals – lawyers, notaries, physicians and the like – represent a relevant part of licensed workers (36% of all regulated workers in Italy, Mocetti et al., 2021) and are usually subject to regulations in terms of entry requirements (e.g., university degree, professional experience, state examination), prices, tariffs and codes of conduct (e.g., on advertising and business structure). In addition, it is very often required for licensed professionals to enrol in a professional body, which enforces rules and norms with disciplinary and sanctioning power (Mocetti et al., 2020).

While initially limited to the United States, the interest for regulated occupation has grown in the European Union too. Koumenta et al. (2014) estimate the quota of regulated occupations on EU's labour force, ranging from a minimum of 9% to a maximum of 24%, with significant cross-country heterogeneity, both in the overall prevalence of regulation and in the distribution of regulation among occupations. Some countries – including Italy – stand out for a high level of regulations of liberal professions. In Italy, estimates say that regulated occupations make up about 20% of total employment (Koumenta and Pagliero, 2019), and the share of licensed liberal professionals (professioni ordinistiche) over those employed in regulated occupations amounts to approximately 35% (Mocetti et al., 2021). However, despite its large and increasing importance, limited attention – also for the Italian case – has been paid to analyse, on the one hand, the characteristics of regulated professionals and, on the other hand, the effects of regulations on workers' labour market outcomes. One of the main reasons behind this gap in the literature is the lack of appropriate data, especially concerning self-employed regulated workers.

Thus, the scope of this paper concerns self-employed licensed professionals in Italy. The main aim is to understand trends over time and underlying mechanisms in their earnings. Both levels and distribution will be investigated. Although the existing literature already provides some insight on labour market outcomes of regulated occupations, mainly on regulation-induced premia, the evidence on what causes them is somewhat mixed. Moreover, concerns on the availability and quality of data are frequently expressed. Causal inference techniques exploiting exogenous effects from policy interventions have been used to address the first issue, but only on few occasions due to the scarcity of exogenous events. Furthermore, much attention is given to the average effects of regulation and reforms, but less to their distributive aspects. This paper tries to address these issues by exploiting a novel dataset combining administrative and survey data to estimate the earnings premium of liberal professions in Italy, to perform a causal analysis on exogenous reforms to gain more insights on the mechanisms behind this premium and, finally, to understand which side of the earnings distribution is more or less affected by these policies.

From a theoretical point of view, economists see licensed occupations either negatively or positively. On the one hand, some argue they are a form of rent-seeking by powerful professional bodies that gives rise to wage premiums and creates barriers to entry (Friedman and Kuznets, 1945). On the other hand, others consider licensing helpful in improving occupation-specific human capital and skills (Shapiro, 1986) or overcoming asymmetric information on the quality of specific goods and services, thus favouring consumers (Akerlof, 1970).

From Kleiner (2000) onwards, some empirical studies have found little or no evidence on the improvement in human capital nor the reduction in asymmetries, while there is some evidence of rents and market distortions. Kleiner and Kudrle (2000) find that more restrictive standards do not significantly affect service quality. In turn, they affect entry levels in the market negatively and service prices and wage levels positively.

The relevant literature has focused much on the effects of regulation on labour market outcomes. Above all, licenses seem to create a significant wage premium for licensed professional workers. Estimates for the US range from a 7.5% (Gittleman et al., 2018) to an 18% (Kleiner and Krueger, 2013) premium on hourly wages for workers required to have a license. Similarly, Koumenta and Pagliero (2019) estimate a 4% wage premium from regulation for the European Union, with a considerable degree of variability between occupations.

At the same time, and unlike other premium-inducing institutions (e.g., unions), licensing seems to contribute to wage dispersion among regulated workers, especially in the upper tail of the distribution (Kleiner and Krueger, 2013). Furthermore, Gittleman et al. (2018), while confirming that licensing does not induce wage compression, find that US workers in the bottom quartile seem to gain from having a license too. Finally, Koumenta and Pagliero (2019) analyse the effect of licensing on the entire wage distribution in the EU, finding once more that licensing increases dispersion at the top and the bottom of the distribution, thus benefitting those at the top. These results suggest that regulation has relevant effects on income distribution and inequality.

The existing literature presents more interesting evidence, such as none of the most frequent requirements (educational levels, internships, further education after the entrance, examinations) having an additive effect on wages (Kleiner and Krueger, 2013). In addition, having a license when it is not required has no apparent effect on wages, while it does when it is required (Gittleman et al., 2018). Moreover, Koumenta and Pagliero (2019) estimate that at least one-third of the wage premium from regulation can be attributed to restrictions and not skills signalling. Altogether, the results in the relevant literature are consistent with the hypothesis of licensing as a barrier to entry and of the resulting wage premium as a monopolistic rent.

For what concerns Italy, one of the most recent works on regulated occupations is by Mocetti et al. (2021), who use data from the Italian Labour Force Survey (LFS) and the Regulated Occupations Database of the European Commission. Their estimates show that regulated occupations present lower mobility than non-regulated occupations, both to/from and within regulated occupations. Regulations are estimated to contribute to more than half of the reduced mobility, while the other half is due to compositional factors. Moreover, Mocetti et al. (2021) find a significant wage premium – approximately 18% for professioni ordinistiche – higher for female and self-employed workers and lower for younger workers. These results are hence in line with findings in the international literature.

A recurrent problem in the literature on regulated occupations is the lack of appropriate data. (Kleiner, 2000; Koumenta et al., 2014). Another frequent problem involves the risk of estimates of wage premia being biased by unobservable variables (Kleiner and Krueger, 2013; Koumenta et al., 2014). Therefore, many works in this field have recurred to causal inference econometric techniques, exploiting regulation reforms as an exogenous event to isolate the actual link between licensing and the observed labour market outcomes. For instance, Kleiner et al. (2016) employ a difference-in-differences methodology to analyse the relaxation of regulations on nurse practitioners' possibility to prescribe drugs and their scope of practice. They find that this policy raises nurses' wages and lowers physicians' wages while lowering the overall prices of health care services. No significant effects on the quality of medical services were observed. These findings suggest the existence of a rent-induced wage premium for physicians.

Raitano and Vona (2021) analysed the intergenerational transmission of earnings inequality within licensed sectors (lawyers in this case). In a quasi-experimental setting, liberalisations (the 2004 reform of bar exams and the 2006 "Bersani" decree) were used as an exogenous discontinuity to disentangle the effects of lower monopolistic rents and increasing returns to specific skills that parents can transfer to children. Mocetti et al. (2020) investigated a similar issue, exploiting the liberalisations of 2006 ("Bersani" decree) and 2011 ("Monti" decree) to understand the link between regulation and intergenerational occupational mobility on a variety of professional services and found that liberalisation leads to a reduced propensity for career following.

We follow a similar empirical strategy to overcome the above-discussed issues and reach our own research goals. We use an innovative panel dataset, obtained by merging survey data from various waves of the Italian Statistics on Income and Living Condition (IT-SILC) survey and administrative information from social security records. This dataset allows many improvements in the availability and quality of data on regulated professionals with respect to the existing literature. We thus focus on the case of Italy with several goals: first, we analyse levels and trends of earnings distribution of four major categories of liberal professionals (lawyers, accountants, engineers and architects), also in comparison with non-regulated workers with similar skills; secondly, we retrieve our estimate of the earnings premium from regulation; finally, we exploit the liberalisation reforms of regulated professions occurred in 2006 and 2011 to identify the source of the possible earnings gap between regulated and unregulated workers, applying a difference-in-differences methodology. We also use the recentred influence function (RIF) methodology (Firpo et al., 2009) to perform an unconditional quantile regression (UQR) and obtain the distribution among deciles of the effects of the reforms.

Our results confirm the existence of an earnings premium from regulation, even when regulated and non-regulated high-education workers are compared. However, the DiD analysis provides mixed evidence. The 2006 reform apparently (and counter-intuitively) increased the regulation premium, while the 2011 reform seems to have had the opposite effect. The UQR possibly helps interpret these results, suggesting that the increase in earnings following the 2006 reform was concentrated in the lower deciles of the earnings distribution. Instead, individuals in the top-end of the distribution experienced a reduction in their earnings relative to the control group. This fact leads to the main takeaway of this work: it is crucial to look beyond effects on the average of reforms when analysing labour markets characterised by significant levels of inequality.

The remainder of the paper is organised as follows. Section 2 will present the institutional context, describing regulated occupations in Italy and the reforms between 2006 and 2012. Section 3 will describe the dataset and Section 4 will explain the empirical methodology employed in the analysis. Section 5 will present the main results, while Section 6 will investigate possible heterogeneity effects and provide robustness checks. Finally, Section 7 concludes by discussing the results and their implications.

2 Institutional context

Italy has a tradition of strict regulation of professional services, although a series of reforms put in place in the last two decades has loosened it (two of which, the "Bersani Decree" of 2006 and the "Monti Reforms" of 2011-2012 are at the centre of this paper). In 1998, the OECD indicator of Product Market Regulation for professional services[1] saw Italy as the most regulated country for architects and engineers (4.02 for both), the third most regulated for accountants (3.67) and the sixth most regulated for lawyers (3.92). Twenty years later, this indicator reflected the process of liberalisation that occurred in the meantime, since Italy went down to sixth place for architects (2.68), to twelfth place for engineers (2.15), to the fifth for accountants (2.61) and down below for lawyers (2.57), ranking among the ten less regulated countries.

Like many other developed countries, Italy has observed a growth in the prevalence of regulated occupations over total employment. For example, estimates by Koumenta and Pagliero (2019) for 2015 show that regulated occupations make up 19.3% of total occupation. Estimates by Mocetti et al. (2021) for the same year are similar but slightly higher: regulated occupations and professioni ordinistiche (licensed liberal professions subject to mandatory enrolment in an association) represent 24% and 10% of total employment.

Regulation of occupations in Italy, especially licensed professions, includes entry requirements and restrictions, professional associations (ordini), codes of conduct and disciplinary procedures and, previously, price regulation (Pellizzari et al., 2011). Regarding entry requirements, these include educational attainments (usually a tertiary degree or a specialisation school degree) and compulsory practice. Enrolment in an association is always conditional to passing a state examination, with specific formats and organisational characteristics for each profession.

Every association has its code of conduct and its disciplinary procedures, which the association itself enforces. Before the liberalisation process, these codes included

[1] OECD has been producing the indicators of Product Market Regulation since 1998 and updates them every five years. These indicators are available for many sectors, including professional services, and measure regulatory barriers to entry and competition (such as educational and membership requirements) and conduct requirements. They range from a maximum of 6 to a minimum of 0.

rules on prices, limitations to advertising, rules on competition between colleagues and multi-disciplinary practices. Rules on prices usually included minimums and maximums, fee schedules, either fixed and mandatory or recommended. Competitive advertising used to be prohibited as well as advertising price and costs, and many associations imposed both ex-ante and ex-post controls on the contents of advertising.
Hence, a process of liberalisation has taken place astting from the mid-2000s. The 2006 "Bersani" reform and the series of reforms adopted by the Monti government between late 2011 and early 2012 represent the most important acts in this process. The "Bersani" reform abolished minimum fees and the restrictions to advertising while permitting to offer contingency pricing and to form "multi-disciplinary" societies (i.e., societies between different kinds of professionals). Subsequently, the "Monti" reforms completely abolished fixed or recommended prices and fees (both floors and caps), made the written previous agreement on compensation mandatory and reiterated the possibility to advertise prices, qualifications and professional activity. Thus, the liberalisation process regarded conduct requirements more than entry barriers, which were only slightly affected by "Monti" reforms by shortening the required training periods. This is another reason why we focus on earnings effects rather than mobility effects.

3 Data and descriptive evidence

3.1 Dataset

We employ a dataset obtained from merging the 2004-2017 waves of the Italian component of the EU-SILC (IT-SILC) survey with the administrative longitudinal social security records collected by the Italian National Social Security Institute (INPS). We call this dataset "AD-SILC" (where "AD" stands for "administrative") to symbolise the union of administrative and survey data. INPS records contain the employment and earning histories of all individuals working in Italy, from the moment they entered the labour market up to the end of 2018. Thus, the main advantage of this dataset is the possibility to reconstruct working careers in Italy, year by year and with a high degree of confidence, granted by data from administrative sources. Furthermore, it allows having a comprehensive picture of working weeks, type of employment (e.g., public or private employment, self-employment), contractual arrangements (such as subordinate, "para-subordinate", consultancies) and gross earnings, yearly and for each working relationship. We enrich this information with records on workers' education provided by IT-SILC.

Therefore, on the one hand, the merged dataset provides much information on working histories and workers' characteristics. On the other hand, it allows reconstructing other helpful features, such as working experience. For the sake of our purposes, this dataset provides information on self-employed earnings, pension funds (that allow us to distinguish between the various professional categories, hence between regulated and non-regulated occupations) and on job qualifications (i.e., managers, white collars or blue collars, but for private employees only).

	Full Sample	**Professionals**
Gender - Female	42.05%	32.28%
Age		
<30	30.21%	9.96%
30-39	27.82%	35.12%
40-49	23.67%	28.5%
>50	18.3%	26.42%
Area of work		
North	52.69%	47.41%
Centre	23.48%	27.45%
South	22.83%	25.14%
Educational level		
Not reported	0.46%	0%
Primary	21.16%	0.85%
Lower Secondary	27.95%	1.72%
Higher Secondary	37.81%	25.10%
Tertiary	12.62%	72.34%
Job qualification (private employees only)		
Manager	1.09%	
White collar	16.43%	
Blue collar	38.63%	
Apprentice	2.7%	
N. of obs.	4292879	9182

Table 1: Sample composition

Given the large dimension of the dataset, we perform a preliminary analysis to select a subsample from which we will later obtain descriptive evidence and on which we will perform our empirical analysis. Table 1 represents the socio-demographical composition of the sample. The main drawback of our dataset is the under-representation of professionals in the sample, probably due to misreporting and under-reporting issues. Table 2 reports the percentage of workers belonging to each INPS fund in the period 2000-2017. We aggregated all pension funds of professional associations together to represent liberal professionals as a whole. *Gestione separata* (non-regulated self-employed's pension fund) is disaggregated in consultants and "pure" self-employed.

We can see that the percentage of licensed professionals is way lower than the estimates available in the literature, averaging 3.33%. The percentage of professionals grows throughout the years, reflecting an improving representativity rather than an actual increase in professionals. The dataset also allows us to investigate whether individuals have worked at least once a year as liberal professionals even though they have another main occupation. Table 3 represents the percentage of these individuals over the total of workers in the dataset. It is about 1 point higher than that in Table 2 but still not as high as the estimates from Koumenta and Pagliero (2019) and Mocetti et al. (2021).

This fact suggests restricting non-regulated occupations to a subset of high-skilled occupations, similar in characteristics to regulated professionals, to make more reliable and meaningful comparisons. We thus select graduated managers from the private sector, graduated consultants and graduated non-regulated professionals when making comparisons on descriptive evidence and delete blue collars from the sample when estimating the earnings premium.

Year	Private Emp.	Special funds	Public Emp.	Consultants	Other Professionals	Artisans	Professionals
2000	56.96	4.05	13.76	3.16	0.64	19.07	2.36
2001	56.84	3.89	13.89	3.70	0.64	18.60	2.43
2002	57.12	3.71	13.64	4.36	0.66	18.03	2.47
2003	57.16	3.26	13.65	4.94	0.68	17.68	2.63
2004	57.14	3.15	14.13	4.55	0.74	17.53	2.75
2005	57.06	3.10	14.36	4.40	0.78	17.40	2.90
2006	56.98	2.97	14.58	4.63	0.81	17.06	2.98
2007	57.45	2.88	14.61	4.61	0.79	16.63	3.03
2008	57.74	2.89	14.76	4.36	0.78	16.39	3.08
2009	57.78	2.83	15.01	4.01	0.85	16.26	3.25
2010	57.82	2.76	15.20	3.91	0.88	16.07	3.35
2011	57.83	2.75	15.22	3.98	0.93	15.84	3.46
2012	58.06	2.67	15.30	3.75	0.98	15.63	3.61
2013	58.75	2.68	14.75	3.29	1.02	15.63	3.89
2014	58.87	2.66	14.71	3.18	1.07	15.40	4.11
2015	59.46	2.59	14.79	2.83	1.09	14.96	4.29
2016	59.95	2.50	15.25	2.33	1.10	14.56	4.30
2017	60.91	2.48	15.03	2.19	1.09	13.97	4.33
Average	**58.14**	**2.95**	**14.67**	**3.72**	**0.87**	**16.31**	**3.33**

Table 2: Occupational structure of the full sample – Notes: "Professionals" refers here to all liberal professionals enrolled in an association

Year	**Professionals** (%)
2000	3.28
2001	3.37
2002	3.43
2003	3.62
2004	3.79
2005	3.94
2006	4.05
2007	4.15
2008	4.26
2009	4.46
2010	4.61
2011	4.72
2012	4.91
2013	5.21
2014	5.37
2015	5.64
2016	5.65
2017	5.64
Average	**4.49**

Table 3: Occupational structure of the full sample – Notes: "Professionals" refers here to all individuals working at least once in a year as a liberal professional enrolled in an association

To limit mis-reporting issues and obtain a more meaningful sample, we also restrict regulated professionals. As previously noted, the dataset contains information from every single pension fund of professional associations, thus allowing us to select distinct typologies of self-employed professionals. Table 4 shows the composition of the sample in terms of these typologies.

We proceed with selecting the professions for which tertiary graduation is a requirement for enrolment, for which we observe individuals with very high earnings and for which there is a sufficient number of observations. We do so because a strand of literature on income inequality says that its increase is often lead by the top-end of the distribution (e.g., Atkinson et al., 2011), and since skills and education are often included among the leading causes of rising earnings gaps (e.g., Acemoglu and Autor, 2011). Thus, we select a subsample including engineers and architects (who belong to the same association), lawyers and accountants. However, we exclude physicians since the observations on their earnings from self-employment are often plagued by cross-reporting with earnings from public employment.

Profession	**N. of obs.**
Psychologists	2857
Nurses	2788
Industrial technicians	1961
Agricultural technicians	325
Biologists	647
Chemists, geologists et al.	1860
Engineers & architects	9763
Lawyers	9552
Physicians	25127
Veterinarians	2407
Surveyors	8190
Bookkeepers	2399
Pharmacists	4895
Accountants	3629
Labour consultants	1844
Notaries	279

Table 4: Number of professionals per typology (2000-2017)

Pension funds of lawyers, accountants and engineers and architects (*Cassa Forense*, *CNPADC* and *Inarcassa*) publish reports about their membership on their website, disclosing the number of members and their distribution for gender and age groups, often on a yearly basis. We exploit this information to check whether our dataset is representative, notwithstanding the low number of observed individuals. The dataset seems to track well the evolution of membership numbers and gender and age group composition through the years. Then, we can assume that our sample of professionals is representative, although its size is not very large.
Therefore, we now have a subsample of high-skilled individuals that allows us to make meaningful analyses and comparisons on earnings levels and distribution trends. Table 5 summarises their demographic characteristics.

	Professionals	Managers	Consultants	Other prof.
Gender - Female	38.14%	24.19%	52.26%	44.28%
Age				
<30	4.62%	0.64%	33.43%	14.78%
30-39	40.15%	24.73%	34.82%	35.01%
40-49	37.03%	43.46%	14.30%	25.22%
>50	18.2%	31.17%	17.44%	24.98%
Geographical area				
North	44.77%	67.22%	52.74%	59.94%
Centre	26.89%	23.555%	27.49%	26.40%
South	28.34%	9.23%	19.77%	13.66%
N. of obs.	20124	16004	23565	7719

Table 5: Summary of the characteristics of the reference categories (2000-2017)

3.2 Descriptive evidence

We now present descriptive evidence on earnings trends and inequality. We start by looking at the evolution of mean and median earnings of professionals in the reference period 2000-2017 in Figure 1. Mean earnings have increased substantially in the first half of the 2000s, probably both because of a progressively improving representation of very high earnings in the sample and an actual earnings growth. However, we can observe a large and increasing gap between mean and median earnings, which signals very high inequality. Furthermore, mean earnings peak in 2007 and fall for the following ten years, partly due to the 2007-2008 crisis, while our analysis in Section 4 will try to understand the role of liberalisations in this trend. Finally, the mean earnings of employees in the private sector are presented as a reference point for the rest of the economy, suggesting that regulated professionals' earnings are significantly higher than those of other workers.

In Figure 2, we can observe trends in mean earnings of the three typologies of liberal professionals in analysis. Accountants' earnings appear to be significantly higher, but as we will see later, we also observe more inequality and higher top earnings among them. We suspect that under-reporting affects lawyers' earnings since the mean is lower than that of engineers and architects in the first years and surpasses it as more top earners are included in the dataset.

Figure 1: Trends of mean and median earnings of professionals (2000-2017) - Notes: the selected subsample of professionals (accountants, architects, engineers and lawyers) is now considered. Mean earnings of private employees are represented for reference.

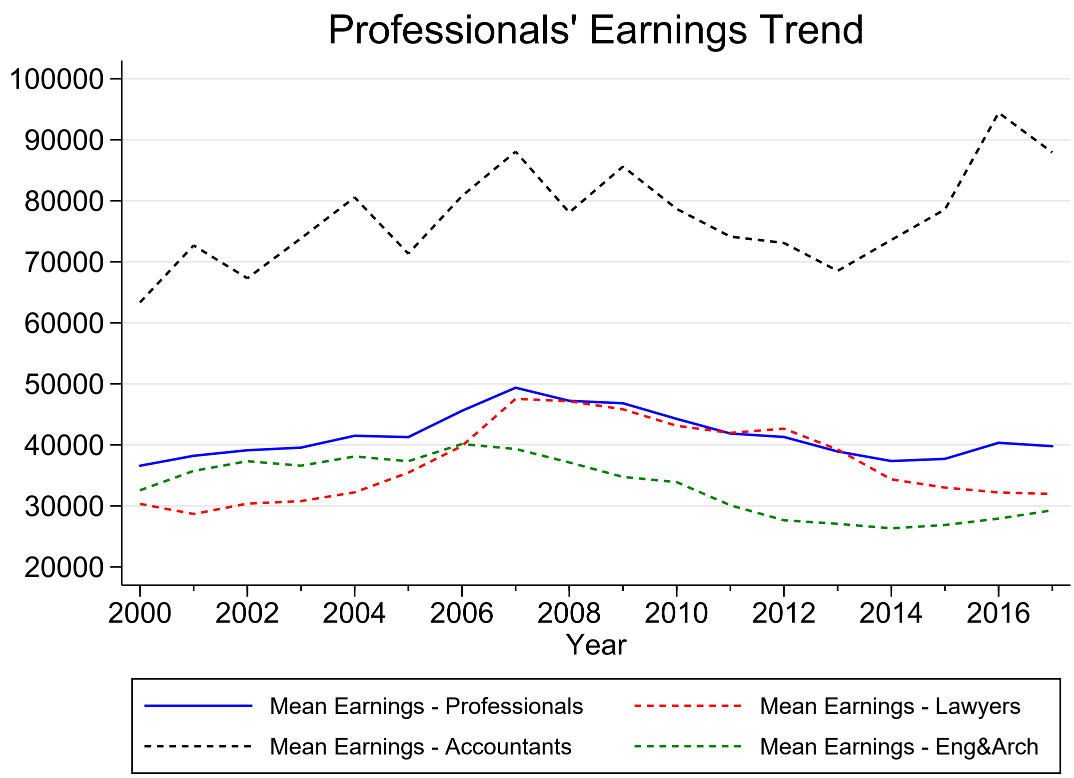

Figure 2: Aggregated and disaggregated mean earnings of the three selected categories (2000-2017)

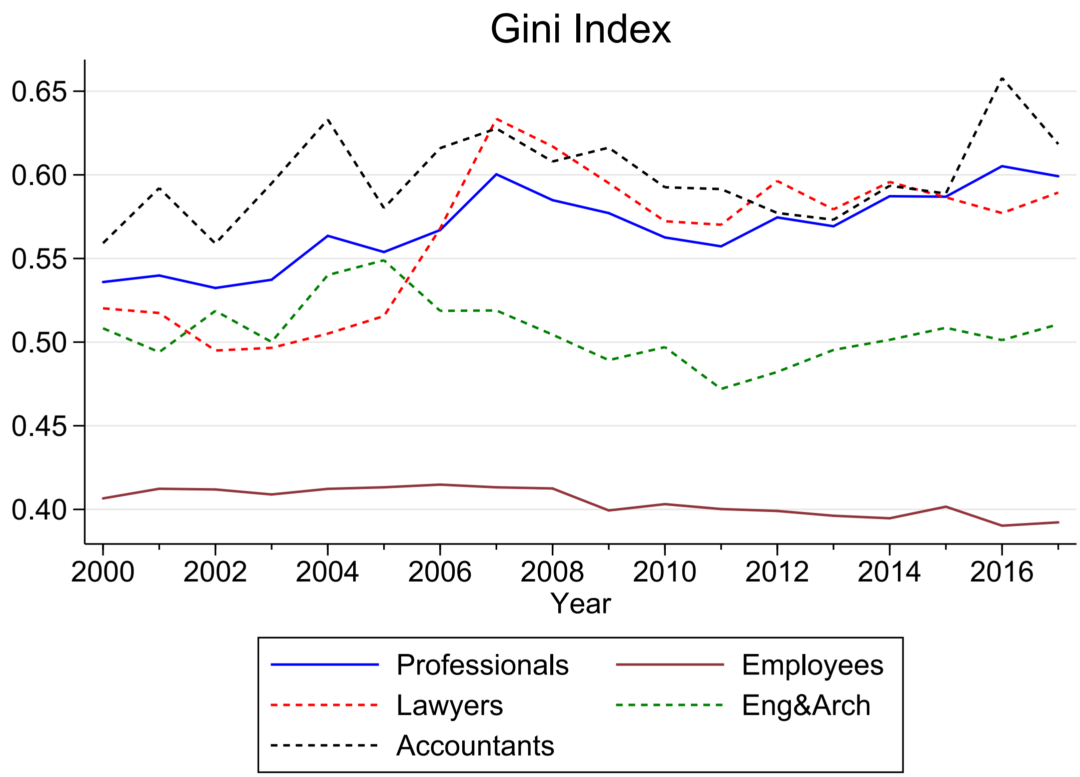

Figure 3: Aggregated and disaggregated Gini Index for professionals' earnings (2000-2017) - Notes: private employees are represented as a reference.

We now take a look at inequality indexes. Figure 3 presents the trend in Gini Index in the reference period. Indeed, our subset of professionals presents exceptionally high inequality, with a Gini well above 50% for the whole period and rising to 60% in 2017. Lawyers and accountants are, perhaps unsurprisingly, the occupations showing the highest inequality. At the same time, it is slightly more moderate for engineers and architects, but still way higher than the Gini Index for private employees (about 40% - remember that we are taking gross earnings into account, which are usually more unequally distributed than disposable incomes).
The high level of earnings concentration at the top is also clear from trends in the top 10% and bottom 50% earnings share (Figure 4). The top 10% share rises from 40% in 2000 to about 50% in 2017. At the same time, the share of earnings for the bottom half of the distributions slightly decreases, remaining at around 15%. The analysis of disaggregated earning shares confirms that accountants and lawyers are

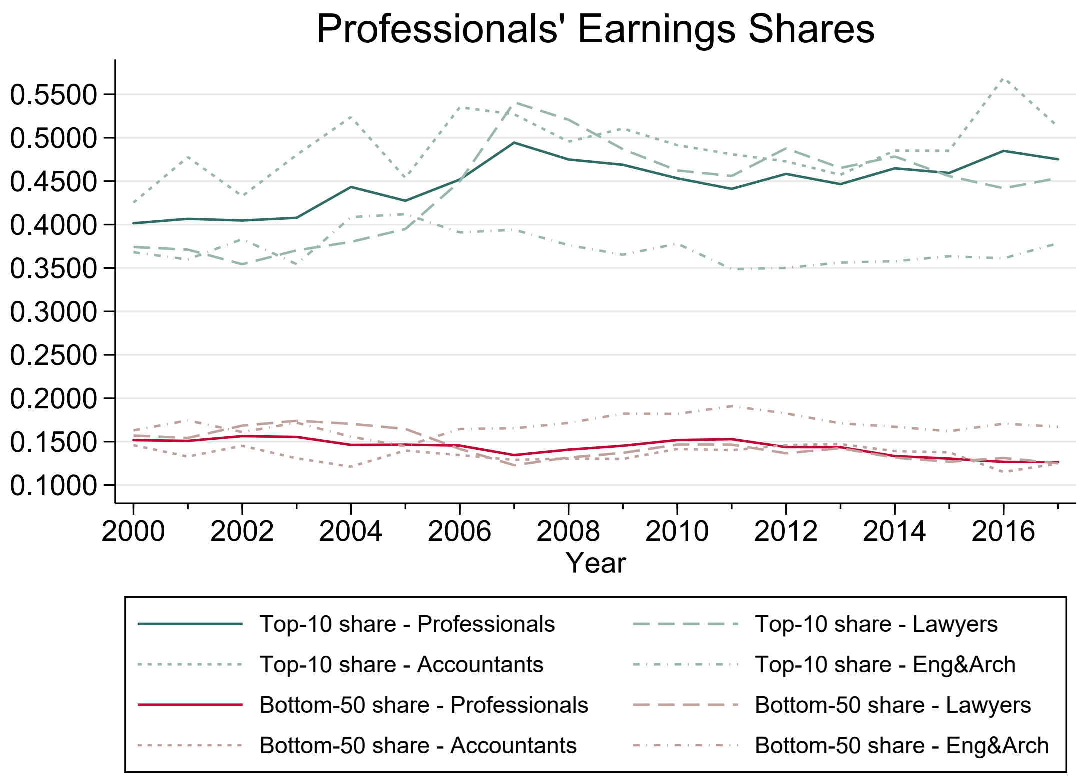

Figure 4: Top 10 and bottom 50 percent earnings share of professionals (2000-2017)

characterised by higher top earnings, while earnings of engineers and architects are slightly less unequally distributed.

We now proceed to compare regulated professionals with other categories of high-skill/high-education workers. Figure 5 compares trends in mean earnings of regulated professionals, graduated managers of the private sector, graduated consultants and graduated (non-enrolled) professionals. Even though there is a wide gap in levels, we can see that managers and regulated professionals share a similar trend. We will see this in depth in Section 4. However, managers earn unsurprisingly more on average than the other three types of workers, while consultants and non-enrolled professionals earn less on average.

Nevertheless, as we see from Figure 6, earnings are more compressed within managers. Instead, we observe more dispersion for professionals (both enrolled and non-enrolled) and consultants: earning shares of the top 10% increase from 35% to about 40% for non-enrolled professionals and stay above 40% throughout the whole period

Figure 5: Comparison of mean earnings trend between professionals and other high-skill occupations (2000-2017)

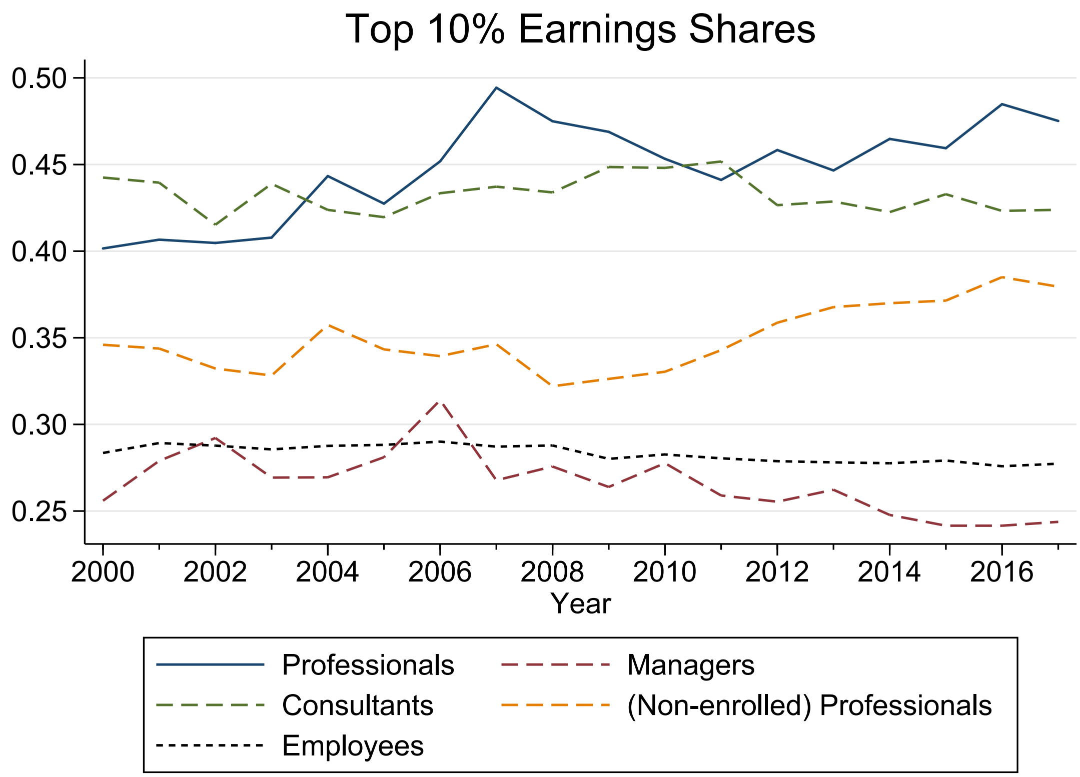

Figure 6: Comparison of top 10 percent income share trend between professionals and other high-skill occupations (2000-2017). Notes: private employees are represented as a reference

for consultants. Thus, these three categories seem to be characterised by extremely high inequality if we compare them to the usual reference point provided by employees of the private sector.

4 Empirical strategy

This paper aims to estimate the earnings premium of regulated liberal professions and verify how liberalisations have affected it, estimating both the average effect and the effect on deciles. To do so, we will exploit the empirical strategy described in this section. Firstly, we will estimate the coefficients of the following (log) earnings regression:

$$log(e_{it}) = \alpha + \beta R_{it} + \boldsymbol{\gamma\prime}\mathbf{X}_{it} + \phi_t + \epsilon_{it} \tag{1}$$

where R_{it} is the relevant independent variable, X_{it} is a set of individual control variables including gender, age and age squared, and a dummy for attaining a tertiary degree. Furthermore, since *Cassa Forense* (lawyers' pension fund) abolished the minimum income threshold for mandatory enrolment in 2014, we also control for lawyers entering the market after that year. Finally, ϕ_t is a year dummy controlling for possible common shocks and other time trend effects. We will estimate this equation with a pooled OLS (POLS) methodology using three different specifications. In the first specification, we exploit the whole sample to estimate a regression in which R_{it} is a set of dummy variables representing the different pension funds. The idea behind this model is to estimate premia and penalties of the various categories, holding professionals as a reference point. In the second model, we restrict the sample to regulated professionals, managers, consultants and non-enrolled professionals. Here, R_{it} is a dummy indicating self-employed regulated professionals, thus allowing us the estimate the earnings premium of regulated professions. Finally, in the last specification, we further restrict the sample to the three typologies of professionals mentioned above and to graduated managers, consultants and non-enrolled professionals (obviously, we eliminate tertiary degree from controls to avoid multicollinearity). R_{it} is now a dummy indicating the subset of high-skill professionals.
We then evaluate the effects of the 2006-2011 liberalisations on earnings premium by employing a difference-in-differences (DiD) methodology. We run two separate regressions for 2006 and 2011 reforms, with a before-after interval of four years (hence one on the 2002-2010 period and the other on the 2007-2015 period). The estimated DiD model is the following:

$$log(e_{it}) = \alpha + \beta_1 Post + \beta_2 Professional + \beta_3 Post \times Professional + \boldsymbol{\gamma\prime}\mathbf{X}_{it} + \phi_t + \epsilon_{it} \quad (2)$$

Our preferred specification takes only individuals who were already working before the reform into account to eliminate effects related to changing composition of employment. We estimate this DiD regression employing both POLS and Fixed Effects models (FE). The latter would allow us to control for unobservable variables, too, thus obtaining more reliable estimates of the effect of the policy on earnings premium. We also run a single regression along the whole reference period (2002-2015), including an interaction term for both policies[2]. Results for this regression are presented separately in the Appendix.

[2]This means that we estimate the following regression, where β_3 and β_4 are the coefficients of interest:
$log(e_{it}) = \alpha + \beta_1 Post + \beta_2 Professional + \beta_3 Post2006 \times Professional + \beta_4 Post2011 \times Professional + \boldsymbol{\gamma\prime}\mathbf{X}_{it} + \phi_t + \epsilon_{it}$

4.1 Treatment and control groups

In a DiD framework, it is crucially important to select the treatment and control groups carefully. The choice of the treatment group is quite evident at this point: we can use the subgroup of professionals made of accountants, engineers and architects and lawyers for the reasons described in Section 3. The choice of the control group requires instead more attention. We already observed a similar trend in mean earnings between professionals and graduated managers (Fig. 5). This similarity is crucial since the common trend assumption is notoriously fundamental in a DiD framework (e.g., Angrist and Pischke, 2008). We will now investigate this common trend in depth and compare the two groups from other points of view to verify whether graduated managers are a suitable control group for this analysis.

First, even though we do not observe fields of education, we can assume that managers and professionals are graduated in similar disciplines. On the one hand, degrees in business and economics, law, engineering and architecture are required to become accountants, lawyers, engineers and architects. On the other hand, managers of private firms are usually graduated either in business, engineering management or law. Thus, we can assume that managers and professionals have followed similar curricula during their university careers and hence have similar skills. We now compare the most relevant observable variables of the two groups. In Tab. 5, we saw that, in the 2000-2017 period, professionals have a higher percentage of women, are more concentrated on the 30-39 and 40-49 classes of age and more distributed in Central and Southern Italy than graduated managers. Tables 6-8 show the trends of gender composition, mean and median age and geographical area through the 2000-2017 period.

These variables seem either to remain stable or to change with a similar trend through the period in analysis. Regarding gender composition, the percentage of women among professionals remains about 15 percentage points higher than among managers, with an average difference of 13.5 points. Instead, mean and median age show different trends, as both mean and median age increase more rapidly for professionals than for managers. However, the difference in levels is not so pronounced, given that mean and median age are only slightly higher on average for managers than for professionals. Regarding the geographical composition of the two groups, things do not change significantly through the years. The distribution of professionals is fairly stable at about 45% in the North, 27% in the Centre and 28% in the South. Managers are stable at 67% in the North, 24% in the Centre and 9% in the South.

Gender - % of female workers		
Year	**Professionals (%)**	**Managers**
2000	30.35	16.27
2001	32.78	16.61
2002	33.78	18.82
2003	34.78	17.91
2004	35.94	19.17
2005	37.76	20.97
2006	37.49	21.06
2007	38.58	23.14
2008	38.38	23.81
2009	38.79	24.61
2010	38.73	26.01
2011	38.64	27.01
2012	38.92	26.75
2013	39.19	27.63
2014	40.21	27.61
2015	40.07	27.99
2016	39.25	27.4
2017	39.45	28.27
Average	**38.14**	**24.19**

Table 6: Trends in gender composition

Age				
	Professionals		**Managers**	
Year	Mean	Median	Mean	Median
2000	37.5	36	44.3	44
2001	37.6	37	44.6	44
2002	38.2	37	44.4	44
2003	38.7	38	44.7	45
2004	39.0	38	45.1	45
2005	39.3	38	44.6	45
2006	39.6	39	44.9	45
2007	39.8	39	44.9	44
2008	40.6	39	45.2	44
2009	41.0	40	45.6	45
2010	41.7	40	45.6	45
2011	42.2	41	45.9	45
2012	43.0	42	46.1	45
2013	43.4	42	46.4	46
2014	43.6	43	46.8	46
2015	44.4	43	47.1	46
2016	45.5	44	47.5	47
2017	46.3	45	47.9	47
Average	**42**	**41**	**45.8**	**45**

Table 7: Trends in mean and median age

Geographical composition (%)						
	Professionals			**Managers**		
Year	North	Centre	South	North	Centre	South
2000	45.81	27.93	26.26	69.59	22.2	8.21
2001	45.63	27.68	26.69	69.51	22.45	8.04
2002	46.79	26.76	26.46	69.68	21.9	8.42
2003	45.74	26.93	27.33	68.89	22.08	9.03
2004	46.1	26.52	27.39	69.26	22.01	8.72
2005	46.08	27.13	26.79	67.77	23.27	8.95
2006	45.53	27.86	26.61	67.29	23.17	9.54
2007	44.88	27.8	27.32	66.32	23.98	9.71
2008	45	27.41	27.59	65.62	24.4	9.98
2009	45.48	27.05	27.47	65.71	24.02	10.26
2010	45.19	27.16	27.65	66.32	23.88	9.8
2011	45.54	26.84	27.62	66.12	23.98	9.9
2012	45.52	27.05	27.43	66.04	24.58	9.38
2013	45.75	26.58	27.67	66.8	24.51	8.69
2014	43.44	26.17	30.39	67.31	23.94	8.75
2015	42.74	26.54	30.72	67.47	23.79	8.74
2016	42.91	26.69	30.4	66.67	23.8	9.54
2017	43.11	25.9	30.99	67.31	23.43	9.27
Average	**44.77**	**26.89**	**28.34**	**67.22**	**23.52**	**9.23**

Table 8: Trends in geographical composition

Therefore, the analysis of relevant observable variables seems to confirm the comparability of the two groups and to explain the difference in levels of earnings too, since Italy is notoriously characterised by regional, gender and intergenerational gaps and professionals are less concentrated in Northern Italy and more concentrated in Southern Italy, have a higher percentage of women and are slightly less young on average.

We proceed with the visual inspection of trends in mean earnings in the periods of interest for the DiD regression to verify the common trend assumption. Figure 7 plots again mean earnings of professionals and managers for the whole 2000-2017 period, while Figure 8 compares them before and after the 2006 and 2011 reforms of regulated occupations. Again, Fig. 7 suggests that the two groups experienced a similar evolution of their mean earnings.

In Fig. 8, a common trend can be seen in pre-2006 mean earnings. We can also see a discontinuity in mean earnings of professionals after 2006 and a slight divergence with respect to mean earnings of graduated managers. However, the inversion in both trends is most probably due to the aftermath of the 2007-2008 crisis. Things are instead less defined for what regards the 2011 reform. The pre-policy trend is less common because of the overlapping effects of the previous reform, and the mean earnings of the two groups do not seem to diverge very much. We also have to keep in mind that the 2011 reform coincides with the Italian sovereign debt crisis. Thus, even though we control for the economic cycle, the latter might affect and be correlated to trends in mean earnings of the two groups, which may be affected differently (given that the treatment group is made up of self-employed workers, while the control group is made up of employees). Thus, graduated managers seem to be a suitable control group for this DiD setting, especially for the 2006 reform. We then proceed with using these two groups for our empirical analysis, exploiting them also for the analysis of the 2011 reform for the sake of comparability, even though the graphic evidence in favour of the common trend assumption is less evident in the latter case. Standard difference-in-differences methodologies allow estimating the average effect of a policy on the variable of interest. Nonetheless, in labour markets showing very high levels of inequality, such as the one we are analysing in this paper, it would seem reasonable to go beyond average effects and try to understand the effects along the earnings distribution. With this scope in mind, we perform again our DiD employing the recentred influence function (RIF) methodology proposed by Firpo et al. (2009), which allows us to run unconditional quantile regressions (UQR) for deciles of the earnings distribution.

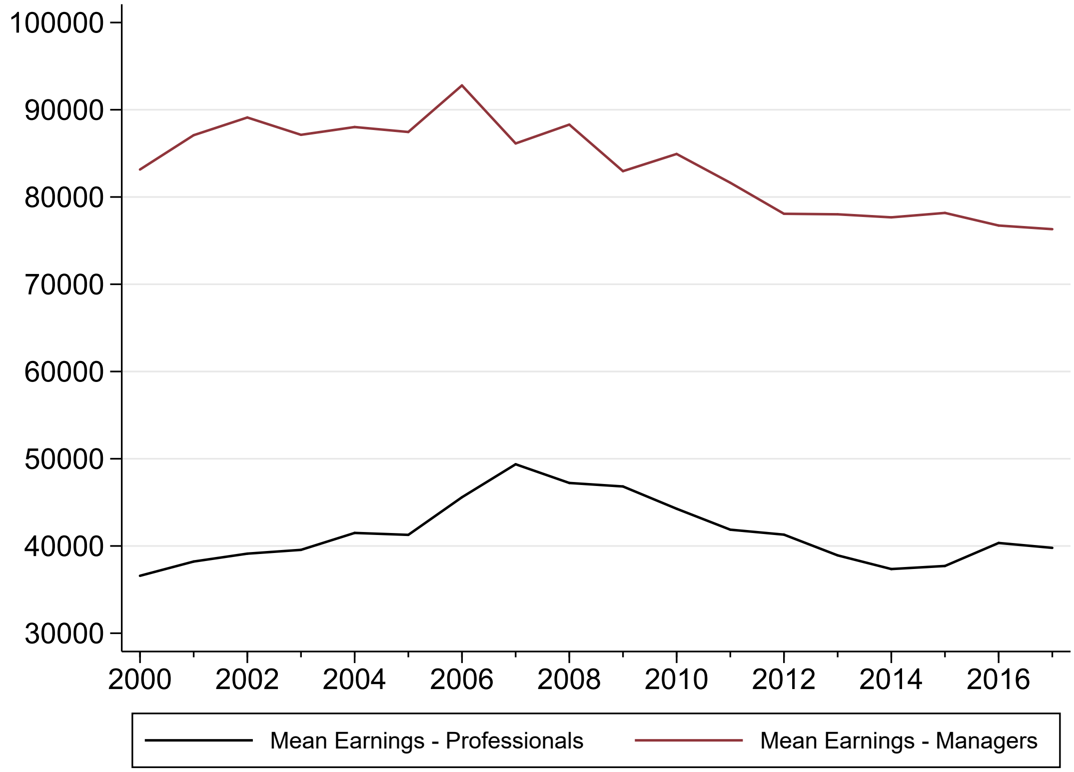

Figure 7: Mean earnings of professionals and managers (2000-2017)

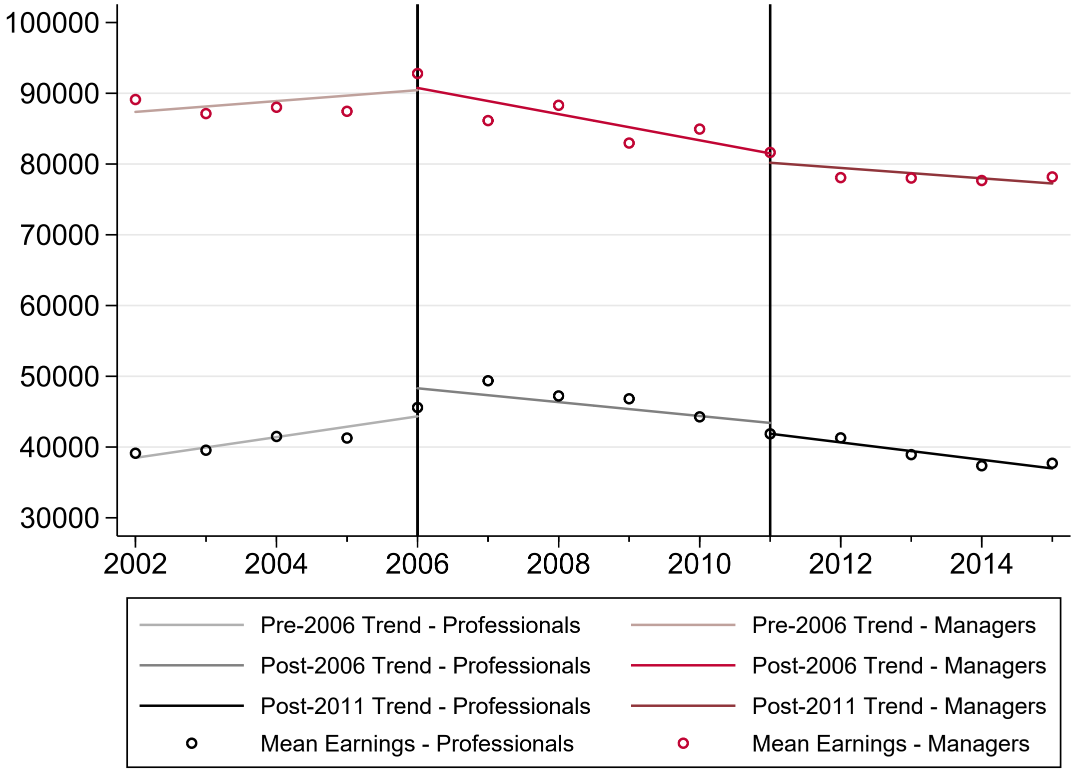

Figure 8: Pre and post-reform trends of treatment and control groups (2002-2015)

5 Main Results

Hereby we present the estimated coefficients for the earnings regressions and the results of our difference-in-differences analysis. The unconditional quantile regressions for the distributional effects of liberalisations will be presented in the following section as an extension on heterogeneity effects.

5.1 Earnings premium

Table 9 shows the estimated coefficients of the three models we employ to assess earnings premium for regulated liberal professionals. In the first model, male professionals from Northern Italy represent the baseline to estimate the relative earnings for the other categories. The estimates are negative and statistically significant for all categories except private and public employees, for which the coefficient is less significant. In particular, we can see that the coefficient for belonging to a category of professionals that is not subject to mandatory enrolment is negative, thus suggesting the existence of a premium from regulation for workers enrolled in a professional association. In the second model, we focus on workers usually considered to be highly skilled, such as managers, consultants and professionals. The estimated earnings premium for professionals is about 13%, only slightly higher than estimates from the relevant literature for the European Union and Italy (e.g., Koumenta and Pagliero,2019; Mocetti et al., 2021). Notwithstanding, the premium from regulation appears to be lower than the premium from having a tertiary degree, estimated at about 36%. In the third model, we further restrict the sample to professionals, managers and consultants holding a tertiary degree. This specification seems to confirm the greater importance of education in determining earnings since the coefficient for being a regulated professional is now slightly negative and not statistically significant.

Coefficients	**(1)**	**(2)**	**(3)**
Constant	7.453***	5.923***	5.452***
	(0.0787)	(0.111)	(0.252)
Private Employee	0.120**		
	(0.0364)		
Public Employee	0.194**		
	(0.0528)		
Consultants	-0.378***		
	(0.0374)		
Non-enrolled Professionals	-0.280***		
	(0.0368)		
Artisans & Retailers	-0.204***		
	(0.0483)		
Professionals		**0.131***	
		(0.0318)	
Professionals (three categories)			**-0.00656**
			(0.0373)
Education – Tertiary Degree	0.290***	0.359***	
	(0.0103)	(0.0172)	
Experience	0.000722***	0.00128***	0.00139***
	(0.0000190)	(0.0000446)	(0.0000600)
Gender – Female	-0.333***	-0.447***	-0.464***
	(0.0160)	(0.0167)	(0.0208)
Age	0.109***	0.169***	0.203***
	(0.00217)	(0.00611)	(0.0144)
Macro-area			
Centre	-0.0705**	-0.174***	-0.193*
	(0.0210)	(0.0439)	(0.0687)
South			
	-0.214***	-0.477***	-0.519***
	(0.0202)	(0.0522)	(0.0690)
Post-2014 Lawyers	-1.091***	-0.770***	-0.593***
	(0.0851)	(0.0860)	(0.0800)
Observations	1089165	174684	64611

Table 9: Earnings premium for professionals (2000-2017) – Notes: in (1), we exploit the full sample and use dummies for different pension funds as independent variables; in (2), we restrict the sample to professionals (regulated and non-regulated), managers and consultants and use a dummy for professionals as the independent variable; in (3), we further restrict the sample to accountants, lawyers, engineers and architects, graduated consultants, graduated managers and graduated non-regulated professionals. Standard errors (clustered at regional level) in parentheses, * p<0.05, ** p<0.01, *** p<0.001.

5.2 Difference in differences

We now turn to the evaluation of the effects of the 2006-2011 liberalisation reforms, which can help to assess the existence and the determinants of an earnings premium from regulation, given that mere OLS estimation of an earnings regression may be confounded by other unobservable variables (Kleiner and Krueger, 2013; Koumenta et al., 2014).

By comparing two groups of workers that are supposedly similar for both observable and unobservable variables (a supposition which should be enforced by common trends in the relevant outcome variable, i.e., earnings), DiD methodology should help to retrieve reliable estimates of the effects of changing regulations (relaxing them, in our case). Furthermore, understanding how and in which direction these changes modify the premium may allow us to get some clues on what causes this premium on a first stance.

Table 10 shows DiD results of POLS and FE estimations of the 2006 ("Bersani") and 2011 ("Monti") reforms. We consider incumbent individuals (i.e., those who were already working previously) only. Estimates for effects of "Bersani" reform on earnings of professionals are positive and quite significant with both estimation methods, while estimates for "Monti" reform show a negative sign.

At first glance, the positive sign of the coefficients for the first reform is somehow counterintuitive since we expect liberalisations to lower the average earnings of regulated workers relative to non-regulated workers. Nevertheless, we may reflect on the fact that the primary measure of the reform was to remove minimum fees. Hence, after the policy was introduced, we can hypothesise that individuals earning less could make more competitive offers than those earning more. In other words, the benefits for the low-earnings workers may have offset the penalties for the high-earnings workers, thus resulting in a redistribution of rents from regulation within professionals and a positive average effect of the policy.

The fact that estimates for the 2011 reform have the opposite sign is also puzzling. Possibly, the "Monti" reform may have tackled rents from regulation more strongly, thus causing a fall in relative earnings rather than an internal redistribution of rents. Or perhaps the fact that this reform removed price caps too may have allowed the high-earnings professionals to raise further their fees, counterbalancing the effect of the previous reform. Alternatively, these results may be affected by the fact that the pre-treatment period of this policy coincides with the after-treatment period of the "Bersani" reform. This fact may reduce the exogeneity of the "Monti" reform, which is plausible also because it did not innovate the institutional framework but rather confirmed and strengthened the provisions of the previous policy. Also, the after-treatment period of the "Monti" reform coincides with the 2011-2012 recession.

This factor may explain why, when estimating a single regression along the whole reference period instead of two separate regressions for the two policies, the 2011 reform loses statistical significance (see Appendix).
However, since standard DiD does not allow to look at heterogeneity of the effect along the distribution, performing a UQR seems crucial to assess these results and verify these hypotheses.

	2006 ("Bersani") Reform		**2011 ("Monti") Reform**	
	POLS	FE	POLS	FE
Professional	-0.760***	-0.329	-0.777***	-0.0333
	(0.0753)	(0.169)	(0.0628)	(0.233)
Post×Professional	0.0819**	0.0979**	-0.0839*	-0.0891***
	(0.0245)	(0.0275)	(0.0353)	(0.0221)
N	14888	14888	19177	19177

Table 10: Difference-in-differences estimates - Note: we consider only incumbent individuals, thus excluding those who started working after the introduction of the policy. Standard errors (clustered at regional level) in parentheses, * p<0.05, ** p<0.01, *** p<0.001.

6 Heterogeneous effects and robustness checks

In this section, we perform some extensions of our analysis to evaluate the heterogeneity of the estimated effects. Firstly, we will run again our DiD regression, this time including both incumbents and post-reform entrants. Then, the results of the unconditional quantile regression will be presented. Lastly, we will check the robustness of our DiD analysis.

6.1 Incumbents and entrants

Table 11 presents the results of our DiD model with the inclusion of individuals who entered the market after the reforms in analysis. This extension does not change the signs of the estimated coefficients but changes their significance for the 2006 reform. Only FE estimation of the effect of "Bersani" reform remains significant. Even the magnitude of the coefficient is not much affected.

	2006 ("Bersani") Reform		2011 ("Monti") Reform	
	POLS	FE	POLS	FE
Professional	-0.768***	-0.328	-0.784***	-0.0306
	(0.0755)	(0.168)	(0.0634)	(0.233)
Post×Professional	0.0872**	0.100**	-0.08*	-0.0883***
	(0.0257)	(0.0280)	(0.0346)	(0.0210)
N	15442	15442	19703	19703

Table 11: Difference-in-differences estimates - Note: we now consider both incumbent and entrant workers. Standard errors (clustered at regional level) in parentheses, * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

6.2 RIF-UQR

The analysis of the distributional effects of the two reforms is the core of this paper. Figures 9 and 10 graphically present the unconditional quantile regression results for the "Bersani" reform, with POLS and FE estimation. These results seem to confirm the intuition presented in Section 5. The bottom deciles of the earnings distribution seem to have benefitted more than the top deciles. Coefficients for the top deciles are even negative with FE estimation of the UQR.
Thus, the 2006 liberalisation had a significantly positive effect on the bottom deciles of the distribution and a weakly positive or negative effect (depending on the estimation method used) on the top half of the distribution. We should then observe some influence on earnings inequality within these regulated professionals. We will investigate this later by performing a RIF-UQR analysis on the Gini index. Table 12 summarises the results of this analysis.

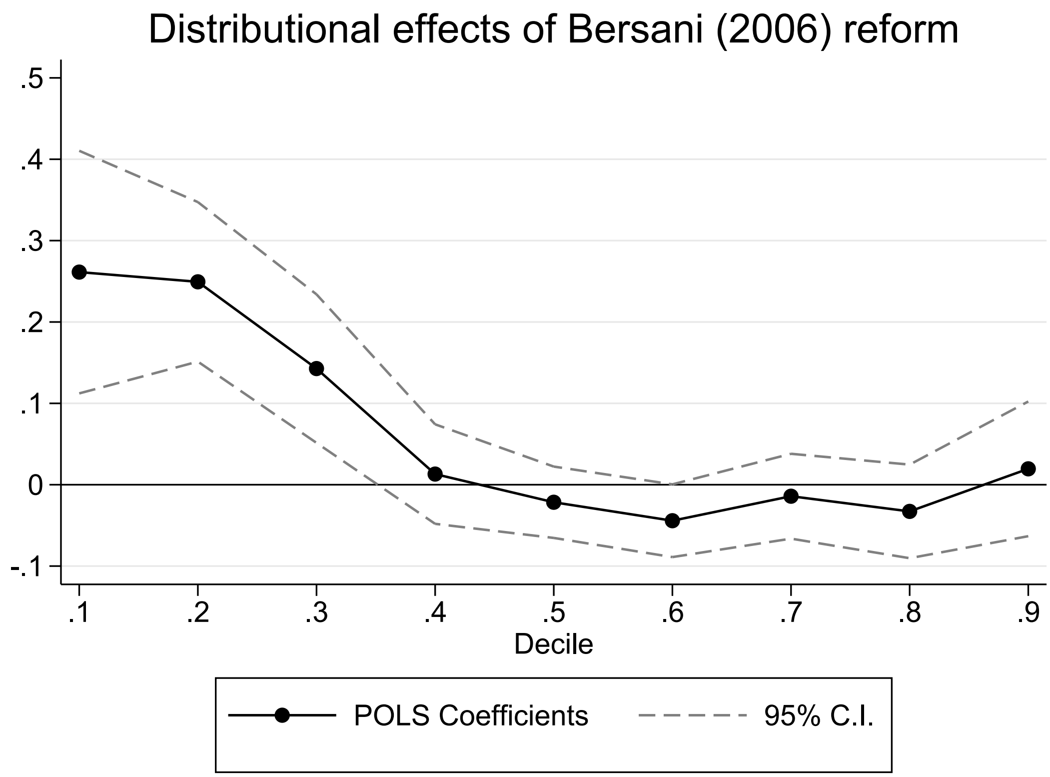

Figure 9: Effects of the "Bersani" reform on deciles of the earnings distribution. POLS estimation of a RIF-UQR (Firpo et al., 2009)

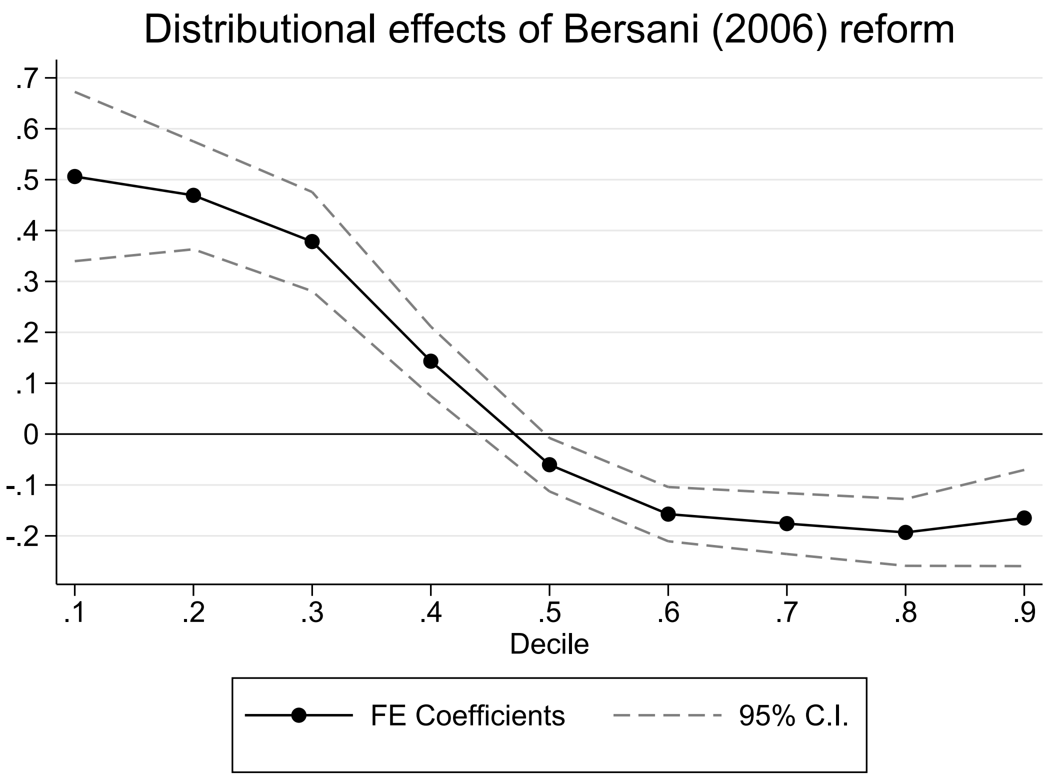

Figure 10: Effects of the "Bersani" reform on deciles of the earnings distribution. FE estimation of a RIF-UQR (Firpo et al., 2009)

"Bersani" Reform	**Professional**				**Post×Professional**			
Decile	POLS		FE		POLS		FE	
10	-1.342***	(0.0547)	-0.417	(0.349)	0.261***	(0.0761)	0.506***	(0.0848)
20	-1.439***	(0.0368)	-0.916**	(0.340)	0.249***	(0.0500)	0.469***	(0.0540)
30	-1.842***	(0.0351)	-1.394*	(0.559)	0.143**	(0.0466)	0.378***	(0.0497)
40	-1.407***	(0.0246)	-0.775	(0.556)	0.0131	(0.0312)	0.143***	(0.0348)
50	-0.751***	(0.0177)	-0.288	(0.314)	-0.0215	(0.0224)	-0.0602*	(0.0268)
60	-0.533***	(0.0177)	0.265	(0.227)	-0.0442	(0.0228)	-0.157***	(0.0272)
70	-0.424***	(0.0201)	0.258*	(0.131)	-0.0141	(0.0266)	-0.176***	(0.0305)
80	-0.271***	(0.0217)	-0.0415	(0.173)	-0.0328	(0.0293)	-0.193***	(0.0335)
90	-0.191***	(0.0307)	-0.144	(0.291)	0.0195	(0.0422)	-0.165***	(0.0482)

Table 12: RIF-UQR for effects on deciles of the earnings distribution of "Bersani" reform. Standard errors (clustered at regional level) in parentheses, * p<0.05, ** p<0.01, *** p<0.001

We now turn our attention to "Monti" reform. Figure 11 presents the POLS

estimation of deciles of RIF-UQR, while Figure 12 presents FE estimation. As in the case of standard DiD, evidence for this reform goes in the opposite direction.
POLS estimation suggests that earnings of the bottom deciles have been apparently penalised, while those at the top have been benefitted, for an average reduction of the earnings premium for professionals. FE estimation yields instead not very significant results. Table 13 presents a summary of the analysis of the "Monti" reform.

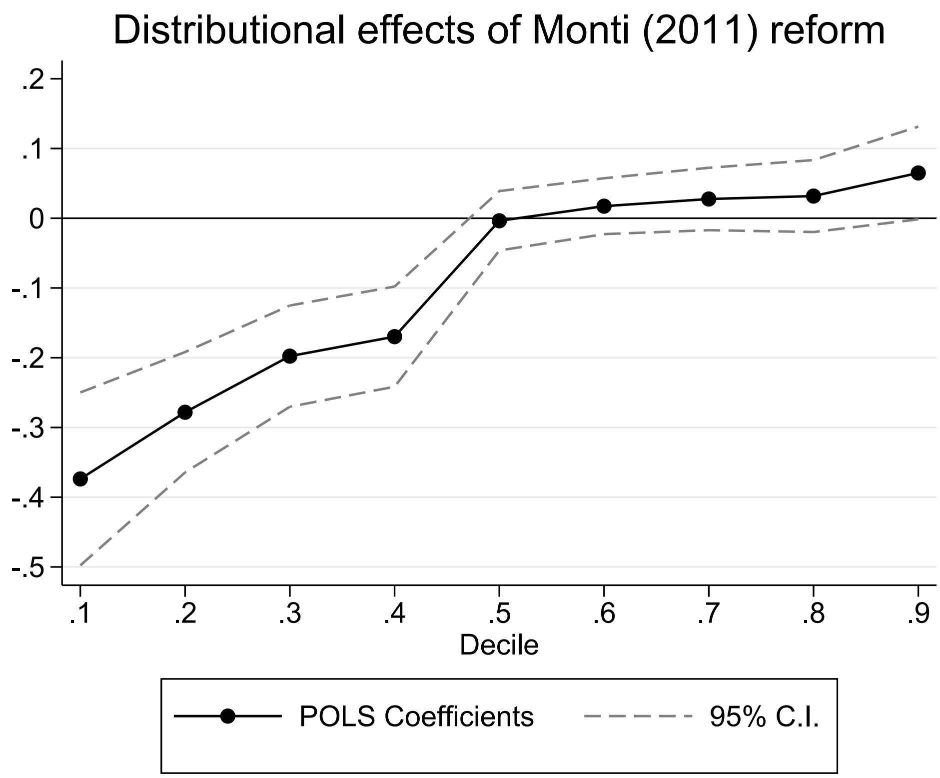

Figure 11: Effects of the "Monti" reform on deciles of the earnings distribution. POLS estimation of a RIF-UQR (Firpo et al., 2009)

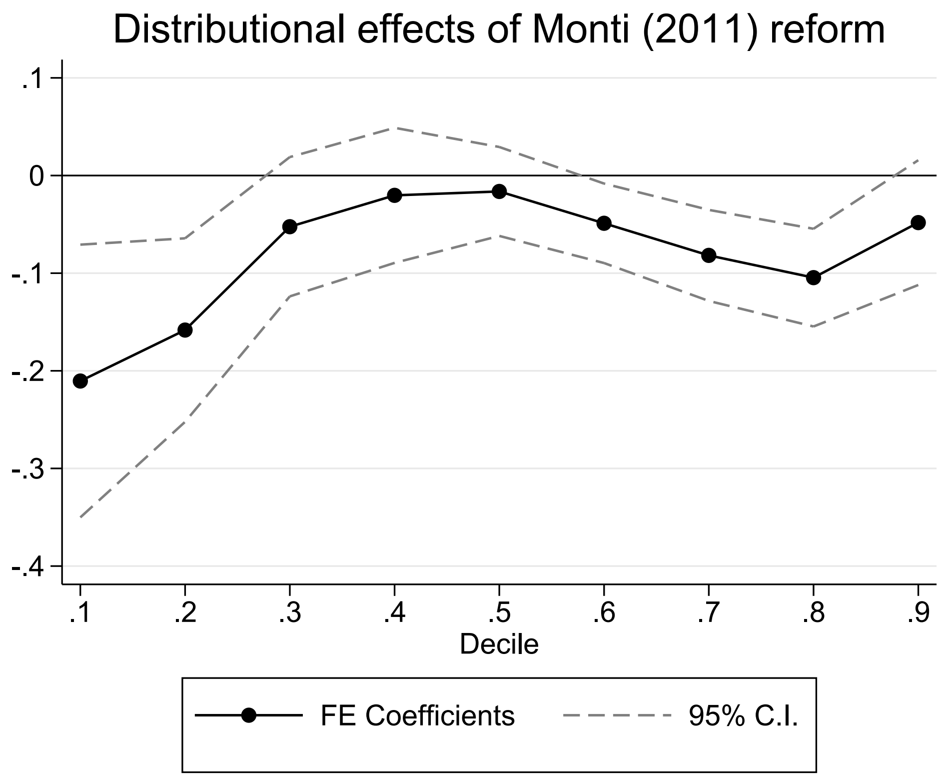

Figure 12: Effects of the "Monti" reform on deciles of the earnings distribution. FE estimation of a RIF-UQR (Firpo et al., 2009)

“Monti” Reform	**Professional**				**Post×Professional**			
Decile	POLS		FE		POLS		FE	
10	-1.179***	(0.0447)	0.242	(0.456)	-0.495***	(0.0688)	-0.210**	(0.0712)
20	-1.324***	(0.0305)	-0.0887	(0.353)	-0.299***	(0.0437)	-0.158***	(0.0479)
30	-1.812***	(0.0298)	-0.323	(0.385)	-0.197***	(0.0400)	-0.0524	(0.0364)
40	-1.431***	(0.0207)	-0.925	(0.532)	-0.0636*	(0.0271)	-0.0203	(0.0353)
50	-0.780***	(0.0150)	-0.489	(0.249)	-0.0199	(0.0197)	-0.0163	(0.0232)
60	-0.587***	(0.0150)	0.0266	(0.256)	0.0268	(0.0203)	-0.0489*	(0.0207)
70	-0.450***	(0.0171)	0.285	(0.234)	0.0217	(0.0234)	-0.0818***	(0.0238)
80	-0.315***	(0.0185)	0.367	(0.227)	0.0144	(0.0254)	-0.105***	(0.0255)
90	-0.191***	(0.0258)	-0.0304	(0.368)	0.0786*	(0.0348)	-0.0482	(0.0326)

Table 13: RIF-UQR for effects on deciles of the earnings distribution of “Monti” reform. Standard errors (clustered at regional level) in parentheses, * $p<0.05$, ** $p<0.01$, *** $p<0.001$

Thus, the two reforms apparently had opposite effects on earnings inequality. Table 14, presenting results of RIF-UQR for Gini Index, confirms that. The coefficient for the 2006 reform is negative (meaning a reduction in inequality) although not much significant, while the coefficient for the 2011 reform is positive (hence, greater inequality). However, both coefficients have a small magnitude.

Effect on Gini Index	**“Bersani” Reform**	**“Monti” Reform**
Professional	0.0320***	0.0272***
	(0.00130)	(0.00115)
Post×Professional	-0.00349*	0.00842***
	(0.00175)	(0.00162)

Table 14: RIF-UQR for effects on Gini index. Standard errors (clustered at regional level) in parentheses, * p<0.05, ** p<0.01, *** p<0.001

6.3 Sensitivity analysis

We now perform an analysis of the sensitivity of our DiD model. We do so by including an interaction term between the "treatment group" dummy variable and each year of the reference period (except for the first, to avoid multicollinearity). This analysis seems to confirm the validity of our DiD model for the 2006 reform for both POLS and FE regressions (Figure 13). Instead, coefficients for the 2011 reform are once again not significant (Figure 14).

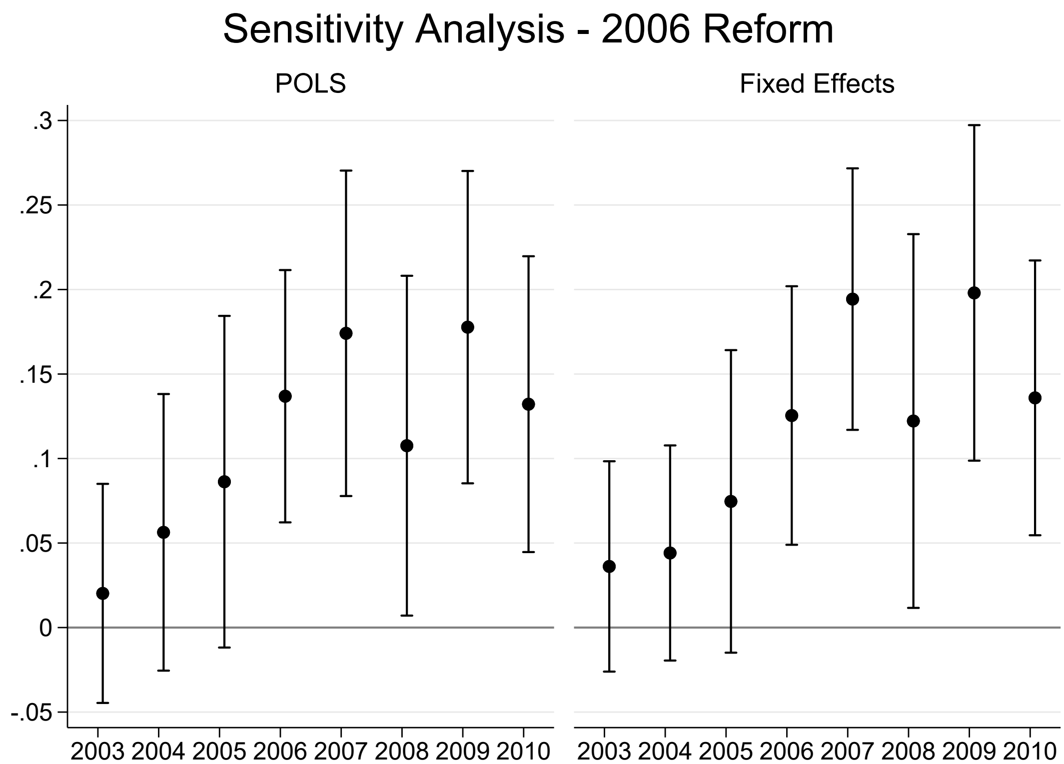

Figure 13: Coefficients of the interaction terms between the "treated" dummy variable and each year of the 2003-2010 period, with 95% confidence intervals. Note that these coefficients are significant only in the post-reform period.

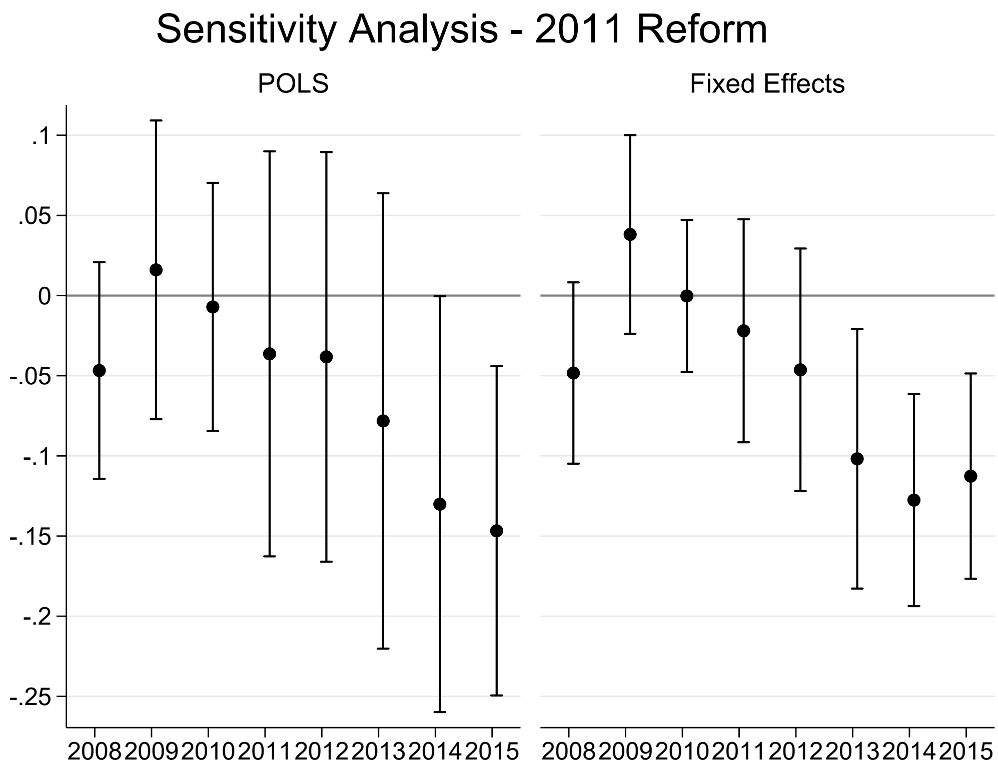

Figure 14: Coefficients of the interaction terms between the "treated" dummy variable and each year of the 2008-2015 period, with 95% confidence intervals. Note that these coefficients are significant only in the post-reform period.

7 Discussion and conclusion

This paper provided some contributions to the literature on labour market effects of regulated occupations. Employing a novel dataset, obtained by merging the Italian component of the Statistics on Income and Living Conditions (IT-SILC) survey with administrative data, we find that regulated liberal professions (professioni ordinistiche) are characterised by very high earnings inequality, pushed by concentration at the top of the distribution. We have then provided evidence on the existence of an earnings premium from working as a regulated liberal professional compared to other workers, which persist when we compare those professionals with other high-education workers, such as managers, consultants and non-regulated professionals. We also evaluate the effects of liberalisations policies, such as those introduced in Italy between 2006 and 2012. Employing a difference-in-differences methodology, we

found that the abolition of price floors and minimum fees (among other provisions) in 2006 has increased the earnings of professionals relatively to those of graduated managers working in the private sector. This result is quite counterintuitive since the relevant literature on regulated occupations expects an eventual earning premium to fall when regulations are removed. In fact, this premium is often described as rent from excessive regulation. Hence, removing the latter would cause the former to vanish. To solve this puzzle, we tried to look at heterogeneities of the effect of liberalisations along the distribution. Employing an unconditional quantile regression, we investigated how the Italian reforms have impacted deciles of the earnings distribution. We found that the "Bersani" reform of 2006 had a very heterogeneous effect along the distribution, benefitting individuals in the bottom half of the distribution more than those in the top half. Depending on the estimation methodology employed, we even found a penalisation for top earnings.
Another puzzle comes from analysing the liberalisation introduced in 2011 (commonly known as "Monti" reform). In this case, results have the opposite sign: earnings of licensed professionals decreased relative to those of managers. However, the distributional analysis of the reform did not clearly identify which side of the distribution was affected more by this fall in earnings. Potential issues in this analysis may come from the post-treatment period coinciding with the 2007-2008 financial crisis and the 2011-2012 sovereign crisis, which may affect results even though we introduce year dummies to control for time trends. Furthermore, we must keep in mind that we are comparing self-employed workers such as liberal professionals to managers (who are employees), two groups that may be affected differently by different phases of the economic cycle. Future research may overcome this problem by finding a more suitable control group or employing a more refined methodology (e.g., synthetic control method).
To conclude, with these results in mind, we argue that the main finding of our analysis is that it is crucial to look at the distribution of policy effects, especially when markets or workers characterised by significant inequality are studied. Most causal inference methodologies look at average effects, something that can bring counterintuitive results. In our case, the fact that earnings of regulated professionals were raised on average by relaxing regulations in 2006 does not imply that such reform did not remove rents. We may instead infer from the distributional analysis of the effect of this policy that the removal of rent-inducing regulations favoured low-earnings individuals more than it penalised high-earnings individuals, thus resulting in a positive average effect.

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Appendix

Single DiD regression for both reforms Incumbents Only		
	POLS	FE
Professional	-0.782***	-0.346*
	(0.0687)	(0.135)
Post2006×Professional	0.0720**	0.0810**
	(0.0257)	(0.0280)
Post2011×Professional	-0.0504	-0.0518
	(0.0498)	(0.0282)
N	15442	15442

Table 15: Difference-in-differences estimates, single regression including interaction terms for both reforms - Note: we consider only incumbent individuals, thus excluding those who started working after the introduction of the 2006 policy. Standard errors (clustered at regional level) in parentheses, * $p<0.05$, ** $p<0.01$, *** $p<0.001$