

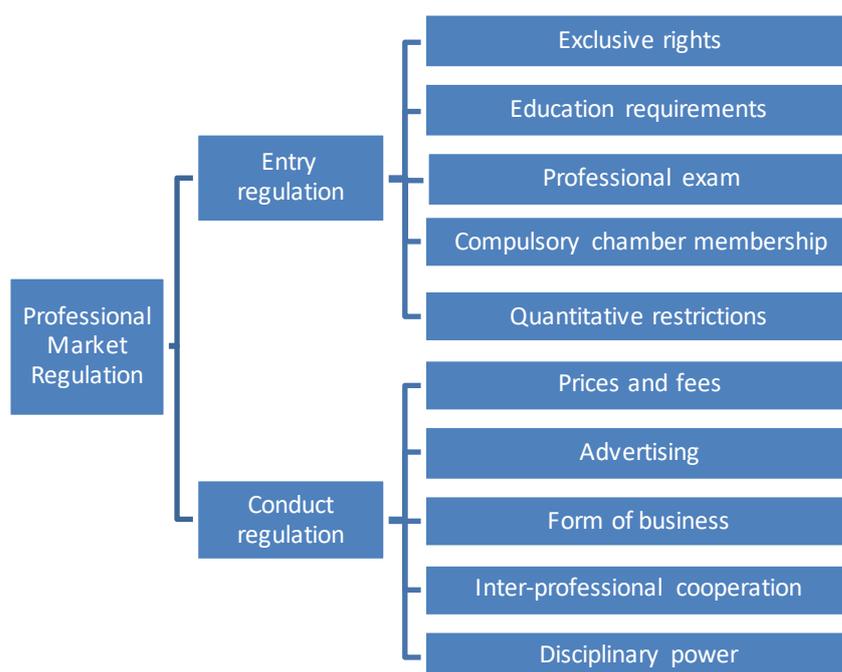
## Appendix

Since the 1990s, the OECD has been constructing a system of indicators to measure stringency and ongoing development in product market regulation across the OECD countries. See Nicoletti et al. (1999), Conway and Nicoletti (2006) and Koske et al. (2015) for more details on the spirit of the indicator and on the methodology adopted to turn qualitative data on laws and regulation into quantitative indicators.

Following the OECD methodology, we develop a novel (time-varying) measure of regulation for 14 professions in Italy. Namely, the indicator has a pyramidal structure and it is aimed at summarizing regulations by regulatory domain.

At the top of the pyramid there is the overall regulatory environment of professional services that, in turn, is based on two main broad regulatory domains: the entry requirements into the profession and the regulation of the market behavior (i.e. conduct); these domains, finally, cover different sub-domains regarding specific classes of regulatory interventions, as shown in Figure A1.

Figure A1: Domains and sub-domains considered in the regulation index



For each sub-domain, different questions have been included in the analysis. The answers to these questions are all designed to express the stringency of regulations, from least to most restrictive (along a 0-6 scale), with regard to their impact on market competition. The aggregate indicators are built as mean of the values of the related sub-domains.

With respect to the OECD indicator we innovate along two main dimensions. First,

we consider a broader set of professions: accountants, agronomists, architects, biologists, chemists, doctors, engineers, geologists, lawyers, notaries, pharmacists, psychologists, social assistants and veterinarians. Second, we enrich the sub-domains of the regulatory environment along several directions.

For entry regulation we consider the following five sub-topics: exclusive rights (i.e. reserves of activities), education requirements, professional exam, compulsory chamber membership and quantitative restrictions. For conduct regulation we consider the following five sub-topics: prices and fees, advertising, form of business, inter-professional cooperation and disciplinary power. The content of each sub-domain is reported in Table A1. In the following we provide further details and we discuss the main element of novelty.

For **entry regulation**, the first sub-domain concerns exclusive rights (1.1). The ministerial decrees report the reserves of activities for each profession and set the reference price for each of them (either a fixed price or price range). For example, the ministerial decree regarding veterinarians sets the price of an examination of a cat or a dog at 30 euros; with regard to lawyers, the compensation is based on the value of the litigation. In the indicator, we have considered how many groups of similar activities are mentioned in the decrees (1.1.1) and, for each group of activities, we have estimated the value of the most common activities, based on the price set by the decree (1.1.2).<sup>24</sup> For education requirements (1.2), we consider the length of the university degree (1.2.1), whether an undergraduate degree of 3 years enables to register at the chamber (1.2.2),<sup>25</sup> whether the university program which leads to pass the professional exam is free or with limited enrollment (1.2.3), the length of the compulsory practice (1.2.4). With regard to the professional exam, we have considered not only whether it exists or not but also – as a proxy of its difficulty and independence with respect to the local pressure of professional bodies – the number and types of tests it is composed of (1.3.1), the composition of the examining board (1.3.2), the national or local level of organization of the professional exam (1.3.3) and the pass rate (1.3.4).<sup>26</sup> With reference

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<sup>24</sup>The ministerial decrees cover, for each profession, a number of groups of activities varying from two to twelve. In each group, different activities are listed and different value ranges are set. Let's consider the case of notaries. We identify five groups of activities (e.g. real estate deed, corporate deed, inheritances, etc.). For each group of activities, we consider different items. For example, as far as real estate sales are concerned, the compensation of the notary is parameterized with respect to the value range to which the sale belongs. Then, to build the value of the exclusive rights we proceed as follows. First, we select the most common activity within each group of activity. For real estate sales, we consider those in the value range 25,000-500,000 Euros. Second, we compute the compensation of the notary for the average sale in this bracket. Third, we replicate the exercise for other groups of activities. Finally, we get the simple average across the groups of activities as overall indicator of the values of the exclusive rights.

<sup>25</sup>This is a more accurate information than only the length of the university degree, as it allows to consider whether after three years it is possible to register at the chamber and, after that, how many years does the university degree last. People who register at the chamber after an undergraduate degree of 3 years are generally identified as "junior" professionals.

<sup>26</sup>These items have been added using the following assumptions. First, we assume that if the examining board is not composed of professionals the exam would be fairer and less subject to pressure by incumbents.

to chamber membership (1.4), we consider whether it is compulsory or not (1.4.1) – this provides little information, because for all professions such membership is compulsory – but also the costs related to the membership itself (1.4.2). We have calculated the latter for each profession as a mean of the cost of first-five-year membership using information drawn from the websites of the professional bodies in each region’s capital.<sup>27</sup> We also include the extent of quantitative restrictions (1.5). Namely, we include not only the quotas for foreign professionals or firms (1.5.1) as done by the OECD, but also whether the running of the business by the professional is subject to quotas within the country (1.5.2),<sup>28</sup> and, if so, to what extent (1.5.3). The latter is measured as the number of inhabitants for each business activities as in some professional activities (notably for notaries and pharmacists) the entry in the market is parameterized to the population following a demographic criterion.

For **conduct regulation**, the first sub-domain is represented by the regulation on prices and fees (2.1). The answer to this question strictly follow the OECD structure. As far as regulation on advertising (2.2) and that on legal form of business (2.3) are concerned, we enrich the answers to have them more tailored to the Italian context. We notably distinguish, on the one hand, the different kinds of advertising (comparative, on the characteristics of the professional and services or on the professional) and, on the other hand, the different legal forms of business that have been introduced in the Italian law (sole proprietorship, partnerships, capital companies) and the existence of restrictions on shareholders for capital companies. The sub-domain of inter-professional cooperation (2.4) has the same questions and answers of the OECD indicator, based on the number of forms of inter-professional cooperation allowed. Finally, we added a novel sub-domain on the disciplinary power (2.5). As a proxy of the effectiveness of such power, failing data on disciplinary proceedings run and penalties imposed by the chambers, we consider whether such power exists and, if so, whether it is entrusted to a specific body, that is deemed more independent, or not.

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Second, we assume that if there is a national examining board there is less risk of connections than in a local context. Third, a lower pass rate indicates higher difficulty to enter the profession (data drawn from CRESME).

<sup>27</sup>We consider the first-five-year average as for some professions the costs vary between the first and subsequent years. The average cost of membership varies from about 150 euros per year for social assistants to 1,500 euros per year for notaries

<sup>28</sup>This means that the running of the business is subject to a decision of the public authority (i.e. a license). We also consider whether such license can be inherited by the child of a professional or not.

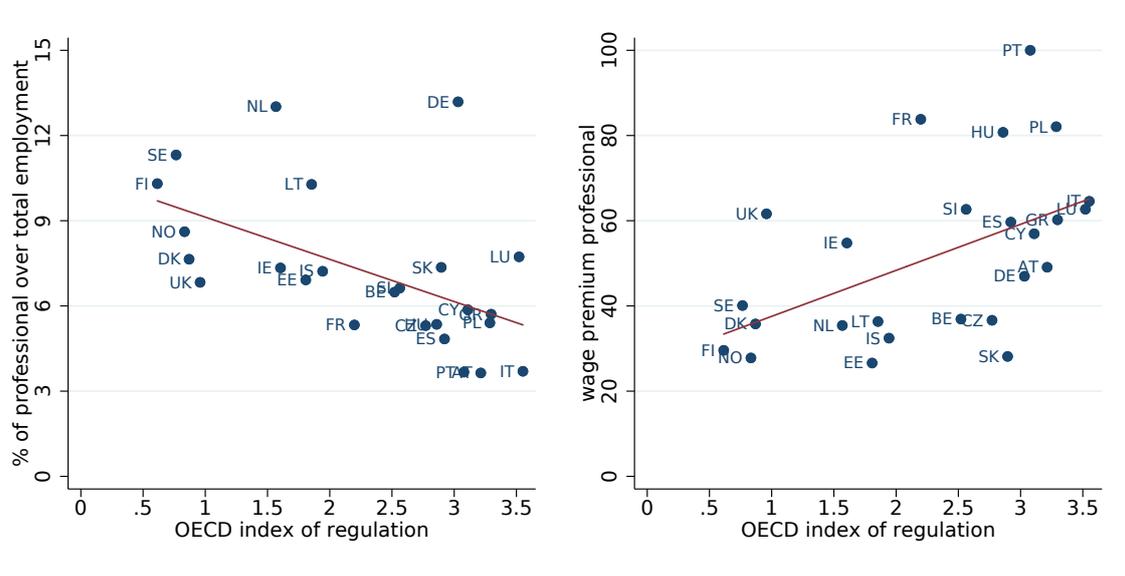
Table A1: Coding of answers and weight of the indicator

		Coding of answers		TW	STW	QW
1.	<b>Entry</b>			1/2		
1.1.	<i>Exclusive rights</i>				1/5	
1.1.1.	How many services does the profession provide under an exclusive right?	Number of reserved activities (*)	0-6			1/2
1.1.2.	What is the average value of the most common reserved activities?	Average value (*)	0-6			1/2
1.2.	<i>Education and training requirements</i>				1/5	
1.2.1.	What is the duration of the University degree?	Number of years	0-6			1/4
1.2.2.	Does an undergraduate degree (3 years) enable passing of the professional exam?	Yes	0			1/4
		No	6			
1.2.3.	Is access to University program free or selective?	Percentage of Universities with entry restrictions (*)	0-6			1/4
1.2.4.	What is the length of compulsory practice / postgraduate education?	Number of years	0-6			1/4
1.3.	<i>Professional exam</i>				1/5	
1.3.1.	Which tests comprise the professional exam?	There are no professional exams	0			1/4
		One or more oral tests	1			
		A written test	2			
		A written test and an oral test	3			
		Two written tests and an oral test	4			
		Two written tests, an oral test and a practical test	5			
		Three or more written tests and a practical test	6			
1.3.2.	How is the examining board composed?	Mostly by non-professionals	0			1/4
		By members suggested by the chamber (also not professionals)	3			
		Mostly by professionals	6			
1.3.3.	Is the professional exam centralized or organized at local level?	Centralized	0			1/4
		Organized locally and evaluated by non-local examination boards	3			
		Entirely organized at the local level	6			
1.3.4.	What is the pass rate of the professional exam?	Percentage of candidates who pass the exam (*)	0-6			1/4
1.4.	<i>Compulsory chamber membership</i>				1/5	
1.4.1.	Is membership in a professional organization compulsory to legally practice?	No	0			1/2
		Yes	6			
1.4.2.	How much is the annual cost of the membership?	Average membership fee (*)	0-6			1/4
1.5.	<i>Quantitative restrictions</i>				1/5	
1.5.1.	Is the number of foreign professionals/firms restricted by quotas?	No	0			1/3
		Yes	6			
1.5.2.	Are quantitative restrictions on the number of businesses provided for?	No	0			1/3
		Yes	3			
		Yes with heritability of the business license	6			
1.5.3.	What is the extent of quantitative restrictions?	Strictness (*)	0-6			1/3

		Coding of answers		TW	STW	QW
2.	<b>Conduct</b>			1/2		
2.1.	<i>Prices and fees</i>				1/5	
2.1.1.	The charged fees or prices are regulated by the government or self-regulated?	No regulation	0			1
		Non-binding recommended prices for some services	1			
		Non-binding recommended prices for all services	2			
		Maximum prices for some services	3			
		Maximum prices for all services	4			
		Minimum prices for some services	5			
		Minimum prices for all services	6			
2.2.	<i>Advertising</i>				1/5	
2.2.1.	How is advertising and marketing of professional services regulated?	All kinds of advertising admitted	0			1
		Only advertising on professionals and services admitted	2			
		Only information on professionals admitted	4			
		Forbidden	6			
2.3.	<i>Form of business</i>				1/5	
2.3.1.	How is the legal form of business regulated?	Capital companies allowed with no restrictions on shareholders	0			1
		Capital companies allowed with restrictions on shareholders	2			
		Capital companies forbidden	4			
		Sole practitioners only	6			
2.4.	<i>Inter-professional cooperation</i>				1/5	
2.4.1.	How is inter-professional cooperation regulated?	All forms allowed	0			1
		Most forms allowed	2			
		Allowed between comparable professions	4			
		Generally forbidden	6			
2.5.	<i>Disciplinary power</i>				1/5	
2.5.1.	Is the chamber entitled with disciplinary power?	Yes, entrusted to a specific body	0			1
		Yes, entrusted to the chamber board	3			
		No	6			

TW = topic weight; STW = sub-topic weight; QW = question weight. (\*) continuous values obtained normalizing each figure and letting the variable varies between 0 (minimum) and 6 (maximum).

Figure A2: Regulation and labor market outcomes in Europe



Data from the EU-SILC and OECD. We consider as professionals those employed in the ISCO group 21 and 24. Wage premium has been calculated on gross incomes, except for Greece, Italy, Spain and Portugal for which we use net incomes; moreover, wage premium has been bounded to 100% for graphical reasons.