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Research paper

How do educational systems regulate the teaching profession and teachers' work? A typological approach to institutional foundations and models of regulation

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HIGHLIGHTS

- This comparative study sheds light on institutional variations in the regulation of the teaching profession.
- We develop a typology articulated around teacher education, labor market and the division of labor.
- We highlight four models of regulation of the teaching profession.
- We underline the bureaucratic, market-oriented or professional approach they favor.
- We discuss how these models shape the regulation of the teaching profession and teachers' work.

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ABSTRACT

This cross-national study contributes to the comparative literature on institutional variations in the regulation of the teaching profession by developing a theoretical typology articulated around teacher education, labor market regulation, and the division of labor. Drawing on Freidson's work on professionalism in the field of sociology of professions, our typology highlights four models of regulation – the 'market', the 'rules', the 'training', and the 'professional skills' models. We discuss how these models, embedded in a bureaucratic, market-oriented or professional approach, shape the regulation of the teaching profession and teachers' work in different contexts.

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1. Introduction

In a context where the link between the teaching force and the quality of education has been strongly asserted, teachers and teaching have come to the "forefront of the global educational policy reform agenda" (Tatto, 2007, p. 7), in particular since the publication of the OECD report "Teachers matter" (OECD, 2005). Three major areas of teacher reforms can be identified as countries have put considerable efforts into reforming the profession: recruitment and education, hiring and distribution, and supporting and rewarding the teaching profession (Akiba, 2013a). What emerges in the policy and scientific landscape is a growing consensus regarding the crucial importance of these areas for ensuring the quality of the teaching workforce (Akiba, 2013b; Letendre & Wiseman, 2015). They also represent key levers for tackling issues related to teacher shortage, attrition, and turnover (Ingersoll, 2003; Shen, 1997), and for improving the attractiveness and the status of the teaching profession (Hargreaves, 2009).

Echoing these debates, influential comparative studies have looked across the world into systemic policies and practices to highlight characteristics of systems producing highly skilled and committed teachers (Darling-Hammond et al., 2017). In their study of five high-performing countries, Darling-Hammond et al. (2017) found that selection practices that make it possible to recruit the best candidates for entering the profession, strong teacher preparation along with induction and mentoring programs, continuous professional learning and career opportunities as well as a strong

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emphasis on teacher evaluation, may not only ensure quality teaching but also be critical drivers for professionalizing teachers. This literature has thus stressed institutional features (and policies) that may create a virtuous circle leading to teachers' quality and a strong teaching profession (see also Tatto, 2008). However, while cross-national similarities and differences in the regulation of the teaching profession have been identified, little is known on what accounts for those between-countries variations.

This cross-national study aims at filling this gap by examining the institutional foundations of the teaching profession in a set of 16 countries having participated in TALIS 2013. It sheds light on what might explain between-countries variations in this regard. We argue that dominant patterns and key rationales underpin the regulation of the teaching profession and the teachers' work in different contexts. We thus address the following research questions: how do educational systems regulate the teaching profession? Can we empirically determine cross-national patterns in the favored arrangements for regulating the teaching profession? What accounts for between-countries variations in this regard?

Building on the work of Eliot Freidson on professionalism (2001), this article proposes a theoretical typology that highlights how distinct models of regulation embedded in a bureaucratic, market-oriented or professional approach shape the way teacher education, the teaching labor markets, and the division of labor are organized and regulated in different contexts. The study therefore expands discussions on teachers' professionalism to the characteristics and interplay among these institutional pillars, rarely analyzed in conjunction, and stresses possible avenues where policies might be applied in order to promote and support the teaching profession.

The paper is organized as follows. In the next section we introduce our approach for the inquiry into the institutional foundations of the teaching profession and discuss the institutional pillars that structure our analysis, namely training programs, labor market regulation, and the division of labor. The third section presents our methods. The Results section presents our typology with the four models of regulation that emerge from our study: the *market*, *rules*, *training*, and *professional skills* models. In the last two sections, we finally consider key elements for discussion before addressing the limitations of the study and providing some concluding remarks.

2. The regulation of the teaching profession: institutional pillars

This study draws on Freidson's work on professionalism in the sociology of professions to investigate the institutional foundations of the teaching profession. While professions have been studied from many angles (Macdonald, 1995), Freidson's institutional approach, which emphasizes professional power, has introduced a conceptualization of professions rooted in the social organization of labor (Brint, 1993; Macdonald, 1995). Professions are then primarily a "socially constructed link between tasks, advanced training and markets" (Brint, 1993, p. 265). The study of professions, rooted in the "world of work" (Freidson, 2001, p. 3), remains first and foremost the study of a "set of interconnected institutions providing the economic support and social organization that sustain the occupational control of work" (Freidson, 2001, p. 2). Not only does Freidson propose a systematic approach to the analysis of occupations through "labor markets (…) through ways of organizing divisions of labor and educational [training] systems" (Freidson, 2001, p. 10), but he also highlights the crucial importance of these intertwined institutional pillars whose organizations can support the work of professionals and enable them to be defined and regarded as such. He also discusses distinct ideal types of organization and control of work – the bureaucracy, the market and the profession. Each of the three ideal types not only articulates the three institutional pillars in a specific way, but also refers to "a faith in these imaginary worlds, each operating on a different set of assumptions" (Freidson, 2001, p. 2) that underlies policy choices. These ideal types therefore represent distinct and concurrent "regimes of control and ideologies" (Gewirtz, Mahony, Hextall, & Cribb, 2009, p. 4). Driven by principles that become normative values (efficiency, competition, and professionalism as values *per se* (Evetts, 2013)) shaping the way work is organized and controlled, they share distinct conceptions of work and professionals.

The bureaucratic ideal type, drawn from Max Weber, is based on the principles of hierarchical organization and control of work, and structured by rules and norms formulated by a rational legal authority (Dubar, Tripier, & Boussard, 2015; Freidson, 2001). Organized by the search for efficiency, and the ideal picture of the skilled management of firms, it favors bureaucratic and external modes of control as well as standardized procedures and practices. The market ideal type, structured by the law of supply and demand, is drawn from Adam Smith (Dubar et al., 2015; Freidson, 2001). It relies primarily on competition in a free market implying a fluid division of labor based on the principles of flexibility and mobility. The professional ideal type, drawn from Emile Durkheim and promoted by Freidson as a "third logic" of organization and control of work, puts occupational control, expertise, and professional autonomy at its center. In this ideal type, the training system and programs provide the future professionals with the knowledge and skills necessary to perform complex tasks that require the exercise of discretion. Sheltered labor markets ensure that only individuals equipped with specialized training and professional qualifications access available positions. Finally, the organization of work should sustain professional autonomy, the latter being granted to expertise rooted in a complex body of knowledge acquired during initial training and developed over time.

To investigate how distinct models of regulation[1] embedded in a bureaucratic, market-oriented or professional approach shape the institutional foundations of the teaching profession, we built a multidimensional framework (Fig. 1) that allows us to operationalize and analyze teacher education, the regulation of teaching labor markets, and the division of labor in a cross-national perspective. Building on Freidson and drawing from the literature in the education field, we focused on the organization, structure, and scope of initial teacher education (ITE) to operationalize the training programs. With regard to the regulation of labor markets for teachers, we emphasized the "port of entry", teacher's status and careers structure as well as the criteria for promotion and career advancement. Accountability schemes and teachers' autonomy forms were selected as key dimensions to investigate the division of labor.

The next sub-sections proceed with a focused literature review that discusses the training programs, labor market regulation, and the division of labor in the light of the literature on the teaching profession. They have a dual objective: to discuss the stakes attached to these key pillars for the teaching profession, and most importantly, to operationalize their constitutive dimensions structuring our analysis of the institutional foundations of the teaching profession.

[1] The notion of model of regulation refers to "the theoretical and normative models serving as cognitive and normative references, especially for decision-makers, in defining 'good ways to steer or govern' the education system. These models include basic values and norms and are simultaneously instruments for interpreting the real situation and guides for action" (Maroy, 2009, p. 76).

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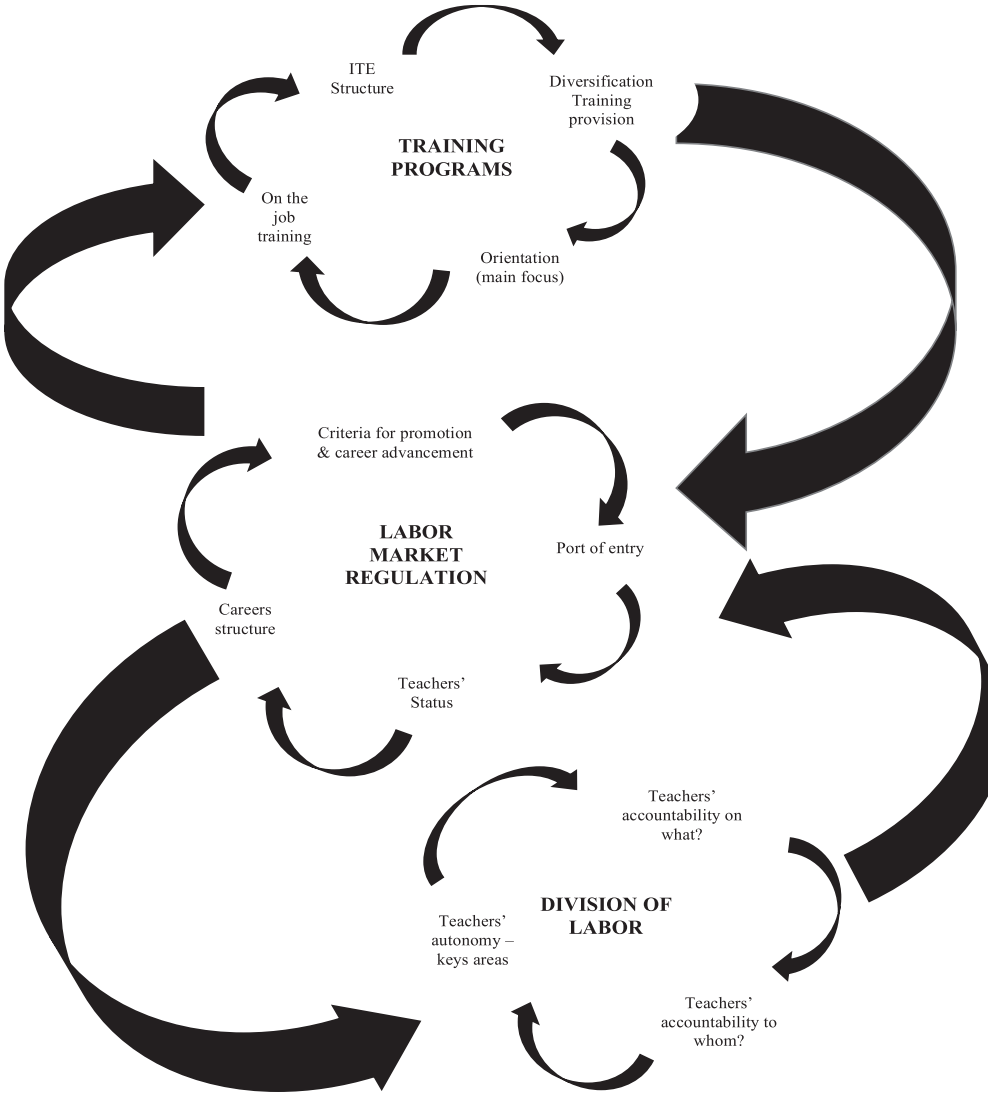


Fig. 1. The regulation of the teaching profession and teachers' work – multidimensional framework.

2.1. Training programs

The term "training programs" refers to the arrangements to provide knowledge, skills, and dispositions for future teachers (Tatto, 2008). With regard to the teaching profession, key issues have been much discussed in the literature (Cochran-Smith, Feiman-Nemser, McIntyre, & Demers, 2008) – what should teachers know? Where should teachers be taught? What is at stake is the knowledge and skills that prospective teachers should be provided with and their institutionalization and acquisition in specific forms of training.

The crucial importance of long-term university-based education, strongly advocated by the "professionalist agenda" (Cochran-Smith & Fries, 2001), echoes the belief that "certain work is so specialized as to be inaccessible to those lacking the required training experience" (Freidson, 2001, p. 17). The knowledge base shared by the members of a professional group – the central characteristic of professionalism and linchpin of knowledge-based activities (Evetts, 2013) – may not only cement a common technical, epistemological, and ethical culture (Lortie, 1975). It also grants professionals their social status attached to highly selective training (Freidson, 2001, p. 95).

Shulman (1987), for his part, has certainly contributed to the debate by conceptualizing key domains of teaching knowledge (Carlsen, 1999, pp. 133–144). Within the literature, there is indeed a growing agreement on the importance of a strong preparation in content knowledge (CK) and specific teaching knowledge (i.e. pedagogical content knowledge (PCK) and general pedagogy (GP) (Schulman, 1987). Nevertheless, the prevalence and articulation of distinct domains of teacher knowledge vary according to teacher education traditions, which place greater or lesser emphasis on educational theories and/or subject aspects, or on practical knowledge and reflexive abilities (Schön, 1987; Zeichner & Liston, 2013).

Teachers' opportunities to learn (Tatto, 2008) also vary according to the initial teacher training structure. Concurrent models of training integrate content and pedagogical knowledge as well as in-school training alongside the preparation period, while in a consecutive model graduate students attend a teaching-oriented preparation after completing a degree in one or more academic disciplines (Eurydice, 2018; Grimmett, 1998). The importance given to on-the-job training is, furthermore, highly variable from one country to another. What is at stake is the balance and articulation between distinct types of knowledge that will serve as a basis for

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teachers' practices.

Formal knowledge provides the theoretical and conceptual foundations of work, while on-the-job training targets the development of practical and tacit knowledge, ideally building the bridge between abstraction and action (Macdonald, 1995). While practical and tacit knowledge are both based "on experience rather than on formal theory" (Freidson, 2001, p. 25), practical knowledge is "instrumental for performing concrete tasks in concrete settings" (Freidson, 2001, p. 31) whereas tacit knowledge as conceptualized by Polanyi (1966) implies both perception and scientific thinking and "concerns how best to undertake specific tasks in particular situations" (Elliott, Stemler, Sternberg, Grigorenko, & Hoffman, 2011, p. 85).

The balance between these distinct types of knowledge, Freidson argues, makes it possible to distinguish professionals from craftspeople and technicians, while the role of universities and the profession itself in the production and formalization of teaching knowledge remains crucial to the professional project (Macdonald, 1995). Moreover, by emphasizing the "extensive exercise of discretionary judgment rather than the choice and routine application of a limited number of mechanical techniques" (Freidson, 2001, p. 95), teachers' preparation also shares a distinct conception of teaching as a complex activity that requires professional initiative, discretion, and autonomy rather than a procedural and scripted activity (Tatto & Plank, 2007). ITE, its organization, structure, and scope, is thus of central importance inasmuch as it shapes the characteristics of prospective teachers and therefore contributes to the quality of teacher supply (Gorard, 2006).

2.2. Labor market regulation

Labor market regulation is of crucial importance inasmuch as labor markets designate "the means by which workers are distributed among jobs and the rules that govern employment, mobility, the acquisition of skills and training" (Kalleberg & Sorensen, 1979, pp. 351–352). To analyze this pillar, we focused on the "port[s] of entry" (recruitment to teaching and allocation to workplace), teachers' employment status, and career pathways (Freidson, 2001).

Beside studies that have investigated the institutional stabilization of work relationships through status, contracts, and employment conditions, the sociology of professions has also paid great attention to the formal conditions, rules, and policies that frame access to positions (Paradeise, 1988), creating what Weber called "social closure" (Weber, 1978; quoted in Freidson, 2001, p. 78). Occupational control, Freidson argues, "depends on a market shelter for members, a shelter that provides a monopoly over particular kinds of specialized work" (2001, p. 84).

The constraints on entering the teaching profession inform on the ways teaching labor markets are sheltered. The binding power of formal entry requirements, such as formal credentials and licensing standards, is strongly debated, most particularly with regard to alternative teacher certification policies (Zeichner, 2017, pp. 139–170). Introduced as a pragmatic solution to teacher shortage, they have been accused of lowering the costs for entering teaching and degrading the status of the teaching profession (Darling-Hammond, 2000).

The "port of entry" (Freidson, 2001) also includes the way professionals are recruited and allocated to workplaces. Studies have stressed distinct selection, recruitment, and hiring schemes, granting more or less power to distinct actors in the management of the teaching workforce (centralized, decentralized, open recruitment system) and implying distinct employment status (civil-servant versus non-civil-servant status) (Eurydice, 2015, 2018). The "Teachers Matter" report (OECD, 2005) moreover makes it possible to articulate these issues with that of teachers' career pathways by distinguishing two systems of teacher employment in the public sector.

In "careers-based" systems (OECD, 2005), initial entry is based on academic credentials coupled with civil service entry examinations, while teachers' allocation to workplace and promotion are essentially based on internal rules. "Position-based" systems favor more flexibility in the management of the teaching workforce. They introduce recruitment criteria, performance evaluation systems, and distinct career pathways to control the quality of teaching staff and make the profession more attractive in a context of recruitment crisis.

These developments stress that the openness of teaching labor markets may not only result from pragmatic reasoning, linked to selection and recruitment issues. It may relate to principles giving more or less credit to professional principles, bureaucratic rules, and/or market-oriented solutions (Freidson, 2001). Moreover, the degree of coordination of teaching labor markets may vary according to the means by which the state and its agencies regulate the recruitment, employment, and careers schemes (Gallie, 2009). This echoes the literature on the institutional foundations of the political economy (of states) that makes the distinction between coordinated and liberal markets (Martin & Thelen, 2007). This distinction implies different levels of market regulation and degrees of state activism in this respect (Freidson, 2001).

2.3. Division of labor

Following Durkheim's legacy (1964), Freidson defines the division of labor as the "structure of social relationships that organizes and coordinates the work of related specializations" (Freidson, 2001, p. 41). His conception of work as a social organization of tasks shaped by the exercise of power not only involves a focus on the organization and scope of work, and related tasks. It suggests examining who is controlling the teachers' work, and analyzing teacher autonomy and accountability.

In the educational field, the division of labor has been studied through the lens of distinct functions – administrative and organizational functions, technical/instructional functions (teachers) – and corresponding relatively autonomous sub-units that compose and shape the social organization of the school system (and of schools) (Bidwell, 1987; Tyack & Tobin, 1994). The 'grammar of schooling' (Tyack & Tobin, 1994) is based on a formal division of instructional labor segmented by grades (students sorted by age and proficiency levels – i.e. horizontal segmentation) and subjects (i.e. vertical segmentation) where teachers traditionally enjoy a large degree of autonomy (Bidwell, 1965). However, educational reforms promoting effective leadership and collaborative culture, as well as introducing various modes of control over teachers' work, have contributed to the blurring of the boundaries of teaching work (Tardif & Levasseur, 2015).

Professional autonomy, which refers to the power of professions to define the content of their work and to maintain the boundaries of their professional domains (Macdonald, 1995), has therefore been much discussed in relation to the rise of accountability schemes. In particular, policies implementing standardized testing, curricula, and instructions have been accused of framing teachers' choices and so reducing their discretionary judgment (Webb, 2002; Wills & Sandholtz, 2009).

In line with these debates, Cribb and Gewirtz (2007) suggested that key issues should be investigated by analyzing the effects of new modes of regulation on teachers' professional autonomy: the domains of autonomy/control, and the agents of control. A "classic way of conceptualizing different domains of autonomy-control relates to the relative freedom classroom teachers have to make

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decisions about curriculum, pedagogy and assessment respectively" (Cribb & Gewirtz, 2007, p. 204). While these domains of autonomy echo Bernstein's three main "message systems" constituting the structure and processes of school knowledge and practices (Bernstein, 1997), some argue that a high level of standardization and codification of teachers' practices favors a mechanical type of specialization at the expense of discretionary specialization (Tatto, 2007).

Moreover, the favored organizational forms of accountability make it possible to envisage distinctive agents of control (Cribb & Gewirtz, 2007) inasmuch as they structure the power relationships between teachers and other actors in the division of labor while favoring various accountability tools (Leithwood & Earl, 2000). Hierarchical forms imply that accountability mechanisms operate through administrative chains in a top-down manner. Managerial forms involve goal-oriented management of schools by head teachers and administrators (Leithwood & Earl, 2000, p. 15) while professional accountability encompasses two approaches. The first one implies a standard movement "as it applies to the practices of teachers", while the other "tends to favor professional control" (Leithwood & Earl, 2000, p. 13). Finally, market-based accountability is based on the development of "production orientations" (Hanson, 1992, p. 28) and competition mechanisms, implying a strong focus on academic achievement. What is at stake is thus who is granted the power to hold teachers accountable and what has to be accounted for.

To summarize, this focused literature review has stressed key issues raised by training programs, labor market regulation, and the division of labor and their implications for the teaching profession. However, while these institutional pillars have received considerable attention in the literature, to our knowledge, few comparative studies have been grounded in a conceptual framework for articulating these pillars empirically and conceptually. This is precisely what our study proposes to do by developing a theoretical typology articulated around teacher education, labor market regulation, and the division of labor. While institutional arrangements for organizing these institutional pillars may vary across time and space, our multidimensional framework (Fig. 1) highlights similarities and differences between countries which we interpret with respect to distinct models of regulation. Our typology thus provides a heuristic tool as well as a conceptually grounded and empirically informed picture of the regulation of the teaching profession that comparative studies struggle to provide.

3. Methods

The aim of this study was to shed light on institutional variations in the regulation of the teaching profession. We investigate cross-national variations regarding key institutional pillars discussed in the previous sections (ITE, labor market regulation, and the division of labor) and build a theoretical typology highlighting how distinct models of regulation of the teaching profession shape the characteristics of these three institutional pillars. We use a synchronic approach to comparison (Noah & Eckstein, 1969) and qualitative-dominant mixed analysis (Onwuegbuzie, Leech, & Collins, 2011). Lower secondary education is the level of reference for schooling. Country is the main level of analysis. Taking country as the level of analysis did not mean we reified national differences. While we highlight marked differences and between-countries variations, our typology aims primarily at drawing attention to the shared institutional features and characteristics that transcend the boundaries of education systems and countries. It invites both going beyond countries' specificities and crossing national boundaries (Shahjahan & Kezar, 2013) in order to discern patterns of convergence (Bray, Adamson, & Mason, 2014), which we analyze in the light of possible distinct models of regulation.

3.1. Data

Our empirical material is gathered from several types of sources (for a full list of sources, see Appendix A). The first data source is TALIS 2013 (OECD, 2014c; 2014d). We used teacher and head-teacher data[2] to retrieve information on teachers' characteristics in countries that participated in TALIS 2013. The TALIS survey provides rich comparative standardized information, which we used to inform the characteristics of distinct pillars and related dimensions under analysis. However, because TALIS does not provide sufficient information nor offer a robust way to operationalize some of the main concepts under analysis, we reviewed institutional and empirical literature (either national or international) in order to enlarge the empirical material and triangulate information. Comparative documentation produced by international organizations such as the Organization for Economic Cooperation and Development (OECD) and Eurydice, reports produced by national governments and agencies, ministry websites, and empirical literature are thus our second type of sources.

3.2. Sample

The original sample included all the participating countries in TALIS 2013 (34 countries[3]). However, the lack of information[4] for triangulation lead us to reduce our sample to 16 countries: Australia, Chile, Denmark, England, Finland, France, Italy, Japan, Korea, New Zealand, Norway, Portugal, China (Shanghai), Singapore, Spain, and the USA.

3.3. Analyses

The construction of our typology draws on a Weberian ideal-type approach (Weber, 1949). The relevance of this method for our purpose is stressed by Freidson inasmuch as it "is a method of conceptualization that can both organize the abstract theoretical issues which concern scholars and highlight the practical issues confronting social policy" (Freidson, 2001, p. 2). The analytical procedure involved two interrelated stages.

The first stage (1) aimed at operationalizing the constitutive dimensions of the three institutional pillars (training programs, labor market regulation, and division of labor) into measurable indicators, collecting information for each country using multiple sources, and operating a first classification of countries at the variable level (by indicator). We proceeded in different phases. First, we operationalized the pillars and constitutive dimensions into measurable indicators (see Table 1). Second, we collected the relevant information. This meant calculating descriptive statistics[5] using the TALIS 2013 dataset for the relevant variables (see Appendix B for a full list of the TALIS 2013 variables, and Appendix C for the descriptive statistics by country). For instance, TALIS asks teachers if their formal education includes pedagogy for the subjects they teach. In each country, if at least 50% of teachers report positively that their formal education includes this aspect for all the subjects they teach, we marked the country in the related category

[2] The TALIS 2013 datasets are publicly available at https://stats.oecd.org/index.aspx?datasetcode=talis_2013%20.

[3] The TALIS 2013 sample includes 34 countries. However, Iceland decided to withdraw all data from the international database we use in the present study (see OECD, 2014d).

[4] Or of accessible information due to language issues.

[5] We follow the technical procedures recommended by the OECD (weighting of the data) for the production of country-level estimates (2014d).

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Table 1
Multidimensional framework – operationalization.

Freidson's institutional pillars	Dimensions	Indicators
Training programs	Structure of initial teacher education (ITE)	Concurrent versus consecutive model
	Diversification of training provision: alternative pathways (e.g. short duration programs, employment-based training)	Yes versus no
	ITE orientation (main focus)	Subject-matter expertise (content knowledge)
		Pedagogy and teaching methodology
	On-the-job training	High versus low
Labor market regulation	Port of entry (i.e. teachers' allocation to schools)	Centralized
		Regionally decentralized (intermediate/local level authority)
		Open recruitment system
	Teachers' status	Civil servant versus non-civil servant
	Teachers' career structures	Flat versus hierarchical
	Criteria for teacher promotion and teacher career ladders	Seniority
		Performance and/or professional development
Division of labor	Organizational forms of accountability – teachers' accountability to whom	Administrative/bureaucratic authority
		External (inspectors)
		Head-teachers
		Peers
	Organizational forms of accountability – teachers' accountability on what	Teaching objectives
		Learning materials
		Assessment practices
		Student academic achievement
	Teachers' autonomy – key areas	Course content
		Learning materials
		Assessment practices

(i.e. pedagogy and teaching methodology). We used institutional and empirical literature to complete and triangulate the information. Third, we operated a preliminary classification of countries by indicators (see Appendix D).

The second stage (2) proceeded according to interrelated phases in order to build our theoretical typology and related types. The objective was to identify key configurations, rationales and traits shared by distinct groups of countries, and this way to confront them with the favored features and underlying rationales associated with the bureaucratic, market and professional ideal types discussed by Freidson.

The first phase, aimed at switching from an 'indicator entry' to a 'country entry'. For each country, we first looked at the favored configurations (and related institutional arrangements) by institutional pillar (for instance, does this country favor a centralized system of teachers' allocation to school and grant teachers a civil-servant status?), and then between pillars. As the country cases were built, cross-cases similarities were identified, stressing patterns of convergence.[6]

The refinement of emerging clusters and types was done according to an iterative process of increasing and selective abstraction (Coenen-Huther, 2006; Schnapper, 1999). This exercise of theorization required setting aside the specificities of each country in order to "go beyond the singularity of individual cases and the proliferation of materials" (Demazière, 2013, pp. 333) and to build consistency within ideal types. It meant conceptualizing key institutional features and underlying rationales underpinning the interplay between teacher education, labor market regulation, and the division of labor in each type.

As explained by Weber:

> "An ideal type is formed by the one-sided accentuation of one or more points of view and by the synthesis of a great many diffuse, discrete, more or less present and occasionally absent concrete individual phenomena, which are arranged according to those one-sidedly emphasized viewpoints into a unified analytical construct [*Gedankenbild*]" (Weber, 1949, p. 90).

The models we depict in this paper constitute therefore an "abstract construction" and a "stylization of reality" (Schnapper, 1999, p. 18) that suggests intelligible schemes of empirical "reality" (Weber, 1949). As such, they do not give an account of the complex empirical reality of the countries that we associate with each ideal type. Indeed, one must have in mind that: "(1) the ideal-type is a model, (2) its content is derived from the content of a particular culture, (3) it exaggerates, (4) it is concerned with meanings" (Lindbekk, 1992, pp. 289–290).

However, and this is quite crucial, our theorization was strongly grounded in the empirical data. Evidence of this is that we started with three theoretical types and ended with four models of regulation, as the data indicated that the professional model identified by Freidson needed to be distinguished into two different models of regulation, which differ in the ways they organize teacher education, the teaching labor markets, and the division of labor.

4. Results: four models of regulation

In the next sub-sections, we present four models of regulation: the *market*, *rules*, *training*, and *professional skills* models. The first two models (the 'market' and the 'rules' models) largely correspond to the market and bureaucratic ideal types discussed by Freidson, while the 'training' and the 'professional skills' models are arguably different versions of the professional model (see Table 2).

4.1. Market and standards-based regulation – the market model

The first dimension characterizing the *market model* is the diversification of ITE providers and pathways for entering the

[6] Although our research design does not focus on or allow us to analyze any further within-country variations, the latter, when highlighted by our data, were nonetheless interpreted as key components related to the favored configurations for organizing the key pillars under analysis in this study. For instance, the diversity of training routes was interpreted as a key element characterizing a cluster of countries (as we discuss below).

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Table 2
Typology – four models of regulation of the teaching profession.

	Market model	Rules model	Training model	Professional skills model
Dominant patterns	Market & standards-based regulation	Bureaucratic & subject matter expertise-based regulation	Professional knowledge & autonomy-based regulation	Bureaucratic & professional skills-based regulation
ITE	Diversification of ITE pathways & providers	University-based ITE focusing on academic disciplines	High ITE selectivity & high ITE academic standards	Off- & on-the job teacher education and preparation
Labor market regulation	Openness, flexibility & competition for job	Bureaucratic rules & impersonal criteria	School autonomy & teacher qualification	Bureaucratic rules & professional standards
Division of labor	Performance, managerial & market-based accountability & low level of teacher autonomy	External/hierarchical control & teacher autonomy	Professional autonomy & expertise	Professional accountability & professional skills
Countries	England, Australia, USA, New Zealand, Chile	France, Italy, Portugal, Spain	Finland, Denmark, Norway	Japan, Singapore, Shanghai, Korea

teaching profession. It seeks to introduce more "flexibility in the design and delivery of training provision" (Teacher Training Agency [England] (2002), quoted in Selinger & Austin, 2003, p. 20). Beside a dominant concurrent model of ITE oriented towards subject-matter expertise, employment-based training and short duration programs became possible routes for entering the teaching profession (Craig, 2016, pp. 69–135). Implying that teachers' preparation becomes contingent on the demands of the labor market, these routes entail a shift regarding the conception of teaching towards a "vocational endeavor" (Jaworski & Philips (1999) quoted in Tatto & Plank, 2007).

For instance, England has introduced several pathways including school-led routes such as School-Centered Initial Teacher Training (or SCITT) or "School Direct" whereby schools lead on recruitment and the delivery of training, with a university or accredited provider being selected as a partner. Teacher apprenticeships offer moreover new paths for teacher preparation (Roberts & Foster, 2016).

In order to ensure consistency within the teaching workforce and to permit comparison and competition, various standards are developed (content standards for ITE programs, accreditation standards for ITE providers, professional and performance standards for teachers, etc.). Along with evaluation and audit procedures, these standards enable the state and its agencies to regulate the quality of ITE, teachers, and schools.

In this model, labor market regulation is based on the principles of openness, flexibility, and competition for jobs. The openness of the labor market allows individuals with differentiated training backgrounds to access teaching positions. The open recruitment system aims to maximize the 'fit' between teachers and schools. Contract-based employment relationships are framed by the definition of pay scales and expected workloads (usually negotiated at the state central level and harmonized statewide). Professional and performance standards serve as benchmarks, stressing the importance of monitoring the quality of the teaching workforce along the way.

Various accountability schemes structure the division of labor and imply that teachers enjoy a relatively low level of professional autonomy. Performance-based accountability schemes involve a strong regulation of teachers' core work. Standardized curricula and large-scale assessments circumscribe what teachers are supposed to teach while accountability mechanisms ensure that teachers focus on teaching and learning outcomes. While various tools are used to assess teachers' performances, managerial forms of accountability require that head teachers mobilize their teaching staff around common goals oriented towards school effectiveness. Finally, in a context driven by school competition fed by market-based accountability mechanisms (report cards, school rankings, etc.), the promotion of evidence-based practices frames teachers' practices while teachers and schools should make a difference to student achievement.

In sum, as a hybrid between the evaluative state (Neave, 1988) that governs through standards and assessment, and the (quasi) market model where competition mechanisms should serve efficiency purposes (Maroy, 2009), the *market model* shares a technical approach to teaching. Underpinned by the will to control teachers' practices and outcomes, the focus is on that which can be most "easily codified and measured" (Groundwater-Smith & Mockler, 2009, p. 126). As (pedagogical) technicians (Ball, 2003), teachers should deliver prescribed curricula (Tatto & Plank, 2007) and model their teaching practices on "best practices" as evidence-based education and practices command (Kvernbekk, 2011; Slavin, 2002). Finally, the prevailing segmented division of labor implies a tight supervision of teachers' work by a "superstructure" (Lessard, 2000) that includes administrators and experts along with various accountability schemes that question teachers' professional autonomy.

4.2. Bureaucratic and subject-matter expertise-based regulation – the rules model

The *rules model* corresponds to a drastically different rationale stemming from the central definition of bureaucratic rules and norms. First, this model is based on unified ITE provision organized according to a consecutive model of training. In this protracted higher education-based preparation, the emphasis is on the mastering of (teaching) subjects.

In this model, which favors off-the-job training and pre-service education, the completion of ITE is not the only prerequisite for accessing teaching positions. Competitive entry exams orchestrated at the central level constitute a strategy used by the state to shelter teaching positions, serving as filters to ensure that a qualified workforce fills open teaching positions. The focus on content knowledge in competitive examinations reinforces long-lasting traditions that value academic excellence and make subject competences central to teachers' professional identities and expertise (Brisard & Mallet, 2004).

In France for example, prospective teachers need to obtain the "*Certificat d'Aptitude au Professorat de l'Enseignement du Second degré*" (CAPES) or the "*Agrégation*" in order to become fully certified teachers. Teachers who succeed in these national certifications will be granted the right to access teaching positions and civil-servant status. They are then allocated to workplaces according to a centralized system (MEN, 2018).

Labor market regulation is based on bureaucratic rules and impersonal criteria that govern teachers' allocation to schools, employment status, and career trajectories. It also hinges on a principle of interchangeability of socialized and qualified state agents. Public authorities manage the provision of the teaching workforce while teachers' specialization in teaching subjects and seniority are the prevalent rules that regulate between-school mobility and allocation to workplaces. Civil-servant status

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regulates teachers' employment conditions, and flat career structures provide few opportunities for professional advancement.

Subject-matter expertise is the key foundation of teachers' autonomy exercised within state guidelines regarding educational curricula. This autonomy goes hand in hand with a relatively low level of teacher accountability, mostly hierarchical and external. Nevertheless, the core work of teachers is also highly framed by the grammar of schooling. It involves a classical, rigid, and segmented division of labor, with a clear distinction between teachers' roles, which focus on instruction, and those of other school actors, which relate to other management or educational functions (i.e. non-teaching educational agents).

In sum, the *rules model* is close to professional bureaucracy (Bidwell, 1965). Sharing a conception of teachers as (disciplinary) subject experts, this model emphasizes self-regulated professional learning, stressing teachers' individual capacities to engage in professional learning as they strengthen their knowledge while exercising their *art* (Freidson, 2001).

4.3. Professional knowledge and autonomy-based regulation – the training model

The first characteristic of the *training model* is a long-term university-based teacher preparation. ITE, the key foundation of teachers' professional expertise and autonomy, is organized according to a concurrent model and combines high levels of selectivity with stringent academic standards. Training programs target prospective teachers among high-performing students to ensure that highly skilled individuals join the ranks of the teaching workforce. With a great focus on educational theories, subject pedagogy, practical experience, and research activities, the aim of ITE is to provide teachers with a broad view of teaching. ITE is expected to develop teachers' capacities to engage in critical thinking, and to update and develop over time the body of knowledge on which their practices will be based.

In Finland for example, the entry process to ITE requires the completion of general upper-secondary education and the passing of the National Matriculation Examination.[7] Beyond this exam, each university organizes its own admissions procedure along with a paper-and-pencil test that is the same for all universities. Each year, only one in ten applicants are selected to enter ITE. These selected teacher-students are in the top quintile of high-school graduates (Sahlberg, 2010, 2013, pp. 15–35; H.; Simola, 2005).

While a teaching degree constitutes the license to teach, the selection process for entering the teaching profession intervenes at the doorstep of ITE, and of schools when it comes to accessing teaching positions. In a labor market regulation that is based on the principles of school and professional autonomy, decentralized recruitment systems favor the search for suitable candidates with respect to schools' characteristics and culture. Teacher continuous learning is also an integral part of this model. Continuous professional development (CPD) mostly happens within schools through participation in professional learning communities, and is not directly linked to career advancement. Career ladders do not structure their careers. Rather, the rationale consists in organizationally supporting schools as communities and teachers in their efforts to engage in continuous professional learning.

This model encompasses a flexible division of labor based on professional autonomy and expertise where teachers enjoy a large degree of freedom. A less segmented institutional form of schooling implies the use of alternative instructional methods facilitating differentiated pupil learning. These methods, in turn, require strong pedagogical skills and professional knowledge, which fits with a school culture emphasizing teachers' active participation. As such, the teacher's role goes beyond the realm of the classroom and a strict focus on instruction. It encompasses curriculum development, planning activities, and participating in schools' self- and peer-evaluation processes in a way that favors organic and professional rather than hierarchical forms of control. Collaborative work and quality-assurance processes at the school level may thus support and sustain professional responsibility and expertise while capacity building and cooperation between school actors, networks, and communities are encouraged.

The *training model* can be seen as a variant of the professional model portrayed by Freidson (2001). It shares a conception of teachers as professional educators and of teaching as a knowledge-based activity (Sahlberg, 2013, pp. 15–35) that requires both formal and practical knowledge as well as discretionary power and professional autonomy. Educational theories, teaching practices, and critical thinking underpin teachers' "working knowledge" (Freidson, 2001) while this model sustains the capacity of teachers as a professional group to develop their own body of knowledge.

4.4. Bureaucratic & professional skills-based regulation – the professional skills model

The *professional skills model* also relies on a highly selective ITE. However, a major difference with the preceding model is its emphasis on practical knowledge and on-the-job training. Teaching programs are designed to integrate in-school training into teacher training. Teacher training and CPD are seen as a learning continuum punctuated by professional cycles. Induction periods are moreover central as they consecrate teachers' entry into their professional community.

Labor market regulation relies on bureaucratic rules and professional standards. Public authorities in collaboration with unions or professional associations define employment status and conditions, national certification, and hiring schemes. A stringent double selection process controls access to teaching positions. Certified teachers, who usually enjoy a civil-servant status, need to pass several tests before being allocated to the workplace by educational authorities. The labor market regulation relies, moreover, on the definition of hierarchical career ladders and stages that include professional-development and performance-based elements. The sophisticated on-the-job training system on which career promotion is based should ensure that teachers develop their professional skills over time.

In Singapore for instance, career ladders include three career tracks with possible bridges from one to another – a teaching track, a leadership track, and a senior specialist track (MOE, 2018). The teaching track focuses on teachers' pedagogical knowledge and skills. It encompasses four career stages linked to teaching expertise levels – senior, lead, master, and principal master teacher. The leadership track leads to three positions: subject head, superintendent, and director general of education. Finally, the specialist track focuses on deepening the knowledge and skills "essential for breaking new ground in educational developments" (MOE, 2018).

This model is based on an occupationally controlled division of labor fitting with a strong professional culture within the education system in general, and within schools in particular. It stresses the crucial importance of expertise regarding educational matters for accessing organizational and administrative functions, and the hierarchy of functions and roles (novice teachers, experienced teachers, head teachers) is grounded on professional expertise. This

[7] The Matriculation Examination Board organizes this nationwide examination. It assesses whether students have met the standards of the national core curriculum at the end of general upper-secondary. Successful students can apply to higher education programs.

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model also combines various forms of accountability (managerial, hierarchical, and professional) along with a tight monitoring of teachers' and students' performance. At the classroom level, the focus is on teachers' instructional and evaluation practices framed by professional standards and central guidelines regarding teaching curricula and learning outcomes. Nevertheless, the collaborative culture within schools and the emphasis on collective and continuous learning processes go hand in hand with organic and professional forms of control. Ranging from self-evaluation, peer evaluation, and lesson planning to classroom observations, these features not only serve a control purpose but also contribute to the development of teachers' expertise.

The *professional skills model* is arguably a second variant of the professional model depicted by Freidson. It shares a conception both of teaching as a craft (Freidson, 2001) and of teachers as continuous professional learners. Practical and tacit knowledge are the key foundation of teachers' professional expertise and legitimacy. The emphasis on on-the-job training coupled with structured professional-development activities echoes a definition of training as "multi-dimensional, continuous and systematic" (Fujita & Dawson, 2007). It aims at sustaining teachers in developing their "tacit art" (Freidson, 2001) while hierarchical career paths sustain an occupationally controlled division of labor.

5. Discussion

In this study, we have examined the institutional foundations of the teaching profession and teachers' work from a cross-national perspective. Drawing on the work of E. Freidson in the sociology of professions, we have proposed a comprehensive typology structured around teacher education, the regulation of the labor markets, and the division of labor. To the best of our knowledge, our study is one of the few that build on the conceptual articulation of these institutional pillars to analyze the regulation of the teaching profession in a comparative perspective. Our Weberian ideal-type approach enables us to identify four prevailing models of regulation – the *market*, *rules*, *training*, and *professional skills* models – and brings forward their underlying rationales centered chiefly on the market, the bureaucracy, or the professional.

First, our study certainly adds to the literature by conceptualizing two variants of the professional model. The *training* and the *professional skills* models thus make it possible to put into perspective some assumptions from the comparative literature. Numerous studies have paid great attention to the characteristics of the teaching workforce in education systems that have achieved high levels of effectiveness and equity (Darling-Hammond, 2017). Top-performing countries such as Finland, Singapore or Canada have therefore been put into the spotlight. This literature has certainly contributed to highlight key and shared features that possibly enhance teacher 'quality' and professionalism. Nevertheless, it also gives the illusion of a homogeneous category to which these countries supposedly belong. However, our work suggests substantial variations between the professional models that distinguish countries such as Finland and Singapore.

We argue that the articulation between distinct types of knowledge and the role it plays in the professionalization of teachers make it possible to distinguish between the two professional models. In the *training model*, the legitimacy of the professional group is mainly attached to teacher preparation, which should provide them with a sound and shared complex knowledge base. In the professional skills model, the legitimacy of the professional group rather lies in a continuous process of knowledge acquisition starting with teacher preparation, and being pursued in the development of practical and contextual knowledge validated by promotion on predetermined career ladders. The sociology of professions and the work of Freidson in particular have largely stressed the importance of knowledge in the professional model. What our work adds here is an account of the role that knowledge, and possibly different knowledge regimes in the two identified professional models, play in the way the professional group of teachers may protect its jurisdiction and justify different sorts of autonomy. Moreover, the modes of control over teachers' work also vary between the two models. While multiple accountability schemes are favored in the *professional skills* model, the *training model* favors a less stringent regulation of teachers' practices that mostly relies on professional modes of control, even if these are also at play in the professional skills model.

Secondly, our typology also points out different ways in which the regulation of the teaching labor markets interplays with teacher preparation and teacher accountability. The *market* model entails more openness and a lower degree of coordination of the teaching labor markets. The low regulation of labor market (i.e. greater openness of the teaching labor markets) is driven by principles of diversity and competition that pervade teacher education and the division of labor (between ITE providers, between schools to hire teachers, between teachers for accessing professional positions, etc.), while distinct standards allow the state to "steer at a distance" (Kickert, 1995, p. 137). In the *training model*, the low regulation of labor markets (i.e. lower degree of state activism in the regulation of labor markets), we argue, does not rely on competition and diversity but rather on a strong principle of integration. In labor markets sheltered by training credentials, local and professional autonomy may favor adaptation to local contexts while a flatter hierarchy and strong teacher preparation would ensure a low level of heterogeneity within the teaching workforce and a high level of cohesion within the school system. In the *rules model*, however, the "coordinated" regulation (Streeck & Thelen, 2005) of teaching labor markets implies a bureaucratic management of teaching supply whose main function is to guarantee the institutional foundations of the state and its model of education favoring academic excellence and disciplinary traditions. Finally, coordinated labor markets in the *professional skills model* imply both a strong bureaucratic regulation of the teaching workforce and professional (accountability and careers) schemes emphasizing continuous development linked to career ladders.

Thirdly, our work suggests possible avenues of research, adding to the existing literature on the attractiveness of the teaching profession, and more generally on labor market outcomes. Currently, issues like the recruitment crisis (Ingersoll & Strong, 2011) or the attrition of novice teachers (Borman & Dowling, 2008) are mainly analyzed by emphasizing the personal characteristics of teachers (e.g. background and qualifications), the characteristics of the workplace, and the organizational characteristics of schools as working environments. However, we argue that patterns of regulation might moderate how those (individual, work, and organizational) characteristics impact on labor market outcomes. As regards attractiveness for instance, it might be argued that professional models based on a generalized trust in teachers, as a professional group, may increase the attractiveness of the profession (Sahlberg, 2011). The *market* and *rules* models may conversely have a negative impact on the attractiveness of the profession (Hargreaves, 2009; Hargreaves et al., 2007). The market model makes this trust conditional on the relative performance of teachers, while the rules model instills this trust more into the institution itself than into the teaching profession. In addition, possibly lower levels of attrition in the bureaucratic model may be related to favorable employment conditions (civil-servant status), while they might be connected to the higher attractiveness of the profession in the professional models. These hypotheses open therefore new avenues for research.

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6. Limitations and conclusions

The results from this study must be discussed in light of its limitations.

Our study was limited by our lack of access to standardized, comparable data in TALIS on the key pillars and related dimensions we discuss in this paper. The TALIS dataset, which we use as the main source in this study, certainly offers rich data on teaching and learning in a large sample of countries. It nonetheless presents some limits. In particular, TALIS 2013 does not provide extensive information about the domains and type of knowledge included in ITE. Moreover, little is available on ITE entry examinations or restrictions for accessing the teaching profession. Because of the crucial importance of these elements for the study of the teaching profession, we have attempted to go beyond the TALIS dataset limits though an in-depth analysis of the empirical and institutional literature. Nevertheless, this has certainly constrained the operationalization of the key constructs under analysis in this paper. Further studies would therefore benefit from building on multiple datasets in addition to TALIS, such as those produced by the Teacher Education and Development Study.[8]

The models we present in this article should be considered as hypotheses regarding dominant patterns and key rationales that underpin the institutional regulation of the teaching profession and of teachers' work in different contexts. One might bear in mind that no pure model can provide a sufficient account of the empirical complexity of each case included in our sample. Put differently, as pointed out by Cho and McLean, "each country, even though it is categorized as fitting into one or the other of the models, may bring in components" from other models (2004, p. 122). In-depth country case studies based on the multidimensional framework we provide would certainly make it possible to stress how countries, and education systems within countries, may bring in features from distinct models of regulation that we depict in this paper.

Finally, the interplay of criteria and features structuring and organizing teacher education, the teaching labor markets, and the division of labor should certainly be discussed with regard to the evolutions that countries have been and are going through. Diachronic comparisons should be considered as ways to apprehend the cultural, historical, and political factors that orient the favored institutional arrangements for regulating the teaching profession and teachers' work. Here, the role of the state together with professional associations and higher education institutions in sustaining teacher professionalism and promoting a strong teaching profession remain crucial, as the considerable literature in the educational field and in the field of sociology of professions demonstrates.

In conclusion, in this study we have identified key principles and organizational features that may sustain teacher professionalism as favored by the 'training' and 'professional skills' models. Both models strongly focus on initial teacher education and teachers' professional development, either implicitly and within professional communities or explicitly as part of career advancement schemes. They also tend to favor professional accountability schemes along with an occupationally controlled division of labor. While these elements stress possible avenues which policies may take in order to promote and support the teaching profession, they also challenge global trends towards a greater control over teachers' work based on bureaucratic and market mechanisms, such as competition or an increased standardization of teaching practices.

Moreover, Freidson's theorization of professionalism as an alternative ideal type of organization and control of work to bureaucracy and the market has strong implications for policy-makers and for the teaching profession. Freidson's work on professionalism was initially motivated by the need to conceptualize the "logic of the profession" in response to the declining status of the professions in advanced industrial society. He argued, "popular watchwords driving policy formation have been competition and efficiency, the first referring to competition in a free market, and the second to the benefits of the skilled management of firms" (Freidson, 2001, p. 2). His work therefore aims to reflect on the institutional, political and economic conditions that should permit professionals whose position has been challenged in the name of competition and efficiency to (re)gain their protected position.

Credit authors statement

Annelise Voisin: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Writing - review & editing, Visualization. **Xavier Dumay:** Conceptualization, Methodology, Writing - review & editing, Supervision, Project administration, Funding acquisition.

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Declaration of competing interest

The authors declare that there is no conflict of interest.

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[8] https://www.iea.nl/studies/iea/teds-m.

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Appendix A

Table 3
Data sources.

DATABASE	TALIS 2013 DATABASE: OECD, Teaching and Learning International Survey 2013 complete database, https://stats.oecd.org/
Empirical & institutional literature	*Akiba (2013a, 2013b); *Aspland (2006); *Au (2007); *Avalos and Assael (2006); *Avalos and Aylwin (2007) *Blackmore (2002); *Buisson-Fenet and Pons (2017); *Calderhead (1989); *Calderhead and Shorrock (2003); *Carrington and Skelton (2003); *CMO (2003); Craig (2016); *Darling-Hammond (1994, 1996, 2000, 2010); *Darling-Hammond and Lieberman (2013); *Darling-Hammond et al. (2017); *Deng and Gopinathan (2016); *Ell (2011); *Eurydice (Eurydice, 2015, 2018); *Evans (Evans, 2008, 2011); *Flores and Niklasson (2014); *Furlong, McNamara, Campbell, Howson, and Lewis (2008); *Gálvez (2010); *Garm and Karlsen (2004); *Hammerness (2013); Hargreaves et al. (2007); *Hiebert and Stigler (2017); *Helleve (2017); *Hooghart (2006); International Institute for Educational Planning (2016); Ingersoll, Alsalam, Bobbitt, and Quinn (1997); *Ingersoll (2007, 2009); *Ingersoll and Strong (2011); *Ingersoll and Smith (2003); Ingersoll and Perda (2008); *Ingvarson et al. (2014; 2013); *Letendre and Wiseman (2015); *Lingard, Sellar, and Lewis (2017); *Loughran and Hamilton (2016); *Brisard & Mallet (2004; 2005); *Menter, Brisard, and Smith (2006); *Munday (2016); *Munthe, Malmo, and Rogne (2011); *NZMO (2015); *OECD (2005, 2013, 2014a, 2014b, 2014c, 2014d, 2016); *Ostinelli (2009); *Ozga (2009); *Paine and Fang (2006); *Paine and Zeichner (2012); *Paine, Bloemeke, and Aydarova (2016); *Ping, Schellings, and Beijaard (2018); *Santiago, Benavides, Danielson, Goe, and Nusche (2013); *Ramírez Carpeño and Mekochi (2015); *Roberts and Foster (2016); *Roth and Swail (2000); * Simola (2005); *Senk et al. (2012); *Schwille, Ingvarson, and Holdgreve-Resendez (2013); *Stephens, Egil tønnessen, and Kyriacou (2004); *Sahlberg (2010, 2011, 2013); *Tatto (2007, 2008); Tatto et al. (2008); Tatto et al. (2013); *Toledo Figueroa and Wittenberg (2014); *Townsend and Bates (2007); *Whitty (2000); *Whitty and Furlong (2017); *Yamasaki (2016); *Youngs, Kim, and Pippin (2015); *Zuljan and Vogrinc (2011)
Websites	Australian Government, Department of Education and training https://www.education.gov.au/Australian Education Standards Authority https://educationstandards.nsw.edu.au/wps/portal/nesa/home Common Core Sate Standards Initiative http://www.corestandards.org European Commission, Eurostat https://ec.europa.eu/eurostat/web/main European Commission, Eurydice https://eacea.ec.europa.eu/national-policies/eurydice/national-description_fr Japan Ministry of Education, Culture, Sports, Science and Technology http://www.mext.go.jp/en Ministère de l'Education Nationale et de la Jeunesse https://www.education.gouv.fr/National Center on the Education and the Economy website http://ncee.orgNew Zealand Teaching Council website https://teachingcouncil.nz New Zealand Government of Education website https://www.education.govt.nz OECD https://www.oecd.org/Singapore Ministry of Education https://www.moe.gov.sg/TIMSS & PIRLS encyclopedia http://timssandpirls.bc.edu/timss2015/encyclopedia/UK Department for Education website https://www.gov.uk/government/organisations/department-for-education

Appendix B

Table 3
TALIS 2013 – variables.

Institutional pillars and dimensions		Prompt	ITEM	Focus	Categories considered	Source TALIS 2013
Training program						
ITE orientation	ITE main focus	Were the following elements included in your formal education or training? (TT2G12)	TT2G12A	Content of the subject(s) I teach	Yes, for all subjects I teach	Teacher questionnaire
			TT2G12B	Pedagogy of the subject(s) I teach	Yes, for all subjects I teach	Teacher questionnaire
	On-the-job training	Were the following elements included in your formal education or training? (TT2G12)	TT2G12C	Classroom practice (practicum, internship or student teaching) in the subject(s) I teach	Yes, for all subjects I teach	Teacher questionnaire
		In your first regular employment as a teacher, did/ do you take part in any induction program? (TT2G19A)		I took/take part in an induction program	Yes	Teacher questionnaire
Labor market regulation						
Port of entry	Teachers' allocation to school	Regarding this school, who has a significant responsibility for the following tasks? (TC2G18)	TC2G18A1-4	Appointing or hiring teachers	You, as Principal School management team Teachers School governing board	Principal questionnaire
			TC2G18A 5	Appointing or hiring teachers	Local, municipality/ regional, state, or national/federal authority	

(*continued on next page*)

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Table 3 (*continued*)

Institutional pillars and dimensions		Prompt	ITEM	Focus	Categories considered	Source TALIS 2013
Division of labor						
Organizational forms of accountability – teachers' accountability on what?	Areas considered with high importance in teachers' appraisal	In your opinion, when you receive this feedback, what is the emphasis placed on the following areas? (TT2G29)	TT2G29B	Knowledge and understanding of my subject field(s)	Considered with high importance	Teacher questionnaire
			TT2G29C	Pedagogical competencies in teaching my subject field(s)	Considered with high importance	
			TT2G29D	Student assessment practices	Considered with high importance	
			TT2G29A	Student performance	Considered with high importance	
Organizational forms of accountability – teachers' accountability to whom?	Formal teacher appraisal (by)	On average, how often is each teacher formally appraised in this school by the following people? (TT2G29)	TC2G27A	You, as principal	- Less than once every two years - Once every two years - Once per year - Twice or more per year	Principal questionnaire
			TC2G27B	Other members of the school management team	- Less than once every two years - Once every two years - Once per year - Twice or more per year	
			TC2G27C	Assigned mentors	- Less than once every two years - Once every two years - Once per year - Twice or more per year	
			TC2G27D	Teachers (not part of the school management team)	- Less than once every two years - Once every two years - Once per year - Twice or more per year	
			TC2G27E	External individuals or bodies (e.g. inspectors, municipality representatives, districts/jurisdictions office personnel, or other persons from outside the school)	- Less than once every two years - Once every two years - Once per year - Twice or more per year	
Teachers' autonomy – key areas	Responsibility in key areas	Regarding this school, who has a significant responsibility for the following tasks? (TC2G18)	TC2G18G3	Establishing student assessment policies, including <national/regional assessments>	Teachers	Principal questionnaire
			TC2G18J3	Determining course content, including <national/regional curricula>	Teachers	
			TC2G18I3	Choosing which learning materials are used	Teachers	

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Appendix C

Table 4
Descriptive statistics – TALIS 2013 variables of interest (percentage and standard error).

ITEMS	Australia	Chile	Denmark	Finland	France	Italy	Japan	Korea
	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)
ITE								
Elements included in formal education or training (**for all subjects)								
TT2G12A (content)	62.2 (1.1)	61.0 (1.6)	60.3 (1.1)	77.1 (0.9)	85.0 (0.7)	69.4 (1.0)	71.2 (0.8)	90.3 (0.6)
TT2G12B (pedagogy)	64.0 (1.2)	60.0 (1.7)	60.3(1.1)	75.1 (0.9)	68.3 (1.0)	62.63 (1.0)	67.6 (.9)	83.6 (0.7)
TT2G12C (practices)	70.1 (1.2)	56.8 (1.6)	52.3 (1.4)	69.2 (1.0)	72.5 (0.9)	35.5 (0.9)	69.5 (0.8)	79.0 (0.85)
TT2G19A (formal induction)	52.6 (1.6)	36.6 (2.0)	26.6 (1.6)	16.3 (1.1)	55.1 (1.2)	49.4 (1.1)	83.3(0.8)	72.3 (0.8)
Labor market regulation								
Significant responsibility for hiring teachers (**yes)								
TC2G18A1-4 (school)	90.9 (2.2)	73.6 (3.3)	100 (0.0)	79.5 (3.3)	31.4 (2.7)	76.8 (3.3)	18.0 (2.4)	42.1 (3.2)
TC2G18A5 (local, regional, national authority)	17.8 (3.0)	34.3 (3.2)	2.4 (1.5)	48.6 (4.1)	81.0 (2.0)	51.2 (3.9)	82.3 (1.8)	64.8 (3.2)
Division of labor								
Teachers' feedback emphasis (**with high importance)								
TT2G29B (knowledge subject)	31.6 (1.5)	54.4 (1.9)	38.5 (1.6)	22.2 (1.3)	58.4 (1.14)	51.2 (1.4)	23.8 (0.8)	34.1 (1.0)
TT2G29C (pedagogical competencies)	32.3 (3.1)	58.6 (1.8)	43.0 (1.6)	27.5 (1.3)	75.8 (1.0)	54.3 (1.4)	34.9 (1.0)	42.8 (1.0)
TT2G29D (student assessment practices)	29.7 (0.9)	49.4 (1.7)	14.7 (1.1)	13.5 (1.0)	40.5 (1.1)	42.7 (1.2)	19.7 (0.8)	30.9 (1.1)
TT2G29A (students' results)	51.8 (1.9)	52.9 (1.7)	29.3 (1.9)	20.3 (1.1)	27.9 (1.0)	58.6 (1.4)	15.4 (0.7)	32.7 (1.0)
Teachers' formal appraisal by (** less than once every two years, once every two year, once or twice or more per year)								
TC2G27E (external)	22.2 (4.4)	47.1 (4.0)	23.9 (4.3)	22.3 (4.0)	92.8 (2.0)	11.2 (2.2)	67.6 (3.2)	57.3 (4.2)
TC2G27A (principal)	71.5 (5.8)	92.7 (2.2)	89.6 (3.2)	73.6 (3.8)	93.8 (2.0)	25.3 (3.1)	93.2 (1.7)	97.5 (1.3)
TC2G27B (management team)	92.9 (2.3)	86.4 (3.0)	69.3 (4.4)	14.2 (1.7)	26.1 (3.3)	12.0 (2.6)	72.4 (3.3)	83.1 (3.0)
TC2G27C (Mentors)	74.11 (4.4)	39.7 (4.1)	18.0 (4.1)	7.6 (2.5)	37.8 (4.1)	10.1 (2.2)	55.8 (4.1)	64.2 (4.0)
TC2G27D Teachers	49.9 (6.4)	59.4 (5.0)	37.4 (4.9)	8.1 (2.5)	18.6 (3.1)	10.2 (2.0)	59.1 (3.7)	93.8 (1.9)
Teachers' significant responsibility (** yes)								
TC2G18G3 (student assessment policies w/national/regional assessments)	35.3 (4.8)	32.7 (4.0)	52.3 (5.5)	42.2 (4.6)	51.0 (3.8)	72.8 (3.5)	30.8 (3.5)	17.2 (2.9)
TC2G18J3 (course content w/national/regional curricula)	60.9 (5.2)	31.2 (3.8)	76.9 (4.8)	65.2 (4.6)	18.9 (3.3)	83.5 (3.0)	18.6 (2.8)	38.26 (3.8)
TC2G18I3 (learning material)	68.2 (5.8)	50.6 (4.2)	95.3 (1.7)	86.3 (3.3)	79.1 (3.2)	87.7 (2.6)	25.9 (3.2)	50.3 (4.2)

Descriptive statistics – TALIS 2013 variables of interest (percentage)

ITEMS	New Zealand	Norway	Portugal	Singapore	Spain	USA	England	Shanghai
	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)	% (S.E)
ITE								
Elements included in formal education or training (**for all subjects)								
TT2G12A (content)	72.6 (0.9)	51.4 (1.2)	76.4 (0.7)	77.8 (0.7)	64.5 (0.9)	77.6 (1.2)	71.9 (1.1)	83.8 (0.8)
TT2G12B (pedagogy)	73.0 (0.9)	50.6 (1.3)	74.2 (0.7)	82.0 (0.7)	44.3 (1.0)	74.08 (1.2)	75.6 (1.0)	78.44 (0.9)
TT2G12C (practices)	78.7 (0.8)	50.7 (1.5)	70.9 (0.8)	82.6 (0.7)	44.0 (0.9)	74.8 (1.3)	80.6 (0.9)	77.3 (0.8)
TT2G19A (formal induction)	66.0 (1.1)	10.3 (1.5)	35.5 (1.0)	80.0 (0.8)	35.3 (1.2)	75.8 (0.9)	59.3 (2.0)	89.77 (0.7)
Labor market regulation								
Significant responsibility for hiring teachers (**yes)								
TC2G18A1-4 (school)	97.6 (1.1)*	96.2 (3.3)	90.6 (2.0)	39.9 (0.3)	26.8 (2.0)	96.2 (2.1)	100 (0.0)	64.3 (4.0)*
TC2G18A5 (local, regional, national authority)	0.8 (0.8)	23.7 (5.1)	39.8 (3.5)	90.9 (0.8)	74.6 (2.1)	16.3 (3.8)	1.0 (0.7)	31.1 (3.9)
Division of labor								
Teachers' feedback emphasis (**with high importance)								
TT2G29B (knowledge subject)	37.0 (1.2)	18.3 (1.6)	62.8(1.0)	41.9 (0.9)	30.1 (1.3)	42.1 (1.4)	37.1 (1.1)	30.5 (0.9)
TT2G29C (pedagogical competencies)	38.0 (1.4)	19.0 (1.6)	67.4 (1.1)	43.7 (0.9)	26.1 (1.3)	40.9 (1.5)	38.9 (1.1)	37.3 (0.9)
TT2G29D (student assessment practices)	34.0 (1.0)	16.6 (1.5)	58.7 (1.0)	35.1 (0.9)	25.7 (1.2)	39.6 (1.8)	55.1 (1.3)	25.5 (0.9)
TT2G29A (students' results)	58.5 (1.2)	24.9 (1.5)	70.1 (1.0)	58.2 (1.1)	50.9 (1.3)	62.8 (1.6)	82.3 (1.4)	42.9 (1.0)
Teachers' formal appraisal by (** less than once every two years, once every two year, once or twice or more per year)								
TC2G27E (external)	53.2 (4.6)	43.6 (7.9)	37.8 (4.1)	46.6 (0.2)	47.2 (3.4)	27.5 (4.6)	58.2 (5.1)	79.8 (3.1)
TC2G27A (principal)	81.8 (3.2)	94.1 (2.0)	82.9 (2.8)	99.4 (0.0)	38.5 (3.4)	89.7 (1.3)	83.3 (4.0)	94.7 (1.7)
TT2G27B (management team)	90.3 (2.4)	82.3 (4.3)	34.0 (4.1)	99.3 (3.2)	51.9 (3.3)	68.1 (6.6)	97.2 (1.4)	9.4 (1.4)
TC2G27C (Mentors)	87.1 (2.9)	47.3 (5.3)	73.9 (3.8)	53.7 (0.3)	19.4 (2.8)	51.36 (6.0)	78.0 (4.2)	98.6 (0.6)
TC2G27D (Teachers)	86.8 (3.0)	39.9 (7.5)	71.1 (3.6)	57.57 (0.2)	16.9 (2.6)	36.3 (5.2)	89.15 (2.4)	92.8 (2.1)
Teachers' significant responsibility (** yes)								
TC2G18G3 (student assessment policies w/national/regional assessments)	38.2 (4.2)	48.7 (6.5)	27.4 (3.4)	41.2 (0.2)	26.6 (3.6)	25.9 (5.2)	36.1 (3.8)	22.84 (3.6)
TC2G18J3 (course content w/national/regional curricula)	80.6 (3.4)	73.7 (4.9)	8.84 (2.35)	57.7 (0.2)	27.2 (3.3)	39.7 (6.1)	79.3 (3.6)	19.7 (3.5)
TC2G18I3 (learning material)	85.5 (3.0)	79.2 (3.4)	61.5 (4.0)	72.1 (0.2)	87.5 (2.4)	61.1 (5.9)	88.6 (2.6)	29.5 (3.6)

*Principal (excluding other actors at the school level).

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Appendix D

Table 5
Sample – preliminary empirical classification[a].

Institutional pillars and dimensions	Indicators	Country classification
Training programs		
ITE structure (dominant model of ITE)	Concurrent	Denmark, Finland, Norway, Chile, *Australia, New Zealand*, Singapore, Korea, Japan, Shanghai
	Consecutive	France, Italy, Spain, Portugal, *England, USA*
ITE diversification (e.g. short duration programs, employment-based training)	Yes	England, USA, Australia, New Zealand, Denmark
ITE orientation (ITE main focus)	Subject-matter expertise (CK)	France, Italy, Portugal, Japan, New Zealand Spain, England, Chile, USA, Shanghai, Singapore, Korea, Japan
	Pedagogy and teaching methodology	Denmark, Finland, Norway, Australia
On-the-job training	High	Australia, New Zealand, Singapore, Japan, Shanghai, Korea, *USA, England,* France
Labor market regulation		
Port of entry (Teachers' allocation to school)	Centralized system	France, Spain (autonomous regions), Singapore, Italy (with schools)
	Decentralized (intermediate/ local level authority)	Japan, Finland (with schools), Norway (with schools), Denmark (with schools), USA (with schools), Korea (with schools)
	Open recruitment system (schools)	Chile, England, Australia, New Zealand, Korea, Shanghai, Portugal
Teachers' status	Civil servants	France, Spain, Portugal, Italy, Japan, Singapore, Korea
	Non-civil servants	Denmark, Finland, Norway, England, USA, Australia, New Zealand, England, Chile
Teachers' careers structure	Flat	France, Italy, Spain, Portugal, Denmark, Finland, Norway
	Hierarchical	*Chile, USA*, Australia, New Zealand, England, Japan, Singapore, Korea, Shanghai
Dominant criteria for teachers' promotion and careers ladders	Seniority based	France, Italy, Spain, Portugal, Denmark, Finland, Norway
	Performance- and/or professional-development based	*Chile, USA*, Australia, New Zealand, *England*[b] Japan, Singapore, Korea, Shanghai
Division of labor[b]		
Organizational forms of accountability – teachers' accountability on what?	Subject knowledge (CK)	Chile, France, Italy, Portugal
	Pedagogical practices	Chile, France, Italy, Portugal
	Assessment practices	Chile, England, Portugal
	Students results	USA, England, Chile, New Zealand, Australia, Singapore, Spain, Italy, Portugal
Organizational forms of accountability – teachers' accountability to whom (Teachers' formal appraisal by?)	External (inspectors)	France, Japan, Korea, New Zealand, Norway, Singapore, Spain, England, Shanghai
	Head teachers & school management team	Australia, Chile, Denmark, Finland, Japan, Korea, New Zealand, Norway, Portugal, Singapore, USA, England, Shanghai
	Peers (mentors, other teachers)	Australia, Japan, Korea, New Zealand, Norway, Portugal, Singapore, USA, England, Shanghai
Teachers' autonomy – key areas	Assessment policies (defining)	Denmark, Norway, Italy
	Learning material (choosing)	Denmark, Finland, France, Italy, Korea, New Zealand, Norway, Portugal, Singapore, Spain, USA
	Course content (de[a]e[b]mining)	Denmark, Finland, France, Italy, New Zealand, Norway, Portugal, Singapore, Spain, USA, England

[a] We use italics to highlight within-country variations.
[b] The main source used for reporting in this section is the TALIS 2013 database (teacher and principal questionnaire).

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