



# Is the “Treiman constant” actually constant? An assessment using two Spanish occupational prestige scales: 1991 and 2013

Inmaculada Garcia-Mainar <sup>a,b,1</sup>, Víctor M. Montuenga <sup>a,b,\*</sup>

<sup>a</sup> Department of Economics, University of Zaragoza, Gran Vía Santiago Ramón y Cajal, 2, 50005, Zaragoza, Spain

<sup>b</sup> IEDIS: Institute on Employment, Digital Society and Sustainability, Zaragoza, Spain

## ARTICLE INFO

### Keywords:

Prestige scale  
Occupation  
occupational hierarchy  
Spain

## ABSTRACT

It is recurrently claimed that occupational prestige scales are invariant over time (the so-called Treiman constant). However, the changes experienced in recent decades in terms of globalization, automation, polarization, or migratory movements, among others, may have modified the occupational structure of the country's labor market and its citizens' perception toward the valuation of occupations. This study aims to evaluate the (in)-variance of occupational sorting with Spanish data using two scales elaborated at two different moments in time separated by more than 20 years. The results indicate that occupations related to financial, managerial, and political activities reduced their level of prestige whereas occupations on social care or occupations with a manual component improved over this period. Additional exercises on the relationship between occupational characteristics and variation in occupational prestige reveal the relevance of the proportion of migrants or public sector workers in the social recognition of an occupation.

## 1. Introduction

Occupational prestige reflects society's valuation of a given occupation. It represents the consensus of citizens on the contribution of an occupation to society and the “recognition” that members of a society have of that occupation (Wegener, 1992; Hauser and Warren, 1997). A prestige scale quantifies the social value of occupations, indicating which are better and which are worse, and transforms their socially important characteristics into a single continuous variable (Goldthorpe and Hope, 1974).

Since the landmark study by Treiman (1977) and the setup of the SIOPS (Standard International Occupation Prestige Scale), it has been recurrently claimed that occupational hierarchy, or the rank ordering of occupations, is essentially invariant across culture, time, and place (Hout and Di Prete, 2006; Nakao and Treas, 1994; Ulfsdotter Eriksson et al., 2022). Thus, the SIOPS scale is used under the assumption that it is stable over time, as reported in recent studies by Lersch et al. (2020) and Jacob and Klein (2019) on stratification and social mobility in the UK and US, respectively.

However, this supposed invariance in the hierarchy of occupations, termed by Hout and DiPrete (2006) as the Treiman constant, should not be understood as “an iron law that cannot vary” (Avent-Holt et al., 2020, p. 2) given that many factors related to labor supply and demand continuously change over time. As noted by Nakao and Treas (1994), any changes in prestige scales are more likely to be caused by changes in population opinion than methodological changes or changes in the classification of occupations. Thus, a

\* Corresponding author. Department of Economics, University of Zaragoza, Gran Vía Santiago Ramón y Cajal, 2, 50005 Zaragoza, Spain.

E-mail address: [vimontue@unizar.es](mailto:vimontue@unizar.es) (V.M. Montuenga).

<sup>1</sup> Equal authorship.

number of observed phenomena may impact the social consideration of professions: the development of information and communication technologies and robotization/automation of certain tasks; polarization of qualifications and salaries; increasing globalization, stimulated by the development of communications and transportation, together with productive specialization and relocation of companies and specific jobs; greater international mobility, with greater flows of migrants; unparalleled growth in the educational level of the population; and greater female labor participation (Oesch and Piscitto, 2019; Oesch and Rodríguez-Menés, 2011). In addition, the Great Economic Recession that took place from 2008 onward may have spurred or slowed down some of these phenomena, ultimately impacting the change in the occupational structure.<sup>2</sup>

In this context, it is possible that citizens' evaluations of occupations may have mutated in such a way that certain occupations that have traditionally enjoyed great social recognition have been losing it while others have been gaining it. Whereas most recent literature has focused on studying scale uniformity across countries, it is also important to determine whether occupational rankings have altered over time. This study challenges the so-called Treiman constant and hypothesizes that because many factors regarding the supply and demand of labor are changing, the perception/valuation of individuals is also changing, likely altering the rank ordering of occupations.

The availability of two comparable scales elaborated on a similar basis, which are separated by more than 20 years, makes Spain an interesting case of study. Furthermore, Spain is interesting on itself: it is a country that has undergone great changes in the last 50 years. In 1978, the current Constitution was approved, which transformed Spain from a Francoist dictatorship to a fully democratic country. The country's per capita income has considerably increased, as has the educational level of the people, the active population, and the proportion of women in the workforce.<sup>3</sup> The productive structure has shifted from an important weight of agriculture and obsolete industries to thriving manufactures and services, among which the automotive sector, logistics, and tourism stand out.<sup>4</sup>

Specifically, this study determines whether the occupational structure and its hierarchical arrangement have been modified in these more than 20 years. The goal is to identify those occupations that have changed the most, both positively (gain in prestige) and negatively (loss of prestige), to confirm whether or not there have been substantial variations in the ordering of occupations. The results obtained indicate that although there has not been a complete alteration in the classification of occupations, there have been important variations. Skilled occupations tend to remain among the most highly valued, whereas unskilled occupations are among the least valued, with service occupations (caregivers, firefighters, nurses, etc.) and certain manual occupations (such as industrial and construction semiskilled workers) gaining social recognition during the period. Contrarily, politicians, managers, and business professionals have been the occupations that lost the most prestige. The manual nature of an occupation and the proportion of immigrants or public sector workers in it are relevant aspects in shaping changes in the occupational structure and its hierarchy.

The remainder of this paper is structured as follows. Section 2 describes the notion of prestige and how the scales measure it, focusing on the case of Spain. Section 3 outlines the methodology, and Section 4 presents the descriptive analysis. Section 5 reports the regression analysis results. Finally, Section 6 discusses the main conclusions of our study.

## 2. Prestige and scales: the case of Spain

### 2.1. Occupational prestige

The use of a prestige scale makes it possible to synthesize in a number (or position) a broad series of attributes considered by society to value an occupation (see Ganzeboom and Treiman, 1996; Warren et al., 1998). Occupational prestige takes into account that the rewards of work are multidimensional and incorporate characteristics valued by society such as security, authority, recognition, responsibility assumed, or professional competence; this valuation represents the share of material and symbolic rewards that characterize the occupation (Goldthorpe and Hope, 1974; Ganzeboom, 2022).

Since the influential study by Treiman (1977) and the creation of the SIOPS scale, it has been repeatedly stated that occupational hierarchy is independent of time and place (Hout and Di Prete, 2006). The first criticism of this claim relates to the question of whether occupational prestige is the only or the most appropriate indicator to test for invariance in occupational hierarchy (see, e.g., Featherman and Hauser, 1976; Freeland and Hoey, 2018; Warren et al., 1998). However, Freeland and Hoey (2018) used social status indices, and Ganzeboom (2022) various socioeconomic index measures, reinforcing the empirical evidence of invariance in occupational sorting. These results validate the Treiman constant hypothesis regardless of the measure used, supporting the use of prestige as an index of occupational sorting.

The second criticism of uniformity in occupational hierarchy is related to the possible discrepancy between the perspective of a macroaggregate approach to occupational structures (a "universal" measure) and a microsectoral approach (at the individual or group-

<sup>2</sup> Of course, the COVID-19 crisis may also have had an influence, as Ulfsdotter-Eriksson et al. (2022) pointed out, but this is outside the period of validity of the scales used in this article.

<sup>3</sup> The real per capita income increased from less than \$19,000 in 1990 to more than \$25,000 in 2020 (expressed in 2010 US\$). The working population was 14 million in the mid-1980s and now stands at more than 23 million. The percentage of women in the workforce was just 25% in the early 1980s and now stands at 47%. Sources: Spanish National Accounts and Spanish Labor Force Survey (LFS).

<sup>4</sup> In the 1980s, manufactures and agriculture accounted for 26% and 18%, respectively, of the total employment, whereas services accounted for less than 50%. Today, more than 75% of the total employment is in the services sector, only 14% in manufacturing, and less than 5% in agriculture. In 2019, Spain received more than 80 million foreign tourist visitors (the second highest in the world), representing almost 12% of the GDP of the country.

specific level). Thus, some differences have been found between universal and particular scales elaborated on different factors such as educational level (Lynn and Ellerbach, 2017), workplace (Avent-Holt et al., 2020), gender (Ulffsdotter Eriksson and Nordlander, 2023), or industry and authority (Zhou, 2005). Although these results may suggest the need for occupation-based social classification (Connelly et al., 2016), empirical studies agree that stable classifications at the aggregate level can coexist with heterogeneity at the micro level (Lynn and Ellerbach, 2017), as the discrepancies arising become unimportant (Avent-Holt et al., 2020; Ganzeboom, 2022; Wegener, 1992). In this study, we compare similarly grounded occupational scales over time in Spain.

## 2.2. Prestige scales

The scales used in this article follow the SIOPS schemes of Treiman (1977). The first one is based on the scale developed by Carabaña and Gómez-Bueno (1996). In this scale, each respondent (a subsample selected from the 1991 Survey on Class Structure, Consciousness, and Biography) was asked to rate up to 450 occupations.<sup>5</sup> The second occupational prestige scale was elaborated in 2013 by the Center for Sociological Research (*Centro de Investigaciones Sociológicas*, CIS, 2013). Herein, 500 occupations were rated.<sup>6</sup> In both cases, each respondent, when rating the occupations, was directly asked to sort the occupations according to *the opinion he/she believed society gave to each occupation*.<sup>7</sup> This allowed us to construct a ranking of occupations by their prestige scores.<sup>8</sup>

Because the 1991 scale expresses occupational categories according to NOC-94, which follows the guidelines of ISCO-88, whereas the CIS scale expresses them according to NOC-11, which follows those of ISCO-08, the scales are not directly comparable. The conversion table prepared by the Spanish National Statistics Institute enables the conversion of occupations in both periods to NOC-94.

## 2.3. Spain as a study case

Over the last decades, various circumstances have made the case of Spain worthy of study. It was not until 1978 that the Constitution was approved. Since then, Spain could be thought of as fully democratic. In the 1980s, a harsh industrial reconversion led to a deep renewal of productive capacity at the cost of increasing the levels of unemployment at the beginning of the 1990s, even when Spain's entry into the former European Economic Community in 1986 favored trade relations with the member countries. It is therefore possible that society at the time valued positively those occupations that enabled a successful transition to a fully integrated democracy in Europe. This was the economic and labor context when the first prestige scale was used.

The short but severe recession between 1992 and 1994 increased the unemployment rate to 24% in 1994. After that, a period of great prosperity followed, with a very positive evolution of the labor market until 2008, when the unemployment rate reached a minimum of 8%. This positive path was hit hard by the great recession that increased the unemployment rate up to 26% in mid-2013. This led to deep dissatisfaction among broad sections of society, who blamed various professions, such as politicians, businessmen or bankers, for causing the crisis and for their behavior during this period. These elements characterized the situation in which the second scale was elaborated.

Some interesting data from this period are as follows. By occupations, the proportion of non-manual workers in the workforce increased, whereas that of manual workers decreased, particularly among those semiskilled in agriculture, manufacture, and construction. The employed population of foreign nationality that was less than 1% in 1990 rose to almost 11% at the end of 2013. The women participation rate increased from 35% in the early 1990s to 54% in 2013. The percentage of adult population with higher education increased from less than 10% in 1990 to 32% in 2013 and has continued to increase to over 40% today.<sup>9</sup>

## 3. Methodology

Whether the rankings of the occupations, according to their prestige, are essentially the same at both time points or whether they have substantially changed is first determined through several descriptive exercises. To this end, after ranking the occupations at the two time points, the positions of each occupation in the rankings are compared, and two analyses are conducted. First, a sort of transition matrix is constructed that ranks the occupations that were in the top, middle, and bottom positions, corresponding to the terciles, using both the 1991 and 2013 scales (see Table 1). Second, a list of those occupations that varied the most between the two scales is presented to detect the most notable changes in the ranking of occupations (Table 2). Although both scales were constructed at

<sup>5</sup> These occupations correspond to the four-digit disaggregation of the 1994 Spanish National Occupations Classification, NOC-94). Although they do not coincide entirely, the NOC follows the ISCO (*International Standard Classification of Occupations*). Both have undergone changes over time (ISCO-68, ISCO-88, and ISCO-08 adapted to the Spanish case by NOC-73, NOC-94, and NOC-11, respectively).

<sup>6</sup> These occupations correspond to the four-digit disaggregation of the 2011 Spanish National Occupations Classification, NOC-11, considered in the CIS study number 3004. As is commonly known, ISCO and NOC classifications have four levels of categorization. The first level (the 1-digit level) comprises ten large groups of occupations. Subsequent levels disaggregate each of these large groups into increasingly specific categories of occupations.

<sup>7</sup> Respondents rate occupations according to what they think others think, not according to their own opinions, so they rely on third-order beliefs about prestige. The way in which prestige is valued could affect the measured stability of the scales, but we cannot predict the direction of the possible effect.

<sup>8</sup> The scores ranged between 0 and 100.

<sup>9</sup> Data from several years of the Spanish Labor Force Survey.

the four-digit level of disaggregation, the analyses in this study are conducted at a higher level of aggregation. Table 1 is elaborated at the two-digit level of the NOC-94 scale, which includes 66 different major occupations, whereas Table 2 is elaborated at the three-digit level, totaling 207 occupations.<sup>10</sup>

We test the extent of the relationship between prestige and a set of explanatory variables by means of regression analysis. This analysis is conducted at the level of occupation expressed in three-digit NOC-94 classification. The dependent variable, occupational prestige, is regressed against a set of explanatory variables to control for certain occupational aspects related to labor demand and supply, which may have changed over time. These include the percentage of women in an occupation, the proportion of immigrants, the composition by educational level, the proportion of workers in the public sector, the percentage of entrepreneurs and self-employed, the manual or skilled nature of the occupation, and the proportion in employment of the occupation.<sup>11</sup> The educational level of an occupation is entered as the proportion of workers of each educational level in that occupation. Thus, three variables are included to account for workers with only compulsory education, those with non-compulsory secondary education, and those with tertiary education.<sup>12</sup> Information for these aspects of occupations is taken from the Spanish Labor Force Survey (LFS) for both time points.

Equation (1) is used to capture the linear relationship as follows:

$$OP_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \quad (1)$$

where  $OP$  denotes occupational prestige,  $X$  includes all the controls,  $i$  denotes individuals,  $t$  represents either 1991 or 2013,  $\alpha$  is a constant term, and  $\varepsilon$  is the disturbance error.

#### 4. Descriptive analysis

The aforementioned ISCO and NOC classifications have four levels of categorization. The first level (the 1-digit level) comprises ten large groups of occupations: 0. Armed Forces; 1. Managers; 2. Professionals; 3. Technicians and Associate Professionals; 4. Clerks; 5. Services and Sales Workers; 6. Skilled Agricultural, Forestry, and Fishery Workers; 7. Craft and Related Trades Workers; 8. Plant and Machine Operators and Assemblers; 9. Elementary Occupations. Subsequent levels disaggregate each of these large groups into increasingly specific categories of occupations.

The first approximation to the changes in the occupational hierarchy of the two scales is obtained from the Spearman rank correlation coefficient which, at 2 digits, presented a fairly standard value of 0.734, but when the three-digit level was used, it reduced to 0.556.

This value is considerably lower than those reported by previous studies<sup>13</sup>; therefore, we should be cautious about claiming that the two classifications are “invariant”. The changes from one scale to the other are reflected in Table 1. Occupations that remained in the same tercile (top, medium, or bottom) in the two scales are shown in the main diagonal of Table 1. The first impression is that occupation in large groups 2 and 3 of Professionals and Technicians and Associate Professionals were placed in the upper levels according to the 1991 scale and tend to remain there in the 2013 scale. Contrarily, group 6 of Skilled in the Primary Sector and group 9 of Elementary Occupations are in the bottom positions in both scales. The biggest increases are observed in occupations in groups 7 and 8 (Craft Workers and Operators), whereas the biggest declines are observed in those in group 1 of Managers and group 4 of Clerks.

Table 2 lists the set of occupations at the three-digit level that varied by more than 50 positions (out of a total of 207) from one scale to another, i.e., those that approximately changed by more than 25%. Again, it is observed that large negative relative variations were more frequent among the occupations included in the large groups 1 and 4 and that positive relative variations were more frequent between the occupations in the large groups 5, 7, and 8. Furthermore, Table 2 provides information, for each of the 2 years, on the weight of each occupation in total employment and the proportions of women and immigrants in each occupation. This may provide a better understanding of how the evolution of occupational prestige was shaped by the behavior of those variables, as discussed below.

The first impression is that there is a certain degree of persistence in the occupational hierarchy between the two scales; however, there are also major changes in the arrangement of occupations. In the following lines, we highlight the most striking variations by sector group. In the following, when naming major groups and occupations at the two-digit level, they are capitalized. When named at the three-digit level, occupations are both capitalized and italicized. When we do not refer to specific occupations, but to more general

<sup>10</sup> Although the scales were constructed at the four-digit disaggregation level of the respective occupational classifications, for the analysis we grouped them at either two- or three-digit levels of aggregation for two reasons: first, to consider more generic occupations, and second, because to conduct the econometric analysis, we must use variables from the Spanish LFS, where the disaggregation of the occupational category is at most at the three-digit level. The prestige in the most aggregated groups is calculated as the arithmetic averages of the prestige corresponding to the four-digit occupations.

<sup>11</sup> The set of variables considered in this study are presented in Table A1 in appendix along with their mean values in both years.

<sup>12</sup> Unfortunately, the Spanish LFS does not provide information on earnings, so this variable could not be included in the analysis. Using data from the Wage Structure Survey, at the two-digit disaggregation level, additional exercises were carried out which showed strong stability over time in the ranking of occupations by wages (results not shown, but available upon request). We are therefore fairly confident that the observed changes in prestige sorting between the two scales are not due to sharp changes in occupational wages. In any case, educational attainment and earnings are highly correlated, and occupations with higher earnings tend to be those with a high proportion of tertiary-educated workers.

<sup>13</sup> For example, Oesch and Rodriguez-Menes (2011), in their four-country study on polarization, found that the rank correlation for occupational hierarchy in Spain, according to median wages, was 0.70, the smallest among the countries studied.

**Table 1**  
Occupational prestige “transition” matrix (in terciles).

2013 CIS scale				
1991 scale	Top	Medium	Bottom	
Top	13 Hospitality and restaurant managers (more than 10 employees) 15 Retail managers (less than 10 employees) 20 STEM professionals 21 Life science and health professionals 22 Higher and secondary teachers 23 Legal professionals 24 Business, administration, social professionals 26 STEM short-cycle professionals 27 Science short-cycle professionals 28 Primary teachers 30 STEM associate professionals 31 Life science and health associate professionals 32 Teaching associate professionals	0 Armed Forces 11 Managers in firms (more than 10 employees) 25 Cultural and religious professionals	10 Chiefs, legislators, and senior officials 14 Managers in firms (less than 10 employees)	
Medium	70 Supervisors in construction 73 Supervisors in metal, machinery, and related trade workers 74 Mining workers 76 Machinery mechanics and repairers	12 Retail managers (more than 10 employees) 16 Hospitality and restaurant managers (less than 10 employees) 17 Managers without salaried employees 29 Professionals in other fields 34 Administrative and specialized secretaries 35 Business services agents 40 Numerical clerks 41 Clerical support workers 42 Keyboard-operating clerks 43 Customer administrative assistants	50 Cook, waiters, and bartenders 52 Protective services workers 53 Sales workers 71 Building frame and related trades workers 72 Building finishers, painters, and related trades workers 75 Metal workers 77 Handicraft and printing workers 79 Wood, garment, and related trades workers 80 Mining and mineral supervisors 82 Supervisors in other activities 86 Drivers	33 Finance and sales associate professionals 44 Noncustomer administrative assistants 45 Client information workers 84 Assemblers 92 Building and housekeeping workers
Bottom		51 Personal services and care workers 60 Skilled agricultural workers 78 Food-processing and related trades workers 81 Stationary plant operators 83 Stationary machine operators 85 Mobile-plant operators	46 Customer services workers 61 Animal producers 62 Forestry and related workers 63 Fishery workers and hunters 90 Street and related sales and services workers 91 Cleaners and helpers 93 Refuse workers and other elementary workers 94 Laborers in the primary sector 95 Mining laborers 96 Construction laborers 97 Manufacturing laborers 98 Transport and storage laborers	

Note: Move from one tercile down to the next tercile. Move from the first tercile to the last one. Move from one tercile up to the next tercile.

occupations including different groups, they are not capitalized or italicized. The numbering according to NOC-94 is indicated (sometimes in parentheses).

We begin with manual workers. Occupations in large groups 6 of Skilled in the Primary Sector and 9 of Elementary Occupations started with low prestige and continued to have low prestige in 2013. Only occupations 602 and 623, *Employees and self-employed skilled workers in agricultural and livestock activities*, were found to have greater social recognition in the second scale. Meanwhile, many occupations in large groups 7 of Crafts and 8 of Operators had a moderately low level of prestige in 1991 and tended to have increased prestige in 2013 (except for group 84 of Assemblers, which exhibited decreased prestige). Specifically, the increases were remarkable in occupations of operators, supervisors, foremen, mechanics, and electricians. Overall, over the course of 22 years, the weight in the employment composition of these manual occupations decreased from half in 1991 to less than 38% in 2013, whereas the participation of immigrants clearly increased and that of women remained extremely low. All occupations in these groups mostly comprised men (except the occupation 91 of Cleaners and helpers).

Among the nonmanual skilled large occupations, Professionals (2) and Technicians (3) had high-prestige values in 1991 and maintained such values 20 years later, with some exceptions. Table 2 shows how the loss of social recognition centered in categories of *Financial associate professional* (331), *Sales representatives* (332), and *Specialized secretaries* (341), with drops of up to 100 positions. Other occupations with extremely high relative losses of positions from one scale to the other were *Business services agents* (351); *Religious professionals* (294, 295); *Archivists, librarians, and related information professionals* (252, 253); and *Finance professionals* (241). The total weight of groups 2 and 3 in the composition of employment sharply increased from 18% to 28% as well as the proportion of

**Table 2**  
More changing occupations (at a 3-digit disaggregation level, 207 occupations).

Code	Improvements, in the descending order	Ranking			Employed			Women			Immigrants		
		1991	2013	Change	1991	2013	Change	1991	2013	Change	1991	2013	Change
855	Ships' deck crew and related workers	179	55	124	0.04	0.07	0.03	0.00	0.02	0.02	0.00	0.22	0.22
512	Other personal care assistants (except nursing)	190	79	111	1.14	2.16	1.02	0.80	0.88	0.08	0.03	0.17	0.13
815	Chemical product plant operators	164	62	102	0.15	0.13	-0.02	0.03	0.09	0.06	0.02	0.02	0.00
511	Personal care assistants (nursing)	133	32	101	1.30	1.89	0.59	0.89	0.94	0.05	0.02	0.06	0.05
401	Numerical clerks	148	56	92	1.07	0.97	-0.1	0.34	0.53	0.19	0.01	0.03	0.02
832	Chemical manufacturing machine operators	163	71	92	0.18	0.11	-0.07	0.18	0.23	0.05	0.04	0.05	0.01
723	Building and related electricians	144	54	90	0.95	0.85	-0.10	0.00	0.01	0.01	0.02	0.06	0.04
762	Electrical and electronic mechanics and fitters	136	53	83	1.27	0.97	-0.30	0.02	0.02	0.01	0.01	0.08	0.06
814	Wood processing and papermaking plant operators	195	116	79	0.13	0.05	-0.08	0.17	0.12	-0.05	0.02	0.06	0.04
834	Wood product manufacturing machine operators	185	111	74	0.13	0.09	-0.04	0.10	0.20	0.10	0.02	0.07	0.04
523	Firefighters	88	15	73	0.13	0.20	0.07	0.01	0.02	0.01	0.01	0.02	0.01
816	Plant for energy production operators	181	113	68	0.05	0.11	0.06	0.00	0.07	0.07	0.00	0.05	0.05
791	Wood treaters	188	122	66	0.14	0.05	-0.09	0.15	0.06	-0.09	0.00	0.06	0.06
519	Other personal service workers	182	119	63	0.07	0.08	0.01	0.44	0.43	-0.01	0.04	0.11	0.07
602	Skilled workers in agricultural activities	196	135	61	0.83	0.65	-0.18	0.14	0.09	-0.05	0.02	0.15	0.13
817	Industrial robot operators	180	120	60	0.08	0.21	0.13	0.09	0.25	0.16	0.02	0.03	0.01
732	Motor vehicle workshop supervisors	100	41	59	0.05	0.06	0.01	0.00	0.03	0.03	0.03	0.03	0.00
623	Skilled self-employed in agricultural and livestock activities	197	145	52	0.03	0.02	-0.01	0.11	0.08	-0.03	0.00	0.23	0.23
742	Miners, stonemasons, stone cutters, and carvers	173	121	52	0.30	0.13	-0.17	0.04	0.04	0.00	0.04	0.10	0.06
851	Locomotive engine drivers and related workers	128	76	52	0.07	0.08	0.01	0.02	0.09	0.07	0.00	0.00	0.00
811	Mining and mineral processing plant operators	154	103	51	0.04	0.03	-0.01	0.04	0.00	-0.04	0.00	0.15	0.15

  

	Worst results, in the descending order	Ranking			Employed			Women			Immigrants		
		1991	2013	Change	1991	2013	Change	1991	2013	Change	1991	2013	Change
103	Local government	3	206	-203	0.04	0.07	0.03	0.19	0.31	0.13	0.00	0.02	0.02
101	Legislators and senior government officials	5	207	-202	1.14	2.16	1.02	0.57	0.50	-0.07	0.00	0.00	0.00
253	Other professionals of public administrations	23	160	-137	0.15	0.13	-0.02	0.42	0.46	0.04	0.00	0.01	0.01
140	Management of other companies (less than 10 employees)	21	140	-119	1.30	1.89	0.59	0.17	0.23	0.05	0.03	0.05	0.02
351	Business services agents	66	168	-102	1.07	0.97	-0.10	0.50	0.52	0.02	0.04	0.10	0.06
331	Financial and sales associate professionals	72	172	-100	0.18	0.11	-0.07	0.35	0.44	0.09	0.04	0.06	0.01
295	Other religious professionals	62	161	-99	0.95	0.85	-0.10	0.44	0.52	0.08	0.01	0.03	0.01
332	Commercial and sales representatives	55	143	-88	1.27	0.97	-0.30	0.13	0.23	0.10	0.02	0.06	0.04
294	Religious professionals (priests)	114	196	-82	0.13	0.05	-0.08	0.03	0.03	0.01	0.01	0.03	0.02
112	Production managers (more than 10 employees)	19	100	-81	0.13	0.09	-0.04	0.09	0.25	0.16	0.02	0.02	0.01
440	Secretary office clerks	122	203	-81	0.13	0.20	0.07	0.69	0.77	0.09	0.02	0.04	0.01
922	Guards and housekeepers	105	180	-75	0.05	0.11	0.06	0.11	0.18	0.08	0.02	0.13	0.11
252	Librarians, archivists, and the like	26	98	-72	0.14	0.05	-0.09	0.76	0.88	0.13	0.00	0.00	0.00
341	Administrative and specialized secretaries	76	148	-72	0.07	0.08	0.01	0.57	0.69	0.12	0.02	0.04	0.02
452	Receptionists	103	173	-70	0.83	0.65	-0.18	0.69	0.74	0.05	0.08	0.11	0.03
001	Commissioned Armed Forces officers	6	73	-67	0.08	0.21	0.13	0.00	0.04	0.04	0.02	0.00	-0.02
813	Glass and ceramics plant operators	113	176	-63	0.05	0.06	0.01	0.09	0.07	-0.02	0.02	0.06	0.04
241	Finance professionals	18	80	-62	0.03	0.02	-0.01	0.36	0.53	0.16	0.03	0.07	0.04
122	Retail trade managers (less than 10 employees)	68	127	-59	0.30	0.13	-0.17	0.34	0.46	0.12	0.03	0.07	0.04

(continued on next page)

Table 2 (continued)

	Worst results, in the descending order	Ranking			Employed			Women			Immigrants		
		1991	2013	Change	1991	2013	Change	1991	2013	Change	1991	2013	Change
161	Hospitality managers (without salaried employees)	89	146	-57	0.07	0.08	0.01	0,56	0,65	0,10	0,03	0,00	-0,03
421	Typists	75	129	-54	0.04	0.03	-0.01	1,00	1,00	0,00	0,00	0,00	0,00
003	Armed Forces, other ranks	54	106	-52	1.61	1.12	-0.49	0,02	0,11	0,08	0,03	0,09	0,05
525	Security guards	110	162	-52	0.04	0.07	0.03	0,05	0,11	0,07	0,02	0,09	0,07
451	Information clerks in offices	126	177	-51	1.14	2.16	1.02	0,77	0,64	-0,13	0,00	0,08	0,08

women, but not the relative proportion of immigrant workers in total employment.

As for unskilled nonmanual occupations (large groups 4 and 5), they had moderately low levels of prestige according to the 1991 scale. In 2013, the prestige of occupations in group 4 Clerks had decreased, while in occupations in group 5 Service workers and salespersons had increased. The loss of social value was particularly marked in occupations in contact with public, as *Secretaries* (440), *Information clerks* (451), and *Receptionists* 452 (in this large group 4, only prestige for *Numerical clerks* [401] increased). Regarding occupations in large group 5, they experienced an upward trend in prestige, which was particularly evident among occupations related to Personal service and care workers (51) and Protective service workers (52), both of which exhibited a strong increase in prestige, with a difference of as much as 100 positions in the two scales. In fact, some groups such as *Personal care assistants* (511), *Other personal care* (512), *Other personal services* (519), and *Firefighters* (523) reached more elevated positions in the 2013 ranking.<sup>14</sup>

Most of the occupations in these groups 4 and 5 were quite feminized (in 511 and 512 the percentage of women exceeds 80% of the total), even though there were some that were highly masculinized, such as Protective services (52). As regards relative weight, group 5 reached a 17% in the composition of the workforce in 2013, whereas the weight of group 4 decreased to 9%. Over time, a substantial increase in the number of immigrant workers was observed in, for example, *Information clerks* (451), *Receptionists* (452), *Personal care* (511) and *Other personal care workers* (512).

Finally, there was a rather sharp decrease in the prestige of some occupations in the large groups of Managers (1) and Armed Forces (0). In particular, the top groups of *Senior officials* and *Legislators* (101) and *Local government* (103), went from being the most highly valued in 1991 to the least in 2013 (drops of 200 positions out of a total of 207), whereas the drops in certain types of Managers were somewhat smaller. The valuation of Armed Forces fell to an intermediate level. Together, both groups represented in 2013 a weight close to 10% of the total employment, with an increasing participation of women, although still low, and hardly any immigration.

In view of the results of this descriptive analysis, it cannot be affirmed that the ranking of occupations remained substantially unchanged. Contrarily, there were extremely marked variations in an ample group of occupations. These changes in the Spanish occupational structure may reflect an alteration in society's valuation of occupations, challenging the alleged invariability of the occupational sorting over time. An additional analysis is conducted to identify the association between occupational prestige and different aspects of occupations related to labor demand and supply, bearing in mind that most of these aspects changed over time.

## 5. Regression analysis

In this section, the relationship between the set of regressors and the occupational prestige for both scales is explored. Logarithms of prestige were taken before estimating equation (1). The unit of observation is the occupation, and the explanatory variables refer to this unit, which total 207 observations/occupations corresponding to the three-digit disaggregation of NOC-94. Notably, by using cross-sectional information, only the relationship but not the causality between variables can be identified.

In this estimation, the variable referring to the proportion of women in an occupation is classified into five groups, from highly feminized occupations (percentage of women above 80%) to highly masculinized occupations (percentage of women below 20%), with intermediate values in intervals of 20%. The rest of the variables enables control for the particular character of a given occupation such as the composition by studies, the proportion of immigrants, whether or not they belong to the public sector, the percentages of entrepreneurs and self-employed worker, as well as the manual or skilled nature of the occupation. Furthermore, the weight of the occupation in employment is used as a control variable, indicating its relative importance in the total composition of employment. In a second set of estimates, an interaction between the proportion of women and that of immigrants is added to capture a possible double penalty of these characteristics on prestige (Grönlund and Öun, 2024).

The first two columns of Table 3 present the estimation of the 1991 and 2013 prestige as a function of the variables considered, whereas the third column shows the results of the estimation of the 2013 prestige as a function of the variables of that year, including the 1991 prestige as an additional explanatory variable. The next three columns show the same type of estimates when the immigrant-women interaction is added.

The results in the first two columns for each set of estimates show that the sign of several coefficients coincide in both periods. Specifically, occupations with higher educational levels, with a higher percentage of entrepreneurs and self-employed workers, are associated with higher prestige. The variable for the weight of employment is not statistically significant at either of the two points in

<sup>14</sup> Firefighters are widely regarded as one of the most trustworthy professions for citizens in Western countries, see, for instance, Majchrowska (2021) for Poland and Harris polls for the US, but not in Asian countries (KRIVET, 2022).

**Table 3**  
OLS occupational prestige estimations in 1991 and 2013.

	1991	2013	2013	1991	2013	2013
Women 0%–20%	0.151*	0.021	0.003	0.154*	0.030	0.016
21%–40%	0.090	0.004	–0.001	–0.092	0.007	–0.003
41%–60%						
61%–80%	0.043	–0.005	0.009	0.041	–0.012	–0.001
81%–100%	–0.239*	0.094*	0.043**	–0.235*	0.080*	0.022**
% immigrants	0.362	–0.173*	–0.125*	–0.253	–0.290*	–0.288*
Immigrant*female				0.371	0.333	0.467
Compulsory studies						
Secondary no ob.	0.621***	0.260**	0.164*	0.621***	0.258**	0.160**
Superiors	0.917***	0.246***	0.026***	0.917***	0.239***	0.015***
Public sector	0.056	–0.125**	–0.078**	0.055	–0.124**	–0.076**
% Entrepreneurs	0.315*	0.009*	0.061*	0.316*	0.013*	0.067*
% Self-employed	0.183*	0.014*	–0.027	0.182*	0.010*	–0.034
Manual	–0.155*	0.008*	0.016*	–0.154**	0.005*	0.021*
Skilled	0.097*	0.017*	0.001	0.097*	0.021*	0.006
Weight employment	–0.008	–0.005	0.010	–0.008	–0.008	–0.003
LogPrestige 1991			0.245**			0.247**
Constant	4.004***	3.900***	2.884***	4.001***	3.902***	2.879**
Adjusted R <sup>2</sup>	0.45	0.39	0.68	0.45	0.39	0.60
Observations	207					

Notes: Dependent variable: Log of occupational prestige in 1991 (column 1), in 2013 (column 2), and in 2013 with Log of occupational prestige in 1991 acting as an additional regressor (column 3). The second set of estimations adds an interaction between the proportion of women and immigrants.

Significance: \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

time. Other variables, however, exhibit a distinct behavior in each of the periods. Thus, the percentage of immigrants in the occupation is negatively associated with prestige in 2013, whereas the relationship in 1991 was not statistically significant. The same is true for the percentage of public sector workers. On the other hand, manual occupations were associated with lower prestige in 1991 but higher prestige in 2013. Regarding the variables of female share, in 1991, highly feminized occupations were significantly less valued than the rest of the occupations. Contrarily, in 2013, highly feminized occupations are positively related with prestige.

The results in the last column for each set of estimates are extremely similar to those in the second column. Only the percentage of self-employment and the skilled nature of an occupation become insignificant when the logarithm of prestige in 1991 is added. Regarding this latter variable, the estimated coefficient is positive and statistically significant, confirming a direct association between the two scales. However, the coefficient is not particularly high, suggesting that although both scales exhibit certain persistence, they are far from being essentially identical, again challenging the invariance assumption of the Treiman constant. Looking at the interaction between immigrants and women, this variable is not statistically significant in either case, indicating that there is no double penalty in prestige for those occupations in which the proportions of immigrants and women are higher.

## 6. Discussion and conclusions

In the last decades, profound structural changes in the composition of employment were observed in Spain, both on the demand side (increased employment in services, as opposed to a reduction in manufacturing and the primary sector) and on the supply side (increased participation of women and immigrants as well as a more skilled labor force). Two different prestige scales elaborated on the same basis are used to determine whether the invariance attributed to the scales over time (Hout and DiPrete, 2006) is no longer valid in the case of Spain. After a descriptive analysis revealing the occupations that gain more positions from one prestige scale to the other, and those that lose the most, some factors associated with the level of prestige of an occupation are studied through regression analysis.

As regards the persistence in rank ordering, while it did not entirely change, extremely important variations were observed so that the rank-order correlation between scales is hardly above 0.5 at the three-digit level of disaggregation. Skilled occupations tend to remain among the most valued across the scales, whereas unskilled occupations remain among the least valued, with society-serving occupations (carers, firefighters, nurses, etc.) and manual semiskilled occupations in manufactures and construction gaining society acknowledgment over time.

The descriptive analysis reveals that almost all the occupations in group 2 (Professionals) and group 3 (Technicians) remained in the top tercile in the two scales. For their part, other high-prestige occupations such as Armed Forces, Managers and Senior government officials (large groups 0 and 1, respectively) sharply moved down in occupational hierarchy from 1991 to 2013, as did several occupations related to Finance and business administration (33), Administrative customer services (44, 45), and the Clergy (25). In contrast, several semiskilled manual occupations related to manufacturing and construction (occupations included in large groups 7 and 8, such as operators, foremen, supervisors and mechanics) experienced the largest increases in prestige, moving from the bottom tercile on the 1991 scale to middle positions on the 2013 scale. Above all, the most marked increases occurred in Personal service occupations of nursing and Care assistants (51). Taken as a whole, the results challenge the Treiman constant, at least in the time



perspective. The permanence of some groups of occupations in similar positions of the prestige scales for both years do not prevent others from having their position changed notably and, therefore, their consideration by society.

An econometric analysis has been conducted to determine whether the changes in the valuation of occupations are shaped by the evolution of certain characteristics of these occupations. Data from the Spanish LFS corresponding to occupations disaggregated at the three-digit level has been used, yielding the following results. First, the relationship between female share and occupational prestige transformed during the study period. Relative to mixed occupations, higher prestige was found in highly masculinized occupations in 1991 and in highly feminized occupations in 2013. The presence of women has increased in practically all occupations but most notably in the integrated and feminized occupations corresponding to Education, Health and Social Services. These occupations had a high level of prestige in 1991 and continue to maintain it with the 2013 scale (see [Table A1](#) in [Appendix](#)). Additionally, some highly feminized occupations such as Personal services and care (51), for instance, have clearly gained prestige over time.<sup>15</sup>

Second, a higher proportion of immigrants in an occupation is associated with a lower valuation of this occupation in 2013. These workers have concentrated on occupations belonging to the large groups 9, Elementary; 5, Service workers; and 6, Skilled in the primary sector. These occupations were already among the least prestigious in 1991 and continue to be in 2013. This result is consistent with the theoretical predictions of [Fan and Stark \(2011\)](#) who developed a migration decision theory in which immigrant workers are more likely to land in low-prestige occupations. [Dustmann et al. \(2013\)](#) confirm this for the case of the UK. Along the same line, [Valentino \(2022\)](#) concludes that for the US, individuals perceive higher prestige in occupations with a higher proportion of white workers.

Despite the increase in immigrant participation in the Spanish labor market, the occupations in which immigrants are most numerous have not seen an increase in their value. There is a kind of social stratification in which immigrants are placed at the lower levels. This could be aggravated by the increasingly widespread belief that immigration is associated with job losses and potential security problems, which could lead individuals to evaluate more negatively those occupations in which immigrants are more numerous. Similar to the results of [Grönlund and Öun \(2024\)](#) in Norway, in our study, the association between the proportion of women and the proportion of immigrants turns out to be statistically insignificant, rejecting the possible double penalty of these characteristics on prestige. This suggests that no apparent differences across genders are observed, since migrant men and women tend to work in low-prestige occupations. Thus, for example, [Orupabo and Nadim \(2020\)](#) find an increase in the number of immigrant men in the female-dominated cleaning industry in Norway.

Third, the percentage of workers in the public sector is a statistically insignificant variable in 1991 with a positive sign on prestige, which turns negative and strongly significant in 2013. The sharp decreases in some occupations within large groups 1 and 4 related to the public sector, such as legislators and senior officials, some government professionals, and certain clerical workers, might have led to this result.<sup>16</sup>

Fourth, being in a manual occupation was negatively associated with prestige on the first scale and becomes positively associated with prestige on the most recent scale. The large improvement in the positions of some occupations in large groups 7 and 8 may explain this result. Automation and digitalization led to large job losses in these groups, so that their weight in the total employment composition decreased and the average age increased, leading to an ageing of these groups. Thus, society is beginning to perceive certain types of trades or professions in these groups (operators, supervisors, electricians) as necessary and more prestigious (for a similar result for Spain and other countries, see [Oesch and Fernandez-Menes](#)).<sup>17</sup>

An alternative explanation to this result is the contributions that relate the evolution of the political situation to the social perception of occupations. These arguments have gained importance in literature because of the increase in populism and the phenomenon of polarization in both the political and social spheres ([Kurer and Palier, 2019](#); [Mudde, 2013](#)). According to this view, workers in the groups with lower prestige challenge whether education is one of the most relevant factors in configuring the ranking of occupations and consider that other elements should prevail in the elaboration of social ranking. In an analysis of the case of Switzerland, for example, [Abrassart and Wolter \(2023\)](#) find that workers farther away from the ideological center place less value on factors such as education or authority but high value on manual occupations. Perhaps this argument could be applied to the case of Spain. During the great recession, there was great social discontent that favored the emergence of nationalist, populist, and extremist (left and right) political parties that have increasingly participated in national and regional governments.

Finally, the positive association observed between the percentages of self-employed workers and entrepreneurs with prestige in

<sup>15</sup> It is not clear whether women's increased labor force participation may have influenced the way in which society values occupations. A study by [Gómez-Bueno \(1996\)](#), based on the same scale as [Carabaña and Gómez-Bueno's \(1996\)](#), found that, in general, women rate all occupations lower than men, but not feminized occupations. Consequently, it seems plausible that part of the observed improvement in the prestige of the more feminized occupations may be due to the higher participation of women in the survey.

<sup>16</sup> The prestige of politicians fell sharply during the period analyzed, probably due to the increasing social discontent following corruption scandals and the economic crisis.

<sup>17</sup> Different studies pointed out that the percentage of jobs at risk of automation in Spain is one of the highest among the advanced countries ([Arntz et al., 2016](#); [Nedelkoska and Quintini, 2018](#)). According to [Frey and Osborne \(2017\)](#) and [Sebastian \(2018\)](#), occupations in groups 7 and 8 present a higher than 60% probability of automation. These manual, semi-skilled occupations are the most affected by employment polarization in Spain ([Sebastian, 2018](#)).

1991 declined in the 2013 scale. The strong loss of prestige of certain occupations in Large group 1 of Managers and politicians may explain this result.<sup>18</sup>

Although the present study offers many sensible results, several limitations must be recognized. First, we cannot rule out other explanations for why occupational prestige varies across scales. Despite several controls for occupational characteristics have been included, many others were not available, at least at the three-digit level of disaggregation such as, for example, the degree of exposure to robotization (Frey and Osborne, 2017) or the share of imports/exports. These variables, and others, can affect the occupational structure and the society's valuation of occupations.

Second, we have made the two scales comparable, although the values assigned to each occupation are simply ordinal. This means that a score of 50 indicates that an occupation has more prestige than an occupation rated 25, but not that an occupation rated 50 has twice the prestige of an occupation rated 25. Thus, our analysis should be interpreted only in terms of changes in hierarchies or rankings.

Overall, the results of this study indicate that the valuation of occupations may not be time invariant, at least this is what we have found for the case of Spain between 1991 and 2013. Our contribution has consisted of providing empirical evidence on the changes in the prestige of occupations over time as well as providing some conjectures on the causes operating in this process. Generalizing these results to other countries would require specific studies. We can hypothesize that societies with low birth rates and an aging population would value health and personal care occupations more highly. Similarly, countries concerned about illegal and mass immigration might value protective occupations more highly. In this sense, southern European Mediterranean countries are more likely than other countries to show behavior similar to that described here for Spain. On the other hand, the high valuation of professionals and technicians and the loss of trust in politicians and businessmen seem to be common to most Western countries.<sup>19</sup>

Although there have been many changes in the 22 years between the two scales – such as increases in service sector employment, female participation, educational attainment and immigration, all accompanied by social and cultural changes and the spread of globalization –, it is likely that many of these phenomena will not continue at the same pace in the coming years. In the case of immigration, for example, the observed trend may change or even reverse if there is a very negative view of the growth of the immigrant population. In addition, globalization has been challenged since the Great Recession, and international trade barriers, such as increased tariffs or import quotas, have become more common. Finally, automation and digitalization have experienced even more explosive growth since 2013, thanks to the recent development of artificial intelligence. It is therefore not unlikely that there will be major changes in the social perception of occupations in the coming years. In this context, it would be advisable to develop new scales to assess the degree of stability of occupations in terms of their prestige.

### CRediT authorship contribution statement

**Inmaculada Garcia-Mainar:** Writing – original draft, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Víctor M. Montuenga:** Writing – original draft, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

### Funding

The authors acknowledge financial support by the Spanish Ministry of Science PID2020-118355RB-I00 and the Autonomous Government of Aragon (Research Groups S32-20R), co-financed by ERDF 2014–2020.

### Declarations of competing interest

None.

### Acknowledgments

The authors would like to thank the participants at the Labor Economics Meeting, UNIR, 2021; Applied Economics Meeting, Toledo, 2023; and Spanish Conference of Sociology, Seville, 2024, for the helpful comments received.

### Appendix

[Table A1](#) presents the mean values of the variables, showing some of the changes that have occurred over the period considered.

<sup>18</sup> Historical context can be very influential. The behavior of politicians, businessmen and other professionals during the crisis that began in 2008 may have had a negative impact on society's view of these professions. The situation experienced in another context, that of the COVID-19 pandemic, seems to point in the same direction. The [IPSOS report \(2021\)](#) showed that between 2019 and 2021, the medical and scientific professions were able to generate trust among citizens, in contrast to the case of politicians, business managers or bankers.

<sup>19</sup> Little is known about occupational prestige in former socialist countries. The transition to democracy and entry into the European Union may be a good point of comparison with the Spanish case. This could be a topic for future research based on adequate prestige scales (see, for example, [Domański et al., 2009](#); for Poland).

There was a notable increase in mixed and feminized occupations, as in the proportion of immigrant workers. The proportion of workers with higher educational level increased, whereas the proportion of those with only compulsory education decreased. Finally, the variations in the proportions of workers in the public sector, entrepreneurs, and the self-employed workers were minimal throughout the period.

**Table A1**

Descriptive statistics (1991 and 2013). Sample averages.

	Average 1991	Average 2013
Log average prestige (0–10)	4.69	4.04
Women 0%–20%	0.560	0.473
21%–40%	0.200	0.161
41%–60%	0.116	0.207
61%–80%	0.092	0.106
81%–100%	0.043	0.053
% immigrants	0.02	0.07
Compulsory studies	0.48	0.39
Noncompulsory secondary	0.26	0.20
Higher studies	0.26	0.41
Public sector	0.23	0.22
% entrepreneurs	0.05	0.06
% self-employed	0.11	0.11
Manual		0.57
Skilled		0.52
Observations		207

Notes: Sample statistics from the Spanish Labor Force Survey (LFS) and prestige scales. Manual and Skilled are dichotomic variables: 1 if occupation is classified as manual (skilled) and 0 otherwise. The values indicate the percentage of occupations (out of 207) that are considered as manual (skilled) and are constant in both years. Occupations belonging to Large groups 5, 6, 7, 8, and 9 are considered as manual, whereas occupations belonging to Large groups 1, 2, 3, 6, and 7 are considered as skilled. In the rest of the cases, the values show the percentage of workers in each occupation holding that characteristic.

Source: Prestige scales and Spanish LFS.

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