ARE SKILLS MORE RELEVANT THAN FORMAL EDUCATION? EVIDENCE FROM THE SPANISH LABOUR MARKET (1999-2025)

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Introduction, Objectives and Hypothesis

This paper explores the extent to which work experience and skills acquired outside the formal education system can compensate for the lack of academic qualification in specific occupational groups within the Spanish labour market. While most studies on educational mismatch have focused on the overqualification of university graduates, this research looks instead at a less examined group: workers whose highest level of education is compulsory schooling. We start from the idea that formal education represents only one dimension of human capital, and that, in many labour contexts, skills gained through experience may hold equal or even greater value than academic credentials.

Moreover, the Spanish labour market is generally characterised by a relatively low educational level among the employed population. In this context, individuals without a high formal qualification tend to progress in their careers mainly through the experience acquired in the workplace. In other words, they develop the knowledge and skills demanded by the market outside the formal education system.

Similarly, labour demand does not always correspond to workers' formal educational level, which helps explain why a significant proportion of the employed population holds only a compulsory secondary education certificate without necessarily working in elementary occupations.

Building on this framework, two hypotheses are proposed. The first posits that, regardless of the educational level of the employed population, certain provinces concentrate a higher proportion of jobs in elementary occupations. The second suggests that sex and age interact with educational level in shaping the probability of working in an elementary occupation, such that an age effect is expected among men and a generational effect among women. In addition, it is hypothesised that place of birth exerts an independent influence on the probability of employment in elementary occupations, acting as a form of net discrimination.

The study examines how experience, age, gender, region, and migrant background shape access to low- and medium-skilled jobs when formal education is limited. Conceptually, it contributes to rethinking the relationship between education, skills, and employability by highlighting the compensatory value of experiential learning. Methodologically, it takes advantage of the long-term panel structure to connect macrostructural change with individual labour trajectories, offering fresh insights into the evolving foundations of human capital in Spain.

Theoretical Focus

Research on labour markets shows that a considerable share of workers experience a mismatch between their educational attainment and the requirements of their jobs, either through overqualification or undereducation (Aguilar & García, 2008). Recent studies also emphasise

how skill-biased and task-biased technological change have reshaped labour demand, leading to job polarisation—growth in high- and low-skilled occupations at the expense of intermediate ones (Goos et al., 2014; Autor et al., 2003, 2006; Manning, 2004). Yet, as Fernández-Macías (2012) argues, these dynamics have not followed a single pattern across Europe but vary by national context.

While formal education remains important in recruitment, employers increasingly value skills acquired outside the formal system (Fuller et al., 2022). This shift towards competence-based hiring reflects both the lag between education and labour market needs and the difficulty of attracting suitable candidates when focusing solely on academic credentials. Evidence also suggests that such practices become more common when labour demand exceeds supply (Bone et al., 2025).

Although the mismatch between education and employment has been widely studied among university graduates (Groot & Massen van den Brink, 2000; Lassibille et al., 2001), little attention has been paid to workers with only compulsory schooling (Levels et al., 2014). The Spanish case deserves particular attention, as its labour market structure, educational expansion, and policy environment shape unique patterns of over- and undereducation.

Since the late twentieth century, Spain has experienced a major expansion of higher education (Salas & Martín-Cobos, 2006), alongside technological change that rendered many workers' skills obsolete (Sondergaard et al., 2012). Persistent early school leaving and the growing number of young people not in employment, education or training (NEETs) have further complicated this scenario. Broader political and economic transformations—from the Democratic Transition to the 2008 Great Recession—have also shaped generational opportunities and constraints.

Another structural feature of the Spanish labour market is strong segmentation between a secure, well-protected primary sector and a precarious secondary one dominated by temporary and low-wage jobs, which particularly affects young, low-educated and female workers (Bacaria et al., 2015). The country's low value-added economic model has relied heavily on low-skilled labour in agriculture, construction, services, and care work (Domingo & Gil Alonso, 2007; Oso & Parella, 2012). Much of this demand has been met by international migrants—often overqualified—who remain concentrated in insecure and poorly paid occupations (Muñoz-Comet, 2016; Kogan, 2006).

Data and Methods

This study uses data from the Labour Force Survey conducted by INE, covering the period 1999-2025. The analysis focuses on the employed population aged 18 to 64.

Employment in elementary occupations is the dependent variable. Key independent variables include having at most a school graduate degree (binary), year, province, age, sex, and place of birth. Survey weights (PESO) are applied to ensure representativeness.

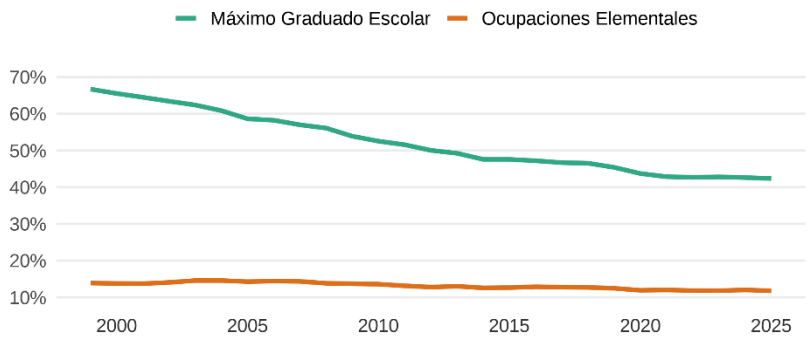
Weighted logistic regression (binary logit) models were estimated to examine the likelihood of being employed in an elementary occupation based on the selected covariates. Several model specifications were tested. The final model was defined as: ocuelemental ~ CICLO + PROV + SEXO*EDAD*maxgraduat, where the dependent variable (*ocuelemental*) indicates employment in an elementary occupation, and the three-way interaction term captures the combined effect

of sex, age, and educational level. Marginal effects were calculated to facilitate interpretation of results in terms of probabilities.

First Findings

- The share of employment in elementary occupations has slightly decreased over time, from 13,86% in 1999 to 11,81% in 2025. What has declined more noticeably is the proportion of employed individuals whose highest education attainment is the basic school certificate. Nevertheless, this share remains relatively high, suggesting that, overall, the educational level of the labour market is still low. Approximately 40% of the employed population holds, at most, a basic school qualification. Furthermore, we assume that individuals who left education early do not possess the minimum qualifications required for full participation in the labour market. Therefore, we interpret the gap between both lines as representing occupations in which experience or practical skills are valued more highly than formal education.

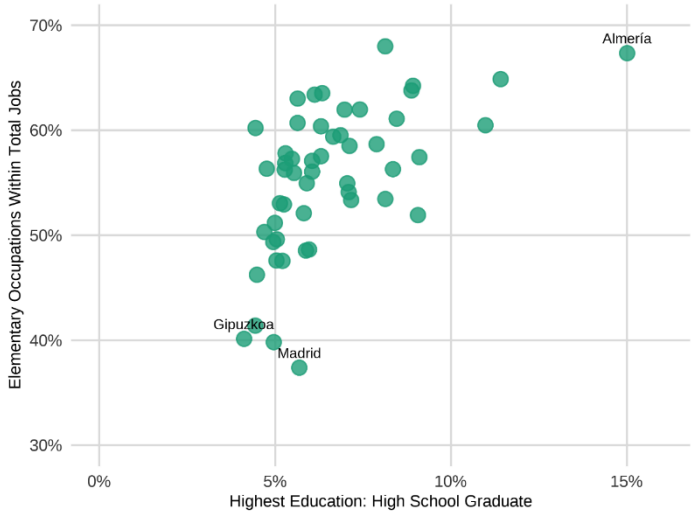
Figure 1. Evolution of the Probability, Among the Employed Population, of Having at Most a School Graduate Degree (Blue) and Holding an Elementary Occupation (Orange).



Source: Labour Force Survey (1999–2025), INE.

- By examining the probability of having, at most, a basic school qualification and of being employed in elementary occupations among the working population, we observe that the higher the share of employment in elementary categories, the greater the proportion of workers without upper secondary or tertiary education. There appears to be a positive relationship between holding only a basic school qualification and the concentration of elementary occupations in certain provinces. For instance, Almería shows both a high proportion of employed individuals with, at most, a basic school qualification and a high share of elementary occupations within total employment.

Figure 2. Probability of Having at Most a School Graduate Degree and Working in Elementary Occupations Among the Employed Population by Province of Residence.

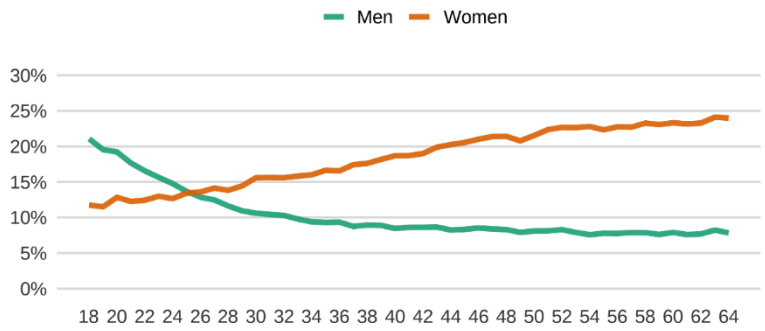


Source: Labour Force Survey (1999–2025), INE.

- When analysing the interaction between sex and age in the probability of being employed in an elementary occupation in Spain, the results reveal a very clear pattern. Among men, there is a marked age effect: the probabilities are highest at younger ages—around 20% at 18 or 20 years old—and decline steadily, reaching approximately 8% from the age of 40 onwards. This suggests that, as men accumulate work experience, the likelihood of being employed in an elementary occupation decreases.

Among women, however, the pattern is different. Younger women—those aged 18 to 25—show much lower probabilities of working in an elementary occupation, around 12% to 13%. In contrast, older women often exceed 20%. This finding points to a generational effect: younger women, likely to have higher educational levels and more diverse career paths, are entering more highly qualified jobs than previous generations.

Figure 3. Probability of Having an Elementary Occupation in Spain According to the Interaction Between Sex and Age, 1999–2025.

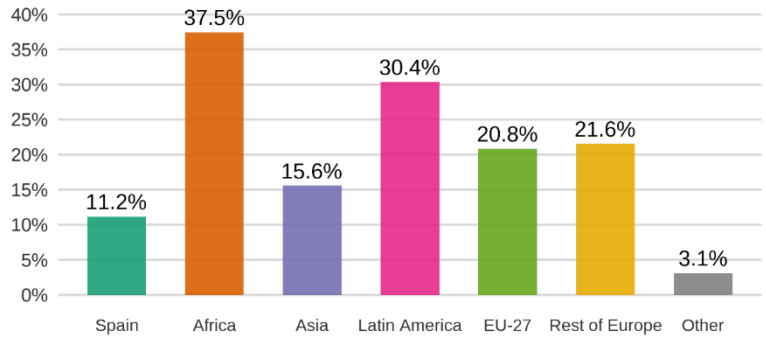


Source: Labour Force Survey (1999–2025), INE.

- When examining the effect of place of birth, marked differences are also observed. Individuals born in Spain display an average probability of around 11%, but this figure increases substantially among the foreign-born population. In particular, people originating from Africa reach a

probability of nearly 37%, and those from Latin America around 30%, indicating a strong concentration of these groups in elementary occupations.

Figure 4. Effect of Place of Birth on the Probability of Having an Elementary Occupation in Spain, 1999–2025.



Source: Labour Force Survey (1999–2025), INE.

- In the following step, we extended the model by including educational attainment (at most basic education vs. upper secondary and tertiary education) to assess its influence on the probability of being employed in elementary occupations.

- When analysing the results by year of observation (Figure 5), we find that the probability of being employed in a low-skilled occupation changes very little over time, even after controlling for educational level. Nevertheless, in certain years these probabilities are slightly higher, probably due to macroeconomic factors or shifts in the labour market. Overall, the effect of time does not appear to be particularly significant.

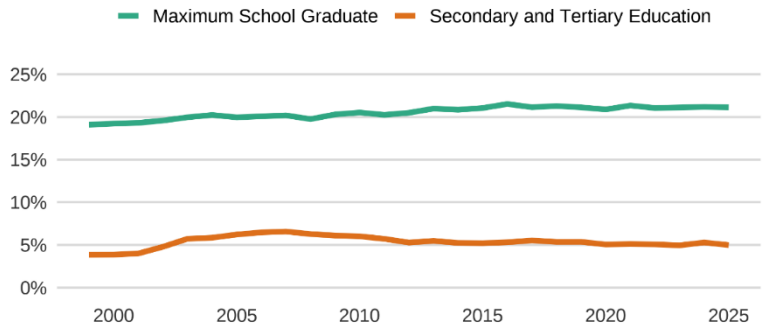
- Regarding the *Predicted Probability of Being in an Unskilled Job in Spain (1999–2025) by Education Level and Province of Residence* (Figure 6), it can be observed that, even when holding all other variables constant, the province of residence continues to have a significant effect. For instance, employed individuals aged 18 to 64 residing in Almería show a higher probability of working in an elementary occupation, even when they have the same educational level as someone living in another province (such as Gipuzkoa or A Coruña). This suggests that there is a province-specific effect on the likelihood of being employed in a low-skilled job; that is, Almería concentrates a relatively high share of elementary occupations regardless of the educational level of its employed population. Therefore, the territorial dimension proves to be relevant for understanding the distribution of these occupations.

- When analysing again the *predicted probability of being in an unskilled job in Spain* by the interaction between age and sex, but this time incorporating education into the model (Figure 7), we find that the generational effect is concentrated solely among women with lower levels of education—that is, those who left school early and entered the labour market at a young age, remaining in elementary occupations. The probability of being employed in an elementary occupation among younger generations is roughly half that of older cohorts (20%–40%). In contrast, men—regardless of their educational level—show a steady decline in the probability of working in elementary occupations as they age. This suggests that, among men with at most a basic school qualification, work experience translates into progressive occupational improvement. Meanwhile, women with upper secondary or tertiary education, in addition to

the aforementioned age effect, maintain a relatively stable share of employment in low-skilled occupations.

- Finally, when examining the *Predicted Probability of Being in an Unskilled Job in Spain (1999–2025) by Education Level and Place of Birth* (Figure 8), we find that, regardless of the educational level of the employed population, being born in Africa—for instance—continues to exert its own independent effect on this probability. In other words, even when two individuals share the same level of education, their place of birth significantly influences the likelihood of working in an elementary occupation. Therefore, place of birth represents a net effect, much like province of residence.

Figure 5. Predicted Probability of Being in an Unskilled Job in Spain (1999–2025) by Education Level and Year of Observation.

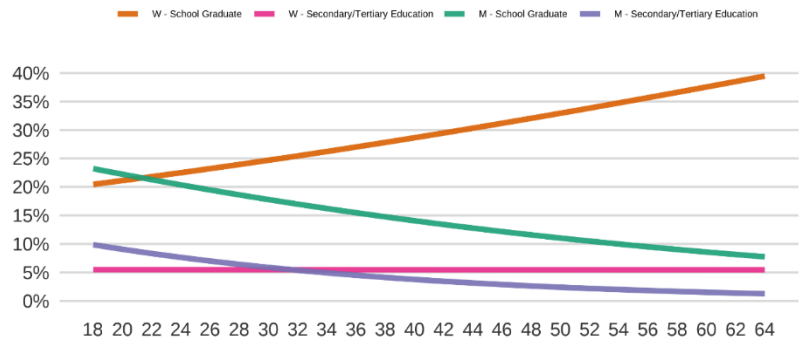


Source: Labour Force Survey (1999–2025), INE.

Figure 6. Predicted Probability of Being in an Unskilled Job in Spain (1999–2025) by Education Level and Province of Residence.

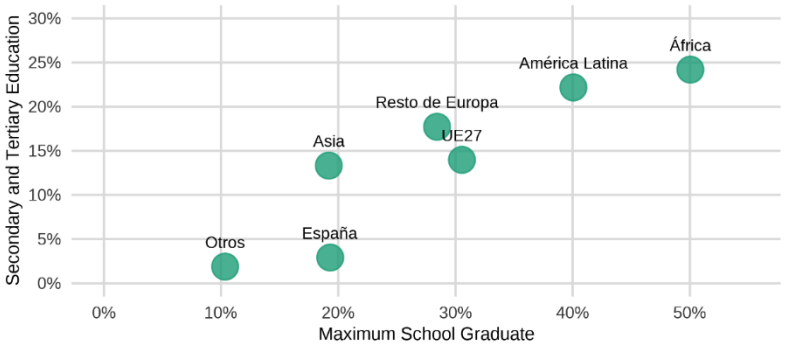
Source: Labour Force Survey (1999–2025), INE.

Figure 7. Predicted Probability of Being in an Unskilled Job in Spain (1999–2025) by Age, Sex, and Educational Level.



Source: Labour Force Survey (1999–2025), INE.

Figure 8. Predicted Probability of Being in an Unskilled Job in Spain (1999–2025) by Education Level and Place of Birth.



Source: Labour Force Survey (1999–2025), INE.

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