



Are Graduates Working in Graduate Occupations? Insights from the Portuguese Labour Market

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INTRODUCTION

The past century has been characterised by an enormous expansion of higher education (HE) around the world. The major motivation of such expansion is inspired in human capital arguments, in that education endows people with skills and abilities that are major drivers of economic growth and individual's earning capacity (Becker, 1964). However, the mass HE reopened the discussion surrounding educational credentialism and the role of education to position job applicants in the labour queue (Thurow, 1976). These subjects deserve proper scrutiny in the context of mass HE in Portugal.

The educational attainment of the Portuguese population has been historically lower than other developed countries. Governments from

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different political parties have implemented reforms and made huge investments to narrow the gap and meet the standards of other countries (see Figueiredo et al., 2017 for synthesis). The progress is multidimensional and results from different reforms: compulsory education and the change in the minimum school leaving age; the types of secondary education, vocational and non-vocational; the types of higher education, public and private, vocationally oriented and general, among other changes. The outcome of these education policies has been extraordinary; for example, the Organisation for Economic Co-operation and Development (OECD) recently drew attention to the increase in master's students in Portugal (33%), which is more than double the OECD average (16%) (OECD, 2019).

It is argued, however, that this supply of skilled workforce has not been accompanied by high-tech manufacturing and service sectors in Portugal (Marques et al., 2022). Policymakers have also acknowledged that the upgrading of the productive system is still lagging the supply of skilled workforce. This leads to overqualification and raises questions about the jobs assigned to skilled workers, notably graduates. Previous research has already warned that the massification of HE involves the supply of skilled workers to industries that are usually unable to attract graduates (Trow, 1973). In this context, graduates tend to accept any available job. Therefore, some research has explored the assignment of graduates to types of jobs in Portugal to determine whether they are assigned to graduate jobs (Cardoso, 2007; Figueiredo et al., 2017).

Our research is inspired by this literature and raises the following research questions: i) What kind of occupations are assigned to graduates in Portugal? ii) How does the workforce composition within occupations vary over time? iii) Are there some context or personal factors that affect the assignment? The literature exploring the inequality among graduates and their distribution across types of occupation (Figueiredo et al., 2017) used a classification of occupations based on the supply of skilled workforce and compared two generations of workers to decide on the type of occupation. However, this classification is sensitive to the proportion of graduates and impedes the analysis of demand-side changes. On the other hand, the research overlooks the distribution of bachelor's (graduate) and master's (postgraduate) degree holders across occupations, and this has evolved over time due to the increased supply of both higher education-level graduates. The research by Almeida et al. (2017) compares the two levels of higher education, focusing on specific occupations and categories of tasks. Their major concern was the wage differentials at different points

of the distribution, controlling for occupations, industries, tasks, among others.

We use data from Quadros de Pessoal, an administrative data set, from 2007 to 2019, to address our questions and concerns. The empirical analysis draws on the classification of occupations used to examine the polarisation of the labour market (CEDEFOP, 2011) and attempts to describe the distribution of graduates (bachelor's and master's¹) in different types of occupations, as well as its evolution, and to compare this distribution by sector and explore wage differentials across occupations over time. Prior to this, we provide a picture of the educational attainment of the Portuguese population since 1990s.

The rest of the chapter is structured as follows. In the next section, we survey literature on the benefits of education and focus on international studies and some of the main studies on the Portuguese labour market. Section 'Data and Method' presents the quantitative data and the empirical methods. Section 'Empirical Evidence and Discussion' is devoted to empirical analysis and to a discussion of the findings. Finally, section 'Concluding Remarks' presents some of the major conclusions and discusses policy implications.

THE BENEFITS OF EDUCATION

The relation between occupations and education levels has been the major focus of skill mismatch literature. While the first generation of studies focused on the impact of overeducation on labour market outcomes, recent research explores the demand-side and the role of employers in generating inequality among skilled workforces.

The Assignment of Graduates and Overeducation

The assignment of individuals to jobs has been discussed by theoretical contributions on overeducation and its impacts on different labour market outcomes, such as wages (Sattinger, 1993), turnover (Jovanovic, 1979) and job satisfaction (Allen & van der Velden, 2001). Overeducation indicates that individuals' investments in education fail to achieve the expected

¹We focus on bachelor's and master's degree holders, that is, graduation and postgraduation. In Portugal, a bachelor's degree is named *licenciatura*, and master's is *mestrado*.

returns; therefore, the skills and abilities acquired over the time spent in school are wasted or inefficiently used.

Recently, studies have moved the focus from supply to the demand side, exploring overeducation from the employer perspective (Bills, 1992; Di Stasio, 2017). This shift reopened the discussion on credentialism, notably in the context of mass HE (Bills, 2016; Tomlinson & Watermeyer, 2022), and acknowledges Thurow's job competition model (1976) as an appropriate theoretical background for this perspective of overeducation.

Thurow's arguments are among the major contributions of the informative role of education, which addresses economic agents' choice in the context of uncertainty about the quality of goods and services. It is an extension of Arrow's screening theory (1973) and assumes that employers prefer to hire more educated people. More precisely, education's role in the job competition model is to identify the applicants who possess cognitive (intelligence) and behavioural (perseverance, work discipline, punctuality, willingness to perform unpleasant tasks and follow some norms of group behaviours) attributes that facilitate learning and consequently reduce employers' training costs. Overeducation positions candidates at the front of the labour queue and improves the probability of hiring due to employers' expectation of their greater trainability. This preference has two major consequences for the labour market and for individuals' investments in education.

The first is the credentials inflation thesis, that is, increasing educational requirements for jobs due to the growing number of advanced education degrees obtained (Collins, 1979). As there are too many qualified people and a limited number of qualified jobs, not everyone will benefit from mass credentials, which consequently become a positional good; that is, although they may enable graduates to access better jobs, they matter less in themselves (Tomlinson & Watermeyer, 2022).

In this context, Elias and Purcell (2004) provide a taxonomy of occupations and discriminate between graduate and non-graduate occupations. Their proposal includes four types of graduate jobs, distinguishing between traditional and new graduate occupations. The methodological option includes a comparison between the occupation and education degree of two generations of workers. Empirical findings indicate that traditional occupations remained stable, while modern and new graduate occupations rose sharply between 1980 and 2000.

The second major consequence is that individuals struggle for advantage in the labour market. Collins (1971) has already pointed out that the

rise in educational requirements together with the renewed role of educational credentials have increased the demand for education. Bills (2016) adds that educational investments represent a defensive response on the part of individuals that, according to Di Stasio (2017), allows them to remain competitive in contexts where employers prefer overeducated applicants. While Di Stasio's empirical evidence supports job competition arguments, that is, overeducated are positioned at the front of the labour queue, this is only the case for candidates whose field of education matches the required occupational skills. In other words, it is the occupation-specific skills that give overeducated applicants a true advantage.

The literature showed that employers influence educated people's job opportunities and respond to the quality of the supply. In the context of an increasing supply of graduates, employers tend to raise educational requirements to reduce uncertainty about applicants' attributes and to hire trainable workers. Policy decisions on HE expansion gave almost all categories of population the opportunity to access HE, but skilled jobs remained scarce in the economy. It is expected that young graduates will continue to invest in education to jump to the front of the labour queue and acquire credentials that attest to their abilities and skills.

Education and the Labour Market: Studies from Portugal

The literature on the relationship between education and labour in Portugal gained momentum after the expansion of higher education, and it centred on the benefits of education in the context of the increasing supply of graduates in the workforce (Portugal, 2004; Centeno et al., 2010). Since then, a couple of topics have emerged alongside the reforms and the population's educational attainment.

However, it is important to start by underlining the economic context of the expansion of higher education in Portugal. In fact, the higher education reform, which implemented the Bologna Process, virtually coincided with an economic crisis in the country. The Portuguese government formally adopted the Bologna model in 2006 (DL 74/2006 of 24th March²) implementing the 3+2 model; the enrolment of students in the new structure began in the 2006/2007 academic year in more than 40% of higher education institutions, and the process was completed in 2008/2009 (see Eurydice, 2007; Portela et al., 2009 for more details

²<https://dre.pt/dre/detalhe/decreto-lei/74-2006-671387>

about the implementation). The expansion of higher education after the reform led to a rise in the number of both bachelor's and master's graduates in the Portuguese labour market (Almeida et al., 2017).

On the other hand, Portugal went into an economic recession in 2008, with unemployment reaching unprecedented levels. The Portuguese government requested external financial assistance in 2011; the lenders imposed strong budget constraints on government expenditure through cuts in public investment, a reduction in public employment and cuts to the wages of civil servants (OIT, 2013).

One set of studies focuses on the impacts of the expansion of higher education on earnings (Figueiredo et al., 2013), the type of jobs assigned to graduates (Cardoso, 2007; Figueiredo et al., 2017) and a typology of graduate jobs (Ramos et al., 2014). Other literature is concerned with the graduates' transition into the labour market and the quality of jobs, notably the impact of the higher education expansion and economic recession on the quality of graduate jobs (Suleman & Figueiredo, 2020). Table 7.1 summarises this literature and highlights the major features and findings of the studies.

The administrative data set, *Quadros de Pessoal*, is the major source of data used to examine the impacts of education on labour market outcomes. It includes key information on the employment relationship, notably wages, contractual arrangements and working time. The data set has therefore been used in a range of research, especially labour market outcomes. As the data are collected annually, the research benefits from longitudinal data that allow an evolutionary perspective. Not surprisingly, most of the research using the *Quadros de Pessoal* data shows changes in labour market outcomes over time.

The findings illustrate that the returns to higher education are sensitive to the interplay between supply and demand. An increasing supply of graduates contributes to a reduction in the premium; nevertheless, there is still a reward for educated people. This downward trend started at the end of 1990, as noted by Cardoso (2007), and the expansion of higher education later impacted on the value of master's and devalued bachelor's degree (Almeida et al., 2017; Suleman & Figueiredo, 2020). While the wage differentials among bachelor's and master's degree holders was null at the beginning of the Bologna Process, the Portuguese labour market has now started to positively differentiate master's graduates. Almeida et al. (2017) add further insights on wage differentials among graduates (bachelor's) and postgraduates (master's). The postgraduation reduces

Table 7.1 Studies on education and the labour market in Portugal

<i>Goals</i>	<i>Data and methodology</i>	<i>Main findings</i>	<i>Reference</i>
<i>Benefits of education and the impacts of higher education expansion</i>			
Provide evidence on the monetary and non-monetary benefits of HE	Employment survey (2003) and administrative data Quadros de Pessôal (1999). Calculate the costs and benefits of continuing to HE	The rate of return to education is exceptional (15%). There are also non-monetary benefits: lower probability of being unemployed, having a fixed-term or part-time job. There are also wage differentials among fields of education	Portugal (2004)
Reassess the benefits of education with expansion of schooling in the population	Quadros de Pessôal (1982, 1995, 2006). Quantile regression to examine the benefits along the wage distribution	There is an education premium, but it varies along the distribution. The returns to education have changed: in 1982 and 1995, the premium was higher due to the limited supply of graduates. In 2006, the increase in graduates led to a reduced premium. However, the Portuguese labour market continues to reward skilled workers	Centeno et al. (2010)
Examine the evolution of relative earnings premiums for young HE graduates	Quadros de Pessôal (1995 and 2009). Quintile regression model and comparison for two age cohorts: 26–36 and 45–54	There is a decline in the education premium and a great dispersion. There was a marked deterioration for graduates in lower quantiles, but the premium remained high in the upper quantile	Figueiredo et al. (2013)

(continued)

Table 7.1 (continued)

<i>Goals</i>	<i>Data and methodology</i>	<i>Main findings</i>	<i>Reference</i>
Examine the returns to postgraduate education	Quadros de Pessoa (2007–2012). Quantile regression and shift-share analysis	There are significant and increasing returns to postgraduate education, while the returns to graduation are decreasing. The assignment of postgraduates to certain occupations reflects displacement effects, with postgraduates increasingly displacing graduates, and graduates subsequently displacing non-graduates in low-paid and less challenging jobs.	Almeida et al. (2017)
<i>Transition into the labour market</i>			
Examine the impacts of different contractual arrangements on wages of young bachelor's and master's degree holders. Compare the impact for post-Bologna graduates that entered labour market during the recession.	Quadros de Pessoa (2007 and 2011) and a treatment-outcome model for multinomial choice of contractual arrangements.	There are 4 types of contractual arrangement: one standard, with a stable and full-time contract, and other non-standard arrangements with different combinations of contract and/or working time flexibility. The wages vary among contractual arrangements, but there are differences over time. Non-standard jobs involve a greater penalisation than standard jobs. The crisis impacted negatively the most precarious jobs, while the expansion reduced the value of the bachelor's degree and created a reward for master's	Suleman and Figueiredo (2020)

(continued)

Table 7.1 (continued)

<i>Goals</i>	<i>Data and methodology</i>	<i>Main findings</i>	<i>Reference</i>
<i>Jobs of graduates</i>			
Examine whether graduates are assigned to jobs requiring non-university degrees	Quadros de Pessoa (1986–1999) and Gottschalk and Hansen (2003) classification of college and non-college jobs	From 1986 to mid-90s, graduates enjoyed a rising wage premium relative to high school graduates, but this then declined. In this time frame, the probability of a young university graduate being employed in a non-university job fell sharply. Women are more likely to be in non-graduate jobs.	Cardoso (2007)
Classify the jobs of graduates during their transition into the labour market	Dedicated survey applied to holders of a bachelor's degree from 2 Portuguese universities who completed higher education in 2004/2005. The sample includes 1004 bachelor's degree participants whose jobs were examined through a multiple correspondence analysis	A continuum from very vulnerable and precarious situations to good employment conditions. The typology includes 5 types of insertion into the labour market: strongly fragile, fragile insertion, classical employment, qualified employment (employed) and qualified insertion (employers and public administration). The contractual arrangements, working time and wages vary from precarious, reduced time and low wages to the opposite conditions	Ramos et al. (2014)

(continued)

Table 7.1 (continued)

<i>Goals</i>	<i>Data and methodology</i>	<i>Main findings</i>	<i>Reference</i>
Examine the impacts of mass HE on the type of occupation assigned to graduates. Explore its relationship with overeducation, overskilling and skill mismatch	Two data sets: Labour Force Survey to examine the share of graduates in each occupation and its change over time (2000 to 2010). Cluster analysis Elias & Purcell strategy were applied to classify occupations. REFLEX data were used to explore the relationship between occupations and skill mismatch.	3 clusters of occupations were found: traditional (TGJ), latent (LJ) and new graduate jobs (NGJ). In 2000, 56.45% of young graduates were TGJ, and the others were equally distributed between the other 2 types. In 2010, and after massification, there is an increasing share of young graduates in LJ or NGJ. Graduates in TGJ report less mismatch, while in LJ they report higher overskilling.	Figueiredo et al. (2017)

the probability of young people being assigned to low-paid and less attractive jobs. The authors assume that the wage premium of postgraduates might reflect an upskilling process and a displacement effect, where the postgraduates displace graduates, and graduates displace non-graduates in low-quality jobs.

The expansion of higher education has also impacted graduates' jobs. In the early 1990s, graduates were seldom found in non-graduate jobs, but later a non-negligible proportion of graduates worked in so-called new graduate jobs (Figueiredo et al., 2017). Furthermore, the graduate labour market is segmented, and graduates are assigned to precarious or good jobs: with flexible/stable contracts, part-time/full-time and low/high wages (Ramos et al., 2014; Suleman & Figueiredo, 2020). These authors note that different contractual arrangements impact the wages. The economic crisis has further increased the penalisation of more precarious jobs.

Until now, we have focused on the relationship between education and the labour market. However, some literature provides insights into some of the major outcomes of the Portuguese labour market.

For example, Marques et al. (2022) examine the demand side and provide evidence on the relationship between overqualification and types of

industries and services. There is a sharp increase in the share of graduates in the Portuguese economy, but high-tech manufacturing and services sectors have a low weight in GDP. This was further associated with low GDP growth. All these elements contribute to a high incidence of overqualification.

In light of the literature, we can expect an increase in the distribution of graduates in non-graduate jobs over time, notably as an outcome of growing supply. However, the differences between bachelor's and master's degree holders deserve scrutiny. The literature fails to show whether firms have become more demanding in terms of the education level. More specifically, according to the OECD data, the number of master's students in Portugal (33%) is more than double the OECD average (16%) (OECD, 2019). So, have employers upgraded the hiring criteria to require a master's degree in response to the increasing supply? In addition, to what extent are bachelor's assigned to less-skilled occupations?

DATA AND METHOD

Like other Portuguese researchers, we use the Portuguese linked employer-employee data—*Quadros de Pessoal*, which includes employee- and firm-level information. It is a longitudinal data set compiled annually by the Ministry of Labour, Solidarity and Social Security based on a standard inquiry, which is mandatory for every firm with wage-earners (see Cardoso & Portela, 2009; Cardoso & Portugal, 2005 for details). It comprises the private sector and state-owned enterprises in Portugal. Our research focuses on young people (15–29 years old) with a HE degree and non-graduates and uses the data from 2007 to 2019 to identify changes in the distribution and composition of occupations over time. We opted for a 2-year interval, and therefore present empirical evidence on seven years.

We chose the classification used in CEDEFOP (2011)³ since it allows us to address the required qualifications. The classification provided by Elias and Purcell (2004) is sensitive to the supply of skills. We therefore used four clusters of occupations to examine how graduates are assigned to different types of occupations over time, namely high skilled, skilled non-manual, skilled manual and elementary.

Table 7.2 presents the summary statistics of our sample. The figures in Table 7.2 indicate an upward trend in young graduates and postgraduates,

³https://www.cedefop.europa.eu/files/5509_en.pdf

Table 7.2 Descriptive statistics

		2007	2009	2011	2013	2015	2017	2019
Education level	Bachelor (%)	12.58	15.58	17.08	17.79	17.92	18.33	19.29
	Master (%)	0.49	0.86	1.44	2.61	3.70	4.35	5.05
	Non-graduates (%)	86.93	83.56	81.48	79.60	78.38	77.32	75.66
Gender	Female (%)	47.37	48.21	48.21	48.86	48.56	47.84	47.33
Type of occupation	High skilled (%)	16.55	18.92	21.03	21.01	21.02	20.90	22.69
	Skilled non-manual (%)	42.70	45.15	44.71	44.87	44.74	45.00	44.72
	Skilled manual (%)	28.00	24.05	23.53	22.64	21.75	21.02	19.89
	Elementary (%)	12.74	11.88	10.73	11.49	12.49	13.09	12.70
Age	Age (mean)	24.92	25.09	25.20	25.35	25.15	24.96	24.90
	Age (SD)	3.09	3.00	2.95	2.85	2.90	2.97	2.99
Wage	Hourly wage (mean)	3.84	4.20	4.51	4.58	4.60	4.98	5.57
	Hourly wage (SD)	2.07	2.18	2.06	2.02	1.96	2.00	2.31

Source: Quadros de Pessoal; SD means standard deviation

and a decline in non-graduates. More specifically, the non-graduate group clusters all young workers with secondary education or less. In 2007, 56.0% of young people had basic (compulsory) education (9 years of schooling), and in 2019, this figure fell to 28.1%. The education reform in 2009, which changed the minimum education level to secondary education (12 years of schooling), certainly contributed to this dramatic transformation.

EMPIRICAL EVIDENCE AND DISCUSSION

Our empirical analysis comprises topics that provide a picture of the supply side, that is, the supply of skills over time, and the labour market outcomes regarding the work of graduates. The next section presents an overview of investments in education, and then we move to the labour market of young graduates in Portugal. Our major focus is the type of occupation assigned to bachelor's and master's degree holders. However, we also compare with non-graduates to make our analysis clearer. Some notes are also included on gender differences when necessary to understand the impacts of the expansion of higher education.

The Supply of Graduates

Although the skill deficit is a key feature of Portuguese society, great efforts have been taken to increase the qualifications of the population. The major outcome of the investments in education is the coexistence of older less educated people with young more educated people. This has resulted in a growing generation gap and raises concerns about the labour market outcomes of young graduates.

The data reported in Fig. 7.1 evidence a growing generation gap from 2007 that has become more marked in recent times. There is also a gender gap, with women investing more in education than men (Fig. 7.2), especially since 2014.

The investments made in higher education in Portugal resulted in a supply of highly skilled young people, thus raising the following question: What are the employment trends of young higher education graduates in Portugal? Our empirical analysis attempts to illustrate how bachelor's and master's graduates are distributed across the types of occupations.

The Distribution of Graduates Across Types of Occupation

Figures 7.3a and b provide a picture of the occupations of young bachelor's and master's degree holders. The data show that high-skilled occupations continue to absorb graduates (more than 60% of bachelor's and more than 80% of master's), but we find a downward trend for bachelor's graduates and an upward slope for master's graduates from 2011. On the

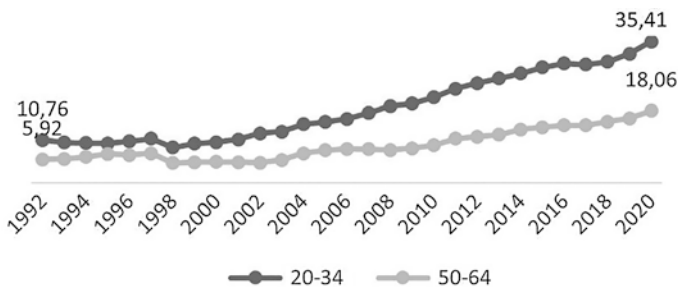


Fig. 7.1 Educational attainment: generation gap among HE graduates (%). (Source: EUROSTAT)

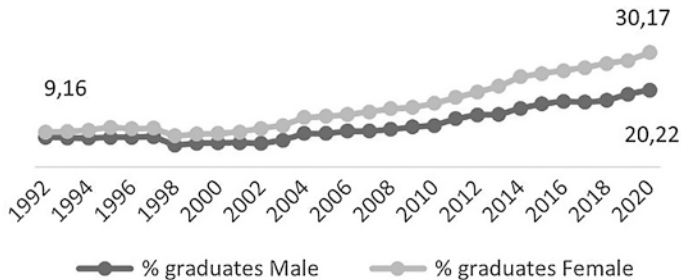


Fig. 7.2 Educational attainment: gender gap among young HE graduates (%). (Source: EUROSTAT)

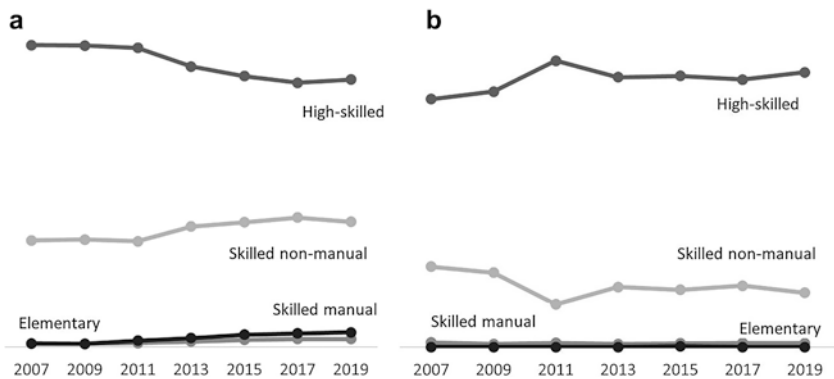


Fig. 7.3 (a) Bachelor's graduates (%). (b) Master's graduates (%). (Source: Quadros de Pessal)

other hand, the number of bachelor's graduates in elementary occupations has increased.

The data in Fig. 7.4 show the composition of each type of occupation by education level. Looking at the 2007–2019 time frame, high-skilled occupations have increased the qualification requirements. The proportion of master's degree holders rose from 2.2% in 2007 to 18.4% in 2019. It indicates a downward trend of young bachelor's graduates and non-graduates in these occupations, which are filled by young postgraduates.

Considering these findings, we explored the specific occupations inside the broad category of high-skilled occupations (Fig. 7.5). The

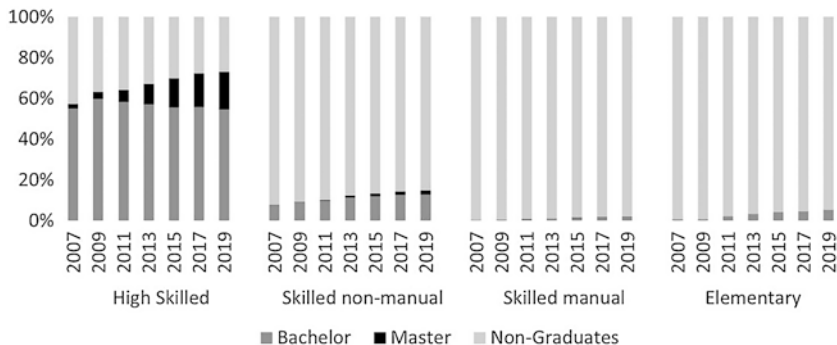


Fig. 7.4 Distribution of graduates across types of occupations classification (%). (Source: Quadros de Pessal)

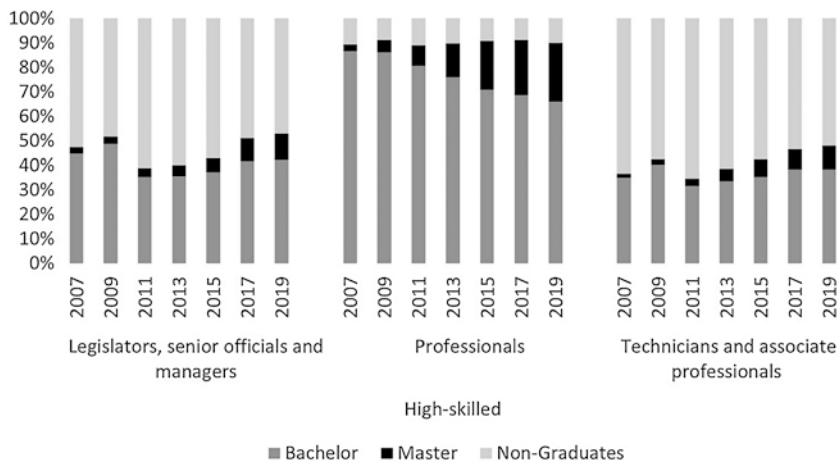


Fig. 7.5 The decomposition of high-skilled occupations. (Source: Quadros de Pessal)

decomposition highlights two features of high-skilled occupations in Portugal. Firstly, the legislator, professional and technician groups continue to hire young people without higher education. About half of the workers in these groups are non-graduates, with master’s graduates making up around 10%. In sum, the professional group seems to be the most

dynamic and shows the largest increase in postgraduates. The other two groups, legislators and professionals, had slight increases.

Figure 7.4 also shows that elementary occupations represent an option for young bachelor's graduates, especially from 2011. There are three times as many bachelor's degree holders in 2011 as in 2009. The increase has since continued, albeit slowly (5.3% in 2019). Therefore, the contribution of elementary occupations to graduate employment is still relatively small and raises no concerns about the potential underutilisation of skills.

Bachelor's graduates tend to occupy skilled non-manual occupations in clerical services. The upward trend in this type of occupation is accompanied by a decline in high-skilled occupations (Fig. 7.3a). Additional evidence presents the distribution by gender. The presence of women in high-skilled and elementary jobs decreased over time, but it increased in skilled manual and skilled non-manual occupations from 2013. Women tend to be assigned to clerical, sales or manufacturing jobs. The pattern for male workers is the inverse.

Industry Affiliation: Education and Occupations

Just as with the occupation type, the distribution of graduates varies across industries. Some can be viewed as graduate industries, while others are less attractive for holders of higher education degrees. Finance, IT, consultancy, health and education are generally graduate industries and started to recruit master's degree holders from 2013. It is important, therefore, to examine the sectors where the proportion of graduates is increasing. Figure 7.6 provides evidence on the sectors that have less than 10% of bachelor's graduates in 2007, but with a subsequent increase in this percentage.

Two industries have a regular upward trend: manufacturing and trade. A similar pattern occurs in the hospitality industry (HORECA), with a slight decrease in 2019. Trade and hospitality are labour-intensive industries and appear as job opportunities for graduates. The data also show that bachelor's graduates tend to be assigned to elementary occupations in these industries. However, whereas there is a more marked upward trend of allocating graduates to less demanding jobs in commerce until 2019, there is a downward trend in other sectors.

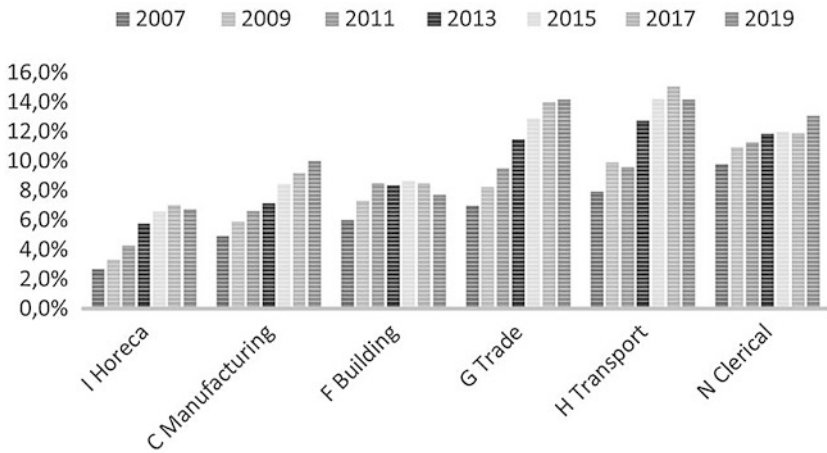


Fig. 7.6 Distribution of bachelors in non-graduates' industries. (Source: Quadros de Pessal)



Fig. 7.7 Mean hourly wage by education level. (Source: Quadros de Pessal)

Wages: Education and Occupations

The literature shows that the benefits of higher education in the context of expansion is one of the major concerns among researchers. The data in Fig. 7.7 show different trends. It should be noted that we limited the non-graduates to those with secondary education.

Between 2007 and 2009, there was almost no wage differential between bachelor's and master's graduates; the divergence then started and became more accentuated between 2009 and 2011 (bachelor's: 6.98, 6.78; master's: 6.83, 7.58). The data in Fig. 7.7 show a general decline between 2011 and 2015, and then a growing gap between the wages of graduates and postgraduates.

Our analysis also focuses on the wage differentials across types of occupation. As can be noted from data in Figs. 7.8(a) and 7.8(b),⁴ there are no visible differences between bachelor's and master's degree holders in highly skilled occupations between 2007 and 2009. The pattern changes, and bachelor's graduates lose their monetary advantage after 2009. More precisely, the postgraduates in high-skilled occupations benefit from higher wages over the years under scrutiny and are also at an advantage in skilled non-manual and skilled manual occupations. In contrast, the bachelor's degree seems to be devalued in all types of occupation, except elementary jobs.

Bachelor's graduates are given skilled manual and elementary jobs with low wages. Their wages have been closer to the mean since 2013, but in 2009 they were below the mean. In sum, graduates lost their advantage in high-skilled jobs, and wage differentials in less-skilled or elementary occupations are negligible and closer to the mean. The postgraduates benefit from working in high-skilled jobs as well as in other skilled jobs. There are almost no master's degree holders in elementary occupations.⁵ The data also revealed that those with secondary education have lower wages in all types of occupation, and their earnings tend to decrease over time. They earn slightly above the mean in high-skilled jobs (around 10%), but their wage is below average in all other occupations. The biggest penalisation is seen in elementary jobs.

Discussion of the Findings

The huge investments in HE raised concerns about the jobs assigned to graduates in Portugal. Previous research has already pointed to the heterogeneity in the demand for graduates and consequently their assignment to different jobs (Figueiredo et al., 2017). Our findings show some

⁴The figures measure the mean hourly wage of bachelor's and master's graduates relative to the average wage of workers in each occupation.

⁵In 2013, 2017 and 2019, there were only 3 postgraduates; in 2015, the number was 42.

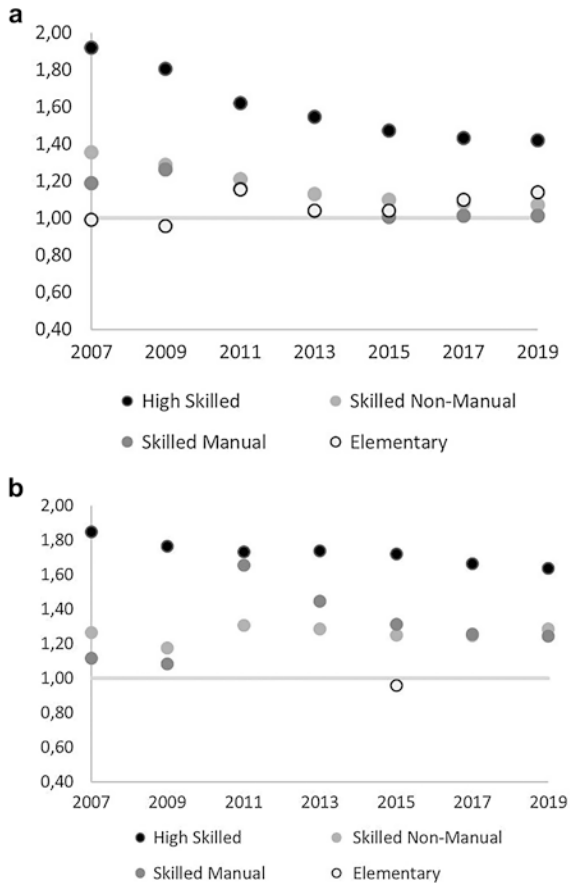


Fig. 7.8 (a) Mean hourly wage to average wage by occupation: bachelor's. (b) Mean hourly wage to average wage by occupation: master's. (Source: Quadros de Pessal)

positive signs, but also sound some alarms. We also found that the expansion of HE most affected bachelor's degree holders.

In relation to occupation type, postgraduates are basically assigned to high-skilled jobs, taking up places previously held by bachelor's graduates (Almeida et al., 2017). In fact, postgraduation protects young people from elementary jobs as demonstrated by the small number of master's

graduates in the lowest skilled occupations. The findings suggest that a master degree helped graduates to position ahead in the labour queue for highly skilled occupations (Bills, 2016), and more importantly in the technical fields of education (Di Stasio, 2017). It remains unclear whether it represents a credential inflation (Collins, 1979) or a true productivity enhancing option of employers. Furthermore, the rise of master's degree holders in Portugal (OECD, 2019) may be a defensive strategy of young people to escalate the labour queue (Bills, 2016).

Additionally, research has already shown that employers claim that young people lack maturity, which they consider a key personal trait (Suleman & Laranjeiro, 2018). Probably, the overeducated applicants, as the master graduates might be, have competitive advantage due to employers' expectations regarding cognitive and behavioural attributes that facilitate learning and, consequently, reduce training costs (Thurow, 1976). Ultimately, the discourse on employability skills and graduates' attributes misses how market rules influence the access of graduates to different types of jobs (Tomlinson & Watermeyer, 2022).

On the other hand, we must question the concerns about the assignment of graduates in non-graduate jobs. Our findings indicate that despite the rising proportion of bachelor's degree holders in elementary jobs, the figures are insignificant (around 5% in 2019) and raise doubts about the incidence of overqualification in Portugal (Marques et al., 2022). The most relevant growth occurs in skilled non-manual work, which indicates that clerical jobs are being filled by bachelor's graduates, especially women. There are also signs of gender segregation by occupation; female bachelor's graduates are overrepresented in traditionally female-dominated occupations, such as clerical work. Furthermore, the proportion of women in high-skilled jobs is tending to decrease. Ultimately, a combination of less-skilled jobs and low pay may particularly affect women in Portugal. This finding requires further research, especially due to the investments in HE by women in Portugal. Once again, pursuing education might be a preventive action to remain competitive in the labour market (Bills, 2016).

Additionally, the increasing supply of graduates benefits the industries that graduates traditionally find less attractive (Trow, 1973). The figures on industry affiliation corroborates Trow's arguments and show that trade, manufacturing, hospitality and clerical sectors have followed a skill upgrade pattern. If this pattern maintains in the coming years, HE will be providing graduates for industries and occupations that are unable to take advantage of their high-level knowledge and skills. Herein, the credential

inflation will produce crowding-out effects, contributing to exclude non-graduates from the labour market.

The empirical evidence pointed to a high incidence of non-graduates in managing and technician positions. There has been extensive discussion in the media and among some academics about the low level of education among managers in Portugal (Cantante, 2018). According to the author, the ability for innovation and economic dynamics can be jeopardised by the low qualifications of the managers. Many workers are more educated than their managers, and if nothing is done to improve their qualifications, the economy will suffer. This pattern is most visible in small and medium businesses, which are prevalent in the Portuguese economy.

The wage gap between different levels of education is a major issue in research in Portugal. Our findings are in line with those of Suleman and Figueiredo (2020) in that the labour market did not differentiate bachelor's and master's graduates at the start of the Bologna Process. We provide evidence on the growing gap from 2009, showing a devaluation of the bachelor's diploma. More specifically, we observed a decline in wages between 2011 and 2015 that can be attributed to the economic crisis, and the gap between graduates and postgraduates since then can be attributed to the expansion of HE and probably to credential inflation. Further research should explore whether postgraduates will follow the same pattern as bachelor's degree holders so that they lose their advantage in high-skilled jobs.

CONCLUDING REMARKS

Our study provided a picture of the graduate labour market in Portugal after the higher education reform in 2006–2007. The expansion of HE increased the supply of graduates, and the most marked consequences of this were seen at the bachelor level. We found a small but increasing proportion of holders of a bachelor's degree being assigned to elementary occupations, having job opportunities in 'non-graduate' industries, and earning lower wages than those with a master's degree. The wage decline is more marked in high-skilled occupations, but wages are closer to the mean in other occupations. It seems that a master's degree is the new basic higher education diploma; this raises doubts as to the role of bachelor's degrees in Portugal.

The relevance of postgraduation must be questioned in terms of both the distribution across occupations and the wage differentials. Does it

reflect a credential inflation or a reward for productive skills? In other words, do employers perceive more schooling as the acquisition of unobservable characteristics that they are willing to reward, or do they really need high-level knowledge and skills to face the changing economic challenges? A detailed description of jobs shed light on these questions.

Policymakers should address this consequence of expansion and implement policies to guarantee adequate jobs for graduates and support investments in postgraduation. The employers are reacting to the supply of highly skilled workforce by raising the hiring criteria. The consequences are risky: the potential displacement of graduates and subsequently of those with only secondary education to low-skilled and low-waged jobs or even to unemployment is a paradox in a country with a low qualification structure. Stakeholders of HE and policymakers must tackle the multidimensional effects of expansion and organise the labour market to achieve a win-win outcome.

In conclusion, Portugal has made huge investments to ensure the supply of qualified labour, but employers, that is, the demand side, are the key actors to transform workers' knowledge and skills into a competitive advantage in the global market and to avoid credential inflation. Therefore, policymakers should design appropriate tools to reduce the qualifications gaps of managers. It is time to believe that qualified managers and leaders will take better advantage of workers' skills, improve their competitiveness and boost economic growth.

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