

**GENDER WAGE DISCRIMINATION ACROSS
PORTUGUESE TERRITORY AND ITS LOCAL
DETERMINANTS**

by

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Abstract

Discrimination practices against women within the labour market are widely common and a matter of great concern for academics, policymakers and the society at large. Focusing on wage discrimination practices, this study aims at understanding the role that demand factors play in explaining the wage discrimination gap in Portugal. Using a rich matched employer-employee data set — *Quadros de Pessoal* — we explore cross-regional variations to identify the role of labour demand on the gender wage gap.

Estimating a mincerian wage equation that accounts for worker, firm and job characteristics, the empirical estimates revealed a total hourly wage discrimination gap of -13.6 log points in mainland, varying from -0.4 to -24.4 log points across Portuguese counties. This reinforces the existence of a territorial heterogeneity in wage discrimination practices that enables us to use county variations to identify the impact of local labour market forces on the wage discrimination gap.

Regarding the demand side factors, the regression results at the county level showed that municipalities with a higher share of workers in the secondary sector exhibit a larger discrimination gap. Contrarily, counties with a higher share of workers employed in micro establishments and with a higher share of minimum wage earners exhibit a smaller discrimination gap. On the labour supply side, the results revealed a positive impact of the youth activity rate (from 25 to 34 years old) on the discrimination gap, i.e., employers in counties with a higher supply of workers aged 25-34 seem to have more room to discriminate against women. Fi-

nally, concerning the state of the local labour market, the estimates indicate that counties with high unemployment rates face low discrimination gaps, *ceteris paribus*.

Keywords: gender, wage discrimination, heterogeneity, territory

"In considering research on gender differences in psychological attributes or non-cognitive skills, some cautions must be borne in mind. First, even if men and women do differ on average, it is not possible at this point to know the role of nature versus nurture."

Blau and Kahn (2016)

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Chapter 1

Introduction

Gender discrimination involves a vast list of topics in the most varied areas, from nursery education to labour market or health care access. Nowadays, the topic is broadly discussed and a matter of great concern for policymakers and society at large. In Portugal, measures such as criminalising street harassment and imposing gender balance on corporate boards show a growing consciousness on the issue. Despite this, gender equality is far from reality.

In the labour market, gender discrimination can take many shapes: the difficult access of women to management and top management positions, known as *the glass ceiling effect* (Ransom and Oaxaca, 2005; Cannings and Montmarquette, 1991), the concentration of women in less paid industries, establishments or occupations (Groshen, 1991) or simply a lower wage for an identical job position (Petersen and Morgan, 1995; Heyman et al., 2013; Manning, 2003). In this dissertation, we will focus on the latter topic.

An extensive empirical literature provides important evidence on the existence of a wage gap between men and women, even after taking into account differences in individual's, firm and job title characteristics (e.g., Cardoso et al. (2016)). In the present study, we will provide empirical evidence in order to understand if *discrimination* is homogeneous at the county level in Portugal. If not, we will try to

identify the local factors that can explain this heterogeneity. Do the characteristics of the supply or demand of labour impact on gender wage discrimination in a certain municipality? Do social traits of the population influence the discriminatory behaviour? These are the questions to be responded within the scope of this dissertation.

We will start by estimating the discrimination gap — the part of the total gender pay gap that remains unexplained when worker's, firm and job title characteristics are taken into account — at the county level, by using a linear regression model, to understand if there are relevant differences across the Portuguese territory. Furthermore, we will investigate local determinants of the gender wage discrimination gap by estimating one linear regression and controlling the impacts of these local determinants on the local discrimination gap. Regions in Portugal are quite heterogeneous from many perspectives and the study of the association between gender wage discrimination and characteristics of the local labour market as well as social traits of the population is a very interesting yet quite unexplored topic.

This dissertation is structured as follows. In Chapter 2, we review previous literature on gender wage discrimination. In Chapter 3, we estimate the discrimination gap at the county level and, in Chapter 4, we study the impacts of local determinants on the discrimination gap. Chapter 5 concludes.

Chapter 2

Gender discrimination

2.1 Theoretical explanations on gender discrimination

Economic discrimination occurs when an individual or a group of individuals is differentiated based on economic factors, such as income, job availability and the price or availability of goods and services. In this context, the concept of economic discrimination can be related to wage gaps among workers. In practical terms, it can refer to pay gaps between equally productive individuals, usually related to their association to specific groups of the population according to gender, race, religion, etc. (Cain, 1986). It is then important to distinguish if discrimination is due to a group membership, such as gender, race or religion, or specifically towards an individual (within-group discrimination), with no regard for such membership characteristics (Aigner and Cain, 1977).

Economic discrimination against workers can be originated on the worker side or on the employer side. The former occurs when workers discriminate a minority by demanding higher wages to accept working together, which leads to the segregation of work forces. On the employer side, two situations may occur. Firstly,

the assumption that any employer has the same prejudice against a minority lowers the supply and inherent wages for that minority workers. Secondly, assuming employers' taste for prejudice can differ, some may constantly under evaluate a group's average abilities, also resulting in lower wages (Aigner and Cain, 1977). One possible cause of this labour market discrimination is a pre-market discrimination, which leads to lower skills of certain minorities that will ultimately lead to wage discrimination. Altonji and Blank (1999) claim the existence of pre-market discrimination towards women related to low family expectations concerning future work and impacting educational choices and opportunities. The authors add that, in this context, women foresee the difficulties they would face if wanting to pursue a *man's job* and would invest less energy to attain the skill set necessary for that job, creating some sort of a snow-ball effect.

There are several theories on how **discrimination against women** emerged. Trentham and Larwood (1998) argue that part of the gender discrimination, the concentration of women in low-paying jobs, is due to individual preferences and specificities that occur because of different education and training, gender-role socialization, stereotypes and personal values and prejudices. Sz wajkowski and Larwood (1991) attribute to the fields of human capital, economics, psychology and sociology a joint responsibility on explaining gender discrimination, from wage gap regression studies to sex role socialization studies. Different authors point to the main causes of gender discrimination emphasizing aspects such as psychological traits and non-cognitive skills opposing women to men, e.g. as women being less capable of negotiating or more risk averse. However, as interestingly discussed by Blau and Kahn (2016), even if such differences currently exist, it is not possible to distinguish *nature from nurture*, given the sociological and cultural context in which women have been involved. Since the 1950s, following the Second World War, awareness and sensitiveness for the discrimination topic rose widely and many non-discrimination principles, including some regarding gender, emerged (Besson, 2008).

From the 1970s to the 1990s, due to the development of new technologies and inherent less importance of physical strength, the United States experienced a great increase in the returns to skills, leading to a significant reduction in the wage gap (Borghans et al. (2016)). Bacolod and Blum (2010) add the increasing demand for social skills as a cause of the gap narrowing. Also, the growing competitiveness of firms in response to globalization helped reducing the gap (Black and Brainerd (2004)). Blau and Kahn (2016) corroborate the long term decreasing trend, providing empirical evidence from 1980 to 2010, adding that occupations and industry are still an important cause of gender wage differences and concluding that the discrimination gap decreased much more slowly at the top of the wage distribution.

Gender discrimination can be analysed from many different perspectives. Many authors attribute a great part of the gender wage gap to the gender composition along the job and occupations ladder. Treiman and Hartmann (1981) argue that women are paid less because they are more likely to be employed in low paid jobs, such as clerical and services. This first concept is called *evaluative discrimination*, one of the most important causes of the gender wage gap. Groshen (1991) analysed the gender wage gap in the US, from 1974 to 1983, and concluded that occupation explained the most significant part of the difference, from one third in manufacturing to two thirds in services. Many other authors, such as Press (1986), argue that sex segregation is the main cause of the gender wage gap. Jabbar et al. (2016) discussed the teaching example to illustrate that sex segregation matter, detailing the process of feminization in the mid-1800s when men started leaving the activity to pursue more promising opportunities. The *within-job or taste-based discrimination* occurs when an individual earns a different wage than an equal, and is found to be less important by several authors (Petersen and Morgan, 1995; Groshen, 1991). It is also the type of discrimination that tends to disappear in the long run as it represents an inefficient allocation of resources: it means disregarding valid and skilled women just because of their gender. Also, firms from competitive sectors have a much higher

pressure towards efficiency and are theoretically the least discriminant (Heyman et al., 2013). Opposingly, other authors argue that every market is imperfect and therefore discrimination can prevail indefinitely (Manning, 2003). This is the type of discrimination that we will study. Thirdly, the *allocative discrimination* concerns the limitations that female workers face in the access to well-paid or even top management positions. This phenomenon is called *the glass-ceiling effect*, as if a sort of transparent barrier was depriving women of reaching higher positions or higher pay checks. The main difference between the *allocative* and the *evaluative* forms of discrimination is that the first regards a vertical segregation of gender while the latter points to an horizontal concentration of women across less rewarding activity sectors or firms. Cardoso et al. (2016) provide empirical evidence that corroborates the presence of a *glass-ceiling effect* in the Portuguese case. The authors found a significant widening of the gender gap when comparing the 10th percentile to the median and to the 90th percentile.

Another theory, suggested by Huertas et al. (2016), separates discrimination into horizontal and vertical segregation: the horizontal being related to the evaluative discrimination and the vertical to the allocative. Furthermore, they add to this context the concept of *sticky-floors*, with respect to unfair promotions and wage adjustment practices, as if female workers kept metaphorically stepping on some sort of slimy pavement sticking their feet down. Similarly, the *glass-ceiling effect* is again mentioned by these authors, embracing the same stigma although relating more specifically to top management job positions being hardly accessible to women.

2.2 Measuring the gender wage discrimination

In Europe, since the 1990s, female workers steadily became more present in the labour market. Cipollone et al. (2012) studied the female labour force participation from 1990 to 2008 and observed, for many European countries, an increase from 55%

to 66%, accompanied by an increase of the female employment rate from 49% to 61%, although still with a relevant portion of temporary or part-time employment. However, the gender pay gap is still a reality throughout Europe. According to the most recent Eurostat studies from 2015, unconditionally, a woman earns on average less 16,3% than a men, ranging from 5,5% in Italy and Luxembourg to 26,9% in Estonia. In this indicator, Portugal scores a 17,8% unadjusted pay gap, with a growing trend since 2006. However, further analysis is needed in order to understand what portion of this gap can be attributed to discrimination.

There is a large number of studies on wage discrimination in the **Portuguese labour market** in the past decades. González et al. (2008) analysed and decomposed the gender pay gap, i.e., the total average difference of men and women's wages, in Portugal, between 1985 and 2005, and concluded that discrimination is the major contributor to the gap. In 2005, the total gap was 22 log points, slightly lower than 1985's gap of 24 points. Of these totals, 67% and 52%, respectively, were due to discrimination practices. Moreover, the authors conclude that industry accounts for 80% to 98%, respectively in 1985 and 2005, of the endowments part of the gap (the remaining part besides discrimination), being responsible for the widening of the gap. Human capital variables contributed to the gap's reduction in 2005, in opposition to previous years.

Cardoso et al. (2016) analysed mainland Portugal from 1996 to 2008 and observed a raw gender wage gap of 24 log points throughout the period. When controlling for the employees' age, it lowers to a conditional gap of 23 log points. 19% of this gap is attributed to the high allocation of women to firms of lower average quality and other 19% to job characteristics. Almost two thirds of the total gap remain unexplained and can be attributed to gender discrimination. According to the same study, over the past twelve years, the raw gap decreased, mostly due to a convergence in workers' characteristics and firm allocation, and the discrimination component also decreased. However, women's access to well paid jobs worsens over

time and would have, by itself, contributed to widening the gender pay gap.

Vieira et al. (2003) add an interesting point of view on gender discrimination through the analysis of the proportion of females in an establishment and its relation to females' wages. The authors concluded that the concentration of women accounts for 11% (in 1985) to 25% (in 1989) of the gender pay gap and that a higher relative presence of women has a negative impact on women's wages and a positive impact on men's wages. Hultin and Szulkin (1999), using data from Sweden, studied the impact on the employees' wages of a gender-differentiated composition in the management structure. Contrarily to Portugal, the results show that a strong female power structure impacts positively on women's wages while a strong male composition impacts them negatively. Male employees' wages are not affected by any scenario.

As an alternative to OLS methods, authors such as Figueiredo and Botelho (2013) and Mendes (2010) used quantile regressions and conclude that gender wage differences grow along the wage distribution, meaning that higher levels of income present higher gender gaps. The authors claim that OLS overestimates the gap for lower quantiles and underestimates differences for upper quantiles.

There is a large number of studies regarding gender discrimination and the gender pay gap across countries and over time. For an insightful empirical literature review, see, e.g., Gupta et al. (2006); Cipollone et al. (2012); Cochard et al. (2015). However, the research on **within-country territorial dimension** is very scarce.

Hirsch et al. (2013) argue that more populated labour markets will present less discrimination traits since competition is higher and there is less room for such inefficiencies. It was found that, for Western Germany, from 1975 to 2004, young workers have much lower unemployment rates in large metropolitan locations than in rural, a persistent difference of approximately 10 percentage points over 30 years under analysis.

Huertas et al. (2016) studied the differences in the gender pay gap for Spanish regions for the years of 2002, 2006 and 2010. The authors found significant re-

gional differences, with the raw gap ranging from 2 log points in Extremadura (2002 and 2006) to a maximum of 31.5 log points in Asturias (2010). This gap becomes smaller after controlling for relevant variables although still presenting a relevant heterogeneity among the twelve regions. To understand what may be causing these differences, two groups of variables are tested: demographic variables, such as the fertility rate and the age gap of first marriage and variables related to the regional labour market, such as the unemployment rate, minimum wage, the role of unions, and, lastly, the share of regional public employment. The fertility rate has, as expected, a positive and significant impact on the discrimination gap, which can be related to women's larger distance to the labour market over motherhood. The age gap at first marriage also has a positive impact on the wage gap, according to the authors, because of a more pronounced division of labour in couples where the husband is older than the wife. Nevertheless, the estimation shows otherwise, what can be explained by the presence of a high average marriage age in Spain. One possible explanation presented is that marriage is usually linked to an economic stability of both individuals and, therefore, regions with a higher marriage age gap may have better labour conditions to women, sooner achieving the desired stability. The remaining variables present the expected results: higher unemployment rates are related to smaller gender gaps because of a higher pressure over wages; higher minimum wages also benefit women's position, since they are more present at the bottom of the wage distribution; stronger unions and high public employment favour equality amongst workers, impacting positively on equalising women's wages.

Pereira and Galego (2011) added a regional comparison of wages among Portuguese regions, at NUTS II level, between each specific region and Lisbon. The raw gaps are all negative because of Lisbon's higher presence of large companies and stronger industrial structure and higher levels of education and qualification. In 1995, the gaps for men varied between 21% to 33%, when comparing Lisbon to Algarve or to Norte, and between 20% and 35% for women, for the same regions.

The situation is similar in 2002. Decomposition techniques are applied to the raw data and the authors conclude that the behavior among regions is very similar for both men and women. By controlling the regional endowments — education, tenure, occupation, industry, and firm size —, the authors conclude that a major part of the gap vanished but not all of it. For men, in 2002, 40% to 100% of the gap (from region Norte to Algarve) is explained by these variables. For women, more than 50% of every region's gap is explained but not all of it. The explained part is due to the occupation structure between Lisbon and other regions, with the former including larger firms characterised by higher wages, and higher levels of education. Further analysis, from 1995 to 2002, proved that the endowments gap between Lisbon and other regions is growing, enforcing regional divergence. The authors attribute the unexplained part of the gap to a temporary disequilibrium situation, to external economies effect or to a sorting effect, i.e., an easier and more productive match between employee and employer as a consequence of a denser urban agglomeration.

Discrimination in the labour market against women is a well-documented phenomenon, studied across all continents and from many different points of view. In the present study, we will update the estimates of the total gender pay gap and the discrimination gap in Portugal. Furthermore, as studied by some of the authors mentioned, we will perform an exploratory analysis with the aim of identifying the link between the local discrimination gap, at the county level, and the local labour market conditions and other characteristics.

Chapter 3

Territorial heterogeneity in wage discrimination

3.1 Measuring wage discrimination at the county level

3.1.1 The data

In order to understand heterogeneity across Portuguese municipalities, we will use matched employer-employee data that covers all privately held companies in the country — *Quadros de Pessoal* (QP). QP is a database collected by the Ministry of Labour, Solidarity and Social Security that contains information, from 1985 to 2012, on three different levels: firms, establishments and workers. In 2012, the data includes information on around 2.3 million workers among 317 thousand establishments across 278 municipalities in mainland Portugal. Information at the firm/establishment level includes location, size, industry, number of employees, ownership type, sales, etc.. Information at the worker level includes wage, tenure, type of contract, education, qualifications, number of working hours, date of last promo-

tion, etc.. This is a mandatory survey for establishments with at least one wage earner in the private sector, which is why it is a representative and reliable source of information to estimate the gender wage discrimination gap at the county level. We will use data at the worker level from 2012, the most recent year available.

3.1.2 The empirical model

Using a linear regression analysis, that allows us to model the relationship of a dependent variable with a set of explanatory variables, we will estimate the raw gender pay gap at the county level. The model writes as:

$$\ln W_i = \alpha + \delta \text{female}_i + \varepsilon_i \quad (3.1)$$

where $\ln W$ is the natural logarithm of hourly wages (base wage plus regular benefits) for each worker i , α is a constant term, female is a dummy variable that takes the value 1 for female workers and 0 if otherwise, and ε the random error term. δ is the parameter of interest and measures the unconditional wage difference between men and women. A negative coefficient of the variable female , δ , indicates that, in a specific county, female workers earn on average lower wages than men. This regression was estimated 278 times using Stata (Data Analysis and Statistical Software), one for each of the Portuguese municipalities, with information for 2.262.257 workers, varying from 214 workers in Barrancos to 308.636 in Lisbon (see Table A.3 in Appendix A for more detailed information). Azores and Madeira were excluded because of a small representation of the data collected.

To estimate the wage discrimination gap, a standard mincerian wage equation (Mincer, 1974), a wage regression with controls for worker, establishment and job characteristics, is estimated by the Ordinary Least Squares method (OLS). OLS estimates a set of unknown parameters, one for each of the explanatory variables, that minimizes the total sum of square residuals. The model can be written as

follows:

$$\ln W_i = \alpha + \delta \text{female}_i + \mathbf{X}_i \boldsymbol{\beta} + \varepsilon_i \quad (3.2)$$

where $\ln W_i$ is the natural logarithm of the hourly wage of each worker i , α is a constant term, female is a dummy variable that takes the value 1 for female workers and 0 if otherwise and δ is our parameter of interest, \mathbf{X} is a vector of explanatory variables for each individual i , $\boldsymbol{\beta}$ represents the vector of unknown parameters to be estimated and ε an unobserved error term (zero mean and constant variance). \mathbf{X} includes a set of worker's, job title and establishment characteristics. The *worker* dimension includes the following variables: a dummy for gender, linear and quadratic terms in age, a dummy for foreigners and a set of dummies for education. The *job title* controls include: dummies for qualification at the 1-digit level, according to the National Qualification Framework; linear and quadratic terms in tenure; dummies for occupation at the 1-digit level, according to the Portuguese Classification of Occupations (1-digit level); and dummies for type of contract (part-time or full-time, fixed-term or permanent). Finally, at the *firm* level, we will include size, as the natural logarithm of the number of employees, and dummies for industry at the 1-digit level, according to the Statistical Classification of Economic Activities. A detailed description of all variables is present in Table A.1 Appendix A.

Thus, equation 3.2 extends equation 3.1 by adding an extensive set of controls for worker, establishment and job characteristics in order to properly identify the wage discrimination gap measured by the δ coefficient. Equation 3.2 was also estimated 278 times using Stata, for each county in turn, with information for a total of 2.262.257 workers of mainland Portugal. A negative coefficient of the variable *female*, δ , indicates the existence of wage discrimination towards women.

3.2 Empirical results

Portugal presents a global unconditional wage difference between male and female workers of 14% and a discrimination gap of 13%¹. These estimates were obtained from the estimation of equations 3.1 and 3.2 by OLS, respectively, using a total sample of 2.3 million wage earners aged 16-65 among the 278 counties. This means that only 8% of the total wage gap is attributable to workers, establishment or job title characteristics. The full results of equation 3.2 for the aggregated data of mainland Portugal are presented in Table A.2 of Appendix A. The estimates at the county level for the raw gap and for the discrimination gap, as well as the number of workers considered in each municipality, are listed in Table A.3 in Appendix A. Some municipalities present coefficients that are not statistically significant at a 10% significance level. This is the case of 11 municipalities in the discrimination model (3.2) and, for the robustness of the results, they will be excluded from the remaining analyses (namely Alfândega da Fé, Terras de Bouro, Sardoal, Arronches, Vila do Bispo, Vieira do Minho, Mourão, Monchique, Torre de Moncorvo, Figueiró dos Vinhos and Mértola).

By looking at the results at the county level, we can state that there is heterogeneity across the Portuguese territory, as it may be observed in Figure 3.1. The discrimination wage gap varies from approximately -2.4% in Caminha to -24% in Sever do Vouga or -23% in Mangualde, with a standard deviation of 4.4 log points. Moreover, when we look at Figures 3.2 and 3.3, we can not only confirm the territorial dispersion of the pay gap but also a different pattern when we consider the raw pay gap or the discrimination factor. The two maps show that the west coast and the central area of the country present higher pay gaps, gathering the majority of municipalities with values over the 4th quintile. The central west region of Portugal present high values of discrimination, which can, at a

¹The exact wage difference is computed as $exponential(\delta) - 1$

first glance, mislead us to think that discrimination is directly proportional to population density, since this area is one of the most populated in the country. However, it is important to notice that Lisbon and Porto metropolitan areas do not present the highest levels of discrimination. Additionally, the analysis of the presented maps shows us that some municipalities that have very high raw pay gaps between men and women have, contrarily, low discrimination gaps, e.g. Castro Verde (estimates of -0.46 *vs* -0.13) or Entroncamento (-0.33 *vs* -0.11). Also, counties with low raw pay gaps can face very high discrimination gaps, such as Baião (-0.05 *vs* -0.13) or Arruda dos Vinhos (-0.07 *vs* -0.15). However, these are very small municipalities, all of them with a number of inhabitants and workers below average and only Baião slightly above the median. The standard deviation of the pay gaps are relatively low — 7.2 log points for the raw gap and 4.4 for the discrimination gap. Nevertheless, both indicators present negative skewness values, which means there is a concentration of municipalities in higher values of the distribution and therefore of discrimination (Table 3.1).

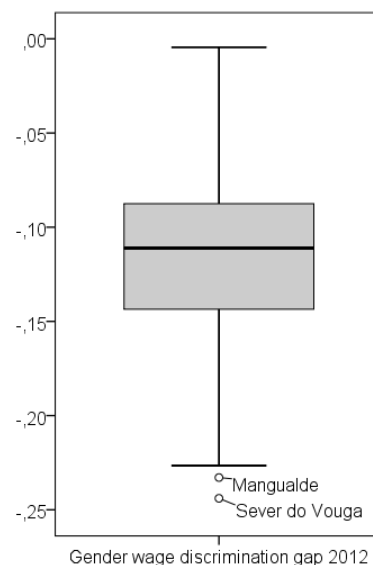


Figure 3.1: Box plot of the distribution of the gender wage discrimination gap across counties in Portugal, 2012

Table 3.1: Wage regressions at the worker level: descriptive statistics of the raw pay gap and the gender wage discrimination gap

Variable name	N	Min.	Max.	Mean	Median	Std. Dev.	Skewness
Raw pay gap	278	-0.462	0.059	-0.134	-0.132	0.072	-0.625
Discrimination gap	278	-0.244	-0.005	-0.115	-0.111	0.044	-0.258

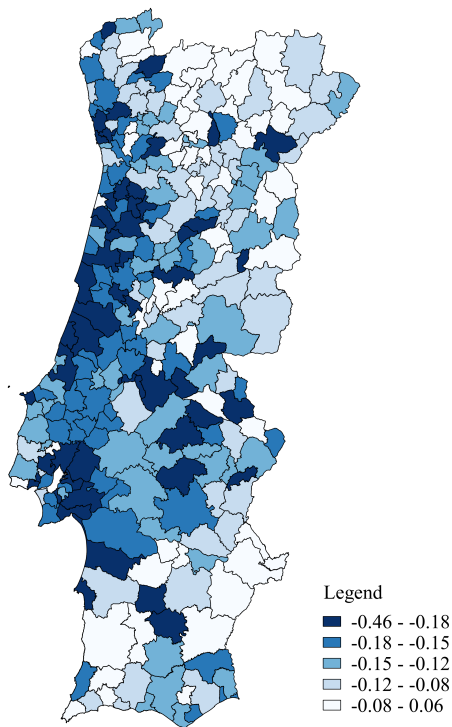


Figure 3.2: Raw gender wage gap in Portugal, 2012

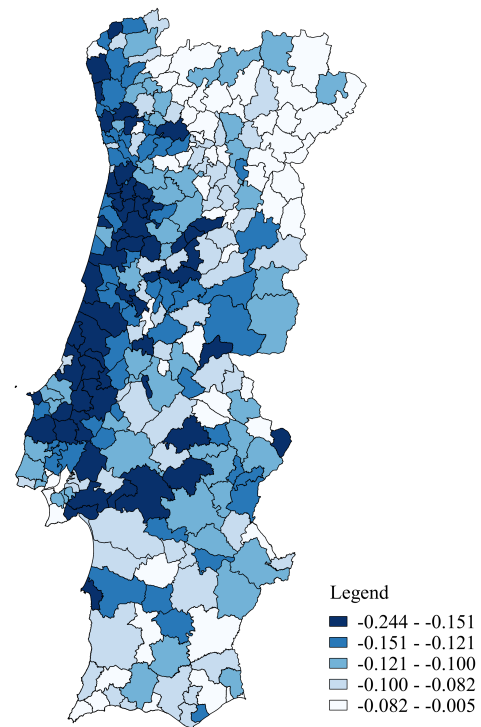


Figure 3.3: Gender discrimination wage gap in Portugal, 2012

¹In Figure 3.2, 17 counties are not significant at a 10% significance level: Mourão, Vila Nova de Paiva, Resende, Murtosa, Barrancos, Mondim de Basto, Ourique, Manteigas, Sabugal, Castanheira de Pera, Santa Marta de Penaguião, Arronches, Crato, Alvito, Figueira de Castelo Rodrigo, Murça and Caminha. In Figure 3.3, 11 counties are not significant at a 10% significance level: Alfândega da Fé, Terras de Bouro, Sardoal, Arronches, Vila do Bispo, Vieira do Minho, Mourão, Monchique, Torre de Moncorvo, Figueiró dos Vinhos and Mértola.

Chapter 4

Local determinants of the wage discrimination gap

4.1 The empirical model

In the previous section, the results showed that the discrimination wage gap varies widely among Portuguese counties. In this section, we present an exploratory analysis in order to shed some light on the local factors that may impact on the discriminatory practices at the employer level. The focus on county variations has the advantage of assuring a common institutional support, which allows us to concentrate on the role of market forces (Carneiro and Varejão, 2012).

Three groups of variables will be considered in our analysis: characteristics of the demand for labour, characteristics of the supply of labour and more exploratory group of local determinants, including cultural and social traits of the local population. In particular, we will include the following factors at the county level, all measured in 2011, except for the abstention rate in local elections (2009) and the right or left-wing political majority (2005 and 2009):

1. Characteristics of the demand for labour:

- (a) Share of minimum wage earners, measured by the number of workers earning minimum wage as a percentage of the total number of workers;
- (b) Share of workers per economic sector, measured by the number of people working in primary, secondary or tertiary sector establishments as a percentage of the total number of workers;
- (c) Share of workers per establishment size, measured by the number of people working in establishments with less than 10 workers, 10 to 49 workers, 50 to 249 workers and with 250 workers or higher — micro, small, medium, and large establishments, respectively — as a percentage of the total number of workers;
- (d) Female employers share, measured by the number of women among all employers of privately-held establishments;
- (e) Share of young employers, measured by the number of employers aged 15 to 34 years old among all employers of privately-held establishments.

2. Characteristics of the supply of labour:

- (a) Young workers activity rate, measured by the supply of labour (employed and unemployed) of the local population aged 15 to 24 years old and 25 to 34 years old among the total resident population of the correspondent age group;
- (b) Share of female workers, measured by the number of women employed over the total number of employees in private establishments;
- (c) Share of workers holding a college degree, measured by the graduates in higher education among the total employees in private establishments;
- (d) Share of female immigrants, measured by the number of foreign resident women as a percentage of the total resident female population.

3. Other local determinants:

- (a) Other characteristics of the local labour market:
 - i. Unemployment rate, measured by the number of unemployed people as a percentage of the labour force;
 - ii. Being or not part of a metropolitan area, measured by a dummy variable taking the value 1 for municipalities included in the metropolitan areas of Lisbon or Porto and the value 0 if otherwise.

- (b) Cultural and social traits of the population:
 - i. Public expenditure in cultural areas, measured by the amount spent in events and facilities by the town council on culture and sports (Euros per capita);
 - ii. Ageing index, measured by the number of generally economically inactive people (aged over 64 years old) over the number of young people (aged less than 15 years old);
 - iii. Crude birth rate, measured by the number of births during the year over the average population of the same year, expressed per 1000 inhabitants;
 - iv. Share of catholic inhabitants, measured by the number of catholic population as a percentage of the total number of residents;
 - v. Right or left-wing political majority, measured by a dummy variable taking the value 1 for municipalities that elected a city mayor from a right or left-wing political party in the elections of 2005 and 2009 and the value 0 if otherwise;
 - vi. Abstention rate in the local elections of 2009.

Data sources are the National Statistical Institute of Portugal (INE), Pordata, Quadros de Pessoal, Associação Nacional dos Municípios Portugueses (ANMP), Comissão Nacional de Eleições (CNE) (more details and descriptive statistics in

Tables B.1 and B.2 in Appendix B). Also in Appendix B, we present the maps with the distribution of these variables across Portuguese territory (Figures B.1 to B.24).

Using a linear regression model and the ordinary least squared method (OLS), we will estimate the influence of the set of variables described above on the local gender discrimination wage gap. The model writes as:

$$\mathbf{wage_gap}_i = \mathbf{X}_i\boldsymbol{\beta} + \boldsymbol{\varepsilon}_i \quad (4.1)$$

where $\mathbf{wage_gap}_i$ represents the gender discrimination wage gap at the county level and computed as $exponential(\hat{\delta}) - 1$, where $\hat{\delta}$ is the estimate of the *female* coefficient from model 3.2 as explained in section 3.1. Additionally, for a clearer interpretation of the coefficients, the discrimination gaps were converted into their additive inverse, i.e. multiplied by -1 , hence enabling an intuitive explanation of a negative (or positive) estimate as a factor that is associated with lower (or higher) levels of discrimination, respectively. \mathbf{X} is a vector of explanatory variables for each of the n counties (including a constant term), $\boldsymbol{\beta}$ represents unknown parameters for each of the variables contained in \mathbf{X} and $\boldsymbol{\varepsilon}$ is an unobserved error term (zero mean and constant variance). \mathbf{X} includes the three dimensions of variables presented in the previous section — characteristics of the demand for labour, characteristics of the supply of labour and other local determinants.

The model presented in 4.1 is to be applied to the 267 municipalities with statistically significant discrimination gaps at a 10% significance level, which excludes 11 counties from the analysis, as discussed in the previous chapter.

4.2 Empirical results

The OLS estimates of Equation 4.1 are reported in Table B.3 in Appendix B. The results present a R-squared of 0.5398, i.e., the selected explanatory variables account for 54% of the total variance of the gender wage discrimination gap across the

Portuguese territory.

Seven independent variables are statistically significant: three from the demand side of labour, one from the supply side and three from the exploratory group of indicators.

The share of minimum wage earners, from the demand side, is the variable with a higher impact on the discrimination gap (-0.19). We can say that, *ceteris paribus*, an increase of 1 percentage point in the share of minimum wage earners will decrease the discrimination gap in 0.19 percentage points. According to authors such as Robinson (2005) and Blau and Kahn (2016), since women are over-represented at the bottom of the wage structure, the minimum wage brings up the wage floor, with a stronger impact on women's wages. Being so, a higher presence of minimum wage earners may be increasing the *natural* wage attributable to women and consequently resulting in less gender differences. Secondly, the activity rate of young population, from the supply side, presents a strong positive relation with the discrimination gap (+0.18), since 1 additional percentage point in the activity rate of people aged 25 to 34 years old will aggravate the discrimination gap in 0.18 percentage points, all else unchanged. Since most hiring occurs among younger workers, a higher activity rate of the young population can lead to more flexibility of the employers to discriminate, namely towards women. Several authors, such as Pailhé (2000); Gorman (2003); Cardoso et al. (2016), recognise gender discrimination practices on the hiring process, either regarding lower wages or more difficult access to better occupations, mostly due to expectations of women's career interruptions for maternity matters. Goldin and Rouse (1997) provide a quite interesting study about the hiring process of orchestra musicians in the 1970s and 1980s in the United States. A *blind* audition, where the employer was not able to see whether the candidate was a man or a woman, would increase a female musician hiring probability in 50%. The unemployment rate is the third significant most impactful variable (-0.16). It accounts for a decrease of 0.16 percentage points in the discrimination gap for each

one additional point, holding all other variables constant, which is consistent with the theory presented by Huertas et al. (2016). The authors provide empirical evidence for Spain, in the 2000s decade, as high unemployment rates are expected to negatively impact on the discrimination levels because of an increased pressure over wages when unemployment is high. The share of workers in the secondary sector presents a significant positive relation with the discrimination gap (+0.11). It represents an 0.11 percentage points increase in the discrimination gap for each additional own percentage point, all other factors held constant. The share of workers in the secondary sector is expected to be related to a higher level of discrimination since it represents a more traditional form of labour where the role of women is typically stronger in less complex occupations. A study of the Portuguese labour market in the 1990s made by Koch and Strotmann (2000) shows that the Textile industry, one of the most representative subsectors, is an example of feminization of occupations in the 1990s. Around 70% of Textile workers were women and these women were the least educated among all activity subsectors — around 90% with primary or preparatory schooling. The feminization of some industries decades ago can still be inducing the pay gap in counties with a high presence of those industries. The abstention rate, the only statistically significant of the exploratory variables, presents a relatively high influence on the discrimination gap (+0.08). This represents approximately a 0.08 percentage points increase in the discrimination gap for each additional abstention percentage point, all other factors held constant. It behaves as expected since the variable is included as a measure of alienation and indifference towards local public policy, whether it regards the candidates or policies themselves (Adams et al., 2006). This indifference can represent a certain lack of social and collective consciousness or simply demoralization against current policies and candidates, and can, consequently, be related to discrimination practices. However, this is an exploratory conclusion and further investigation is required in order to confidently establish this sort of relation. The share of workers in micro establishments

presents an inverse relation with the dependent variable (-0.06). For 1 additional percentage point on this factor, the discrimination gap would decrease 0.06 percentage points, *ceteris paribus*. A 2009 report from WINNET8 — Women’s Resource Centres, Promoting Innovation in Gender Equality across Europe — performed by Zimoch and Hozer-Koćmiel (2010), points to the fact that, in less wealthy countries, such as Portugal, Italy, Greece and Poland, self-employment is very popular as it is sometimes the only possible employment for women, resulting in a higher share of self-employed women in micro-firms (17,2% in Portugal, 15% in Poland, 16.8% in Italy and 23% in Greece). This is one possible explanation for the inverse relation between the share of micro establishments and the discrimination gap at the county level. Lastly, we conclude that, all other factors being equal, municipalities that belong to a metropolitan area present a discrimination gap approximately 0.01 percentage point lower, in agreement with the findings of Hirsch et al. (2013). The authors, using data from Western Germany from 1975 to 2004, provide evidence that corroborates that more populated and competitive markets present less discrimination as there is less room for inefficiencies. However, the coefficient is relatively small (-0.01) and consequently of little economic relevance.

4.3 Results validation

To validate the regression results, in this section some robustness analysis are presented, to confirm assumptions of the linear regression model, such as the independence, homoscedasticity (constant variance) and normality of the residuals, the non-correlation of the explanatory variables, and to investigate the possible presence of significant outliers at the county level.

Regarding residuals analysis, we start by graphically analysing the relationship between the standardized residuals and the standardized predicted values to validate their independence and homoscedasticity. By using SPSS Statistics software, we plot

the former in the X -axis and the latter in the Y -axis (see Figure 4.1). As expected, the error terms are randomly distributed around the mean (zero) among different values of the prediction. There is no nonlinear pattern present, which grants a first validation to the linear model applied. The model appears to be homoscedastic. However, using Stata, we reestimate the wage regression at the county level using robust standard errors, that allows the variance of the errors to vary, i.e., to be heteroscedastic. We conclude that the results are qualitatively equivalent (Table B.4 in Appendix A), which grants more confidence to the previous results. Additionally, we analyse the normality of the distribution of the observed residuals. Using again the SPSS Statistics software, we plot the Normal Probability Plot of the observed cumulative probability against the expected cumulative probability for a Normal distribution (see Figure 4.2). We can assume a normal distribution of the residuals since the observed cumulative probability follows the expected probability plot of the Normal distribution.

Regarding the assumption of non-correlation between the explanatory variables, we test for multicollinearity, the ability of linearly predict one variable from the others, using two different methods. Firstly, we calculate the bivariate correlations. According to Marôco (2011), an absolute value of bivariate correlation higher (lower) than 0.75 (-0.75) can be problematic and compromise the regression results. We calculate correlation values using SPSS Statistics and we find that only one pair of variables matches the exact threshold of correlation: ageing index and crude birth rate. Also, the pairs share of female immigrants - share of catholics and right-wing political side - left-wing political side present high correlations of -0.74 and -0.73, respectively, even though not above the specified threshold (detailed results in Table B.5). In order to further validate if these variables are problematic to our model, we will analyse the *Variance Inflation Factor* (VIF), a more sophisticated measure of multicollinearity. VIF is calculated for each variable i through the expression $1/(1 - R_i^2)$, where R_i^2 is the determination coefficient of the variable i as the dependent

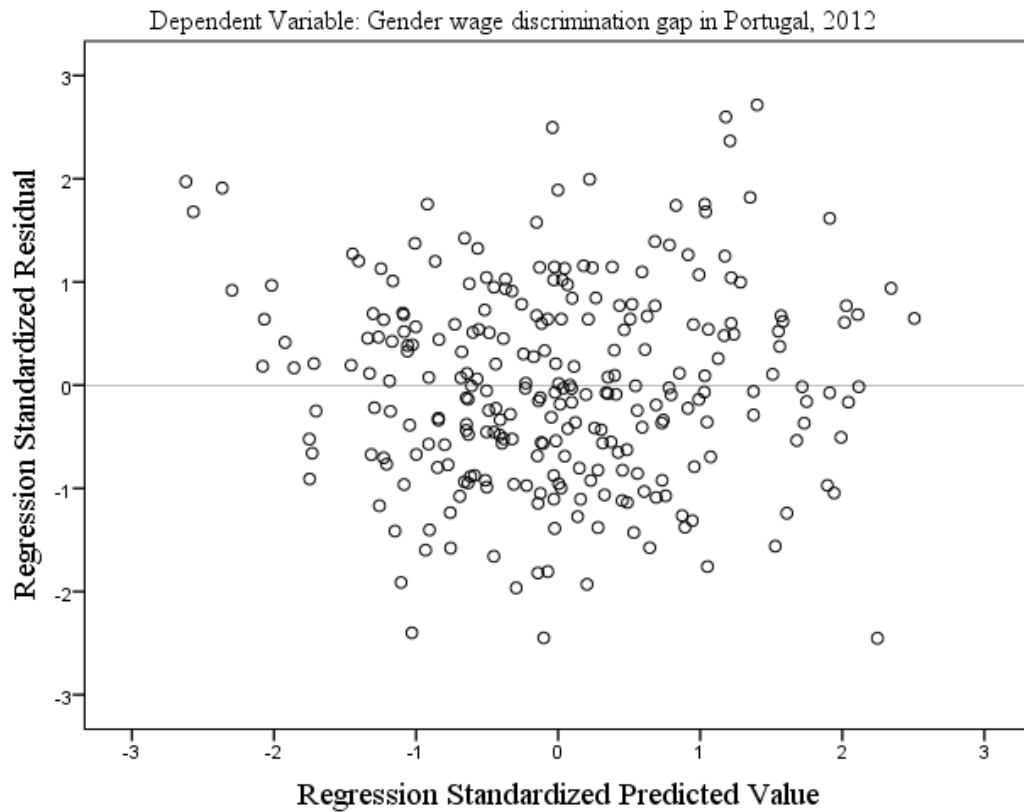


Figure 4.1: Standardized residuals distribution across the standardized regression predictions

variable and the others as the explanatory ones. Using SPSS Statistics software, we find that no explanatory variable surpasses the two most common thresholds for multicollinearity issues: 5 or 10 (detailed results in Table B.6 in Annex B). However, the variable share of catholics presents a VIF of 4.94, very close to the first threshold. To assure that no estimation problems arise from this fact, we reestimated the discrimination regression without this variable and the two other potentially problematic variables: the ageing index and the right-wing political side, and prove that the results are qualitatively identical (estimation results in Table B.7 in Appendix B). We then conclude that no issues of multicollinearity are present in

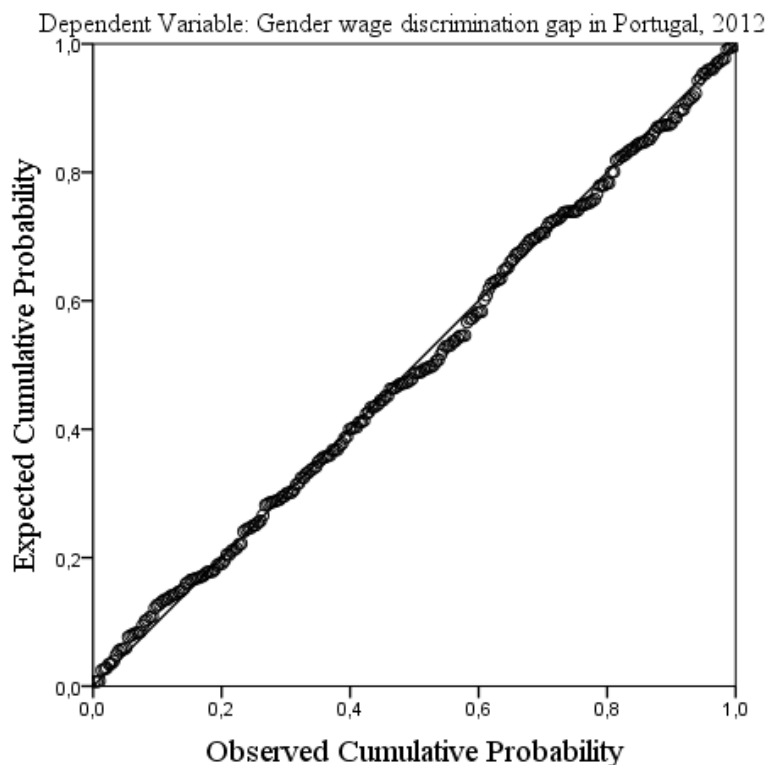


Figure 4.2: Normal P-P Plot of Regression Standardized Residual

the estimated regression.

Another way of validating the regression results is to study the influence of each observation in the estimation of the β vector of coefficients. To do so, we use the Cook's distance, a measure of influence measured as a combination of the standardized residuals and the *Leverage*. Leverage is a measure of the distance of one observation's independent variable to the other observations, as an indicator of potential outliers. It takes h_{ii} , the i -th diagonal element of the *hat* matrix $\mathbf{H} = \mathbf{X}(\mathbf{X}^T \mathbf{X})^{-1} \mathbf{X}^T$, a transformation of the matrix of the explanatory variables, deducing the factor $1/n$. The leverage can then be calculated for each data point as $h_{ii} - 1/n$. Values below 0.2 are considered harmless, as stated by Marôco (2011),

values from 0.2 and 0.5 comprehend a certain risk of the presence of outliers and values above 0.5 are considered multivariate outliers. The author also mentions other theories that point to a threshold of $3k/n$ for $k > 6$ variables and $(n - k) > 12$. According to the first set of thresholds, we find 8 municipalities (3% of the total data set) at risk with leverage levels between 0.20 and 0.32 — in descending values of leverage: Castro Verde, São João da Pesqueira, Tarouca, Aljezur, Albufeira, Penedono, Vila Velha de Ródão and Figueira de Castelo Rodrigo. According to the second theory, only the first 5 counties are considered at risk. To analyse the impact of these possible 8 outliers, we reestimate the discrimination regression at the county level excluding these data points. We conclude that the results are qualitatively identical with the exception of the variable share of young employers (from 15 to 34 years old) that becomes statistically significant at a 5% significance level and presents a negative coefficient of -0.119, which means that, *ceteris paribus*, an additional percentage point in the share of young employers means almost less 0.12 percentage points in the discrimination gap. Also, the variable public expenditure in cultural areas gains statistical significance, although with an approximately null coefficient, hence without impact on the dependent factor. The full estimation results are present in Table B.8 in Appendix B. From the Leverage values, we can estimate the Cook's Distance, measured as follows:

$$DC_i = \frac{r_i h_{ii}}{(k + 1)(1 - h_{ii})} \quad (4.2)$$

where r_i are the standardized residuals, h_{ii} the diagonal of the hat matrix and k the number of variables of the model. According to many authors, such as Marôco (2011), a DC value over 1 means that a specific data point is overinfluencing the estimation of the coefficients vector. The results point to a minimum of 0 and a maximum of 0.083, which are comfortable results. The full set of Leverage values and Cook's distances is presented in Table B.9 in Appendix B.

Chapter 5

Conclusions

The first aim of this study was to quantify the raw gender pay gap in each municipality of mainland Portugal and to understand how much of the gap is not explained by worker's, job title and firm characteristics. We conclude that, on average, Portuguese female workers earn 14% less than their male colleagues. When taking into account worker, job title and firm characteristics, the difference falls to 13%, which is the value that we can associate to gender wage discrimination. Among counties, this gap varies from -2% in Caminha to -24% in Sever do Vouga, with the most discriminatory counties located in the West coast and Central area of the country. Furthermore, in an exploratory analysis, we try to establish a link between characteristics of the supply and demand of labour and other local determinants with the discrimination gap. Some interesting and statistically significant relations are found. As expected, factors related to the demand side of the labour market are the most relevant to explain the discrimination wage gap: a strong negative coefficient (i.e. associated to lower levels of discrimination) of the share of minimum wage earners, a negative relation of discrimination with the share of workers in micro-sized establishments, and a positive relation with the share of secondary activity sector workers. Regarding the supply side of the labour market, the only variable that has impact on the discrimination gap is the youth activity rate, a positive impact (i.e.

associated to higher levels of discrimination) that can be related to discrimination against women on hiring practices, more present among youngsters. Regarding the state of the local labour market, a high unemployment rate is associated with lower levels of discrimination and, finally, regions with a higher abstention rate are found to discriminate more, although it is difficult to state a causal relationship between the two indicators.

This study has some limitations, among them the very low frequency of data collection at the county level. We performed a cross-sectional data analysis for the year of 2012. If more information was collected and provided, a richer analysis could be made using for instance panel data. This would allow to account for regional fixed effects.

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Appendix A

Territorial heterogeneity in wage discrimination

Table A.1: Wage regression at the worker level: variables description

Dimension	Variable	Description
Worker	Female	Dummy variable that takes the value 1 for female workers and 0 otherwise
Worker	Age	Workers' age (in years) and its square
Worker	Foreigner	Dummy variable that takes the value 1 for foreigners and 0 otherwise
Worker	Education	3 dummy variables for 4 levels of education: primary school (omitted category), 6 to 9 years of schooling, high school and college education
Job title	Qualification	7 dummy variables for 8 qualification levels, according to the National Qualification Framework (1-digit level)
Job title	Tenure	Worker's tenure in the current establishment in years, also included in the quadratic form to capture non-linear correlations
Job title	Occupation	8 dummy variables for 9 occupations, according to the Portuguese Classification of Occupations (1-digit level)
Job title	Type of contract	2 dummy variables, the first taking the value 1 for part-time jobs and 0 otherwise, the other taking the value 1 for permanent employment and 0 otherwise
Firm	Size	The natural logarithm of the number of employees of the worker's establishment
Firm	Industry	19 dummy variables for 20 economic activities, according to the Statistical Classification of Economic Activities (1-digit level)

Table A.2: Wage regression at the worker level: OLS results
(dependent variable: hourly wage (natural logarithm))

Independent variables	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
Female	-0.136***	0.000	-294.51	0.000	-0.137	-0.135
Age	0.016***	0.000	110.09	0.000	0.016	0.016
Squared age	0***	0.000	-77.14	0.000	0.000	0.000
Tenure	0.013***	0.000	159.11	0.000	0.012	0.013
Squared tenure	0***	0.000	-50.88	0.000	0.000	0.000
Foreigner	0.005***	0.001	4.66	0.000	0.003	0.007
6-9 years of schooling	0.102***	0.001	154.64	0.000	0.101	0.104
High school	0.216***	0.001	270.35	0.000	0.215	0.218
College education	0.393***	0.001	378.37	0.000	0.391	0.395
Part-time job	0.016***	0.001	18.15	0.000	0.014	0.018
Permanent employment	0.025***	0.001	43.75	0.000	0.024	0.026
Qualification_1	-0.12***	0.001	-103.88	0.000	-0.123	-0.118
Qualification_2	-0.104***	0.001	-78.33	0.000	-0.106	-0.101
Qualification_3	-0.21***	0.001	-174.18	0.000	-0.212	-0.207
Qualification_4	-0.381***	0.001	-329.29	0.000	-0.384	-0.379
Qualification_5	-0.453***	0.001	-363.62	0.000	-0.456	-0.451
Qualification_6	-0.486***	0.001	-351.12	0.000	-0.488	-0.483
Qualification_7	-0.446***	0.002	-267.86	0.000	-0.449	-0.443
Occupation_1	0.07***	0.001	54.39	0.000	0.068	0.073
Occupation_2	0.005***	0.001	4.01	0.000	0.003	0.008
Occupation_3	-0.072***	0.001	-52.82	0.000	-0.074	-0.069
Occupation_4	-0.124***	0.001	-91.18	0.000	-0.127	-0.122
Occupation_5	-0.104***	0.003	-39.57	0.000	-0.109	-0.099
Occupation_6	-0.112***	0.001	-79.3	0.000	-0.114	-0.109

N=2262257

Table A.2: Wage regression at the worker level: OLS results
(dependent variable: hourly wage (natural logarithm))

Occupation_7	-0.162***	0.001	-110.64	0.000	-0.165	-0.159
Occupation_8	-0.137***	0.001	-93.24	0.000	-0.14	-0.134
Size	0.05***	0.000	400.95	0.000	0.05	0.051
Industry_1	0.139***	0.004	35.44	0.000	0.131	0.146
Industry_2	-0.044***	0.002	-23.72	0.000	-0.048	-0.04
Industry_3	0.57***	0.004	131.63	0.0000	0.562	0.579
Industry_4	0.071***	0.003	25.23	0.000	0.066	0.077
Industry_5	-0.056***	0.002	-28.76	0.000	-0.06	-0.052
Industry_6	0.038***	0.002	20.33	0.000	0.034	0.041
Industry_7	0.129***	0.002	63.36	0.000	0.125	0.133
Industry_8	-0.08***	0.002	-41.1	0.000	-0.084	-0.077
Industry_9	0.073***	0.002	32.94	0.000	0.069	0.078
Industry_10	0.521***	0.002	242.3	0.000	0.517	0.525
Industry_11	0.004	0.003	1.33	0.184	-0.002	0.01
Industry_12	-0.017***	0.002	-8.28	0.000	-0.021	-0.013
Industry_13	-0.101***	0.002	-52.32	0.000	-0.105	-0.098
Industry_14	0.036***	0.004	9.96	0.000	0.029	0.043
Industry_15	0.025***	0.002	10.97	0.000	0.021	0.03
Industry_16	-0.079***	0.002	-40.54	0.000	-0.082	-0.075
Industry_17	0.06***	0.003	20.86	0.000	0.054	0.066
Industry_18	-0.006***	0.002	-2.95	0.003	-0.011	-0.002
Industry_19	0.632***	0.043	14.64	0.000	0.547	0.716
Constant term	1.190	0.004	327.47	0.000	1.182	1.197
$F(46, 2261898) = 78189.21 \mid Prob > F = 0.0000 \mid R - squared = 0.6139 \mid AdjR - squared = 0.6139$						

0*statistically significant at 10% significance level; **statistically significant at 5%; ***statistically significant at 1%

Table A.3: Wage regressions at the worker level: Estimates of the raw gender wage gap and the gender wage discrimination gap by county, Portugal 2012 (includes the number of workers per county and the significance level of the coefficient delta)

Municipality	N	Raw gap	Sig.	Disc. gap	Sig.
Abrantes	6405	-0.202	0.000	-0.107	0.000
Águeda	13531	-0.211	0.000	-0.182	0.000
Aguiar da Beira	894	-0.102	0.000	-0.096	0.000
Alandroal	635	-0.094	0.000	-0.139	0.000
Albergaria-a-Velha	6248	-0.173	0.000	-0.175	0.000
Albufeira	14961	-0.117	0.000	-0.079	0.000
Alcácer do Sal	1839	-0.159	0.000	-0.099	0.000
Alcanena	4496	-0.146	0.000	-0.185	0.000
Alcobaça	12399	-0.218	0.000	-0.195	0.000
Alcochete	3871	-0.181	0.000	-0.1	0.000
Alcoutim	285	-0.157	0.001	-0.099	0.013
Alenquer	10105	-0.164	0.000	-0.167	0.000
Alfandega da Fé	453	0.059	0.073	-0.005	0.858
Alijó	1468	-0.174	0.000	-0.11	0.000
Aljezur	649	-0.16	0.000	-0.097	0.000
Aljustrel	1783	-0.204	0.000	-0.148	0.000
Almada	21445	-0.113	0.000	-0.073	0.000
Almeida	901	-0.131	0.000	-0.077	0.000
Almeirim	3652	-0.158	0.000	-0.112	0.000
Almodôvar	791	-0.145	0.000	-0.105	0.000
Alpiarça	1080	-0.168	0.000	-0.124	0.000
Alter do Chão	440	-0.203	0.000	-0.059	0.089
Alvaiázere	1198	-0.161	0.000	-0.093	0.000
Alvito	267	-0.07	0.183	-0.092	0.011
Amadora	34730	-0.219	0.000	-0.112	0.000
Amarante	9258	-0.095	0.000	-0.152	0.000
Amares	2496	-0.18	0.000	-0.119	0.000
Anadia	6056	-0.137	0.000	-0.153	0.000
Ansião	2244	-0.141	0.000	-0.121	0.000
Arcos de Valdevez	3698	-0.04	0.001	-0.107	0.000
Arganil	2113	-0.228	0.000	-0.19	0.000
Armamar	847	-0.046	0.053	-0.048	0.015
Arouca	4211	-0.086	0.000	-0.111	0.000
Arraiolos	1132	-0.192	0.000	-0.182	0.000
Arronches	437	-0.046	0.252	-0.043	0.359
Arruda dos Vinhos	2642	-0.072	0.000	-0.146	0.000
Aveiro	26660	-0.209	0.000	-0.144	0.000
Avis	810	-0.219	0.000	-0.159	0.000
Azambuja	5856	-0.181	0.000	-0.153	0.000
Baião	2229	-0.051	0.000	-0.134	0.000

Table A.3: Wage regressions at the worker level: Estimates of the raw gender wage gap and the gender wage discrimination gap by county, Portugal 2012 (includes the number of workers per county and the significance level of the coefficient delta)

Barcelos	30896	-0.156	0.000	-0.147	0.000
Barrancos	214	0.026	0.607	-0.085	0.028
Barreiro	10036	-0.213	0.000	-0.11	0.000
Batalha	4982	-0.161	0.000	-0.226	0.000
Beja	7029	-0.106	0.000	-0.084	0.000
Belmonte	1522	-0.217	0.000	-0.14	0.000
Benavente	6930	-0.184	0.000	-0.17	0.000
Bombarral	1881	-0.135	0.000	-0.113	0.000
Borba	1048	-0.131	0.000	-0.143	0.000
Boticas	761	-0.072	0.003	-0.11	0.000
Braga	46721	-0.114	0.000	-0.11	0.000
Bragança	5425	-0.094	0.000	-0.068	0.000
Cabeceiras de Basto	2237	-0.05	0.003	-0.081	0.000
Cadaval	2030	-0.168	0.000	-0.158	0.000
Caldas da Rainha	10194	-0.139	0.000	-0.102	0.000
Caminha	2027	-0.032	0.12	-0.024	0.086
Campo Maior	2068	-0.164	0.000	-0.184	0.000
Cantanhede	7339	-0.208	0.000	-0.151	0.000
Carrazeda de Ansiães	557	-0.076	0.023	-0.09	0.000
Carregal do Sal	1577	-0.129	0.000	-0.166	0.000
Cartaxo	3329	-0.16	0.000	-0.128	0.000
Cascais	36405	-0.04	0.000	-0.092	0.000
Castanheira de Pera	416	0.048	0.333	-0.123	0.000
Castelo Branco	10955	-0.129	0.000	-0.126	0.000
Castelo de Paiva	2683	-0.136	0.000	-0.114	0.000
Castelo de Vide	496	-0.099	0.002	-0.096	0.000
Castro Daire	1876	-0.1	0.000	-0.107	0.000
Castro Marim	929	-0.115	0.000	-0.112	0.000
Castro Verde	2784	-0.462	0.000	-0.13	0.000
Celorico da Beira	1055	-0.099	0.000	-0.088	0.000
Celorico de Basto	2008	-0.143	0.000	-0.1	0.000
Chamusca	1690	-0.111	0.000	-0.093	0.000
Chaves	5665	-0.079	0.000	-0.111	0.000
Cinfães	1817	-0.125	0.000	-0.064	0.000
Coimbra	35302	-0.172	0.000	-0.118	0.000
Condeixa-a-Nova	2113	-0.19	0.000	-0.159	0.000
Constância	907	-0.3	0.000	-0.203	0.000
Coruche	3067	-0.133	0.000	-0.114	0.000
Covilhã	9279	-0.11	0.000	-0.1	0.000
Crato	459	-0.042	0.188	-0.06	0.017
Cuba	361	-0.072	0.057	-0.094	0.003

Table A.3: Wage regressions at the worker level: Estimates of the raw gender wage gap and the gender wage discrimination gap by county, Portugal 2012 (includes the number of workers per county and the significance level of the coefficient delta)

Elvas	3187	-0.123	0.000	-0.115	0.000
Entroncamento	3418	-0.333	0.000	-0.105	0.000
Espinho	4676	-0.127	0.000	-0.092	0.000
Esposende	7126	-0.105	0.000	-0.164	0.000
Estarreja	5349	-0.194	0.000	-0.158	0.000
Estremoz	2493	-0.148	0.000	-0.121	0.000
Évora	13599	-0.148	0.000	-0.113	0.000
Fafe	9897	-0.101	0.000	-0.1	0.000
Faro	17569	-0.135	0.000	-0.092	0.000
Feira	30615	-0.152	0.000	-0.152	0.000
Felgueiras	20347	-0.132	0.000	-0.115	0.000
Ferreira do Alentejo	1729	-0.074	0.000	-0.079	0.000
Ferreira do Zêzere	1543	-0.148	0.000	-0.183	0.000
Figueira da Foz	13112	-0.284	0.000	-0.227	0.000
Figueira de Castelo Rodrigo	814	0.052	0.144	-0.077	0.000
Figueiró dos Vinhos	692	-0.076	0.013	-0.045	0.114
Fornos de Algodres	601	-0.081	0.016	-0.051	0.094
Freixo de Espada à Cinta	480	-0.112	0.000	-0.062	0.015
Fronteira	429	-0.176	0.000	-0.139	0.000
Fundão	4865	-0.101	0.000	-0.132	0.000
Gavião	368	-0.237	0.000	-0.127	0.000
Góis	537	-0.07	0.02	-0.127	0.000
Golegã	823	-0.147	0.000	-0.095	0.000
Gondomar	19286	-0.153	0.000	-0.123	0.000
Gouveia	1703	-0.071	0.000	-0.089	0.000
Grandola	1991	-0.242	0.000	-0.099	0.000
Guarda	8614	-0.115	0.000	-0.133	0.000
Guimarães	44869	-0.111	0.000	-0.099	0.000
Idanha-a-Nova	1200	-0.09	0.000	-0.113	0.000
Ílhavo	6664	-0.253	0.000	-0.198	0.000
Lagoa	5237	-0.102	0.000	-0.086	0.000
Lagos	6284	-0.094	0.000	-0.076	0.000
Lamego	3770	-0.071	0.000	-0.098	0.000
Leiria	35127	-0.209	0.000	-0.186	0.000
Lisboa	308636	-0.162	0.000	-0.077	0.000
Loulé	19266	-0.118	0.000	-0.091	0.000
Loures	45330	-0.194	0.000	-0.146	0.000
Lourinhã	3733	-0.137	0.000	-0.15	0.000
Lousã	2621	-0.142	0.000	-0.139	0.000
Lousada	10668	-0.144	0.000	-0.13	0.000
Mação	1064	-0.15	0.000	-0.108	0.000

Table A.3: Wage regressions at the worker level: Estimates of the raw gender wage gap and the gender wage discrimination gap by county, Portugal 2012 (includes the number of workers per county and the significance level of the coefficient delta)

Macedo de Cavaleiros	1717	-0.041	0.036	-0.069	0.000
Mafra	16561	-0.09	0.000	-0.12	0.000
Maia	45450	-0.239	0.000	-0.15	0.000
Mangualde	5044	-0.299	0.000	-0.233	0.000
Manteigas	441	-0.026	0.447	-0.063	0.018
Marco de Canaveses	10706	-0.184	0.000	-0.131	0.000
Marinha Grande	10301	-0.318	0.000	-0.215	0.000
Marvão	379	-0.173	0.000	-0.062	0.082
Matosinhos	52211	-0.243	0.000	-0.136	0.000
Mealhada	4004	-0.206	0.000	-0.139	0.000
Meda	603	-0.129	0.000	-0.071	0.016
Melgaço	888	-0.147	0.000	-0.1	0.000
Mértola	895	0.045	0.059	-0.03	0.108
Mesão Frio	373	-0.112	0.004	-0.077	0.015
Mira	1839	-0.177	0.000	-0.133	0.000
Miranda do Corvo	1245	-0.088	0.000	-0.1	0.000
Miranda do Douro	925	-0.137	0.000	-0.047	0.007
Mirandela	3345	-0.109	0.000	-0.099	0.000
Mogadouro	964	-0.104	0.000	-0.076	0.000
Moimenta da Beira	1312	-0.104	0.000	-0.094	0.000
Moita	5320	-0.125	0.000	-0.115	0.000
Monção	2782	-0.117	0.000	-0.137	0.000
Monchique	764	-0.047	0.068	-0.03	0.158
Mondim de Basto	796	0.011	0.599	-0.043	0.033
Monforte	447	-0.103	0.005	-0.101	0.000
Montalegre	869	-0.072	0.01	-0.054	0.014
Montemor-o-Novo	3089	-0.131	0.000	-0.156	0.000
Montemor-o-Velho	2874	-0.178	0.000	-0.147	0.000
Montijo	9042	-0.149	0.000	-0.098	0.000
Mora	939	-0.123	0.000	-0.093	0.000
Mortágua	1859	-0.153	0.000	-0.179	0.000
Moura	2125	-0.037	0.04	-0.102	0.000
Mourão	254	-0.015	0.754	-0.044	0.211
Murça	556	-0.051	0.132	-0.073	0.002
Murtosa	1381	-0.014	0.64	-0.148	0.000
Nazaré	2335	-0.138	0.000	-0.091	0.000
Nelas	2403	-0.215	0.000	-0.186	0.000
Nisa	841	-0.131	0.000	-0.094	0.000
óbidos	2621	-0.149	0.000	-0.108	0.000
Odemira	5018	-0.035	0.002	-0.084	0.000
Odivelas	16088	-0.094	0.000	-0.076	0.000

Table A.3: Wage regressions at the worker level: Estimates of the raw gender wage gap and the gender wage discrimination gap by county, Portugal 2012 (includes the number of workers per county and the significance level of the coefficient delta)

Oeiras	72864	-0.233	0.000	-0.108	0.000
Oleiros	662	-0.103	0.000	-0.092	0.000
Olhão	5432	-0.169	0.000	-0.139	0.000
Oliveira de Azeméis	20371	-0.252	0.000	-0.203	0.000
Oliveira de Frades	3922	-0.222	0.000	-0.219	0.000
Oliveira do Bairro	5787	-0.184	0.000	-0.174	0.000
Oliveira do Hospital	4314	-0.175	0.000	-0.168	0.000
Ourém	12028	-0.177	0.000	-0.129	0.000
Ourique	747	0.017	0.46	-0.035	0.073
Ovar	13635	-0.175	0.000	-0.166	0.000
Paços de Ferreira	15929	-0.071	0.000	-0.07	0.000
Palmela	18790	-0.232	0.000	-0.159	0.000
Pampilhosa da Serra	544	-0.075	0.008	-0.127	0.000
Paredes	15744	-0.044	0.000	-0.097	0.000
Paredes de Coura	919	-0.109	0.000	-0.1	0.000
Pedrogão Grande	486	-0.08	0.017	-0.087	0.002
Penacova	1596	-0.134	0.000	-0.099	0.000
Penafiel	15513	-0.153	0.000	-0.147	0.000
Penalva do Castelo	940	-0.15	0.000	-0.048	0.043
Penamacor	449	-0.083	0.016	-0.112	0.000
Penedono	364	-0.095	0.047	-0.141	0.000
Penela	1391	-0.258	0.000	-0.167	0.000
Peniche	4584	-0.193	0.000	-0.183	0.000
Peso da Régua	2638	-0.134	0.000	-0.085	0.000
Pinhel	1150	-0.059	0.005	-0.053	0.011
Pombal	12421	-0.184	0.000	-0.214	0.000
Ponte da Barca	1434	-0.051	0.014	-0.087	0.000
Ponte de Lima	7254	-0.104	0.000	-0.126	0.000
Ponte de Sôr	2424	-0.132	0.000	-0.082	0.000
Portalegre	4384	-0.195	0.000	-0.115	0.000
Portel	639	-0.1	0.001	-0.113	0.000
Portimão	13015	-0.078	0.000	-0.091	0.000
Porto	97178	-0.137	0.000	-0.096	0.000
Porto de Mós	4987	-0.178	0.000	-0.18	0.000
Póvoa de Lanhoso	3858	-0.082	0.000	-0.111	0.000
Póvoa de Varzim	12458	-0.149	0.000	-0.132	0.000
Proença-a-Nova	1042	-0.053	0.031	-0.078	0.000
Redondo	825	-0.106	0.000	-0.113	0.000
Reguengos de Monsaraz	1712	-0.089	0.000	-0.099	0.000
Resende	766	0.012	0.699	-0.074	0.002
Ribeira de Pena	696	-0.066	0.023	-0.056	0.025

Table A.3: Wage regressions at the worker level: Estimates of the raw gender wage gap and the gender wage discrimination gap by county, Portugal 2012 (includes the number of workers per county and the significance level of the coefficient delta)

Rio Maior	4637	-0.18	0.000	-0.2	0.000
Sabrosa	1000	-0.193	0.000	-0.086	0.000
Sabugal	1666	-0.015	0.428	-0.096	0.000
Salvaterra de Magos	3087	-0.17	0.000	-0.145	0.000
Santa Comba Dão	1598	-0.127	0.000	-0.111	0.000
Santa Marta de Penaguião	524	0.033	0.317	-0.075	0.001
Santarém	13185	-0.169	0.000	-0.161	0.000
Santiago do Cacém	4462	-0.112	0.000	-0.124	0.000
Santo Tirso	15798	-0.172	0.000	-0.173	0.000
São Brás de Alportel	1469	-0.037	0.088	-0.085	0.000
São João da Madeira	11118	-0.163	0.000	-0.13	0.000
São João da Pesqueira	988	-0.103	0.000	-0.106	0.000
São Pedro do Sul	2268	-0.115	0.000	-0.118	0.000
Sardoal	432	-0.071	0.028	-0.025	0.436
Sátão	1337	-0.084	0.000	-0.097	0.000
Seia	4127	-0.123	0.000	-0.091	0.000
Seixal	17125	-0.161	0.000	-0.12	0.000
Sernancelhe	711	-0.053	0.045	-0.083	0.001
Serpa	1673	-0.063	0.000	-0.103	0.000
Sertão	2694	-0.133	0.000	-0.134	0.000
Sesimbra	5076	-0.148	0.000	-0.066	0.000
Setúbal	23022	-0.23	0.000	-0.152	0.000
Sever do Vouga	2347	-0.222	0.000	-0.244	0.000
Silves	4855	-0.104	0.000	-0.105	0.000
Sines	5688	-0.429	0.000	-0.169	0.000
Sintra	55108	-0.142	0.000	-0.116	0.000
Sobral de Monte Agraço	1485	-0.117	0.000	-0.132	0.000
Soure	1972	-0.161	0.000	-0.133	0.000
Sousel	847	-0.134	0.000	-0.102	0.000
Tábua	2480	-0.133	0.000	-0.1	0.000
Tabuaço	543	-0.092	0.006	-0.071	0.006
Tarouca	1050	-0.092	0.000	-0.086	0.000
Tavira	4238	-0.095	0.000	-0.05	0.000
Terras de Bouro	865	-0.199	0.000	-0.006	0.759
Tomar	5522	-0.156	0.000	-0.119	0.000
Tondela	5241	-0.105	0.000	-0.119	0.000
Torre de Moncorvo	1504	-0.217	0.000	-0.03	0.14
Torres Novas	7670	-0.136	0.000	-0.139	0.000
Torres Vedras	16063	-0.131	0.000	-0.156	0.000
Trancoso	1491	-0.126	0.000	-0.117	0.000
Trofa	11284	-0.093	0.000	-0.103	0.000

Table A.3: Wage regressions at the worker level: Estimates of the raw gender wage gap and the gender wage discrimination gap by county, Portugal 2012 (includes the number of workers per county and the significance level of the coefficient delta)

Vagos	3664	-0.127	0.000	-0.108	0.000
Vale de Cambra	6312	-0.245	0.000	-0.163	0.000
Valença	4163	-0.218	0.000	-0.157	0.000
Valongo	13228	-0.167	0.000	-0.134	0.000
Valpaços	1419	-0.074	0.000	-0.063	0.001
Vendas Novas	2304	-0.169	0.000	-0.191	0.000
Viana do Alentejo	643	-0.127	0.000	-0.147	0.000
Viana do Castelo	19431	-0.178	0.000	-0.179	0.000
Vidigueira	764	-0.124	0.000	-0.134	0.000
Vieira do Minho	1333	-0.171	0.000	-0.025	0.274
Vila de Rei	524	-0.115	0.000	-0.082	0.000
Vila do Bispo	1092	-0.052	0.036	-0.022	0.279
Vila do Conde	18285	-0.184	0.000	-0.163	0.000
Vila Flor	828	-0.07	0.004	-0.062	0.001
Vila Franca de Xira	25364	-0.194	0.000	-0.133	0.000
Vila Nova da Barquinha	539	-0.231	0.000	-0.119	0.000
Vila Nova de Cerveira	2860	-0.177	0.000	-0.147	0.000
Vila Nova de Famalicão	37510	-0.212	0.000	-0.202	0.000
Vila Nova de Foz Côa	894	-0.134	0.000	-0.054	0.01
Vila Nova de Gaia	54452	-0.113	0.000	-0.125	0.000
Vila Nova de Paiva	446	0.012	0.73	-0.062	0.037
Vila Nova de Poiares	1521	-0.161	0.000	-0.172	0.000
Vila Pouca de Aguiar	1427	-0.083	0.000	-0.074	0.000
Vila Real	8808	-0.066	0.000	-0.076	0.000
Vila Real de Santo António	3396	-0.157	0.000	-0.074	0.000
Vila Velha de Ródão	656	-0.413	0.000	-0.176	0.000
Vila Verde	7345	-0.1	0.000	-0.126	0.000
Vila Viçosa	1503	-0.228	0.000	-0.127	0.000
Vimioso	426	-0.086	0.013	-0.106	0.000
Vinhais	603	-0.061	0.039	-0.103	0.000
Viseu	22154	-0.093	0.000	-0.111	0.000
Vizela	6247	-0.146	0.000	-0.109	0.000
Vouzela	1751	-0.15	0.000	-0.146	0.000

Appendix B

Local determinants of the wage discrimination gap

Table B.1: Wage discrimination regression at the county level: variables description

Variable name	Year	Unit of measurement	Source
Share of minimum wage earners	2011	Percentage	QP
Share of workers of the primary sector	2011	Percentage	QP
Share of workers of the secondary sector	2011	Percentage	QP
Share of workers of micro establishments (<10 workers)	2011	Percentage	QP
Share of workers of small establishments (10-49)	2011	Percentage	QP
Share of workers of medium-sized establishments (50-249)	2011	Percentage	QP
Share of female employers	2011	Percentage	QP
Share of young employers: 15 to 34 years old	2011	Percentage	QP
Activity rate 15-24 years old	2011	Percentage	Pordata
Activity rate 25-34 years old	2011	Percentage	Pordata
Female workers share of employment	2011	Percentage	QP
Share of workers holding a college degree	2011	Percentage	QP
Share of female immigrants	2011	Percentage	Pordata
Unemployment rate	2011	Percentage	Pordata
Part of a metropolitan area (dummy)	2011	=1 if true	ANMP
Public expenditure in cultural areas € per capita	2011	Euros per capita	Pordata
Ageing index (ratio of elderlies over youngsters)	2011	Ratio	Pordata
Crude birth rate per 1000 inhabitants	2011	Borns/1000 inhabitants	Pordata
Share of catholics	2011	Percentage	INE
Right-wing political majority in the last 2 elections (dummy)	2005-2009	=1 if true	CNE
Left-wing political majority in the last 2 elections (dummy)	2005-2009	=1 if true	CNE
Abstention rate in 2009	2009	Percentage	Pordata

Table B.2: Wage discrimination regression at the county level: descriptive statistics

Variable name	N	Min.	Max.	Mean	Std. Dev.	Skewness	Kurtosis
Share of minimum wage earners	278	0.057	0.37	0.183	0.065	0.509	-0.226
Share of workers of the primary sector	278	0.000	0.405	0.066	0.079	1.955	3.76
Share of workers of the secondary sector	278	0.067	0.782	0.377	0.15	0.478	-0.426
Share of workers of micro establishments (<10 workers)	278	0.136	0.697	0.388	0.114	0.201	-0.41
Share of workers of small establishments (10-49)	278	0.18	0.604	0.353	0.077	0.364	0.307
Share of workers of medium-sized establishments (50-249)	278	0.000	0.489	0.199	0.107	0.177	-0.159
Share of female employers	278	0.059	0.433	0.283	0.053	-0.571	1.436
Share of young employers: 15 to 34 years old	278	0.000	0.4	0.153	0.046	2.012	8.914
Activity rate 15-24 years old	278	0.26	0.499	0.365	0.044	0.008	-0.077
Activity rate 25-34 years old	278	0.743	0.949	0.88	0.036	-1.039	1.161
Female workers share of employment	278	0.235	0.611	0.456	0.066	-0.485	0.799
Share of workers holding a college degree	278	0.039	0.312	0.107	0.038	1.795	5.934
Share of female immigrants	278	0.001	0.257	0.028	0.035	3.323	13.476
Unemployment rate	278	0.051	0.229	0.125	0.028	0.654	0.395
Part of a metropolitan area (dummy)	278	0.000	1	0.126	0.332	2.268	3.165
Public expenditure in cultural areas € per capita	278	4.006	598.563	105.552	89.213	2.423	8.413
Ageing index (ratio of elderlies over youngsters)	278	0.593	5.978	1.971	1.013	1.579	3.071
Crude birth rate per 1000 inhabitants	278	2.2	13.1	7.591	2.047	0.022	-0.248
Share of catholics	278	0.672	0.989	0.912	0.071	-1.101	0.356
Right-wing political majority in the last 2 elections (dummy)	278	0.000	1	0.385	0.487	0.476	-1.787
Left-wing political majority in the last 2 elections (dummy)	278	0.000	1	0.442	0.498	0.233	-1.96
Abstention rate in 2009	278	0.189	0.559	0.364	0.076	0.055	-0.339

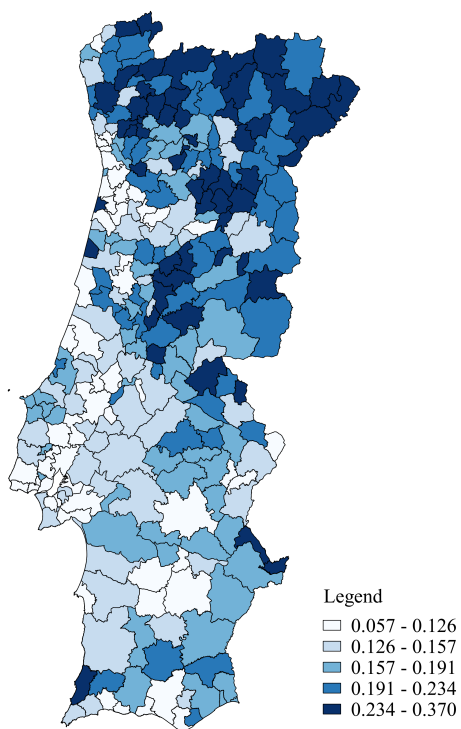


Figure B.1: Share of minimum wage earners, Portugal, 2011

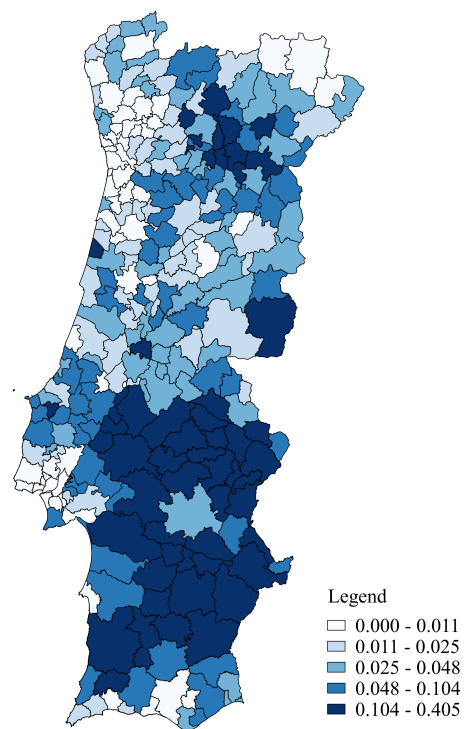


Figure B.2: Share of workers in the primary sector, Portugal, 2011

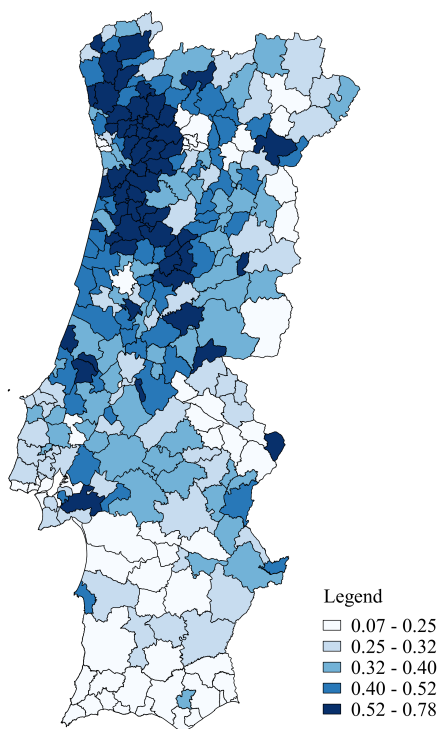


Figure B.3: Share of workers in the secondary sector, Portugal, 2011

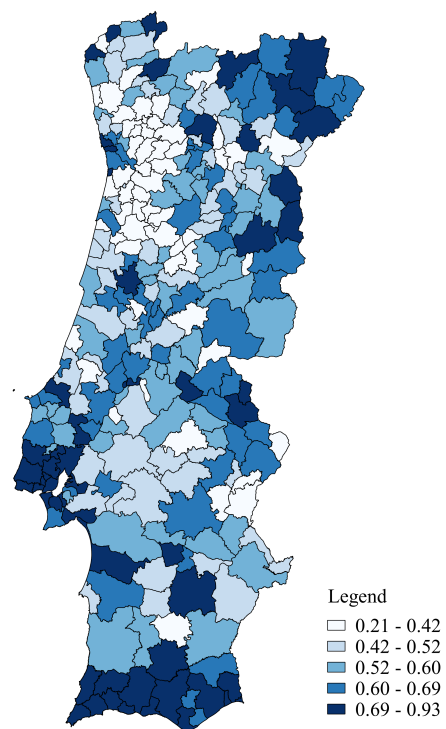


Figure B.4: Share of workers in the tertiary sector, Portugal, 2011

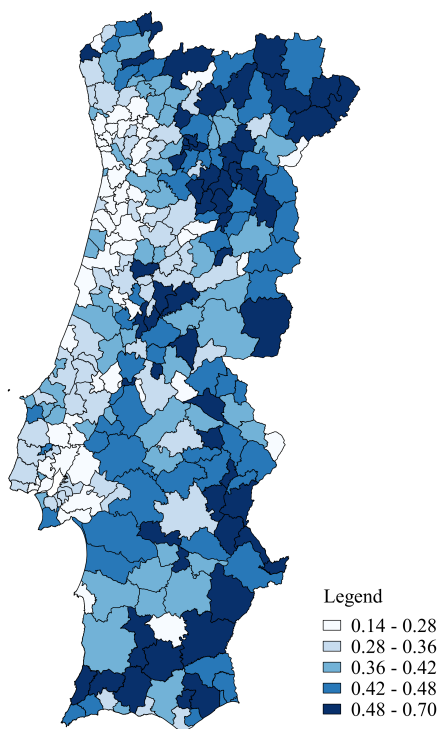


Figure B.5: Share of workers in micro-sized establishments, Portugal, 2011

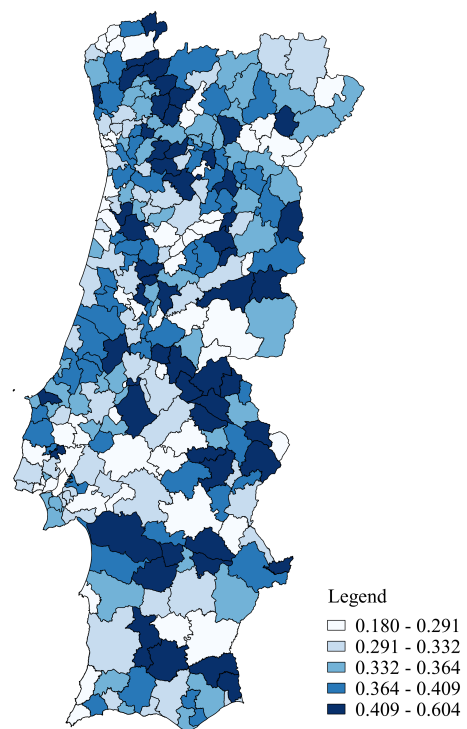


Figure B.6: Share of workers in small-sized establishments, Portugal, 2011

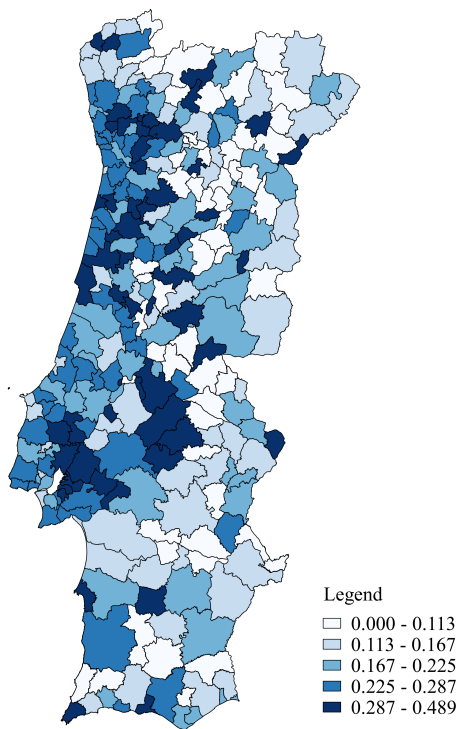


Figure B.7: Share of workers in medium-sized establishments, Portugal, 2011

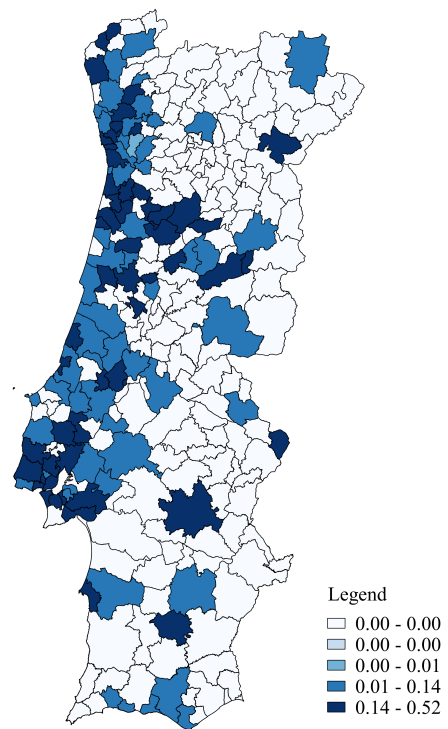


Figure B.8: Share of workers in large establishments, Portugal, 2011

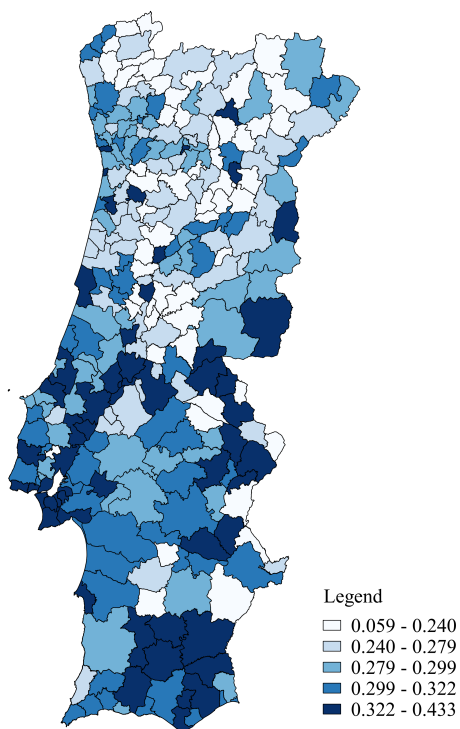


Figure B.9: Share of female employees, Portugal, 2011

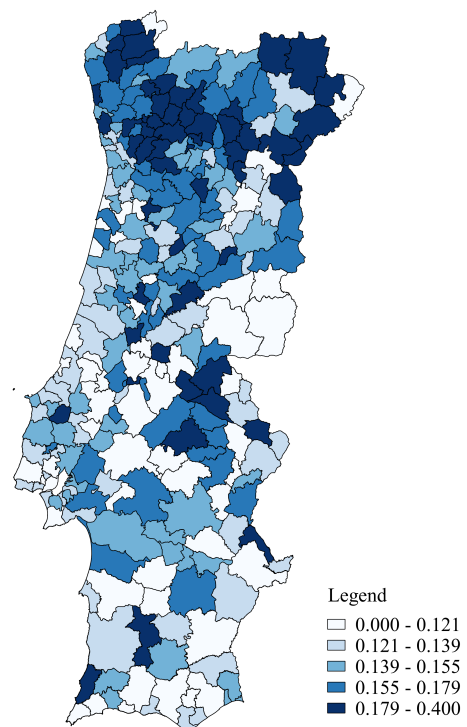


Figure B.10: Share of young employees (15 to 34 years old), Portugal, 2011

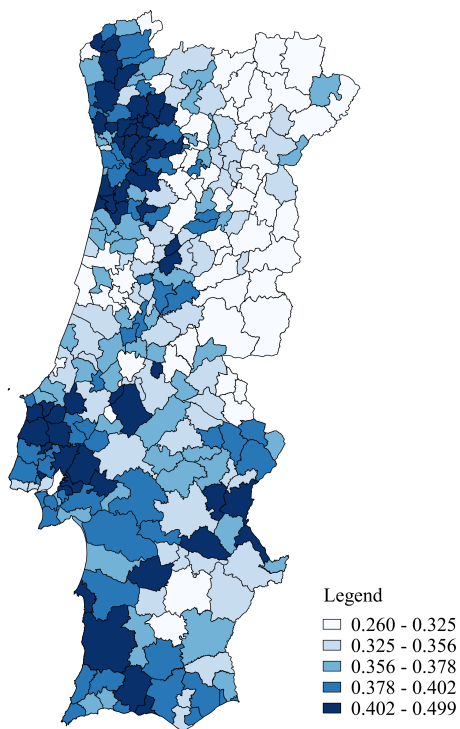


Figure B.11: Youth activity rate (15 to 24 years old), Portugal, 2011

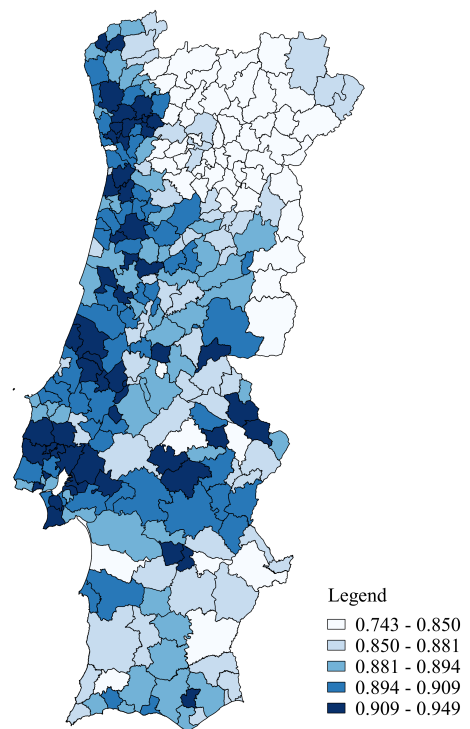


Figure B.12: Youth activity rate (25 to 34 years old), Portugal, 2011

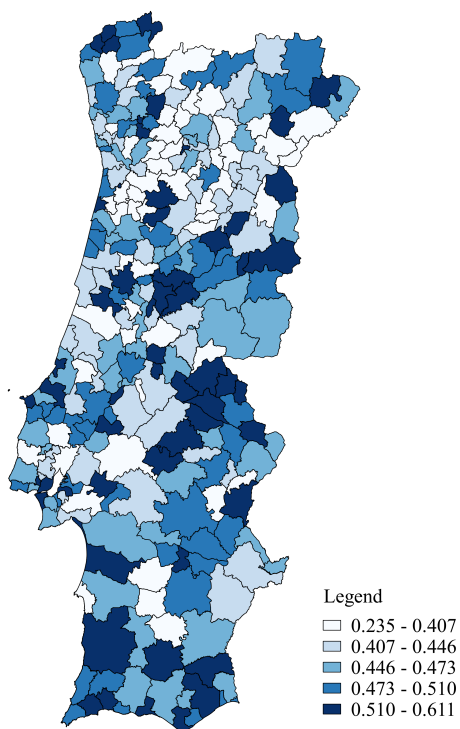


Figure B.13: Share of female workers, Portugal, 2011

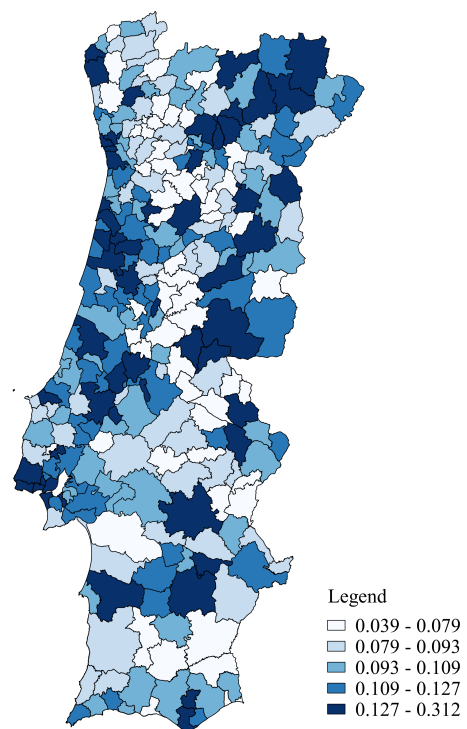


Figure B.14: Share of workers holding a college degree, Portugal, 2011

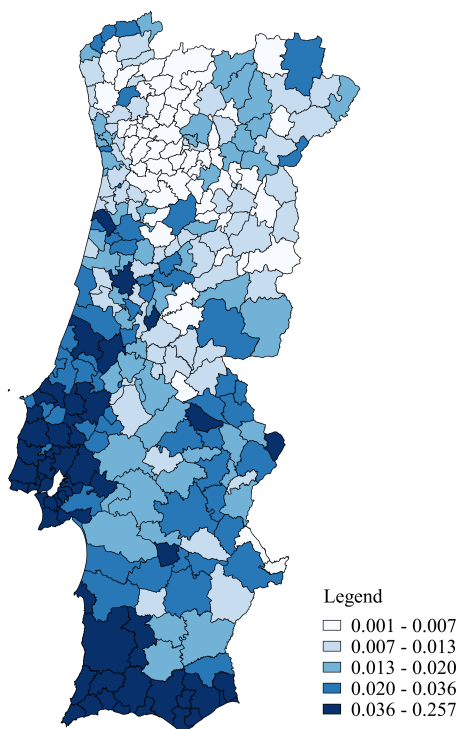


Figure B.15: Share of female immigrants, Portugal, 2011

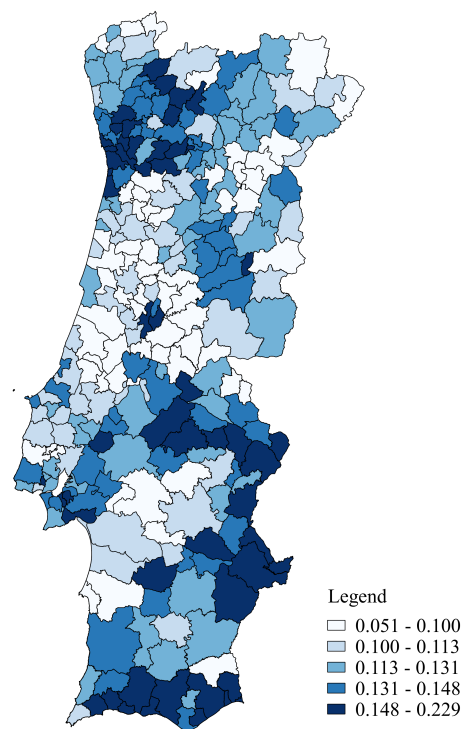


Figure B.16: Total unemployment rate, Portugal, 2011

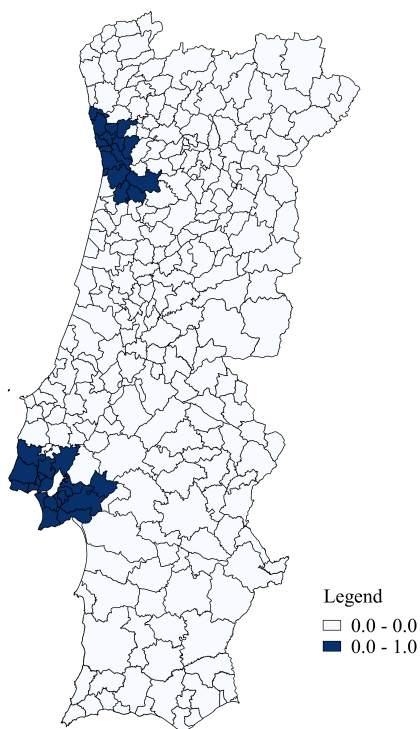


Figure B.17: Metropolitan areas of Porto and Lisbon, Portugal, 2011

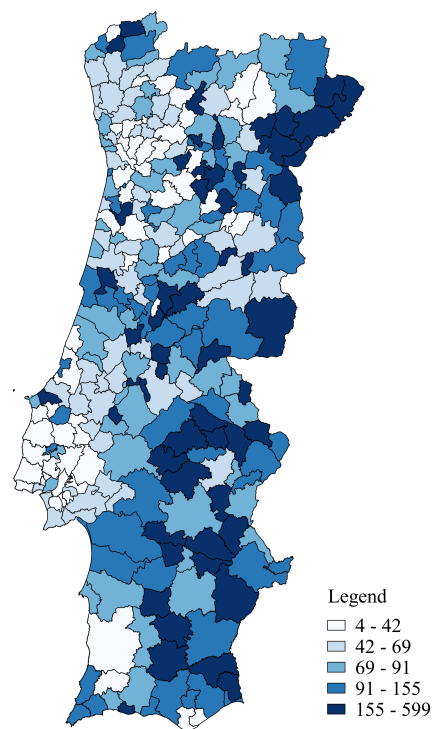


Figure B.18: Public expenditure in cultural areas (€ per capita), Portugal, 2011

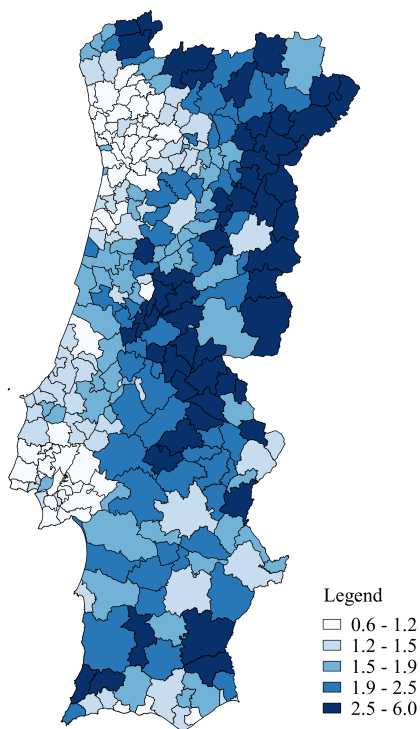


Figure B.19: Ageing Index, Portugal, 2011

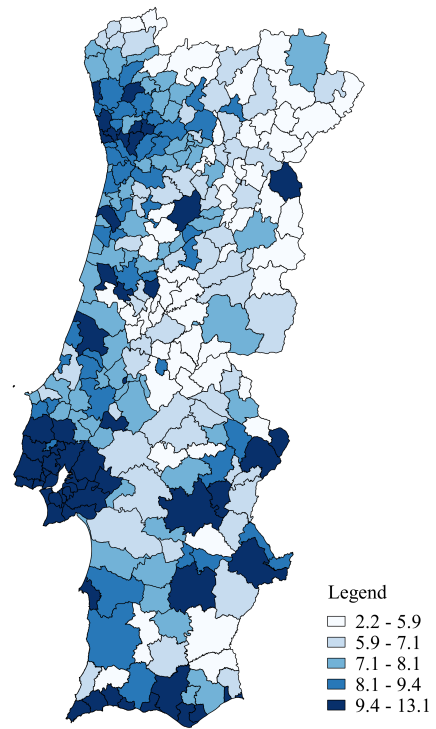


Figure B.20: Crude birth rate per 1000 inhabitants, Portugal, 2011

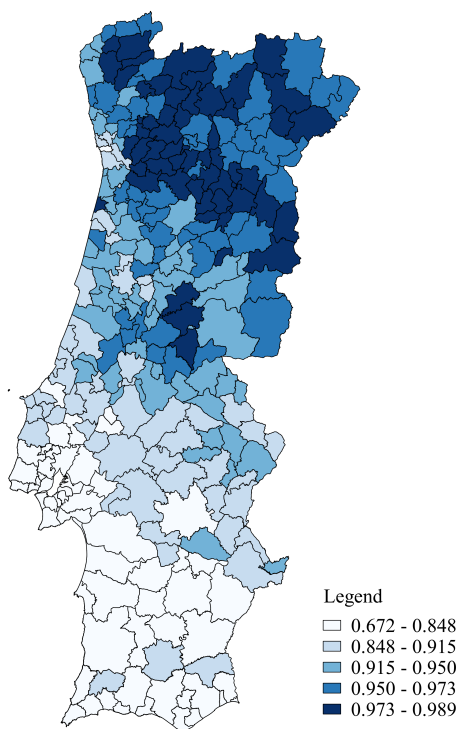


Figure B.21: Share of catholic population, Portugal, 2011

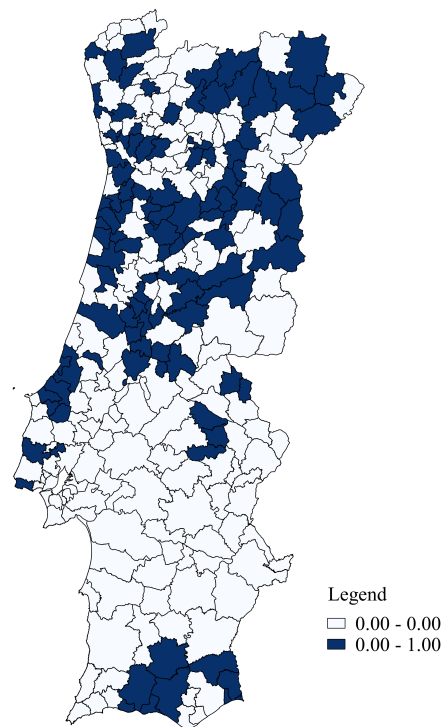


Figure B.22: Counties with a right-wing political majority in the elections of 2005 and 2009, Portugal

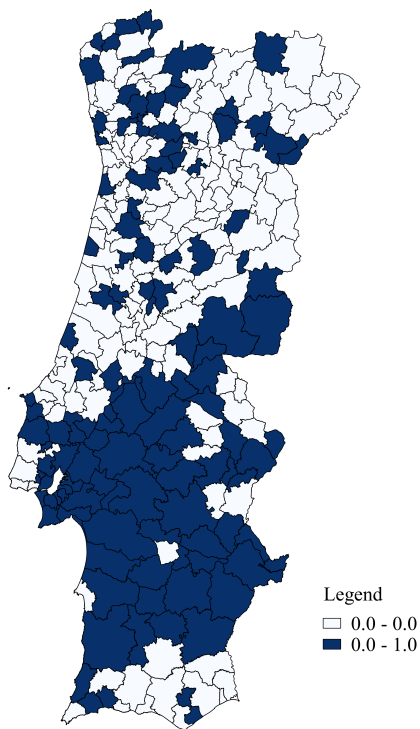


Figure B.23: Counties with a left-wing political majority in the elections of 2005 and 2009, Portugal

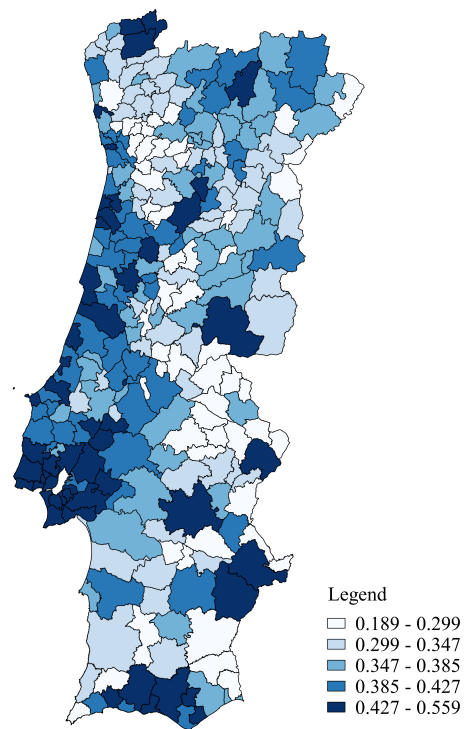


Figure B.24: Abstention rate in county elections, Portugal, 2009

Table B.3: Wage discrimination regression at the county level: OLS results (dependent variable: the additive inverse of the discrimination gap)

N=267

Independent variables	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
Share of minimum wage earners	-0.190***	3.7	-5.13	0.000	-26.25	-11.69
Share of workers of the primary sector	0.043	2.73	1.59	0.114	-1.05	9.72
Share of workers of the secondary sector	0.109***	1.98	5.48	0.000	6.95	14.75
Share of workers of micro establishments	-0.063**	2.76	-2.29	0.023	-11.76	-0.89
Share of workers of small establishments	0.013	2.9	0.46	0.645	-4.37	7.05
Share of workers of medium-sized establishments	-0.001	2.62	-0.04	0.965	-5.28	5.05
Share of female employers	0.005	3.56	0.13	0.9	-6.57	7.46
Share of young employers: (15-34 years old)	-0.041	4.01	-1.03	0.305	-12.03	3.77
Activity rate 15-24 years old	-0.020	5.31	-0.38	0.707	-12.46	8.46
Activity rate 25-34 years old	0.175***	6.53	2.68	0.008	4.64	30.37
Female workers share of employment	0.033	2.94	1.14	0.257	-2.45	9.12
Share of workers holding a college degree	-0.052	5.75	-0.91	0.364	-16.56	6.09
Share of female immigrants	-0.059	7.79	-0.76	0.448	-21.26	9.42
Unemployment rate	-0.163**	6.63	-2.46	0.015	-29.33	-3.23
Part of a metropolitan area (dummy)	-0.014**	0.59	-2.36	0.019	-2.55	-0.23
Public expenditure in cultural areas € per capita)	0.000	0.000	1.57	0.118	0.000	0.01
Ageing index	0.002	0.28	0.63	0.531	-0.38	0.73
Crude birth rate per 1000 inhabitants	0.002	0.15	1.03	0.304	-0.14	0.46
Share of catholics	0.020	4.89	0.42	0.678	-7.59	11.65
Right-wing political majority in the last 2 elections	-0.004	0.49	-0.72	0.472	-1.31	0.61
Left-wing political majority in the last 2 elections	-0.002	0.5	-0.38	0.708	-1.17	0.8
Abstention rate in 2009	0.078***	2.9	2.71	0.007	2.14	13.55
Constant term	-0.071	8.46	-0.83	0.405	-23.72	9.61

$F(22, 244) = 13.01 \mid Prob > F = 0.0000 \mid R - squared = 0.5398 \mid AdjR - squared = 0.4983$

*statistically significant at 10% significance level; **statistically significant at 5%; ***statistically significant at 1%

Table B.4: Wage discrimination regression at the county level: OLS results (dependent variable: the additive inverse of the discrimination gap; robust standard errors)

N=267

Independent variables	Coef.	Std. Err.	t	P > t	[95% Conf. Interval]
Share of minimum wage earners	-0.0190***	4.06	-4.67	0.000	-26.96
Share of workers of the primary sector	0.043	2.79	1.56	0.121	-1.16
Share of workers of the secondary sector	0.109***	1.85	5.87	0.000	7.21
Share of workers of micro establishments	-0.063**	3.09	-2.04	0.042	-12.42
Share of workers of small establishments	0.013	3.22	0.41	0.679	-5.01
Share of workers of medium-sized establishments	-0.001	3.03	-0.04	0.97	-6.09
Share of female employers	0.005	3.96	0.11	0.91	-7.35
Share of young employers: (15-34 years old)	-0.041	4.32	-0.96	0.34	-12.63
Activity rate 15-24 years old	-0.020	5.32	-0.38	0.708	-12.49
Activity rate 25-34 years old	0.175***	6.43	2.72	0.007	4.85
Female workers share of employment	0.033	3.06	1.09	0.276	-2.69
Share of workers holding a college degree	-0.052	5.51	-0.95	0.343	-16.09
Share of female immigrants	-0.059	7.21	-0.82	0.413	-20.12
Unemployment rate	-0.163**	6.47	-2.52	0.012	-29.02
Part of a metropolitan area (dummy)	-0.014**	0.56	-2.46	0.014	-2.5
Public expenditure in cultural areas € per capita)	0.000	0.000	1.48	0.139	0.000
Ageing index	0.002	0.28	0.62	0.535	-0.38
Crude birth rate per 1000 inhabitants	0.002	0.16	0.99	0.325	-0.16
Share of catholics	0.020	4.52	0.45	0.653	-6.86
Right-wing political majority in the last 2 elections	-0.004	0.52	-0.67	0.501	-1.38
Left-wing political majority in the last 2 elections	-0.002	0.52	-0.36	0.72	-1.22
Abstention rate in 2009	0.078***	2.97	2.64	0.009	1.99
Constant term	-0.071	8.17	-0.86	0.389	-23.15

$F(22, 244) = 13.75 \mid Prob > F = 0.0000 \mid R - squared = 0.5398$

*statistically significant at 10% significance level; **statistically significant at 5%; ***statistically significant at 1%

Table B.5: Wage discrimination regression at the county level: Correlation matrix

Correlations matrix	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
[1]Share of minimum wage earners	1	0	0.17	0.5	0.27	-0.28	-0.36	0.29	-0.16	-0.37	0.16	-0.4	-0.34	-0.06	-0.31	0.23	0.37	-0.49	0.56	0.14	-0.12	-0.36
[2]Share of workers of the primary sector	0	1	-0.32	0.34	0.15	-0.22	-0.01	0.02	-0.07	-0.24	-0.05	-0.21	-0.08	0.07	-0.25	0.34	0.2	-0.2	-0.09	-0.18	0.22	-0.22
[3]Share of workers of the secondary sector	0.17	-0.32	1	-0.39	-0.1	0.39	-0.24	0.11	0.35	0.19	-0.31	-0.29	-0.44	-0.15	-0.05	-0.18	-0.19	-0.08	0.47	0.09	-0.07	-0.26
[4]Share of workers of micro establishments	0.5	0.34	-0.39	1	0.33	-0.7	-0.23	0.23	-0.36	-0.5	0.11	-0.3	-0.07	0.01	-0.34	0.3	0.45	-0.45	0.21	0.04	-0.04	-0.16
[5]Share of workers of small establishments	0.27	0.15	-0.1	0.33	1	-0.6	-0.1	0	-0.06	-0.12	0.12	-0.26	-0.12	-0.01	-0.19	0.09	0.17	-0.18	0.17	0.07	-0.05	-0.3
[6]Share of workers of medium-sized establishments	-0.28	-0.22	0.39	-0.7	-0.6	1	0.12	-0.08	0.28	0.31	-0.11	0.17	0.03	0	0.14	-0.21	-0.29	0.27	-0.09	-0.04	0.09	0.13
[7]Share of female employers	-0.36	-0.01	-0.24	-0.23	-0.1	0.12	1	-0.11	0.14	0.27	0.1	0.14	0.25	0.12	0.23	-0.12	-0.2	0.36	-0.41	-0.12	0.15	0.2
[8]Share of young employers: (15-34 years old)	0.29	0.02	0.11	0.23	0	-0.08	-0.11	1	0.05	-0.23	-0.06	-0.19	-0.22	0.04	-0.1	0.11	0.04	-0.13	0.32	0.08	-0.11	-0.16
[9]Activity rate 15-24 years old	-0.16	-0.07	0.35	-0.36	-0.06	0.28	0.14	0.05	1	0.47	-0.02	-0.28	0.13	0.2	0.25	-0.15	-0.44	0.4	-0.18	-0.07	0.15	-0.05
[10]Activity rate 25-34 years old	-0.37	-0.24	0.19	-0.5	-0.12	0.31	0.27	-0.23	0.47	1	0.18	0.11	0.19	-0.12	0.27	-0.15	-0.39	0.44	-0.33	-0.02	0.05	0.17
[11]Female workers share of employment	0.16	-0.05	-0.31	0.11	0.12	-0.11	0.1	-0.06	-0.02	0.18	1	0.09	0.16	0.04	-0.06	0.11	0.22	-0.06	-0.11	-0.02	0.06	-0.02
[12]Share of workers holding a college degree	-0.4	-0.21	-0.29	-0.3	-0.26	0.17	0.14	-0.19	-0.28	0.11	0.09	1	0.17	-0.03	0.29	-0.06	-0.17	0.31	-0.26	-0.05	-0.01	0.38
[13]Share of female immigrants	-0.34	-0.08	-0.44	-0.07	-0.12	0.03	0.25	-0.22	0.13	0.19	0.16	0.17	1	0.19	0.14	-0.05	-0.22	0.44	-0.74	-0.07	0.07	0.36
[14]Unemployment rate	-0.06	0.07	-0.15	0.01	-0.01	0	0.12	0.04	0.2	-0.12	0.04	-0.03	0.19	1	0.19	-0.07	-0.28	0.26	-0.2	-0.15	0.14	0.02
[15]Part of a metropolitan area (dummy)	-0.31	-0.25	-0.05	-0.34	-0.19	0.14	0.23	-0.1	0.25	0.27	-0.06	0.29	0.14	0.19	1	-0.24	-0.32	0.46	-0.32	-0.06	0.05	0.32
[16]Public expenditure in cultural areas € per capita)	0.23	0.34	-0.18	0.3	0.09	-0.21	-0.12	0.11	-0.15	0.11	-0.06	-0.05	-0.07	-0.24	1	0.35	-0.27	0.06	0.03	0.04	-0.29	-0.32
[17]Ageing index	0.37	0.2	-0.19	0.45	0.17	-0.29	-0.2	0.04	-0.44	-0.39	0.22	-0.17	-0.22	-0.28	-0.32	0.35	1	-0.75	0.29	0.09	-0.02	-0.32
[18]Crude birth rate per 1000 inhabitants	-0.49	-0.2	-0.08	-0.45	-0.18	0.27	0.36	-0.13	0.4	0.44	-0.06	0.31	0.44	0.26	0.46	-0.27	-0.75	1	-0.55	-0.12	0.11	0.41
[19]Share of catholics	0.56	-0.09	0.47	0.21	0.17	-0.09	-0.41	0.32	-0.18	-0.33	-0.11	-0.26	-0.74	-0.2	-0.32	0.06	0.29	-0.55	1	0.28	-0.31	-0.44
[20]Right-wing political majority in the last 2 elections	0.14	-0.18	0.09	0.04	0.07	-0.04	-0.12	0.08	-0.07	-0.02	-0.02	-0.05	-0.07	-0.15	-0.06	0.03	0.09	-0.12	0.28	1	-0.73	-0.01
[21]Left-wing political majority in the last 2 elections	-0.12	0.22	-0.07	-0.04	-0.05	0.09	0.15	-0.11	0.15	0.05	0.06	-0.01	0.07	0.14	0.05	0.04	-0.02	0.11	-0.31	-0.73	1	0.09
[22]Abstention rate in 2009	-0.36	-0.22	-0.26	-0.16	-0.3	0.13	0.2	-0.16	-0.05	0.17	-0.02	0.38	0.36	0.02	0.32	-0.29	-0.32	0.41	-0.44	-0.01	0.09	1

Table B.6: Wage discrimination regression at the county level: Variance Inflation Factor

Explanatory variables	VIF
Share of minimum wage earners	2.457
Share of workers of the primary sector	1.901
Share of workers of the secondary sector	3.73
Share of workers of micro establishments	3.988
Share of workers of small establishments	1.985
Share of workers of medium-sized establishments	3.244
Share of female employers	1.374
Share of young employers: (15-34 years old)	1.282
Activity rate 15-24 years old	2.345
Activity rate 25-34 years old	2.242
Female workers share of employment	1.578
Share of workers holding a college degree	2.097
Share of female immigrants	3.029
Unemployment rate	1.417
Part of a metropolitan area (dummy)	1.659
Public expenditure in cultural areas € per capita)	1.451
Ageing index	3.341
Crude birth rate per 1000 inhabitants	3.922
Share of catholics	4.936
Right-wing political majority in the last 2 elections	2.384
Left-wing political majority in the last 2 elections	2.587
Abstention rate in 2009	1.94

Table B.7: Wage discrimination regression at the county level: OLS results (dependent variable: additive inverse of the discrimination gap; excludes the explanatory variables ageing index, share of catholics and right-wing political side)

N=267

Independent variables	Coef.	Std. Err.	t	P > t	[95% Conf.	Interval]
Share of minimum wage earners	-0.187***	3.586	-5.2	0.000	-25.724	-11.596
Share of workers of the primary sector	0.040	2.658	1.52	0.131	-1.203	9.268
Share of workers of the secondary sector	0.107***	1.9	5.64	0.000	6.976	14.459
Share of workers of micro establishments	-0.062**	2.734	-2.26	0.025	-11.566	-0.795
Share of workers of small establishments	0.012	2.861	0.41	0.683	-4.464	6.807
Share of workers of medium-sized establishments	-0.001	2.588	-0.05	0.962	-5.22	4.973
Share of female employers	0.004	3.518	0.1	0.921	-6.579	7.28
Share of young employers: (15-34 years old)	-0.040	3.948	-1.02	0.309	-11.797	3.754
Activity rate 15-24 years old	-0.026	5.242	-0.5	0.62	-12.926	7.722
Activity rate 25-34 years old	0.168***	6.393	2.63	0.009	4.228	29.411
Female workers share of employment	0.036	2.884	1.23	0.219	-2.128	9.233
Share of workers holding a college degree	-0.051	5.676	-0.89	0.373	-16.241	6.119
Share of female immigrants	-0.077	6.143	-1.25	0.213	-19.772	4.428
Unemployment rate	-0.171***	6.386	-2.68	0.008	-29.702	-4.546
Part of a metropolitan area (dummy)	-0.014**	0.574	-2.4	0.017	-2.509	-0.247
Public expenditure in cultural areas € per capita)	0.000	0.002	1.56	0.12	-0.001	0.007
Crude birth rate per 1000 inhabitants	0.001	0.121	0.81	0.416	-0.14	0.337
Left-wing political majority in the last 2 elections	0.000	0.334	0.13	0.893	-0.612	0.702
Abstention rate in 2009	0.070**	2.733	2.55	0.011	1.584	12.349
Constant term	-0.034	6.005	-0.57	0.568	-15.256	8.398

$F(19, 247) = 15.15$ | $Prob > F = 0.0000$ | $R - squared = 0.5381$ | $AdjR - squared = 0.5026$

*statistically significant at 10% significance level; **statistically significant at 5%; ***statistically significant at 1%

Table B.8: Wage discrimination regression at the county level: OLS results (dependent variable: the additive inverse of the discrimination gap; excluding: Castro Verde, São João da Pesqueira, Tarouca, Aljezur, Albufeira, Penedono, Vila Velha de R'odão and Figueira de Castelo Rodrigo)

N=259

Independent variables	Coef.	Std. Err.	t	P> t	[95% Conf.	Interval]
Share of minimum wage earners	-0.194***	3.87	-5.03	0.000	-27.06	-11.83
Share of workers of the primary sector	0.011	3.12	0.36	0.722	-5.04	7.26
Share of workers of the secondary sector	0.085***	2.06	4.14	0.000	4.47	12.6
Share of workers of micro establishments	-0.079***	2.97	-2.66	0.008	-13.77	-2.04
Share of workers of small establishments	0.017	3.03	0.55	0.581	-4.3	7.64
Share of workers of medium-sized establishments	0.014	2.88	0.48	0.635	-4.3	7.04
Share of female employers	-0.027	3.68	-0.75	0.457	-9.99	4.5
Share of young employers: (15-34 years old)	-0.119**	4.74	-2.51	0.013	-21.23	-2.56
Activity rate 15-24 years old	-0.009	5.33	-0.17	0.864	-11.42	9.6
Activity rate 25-34 years old	0.158**	6.68	2.37	0.019	2.68	29
Female workers share of employment	0.021	3.06	0.7	0.487	-3.9	8.16
Share of workers holding a college degree	-0.096	5.95	-1.61	0.108	-21.32	2.14
Share of female immigrants	-0.145	9.07	-1.6	0.11	-32.4	3.33
Unemployment rate	-0.127*	6.72	-1.88	0.061	-25.9	0.59
Part of a metropolitan area (dummy)	-0.016***	0.59	-2.73	0.007	-2.76	-0.45
Public expenditure in cultural areas € per capita)	0.000**	0.000	2.55	0.011	0.000	0.01
Ageing index	0.002	0.3	0.48	0.629	-0.45	0.74
Crude birth rate per 1000 inhabitants	0.002	0.16	1.33	0.184	-0.1	0.54
Share of catholics	0.037	5.09	0.73	0.469	-6.34	13.72
Right-wing political majority in the last 2 elections	-0.005	0.49	-1.11	0.27	-1.5	0.42
Left-wing political majority in the last 2 elections	-0.003	0.49	-0.52	0.602	-1.23	0.72
Abstention rate in 2009	0.086***	2.92	2.94	0.004	2.84	14.34
Constant term	-0.041	8.86	-0.46	0.644	-21.54	13.36

$F(22, 236) = 13.65$ | $Prob > F = 0.0000$ | $R - squared = 0.5600$ | $AdjR - squared = 0.5190$

*statistically significant at 10% significance level; **statistically significant at 5%; ***statistically significant at 1%

Table B.9: Wage regression at the worker level: Leverage and Cook's Distance (sorted in descending order of Leverage)

Municipality	Leverage	Cook's D.
Castro Verde	0.322	0.015
São João da Pesqueira	0.264	0.004
Tarouca	0.262	0.035
Aljezur	0.261	0.083
Albufeira	0.257	0.007
Penedono	0.220	0.050
Vila Velha de Ródão	0.206	0.002
Figueira de Castelo Rodrigo	0.202	0.002
Grandola	0.200	0.007
Fronteira	0.198	0.028
Sines	0.187	0.000
Gavião	0.184	0.012
Monforte	0.184	0.003
Vila Nova de Paiva	0.182	0.001
Cinfães	0.179	0.039
Vila de Rei	0.173	0.015
Góis	0.167	0.020
Pampilhosa da Serra	0.167	0.016
Alcoutim	0.166	0.001
Carraceda de Ansiães	0.159	0.029
Freixo de Espada à Cinta	0.155	0.004
Resende	0.155	0.002
Oleiros	0.154	0.012
Alandroal	0.152	0.001
Alvito	0.149	0.002
Oeiras	0.146	0.001
Alter do Chão	0.145	0.025
Aljustrel	0.141	0.009
Lisboa	0.141	0.007
Vimioso	0.141	0.004
Lagos	0.141	0.003
Valença	0.136	0.011
Porto	0.131	0.001
Penela	0.128	0.000
Oliveira de Frades	0.126	0.007
Idanha-a-Nova	0.125	0.009
Mesão Frio	0.125	0.006
Ourique	0.124	0.027
Odemira	0.124	0.001
Boticas	0.122	0.008
Redondo	0.122	0.002
Mondim de Basto	0.121	0.006
Vale de Cambra	0.121	0.002

Table B.9: Wage regression at the worker level: Leverage and Cook's Distance (sorted in descending order of Leverage)

Alpiarça	0.120	0.004
Mangualde	0.119	0.047
Ferreira do Alentejo	0.119	0.013
Arouca	0.118	0.001
Amadora	0.117	0.000
Cuba	0.115	0.002
Serpa	0.115	0.000
Murtosa	0.114	0.006
Avis	0.113	0.016
Penamacor	0.112	0.007
Lagoa	0.112	0.001
Belmonte	0.112	0.000
Vidigueira	0.110	0.000
Mafra	0.110	0.000
Vinhais	0.109	0.023
Sabrosa	0.109	0.008
Azambuja	0.109	0.004
Campo Maior	0.106	0.002
Vouzela	0.105	0.007
Castanheira de Pera	0.105	0.000
Melgaço	0.105	0.000
Tabuaço	0.103	0.004
Paços de Ferreira	0.102	0.022
São Brás de Alportel	0.101	0.006
Constância	0.097	0.003
Condeixa-a-Nova	0.097	0.000
Tábua	0.096	0.007
Moita	0.096	0.001
Crato	0.095	0.005
Arruda dos Vinhos	0.095	0.001
Vila Flor	0.094	0.008
Mação	0.094	0.004
Loulé	0.094	0.002
Felgueiras	0.093	0.031
Pedrogão Grande	0.093	0.005
Manteigas	0.092	0.003
Vila Nova de Poiães	0.091	0.002
Ribeira de Pena	0.090	0.019
São João da Madeira	0.090	0.008
Elvas	0.090	0.001
Santo Tirso	0.089	0.017
Celorico da Beira	0.089	0.009
Paredes de Coura	0.089	0.006
Montijo	0.089	0.006

Table B.9: Wage regression at the worker level: Leverage and Cook's Distance (sorted in descending order of Leverage)

Vila Nova de Cerveira	0.089	0.005
Espinho	0.089	0.001
Palmela	0.089	0.001
Lousada	0.088	0.001
Trofa	0.086	0.003
Cascais	0.085	0.001
Moimenta da Beira	0.084	0.001
Portimão	0.084	0.001
Vizela	0.083	0.008
Baião	0.083	0.004
Oliveira de Azeméis	0.083	0.002
Paredes	0.082	0.001
Portel	0.081	0.002
Castelo de Paiva	0.081	0.001
Fafe	0.081	0.000
Santa Marta de Penaguião	0.080	0.000
Cabeceiras de Basto	0.080	0.000
Murça	0.079	0.004
Vila Nova de Foz Côa	0.078	0.008
Marvão	0.078	0.002
Vila Viçosa	0.077	0.000
Vila Real de Santo António	0.077	0.000
Coimbra	0.077	0.000
Entroncamento	0.076	0.008
Penacova	0.075	0.003
Mogadouro	0.075	0.002
Castelo de Vide	0.075	0.000
Sousel	0.075	0.000
Olhão	0.074	0.007
Ponte de Sôr	0.074	0.004
Gondomar	0.074	0.002
Moura	0.074	0.000
Miranda do Douro	0.073	0.008
Odivelas	0.073	0.004
Alvaiázere	0.073	0.003
Fornos de Algodres	0.073	0.002
Castro Marim	0.072	0.006
Monção	0.072	0.002
Almeida	0.072	0.000
Sesimbra	0.071	0.012
Tavira	0.071	0.005
Viana do Alentejo	0.071	0.005
Mira	0.071	0.004
Alcochete	0.071	0.002

Table B.9: Wage regression at the worker level: Leverage and Cook's Distance (sorted in descending order of Leverage)

Celorico de Basto	0.071	0.002
Ílhavo	0.070	0.001
Sintra	0.070	0.000
Ponte da Barca	0.069	0.001
Penalva do Castelo	0.068	0.022
Meda	0.068	0.002
Matosinhos	0.067	0.004
Castro Daire	0.067	0.000
Marco de Canaveses	0.067	0.000
Barrancos	0.067	0.000
óbidos	0.066	0.001
Aguiar da Beira	0.066	0.000
Mora	0.065	0.007
Proença-a-Nova	0.065	0.003
Silves	0.065	0.002
Faro	0.065	0.001
Feira	0.065	0.000
Estarreja	0.065	0.000
Beja	0.064	0.003
Guarda	0.063	0.002
Sobral de Monte Agraço	0.063	0.000
Sabugal	0.062	0.000
Figueira da Foz	0.061	0.018
Arcos de Valdevez	0.061	0.004
Nisa	0.061	0.000
Caminha	0.060	0.018
Armamar	0.060	0.008
Chamusca	0.060	0.008
Borba	0.060	0.001
Valpaços	0.060	0.000
Albergaria-a-Velha	0.060	0.000
Macedo de Cavaleiros	0.060	0.000
Loures	0.059	0.003
Montalegre	0.059	0.001
Ovar	0.059	0.000
Barcelos	0.059	0.000
Barreiro	0.059	0.000
Nelas	0.058	0.003
Almada	0.058	0.003
Vila Nova de Gaia	0.058	0.000
Maia	0.057	0.002
Portalegre	0.057	0.000
Mortágua	0.056	0.006
Golegã	0.056	0.001

Table B.9: Wage regression at the worker level: Leverage and Cook's Distance (sorted in descending order of Leverage)

Amares	0.056	0.000
Batalha	0.055	0.008
Vendas Novas	0.055	0.005
Nazaré	0.055	0.003
Almodôvar	0.055	0.001
Carregal do Sal	0.055	0.001
Penafiel	0.055	0.001
Vila Nova da Barquinha	0.055	0.001
Santiago do Cacém	0.055	0.000
Ourém	0.055	0.000
Mealhada	0.055	0.000
Oliveira do Bairro	0.055	0.000
Arraiolos	0.054	0.005
Ferreira do Zêzere	0.054	0.004
Oliveira do Hospital	0.054	0.003
Póvoa de Varzim	0.054	0.003
Valongo	0.054	0.002
Vila Real	0.054	0.002
Aveiro	0.054	0.000
Vila do Conde	0.052	0.004
Vila Franca de Xira	0.052	0.000
Alcácer do Sal	0.051	0.001
Alijó	0.051	0.000
Montemor-o-Velho	0.051	0.000
Tondela	0.050	0.006
Setúbal	0.050	0.003
Marinha Grande	0.050	0.001
Benavente	0.050	0.001
Vila Pouca de Aguiar	0.049	0.002
Alenquer	0.049	0.001
Águeda	0.049	0.000
Sever do Vouga	0.048	0.019
Arganil	0.048	0.016
Pinhel	0.048	0.006
Seixal	0.048	0.000
Pombal	0.047	0.008
Bragança	0.047	0.003
Braga	0.047	0.002
Porto de Mós	0.047	0.001
Miranda do Corvo	0.047	0.000
Évora	0.045	0.002
Salvaterra de Magos	0.045	0.002
Soure	0.045	0.001
Tomar	0.045	0.000

Table B.9: Wage regression at the worker level: Leverage and Cook's Distance (sorted in descending order of Leverage)

Sernancelhe	0.045	0.000
Abrantes	0.044	0.002
Seia	0.044	0.002
Gouveia	0.044	0.000
Trancoso	0.043	0.001
Leiria	0.042	0.002
Reguengos de Monsaraz	0.042	0.001
Vila Nova de Famalicão	0.041	0.006
Covilhã	0.041	0.001
Anadia	0.041	0.001
Caldas da Rainha	0.041	0.001
São Pedro do Sul	0.041	0.001
Bombarral	0.041	0.000
Almeirim	0.040	0.001
Viseu	0.040	0.001
Estremoz	0.040	0.000
Torres Novas	0.040	0.000
Guimarães	0.039	0.006
Alcanena	0.039	0.001
Sertã	0.039	0.001
Coruche	0.039	0.001
Sátão	0.039	0.000
Castelo Branco	0.039	0.000
Peniche	0.038	0.008
Amarante	0.038	0.001
Póvoa de Lanhoso	0.038	0.000
Viana do Castelo	0.037	0.002
Santarém	0.037	0.001
Esposende	0.037	0.001
Lamego	0.037	0.000
Cartaxo	0.037	0.000
Mirandela	0.036	0.000
Chaves	0.035	0.003
Vila Verde	0.035	0.000
Santa Comba Dão	0.035	0.000
Alcobaça	0.034	0.005
Rio Maior	0.034	0.005
Montemor-o-Novo	0.034	0.001
Vagos	0.032	0.003
Lourinhã	0.032	0.002
Ansião	0.032	0.000
Ponte de Lima	0.031	0.000
Cadaval	0.030	0.002
Peso da Régua	0.030	0.000

Table B.9: Wage regression at the worker level: Leverage and Cook's Distance (sorted in descending order of Leverage)

Torres Vedras	0.029	0.001
Lousã	0.029	0.000
Fundão	0.028	0.001
Cantanhede	0.028	0.000