The performance of Portuguese job-centers

En este artículo se analiza el desempeño del sistema nacional de 86 oficinas de empleo público de Portugal que se ocupan de poner en contacto a las personas en paro con las ofertas de trabajo. Para ello se utiliza un conjunto de microdatos correspondiente al periodo 1998-2002 que permite la construcción de fases de desempleo individual y su duración; así como los resultados laborales subsiguientes, teniendo en cuenta al mismo tiempo características individuales tales como la edad, los estudios, el género, las experiencias laborales en el pasado y otras variables del mercado laboral definidas a nivel local de mercado de trabajo o a nivel de oficina de empleo. Entre las diversas conclusiones y recomendaciones para las políticas públicas debe tenerse en cuenta que las oficinas de empleo son un recurso muy importante para promover la equiparación laboral de los trabajadores jóvenes y no cualificados y de los trabajadores sin experiencia laboral.

Artikulu honetan aztertzen da Portugalgo enplegurako 86 bulegoren estaldura nazionalaren sistemaren jarduna. Bulego horien zerbitzu publikoa langabezian dauden pertsonak lan eskaintzekin kontaktuan jartzea da. Horretarako, 1998-2002 aldiko datu sorta bat erabiltzen da. Horiekin, posiblea da langabezi-iraupen aldi-indibidualak eta ondorengo lan emaitzak eraikitzea, aldi berean, kontuan izanik bakoitzaren ezaugarriak (adina, ikasketak, generoa eta iraganeko lan esperientziak) eta lan merkatuko beste aldagai batzuk, tokiko lan merkatu mailan edo enplegu bulego mailan definiturik. Ondorio eta gomendio politiko desberdinen artetik, kontuan izan behar da enplegu bulegoak baliabide oso garrantzitsua direla, langile gazte eta ez kualifikatuen, eta aurretiaz lan esperientziarik izan ez duten langileen lan egokitzapena sustatzeko.

This paper analyzes the performance of the country-wide system of 86 job-centers in Portugal, which have the public mandate of matching unemployed individuals with vacancies. The paper uses a rich micro dataset for the years 1998-2002 which allows the construction of individual unemployment duration spells and subsequent employment outcomes, while observing individual characteristics such as age, education, gender and past job experiences and other labour-market variables defined at the local-labour market or job-center level. Among the several conclusions and policy recommendations, it should be noted that job-centers are a most important resource in promoting the matching of young and unskilled workers and of workers with no previous job experiences.

Dario Sciulli
University of Chieti-Pescara
António Gomes de Menezes
University of the Azores

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1. **INTRODUCTION**[1]

Labour market performance is one of the most important economic problems of modern societies, which depend on flexible and dynamic labour markets to match individuals with suitable jobs, leading thus to individual experiences which are productive and dignifying both at the personal and at society level. Hence, it is only but normal to recognize that labour market performance has occupied economists and policymakers alike. In this paper we study the labour market performance of a highly salient feature of the Portuguese labour market, namely the performance of the Portuguese system of job-centers (Centro de Empregos, CTE), the corner-

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[1] The authors wish to thank Dr. Valentina Del Greco for her technical support in making Portuguese maps reported in Figure A1.

stone of the Portuguese Public Employment Services (PES)[2]. As in many other countries, Portugal has adopted a system of country-wide job-centers which are, in their essence, a building block of Portuguese active labour market policies. The job-centers are responsible for registering individuals who are actively looking for jobs and provide placement and counselling services. Quite importantly, the job-centers receive vacancies posted by firms and actively attempt to match unemployed individuals with those vacancies. It should also be noted that for unemployed people to become eligible to collect unemployment benefits, they have to be registered at a job-center. Therefore, job-centers, which cover the entire Portuguese territory, provide important services for all unemployed individuals, not only with respect their employment or re-employment prospects, but also with respect their income support (in fact, unemployed individuals must meet certain criteria including attending meetings and interviews to preserve their eligibility status to collect unemployment benefits). In summary, the job-centers are an integral and critical part of the dynamics of the Portuguese labour-market and it is only but natural to study how effective they are in promoting higher (re)employment probabilities.

The Portuguese labour market is characterized by stringent employment protection legislation. There is a significant co-existence between permanent-contracts and fixed-term-contracts, which leads to a dual-labour-market characterization of the Portuguese labour market. It should also be noted that unemployment duration is relatively high, even in periods of relatively low unemployment (Portugal and Blanchard 2001). Therefore, when analyzing the Portuguese labour market, it is of paramount importance to analyze unemployment duration and its dual-nature. In this paper, we investigate at the individual level and at the job-center level the determinants of job-center performance in matching individuals with vacancies both with permanent-contracts and with fixed-term contracts.

This paper evaluates the performance of Portuguese job-centers in promoting the employment and re-employment of registered individuals, by analyzing three distinct labour market outcomes: a) the average unemployment duration at job-centers level; b) the percentage of individuals leaving unemployment by matching vacancies at the job-center level over the whole of unemployed individuals; and c) the percentage of individuals leaving unemployment by matching vacancies at the job-center level over the whole of individuals finding a job. In addition, we determine average failure rates and hazard functions at the job-center level (see Sciulli *et al.* 2008 for a micro-econometric analysis of unemployment duration in Portugal).

This paper explores thus the geographic and individual wealth of data across job-centers and individuals of a micro dataset provided by the Instituto do Emprego e Formação Profissional (IEFP), the Portuguese Government owned and administrated Institution responsible for the functioning of the job-centers, among other

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[2] See Agovino et al. (2013) for an efficiency analysis of Portuguese PES.

functions, such as training policies. The data span the period from 1998 to 2002 and 86 job-centers, providing, hence, interesting spatial and time variation. Individual data allow us to construct individual unemployment spells and outcomes, while controlling for several individual characteristics and other regional variables related to the local labour markets of the job-centers. The paper employs graphical and quantitative tools to study the performance of the job-centers, such as kernel-density functions, hazard rates and standard classical statistical tests.

We find robust evidence that job-centers provide a most valuable resource especially for young and unskilled workers, and thus are a most important tool in promoting the labour market position of these disadvantaged groups.

The paper is organized as follows. Section 2 elaborates on PES and its importance to an efficient labour market. Section 3 describes the data and methods employed in the paper. Section 4 presents the results. Section 5 contains the most important conclusions, including with respect policy-making.

2. **PUBLIC EMPLOYMENT SERVICES**

Labour market performance determines living standards and its improvement has been one of the main policy goals among developed countries. The OECD's Jobs Strategy recommendations included five main areas: a) the reform of employment protection legislation; b) working hours negotiation between employers and employees; c) the reduction of the cost of unskilled and part-time labour; d) the reduction of inactivity traps; and e) the improvement of the efficiency of the public employment service (OECD, 1998; Brandt *et al.*, 2005). With respect the well-functioning of the PES the OECD prescribes the integration of three basic PES functions - placement and counselling services, the payment of unemployment benefits and management of labour market programmes -, regular contacts between claimants and PES and competition via active private placement agencies (Jamet, 2006).

An efficient PES is essential to assure a rapid matching between workers and jobs; conversely, inefficiency is likely to be associated with longer vacancy and unemployment duration, which may, in turn, lead to discouragement and the loss of skills. The Portuguese labour market is characterised by «eurosclerosis», with low flow-rates between employment and unemployment and vice versa, resulting in an extremely high mean duration of unemployment (Portugal, 2008). Stringent employment protection legislation and the unemployment benefit system contribute to this poor labour market performance. Quite importantly, the functioning of the Portuguese PES represents a key-determinant in improving labour market performance, and its efficiency may depend on job-center characteristics, including local mismatches between individuals' characteristics and vacant jobs' characteristics.

Many studies assess the efficiency of matching markets and mechanisms and the role of mismatches between individuals' and vacant jobs' characteristics. Petrongolo and Pissarides (2001) focus on matching functions, mismatch and both macro and micro approaches to matching. Among micro-studies, Van Ours (1991) evaluates the effectiveness of the public employment office in the Netherlands using information about vacancy duration. Lindeboom, Van Ours and Renes (1994) use Dutch micro-data to study the effectiveness of job search comparing different recruitment channels, including PES. Sheldon (2003) uses data envelopment analysis to conclude that in 1997-1998 the Swiss PES reached roughly two thirds of its efficiency potential.

Portugal has been experiencing low job-flow rates which are associated with mismatches in a sclerotic labour market (Blanchard and Portugal, 2001). Even during the late 90s and early 00s when Portugal experienced relatively low unemployment, unemployment duration was relatively high, with low job turnover and workers staying at jobs with low productivity. Hence, analysing the matching process in Portugal is paramount to making the Portuguese labour market more efficient and productive.

3. **DATA AND METHODS**

The analysis is based on IEFP data for the period from 1998 to 2002, which provides information on registration and placement dates of individuals enrolled in 86 continental Portuguese job-centers (see IEFP 2000 for details).

We use IEFP data in two distinct manners. First, we aggregate microdata at job-centre level by using average values of variables' distributions to characterize job-centers and assess their performance in promoting job matching. Second, we exploit the original microdata dimension of the IEFP dataset to apply survival analysis and return failure rates and hazard functions at job-center level[3].

We consider three indicators to evaluate the performance of Portuguese job-centers. The first one is the average unemployment duration calculated at job-center level, corresponding to the average value of unemployment spell duration of the individuals registered at a specific job-center in the period under investigation.

The second indicator consists in the job-center matching rate, which measures the percentage of individuals leaving unemployment by successfully matching vacancies offered at the job-center level.

The third indicator consists in the job-center matching ratio, measuring the ratio between individuals leaving unemployment by successfully matching vacancies offered at the job-center level and the whole of individuals leaving unemployment (including those who find a job by their own means). The construction of the latter indicator is possible because IEFP data distinguishes individuals who find a job be-

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[3] See Coelho (2003), for an analysis of unemployment and vacancies duration based on IEFP data.

cause they find a suitable job vacancy registered at the same job-center where the individual is registered, from those who find a job by their own means.

Whereas the second indicator returns an absolute measure of job-center capability in promoting matches between unemployed individuals and vacancies, the third indicator provides a relative measure of the same capability, properly discounted for the number of individuals who leave unemployment by their own means.

It is important to note that the average unemployment duration is based on all unemployment spell events at job-centers level, including censored spells, i.e. those observations for which the exit from the unemployment pool is unobservable[4]. This means that average unemployment duration returns an overall assessment of job-center effectiveness in placing registered individuals, and incorporates factors not strictly connected to job-centers' functioning, including local labour market conditions.

Distinguishing censored from uncensored spells and, in addition, individuals finding a job within the job-center from those individuals of find jobs by their own means reveals, as a matter of fact, a certain heterogeneity in terms of average unemployment duration. By construction, censored spells are longer than uncensored spells (28.28 months against 10.06 months). On the contrary, quite negligible differences exist between average unemployment duration of individuals finding a job by their own means or matching with vacancies offered at the job-centers (9.99 months against 10.19 months). A certain degree of variability exists among job-centers in terms of average unemployment duration of censored and uncensored spells. This may be explained in terms of both distribution of registration dates (especially for censored spells) and local labour market conditions.

The other indicators, in turn, account for the capability of job-centers in placing individuals in jobs, by linking the number of matches at job-center level with the whole of individuals registered at the job-centers and the whole of individuals finding a job, respectively.

Figure A1(Appendix) offers a visual inspection of the three performance indicators in the continental Portugal. Particularly, each map reports the performance of each job-centers according to the quartile distribution of average unemployment duration, CTE matching rate and CTE matching ratio. This preliminary descriptive analysis clarifies that the job-centers in the North and Lisbon regions experience the worst performance, while job-centers in the Algarve region, and partly, in the Center region, perform better.

We attribute to each job-center individual and local labour market characteristics aggregated by using average values calculated over the 1998-2002 period. The characterization includes information related to age, gender, educational level, skill

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[4] Survival analysis assumes that the unemployment spell ends on December 2002, the final month observed in our sample.

level, job experience and (pseudo) local labour market tightness[5]. This allows us to distinguish job-centers according to relevant characteristics and, concomitantly, to learn about associations between those variables and outcome indicators.

Table 1 reports descriptive statistics of variables aggregated at job-center level by referring the average values.

Table 1. **DESCRIPTIVE STATISTICS**

	Mean	Std dev.	Median	Min	Max
Average vacancies	128.35	72.13	110.86	11.95	339.15
Average unemployed individuals	6645.10	3888.71	6147.76	1339.60	19472.85
Tightness within job-center	0.022	0.011	0.019	0.006	0.060
Tightness permanent contract within job-center	0.015	0.010	0.011	0.001	0.045
Average unemployment duration (months)	21.098	3.073	21.240	13.650	28.830
matching within job-center	*10.190*	*1.223*	*10.073*	*7.640*	*13.192*
matching by own-means	*9.992*	*1.178*	*9.852*	*7.420*	*13.329*
censored spells	*28.285*	*2.349*	*27.988*	*20.129*	*34.866*
Matching within job-center	4.367	2.095	4.135	0.840	9.070
Matching	12.274	6.295	10.495	1.320	29.310
CTE matching rate	0.159	0.068	0.151	0.059	0.358
CTE matching ratio	0.412	0.141	0.379	0.149	0.736
Average age	32.026	1.660	31.925	29.110	36.570
Percentage of males	0.381	0.056	0.388	0.214	0.507
Percentage of lowly educated	0.461	0.038	0.461	0.368	0.535
Percentage of unskilled workers	0.214	0.065	0.210	0.100	0.380
Percentage of individuals without job experience	0.199	0.082	0.170	0.060	0.390

Source: Own elaboration on IEFP data.

According to Table 1, the average unemployment duration is about 21 months, with relevant differences between censored and uncensored spells. The CTE matching rate is 15.9%, with values ranging from 5.9% to 35.8%, while the CTE matching

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[5] Labour market tightness is normally defined as the ratio between unemployment rate and job vacancy rate.

ratio is 41.2%, with values ranging from 14.9% to 73.6%. Looking at the variables potentially affecting the outcome indicators, the average age is 32 years old, where the lowest average age is 29 years and the highest 36.5. Males, on average, represent 38% of registered individuals, with values ranging from 21.4% to 50.7%. Lowly educated individuals represent 46.1% of registered individuals, with values ranging from 36.8% to 53.5%; unskilled workers comprise, on average, 21.4% of registered individuals, with values ranging from 10% to 38%. Finally, the percentage of registered individuals without job experience corresponds to 19.9% of registered individuals, where the lowest value is 6% and the highest is 39% across all CTEs.

Looking at the local labour market conditions, our sample reveals that the tightness of the local labour markets on average, is 0.022, meaning there are 22 vacancies registered at the job-centers for each 1000 individuals registered at the job-centers. The tightness indicator for permanent contracts decreases to 0.015, revealing, thus, that there are 15 vacancies offering permanent contracts at the job-center level for each 1000 individuals registered at the job-center and looking for a permanent contract. It should be noted that this result is in line with a well-established characterization of the Portuguese labour market (and other Southern Europe countries) in the literature, where a significant part of new job-relationships is formed using fixed-term contracts as a screening device and a work-around stringent employment protection legislation (and associated with the dual nature of the labour market).

4. RESULTS

### 4.1. Unemployment duration and matching rates' indicators

The empirical analysis proposed in the current contribution is based on graphical and quantitative tools, which allow us to uncover the relationship between job-centers' characteristics and indicators measuring job-centers' performance.

Figures 1, 2 and 3 report, for each performance indicator (namely, average unemployment duration, CTE matching rate and CTE matching ratio), Kernel density functions related to the distribution of outcomes conditional on the value - if below or above the median - assumed by the variables which characterize job-centers (i.e. age, gender, education, skills, job experience, local labour market tightness).

The interpretation of the graphs is straightforward. In case the distribution functions overlap, this indicates that the specific characteristic does not affect the performance indicator. In case the distribution function conditional on the values (of the characteristic) below the median is positioned at the right of the distribution function conditional on the values (of the characteristic) above the median, it would be indicative that this specific characteristic contributes to improve (worsen) the performance indicator, and *vice-versa*.

In addition, each couple of Kernel density function is accompanied by a Kolmogorov-Smirnov test, which test the hypothesis of equality of distribution functions (see Tables 2a, 2b and 2c). For each table, the first line tests the hypothesis that the outcome for group 1 (characteristic's value below the median) contains smaller values for group 2 (characteristic's above the median). The second line tests the hypothesis that the outcome for group 1 contains greater values for group 2. Finally, the third line shows the approximate asymptotic p-value for the combined test (samples greater than 50 observations), accompanied by corrected p-value, to which we refer when commenting the Kolmogorov-Smirnov tests.

Figure 1.   **DISTRIBUTION OF AVERAGE UNEMPLOYMENT DURATION BY INDIVIDUAL AND LABOUR MARKET CHARACTERISTICS**
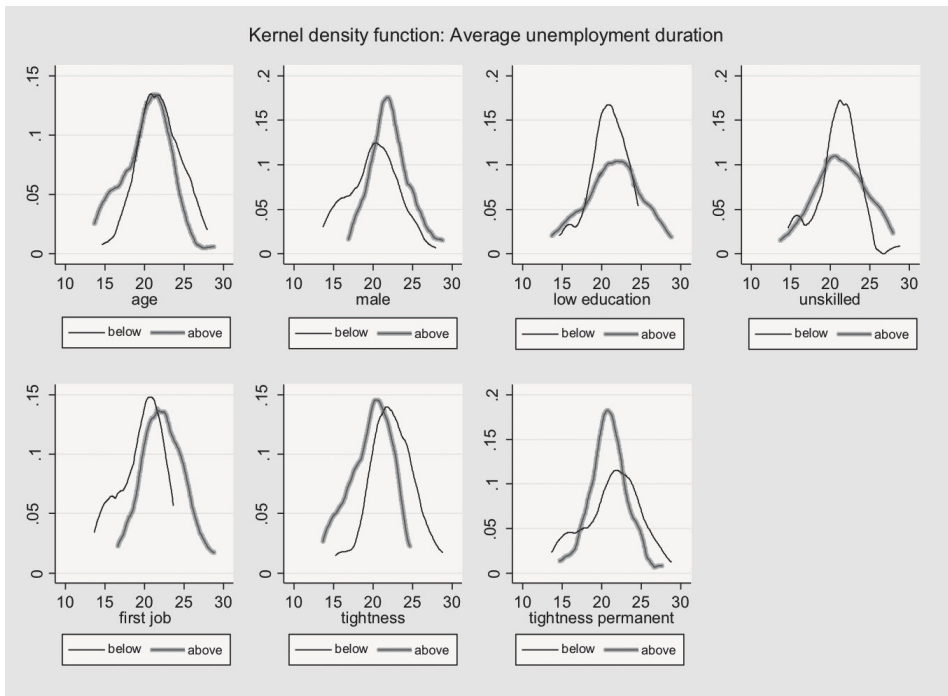
Source: Own elaboration on IEFP data.

According to Figure 1, we find that the distribution of the average unemployment duration of job-centers characterized by an average age above the median is placed to the right of the distribution of the average unemployment duration of job-centers characterized by an average age below the median. This suggests that younger individuals experience longer unemployment duration. According to the Kolmogorov-Smirnov test (Table 1a) the null hypothesis of equality of distribution functions is rejected (at 10% level), confirming the existence of structural differences in terms of

average unemployment duration at job-center level between the two age groups. The same finding, i.e. a statistically significant association between a characteristic and higher levels of average unemployment duration, results for job-centers characterized by a percentage of males above the median (the Kolmogorov-Smirnov test is significant at 1% level); for job-centers with a percentage of individuals without job-experiences above the median (significant at 1% level); and, finally, for job-centers with labour market tightness and permanent contract tightness above the median (both associated Kolmogorov-Smirnov tests reveal a significance level at 1%). On the contrary, the distribution functions of average unemployment duration, conditional on values above or below the median of the percentage of lowly educated and unskilled individuals are substantially overlapped, suggesting there are no systematic differences in average unemployment duration at job-center level due to these characteristics: this is confirmed by the relevant Kolmogorov-Smirnov tests.

Table 2a. **KOLMOGOROV-SMIRNOV TEST FOR EQUALITY OF DISTRIBUTION FUNCTIONS: AVERAGE UNEMPLOYMENT DURATION**

Variable	Smaller	group	D	P-value	Corrected	Significance
Age	Below		0.023	0.977		
	Above		-0.256	0.060		
	Combined	K-S:	0.256	0.120	0.082	*
Male	Below		0.326	0.010		
	Above		0.000	1.000		
	Combined	K-S:	0.326	0.021	0.012	**
Low education	Below		0.238	0.087		
	Above		-0.101	0.647		
	Combined	K-S:	0.238	0.175	0.124	
Unskilled	Below		0.217	0.134		
	Above		-0.088	0.719		
	Combined	K-S:	0.217	0.266	0.200	
First job	Below		0.395	0.001		
	Above		0.000	1.000		
	Combined	K-S:	0.395	0.003	0.001	***
Tightness	Below		0.000	1.000		
	Above		-0.422	0.000		
	Combined	K-S:	0.422	0.001	0.000	***
Tightness permanent	Below		0.140	0.433		
	Above		-0.279	0.035		
	Combined	K-S:	0.279	0.070	0.045	**

Source: Own elaboration on IEFP data.

From Figure 2 it emerges that the CTE matching rate is slightly higher for job-centres with average age below the median, but the Kolmogorov-Smirnov test reveals that the null hypothesis of equality of distribution functions is not rejected, suggesting no systematic differences exist between them. Similarly, the CTE matching rate shows overlapped Kernel density function for job-centers with different percentages of lowly educated individuals. On the contrary, job-centers characterized by a percentage of males below the median show a Kernel density function placed slightly at the right of the one associated with job-centers with a percentage of males above the median, suggesting, thus, that the CTE matching rate is higher for job-centers with a higher presence of females. An above the median incidence of unskilled workers and without job-experiences is associated with a distribution of CTE matching rates placed at the right of the complementary cases, indicating that both disadvantaged categories present a higher probability of being (re-)employed by matching with job positions offered at the job-centers. Finally, values above the median of the average tightness and permanent contract tightness are associated with higher CTE matching rates.

Figure 2.　　**DISTRIBUTION OF CTE MATCHING RATE BY INDIVIDUAL AND LOCAL LABOUR MARKET CHARACTERISTICS**
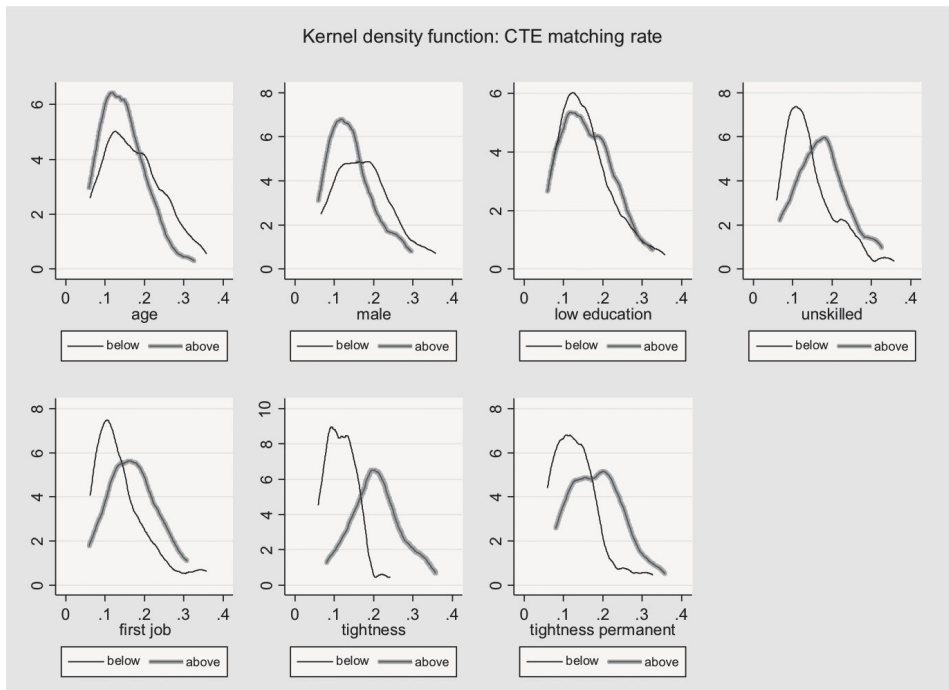
Source: Own elaboration on IEFP data.

These results, including those concerning disadvantaged workers (females, unskilled workers and without job experience), should be interpreted with due caution. The fact that certain values of some «disadvantaging» characteristics are associated with higher CTE matching rates does not indicate that those characteristics generally increase the chance of (re-)employment. Individuals, in fact, also find jobs by own means, i.e. matching with vacancies not registered at the job-centers. Higher CTE matching rates, therefore, indicate that such characteristics favor the (re-)employment by matching vacancies offered at job-center level, but a whole evaluation should also consider the role of the CTE matching ratio indicator.

Table 2b. **KOLMOGOROV-SMIRNOV TEST FOR EQUALITY OF DISTRIBUTION FUNCTIONS: CTE MATCHING-RATE**

Variable	Smaller group	D	P-value	Corrected	Significance
Age	Below	0.000	1.000		
	Above	-0.233	0.098		
	Combined K-S	0.233	0.195	0.141	
Male	Below	0.000	1.000		
	Above	-0.256	0.060		
	Combined K-S	0.256	0.120	0.082	*
Low education	Below	0.140	0.433		
	Above	-0.084	0.736		
	Combined K-S	0.140	0.796	0.729	
Unskilled	Below	0.329	0.010		
	Above	-0.023	0.978		
	Combined K-S	0.329	0.019	0.011	**
First job	Below	0.329	0.010		
	Above	-0.054	0.884		
	Combined K-S	0.329	0.021	0.012	**
Tightness	Below	0.710	0.000		
	Above	0.000	1.000		
	Combined K-S	0.710	0.000	0.000	***
Tightness permanent	Below	0.442	0.000		
	Above	0.000	1.000		
	Combined K-S	0.442	0.000	0.000	***

Source: Own elaboration on IEFP data.

Figure 3 provides, therefore, evidence concerning the CTE matching ratio, which may be a measure of the relative performance of job-centers in providing job-opportunities with respect to the general local labour market conditions.

Job-centers characterized by average age below the median are associated with higher CTE matching ratios. The related Kolmogorov-Smirnov test rejects at 1% level the null hypothesis of equality of distribution functions. The distribution functions of CTE matching ratio are overlapped when graphed accordingly to the gender and education variable. This means that job-centers characterized by a lower incidence of males and a lower incidence of individuals with low education perform similarly to job-centers with complementary characteristics. This is confirmed by the corresponding Kolmogorov-Smirnov tests that do not reject the null hypothesis of equality of the distribution functions.

Figure 3.   **DISTRIBUTION OF CTE MATCHING RATIO BY INDIVIDUAL AND LOCAL LABOUR MARKET CHARACTERISTICS**
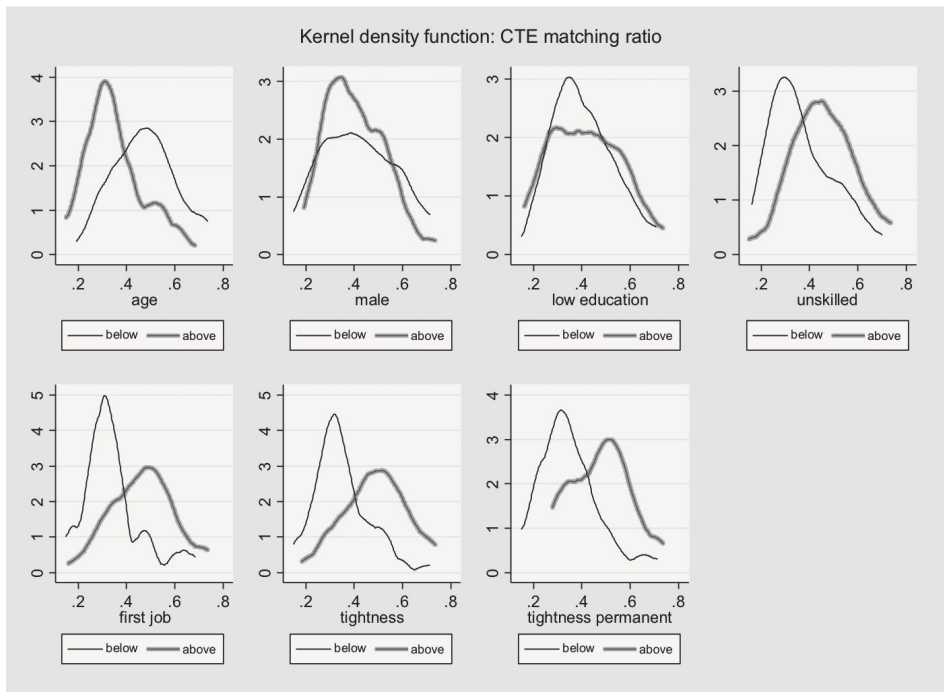
Source: Own elaboration on IEFP data.

The skill level, however, is relevant for the CTE matching ratio. Job-centers characterized by an incidence of unskilled workers above the median are associated with higher CTE matching ratios. Similarly, a relative predominance at the job-center level of individuals looking for their first job-experience increases the CTE matching ratio at such job-center. The Kolmogorov-Smirnov test rejects the null hypothesis of equality of distribution functions for both characteristics. Finally, when looking at the local labour market characteristics, we find that job-centers

characterized by relatively high tightness and relatively high permanent contract tightness (levels above the median) present a higher CTE matching rate. Both findings are statistically significant according to the Kolmogorov-Smirnov test.

Table 2c. **KOLMOGOROV-SMIRNOV TEST FOR EQUALITY OF DISTRIBUTION FUNCTIONS: CTE MATCHING RATIO**

Variable	Smaller	group	D	P-value	Corrected	Significance
Age	Below		0.000	1.000		
	Above		-0.442	0.000		
	Combined	K-S:	0.442	0.000	0.000	***
Male	Below		0.093	0.689		
	Above		-0.140	0.433		
	Combined	K-S:	0.140	0.797	0.730	
Low education	Below		0.135	0.455		
	Above		-0.145	0.405		
	Combined	K-S:	0.145	0.757	0.683	
Unskilled	Below		0.424	0.000		
	Above		-0.048	0.907		
	Combined	K-S:	0.424	0.001	0.000	***
First job	Below		0.512	0.000		
	Above		0.000	1.000		
	Combined	K-S:	0.512	0.000	0.000	***
Tightness	Below		0.508	0.000		
	Above		0.000	1.000		
	Combined	K-S:	0.508	0.000	0.000	****
Tightness permanent	Below		0.465	0.000		
	Above		0.000	1.000		
	Combined	K-S:	0.465	0.000	0.000	***

Source: Own elaboration on IEFP data.

Table 3 summarizes evidence from graphical analysis and Kolmogorov-Smirnov tests. The reported results refer to the case where the variables characterizing jobcenters are above the median of their respective distribution.

Table 3. **THE IMPACT OF INDIVIDUAL AND LABOUR MARKET CHARACTERISTICS ON JOB-CENTERS PERFORMANCE INDICATORS**

	Age	Male	Low education	Unskilled	First job	Tightness	Permanent contract tightness
Unemployment duration	-	+	=	=	+	-	-
CTE matching rate	=	-	=	+	+	+	+
CTE matching ratio	-	=	=	+	+	+	+

Source. Own elaboration on IEFP data.

A major finding of our analysis is that Portuguese job-centers perform better for unskilled workers. Job-centers characterized by relatively higher incidence of unskilled workers experience higher CTE matching rates, meaning that unskilled workers are more likely to find a job by matching with vacancies offered at the job-centers. In addition, job-centers characterized by a relatively higher incidence of unskilled workers are also associated with higher CTE matching ratios, i.e. the matching of unskilled workers is more likely to take place in or via the job-center than outside the job-center. To be clear, these results do not suggest that unskilled workers are more likely to find a job in the Portuguese labour market with respect to skilled ones; they rather indicate that vacancies registered at job-centers are more likely to fit characteristics of unskilled workers, while skilled workers are more likely to find a job looking at jobs offered in the local labour market outside the job-center. A similar result emerges for job-centers characterized by a higher incidence of individuals without job experience. These job-centers are characterized by longer unemployment duration, higher CTE matching rates and higher CTE matching ratios. In other terms, individuals without job experience need longer time to find a job and are more likely to match vacancies offered via the job-center. Adding this finding with the one concerning the age variable, it then follows that younger individuals represent a disadvantaged group in the Portuguese labour market and, most importantly, that job-centers provide a valuable contribution in improving their disadvantaging condition. Finally, the tightness at job-center level is an important predictor of the performance of the job-center. Higher local labour market tightness decreases the average unemployment duration and increases the probability of (re-)employment, especially within job-centers. In fact, and looking at the role of individuals' preferences for permanent contracts, it is indeed the case that a higher ratio between permanent jobs offered and permanent jobs demanded is likely to decrease the average unemployment duration and to increase the CTE

matching rate and to increase the CTE matching ratio. In any case, the return of job-center performance seems to be greater for overall vacancies than for vacations offering permanent contracts. This is confirmed by evidence arising from ordinary least square estimates, for which an absolute increase by 1% of the tightness variable decreases by 1.64 months the average unemployment duration at job-centre level, while an identical increase in the permanent contract tightness, reduces by 0.64 months the average unemployment duration at job-centre level (see Table A2). These findings suggest that the quality of contracts offered is relevant, but the number of job positions offered (without regarding the contract type) is more important to improve the job-centers' performance.

4.2. **The estimated failure rates at job-centers level**

By using individual 1998-2002 IEFP micro-data on registration and placement dates we obtain information on individual unemployment duration, which allows us to determine failure rates[6], which indicate the hazard that an unemployment spell will terminate in each month given that it has not ended before then.

Failure rates are calculated at job-center level and reported in their average values in Figure 4, where each number identifies a specific job-center. Figure A2, in turn, shows the associated hazard function(s) for each job-center. Job-centers numbered between 100 and 200 are those located in the region «North», those numbered from 200 to 300 are those located in the region «Center», those numbered from 300 and 400 are in the Lisbon region, those numbered from 400 to 500 are those located in the Alentejo Region, while those numbered over 500 are those located in the Algarve Region (see Table A1 for the correspondence between job-centers and related numbers).

The failure rates are, on average, higher in Alentejo and Algarve, while they are lower in the North. Within regions there is a certain degree of heterogeneity, especially in those characterized by high failure rates. The highest failure rate (equal to 0.04875) for the period under analysis has been found in the job-center of Salvaterra de Magos (number 375) in the Santarém district, which until 2002 belonged to the Lisbon region.

The lowest failure rate (equal to 0.00822) has been estimated in the job-center of Chaves (number 114) in the North of Portugal. It follows that the failure rate for the job-center performing better in Portugal in 1998-2002 is almost six times greater than the failure rate of the job-center performing worse.

As anticipated the issue of heterogeneity is relevant. While job-centers located in the southern regions perform better in terms of failure rates, they are also characterized by greater variability. Job-centers located in the Alentejo Region show a standard deviation almost three times greater than the standard deviation found in the

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[6] The survival analysis was carried out using the software STATA 13.0 (see Cleves *et al.* 2004 for details).

North Region. Therefore, it is not surprising that the failure rate of the job-center of Estremoz is, in turn, three times greater than the failure rate of job-center of Beja, even though they are in the same region.

Looking at Figure A2, it emerges that the hazard functions are relatively similar for long unemployment spells, while we find more relevant differences, among job-centers, for hazard rates in correspondence of shorter unemployment duration. In other words, differences in the failure rates are more likely to be determined from differences in the hazard rate for short unemployment duration rather than structural differences along the whole duration distribution.

Figure 4.   **FAILURE RATES AT JOB-CENTRE LEVEL**
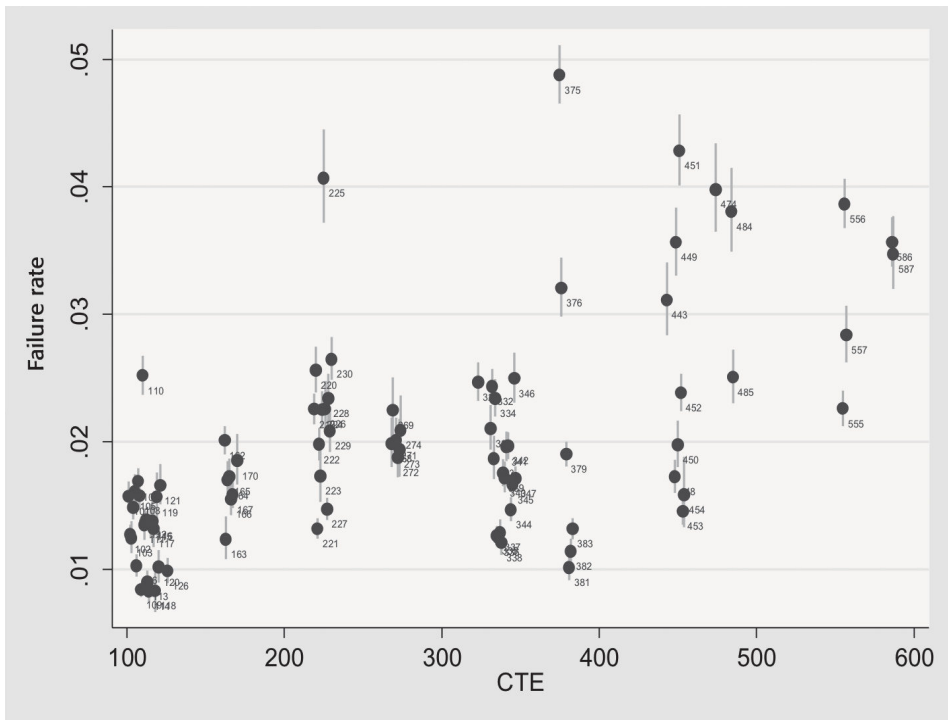
Source: Own elaboration on IEFP data.

With the aim of better understanding the sources of the above-mentioned heterogeneity, we characterize selected job-centres (the top-5 and the bottom-5 in terms of failure rates) with relevant individual and local labour market characteristics, looking for common factors and differences. By measuring the job-centers performance in terms of failure rates, we highlight the position of each job-center with respect to the distribution of relevant characteristics. The job-centers thus considered are:

– Top-5: Salvaterra de Magos (number 375, Lisbon); Estremoz (number 451, Alentejo); Marinha Grande (number 225, Centre), Ponte de Sor (number, 474, Alentejo); Loulé (number 556, Algarve).

– Bottom-5: Chaves (number 114, North); Torre de Moncorvo (number 118, North); Porto (number 109, North); Vila Real (Number 113, North); Lamego (number 126, North).

Table 4.   **DISTRIBUTION OF RELEVANT CHARACTERISTICS AMONG TOP-5 AND BOTTOM-5 JOB-CENTRES**

	Top-5					Bottom-5				
Job-centre number	375	451	225	474	556	114	118	109	113	126
Vacations	Above	Below	Above	Below	Above	Below	Below	Above	Below	Below
Unemployed individuals	Below	Below	Below	Below	Above	Above	Below	Above	Above	Above
Tightness	Above	Below	Above	Above	Above	Below	Below	Below	Below	Below
Permanent contract tightness	Below	Below	Above	Below	Below	Above	Below	Below	Below	Below
Average unemployment duration	Below	Below	Below	Below	Below	Above	Above	Above	Above	Above
CTE matching rate	Above	Below	Above	Below	Above	Below	Above	Below	Below	Below
CTE matching ratio	Below	Below	Above	Below	Below	Above	Above	Below	Below	Below
Age	Above	Above	Below	Above	Above	Below	Below	Above	Below	Below
Male	Below	Below	Below	Below	Below	Above	Below	Above	Above	Below
Low education	Above	Above	Below	Above	=	Above	Above	Above	Above	Above
Unskilled workers	Above	Below	Below	Below	Above	Above	Above	=	Above	Above
First job	Below	Below	Below	Below	Below	Above	Above	Above	Above	Above

Source: Own elaboration on IEFP data.

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Table 4 shows that three out of five among top performer job-centres are characterized by a number of vacant jobs above the median, while among bottom performers the ratio is one out of five. Interestingly, four out of five top performer job-centres are characterized by a number of registered individuals below the median, against one out of five for the bottom performs counterpart. This is suggestive that smaller job-centers are more likely to show higher failure rates, possibly because of lower competition between workers given the number of vacant jobs. The relevance of local labour market tightness for good performance of job-centers in terms of failure rates is confirmed by the tightness indicator, while the permanent contract tightness variable seems to be quite irrelevant for failure rates. Quite naturally, average unemployment duration is strongly identified with failure rates, so the top-5 job-centers show average unemployment duration below the median and bottom-5 above the median. Looking at CTE matching rates and CTE matching ratios, it emerges that a good performance of job-centers is not unequivocally associated with the fact of finding a job within the job-center or by using other channels: the highest failure rates are compatible with both job-centers characterized by higher matching rates within or outside the job-center. In other terms, a good performance may result from both local labour markets characterized by higher density of unskilled workers or not, possibly because of the predominant economic activities characterizing the local labour market itself. Finally, the top-5 performers are more likely to be characterized by an average age above the median, lower presence of males and of individuals without job-experience. Low educational levels and percentage higher incidence of unskilled workers provide mixed results. Finally, the bottom-5 performers are largely characterized by a presence above the median of lowly educated individuals and unskilled workers and individuals without job-experience.

5. **CONCLUSIONS**

This paper analyzes the performance of the country-wide system of 86 job-centers in Portugal, which have the public mandate of matching unemployed individuals with vacancies, by using IEFP micro dataset for the years 1998-2002. This allows the construction of individual unemployment duration spells and matching rates, while observing individual and labour-market variables defined at the local-labour market or job-center level.

To assess the performance of the job-centers, we analyze three indicators: a) the average unemployment duration at job-centers level; b) the percentage of individuals leaving unemployment by matching vacancies at the job-center level over the whole of unemployed individuals; and c) the percentage of individuals leaving unemployment by matching vacancies at the job-center level over the whole of individuals finding a job. In addition, we determine average failure rates and hazard functions at the job-center level.

According to these indicators, relevant heterogeneity exists among job-centers. Job-centers located in the North region and in the Lisbon area perform worse in terms of average unemployment duration and failure rate, while southern regions and part of central areas of Portugal perform better. Considering matching indicators, job-centers located in the Lisbon area, Alentejo and the western part of the North region, display the worst performance, while those located in Algarve and central Portugal perform better.

A major finding of our analysis is that Portuguese job-centers perform better for unskilled workers than for skilled ones. Job-centers characterized by relatively higher incidence of unskilled workers, indeed, experience higher matching rates. Those job-centers are also characterized by higher matching ratios, suggesting that vacancies registered at job-centers are more likely to fit characteristics of unskilled workers, while skilled workers are more likely to find a job looking at jobs offered in the local labour market outside the job-center. A similar result emerges for job-centers characterized by a higher incidence of individuals without job experience, indicating that those individuals need longer time to find a job and are more likely to match vacancies offered via the job-center. Our analysis reveals that younger individuals represent a disadvantaged group in the Portuguese labour market and, most importantly, that job-centers provide a valuable contribution to offer them a chance of being employed. In sum, Portuguese job-centers seem to be designated to better fit characteristics of disadvantaged workers.

Finally, we find that higher local labour market tightness decreases the average unemployment duration and increases the probability of (re-)employment, especially within job-centers. The return of job-center performance, however, seems to be greater for overall vacancies than for vacancies offering permanent contracts. This suggests that the quality of contracts offered is relevant, but the number of job positions offered (without regarding the contract type) is more important to improve the job-centers' performance.

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APPENDIX

Table A1. **PORTUGUESE JOB-CENTRES BY REGION**

Region	Job-centre (CTE)	Number
North	VIANA DO CASTELO	101
	BRAGA	102
	FAFE	103
	GUIMARÃES	104
	VILA NOVA DE FAMALICÃO	105
	AMARANTE	106
	MATOSINHOS	107
	PENAFIEL	108
	PORTO	109
	PÓVOA DO VARZIM / VILA DO CONDE	110
	SANTO TIRSO	111
	VILA NOVA DE GAIA	112
	VILA REAL	113
	CHAVES	114
	BRAGANÇA	115
	MACEDO DE CAVALEIROS	116
	MIRANDELA	117
	TORRE DE MONCORVO	118
	FELGUEIRAS	119
	PORTO OCIDENTAL	120
	BASTO	121
	LAMEGO	126
	S. JOÃO DA MADEIRA	162
	ARCAS DE VALDEVEZ	163
	BARCELOS	164
	MAIA	165
	VALONGO	166
	GONDOMAR	167
	VALENÇA	170

.../...

Region	Job-centre (CTE)	Number
Centre	AVEIRO	219
	ÁGUEDA	220
	COIMBRA	221
	FIGUEIRA DA FOZ	222
	LOUSÃ	223
	LEIRIA	224
	MARINHA GRANDE	225
	S. PEDRO DO SUL	226
	VISEU	227
	GUARDA	228
	CASTELO BRANCO	229
	COVILHÃ	230
	ARGANIL	268
	FIGUEIRÓ DOS VINHOS	269
	TONDELA	271
	SEIA	272
	SERTÃ	273
	PINHEL	274
Lisbon	CALDAS DA RAINHA	323
	ABRANTES	331
	SANTARÉM	332
	TOMAR	333
	TORRES NOVAS	334
	AMADORA	335
	CASCAIS	336
	CONDE REDONDO	337
	PICOAS	338
	LOURES	339
	MOSCAVIDE	340
	TORRES VEDRAS	341
	VILA FRANCA DE XIRA	342
	ALMADA	344
	BARREIRO	345
	MONTIJO	346
	SETÚBAL	347
	SALVATERRA DE MAGOS	375
	ALCOBAÇA	376
	SINTRA	379
	ALCANTÂRA	381
	BENFICA	382
	SEIXAL	383

.../...

Region	Job-centre (CTE)	Number
Alentejo	ALCÁCER DO SAL	443
	SINES	448
	ELVAS	449
	PORTALEGRE	450
	ESTREMOZ	451
	ÉVORA	452
	BEJA	453
	OURIQUE	454
	PONTE DE SÔR	474
	MONTEMOR-O-NOVO	484
	MOURA	485
Algarve	FARO	555
	PORTIMÃO	556
	VILA REAL DE SANTO ANTÓNIO	557
	LOULÉ	586
	LAGOS	587

Source: IEFP (2000).

Figure A1. **QUARTILE DISTRIBUTION OF PERFORMANCE INDICATORS ACROSS PORTUGUESE JOB-CENTERS**

Average unemployment duration — CTE Matching rate — CTE Matching ratio
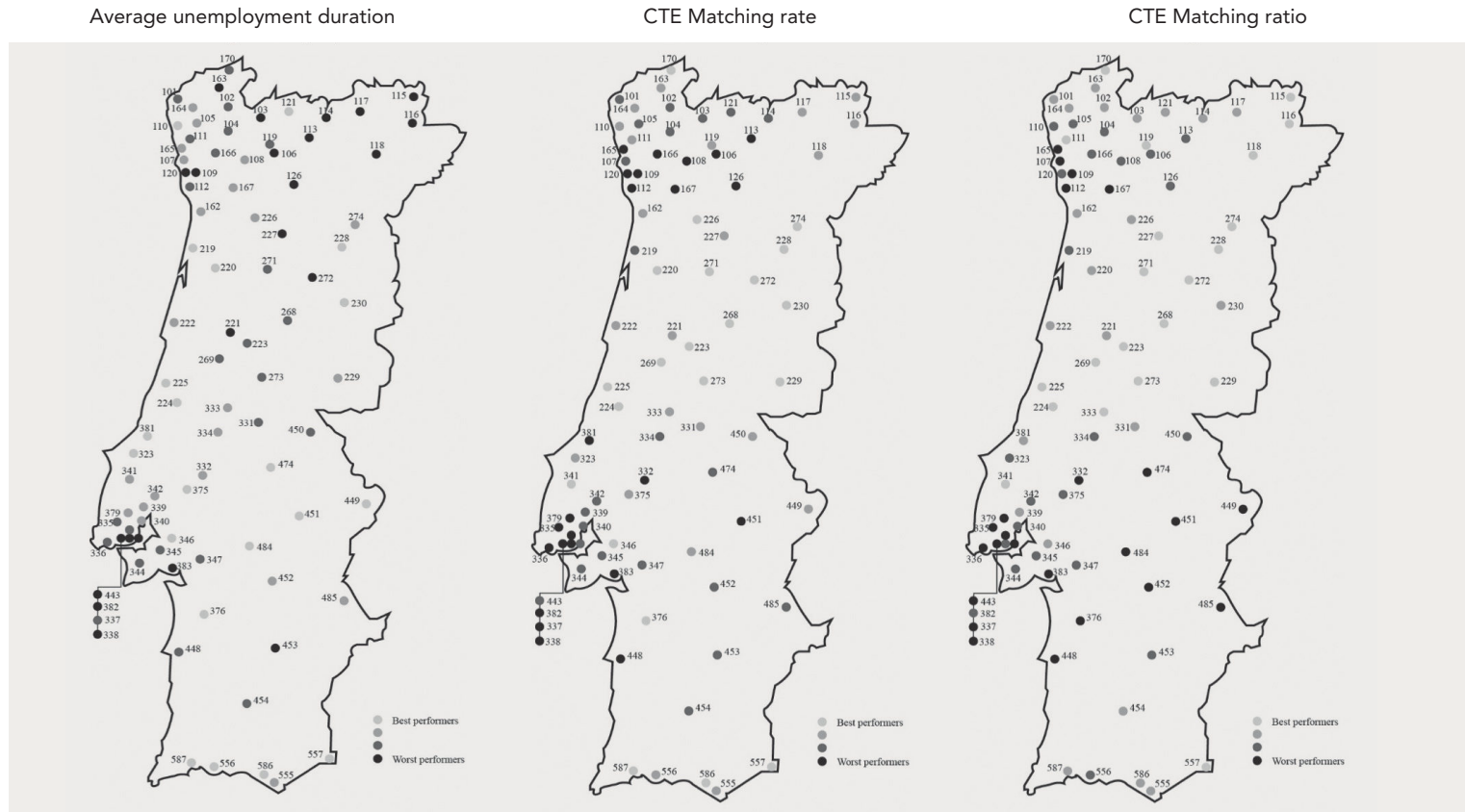
Source: Own elaboration on IEFP data.

Note. Quartile distribution cut-off points: Average unemployment duration [19.368; 21.240; 23.043]; CTE matching rate [0.107; 0.150; 0.205]; CTE matching ratio [0.306; 0.379; 0.511].

Figure A2. **HAZARD FUNCTIONS BY JOB-CENTER**

Source: Own elaboration on IEFP data.