On-the-job Search in Italian Labour Markets: An Empirical Analysis

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This paper analyses the determinants of on-the-job search activities of Italian workers. Using several waves of the Bank of Italy Survey on Household Income and Wealth (SHIW) we estimate with a Probit model how individual socio-demographic characteristics and economic variables affect the probability of on-the-job search. We find that the probability of being engaged in job-search activities is higher for low-wage earners, for workers with low tenure and higher levels of education, for males and for residents in large cities. Moreover, we find significant differences in the determinants of on-the-job search activities across sectors. Public sector employees show a considerable lower probability of on-the-job search compared to private sector workers; White-collars and teachers search much less than blue-collars (both in private and public sectors). Results suggest that the attractiveness of jobs varies considerably, even controlling for wage levels and that notwithstanding the high degree of centralization Italian markets are reactive to job-search determinants.

Keywords: Job search, labour mobility, Public sector.

JEL classifications: J62, J61, M51, J45.

1. Introduction

Labour turnover typically imposes very large costs on firms and organizations in terms of loss of valuable human resources, disruption of ongoing activities, additional recruitment and training costs of new employees. On the other hand, labour turnover is the mechanism that labour markets use to correct job matching errors and might lead to a better and efficient allocation of human resources. Understanding the factors which determine worker's initiated turnover, it is therefore an important economic topic, also relevant for decisions of firms and organizations.

At the theoretical level, labour turnover has been analyzed by Becker (1962). His theory of human capital provides important elements for the analysis of

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determinants of worker turnover. One fundamental idea in the Beckerian framework is that an important part of skills that workers develop are learned on the job and are mainly useful in the current firm (firm-specific human capital). Hence, both firms and workers invest in workers' skills in order to increase labour productivity and the longer an employee works for a given employer, the more specific capital he accumulates. For this reason, the lower the propensity of workers to move from the current firm is, the longer the job tenure is.

Labour turnover and the costs for the firms related to it have been extensively analyzed by the efficiency wage literature which considers the wage that the firm pays as an important instrument to reduce labour turnover costs (Stiglitz, 1974; Salop, 1979). From the labour turnover model of efficiency wages it derives that firms with higher turnover costs tend to pay higher wages in order to discourages workers from turnover. The lack of suitable data on labour turnover does not allow to study this issue directly. However, information about "on-the-job search" decisions can be used as an indicator of voluntary job turnover to partly overcome these data limitations. The activity of searching for a job that takes place while the worker is still employed in his or her current occupation, may be considered as preliminary for job turnover or separations. In fact, in most cases successful job search is associated with workers decisions to quit their current work with the purpose of improving upon employment relationship. According to the extensive literature on this topic, turnover intentions (or on-the-job search decision) are supposed to be the immediate precursors to actual turnover and therefore these intentions are good at forecasting actual quits (van Ours, 1990; Burgess, 1999; Sousa-Poza and Hennemberg, 2004; Kristensen and Westergård-Nielsen, 2004)[1]. Accordingly, Kristensen and Westergård-Nielsen (2004) report that job search is a good predictor of actual quits.

In models of on-the-job search, employed workers may shift from job to job without intervening spells of unemployment. More specifically, the on-the-job search is the outcome of an optimal choice of workers that engage in job search if the marginal return of searching (difference between the utility derived from the current job and the expected utility from the alternative job) exceeds its marginal cost.

A strand of literature that uses direct measures of the job search process focuses on the determinants of employed search (Black, 1981, van Ophen, 1991). Other studies investigate the various job search methods (formal and informal search channels) and search intensity pursued by job seekers (Kahn and Low, 1982, 1984; Parsons 1991,

Gregg and Wadsworth, 1996, Addison and Portugal, 2002). Other analysis deal with employees search intensity (Blau, 1992, Pissarides and Wadsworth, 1994, Fuentes, 1998, Manning, 2003).

A growing evidence is focused on employees' intentions to quit and other types of job separations. Some labour economics studies have investigated how individual characteristics and working conditions at the workplace measured, for example by industry injury rates or work attributes (harms, hazards, uncertainty, physically and mentally heavy work), affect job duration or employees probability to quit (Viscusi, 1979; Bartel, 1982; van Ophem, 1991; Gronberg and Reed, 1994; Manning, 2003, García-Serrano 2004, Bockerman and Ilmakunnas, 2009). Empirical results show that adverse working conditions lead to an increase in quits.

A number of studies have analyzed more in general the determinants of on-the-job search propensity. A major line of research regarding the effect of wage level of the incidence of on-the-job search has been developed. Black (1981), using data from the United States, finds that one of the main determinants that encourage individual's decision of whether or not to search for a new job is the potential wage gain he could obtain, estimated as the residual from a regression of the wage on human capital, demographic variables and local labour market conditions. Similarly, Hartog and van Ophem (1994) model the probability of US workers to search on-the-job as a function of a wage residual derived from a wage equation with years of education and labour market experience as explanatory variables. They find a significant negative effect of the wage residual on the job search decisions.

Although the wage level has received a lot of attention in the literature, there are other reasons, such as individual and non-wage job characteristics, driving employees' job search behavior. We focus on some determinants that we also include in our empirical analysis. Employee characteristics such as gender, age, marital status and education are important determinants of on-the-job search. It has been shown that the probability of being engaged in job-search decisions is higher for males (Blau and Kahn, 1981; Royalty, 1998), young workers (Campbell, 1997; Kidd, 1991, 1994), better educated and not married workers (Royalty, 1998; Holmlund, 1984). Many studies also show a positive effect of the status of temporary employment on-the-job search.
Empirical analysis also predict that workers with short job tenure and high qualifications are more likely to search. For instance, Pissarides and Wadsworth (1994) find out that skilled workers search more than the unskilled do in Britain.

The economics literature also shows that workers' decisions to engage in on-the-job search are influenced by labour market conditions and institutional aspects such as employment protection legislation and/or Unions membership. In good markets with high growth rates and low regional unemployment rates, increasing the likelihood of finding good job offers, the probability of on-the-job search tends to rise. As regard to this evidence, some studies (Black, 1981; van Ours, 1990; Pissarides and Wadsworth, 1994), for example, including variables capturing labour market conditions, find that local unemployment has a negative effect on the propensity to search especially for risk-averse workers. Considerable evidence also show a negative correlation between union membership and voluntary turnover (Booth and Francesconi, 1999; Kidd, 1994; Lucifora, 1998). Furthermore higher levels of job security are associated with lower on-the-job search activities (Burgess, 1994, 1999; Lazear, 1990).

A growing empirical literature on job satisfaction underlines the relevance of job satisfaction as a determinant of worker turnover decisions; there exists a strong negative relationship with both quit intentions (Schields and Price, 2002; Sousa-Poza and Hennemberg, 2004; Kristensen and Westergård-Nielsen 2004; Delfgaauw 2007; Böckermann and Ilmakunnas, 2009) and actual quits (Freeman 1978; Akerlof *et al.,*1988; Clark and Georgillis, 1998; Clark *et al.*, 1998; Clark, 2001; Lévy-Garboua, Montmarquette, and Simonnet 2007). In a cross-national analysis covering 25 countries, Sousa-Poza and Henneberger (2004) report strong negative relations between job satisfaction and turnover intention which reflect the probability that an individual will change his job within a certain time period, while Böckerman and Ilmakunnas (2009), using Finnish data, find the same link between job satisfaction and both intention to quit and job search.

This paper analyses the determinants of on-the-job search activities of Italian workers. The aim of this study is to provide evidence about the impact of socio-demographic characteristics and economic conditions on the probability of on-the-job search. To the best of our knowledge, there are no other studies investigating the determinants of on-the-job search activity with regards to Italy.

The Italian labour market has several features making it worthwhile to analyze its effects on the job-search activities. In comparison to other advanced countries, Italy has a highly centralized wage bargaining system and typically local labour markets conditions and individual productivity have little influence on the determination of

wages. Furthermore, public sector employees enjoy better working conditions, strong job security and lower pressure to put effort on the job.

It is therefore interesting to investigate how these factors affect on-the-job search behaviour of Italian workers.

We use the latest six waves of the Survey on Household Income and Wealth (hereafter indicated as SHIW), conducted by the Bank of Italy from 1995 to 2006 in which personal and family information are combined with information on labour market behaviour of individuals. The Survey asks to workers and unemployed if they have carried out some actions to search for a new job opportunity in the past calendar year. We restrict the analysis to public and private employees and self-employed. We define the dependent variable as *on-the-job search,* which is set equal to one if individuals did some actions to look for a new occupation and we estimate a number of pooled Probit models for on-the-job search in order to verify empirically the relationship existing between on-the-job search activities and several socio-demographic and economic variables[2].

Our main findings are the following. In accordance with the existing literature we find that the wage level considerably decreases the probability to search for a new job, while a high educational level makes job search more likely. The probability of search is negatively related to worker's accumulated tenure. Individuals living in large cities are more willing to change job. The number of jobs held and the average number of hours worked per week have a positive effect on the probability of searching for another job. Married women are less likely to be looking for an alternative employment and there is a very large effect of the presence of children on female job search. We find that public sector workers show a considerable lower probability of on-the-job search compared to private sector workers, suggesting the high attractiveness of Italian public jobs, beyond the anecdotal evidence of large queue in competition for public jobs. White-collars and teachers search much less than blue-Collars (both in private and public sectors). Results suggest that the attractiveness of jobs varies considerably, even controlling for wage levels and that notwithstanding the high degree of centralization Italian markets are reactive to job-search determinants.

The paper is organized as follows. The next section presents a very simple theoretical model which sets out possible motivations for on-the-job search behaviour. Section 3 describes the SHIW dataset we use and gives some descriptive statistics.

Section 4 reports and discusses many different specifications explaining the probability of job search. Section 5 concludes.

2. A Very Simplified Model of On-the-Job Search

The model presented in this section is inspired by the search model pioneered by Burdett (1978) who was the first to extend the classical search model by allowing workers to search for better jobs even after a job has been found. Variations and extensions of this model have been used to study the link between wages, labour turnover and the duration of employment spells (Eckstein and van den Berg, 2007, provide a review of the literature that uses the model as the basis for parameter estimation). We integrate the job-search model of Burdett (1978) with the theoretical considerations of Pencavel (1972), Anderson and Meyer (1994) and Clark (2001) on worker's quit propensity.

The main prediction of the search model is that employed workers who decide to search on the job are usually motivated by the desire to find a better job, typically a job with a higher growth. However, on-the-job search decision may be also affected by other relevant factors capturing information about job quality (e.g. the appeal of the individual to employers, the state of the aggregate labour market; the working hours; the typology of labour contract; the professional condition of worker; the perceived job security; the level of tenure accumulated).

An individual will determine the intensity of his job search by equating marginal benefits and costs of the search. Define q as a composite index representing the "quality of the job" where q is a function of a number of factors: $q = q(w, f, \phi, e, ..)$: q is increasing in the wage w obtained in the current firm, but it is also increasing in the future career prospects, f; in the degree of job security, ϕ; while it is decreasing in the level of effort required, e, (measured, for example, by hours of work) and so on. Following the existing literature, we assume that workers are able to observe job quality, q, of their current job as well as the quality of any job offer they might receive.

Define $c_e(\lambda)$ to be the cost of an employed individual generating job offers at a rate λ. Let λ denote the arrival rate of job offers for an employed worker that will choose λ to maximize the value of being employed, $V(q)$:

[1] $$rV(q) = u(q) + \lambda \int_q [V(x) - V(q) - c_M] dF(x) - \delta_u \left(V(q) - V^u\right) - c_e(\lambda)$$

where r denotes the worker's discount rate, $u(q)$ is the instantaneous (net) utility obtained in the current job of quality q, $V(x)$ is the value of an external job with quality x, $F(x)$ is the distribution of quality of external jobs, c_M is one-time cost of moving (which depends on individual characteristics), δ_u is the probability of becoming unemployed and V^u is the value of being unemployed.

Equation [1] shows that the value of being employed increases with the quality of the current job and that a worker will accept a job offer whenever this new job is of higher quality than his/her current job, net of any mobility costs.

Consider the choice of search intensity λ by an employee which aims to maximize $V(q)$. The first-order condition for this maximization problem can be written as:

[2] $$\frac{\partial c_e(\lambda)}{\partial \lambda} = \int_q [V(x) - V(q) - c_M] dF(x)$$

The left-hand size of (1) represents the marginal cost of search. On the other hand, the right-hand size is the expected gain of an extra job offer.

Under the standard assumption that $c_e(\lambda)$ is increasing and convex, that is, $c_e' > 0$ and $c_e'' < 0$, equation [2] shows that the intensity of job search depends negatively on factors increasing the "quality" of the current job q: a higher current wage, a higher predicted wage growth, the degree of security of the job, other non-wage benefits and so on. Therefore workers experiencing a lower quality of their job provide a greater effort in search and, consequently, they will have a higher probability of finding a better occupation.

On the other hand, good external perspectives, represented by the value of $V(x)$ will tend to increase the effort in on-the-job search: the value of worker's skills for potential employers, the state of the labour market, the extent of a network of social relationships favouring the transmission of information on job opportunities and so on.

Finally, equation [2] shows that the mobility costs in which a worker incurs if he/she changes job will reduce search intensity: for example, the necessity to move in another city could represent a very high cost for married individuals or individuals with children.

In the following Sections, using data on Italian workers, we try to verify empirically some of the theoretical predictions of this model.

3. The Data

This section briefly describes the data and the construction of the sample. The data source we use for our empirical analysis is the *Survey of Household Income and Wealth* (SHIW) which is conducted every two years by the Bank of Italy on a representative sample of about 8,000 Italian households.[3] The SHIW contains a rich set of information on demographic and social characteristics of all individuals within the households, such as age, gender, marital status, education, region of residence as well as information on individuals' working activity (earnings, employment status, type of occupation, industry, firm size, work experience and so on). We pool together SHIW data drawn from the six latest waves, conducted respectively in 1995, 1998, 2000, 2002, 2004 and 2006.

The Survey asks to workers and unemployed if they have started searching for a new occupation/position or if they have carried out some actions to look for a job opportunity during the reference year. We focus on employees and self-employed, neglecting the unemployed.

Each employed individual was asked, with reference only to his or her current job, "Have you been looking for another job in this year?" We use the respondents' answer to this question to define the dichotomous dependent variable *On-the-job Search* that takes the value of one if the respondent reports that he has searched for a new job, and zero otherwise.

Table 1 presents descriptive statistics for the main variables used in the analysis. The mean value of *On-the-job Search* is 0.081 with a standard deviation of 0.27. Females make up 39% of the sample. Education represents the years of schooling. It is set at 0 for no educational qualification; 5 for elementary school; 8 for middle school; 11 for some high school; 13 for high school; 18 for university; 20 for a postgraduate qualification. The average number of years of education for workers in the sample is 11. 66% of the sample are married people[4]. The average level of labour income (in log) is 9.5.

Table 1 around here

21.6% of the sample are Public employees and 21.8% are self-employed. The experience of workers refers to the experience accumulated before the current job,

obtained by calculating the total years of experience accumulated by the employees minus the current job tenure. The average levels of experience and tenure are 5.3. and 15 respectively. Residents in the North-West or North-East constitute 48%, 22% live in the Centre and 30% live in the South or on the Islands.[5] People living in very small towns (below 20,000 inhabitants), make up 29% of the sample; 8.6% live in very large cities with more than 500,000 inhabitants. The average number of jobs performed is 1.95. Among private employees individuals employed in small firms (with fewer than 20 employees) make up 44%, 28% work in medium-sized firms (20-99 employees) while 28% work in large firms (100 or more employees). The average *Number of job experiences* (including the present job) by a worker and the total hours worked per week are 1.96 and 38 respectively. The average *Regional Unemployment rate* is 9.1 percentage points.

In Table 2 we investigate the on-the-job search distribution by individual characteristics.

Table 2 around here

Table 2 shows that males search more (8.5%) than females (7.8%). On-the-job search tends to increase with educational levels: workers with a College Degree or more show a 10.8 probability of search, while poorly educated individuals search significantly less. Public employees, search much less than other categories (3.6%), private workers (8.7%) and self-employed (5.9%). It is also interesting to note that employees with temporary contracts search much more (30%) than workers facing permanent jobs (7%). Workers with a level of tenure above the mean engage less on on-the-job search activity (6.2%) than those having a low level of tenure accumulated. Looking at the professional qualifications of private and public employees, it emerges that Blue-Collars show a 11.4% probability of search, while that probability is equal to 7.1% for Teachers and Managers. Moreover, workers in small firms (fewer than 20 employees) exhibit a higher probability to look for another job (13.2%) compared to those working in large firm (7.8%). According to the geographical areas, the probability of job search is lower in the Centre (7.5%) and in the South (7.9%) compared to the North-West regions (8.7%). A more rigorous analysis of the on the job search activity is carried out through the econometric estimations in the next section.

4. An Empirical Analysis of On-the-Job Search Activities in Italy

In this Section in order to analyze the determinants of on-the-job search activities, we estimate a number of specifications of a probit regression on pooled data. The dependent variable is *On-The-Job Search*. We restrict our sample to public and private employees and self-employed, aged between 15 and 65 years.

The estimated on-the-job search coefficients from Probit regressions are based on the following equation:

$$\Pr(Search = 1 \mid X) = \Phi(\beta_0 + \beta_1 Z_i + \beta_2 E_i + B_3 C_i) \quad (3)$$

where $Search$ is on-the-job search of individual i, Z_i is a vector of individual and socio-demographic characteristics (gender, marital status, residence, etc.), E_i describes a number of economic variables (employment status, labour income, typology of job contracts, regional unemployment rate, work experience, job tenure), C_i includes firm characteristics, Φ represents the standard normal cumulative distribution function. In order to estimate the coefficients of interest, we use a Maximum Likelihood Estimator, which, as shown by Wooldridge (2002), is consistent, asymptotically normal and efficient under very general assumptions.

The reported coefficients in Tables 3 and 4 represent the marginal effects, evaluated at the mean values of the explanatory variables in the sample. In all the equations sample weights provided in the SHIW dataset are used. In all the regressions we control for dummy year variables (not reported).

In order to analyse the potential differences in the determinants of on-the-job search activities of employed individuals, in column 1 of Table 3 we report the estimated coefficients for the whole sample of workers. Columns 2 and 3 replicate column 1's analysis separately for men and women.

Table 3 around here

Results of column (1) show, in accordance with the existing literature, that the educational level has a positive impact on actual job search probably because a high level of education is often associated with better labour market alternatives. Better educated workers may be more efficient in searching and are faced with more job opportunities. Ceteris paribus, they may have access to better job positions, the attainment of an educational qualification is able to signal their skills to external

employers. In our analysis one more year of education increases the probability of search on the job of about 0.2 percentage points. In all specifications the education coefficient is highly statistically significant (p-value 0.000).

As regards gender, females turn out to be significantly less prone to search for a new job (about 1% less). One possible reason of the different search behaviour between men and women could be related to the costs of search, including any opportunity costs. There is reason to suspect that the opportunity costs – including the cost of non-wage time that is used to search rather than for other non-work activities – and the mobility costs incurred by individuals may be higher for women than for men.

Being married shows a negative significant effect on job search decision since it is much more costly for a worker to move with a family (Holmlund, 1984; Zimmermann, 1984). The coefficient is statistically significant at the 5% level for the sample of all employees.

In column (1) we consider, as determinant of on-the-job search activity the log of *Labour Income*. As we have seen in Section 2, a very clear prediction from turnover models is that the intensity of search is decreasing in the wage because the higher the wage level is, the less the potential gains from job search are, as there are fewer higher wage jobs to find. This factor has received a lot of attention in the literature: human capital theory predicts that, other things being equal, a worker will have a greater probability of quitting if his wage is low, simply because workers have more possibility to find a better-paid job by changing employers. Efficiency wages theories have shown the interest of firms to pay a higher wage in order to discourage worker turnover and avoid to bear the related turnover costs. Our analysis strongly confirms this prediction: estimations show an inverse relation between labour income and the probability of job search (the effect of labour income is highly significant (*t*-stat is 30.05)). Ceteris paribus, a wage increase of 1,000 euros (starting from the average level) leads to a reduction of 4.7% in the probability to search for a new job for the whole sample of employees. Results show that labour income strongly reduce on-the-job search, but also, that a convex relationship exists between on-the-job search behaviour and labour income: at high level of labour income, a further increase of income has a decreasing effect on the probability of on-the-job search. To make clearer this aspect, we represent graphically in Figure 1 the relationship between the probability of on-the-job search and labour income.

Figure 1 around here

We obtain very similar results if – instead of the log of income – we insert income in linear and squared terms.

Most important for the purposes of the analysis, in column (1) we examine if there exist differences in job-search activities across type of occupations. The omitted category is private employee. Ceteris paribus, estimates show that being employed in the public sector reduces the probability of searching for a new job of about 3.1%compared to private employees (the coefficient is significant at the 1 percent level). This remarkable difference – obtained controlling for wage levels – is probably due to a number of advantages enjoyed by public sector employees, such as a higher degree of protection against the risk of losing their own job, lower pressure by managers and supervisors to provide effort on the job, more relaxed work environment. This is an important result which proves the attractiveness of Italian public jobs (on this point, see also Scoppa, 2009), beyond the anecdotal evidence of large queue in competitions for public jobs.

Our estimates show that being self-employed reduces on-the-job search of 1.3% compared to private employees. This results can be due to the fact that, holding other things constant, self-employed people enjoy their position as independent actor on the market. That condition of independence gives them a higher measure of self-determination and freedom since they are not subject to a hierarchy and they do not have to obey orders given by their superiors, leading to a decrease in the probability of searching for an alternative job.

Following the existing literature, in all specifications we include among the explanatory variables the levels of tenure and experience of workers and their squared terms.

The experience of workers refers to the experience accumulated before the current job, obtained by calculating the total years of experience accumulated on the labour market minus the current job tenure. Given that we include also the variable *Tenure*, we use this measure of *Experience* to avoid problems of collinearity with *Tenure*. The coefficient of *Experience* turns out to be not statistically significant different from zero.

Tenure is defined as the difference between the worker's age and the age in which he/she has started to work in the current firm. Results show that *Tenure* is

negative and highly significant in all specifications. The longer is the tenure, the higher is the accumulation of firm specific human capital and, therefore, the higher is the productivity in the current firm. However, this reflects in a higher wage. Holding the wage constant, the additional negative effect of the tenure on the probability of on-the-job search may probably reflect good relations with colleagues, the development of trust and social cohesion, promotion opportunities at the workplace and so on. Furthermore, a high level of tenure implies that the current match between the worker and the employer is the best one available in the labour market.

Tenure Squared turns out to be positive, implying that the marginal effects of tenure are decreasing. Accordingly to our estimations, the relationship between search on the job and tenure is therefore convex, similar to the relationship with labour income.

In our regressions we also consider the *Number of Job Experiences* previously held by the worker as a factor that may affect the probability of on-the-job search. The results of the estimates show that one more job experience in the past increases the probability of being engaged in job search activities by 0.6% for the whole sample of employees (statistically significant at the 1 percent level). This is probably due to a larger network of acquaintances acquired on previous jobs which may help to find a new job or to a greater individual propensity to move from one job to another.

In column (1) we include as explanatory variable the *Fixed Term Contract* status to verify the effects of a non permanent position of the worker on the probability to search for a new job. As expected, results show an increase of 9.2 percentage points in the probability of engaging of on-the-job-search activity in the case of temporary labour contracts. The strong statistical significance and the magnitude of the coefficient imply that temporary jobs are much less desirable than permanent ones. Furthermore, the approaching of the end of the contract could be the most important reason for inducing workers to engage in on-the-job search activity since they may have a high expectation of leaving their current firm. Finally, workers holding a temporary contract may be less integrated in the firm or may suffer worse working conditions than workers holding a permanent contract (Garcia-Serrano, 2004).

In all specifications we control for geographical dummy variables to capture both the effects of different regional labour market conditions and the average quality of jobs. Moreover, we also consider the unemployment rate at regional level. Regional unemployment rates are taken by Labor Force Survey conducted by ISTAT (the National Statistic Institute). It is plausible to think that the propensity to search for

another job depends on the state of the regional labour market. According to the existing literature, workers search less in regional labour markets with high unemployment rate. In fact workers will have a higher probability of search for a different job when it is relatively easy for them to obtain a better job quickly. Thus, when jobs are more plentiful relative to job seekers, one would expect the search rate to be higher than when few jobs are available and many workers are being laid off.

Italy is characterized by huge regional differences, favouring the North-East and North-West regions, in terms of employment perspectives, quality of jobs and unemployment rates.

The existence of these discrepancies among the country are partly confirmed in our findings. according to the geographical areas, results in column (1) show that, the probability of search on-the-job is lower in the Centre and in the South by 1 and 1.8 percentage points respectively than the North-Western regions, the reference category.

In contrast to theoretical predictions, in our specification the *Unemployment* coefficient is not significant. This result can probably be explained by the fact that regions with high levels of unemployment also tend to provide worse jobs, that is, less stable and with worse working conditions (unobservable characteristics in the data) and therefore there is the tendency for employees to search for better jobs in these markets, offsetting the effects of looking at job opportunities.

Note that since the unemployment rate is defined at a regional level, the standard errors reported in Tables 3 and 4 are corrected for the potential clustering of the residual at the regional level.

In regression (1) we also control for the city size dummies. Results show that job search activity appears to increase with the size of the town where individuals live: workers search 2 percentage points more in very large cities compared to the reference category (towns with fewer than 20,000 inhabitants). This finding is probably due to the fact that large cities are characterized by thicker labour markets, in which search activities are more productive in terms of probability of job matching.

In order to check the relative importance of determinant factors on search activities among men and women, columns 2 and 3 of Table 3 replicate column 1's. The estimated coefficients of on-the-job search explanatory variables are quite similar: the results show that men and women do not exhibit significant differences in their on-the-job search behaviour. The only relevant differences concern the following aspects: other things being equal, married women are more strongly discouraged to search for another

job (-2.6%) compared to married men (-1.0%) (but in both cases the married dummy is significant at the 1% level). At the same time, having children does not seem to affect job search propensity of men while there is a large negative effect from the presence of children for females (the effect is significant on the 1% level): having a child reduces the probability to look for an alternative employment by 2.1%.

In order to evaluate potential differences in the determinants of on-the-job search decisions between public and private employees, in Table 4, columns 1 and 2, respectively, we separately report the estimated coefficients for the two categories of workers. This potential divergence in on-the-job search activity between public and private employees might arise for many reasons governing employment relationship.

Italian public employees enjoy many favourable working conditions such as a very high degree of job security (public employees are assured of employment until retirement), lower pressure by managers and supervisors to provide effort on the job ("low powered incentives" since it is particularly difficult to measure both individual and aggregated performance), more relaxed work environment and better social climate. These aspects make public sector employment particularly attractive for workers, explaining individuals' willingness to queue to get public jobs, although the wage premium is not very high. The negative coefficient attracted by Public employees in Table 3 partly confirms these aspects.

Table 4 around here

Results in Table 4 show that the probability of looking for another job is negatively related to the Wage for both public and private employees but the effect is much stronger in the private sector. Ceteris paribus, an increase in the Labour Income leads to a reduction of about 7% for private workers and only 2.5% for public employees. This might suggest that public employees are interested in other non-wage aspect of their job (job security, work pace, and so on). Similarly, the educational level has a positive impact on on-the-job search for both private and public employees but the coefficient shows a bigger magnitude with respect to private workers: one more year of education increases the probability of search of a new job by 0.4 percentage points. Looking at the experience level of workers, it significantly increases the probability of on-the-job search for the sub sample of private employees (0.2%) whereas the coefficient turns out to be not statistically different from zero for public employees. Moreover, results show

that the Number of Job Experiences and the effect of a Fixed term contract even if significant for both categories, are more important for private employees.

In the specifications reported in Table 4 we control for some additional variables that are only available for the categories of private and public employees. In particular, we introduce the average *Number of Hours Worked* (per week). Results show that the number of work hours has a positive impact on the probability of search for another job for the sub-sample of private employees (while has no effect on public employees). One more hour worked increases the probability of on-the-job search of 0.1% (the coefficient is significant at 1% level). It is worthwhile to note that in the regression we are taking the wage constant, so a higher number of working hours implies a lower hourly wage: this explains why employees tend to search more.

Only for private employees (column 2) we also consider firm size dummies: *Medium Firm* (20-99 employees) and *Large Firm* (100 or more employees).[6] Our results show that the size of the firm in which employees work does not have a significant impact on the probability of job search. This result is likely due to the fact that we are controlling for workers' labour income. Even if large firms tend to have substantial firm-specific and screening investments in their workers, they pay higher wages to discourage worker turnover. In fact, if we do not control for individual labour income, we obtain the traditional effect showing a drastic decrease in the job search as the firm size increases.

In columns 1 and 2 we also control for the professional qualifications of private and public employees. It emerges that White Collars and Teachers (both in private and public sector) search significantly less compared to the Blue Collars (the reference category).

4. Concluding Remarks

This study has explored on-the-job search activities of workers in Italian labour markets. Due to a lack of available data, allowing to match workers' and employers' characteristics with decisions of voluntary turnover, we have used on-the-job search intensity as a proxy of workers voluntary turnover. To the best of our knowledge, there are no other studies investigating the determinants of on-the-job search activity with regards to Italy.

We argued that the Italian labour market has several features such as a highly centralized wage bargaining system, wages not reactive to labour market conditions and public sector employment which seems particularly attractive.

On the basis of these aspects, by investigating empirically the differences in the determinants of on-the-job search activities between public and private employees, we have shown that the public sector employees have a considerable lower probability of on-the-job search, compared to private sector workers, even controlling for wage levels. This indirectly result suggests the high attractiveness of Italian public jobs.

In accordance with the findings in other countries, we have found that the probability of being engaged in job-search activities is much lower when the wage is higher. It is higher for males, for workers with low tenure and higher levels of education, for workers with thick networks of informal relationships build in previous work experiences and for residents in large cities. Married women are less likely to be looking for an alternative employment and there is a very large negative effect from the presence of children on female job search.

Notwithstanding the high centralization of wage bargaining our findings show that Italian workers are highly mobile and reactive to labour market conditions and individual characteristics. Moreover, the evidence we gathered suggests that jobs do not differ only in terms of the wage paid, but there are a number of characteristics that workers consider in their choice of job.

As this study is based on household survey data, it was possible to include firm characteristics only by introducing firm size and professional qualifications as controls variables. Further research into this topic should link employer-employee data providing much more detailed firm-individual level information not available in this phase on the analysis. In addition, it would be interesting to verify whether workers searching in a certain period for a job effectively quit in the subsequent periods, but this kind of study requires panel data rather than cross-section data which are the ones we used.

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Table 1. Descriptive statistics

Variables	Mean	St. Dev.	Min	Max	Obs.
On-the-Job Search	0.081	0.273	0	1	44721
Female	0.387	0.487	0	1	44721
Education (in years)	10.952	3.876	0	20	44721
Married	0.657	0.475	0	1	44721
Number of Children	0.457	0.733	0	5	44721
Labour Income (in log)	9.520	0.621	.081	13.852	41207
Public Employee	0.216	0.411	0	1	44721
Self Employed	0.218	0.413	0	1	44721
Experience (in years)	5.335	8.439	0	51	44210
Experience squared	99.67	234.003	0	2601	44210
Tenure (in years)	15.177	11.392	0	57	44263
Tenure squared	360.107	439.965	0	3249	44263
North-West	0.252	0.434	0	1	44263
North-East	0.232	0.422	0	1	44721
Centre	0.217	0.412	0	1	44721
South	0.201	0.400	0	1	44721
Islands	0.098	0.298	0	1	44721
Very Small City (<20 inhabitants)	0.285	.452	0	1	44721
Small City (20-40)	0.204	0.403	0	1	44721
Medium City (40-500)	0.424	0.494	0	1	44721
Large City (>500)	0.086	0.281	0	1	44721
Small Firm (<20 employees)	0.441	0.496	0	1	25335
Medium Firm (20-99)	0.277	0.447	0	1	25335
Large Firm (>100)	0.278	0.448	0	1	25335
White-Collar	0.283	0.450	0	1	44721
Teacher	0.068	0.251	0	1	44721
Junior Manager	0.048	0.215	0	1	44721
Manager	0.019	0.138	0	1	44721
Fixed Term Contract	0.055	0.228	0	1	44721
Number of Jobs Experiences	1.959	1.679	0	82	44685
Hours worked per week	37.817	8.888	0	150	35084
Regional Unemployment Rate	9.211	5.934	3.342	22.533	44721

Data source: SHIW 1995-2006. Sample: employed (private/public employees and self-employed).

Table 2. On-the-job search distribution by individual characteristics.

Variables	*Mean*	*St. Dev.*
Female	0.078	0.269
Male	0.085	0.278
Elementary school	0.065	0.246
Middle school	0.083	0.276
High school	0.081	0.273
College degree	0.105	0.307
Postgraduate qualification	0.108	0.312
Public Employee	0.036	0.186
Private employee	0.087	0.282
Self Employed	0.059	0.235
Permanent Contract	0.068	0.252
Fixed Term Contract	0.301	0.459
Tenure below the mean	0.080	0.271
Tenure above the mean	0.062	0.242
Blue-Collar	0.114	0.317
White-Collar	0.071	0.256
Teacher	0.038	0.191
Junior Manager	0.071	0.258
Manager	0.038	0.191
Small Firm (<20 employees)	0.132	0.339
Medium Firm (20-99)	0.097	0.296
Large Firm (>100)	0.078	0.268
North-West	0.087	0.271
North-East	0.081	0.274
Centre	0.075	0.263
South	0.079	0.269
Islands	0.098	0.297

Data source: SHIW 1995-2006.
Sample: private/public employees and self-employed.

Table 3. Determinants of *On-the-Job Search*. Probit estimations. Dependent Variable: On-theJob Search.

Variables	Whole Sample	*Men*	*Women*
	(1)	(2)	(3)
Female	-0.008**		
	(0.004)		
Education	0.002***	0.002**	0.002***
	(0.001)	(0.001)	(0.001)
Married	-0.006**	-0.010***	-0.026***
	(0.002)	(0.004)	(0.005)
Number of Children	0.000	0.000	-0.021***
	(0.002)	(0.001)	(0.002)
(Female)(Number of Children)*	-0.009***		
	(0.003)		
Labour Income (in log)	-0.047***	-0.048***	-0.047***
	(0.003)	(0.004)	(0.003)
Public Employee	-0.031***	-0.034***	-0.024***
	(0.003)	(0.003)	(0.004)
Self Employed	-0.013***	-0.016***	-0.006
	(0.003)	(0.003)	(0.004)
Experience(years)	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)
Experience Squared	-0.000	-0.000	-0.000*
	(0.000)	(0.000)	(0.000)
Tenure (years)	-0.007***	-0.006***	-0.007***
	(0.000)	(0.000)	(0.000)
Tenure Squared	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)
Number of Jobs Experiences	0.006***	0.006***	0.006***
	(0.001)	(0.001)	(0.001)
Fixed Term Contract	0.092***	0.110***	0.072***
	(0.013)	(0.016)	(0.012)
North-East	-0.005	-0.003	-0.008
	(0.006)	(0.007)	(0.006)
Centre	-0.010*	-0.011*	-0.009
	(0.005)	(0.006)	(0.006)
South	-0.018**	-0.022**	-0.014
	(0.009)	(0.011)	(0.011)
Islands	-0.015	-0.022	-0.003
	(0.012)	(0.015)	(0.014)
Small City (20-40)	0.011**	0.011*	0.009**
	(0.005)	(0.006)	(0.004)
Medium City (40-500)	0.012**	0.012*	0.010**
	(0.005)	(0.006)	(0.004)
Large City (>500)	0.020**	0.025*	0.011**
	(0.009)	(0.014)	(0.005)
Regional Unemployment Rate	0.001	0.002	-0.000
	(0.001)	(0.001)	(0.001)
Observations	40672	24839	15833
Pseudo R-squared	0.228	0.216	0.258
Log-likelihood	-9020	-5448	-3503

Notes: Pooled Probit estimates. The dependent variable is *On-the-Job Search*. The coefficients represent the marginal effects. Standard errors (robust to heteroskedasticity) are reported in parentheses. The standard errors are corrected for the potential clustering of the residual at the regional level. The symbols ***, **, * indicate that coefficients are statistically significant, respectively, at the 1, 5, and 10 percent level. Sample weights are used. Year dummy variables are included in all the regressions (not reported). Data source: SHIW 1995-2006.

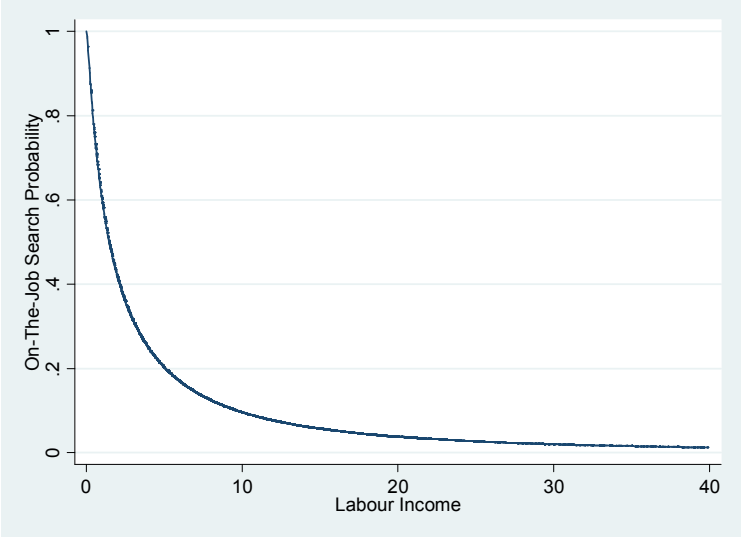

Figure 1. The relationship between on-the-job search decision and labour income.

Table 4. Determinants of *On-the-Job Search*. Probit estimations. Dependent Variable: On-theJob Search.

Variables	(1) Public Employees	(2) Private Employees
Female	-0.008**	-0.006
	(0.004)	(0.005)
Education	0.001***	0.004***
	(0.000)	(0.001)
Married	-0.003	-0.003
	(0.003)	(0.004)
Number of Children	-0.001	0.002*
	(0.001)	(0.001)
(Female)(Number of Children)*	0.004	-0.013**
	(0.004)	(0.005)
Labour Income (in log)	-0.025***	-0.068***
	(0.003)	(0.003)
Experience (years)	-0.000	0.002***
	(0.000)	(0.001)
Experience Squared	-0.000	-0.000***
	(0.000)	(0.000)
Tenure (years)	-0.003***	-0.010***
	(0.000)	(0.000)
Tenure Squared	0.000***	0.000***
	(0.000)	(0.000)
Number of Job Experiences	0.002***	0.008***
	(0.001)	(0.002)
Fixed Term Contract	0.043***	0.116***
	(0.012)	(0.010)
North-East	-0.005*	-0.005
	(0.003)	(0.005)
Centre	-0.006**	-0.013***
	(0.003)	(0.004)
South	-0.004	-0.028***
	(0.005)	(0.007)
Islands	-0.002	-0.025***
	(0.006)	(0.008)
Small City (20-40)	-0.002	0.017***
	(0.003)	(0.005)
Medium City (40-500)	0.002	0.015***
	(0.003)	(0.004)
Large City (>500)	-0.002	0.026***
	(0.004)	(0.008)
Regional Unemployment Rate	-0.000	0.002
	(0.000)	(0.006)
Hours worked per week	-0.000	0.001***
	(0.000)	(0.000)
Medium Firm		-0.001
		(0.004)
Large Firm		0.002
		(0.004)
White-Collar	-0.009***	-0.011***
	(0.003)	(0.004)
Teacher	-0.008**	-0.039***
	(0.004)	(0.010)
Junior manager	-0.008**	0.025**
	(0.004)	(0.010)

Manager	0.014	0.007
	(0.012)	(0.018)
Observations	9393	24537
Pseudo R-squared	0.264	0.194
Log-likelihood	-1074	-6695

Notes: Pooled Probit estimates. The dependent variable is *On-the-Job Search*. The coefficients represent the marginal effects. Standard errors (robust to heteroskedasticity) are reported in parentheses. The standard errors are corrected for the potential clustering of the residual at the regional level. The symbols ***, **, * indicate that coefficients are statistically significant, respectively, at the 1, 5, and 10 percent level. Sample weights are used. Year dummy variables are included in all the regressions (not reported). Data source: SHIW 1995-2006.

[1] The relationship between job search, job offers and mobility is analyzed in Hartog et al. (1988), Hartog and Van Ophem (1996) for Dutch employees during the eighties.

[2] Unfortunately, the dataset we use does not allow us to describe the supposed correlation or the cause-and-effect existing between on-the-job search and actual turnover. We do not have a panel data to verify whether workers searching in a period for a job effectively quit in the subsequent periods.

[3] SHIW data are freely available at www.bancaditalia.it.

[4] We set *Married* equal to zero if the individual has never got married, is widowed, separated or divorced.

[5] North-West includes the following regions: Piedmont, Valle d'Aosta, Lombardy, Liguria; North-East includes Veneto, Trentino Alto Adige, Friuli Venezia Giulia, Emilia Romagna; Centre includes Tuscany, Lazio, Marche, Umbria; South includes Abruzzi, Campania, Apulia, Molise, Basilicata, Calabria; Islands include Sicily and Sardinia.

[6] We have six categories for firm size and we tried to use all of them but the results are very similar.