

Job Search Methods and Outcomes for the Employed and Unemployed: an empirical investigation *

Mauro Sylos Labini[†]

LEM, S.Anna School of Advanced Studies, Pisa

BETA, Université Louis Pasteur, Strasbourg

September 8, 2005

Abstract

This paper aims at investigating two empirical aspects of the job search process: heterogeneity in the job search strategies and the relative effectiveness of the employed search. It focuses on Italian job-seekers, exploiting a unique set of questions asked in the 1993 Bank of Italy's survey on Household Income and Wealth. It is found that public employment agencies for the unemployed and checking with friends for the employed are the most widespread search methods. This last method is also the most effective conditional upon its use in terms of job finding rates. On-the-job seekers use less methods (a proxy of search effort), but descriptive evidence shows that they generate more offers and have higher job finding rates for most of the method considered. Once we control for endogeneity of method choice and for personal characteristics the last results is not confirmed.

JEL Classification: J21, J64.

Keywords: Labor Markets, Job Search.

***Acknowledgements:** I wish to thank Giovanni Dosi, Alfonso Gambardella, and Patrick Llerena for their support and supervision.

[†]S.Anna School of Advanced Studies, P.zza Martiri della Liberta' 33, 56127 Pisa, Italy. *E-mail:* syloslabini@sssup.it. *Phone:* +39-050-883343. *Fax:* +39-050-883344.

1 Introduction

Labor markets are peculiar kinds of social institutions and often the analogy with other markets can be misleading. In particular, the way in which demand and supply interact can hardly be envisaged as a simple curves-crossing equilibrium process. In this respect, given the uncertainties that characterizes both sides of the market, modern economic theory of unemployment attributes a very important role to job search activity: in an extreme but popular representation, unemployment is an entirely voluntary and productive activity devoted to acquire information on job opportunities in a market characterized by different kinds of frictions. In this framework, the average unemployed worker has many job opportunities, but go on searching as long as the marginal productivity of search is higher than its marginal cost.¹ In its simplest version, this setting, combined with rational expectations about offer arrival rates and offer distribution, implies a constant reservation wage policy: individuals optimally set at the beginning of their search activity, under which they reject any offer.

Even if traditional job search literature concentrates mainly on reservation wages of unemployed workers, standard models have been recently challenged by new evidence concerning two real world facts: heterogeneity in job search behaviors and widespread on-the-job search. Authors addressing the first issue acknowledge that offer arrival rate depends on the use of different search strategies which are likely to have different costs and productivity. Taking this into account not only allows to have a more realistic picture of agents search behavior, but also helps investigating the efficiency of different job search methods across different work-

¹See Stigler (1963) for one of the first articles that formalize this view.

ers. In particular, it improves both our understanding on the importance of social networks and leads to produce more reliable evaluation of public employment agencies. The most important problem in both respect is that job seekers typically auto select in different search methods and therefore it is difficult to separate the effect of a specific search strategy from individual unobserved heterogeneity (Osberg, 1993).

The second issues, on-the-job search, also complicates the stylized representation of voluntary unemployment. In fact, if on-the-job search proves to be *ceteris paribus* more effective than off-the-job one, the validity of job search theory is at stake: if looking for a job while employed is as efficient as seeking while unemployed, why should job seekers reject offers below their reservation wage? It would be wiser, in fact, to accept the first job proposed and then go on searching (Clark and Summer, 1979; Blau and Robins, 1990). Moreover, in a recent paper Boeri (1999) claims that highly regulated labor markets tend to produce a high share of short term jobs and workers in such positions are likely to compete with unemployed job-seekers. Such important claim deserves more careful evidence and cross country comparisons about on-the-job search behaviors.

In this paper we empirically address both issues exploiting a unique set of questions contained in the 1993 Bank of Italy survey of Household Income and Wealth (SHIW). More specifically, we purport to shed some light on two subjects: first, we investigate both determinants and consequences of different job search methods. Second, we compare search strategies and outcomes of employed and unemployed workers. In doing this we can not neglect the peculiarities of Italian labor market in two important dimensions: unemployment characteristics and labor demand structure.

Even if Italian aggregate unemployment figures are by and large in line with European Union ones, if one disaggregates the national rate in its regional and age components, important heterogeneities emerge in many respect (Bertola and Garibaldi, 2003). Most of Italian unemployed workers, in fact, live in the south and/or are seeking their first job. Moreover, the proportion of long term unemployed is one of the highest in OECD countries and this obviously affects search behaviors.

The second aspect to consider is the notable high proportion of small firms in the Italian production structure. For example, Eurostat (1998) estimates the Italian average firm size is about half of the European average. This is likely to affect the channels through which workers search and find their jobs, given that small firms are known to rely more intensively in informal means of recruitment (Pistaferrri, 1999; Sylos Labini, 2004).

The paper is organized as follows. Section 2 reviews the available empirical evidence on multiple job search methods and the effectiveness of employed search. In Section 3 our data set is described stressing strengths and weaknesses. Section 4 presents some descriptive evidence on method utilization rates and performance. In Section 5 a reduce-form model is estimated in order to control for heterogeneity of method choice and other relevant characteristics. Section 6 concludes.

2 The Literature

In most of theoretical works addressing job search beyond the sole modelling of the opportune reservation wage, the additional choice considered is usually the appropriate level of search effort (Mortensen, 1986). Job search activity is thus

described by a *production function* whose only input is search effort and whose outputs are offers.² An alternative and more realistic metaphor has been proposed by Lars Osberg (1993), who considers job search as a *process* and compares job seekers to fishermen: what an individual thinks is optimal in order to get a suitable job is a specific search strategy (lure and location), rather than the reservation wage (which fish to throw back).

In order to investigate this issue empirically, Holzer (1988) proposes one of the few models that tries to combine both views in a traditional rationality-cum-equilibrium framework: utility maximizers unemployed choose a reservation wages and a search intensity for any of a set of search methods which vary in both costs and productivity. His empirical results, obtained analyzing the 1981 Youth Cohort of the National Longitudinal Survey, point out that checking with friends and relatives and direct application are the most frequently and intensively used search methods by unemployed youth. Moreover, these methods are also the more productive in terms of job offers generation and job acceptances conditional upon use. Finally, the paper shows that search methods used by unemployed youth appear to be related to relative productivities and costs of each method, as the model suggests.

Using the same data set, Holzer (1987) also compares job search choices and outcomes of both employed and unemployed. With a standard theoretical setting he shows that search choices of the two groups are likely to be different: first, employed job seekers are likely to chose higher reservation wages, given that their search costs tend to be relatively lower. Second, and pretty much for the same rea-

²In most of search models search effort influences the probability of receiving an offer and not offers distributions. To the best of our knowledge this assumption is never tested and it is made for "the sake of simplicity".

sons, employed searchers' effort is also likely to be lower. This leads to predict that on-the-job seekers have, compared to off-the-job ones, a lower probability of receiving offers, a lower probability of accepting offers, and higher wages when offers are accepted. Even if Holzer himself acknowledges that these predictions depend on critical assumptions concerning e.g. orthogonality between effort and wage offer, homogeneity in search technology between the two groups, and exogenous selection in employment status, they are largely corroborated by his empirical analysis: unemployed job seekers use more job search methods (a proxy of intensity), devote more time to each method, and the latter helps to explain their higher probability of receiving offers. The overall picture depicts unemployed searcher being more eager and more likely to get a new job. This empirical finding is important, because, as noted by Clark and Summer (1979), if searching while employed turns out to be more or as effective as searching while unemployed, the entire validity of the theory of search while unemployed need to be reconsidered.

Exploiting a unique—and somewhat more representative—US data set, the 1980 Equal Opportunity Pilot Project Data, Blau and Robins (1990) shed additional light on both of the issues above. They propose a very articulate representation of job search process which involves the choice of search method, the choice of how many firms to contact, the rate at which offers are received, and the acceptance or rejection of an offer and perform a reduced form estimation based on this representation. In some respects, their results are largely consistent with Holzer (1988) when the efficacy of different job search method is assessed: direct employer contact and newspaper advertisement are the method which generate the most contacts, but checking with friends and relative and direct employment contact are the ones with the highest job finding rates. However, the findings con-

cerning the relative efficacy of employed/unemployed job search challenge some of the facts reported by Holzer (1987). In particular, Blau and Robins (1990) find that employed search is somewhat less intensive but seems to be more effective for some dimensions. In fact, employed job seeker tend to use fewer job methods but are more likely to receive job offers and to gain new employment.

Michelle Harrison Ports (1993) using the Current Population Survey data provides one of the few descriptive pictures of the time trends in job search strategies used by U.S. unemployed job seekers. Two stylized facts deserve to be mentioned: first, she finds the share of people looking for work by placing or answering ads in 1992 has nearly doubled since the 1970 (from 23.4% to 41.7%), while those using public employment agencies has sharply declined (from 30.2% to 22.6%).³ These trends are plausibly explained by the contemporaneous rise of service and white collar jobs who are both likely to use ads more intensively and public employment agency less intensively. Second, the only job method that follows a pattern linked with the economic cycle is direct employer contact whose use rises with unemployment rate.⁴

So far detailed evidences outside the US have been scarce. Osberg (1993) examines the job search methods of unemployed Canadian workers exploiting longitudinal data from the Labor Force Survey. He notices that many workers find jobs without any reported search, an issues that has been somewhat neglected by the previous works reviewed and that has received more scrutiny by sociologists (Granovetter, 1995). Osberg (1993) finds that direct application is the most

³Incidentally, Blau and Robins (1990) 1980 figures for both methods (respectively 48% and 38%) are slightly different. This can depend from the non random nature of the EOPP survey.

⁴This pattern is somewhat contradicted by Canadian data reported in Osberg (1993) (p.351) for a limited number of years.

widespread search strategy and, together with newspaper ads, also the most successful. Moreover, both men and women seem to change their search behavior along different phases of the business cycle, but they do so in different veins and with distinct outcomes in terms of job finding rates. Finally, social returns to public employment are likely to increase during recessions and, in order to measure them properly, it is necessary to control for selectivity bias.

Among European nations, Great Britain has been the most studied case, but to the best of our knowledge the evidence available does not go beyond unemployed job seekers behavior. Public Employment Service shows an overall better performance with a higher share of unemployed (around 70%) using job centers (see both Gregg and Wadsworth (1996) and Böheim and Taylor (2002)). Böheim and Taylor (2002) also show that replying to advertisement and check with friends and relatives are popular search methods too, but they do not increase the probability of employment as much as direct application does. This suggest there is room for policies aimed to improve job search skills.

Addison and Portugal (2002) use Portuguese data in order to shed light on the effects of job search strategies on escape rate from unemployment and evaluate the state employment agency performance. Similarly to the UK the use of Public Jobcenters is widespread among job seekers: with 26% of them using it, it results as the most common job search method. On the other hand, checking with friends and relatives is the most effective one in terms of the share of people that find a job through it in a given period, given that they use it in the previous one. Interestingly, Addison and Portugal (2002) report that a non trivial number of unemployed finds works through methods that were not used in the previous quarter. This is very clear for the case of the one who get their jobs with the

help of friends and relatives, confirming that this method is useful in connecting people to job even when they are not explicitly searching (Granovetter, 1995). Finally, Addison and Portugal (2002) do not consider employed searchers in most of their investigation, but report in a note that "Portuguese data revealed few overt differences between on- and off-the-job search" (p.507).

Overall, there are few stylized facts in the sparse empirical literature reviewed. In particular, it is hard to find common patterns across countries with similar institutions (i.e. labor market regulations). For instance, friends and relatives are very useful both in the US and in Portugal, but are less important in UK and Canada.

3 The Data

The Bank of Italy Survey of Household Income and Wealth (SHIW) is a widely used source of Italian data that collects information on income, consumption, and wealth of families and individuals.⁵

In 1993 a unique set of questions about labor supply and job search activity was added to the baseline survey. These questions allow to collect retrospective information about employment status and job search activity for every month of the period between January and December 1993. In particular 24,013 individuals interviewed between May and July 1994 were asked for each 1993 month, first, if they have been working or not and, second, regardless of their employment status, if they have been actively searching for a job. Additionally, questions on job search methods used, offers received, offers rejected, number of changes of employer, and

⁵For methodological details see Brandolini and Canari (1994).

means used to find the most recent job have also been asked for the whole year.

The sub-sample used in our analysis includes the individuals who reported experiencing at least one month of job search during 1993. In particular, our empirical investigation largely follows Blau and Robins (1990) methodology: we consider complete and incomplete spells of search of both employed and unemployed searchers.⁶ We then exclude both the individuals experiencing multiple spells (94 obs.) and the ones who have searched both being employed and unemployed (274 obs.), given that most of the information we have about job search methods and offers refers to the entire year and, therefore, in the above cases it is not self evident to which spell or employment status this information applies. Our final sample is therefore composed of 358 employment spells of search and 1,656 unemployment ones. For both of them we know the number of months they endure, the methods of search used by the job-seekers, the number of offers received, the number of offers rejected, and the method (if any) used to find the eventual job found during such spell. Finally, we know for the employment spells if there was a transition into a new job, and for the unemployment ones if there was a transition into employment.

The job search methods identified are by and large the ones specified in the surveys used by the articles reviewed in the previous section. In particular, we focus on the state employment agency (PUB), public exam (PE),⁷ newspaper and magazines advertisements (NEWS), direct employer contact (DIR), references of

⁶In Blau and Robins (1990) only spells with known starting dates are included. Instead we can use left-censored spells. In fact, differently from the survey used by Blau and Robins (1990), in 1993 SHIW it is clear that the search information refers only to the censored portion of the spell.

⁷In Italy, likewise other European countries, most of public employment recruitment works through public exams.

friends, relatives and acquaintances to potential employer (FRND), and a variety of other less frequently used methods that we have subsumed under a residual category (OTH).⁸ Similarly, the list of the possible means for job acceptance are the above plus direct call from a firm and collaboration with family business. With respect of other countries survey reviewed above, we do not consider explicitly private employment agencies. This is largely due to the institutional features that limit their role in the Italian case.

Except for Blau and Robins (1990), the papers reviewed above do not use retrospective data that elicit information about spell search over a 17-19 months period prior to the survey date, therefore we need to be cautious in stressing international differences and comparisons. Retrospective monthly data have in fact both strengths and weaknesses. If, on the one hand, they do not misreport intra monthly multiple transitions, on the other they could underestimate the intensity of search activity, given that people do not always recall very accurately what they have been doing one year before.

4 Search Patterns: Some Descriptive Statistics

Table 1 depicts simple statistics on the utilization rates of each job search method across different groups. Given the peculiarities of the Italian labor market pointed out in the introduction, we consider separately the following groups: short term searchers (i.e. we exclude both employed and unemployed that have been searching during the whole year), females, south residents, northern and central ones, and the youth (15-24 years old). We also report the averages of both the number of

⁸Included in OTH are private employment agency, inserting his/her name in a data bank, self-employment and other unspecified methods.

methods used and the length of search spells. For each of the above, we calculate tests of differences between employed and unemployed job seekers.

Table 1 shows that the share of employed job seekers is not irrelevant (about 17 percent of all spells) and is relatively more important among short term searches, males, adults, and in northern and central regions. As found for the US case by Blau and Robins (1990) and Holzer (1987), unemployed workers use on average more methods. If we take this as a measure of search intensity,⁹ the result confirms the prediction of job search theory reviewed in Section 2. However, in our data the bulk of the difference seems to be due to a more intensive use of public employment agency and public exams by unemployed workers. Moreover, when we do not consider long term searchers the difference turns out to be not statistically significant. Together with the higher number of methods used by the short term searchers, this suggests that the overall result could be due to "irrelevant" search methods used by long term unemployed. The last column shows that on-the-job workers experience on average shorter spells of search and this result holds for each sub-group. Of course, this can be due either to faster transition to (new) employment or to a higher rate of workers who stop searching before transition.

The most common search method used by the unemployed is public employment agency, closely followed by friends and relatives. In this respect the general picture is more alike to UK and Portugal than to the US, where state agency utilization rate ranks below DIR and NEWS. It could be possible that the widespread use of PUB is slightly affected the fact that in 1993 recipients of unemployment benefit were required to be registered with the Public Service ("Ufficio Pubblico di Collocamento"). However, in Italy the provision of unemployment insurance, whose

⁹Unfortunately, we do not have information about time devoted to each method.

amount is only 30 per cent of the previous wage, is very narrow and includes a small number of unemployed workers.¹⁰ FRND becomes the most popular method if one considers only short term unemployed searches. In comparison with other countries figures, the shares of people using direct applications and newspaper ads is very low. However, the aggregate number largely reflects the Southerners unemployed behaviors. In fact, in Italian Mezzogiorno "public" methods (PUB and PE) are much more popular than "private" ones (DIR and NEWS), reflecting probably the weak private labor demand.¹¹ Conversely, in Central and Northern regions direct application is also a relatively popular search method. Finally, female unemployed are slightly less likely than males to use FRND, but use more frequently NEWS.

In the case of employed job-seekers friends and relatives is clearly the most widespread method. In particular, FRND is used by most of southerners and youth searchers. As anticipated, as far as DIR, NEWS, and FRND are concerned there are no major differences among employed and unemployed in all the sub groups considered. The only exception is direct application in the North and the Center being used by an higher share of unemployed searcher.

We dispose of three indicators of job search performance: offers, rejections, and job finding rate. Table 2 reports average monthly offer, offer minus rejection, and job finding rates. The latter is defined as having found a job in a given month through a given method conditional upon having used it. Unfortunately, we do not know the actual channel through which offers have been obtained and eventually

¹⁰The Italian welfare system is notoriously biased in favor of employed workers who risk to loose their job. In fact, unemployed workers either seeking their first job or reentering in the labor force after a period of inactivity are left without any protection. See Belli and Rossi (1999) for a description of Italian Legislation.

¹¹For some evidence see for example Alesina et al. (1999).

rejected. Therefore, offer and offer minus rejection rates depicted refer simply to total offers and rejections for individuals using a given method. Moreover, we are not able to adjust for search intensity. In reading the figures, we should also keep in mind that a sizable number of job seekers who find a job in 1993 do not report any offer received and this happens to be true for all the job search method successfully employed. This is surprising because if, for instance, it is granted that people who find a job passing a public exam do not receive any offer, it is more troublesome for the ones who get their job applying directly.

Table 2 shows that employed job seekers receive substantially more offers, even controlling for the ones rejected. This is true for all the methods considered but for PUB, where the difference is not statistically significant. In this respect our data are more in line with Blau and Robins (1990) than with Holzer (1987), showing preliminary evidence that on-the-job seekers are likely to generate more offers. Among the individual methods of job search DIR and FRND seem to be the most productive in terms of offer generation and this in line with the international evidence reviewed above¹².

Before illustrating the results concerning the job finding rates (the last part of Table 2) we want to stress that, likewise other countries' evidence, a sizable portion of job findings occurs without recorded job search (Clark and Summer, 1979; Osberg, 1993). According to Granovetter (1995), this fact poses a challenge to job search models. In fact, a high portion of people not reporting any search probably occurs through "not strategic" referrals by friends and relatives. Therefore, surveys asking about methods of job finding only to the ones who report

¹²The figure for employed seekers who used PE shows also a high offer rate, but given that for this group the job finding rate is zero, it is likely that the offer were obtained through others search methods.

search activity are likely underestimate the importance of social contacts. In our data around 51 per cent of both employed and unemployed individuals who find a job during 1993 do not report any job search activity. The share decreases to 45 if we consider only job-to-job transition. Even if a portion of this result can be due to misreport information, our figures confirm that an important portion of the matching process occurs without explicit job search. As clarified in section 3, however, in this work we focus on individuals with reported job search activity.

Job finding rates indicate that checking with friends and relatives is the most effective search method conditional upon its use. This is true especially for employed, but also for unemployed, whose FRND score is indeed similar to DIR. Comparatively, FRND performance improves if one considers only shorter spells. The efficiency of FRND is in line both with US and Portuguese evidence. On the contrary, PUB performance is particularly poor, especially if one considers the high share of unemployed job seekers using it. However, it slightly improves if we do not consider long term searchers.

Again, employed workers display on average a more effective search activity: hit rates are higher in each single method for on-the-job seekers but PUB, the difference is not statistically different from zero, and PE, no on-the-job seeker succeeds employing this method. Nevertheless, if we consider only short term searchers, differences are less overwhelming, but still hold statistically significant for FRND and all methods.

In order to further explore the distinct features of Italian labor market, in table 3 we confront hit rates differences across distinct groups without distinguishing between employed and unemployed.¹³ In the South all methods are less effective,

¹³If we consider only the unemployed searchers, qualitative results do not change.

even if for NEWS the difference is not statistically significant given the low number of individuals using it. The low utilization rates of DIR and NEWS are probably due to such poor performances. The evidence is more mixed when we consider gender differences across different methods. Overall, conditional upon searching, males are slightly more likely to find a (new) job. But, interestingly, males display worse hit rates if they use NEWS, while females are relatively less effective when they use FRND. These differences could possibly explain the divergence in search intensity depicted table 1.

The results presented in this section should be taken with an important caveat. Differences in hits rates across methods do not necessarily imply difference in overall effectiveness. Individuals are in fact likely to choose methods on the basis of observed and unobserved characteristics that are associated with the productivity of the method.

5 Determinants and Outcomes of different Search Methods

The evidence discussed in the previous section shows that both search method use and job finding rates vary across workers with distinct characteristics and living in different geographical regions. Moreover, it suggests that in the Italian labor market, despite the lower number of methods used by on-the-job seekers, employed search is more effective than unemployed one in both offers generation and job finding rate. In this part of the paper we try to verify if the above results still hold adjusting our estimates both for differences in the characteristics of employed

and unemployed searchers and for the endogeneity of the search method choice. To achieve this goal, we use a reduced-form search model that resembles the one proposed by Blau and Robins (1990).

Preliminarily, we apply a simple multivariate analysis in order to investigate the determinants of job search effort. We regress the number of job search methods used on search length (months spent searching), experience (express in years), education (we use a discrete variable which ranges from 1 to 6: no formal education, primary school, upper intermediate school, high school, university degree, and graduate education), family income (calculated as the per capita family income minus the eventual labor income), and dummy variables for demographic groups (female and marriage), location (living in a metropolitan area with more than 500,000 inhabitants), southern regions, and receiving unemployment benefits.¹⁴

In table 4 we report OLS estimation both for all job-seekers, and for employed and unemployed separately. In the former case we add a dummy variable for employment status. Overall, searchers with longer spells and singles are likely to use more methods. For unemployed job-seekers education level and living in metropolitan areas are positively correlated with the number of methods used. The contrary is true for living in the South and being married, while receiving unemployment benefits is not associated with the number of methods used. When on-the-job seekers are considered, no coefficient is statistically different from zero, but the spell length. Finally, and most important, the positive coefficient relative to the employment status dummy confirms that on-the-job searchers use on average

¹⁴As mentioned, Italian system is in this respect somewhat incoherent and ungenerous. The dummy assumes value one if individuals are recipients of the following programs: "cassa integrazione", "indennitá di mobilitá", and alike subsidies.

less methods.¹⁵

We now move to assess which personal characteristics affect both search method use and search method outcome. We base our empirical analysis on the very simple relationship between the job-finding probability and two components of the job search process:

$$P_{ij} = P(J|U)_{ij}P(U)_{ij}, \quad (1)$$

where P_{ij} is the job-finding probability using method j of a person i , $P(J|U)_{ij}$ is the probability that a person i finds a job through method j given that this method as been used, and $P(U)_{ij}$ is the probability that person i uses method j . As already mentioned, the present work, compared to Blau and Robins (1990), does not have information regarding the job search method through which contacts and offers have been received. Thus, our description of the job search process is by far more stylized. However, as already mentioned in our data set many individuals, even they have found a job, do not report any offer received. Therefore, even if we had the lacking information, a model encompassing offers would have had a few problems.¹⁶

We specify a reduced form equation for each of the two right hand terms of Equation 1 defining two dichotomous variables y_{1ij} and y_{2ij} . The first assumes value 1 if a job seeker i has found a job using method j and the second value 1 if individual i used method j . The statistical model is specified as

$$y_{1ij}^* = \mathbf{X}_i\beta_1 + \epsilon_{1ij}$$

¹⁵If we run the same regression either without counting PUB as a method or focussing only on short term searchers the result still holds.

¹⁶Blau and Robins (1990) do not address this issue (i.e. job finding without reported offer). Possibly, US data are different in this respect.

$$y_{1ij} = \begin{cases} 1 & \text{if } y_{1ij}^* > 0 \\ 0 & \text{if } y_{1ij}^* \leq 0 \end{cases} \quad (2)$$

$$y_{2ij}^* = \mathbf{X}_i \beta_2 + \epsilon_{2ij}$$

$$y_{2ij} = \begin{cases} 1 & \text{if } y_{2ij}^* > 0 \\ 0 & \text{if } y_{2ij}^* \leq 0, \end{cases} \quad (3)$$

where, y_{1ij}^* and y_{2ij}^* are two latent indexes, β_1 and β_2 are parameter vectors, \mathbf{X}_i is a vector of explanatory variables, and ϵ_{1ij} and ϵ_{2ij} are disturbances. Given the reduced form of our model the same set of regressor appears in each equation.

If we assume that ϵ_{1ij} and ϵ_{2ij} are jointly normally distributed, Equation 2 and 3 become two probit models and consistent estimates of β_1 β_2 can be obtained through bivariate maximum likelihood estimation.

For each job search method equations 3 and 2 are estimated separately for on and off-the-job seekers, in order to allow coefficients to be different across the two groups. A third specification estimates the model with all searchers, adding a dummy variable assuming value 1 if the seeker is employed. An important caveat is that in order to meaningfully interpret the coefficient related to this dummy, we are implicitly assuming that the employment status is exogenous to the choice of search methods and outcomes.

The explanatory variables included in \mathbf{X}_i are the same considered in the regression above: search length, experience, education, family income, and dummy variables for demographic groups, location, southern regions, and receiving unemployment benefits.

The results for FRND, DIR, NEWS and PUB are reported in Table 5 and 6. For PE given the very few individuals who find the job through this method we

simply depict in Table 7 the coefficients of a probit model for the probability of using this method.

According to the coefficients depicted, some of the results found in section 4 concerning utilization rates are confirmed. Female job-seekers are more likely to use newspapers ads and less likely to check with friends and relatives. This is consistent with the fact that, as showed in the same table, they use NEWS more effectively. Married individuals are less likely to use every method but social contacts. Southern seekers use more frequently friends and relatives and public employment agency, while the opposite is true for direct application and newspaper ads. Interestingly, all methods are less effective in the South, included the widely used FRND. Unemployment benefit recipients do not seem to differ in any relevant dimension from the rest of job seekers except for using more often DIR. On the other hand, family wealth negatively affect the use of PUB. Education level is an important determinants of every method choice: it positively affects the probability of using of DIR, NEWS, and PE, but negatively FRND and PUB.

When we focus on the determinants of job finding rates, less coefficients are statistically significant different from zero and, in most of the cases, they have the same signs. First, spell length has a negative impact on the probability of finding a job irrespectively of the method considered. This is largely consistent with unemployment duration dependence and persistence (Heckman and Borjas, 1980). Second, age decreases the job finding probability while work experience increases it. The behavior of these controls is much as expected. On the contrary, it is quite surprising that the coefficient relative to education do not statistically differ from zero in every method but PUB.

Our estimates do not confirm the descriptive evidence concerning the relative

effectiveness of employed searchers. In none of the methods considered the coefficient relative to employment status is statistically different from zero in the job finding equation. Many different explanations can be attempted for this result. The most direct one has to do with the importance of the controls employed. We find that if we do not include experience and spell length in \mathbf{X}_i the coefficient of the employment status dummy turns out to be positive and significant for FRND and NEWS. This is due to the fact that most of Italian unemployed are both looking for their first job (i.e. have zero experience) and are long term unemployed. Notably these two categories have lower job finding rates.

Given the overwriting higher offer rates of employed seekers depicted in Table 2, another explanation for the above result is that employed search is more effective in generating offers but these are not always accepted. In order to explore this hypothesis, we slightly modify equation 2 substituting y_{1ij} with a different dichotomous variable that assumes value 1 if individual i received an offer given that he has used method j . In this case employment status turns out to be positively associated with the probability of receiving an offer in each of the methods considered. This suggests that employed workers are more likely to generate an offer, but are also more selective. The picture is also consistent with the insight of job search theory which predicts higher reservation wages for on-the-job searchers.

6 Conclusions

This paper empirically explores determinants and outcomes of different job search methods for both employed and unemployed workers. The analysis focuses on Italian job-seekers and acknowledges the institutional peculiarities of the Italian

labor market.

Traditional job search methods have been both enriched and questioned by two important stylized facts: first, job seekers use multiple search strategies and therefore there are additional dimensions beyond reservation wage and effort to be considered. Job search resembles more to a process than to a choice about what offer should be rejected (Osberg, 1993). This is particularly important for a correct assessment of both the importance of social contacts and the evaluation of public employment agencies. Second, on-the-job search is widespread and its efficacy potentially challenges traditional models. Unemployed search activity is often depicted as a form of voluntary investment that would be impossible on-the-job. But if the unemployed search in ways that would be possible if they held a job, this theory would be at best incomplete (Clark and Summer, 1979). This work sheds light on both issues empirically following the methodology proposed by Blau and Robins (1990).

Reviewing the sparse empirical literature on the two subjects, we emphasize both controversies and stylized facts. Notably there is no consensus on the relative efficiency of employed search, while robust evidence on the efficacy of friends and relatives in connecting jobs and people has been found.

Our empirical methodology allows to compare spells of search of both employed and unemployed job seekers. In particular, we are able to identify both utilization rates and proxies of performance (offer and hit rates) across different methods controlling for spell length. As expected an overwhelming amount of unemployed spells concerns southern individuals who have been searching for the whole period considered. Anyway, especially if we consider only short term searchers in northern and central regions, the amount of on-the-job seekers is relevant.

Unemployed searchers use on average more job-search methods, even controlling for personal characteristics. This is consistent with the theory of job search and with other countries evidence. The use of social contacts is widespread among both off and on-the-job seekers, but the most popular search methods for unemployed is public employment service. The last results is due especially to long term unemployed. As expected, we show that southern searchers use very seldom two "private impersonal" methods such as direct application and newspaper ads. On the other hand, they rely heavily on public employment service and friends and relatives. This is likely to be the result of fewer private opportunities.

Conditional upon their use, direct application seems to be the method that generates the most offers, while checking with friends and relatives is the one with the highest hit rate. Descriptive evidence for all performance indicators also shows that employed seekers display on average more effective search. This holds for most of the methods considered and especially for offer rates.

Finally, we check if the above results still hold controlling for both differences in personal characteristics and the endogeneity of the search method choice. We estimate a reduced-form model that controls for both factors. Our findings are largely confirmed except for the employed higher job finding rates. In fact, once we control for work experience and length of unemployment, off and on-the-job seekers do not have major differences in the probability of finding a job. Additional evidence shows that a possible interpretation for this is that on the-job-seekers are more selective in offer acceptance.

References

- Alesina, A., S. Danninger and M. Rostagno (1999). "Redistribution Through Public Employment: The Case of Italy." *NBER Working Paper No. W7387*.
- Addison, J.T. and P. Portugal (2002). "Job Search Methods and Outcomes." *Oxford Economic Papers*, 54, 505-533.
- Belli, E. and F. Rossi (1999). "Disoccupati e Strumenti di Sostegno del Reddito" in G. de Caprariis (ed.) *Mercato del Lavoro e Ammortizzatori Sociali*, 23-103. Bologna, Il Mulino.
- Bertola, G. and P. Garibaldi (2003). "The Structure and History of Italian Unemployment." *CESifo Working Paper No. 907*.
- Blau, D.M. and P.K. Robins (1990). "Job Search Outcomes for Employed and Unemployed" *Journal of Political Economy*, 98(3), 637-55.
- Boeri, T. (1999). "Enforcement of Employment Security Regulations, On-The-Job Search and Unemployment Duration." *European Economic Review*, 43(1), 65-89.
- Böheim, R. and M.P. Taylor (2002). "Job Search Methods, Intensity and Success in Britain in the 1990s." *Working Paper No.206*, Johannes Kepler University of Linz.
- Brandolini, A. and L. Canari (1994). "Methodological Appendix." In *Savings and Accumulation of Wealth*, edited by Ando, A., L. Guiso and I. Visco. Cambridge, Cambridge University Press.

- Clark, K.B. and L.H. Summers (1979). "Labor Market Dynamics and Unemployment: a Reconsideration." *Brooking Papers on Economic Activity*, 1, 13-60.
- Eurostat (1998). *Enterprises in Europe, Data 1994-95*. Fifth report, European Commision.
- Granovetter, M. (1995) *Getting a Job: a Study on Contacts and Careers* (2nd Ed). Chicago, Chicago University Press.
- Gregg, P. and J. Wadsworth (1996). "How Effective Are State Employment Agencies? Jobcenter Use and Job Matching in Britain." *Oxford Bulletin of Economics and Statistics*, 58, 43-67.
- Heckman, J.J. and G. Borjas (1980). "Does Unemployment Cause Future Unemployment? Definitions, Questions and Answers from a Continuous Time Model of Heterogeneity and State Dependence." *Economica*, 90(2), 344-49.
- Holzer, H.J. (1987). "Job Search by Employed and Unemployed Youth." *Industrial and Labor Relation Review*, 40(4), 601-11.
- Holzer, H.J. (1988). "Search Method Use by Unemployed Youth." *Journal of Labor Economics*, 6(1), 1-20.
- Ioannides, Y.M. and L.D. Loury (2002) "Job Information Networks, Neighborhood Effects and Inequality" *Discussion Papers 0217*, Department of Economics, Tufts University.
- Mortensen, D.T. (1986). "Job Search and Labor Market Analysis." In *Handbook of Labor Economics*, edited by O. Ashenfelter and R. Layard. New York, Elsevier-North Holland, 849-919.

- Osberg, L. (1993). "Fishing in Different Pools: Job-Search Strategies and Job-Finding Success in Canada in the Early 1980s." *Journal of Labor Economics*, 11(2), 348-386.
- Ports, M.H. (1993). "Trends in Job Search Methods, 1970-1992." *Monthly Labor Review*, October, 63-67.
- Pistaferri, L. (1999) "Informal Networks in the Italian Labor Market." *Giornale degli Economisti e Annali di Economia*, 58, 355-376.
- Rees, A. (1966) "Information Networks in Labor Markets" (in Labor Economics: Effects of More Knowledge) *American Economic Review*, 56(1/2), 559-566.
- Stigler, G.J. (1963). "Information in the Labor Market." *American Economic Review*, 70, 94-105.
- Sylos Labini, M. (2004). "Social Networks and Wages: it is all about connections!" *Lem Working Paper n.2004/10*. S.Anna School of Advanced Studies, Pisa.

Table 1: The Use of Different Job Search Methods

Group	Sample Size	Percentage Using										Averages	
		FRND	DIR	NEWS	PUB	PE	OTH	Num. of Meth.	Length of Spell				
All													
Employed	358	49	30	21	17	14	13	1.44	7.72				
Unemployed	1656	52	28	20	57	22	10	1.90	10.30				
t-statistic for difference		1.13	-0.42	-0.27	14.38***	3.32***	-1.73*	8.50***	11.44***				
Spells < 12 months													
Employed	153	42	31	20	04	15	14	2.11	1.99				
Unemployed	336	44	36	17	30	16	12	2.24	3.62				
t-statistic for difference		0.32	1.06	-0.63	6.82***	0.37	-0.86	1.22	7.04***				
Female													
Employed	133	47	29	26	20	21	8	1.53	7.57				
Unemployed	851	49	30	23	57	22	9	1.90	10.40				
t-statistic for difference		0.25	0.30	-0.83	8.15***	0.12	-2.12**	4.19***	8.09***				
Youth													
Employed	74	57	36	20	16	21	7	1.53	7.45				
Unemployed	774	53	30	24	57	24	9	1.98	10.43				
t-statistic for difference		-0.64	-1.09	0.68	6.47***	0.56	0.87	4.22***	7.77***				
North and Center													
Employed	240	45	34	25	11	14	12	1.42	6.68				
Unemployed	667	46	47	29	48	15	11	1.97	9.35				
t-statistic for difference		0.39	3.67***	0.95	10.91***	-0.52	0.25	7.72***	8.03***				
South													
Employed	118	57	21	13	29	12	8	1.47	9.84				
Unemployed	989	56	16	15	62	27	15	1.85	10.94				
t-statistic for difference		-0.13	-0.50	0.71	7.13***	3.63***	-2.64***	4.27***	3.64***				

Notes: Length of spells of search is expressed in months. Mixed spells and individuals with more than one spell of search are not considered. * significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Elaboration on Bank of Italy (1993)

Table 2: Average monthly offers and job finding rates by method used.

	FRND	DIR	NEWS	PUB	PE	All
Offer rate						
Employed	.084	.169	.093	.008	.173	.131
Unemployed	.026	.039	.017	.006	.015	.030
t-statistic for difference	-3.61***	-3.66***	-3.22***	-0.30	-4.99***	-6.56***
Offer minus rejection rate						
Employed	.056	.076	.030	.001	.060	.056
Unemployed	.013	.020	.003	0	.001	.013
t-statistic for difference	-4.13***	-2.85***	-2.70***	...	-4.30***	-5.27***
Job Finding Rate						
Employed	.096	.047	.039	.001	0	.079
Unemployed	.023	.019	.005	.003	.002	.026
t-statistic for difference	-5.53***	-1.88*	-3.51***	0.32	...	-6.42***
Job Finding Rate for spells < 12						
Employed	.254	.104	.094	0	0	.180
Unemployed	.136	.076	.027	.032	.024	.111
t-statistic for difference	-2.49**	-0.68	-1.56	...	...	-2.48**

Notes: Information about the actual channel through which offers have been received and rejected is not available. Therefore, *Offer rate* and *Offer minus rejection rate* are the monthly averages given that a method has been used.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Elaboration on Bank of Italy (1993)

Table 3: **Job finding rates across different groups.**

	FRND	DIR	NEWS	PUB	PE	All
	Sex					
Male	.047	.027	.002	.002	.002	.039
Female	.022	.023	.018	.005	.003	.025
t-statistic for difference	2.54**	0.35	-1.84*	-1.00	-0.35	2.07**
	Geography					
North and Center	.066	.033	.016	.007	.010	.059
South	.015	.006	.002	.001	0	.011
t-statistic for difference	5.00***	2.17**	1.52	1.80*	...	7.13***

Notes: Information about the actual channel through which an offer has been received and rejected is not available. Therefore, *Offer rate* and *Offer minus rejection rate* are the monthly averages given that a method has been used. * significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Elaboration on Bank of Italy (1993)

Table 4: **Determinants of Search Intensity.**

	Unemployed		Employed		Combined	
Family Income	-.004	(.005)	.002	(.006)	-.003	(.007)
Unemp. sub.	.175	(.146)	.270	(.259)	.187	(.185)
Spell length	.063***	(.007)	.033***	(.007)	.054***	(.008)
Female	-.019	(.047)	.117	(.079)	-.005	(.064)
Married	-.277***	(.067)	-.066	(.088)	-.233***	(.086)
Age	.001	(.003)	-.008	(.007)	-.001	(.004)
Education	.199***	(.029)	.042	(.045)	.162***	(.039)
Metr. Area	.132*	(.072)	-.022	(.111)	.103*	(.097)
South	-.128***	(.051)	-.017	(.081)	-.178***	(.068)
Experience	.002	(.004)	.006	(.006)	.002	(.005)
Employed	...	...	...	...	-.356***	(.098)
Constant	.793***	(.156)	1.193***	(.221)	1.013***	(.197)
R-squared	0.105		0.076		0.124	
Obs.	1565		358		2014	

Notes: Results of three separate OLS regressions are displayed. Number of search methods used is the dependent variable.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Elaboration on Bank of Italy (1993)

Table 5: Reduce form estimates of Search Model: friends and relatives and direct application.

	FRND				DIR			
	Method Use		Job Finding		Method Use		Job Finding	
Family Income	-.009	(.006)	.001	(.012)	.004	(.007)	-.028	(.022)
Unemp. sub.	.062	(.187)	-.159	(.353)	.329*	(.185)	.381	(.463)
Spell length	.028***	(.008)	-.120***	(.012)	.007	(.008)	-.128	(.022)
Female	-.129**	(.058)	-.162	(.126)	-.078	(.064)	-.185	(.186)
Married	-.089	(.078)	-.114	(.182)	-.195**	(.086)	-.090	(.288)
Age	.007*	(.004)	-.043***	(.014)	-.002	(.004)	-.042**	(.021)
Education	-.148***	(.036)	-.168**	(.082)	.103***	(.039)	-.177	(.288)
Metr. Area	-.162*	(.089)	-.428*	(.226)	-.177*	(.097)	-.501	(.417)
South	.139**	(.062)	-.280**	(.139)	-.870***	(.068)	-.614***	(.232)
Experience	-.003	(.005)	.054***	(.012)	.001	(.005)	.023	(.018)
Employed	.063	(.093)	-.093	(.141)	-.157	(.098)	-.346	(.235)
Constant	.158	(.183)	.866**	(.396)	-.378*	(.197)	.873	(.606)

Notes: Results of two separate bivariate probit regressions are displayed. Standard errors in parenthesis.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Elaboration on Bank of Italy (1993)

Table 6: Reduce form estimates of Search Model: newspaper ads and public employment agency.

	NEWS				PUB			
	Method Use		Job Finding		Method Use		Job Finding	
Family Income	-.0002	(.007)	.013	(.020)	-.026***	(.007)	.015	(.021)
Unemp. sub.	...	...	...	...	.232	(.191)	1.09***	(.406)
Spell length	.035***	(.009)	-.084***	(.028)	.094***	(.009)	-.060*	(.034)
Female	.147**	(.067)	1.10***	(.395)	.098	(.062)	.318	(.299)
Married	-.299***	(.093)	-1.06**	(.433)	.046	(.084)	.317	(.406)
Age	-.004	(.004)	-.006	(.026)	-.013***	(.004)	-.066	(.041)
Education	.191***	(.043)	-.010	(.168)	-.121***	(.038)	.346*	(.199)
Metr. Area	.567***	(.093)	.042	(.404)	-.083	(.095)	-5.07	(.498)
South	-.503***	(.072)	.067	(.276)	.172***	(.066)	.064	(.317)
Experience	.003	(.007)	.037	(.026)	.003	(.006)	.071**	(.033)
Employed	.005	(.111)	.233	(.311)	-.947***	(.110)	-.638	(.398)
Constant	-1.53***	(.219)	-2.70***	(.396)	-.051	(.200)	-2.34	(.905)

Notes: Results of two separate bivariate probit regressions are displayed. Standard errors in parenthesis.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Elaboration on Bank of Italy (1993)

Table 7: Reduce form estimates of Search Model: public exam.

	PE	
	Method Use	
Family Income	.002	(.007)
Unemp. sub.	.207	(.246)
Spell length	.005	(.010)
Female	.048	(.071)
Married	-.364***	(.105)
Age	-.004	(.006)
Education	.695***	(.051)
Metr. Area	-.020	(.108)
South	.508***	(.080)
Experience	-.006	(.008)
Employed	-.116	(.123)
Constant	-3.42***	(.244)

Notes: Results a probit regressions are displayed. Dependent variable assumes value 1 if Public Exam search method has been used. Standard errors in parenthesis.

* significant at 10%; ** significant at 5%; *** significant at 1%.

Source: Elaboration on Bank of Italy (1993)