Weber, Andrea Maria; Mahringer, Helmut

Working Paper

Choice and success of job search methods

IZA Discussion Papers, No. 1939

Provided in Cooperation with:
IZA – Institute of Labor Economics

Suggested Citation: Weber, Andrea Maria; Mahringer, Helmut (2006) : Choice and success of job search methods, IZA Discussion Papers, No. 1939, Institute for the Study of Labor (IZA), Bonn

This Version is available at:
https://hdl.handle.net/10419/33611

DISCUSSION PAPER SERIES

IZA DP No. 1939

Choice and Success of Job Search Methods

Andrea Weber
Helmut Mahringer

January 2006

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

Choice and Success of Job Search Methods

Andrea Weber
Institute for Advanced Studies, Vienna
and IZA Bonn

Helmut Mahringer
Austrian Institute of Economic Research, Vienna

Discussion Paper No. 1939
January 2006

IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
Email: iza@iza.org

IZA Discussion Paper No. 1939
January 2006

ABSTRACT

Choice and Success of Job Search Methods*

Job seekers can influence the arrival rate of job offers by the choice of search effort and the search methods they use. In this paper we empirically investigate the contribution of the use of different search methods on the outcome of search. We use unique data on the search behavior of job seekers sampled from the inflow into employment during the year 1997 in Austria, which matches survey information with administrative records. We analyze the quality of job matches in terms of wages and job durations for employed and unemployed workers. Our main finding is that the public employment service specializes in the support of low quality workers. For these workers it is equal in efficiency to the other search channels.

JEL Classification: J20, J64, C31

Keywords: job search, search channels, selectivity bias

Corresponding author:

Andrea Weber
Institute for Advanced Studies
Department of Economics and Finance
Stumpergasse 56
A-1060 Vienna
Austria
Email: andrea.weber@ihs.ac.at

* We are grateful to René Böheim, Helmut Hofer, Rudolf Winter-Ebmer, participants in the Second Austrian Labour Market Workshop, and the EEA2002 conference in Venice for discussion and valuable comments of an earlier version. Andrea Weber gratefully acknowledges financial support form the Austrian Science Foundation, Project Nr J2365-G05 and from the Center for Labor Economics at UC, Berkeley.

1 Introduction

Job search can be seen as a process of information gathering. During search the worker collects information on the job offer distribution and on the most successful job search strategies. The worker can influence the search outcome by putting more or less effort into job search and by choosing among several search methods. Using an nice analogy, Osberg (1993) compares job search to fishing, where the choice of location and lure helps to catch the big fish.

Social networks play a big role in matching employers and workers, which is well documented in the literature. As early as the 1960s Rees (1966) finds that most jobs are obtained through informal referrals from friends and relatives. For job seekers informal search is less costly and may be most productive in generating acceptable job offers and reliable information about jobs. For employers recruitment by referrals from their existing workforce provides a cheap and useful screening device. Employees refer to friends who are similar to themselves and avoid making referrals to unsuitable applicants, because this damages their own reputation (Fernandez et al., 2000).

The role of the public employment office as a formal intermediary can be seen as complementary to the informal search through personal contacts. The service is designed for job seekers, who cannot rely on social contacts. As a part of the active labor market spending in most industrialized countries the state provides a free service for job seekers and employers and thus intervenes directly in the process by which workers and firms are matched. In course of evaluations of the service it has been found that job offers through the public employment office are characterized by low wages and high rejection rates from the side of the unemployed (Blau and Robins, 1990; Holzer, 1988; Osberg, 1993). Consequently the public employment office has often been seen as an inefficient public bureaucracy. This has led to suggestions of involving private employment agencies in the placement of unemployed or bringing market forces into the public

employment office (Martin and Grubb, 2001).

Job searchers with no precise knowledge of the wage offer distribution and of different firms may search by contacting employers directly without referrals. This is sometimes called a "random" search behavior (Kahn and Low, 1990), generating a relatively high number of offers together with high offer rejection rates by workers. Answers to media advertisements and contacts through referrals point to a more strategic search behavior, generating more acceptable offers. With the diffusion of new technologies the list of search methods has been extended in the last years by Internet job services (Kuhn and Skuterud, 2004).

The choice of search methods may be important for the search outcome, because search methods give access to different pools of employment and to different wage offer distributions. Also search methods vary in their costs and effectiveness for the individual worker. From the employer's perspective Roper (1988) argues that employers face considerable variations in vacancy durations and potential applicants with respect to their choice of recruitment strategies.

With few exceptions the literature on the effectiveness of job search methods compares job finding rates of unemployed workers using a variety of search methods (e.g. Holzer, 1988; Osberg, 1993). This research design implies two major restrictions. First, the search behavior of employed workers who directly move from job to job, as well as job search of school leavers who enter the labor market for the first time is neglected.[1] Second, unemployment durations are not the only search outcome of interest. Job search behavior is likely to also influence the quality of matches.[2]

The main problem to get hold of these questions is data availability. Whereas unemployed, or jobless searchers who are registered with the public employment

[1] Lindeboom et al. (1994) study effectiveness of search methods for employed and unemployed job searchers.

[2] Addison and Portugal (2002) study the effects of different search methods on wages and transitions from employment into unemployment.

office, are easily identified it is harder to track down job search of employed workers or students. For a reliable analysis of search outcomes, like wages or employment stability, it is necessary to have longitudinal individual information on employment and wages.

In this paper we investigate the search behavior of a representative group of all job searchers and compare starting wages and job durations as search outcomes using a special data set. The data provides retrospective information about the search process of workers starting a new job in Austria. To access information on search behavior as well as search outcomes and labor market histories we merge two data sources. The first component is an interview with detailed information on the job search process (e.g. search methods used, the successful search channel generating the match) and a rich set of individual characteristics. As a second component we match individual information from the social security administrative registers to obtain wages, employment and unemployment records. This way we get exact measures of the outcome variables of interest and are able to control for individual labor market histories.

The use and efficiency of search methods is a well researched topic in many countries. For Austria little information on the use of search methods exists, though. One exception is Ebmer (1990), who investigates arrival rates of job offers through the public employment office and the placement policies of caseworkers.

The remainder of the paper is organized as follows: the next sections explains the empirical strategy and contains theoretical considerations on how search effort and search methods might influence wages and job stability. Section three describes the data and the sampling strategy. Section four presents empirical results. We conclude in the final section.

2 Empirical Strategy and Theoretical Considerations

The empirical analysis in this paper has two parts. First, we study the determinants of job search behavior and ask the questions: How much do different individuals invest in search effort? Who finds a job with a specific search channel?

Specifically, we investigate the effects β_S of factors $X_{S,i}$ influencing individual i's search effort S_i, measured by the number of search methods used, by estimating the equation

$$S_i = X_{S,i}\beta_S + u_{S,i} \tag{1}$$

The error term is denoted by $u_{S,i}$. Similarly, we specify an equation for the probability of being successful with a certain search channel SM. We distinguish five job search channels: asking friends and relatives, the public employment office (AMS), contacting the employer directly, newspaper advertisements, and "other search channels".

$$SM_i = X_{SM,i}\beta_{SM} + u_{SM,i} \tag{2}$$

In this equation SM_i is a 1×5 vector of zeros and a one in the 'jth component for the successful channel; β_{SM} is a parameter matrix, the j'th row of which corresponds to influence of the explanatory variables $X_{SM,i}$ on the successful search channel, and $u_{SM,i}$ is the individual specific error.

The second part of the analysis investigates the match quality. We want to find out whether search outcomes differ by the level of search effort and by the successful search channels. We measure search outcomes in terms of starting wages and job durations. We do not investigate search durations, as the information in the data is too limited. We use parametric and nonparametric analysis to

compare job-searchers across successful search channels. The nonparametric analysis uses only the information in the administrative variables from the social security registers. We plot mean yearly wages and employment rates for the years before and after the job start to control for individual labor market histories. In the parametric analysis we estimate wage and duration regressions of the following form

$$Y_i = X_{Y,i}\beta_Y + S_i\alpha + u_{W,i} \quad (3)$$

$$Y_i = X_{Y,i}\beta_Y + SM_i\gamma + u_{D,i} \quad (4)$$

where Y_i denotes the (log) outcome variable, $X_{Y,i}$ is a set of controls and β_Y is the corresponding parameter vector. The effect of search effort S_i and the successful channel SM_i is measured by the parameters α and γ.

The rationale for using starting wages and job durations as outcome measures is that those are the most immediate outcomes of search and most likely to be directly influenced by the search strategy. One might argue whether there is also a long term effect on earnings and employment stability. But as individuals move on to other jobs new search processes are started and the impact of the current search strategy might be weakened. However, we also check the robustness of our results by using alternative measures for wages and employment stability.

Before starting the empirical analysis, we review theoretical models on job search, which allow for an individual specific search strategy affecting job search outcomes. Based on these theoretical insights we will discuss expected findings for the empirical analysis and implications for the interpretation of the results.

The classical stationary job search model assumes that the arrival rate of job offers and the wage offer distribution are constant across workers and exogenously determined (Mortensen, 1986). The worker's job search strategy consists

of determining a reservation wage which equates the utility of accepting an offer with the utility of remaining unemployed. As an extension to the classical model Burdett (1979) constructs a search model in which the workers can vary their search effort. He shows that in this model the arrival rate of job offers is not exogenously given but can be influenced by the individual's search behavior. The choice of search effort is seen as a part of the worker's time allocation decision. In Burdett's model searchers choose an optimal level of search effort together with the reservation wage in order to maximize their own expected discounted lifetime incomes. Holzer (1988) adopts this model and shows that the choice of search methods should be related to their costs and profitabilities. Van den Berg and van der Klaauw (2006) generalize the model with endogenous search effort and search along two channels by introducing separate channel specific wage offer distributions. In their model, workers can direct search effort to the channels and thereby influence the offer rates, which in turn give access to the different wage offer distributions.

From the theoretical models we can infer that a ceteris paribus increase of search effort should increase the arrival rate of job offers. If the reservation wage remains unchanged the consequence will be a shorter search duration. If, on the other hand the individual can take as much time for search as before, the reservation wage increases as well, we are likely to find a better quality job match. Hence the outcome of higher search effort will be a combination of both, shorter search durations and better match quality . The same mechanic should work for the choice of search methods. If the individual chooses a more efficient search method, which either generates a higher number of offers, or allows access to a better wage offer distribution, or both, we can expect shorter search durations and better match quality .

A further insight is that the individual's choice of search methods and effort is related to search costs. It is plausible that search costs vary for different search methods. Asking friends and relatives should be related to low search

costs, as well as using the public employment office, which provides service free of charge. More costly in terms of money and time is direct application to firms and checking newspaper advertisements. Search costs will further vary by individual. For example, a highly qualified worker will not make use of the public service because the arrival rate of an appropriate job offers is almost zero; or vice versa, a low qualified worker will not consult a specialist journal for job adverts. In a non-random sample like ours search effort and job finding methods are not randomly distributed among job searchers, but they are endogenously determined as the results of the individual's utility maximization. This means that the parameter estimates γ for the different successful channels in equation 4 can be interpreted as relative efficiencies of the search channels. To deal with potential endogeneity of search effort S and the successful channel SM in equations 3 and 4, we will use an instrumental variables strategy as robustness check.

3 Data

The empirical analysis is based on a survey of 500 successful job searchers, who started a job during the year 1997 in Styria. This region in the southern part of Austria with its old industrial areas experienced a massive crisis in the primary industries sector during the 1980s. Unemployment rates were among the highest of the nine Austrian states until the early 1990s, when a recovery process of the regional economy began and unemployment rates adjusted to the Austrian average. For the Austrian economy 1997 was a year of recovery after the recession in the early 1990s. In this year the unemployment rate in Styria was 8.1%, one percentage point higher than the national unemployment rate; employment growth was moderate with 1.2%. The Austrian labor market is characterized by very dynamic movements into and out of employment and high turnover rates. Institutional factors stimulating the dynamics are the relative

importance of industries with seasonal demand fluctuations (like construction and tourism), the absence of firing restrictions for blue collar workers, and the universal coverage of the unemployment insurance system.[3] Several studies document the labor market dynamic in Austria (Delbono and Weber, 2005; Fischer and Pichelmann, 1991; Stiglbauer et al., 2003), here we simply look at the share of newly started jobs relative to ongoing jobs in Styria. During 1997 there existed a total of 416,000 employment relationships in Styria. The inflow of new jobs amounts to 196,000. This number includes multiple job starts per person. In 1998 average duration of all unemployment spells in Styria was 141 (Austria 127 days). In the stock of unemployed at any point in time the average duration of unemployment was 243 days, and the share who was unemployed for longer than one year was 16.4%.

The universe underlying the sample of interviewees are the employment relationships registered with the Austrian social security service.[4] A random sample from all jobs started in Styria during the year 1997 was drawn, stratified by age, sex, job type (marginal and regular employment), and 15 industry indicators.[5] The survey was conducted two years after the jobs started, in April 1999. Individuals were contacted by telephone and then interviewed in a face to face meeting with the interviewer. The response rate to the telephone contacts was about 50% which is largely due to changes in residential addresses. The total sample consists of 500 interviews.

The time lag between the job start in 1997 and the interview 1999 raises some concerns of recall error. For this reason we matched individual information directly from the social security registers. The administrative registers contain precise measures of wages, job durations, and of time spent in unemploy-

[3] In Austria every worker who was employed for more than 50 weeks during the last two years is eligible for UI benefits, and the benefit duration is basically unlimited.

[4] The Austrian Social Security Service registers all private sector employment relationships. Civil Servants and self employed are not included.

[5] Throughout the paper we refer to a job as an uninterrupted employment relationship with the same employer.

ment. In addition, we can distinguish between regular jobs, apprenticeships, and marginal job. In the analysis we use the administrative information for two purposes. First, we perform some credibility checks on the answers to survey questions by comparing wages, durations, job types, and the labor market status before taking up the job in both sources. It turns out that information on indicators, which tend to be rather stable over time or which are easier to memorize lead to more reliable answers in the survey.[6] For wages and job durations, on the other hand, we only have crude interval measures in the survey, and they tend to be quite inconsistent with the administrative records. Indeed, it might be particularly difficult to remember starting wages and duration of a job taken up two years earlier; especially if it was only a short job. Hence, the second purpose is, to use starting wages and job durations from the administrative records to estimate the effects of search effort and job search methods on search outcomes. We are able match wages for a sub-sample of 408 individuals. The remaining individuals are in marginal employment, which means they earn wages below a certain threshold are only partly covered by the social security system. In the estimations we restrict the analysis of starting wages and job durations to this sub-sample. We also control for the marginal employment status in the analysis of job search effort and the successful channels.

The sampling strategy has further implications, which are worth discussing. We are not drawing observations from the stock of all job searchers, but from the universe of new jobs created in 1997. Consequently short jobs have a high probability to be in the sample. In the context of the high employment turnover in the Austrian labor market, this means we are especially likely to interview individuals who change jobs frequently, or whom we could call "experienced job searchers". The standard sampling procedure in the literature on job search behavior is to interview individuals from the stock of unemployed job searchers at a certain point in time. In this sampling environment, individuals with long

[6] Detailed tables available on request.

search durations or "unexperienced job searchers" will be more represented than in a sample of job searchers. We have to keep these features in mind when interpreting the results, and especially when comparing to other studies.

An obvious omission of our sampling strategy is, that we do not observe individuals who search during all the year 1997 without finding a job, as well as individuals who give up search. An argument why this exclusion might not play an important role, is the high rate of employment turnover in Styria. Given the high number of newly filled jobs, it is quite plausible, that an individual, who seriously engages in job search, finds a job within one year. The long term unemployed, or unsuccessful searchers, might constitute a group with specific features, that are beyond the focus of our analysis. From the policy perspective the service component of the public employment office, which is the primary interest of this paper, is more targeted towards short term unemployed. For long term unemployed special training measures are available in the context of Active Labor Market Policies.

An immediate advantage of the sampling strategy is, however, that not all of the interviewed individuals were unemployed during job search (27%). The sample also includes new participants in the labor market finding their first job (35%), job-to-job movers (27%), and persons returning from temporary leave. This allows us to examine groups of job searchers that are often neglected in the study of search behavior.

Summary statistics of all variables used in the regression analysis below, for both the full sample and the sample with wage information, are presented in Table 1. We split the independent variables in three groups: personal characteristics or socioeconomic indicators, variables related to the individual's labor market history, and job specific variables. The variable means are fairly similar across both samples. We use one piece of subjective information in the survey to construct a dummy variable indicating high career attitude. It equals one if

the question "I can only be satisfied with life if I am successful in my job" is answered with yes.

The main outcome measures in the analysis are starting wages and job durations. Wages are given as gross monthly wages (excluding annual wage premia and occasional extra payments). We use the starting wage in 1997 as a proxy for the outcome, because we have many short jobs in the sample for which no wage information is available in the years after 1997. The mean monthly starting wage is about 16.000 Austrian Schillings (1160 Euro). Job durations can be measured on a daily basis in the administrative records. We observe jobs until September 2004; right censoring of job durations is therefore no issue in our sample. The mean duration of jobs is relatively short with 22.8 months, which is a result of the sampling strategy as discussed above. Again, we will use the number of days employed in the year following the job start as an alternative measure of employment stability in the robustness checks.

4 Results

Search methods and successful search channels

The central part of the interview concerns the search process, which leads to the successful job match in 1997. Out of a large list of possible job search methods the participants report all the methods they had used during search and the successful search channel, which generated the job match. For reasons of small cell sizes and better differentiation we collapse the list to 5 search methods: asking friends and relatives (personal contacts), newspaper or media advertisements, public employment office (AMS), direct contact to the employer and a residual category of other methods.[7]

[7] Other search methods include private employment agencies, advertisements in schools and universities and contacts which were generated upon the incentive of the employer. Internet search is also included but it was very rarely used.

Table 2 provides a sample overview of search methods used and successful search channels. As we learn from the first column, the most frequently employed search methods are asking friends and relatives and the use of media advertisements. Both methods are used by about 60% of the participants. The public employment office, which is compulsory in Austria for unemployed receiving unemployment insurance benefits, is reported half as often (35%). The share of unemployed among job searchers using the public employment office is 45%. This indicates that the service is intensively used also by other groups of job searchers. 30% of workers contact a possible employer directly either by mail or by telephone. A share of 8% use no search methods at all. On average a job seeker uses 2 methods during search.

In the next column we learn about the distribution of successful search channels. We notice that differences in the frequencies of successful channels are more pronounced than the differences in frequencies of search methods used in the first column. Almost half of the jobs are found by personal contacts, whereas the share of job matches generated by the public employment office lies around 8%. The share of unemployed among successful AMS searchers is about 50%, which demonstrates again the importance of the service to all groups of job searchers.

It is not easy to compare the numbers of search methods used and successful channels in Austria with other data sources, as there exists very little information on the job search process. Frühstück et al. (1999) evaluate the share of new jobs which were reported as vacancies to the public employment office and the share of these vacancies, which were filled by the public employment office. They report a market share of the AMS of 9%, which is comparable to our finding.

International studies document differences in the role of the public employment office across countries. In Great Britain the public employment office is used

by a large part of job seekers and employers (70% of unemployed job seekers) and there is evidence of a high efficiency of the service (Gregg and Wadsworth, 1996). Holzer (1988) reports a low market share of the public employment office and only a small positive impact of the service on the probability of getting a job offer for unemployed youth in the USA.

The values in the last column of Table 2 perform a check on the informational content of the answers to the questions about search methods use and the successful channel. The group of persons, who are successful with a particular search channel can be divided into two subgroups. There are persons who searched with the method and are then successful and others who do not search with the method but are nevertheless successful. The numbers reported in column three are the "successful searchers". The share of "successful searchers" in the total sample is often referred to as "hit rate". If the numbers in column two and column three coincide every individual whose job is generated by the channel also reports the channel as a search method. On the other hand, if the number in column 3 is small in comparison to column 2, individuals find a job with a channel to which they do not attribute any search effort. We find that differences are especially high for asking friends and relatives and direct employer contacts, whereas for AMS and media advertisements the numbers of column 3 and column 2 are roughly equal.[8] It seems to be the case that contacting friends is not always seen to be combined with search effort and that the job finding success appears to be a coincidence. Although job search increases the probability of finding a job it may not be an absolute requirement to find employment.[9] In total only a share of 75% reports their successful search channel among the used channels. We should note that in our sample we have many "experienced job searchers" who frequently switch between employment

[8]It turns out that the number of "successful non-searchers" exceeds the number of persons who reported no search at all with 24% as opposed to 8%.

[9]Inconsistencies in the reports on search methods used and successful search channels are a common finding in various surveys (Addison and Portugal, 2002).

and non-employment. For them job search may be less of an issue. In our analysis we will use an indicator whether the successful channel was used or not to account for possible recall or measurement error.

Search effort

Following the discussion of search channels, we now investigate the determinants of job search effort measured by the number of search methods used by the individual.[10] In the literature one finds different methods of measuring search effort. Many studies (e.g. Barron and Mellow, 1979) use the time spent for job search during a time interval as an approximation for effort of search. Others use the number of employer contacts (Kahn and Low, 1990). Eriksson et al. (2002) use a combined index of number of search methods used and time spent for job search. We will follow Holzer (1988) and measure search effort by the number of search methods used during search.

Table 4 shows the estimation results from an ordered probit model. We find that search effort decreases with age, which might imply that older job searchers are more experienced with the choice of search channels. Individuals with secondary or higher education search harder than lower educated individuals. Individuals with a higher attitude towards a professional career use less methods for job search. An interpretation might be that their search effort is more directed towards profitable channels and that they search more efficiently. Individual labor market history also plays a role in determining search effort. Individuals who spent a larger part of the last year in unemployment increase search effort. This may be a result from monitoring of search effort by the public employment office (van den Berg and van der Klaauw, 2006). On the other hand, job-to-job movers, who are likely to be restricted in the time available for job search, show a lower search effort. But also workers finding their first job do not search

[10]The most common combinations of search methods are: friends alone, friends plus media plus AMS, friends plus media, media alone, media plus AMS, friends plus media plus direct contacts, friends plus media plus AMS plus direct contacts.

as hard as unemployed individuals. Given the increasing difficulties for young workers to find stable employment, it might be a reasonable strategy for the public employment service to support an increase of search effort and efficiency among new labor market entrants.[11] Finding a marginal job seems to require less search effort than finding a regular job. Note, however, that this is not the case for part-time jobs.

Overall our findings on search behavior of individuals not-unemployed are in line with international results. E.g. Blau and Robins (1990) find differences in the number of search methods used and offer acceptance rate by unemployed and employed workers. They conclude that search by employed job seekers is more effective.

We also included industry dummies in the regression as proxies for the occupation. We find, that there are considerable differences in job search effort among the industries, as the industry dummies are jointly significant.

Successful search channels

Let us turn to the question which characteristics influence the success of each search channel. We estimate a multinomial logit model with the successful channel as the dependent variable. This allows us to directly compare each channel with all the others.[12] The estimation results are reported in Table 5, with the public employment office chosen as reference category. The parameter estimates in this table can be interpreted as comparing an AMS success with a success in each of the remaining channels. In Table 6 we present the marginal

[11] In Austria job stability as well as the chance to directly move from job to job without intermittent unemployment fell considerably during the last three decades (Mahringer, 2005) (Mahringer, 2005: Essays on Child Care Costs and Mothers' Employment Rates and on Trends in Job Stability, University Linz, 2005.)

[12] The multinomial logit model puts some strain on the data, as four parameters have to be estimated for each independent variable, and our sample has only 501 observations. Although more detailed personal characteristics, (e.g. marital status and family composition) are available in the data, we decided to present a specification from which we omit most of the insignificant variables and only keep the ones which seem to be important. A test for IIA does not support the assumption for all alternative channels.

effects, which can be interpreted as the effects of the explanatory variables on the percentage increases in the probability of being successful with that particular channel as compared to all other channels. In the discussion of results we refer to both tables.

Compared to men, for women the public employment office is more likely to be a successful search channel than friends and other methods. This may have to do with the difference in job related contacts across sexes. Age has no effect on the probability of being successful with a particular channel. Individuals with some vocational training, as opposed to low educated, have a higher probability to find a job via media advertisements. The channel by which workers with education on the secondary level and above find employment are mostly other methods. This can be interpreted as high educated individuals making more use of private job agencies.

A high level of career attitude is related with a 3% lower probability of finding a job through the public employment office, especially in comparison with direct contacts and social networks. This result points in the direction of a negative selection of individuals finding a job through AMS.

The indicator for being successful with one of the channels actually chosen for search resembles the descriptive results in Table 2. Successful channels that were not used during search are mostly direct contacts, social networks, and other methods.

Residents of a city also have a high probability of finding a job through the media and a low probability through direct contacts. This result seems to be counter intuitive. Living in the city is often taken as a proxy for the density of employers in one's region (Barron and Gilley, 1981; Chirinko, 1982). For persons living in rural areas this means a higher cost of contacting employers directly. On the other hand, the search process might be more informal in urban areas, because there is more anonymity.

The individual's labor market status while searching also plays a role in determining the probability of the job finding method. In comparison to unemployed individuals, job-to-job movers more likely find jobs through direct contacts to employers. It also appears that workers finding their first job are very unlikely to benefit from the public employment office or from media advertisements. They have a 10 percent better chance of finding a job through direct employer contacts than unemployed. The low success of AMS is surprising, given that about 24% of new labor market entrants report searching with the AMS. Layoff as a reason for termination of the last job makes workers more likely to find new employment through the public employment office as opposed to media advertisements or friends.

We also find differences in the job finding success among job types. Assuming that the type of job found was also the one the workers predominantly searched for, we can interpret the parameter estimates as follows. Apprenticeship jobs are generated at a higher rate by the AMS than by media advertisements, direct contacts, and especially social networks. Part time jobs, on the other hand, are less likely to be found through AMS, but rather through the media, direct contacts, and friend.

For a discussion of the policy relevance of our findings especially the role of the AMS among the search channels is important. Our results suggest that whereas AMS matches a fair amount of apprenticeship jobs, it could extend its service for new labor market entrants and individuals interested in part time jobs.

Search outcomes: Wages and job durations

After having studied the determinants of search behavior and search success we turn to the search outcomes. We start with a descriptive analysis of starting wages and job durations for the different successful channels.

The mean values of the measures for job search outcomes in Table 3 indicate a

very disappointing performance of the public employment office. A job found through the AMS pays 16% less than the average job. Although there is no significant difference in mean wages among the other four job search channels, AMS jobs pay significantly less. A similar picture arises from job durations: jobs found through AMS are on average only half as long as other jobs.

The finding is confirmed if we look not only at means, but at the empirical distributions of the outcome variables across search channels. Figure 1 plots the histograms of starting wages for all channels. Whereas the plots are skewed to the right for the other 4 channels, we find AMS jobs predominantly in the lowest wage bins (note the differences in scales). Figure 2 plots empirical hazard rates out of the job. In the graphs for media and friends, job leaving hazards are high during the first year. For direct contacts and other methods the hazard rates are more stable over time. Job leaving hazard rates for AMS jobs are particularly high for short durations. Note again the differences in scale. Overall we can see that the majority of short jobs with durations less than one year in our sample was generated by either the public employment office, media advertisements, or social networks, which are also the channels with lowest search costs.

The analysis so far investigated only correlations between search channels and outcome variables. We are not able to make a statement about implications. Consequently, we do not know the reason for the bad outcomes of the public employment office. Is it the differences in the quality of the service, or is the AMS clientele different form other job searchers? To find answers to this important question, we first compare job-searchers across successful search channels nonparametrically, using only the most reliable information from the administrative variables. We plot mean yearly wages and employment rates for the years before and after the job started. We then estimate wage and duration regressions to evaluate the robustness of the nonparametric results to a rich set of controls.

In Figure 3 we plot mean yearly wages in the years 1995 to 1999 for the five groups of job searchers. The yearly wage variable sums up the earnings from all jobs during the calender year. For each group we see a sharp rise in yearly wages between 1996 and 1998, because part of the sample was not employed before taking the job in 1997. It seems that the high wage earners find their jobs via other methods, which conforms with the general finding of "cream-skimming" in the private employment agencies (Kuebler, 1999). Jobs generated by the media, direct contacts, or friends pay slightly lower wages. At the bottom of the graph, with lowest wages in every single years, we find the group of AMS job searchers. Their wages are not only lowest in 1997, as we would expect from Table 3, but also in all the other years.

A similar finding is documented in Figure 4, which plots mean yearly employment rates.[13] All five lines slope upwards in 1997, when we find every individual in a new job. But whereas the lines for the other search channels intersect, the AMS lies always at the bottom. For AMS clients the employment rate increases by almost 15 percentage points between 1996 and 1997. But thereafter it declines again, indicating that workers move back to unemployment after having worked in a short job.

Both graphs clearly indicate that the group of workers finding a job through the public employment office differs from the rest of the job searchers. This indicates that not all the differences in search outcomes can be attributed to the quality of the service. In other words the bad outcome for AMS jobs is not just the result of unfortunate matches, but it is related to personal characteristics. The next step is to find out whether there are still significant differences in starting wages and job durations across successful search channels once we control for a set of observable characteristics.

Table 7 reports regression results from a log wage regression. The baseline

[13] Employment rates are given by the number of days employed divided by the sum of days employed plus days unemployed.

specification in the first column performs a check on the consistency of the dependent variable, taken from the administrative records, with the personal characteristics as reported in the survey. The parameter estimates have the expected signs and magnitudes. In short, we find that women earn 25% less than men, wages rise with experience and the educational level. Labor market participation, not only in employment but also in unemployment, during the last two years before starting the job also leads to higher wages. Apprenticeships and part-time jobs pay lower wages and we find significant wage differences across industries.

Column two measures the effect of search effort on wages. Although one would expect that higher search effort leads to an increase in the arrival rate of job offers, which in turn could be an opportunity to find better matches, we find no significant effect on starting wages. Maybe our measure of search effort is too imprecise.

Column three includes 4 dummy variables for the successful search channel into the model; the reference group is AMS jobs. We do not find any differences in wages across search channels after controlling for observable characteristics. This is a very clear result and it means that the mean wage differences in Table 3 can be explained by observable characteristics alone; they are not due to the quality of the service. We would also like to note, that the "zeros" on the search channel dummies are estimated with high precision. The estimated coefficients are close to zero, and the standard errors are small.

Table 8 presents the same specifications for log job durations. When interpreting the baseline in column one, we have to keep the particular selection of the sample in mind. Short job spells are highly represented, and job durations vary from one moth to almost four years. So the sample does not represent the job duration of an average job of an average Austrian worker. Having said this, column one shows that job durations are not determined by individual

characteristics like sex, age, or education. Strong determinants of job durations are, however, the time employed during the last two years before the job start, which reflects labor market attachment. The other determinant is the job type. Apprenticeships, which usually go on for two or three years, represent the long jobs in the sample. Permanent contracts, not surprisingly, also lead to longer job durations.

Search effort, included in the model in column two, again has no significant impact on job duration. The coefficients on the successful channel dummies in column three, are larger than in the wage equation. They indicate that AMS jobs are shortest of all. But the standard errors are also high, and only the coefficient for direct contacts is significant at the 10 % level. For job durations, like for starting wages, there is no indication that they differ across successful search channels. Our results are in contrast to the findings of Addison and Portugal (2002), who report that the public employment office has a low success rate and leads to jobs that are unstable and pay low wages, using the Portuguese Labor Force Survey.

4.1 Robustness checks

We would like to add some robustness checks to test the stability of the finding that differences in job search outcomes for different successful search channels are determined by observable worker characteristics alone. The first test concerns the outcome measures. As we discussed above we chose starting wages and job durations, because we regard them as the most immediately affected measures of job search outcome in our data. But we try out the specifications in Tables 7 and 8 for alternative measures: namely the sum of labor earnings in 1998, the year following the job start, and the number of days employed counted one year from job start. These specifications confirm our previous findings; see Table 9. Especially, we find no significant impact of search effort, or the suc-

cessful channel on outcomes after controlling for observable characteristics.

The results indicate a negative selection of workers finding a job through AMS based on observable characteristics. This means that the less qualified and the less skilled are the main clientele of the public employment office. From the study of search theory we learn that search behavior, like the choice of search effort and search methods is endogenous with respect to the outcomes of search. It is therefore plausible to consider a model in which selection into successful channels also occurs on basis of unobservable individual characteristics, which are not orthogonal to the error terms in the outcome equations. In the analysis of determinants of job search effort and the successful search channel (Tables 4 and 5), we identified some variables which influence these processes, but can be assumed not to influence the outcome directly. Those were the area of residence (city indicator), the career attitude, and the reason for termination of the last job. Hence, we use these variables as instruments for search effort and the successful channels in the outcome equations.

To be precise, we first use the city indicator and career orientation as instruments for search effort for the model in column two in Tables 7 and 8 (equation 3). Second, for the model in column three (equation 4) we use career attitude, city indicator, the dummy whether the successful channel was also used as search method, and dummies for job loss following firm closure or layoff as instruments for the successful channels. The results of the Instrumental Variable estimation are presented in columns four and five in Tables 7 and 8. But let us step back and comment the quality of the instruments and the first stage results first. Although there is some indication that the chosen instruments might be important in determining search effort and the successful search channel form Tables 4 and 5, the corresponding parameter estimates in the linear first stage equations on the estimation sample are not statistically significant. The F-tests for joint significance of the instruments in the first stage are 1.7 for the search effort, and range from 0.9 to 13.2 for the successful

channels. Tests for endogeneity of search effort or the successful channels on basis of these instruments also fail to reject the Null that search effort or the successful channels are exogenous in both outcome equations for starting wages and job durations.[14] As a consequence of the weak first stage it is not surprising the the IV results in Tables 7 and 8 just blow up the standard errors but do not show a deviation from the OLS results. We cannot be certain if the IV strategy fails because the instruments are badly chosen, or because there is just not enough variation in the sample with 408 observations. But in this sample we find no indication of selection into successful search channels on the basis of unobserved heterogeneity.

5 Conclusions

This paper has studied the determinants of the job search process and of job search outcomes for workers using different search methods in Austria. We use a unique data set which combines detailed survey information on search strategies with precise measures of search outcomes like wages and job durations for a sample of successful job searchers. The search outcome variables are matched individually from administrative data sources. One of the features of the sample is that it includes not only job searchers who are unemployed, but also job-to-job movers and new labor market entrants.

In our data, the distribution of search methods among job searchers is relatively equal. Media advertisements and personal contacts are used by 60% of job searchers, the public employment office (AMS) and direct contacts to employers by about 30%. The majority of jobs is, however, generated by personal contacts and only 8% of jobs are matched with the help of AMS.

We find that search effort and the successful search channels differ by population

[14] We estimated reduced form outcome equations in which we included the endogenous variables together with the residuals form the first stage. Then we tested the Null that the coefficient on the residual is equal zero. Test statistics are available on request.

groups, thus providing evidence for selection. Job-to-job movers and individuals finding their first job have lower search effort. In comparison to unemployed individuals, job-to-job movers more likely find jobs through direct contacts to employers. It also appears that workers finding their first job are very unlikely to benefit from the public employment office or from media advertisements. They have a 10 percent better chance of finding a job through direct employer contacts than unemployed. For a discussion of the policy relevance of our findings especially the role of the AMS among the search channels is important. Our results suggest that whereas AMS matches a fair amount of apprenticeship jobs, it could extend the service for new labor market entrants and individuals interested in part time jobs.

Regarding search outcomes, we find that mean starting wages for jobs generated by the public employment office are 16% lower and job durations are only half as long as the average job. But we also observe that mean wages and employment rates are lower for these workers in years before and after the job start. Once observable differences between workers finding their job with AMS and the other channels are held constant, we find no differences in search outcomes among the five search channels. Also we do not find that search outcomes differ by the level of search effort. The results proof to be very robust in several parametric and nonparametric specifications.

Our findings indicates a negative selection of workers, who find a job with AMS, based on observable characteristics. It seems that the public employment office supports mainly low skilled and low qualified individuals, who are characterized by frequent job changes and low wage profiles. We can conclude that although AMS specializes its services on low quality workers for them it attains as efficient job matches as the other channels.

References

Addison, J. T., Portugal, P., 2002. Job search methods and outcomes. Oxford Economic Papers 54, 505–533.

Barron, J., Gilley, O., 1981. Job search and vacancy contacts: note. American Economic Review 67, 683–691.

Barron, J., Mellow, W., 1979. Search effort in the labor market. Journal of Human Ressources 14, 389–404.

Blau, D., Robins, P., 1990. Job search outcomes for the employed and unemployed. Journal of Political Economy 98, 637–655.

Burdett, K., 1979. Search, leisure and individual labour supply. In: Lippman, S., McCall., J. J. (Eds.), Studies in the Economy of Search. North Holland, pp. 157–170.

Chirinko, R. S., 1982. An empirical investigation of the returns to job search. American Economic Review 72, 498–501.

Delbono, E., Weber, A., 2005. Compensating wage differentials and seasonal employment in austria: Evidence from administrative data. mimeo .

Ebmer, R., 1990. Placement service and offer arrival rates. Economics Letters 34, 289–294.

Eriksson, T., Lilja, R., Torp, H., 2002. Determinants of job search intensity - some evidence from the Nordic Countries. Labour Institute for Economic Research Discussion Papers Helsinki.

Fernandez, R., Castilla, E. J., Moore, P., 2000. Social capital at work: networks and employment at a phone center. American Journal of Sociology 105, 1288–1356.

Fischer, G., Pichelmann, K., 1991. Temporary layoff unemployment in austria: empirical evidence from adiministrative data. Applied Economics 23, 1447–1452.

Frühstück, E., Gregoritsch, P., Kalmar, M., Löffler, R., Wagner-Pinter, M., 1999. Das Arbeitsmarktservice als Informationsträger bei der Besetzung von Vakanzen 1999. AMS Wien.

Gregg, P., Wadsworth, J., 1996. How effective are state employment agencies? Jobcentre use and job matching in Britain. Oxford Bulletin of Economics and Statistics 58, 443–467.

Holzer, H., 1988. Search method use by unemployed youth. Journal of Labor Economics 6, 1–20.

Kahn, L., Low, S., 1990. The demand of labor market information. Southern Economic Journal 56, 1044–1058.

Kuebler, D., 1999. Using private job agencies: Optimal screening or cream skimming? Public Choice 101, 85–107.

Kuhn, P., Skuterud, M., 2004. Internet job search and unemployment durations. American Economic Review 94, 218–232.

Lindeboom, M., van Ours, J., Renes, G., 1994. Matching employers and workers: an empirical analysis on the effectiveness of search. Oxford Economic Papers 46 (1), 45–67.

Mahringer, H., 2005. Essays on child care costs and mothers' employment rates and on trends in job stability. Thesis: University of Linz .

Martin, J. P., Grubb, D., 2001. What works and for whom: a review of OECD countries' experiences with active labour market policies. Working Paper (14), iFAU.

Mortensen, D. J., 1986. Job search and labor market analysis. In: Ashenfelter, O., Layard, R. (Eds.), Handbook of Labor Economics. Vol. 2. North Holland, Amsterdam.

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, 348–386.

Rees, A., 1966. Information networks in labor markets. American Economic Review 56, 559–566.

Roper, S., 1988. Recruitment methods and vacancy duration. Scottish Journal of Political Economy 35, 51–64.

Stiglbauer, A., Stahl, F., Winter-Ebmer, R., Zweimüller, J., 2003. Job creation and job destruction in a regulated labor market: The case of Austria. Empirica 30, 127 – 148.

van den Berg, G. J., van der Klaauw, B., 2006. Counseling and monitoring of unemployed workers: Theory and evidence from a controlled social experiment. International Economic Review Forthcoming.

Figure 1: Starting Wages, histogram by successful search channel

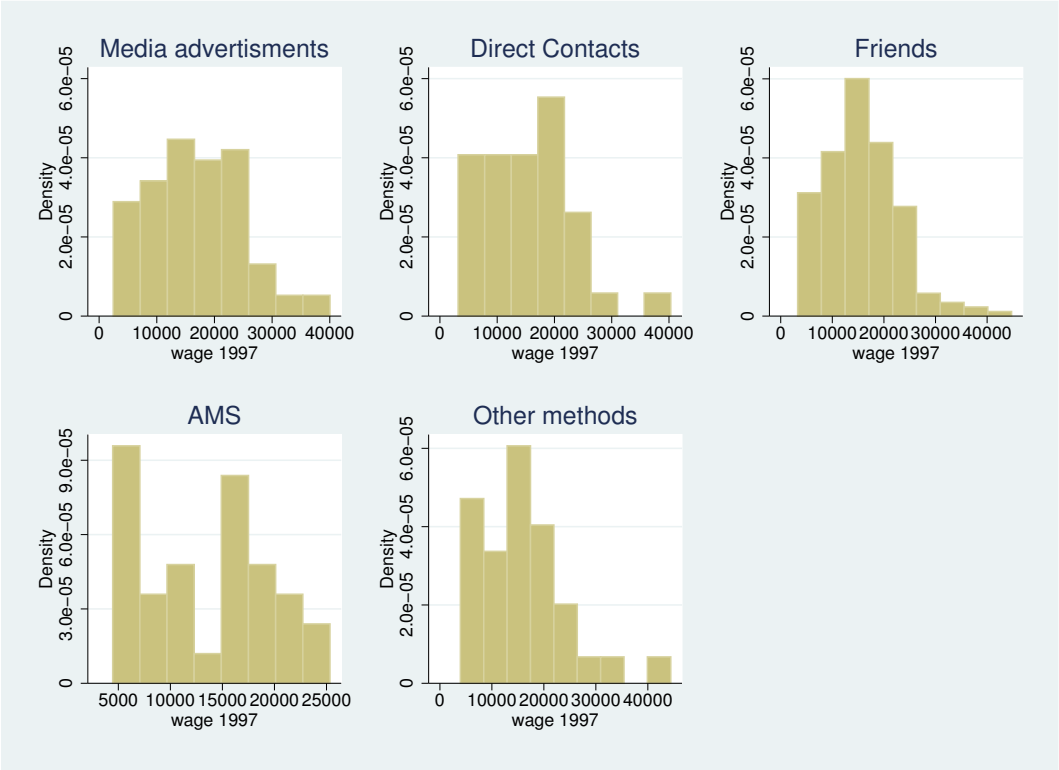

Figure 2: Job durations, empirical hazard rates by successful search channel

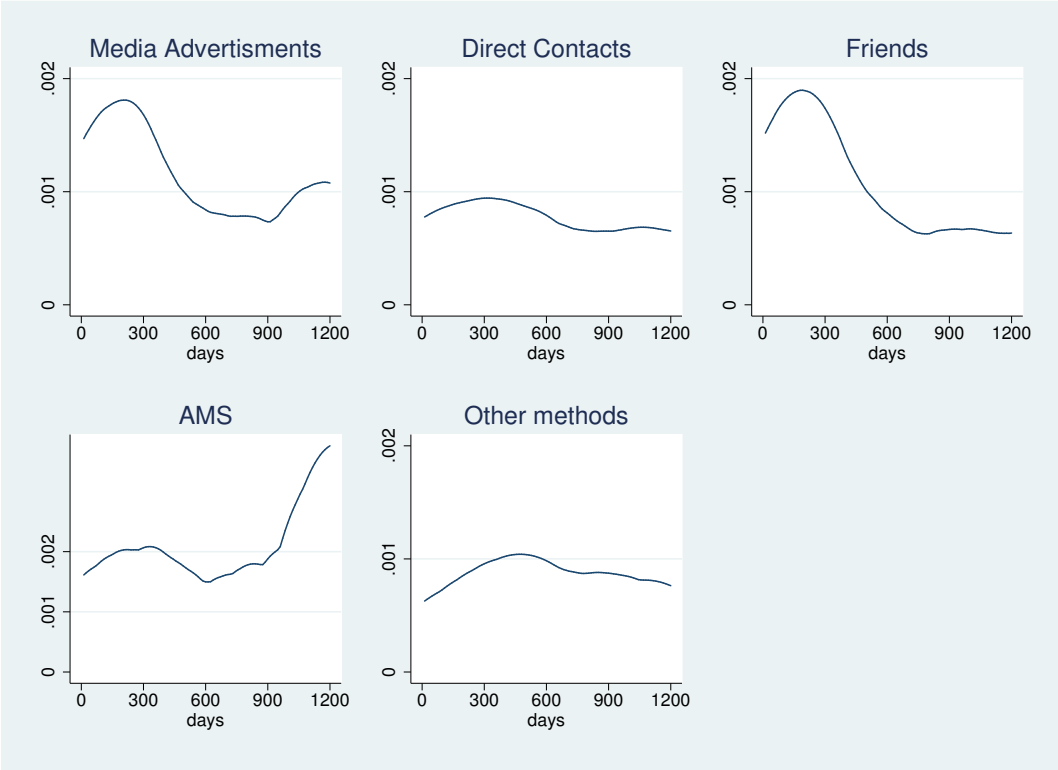

Figure 3: Mean yearly wages by successful search channel

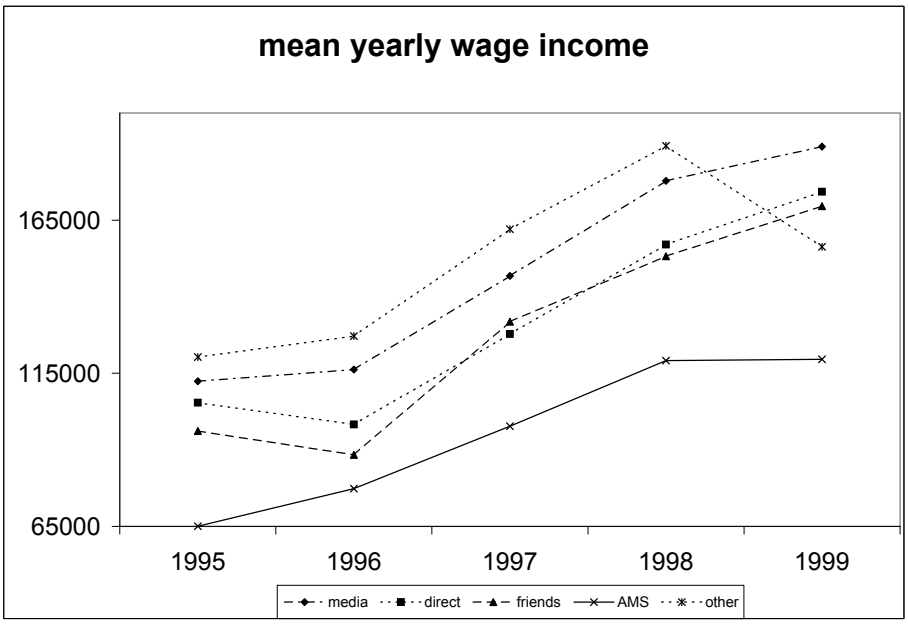

Figure 4: Mean yearly employment rates by successful search channel

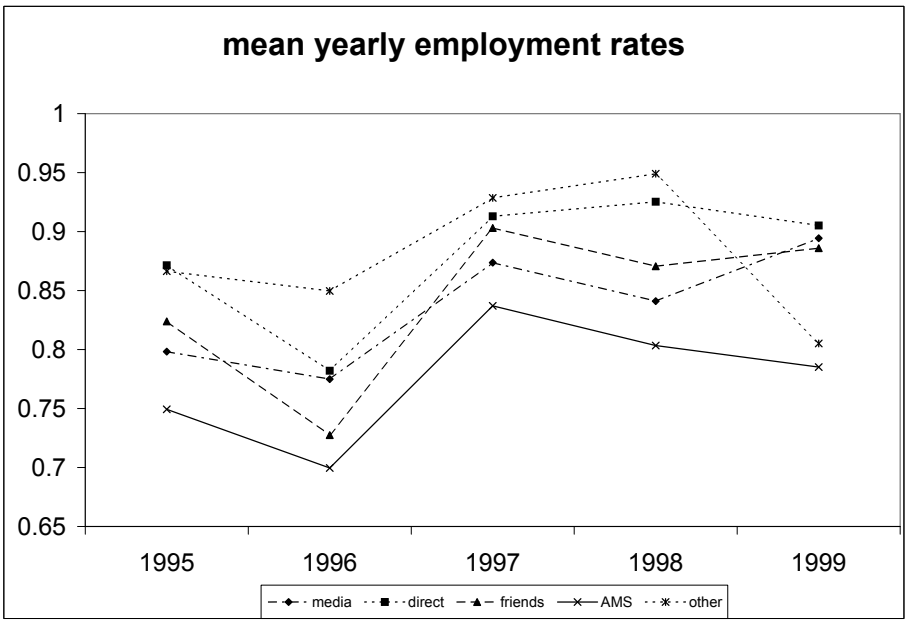

Table 1: Summary Statistics

	Full Sample		Estimation Sample	
	Mean	Std. Dev.	Mean	Std. Dev.
Personal Characteristics				
Woman	0.479	0.500	0.439	0.497
Lives in City	0.271	0.445	0.255	0.436
Career Attitude	0.235	0.425	0.228	0.420
Age (years)	29.449	10.071	28.929	9.941
Experience (years)	11.898	10.041	11.475	9.904
Education				
Compulsory	0.178	0.383	0.189	0.392
Vocational Training	0.391	0.489	0.400	0.490
Higher Vocational	0.098	0.297	0.105	0.307
Secondary School	0.333	0.472	0.306	0.462
Labor Market History				
During last 2 years				
% Employed*	0.453	0.387	0.469	0.382
% Unemployed*	0.149	0.240	0.148	0.227
Status before taking the job				
Job-to-job Mover	0.267	0.443	0.292	0.455
First Job	0.353	0.478	0.341	0.475
Unemployed	0.267	0.443	0.279	0.449
On Leave	0.112	0.315	0.088	0.284
Reason for leaving previous job				
Firm Closure	0.074	0.262	0.078	0.269
Layoff	0.118	0.323	0.132	0.339
Quit	0.451	0.498	0.446	0.498
Job Characteristics				
Marginal Employment*	0.186	0 .389		
Apprenticeship*	0.066	0.248	0.078	0.269
Part Time Job	0.240	0.427	0.167	0.373
Permanent Contract	0.758	0.428	0.765	0.425
Starting wage*			15.875	7.481
Job duration*			22.8	28.6
Observations	500		408	

NOTE: The estimation sample excludes individuals in marginal employment. Variables marked with * are taken from the administrative registers, the remaining variables are answers to survey questions. Career Attitude is a dummy variable equal one if the question "I can only be satisfied with life if I am successful in my job" is answered with yes. Experience is measured as potential experience age-(years of schooling +6). Starting wages are measured in 1000 ATS, job durations are measured in months.

Table 2: Search method use and job finding success

	Search method used number of persons in percent	Successful method	Search method was used and was successful "hit rate"
Media	305 61.0%	103 20.6%	101 20.2%
Direct Contact	154 30.8%	84 16.8%	58 11.6%
Friends	301 60.2%	233 46.3% 7	168 33.5%
AMS	177 35.4%	39 7.8%	38 7.6%
Other	56 11.2%	41 8.2%	15 3.0%
No Search	42 8.3%		
Total		100%	75.8%
Average number of methods used	1.98		
Observations	500		

NOTE: Numbers are based on a sample of successful job searchers who found a job in 1997. The sample is hence not representative of all job seekers.
"hit rate" refers to the share of persons who report the method as their search method and successful method

Table 3: Outcome Measures by Successful Search Channel

		Wages 1997			Job Durations	
	Obs.	Mean	Std. Dev		Mean	Std. Dev
Media	81	16.927	8.085		20.7	26.6
Direct Contact	74	15.881	7.693		29.6	32.2
Friends	188	15.851	7.107		21.7	29.0
AMS	32	13.312*	6.153		12.1*	13.5
Other Methods	33	15.916	8.499		29.7	29.9
All	408	15.875	7.481	22.8	28.6	

NOTE: Wages measured in 1000 Austrian Shillings, Job Durations measured in months. * means significantly different from overall sample mean at a 5% level

Table 4: Search Effort, ordered probit estimation

	Coefficient	Standard error
Woman	0.117	0.110
Age < 25	0.560**	0.197
Age <35	0.392*	0.187
Age <45	0.269	0.202
Education (Compulsory)		
Vocational Training	0.029	0.126
Higher Vocational	-0.035	0.182
Secondary School	0.543**	0.170
Lives in City	-0.094	0.115
Career Attitude	-0.305**	0.117
During last year		
% Employed	-0.142	0.154
% Unemployed	0.493*	0.207
Status Before job		
(Unemployed or on Leave)		
Job-to-job Mover	-0.756**	0.132
First Job	-0.684**	0.145
Job Type		
Marginal Job	-0.428**	0.136
Apprenticeship	-0.111	0.223
Part Time Job	-0.181	0.138
Industry Dummies		
chi2(8)	71.32	
Number of observations :	500	
log Likelihood :	-674.253	
Pseudo R^2 :	0.103	

NOTE: Search effort is measured by the number of different search methods used; **, * significant at 1%, 5% level

Table 5: Multinomial Logit estimation of successful search channel

	Media	Dir Contact	Friends	Other Methods
Woman	-0.588	-0.554	-0.714*	-1.054*
	(0.443)	(0.463)	(0.418)	(0.551)
Age < 25	0.072	-0.001	-0.398	-0.81
	(0.570)	(0.610)	(0.538)	(0.714)
Age <35	0.062	-0.051	-0.169	-0.668
	(0.543)	(0.587)	(0.511)	(0.674)
Education (Compulsory)				
Vocational Training	0.251	-0.246	-0.359	-0.42
	(0.529)	(0.546)	(0.494)	(0.688)
Higher Vocational	0.339	-1.292	-0.564	-0.17
	(0.697)	(0.837)	(0.672)	(0.932)
Secondary School	0.53	0.675	0.479	2.025**
	(0.909)	(0.929)	(0.866)	(0.989)
Lives in City	1.139**	-0.527	0.173	0.094
	(0.531)	(0.590)	(0.519)	(0.640)
Career Attitude	0.665	1.242**	0.990*	0.698
	(0.614)	(0.618)	(0.583)	(0.706)
Successful channel				
not used as search method	-0.443	2.758***	2.701***	4.474***
	(1.259)	(1.067)	(1.048)	(1.100)
End of Last Job (Voluntary Quit)				
Firm Closure	-0.675	0.579	-0.15	0.024
	(0.835)	(0.827)	(0.743)	(0.958)
Layoff	-1.070**	-0.92	-1.169**	-1.362
	(0.542)	(0.638)	(0.512)	(0.839)
Status Before job (Unemployed or on Leave)				
Job-to-job Mover	0.711	1.192**	0.392	0.157
	(0.523)	(0.571)	(0.506)	(0.682)
First Job	0.907	2.091***	1.593**	1.408*
	(0.687)	(0.721)	(0.652)	(0.823)
Job Type				
Marginal Employment	-0.475	-1.409**	-0.914	-0.849
	(0.585)	(0.648)	(0.558)	(0.717)
Apprenticeship	-1.542*	-1.749**	-2.531***	-1.159
	(0.935)	(0.873)	(0.843)	(1.033)
Part-Time Job	1.143*	1.484**	1.285**	1.228
	(0.617)	(0.655)	(0.591)	(0.752)
Number of observations :	500			
log Likelihood :	-597.986	Pseudo R^2 :	0.14	

NOTE: Reference Category is AMS; standard errors in parentheses; ***, **, * significant at 1%, 5%, 10% level.

Table 6: Interpretation of Multinomial Logit Results - Marginal Effects

	Media	Dir Contact	Friends	AMS	Other methods
Woman	0.010	0.018	-0.034	0.029	-0.023
Age < 25	0.050	0.047	-0.078	0.011	-0.031
Age <35	0.030	0.014	-0.021	0.006	-0.028
Education (Compulsory)					
Vocational Training	0.076 *	-0.003	-0.072	0.010	-0.011
Higher Vocational	0.154 *	-0.112 **	-0.079	0.021	0.016
Secondary School	-0.019	0.001	-0.100	-0.022	0.141 **
Lives in City	0.166 ***	-0.114 ***	-0.035	-0.009	-0.008
Career Attitude	-0.038	0.057	0.027	-0.032 *	-0.013
Successful channel not used as search method	-0.255 ***	0.038	0.091 *	-0.064 ***	0.190 ***
End of Last Job (Voluntary Quit)					
Firm Closure	-0.074	0.140	-0.069	0.001	0.003
Layoff	-0.004	0.022	-0.070	0.069	-0.017
Status Before job (Unemployed or on Leave)					
Job-to-job Mover	0.020	0.126 **	-0.102	-0.022	-0.022
First Job	-0.083 **	0.108 *	0.038	-0.056 **	-0.007
Job Type					
Marginal Employment	0.064	-0.083 *	-0.031	0.049	0.001
Apprenticeship	0.045	0.012	-0.301 ***	0.192	0.051
Part Time Job	-0.016	0.043	0.016	-0.041 **	-0.002

NOTE: ***, **, * values significant at a 1%, 5%, 10% level

Table 7: Wage regressions

	OLS	OLS	OLS	IV	IV
Search effort		0.020		0.028	
		(0.019)		(0.180)	
Friends			-0.010		-0.181
			(0.055)		(0.533)
Media			-0.072		0.046
			(0.072)		(0.758)
Dir. Contact			-0.028		0.241
			(0.065)		(1.022)
Other Methods			-0.011		-0.118
			(0.075)		(0.640)
Woman	-0.247***	-0.252***	-0.245***	-0.254***	-0.262***
	(0.045)	(0.045)	(0.046)	(0.063)	(0.071)
Experience	0.016*	0.015*	0.016*	0.015*	0.019
	(0.008)	(0.008)	(0.008)	(0.009)	(0.017)
Education (Compulsory)					
Vocational Training	0.155**	0.154**	0.163**	0.154**	0.087
	(0.062)	(0.062)	(0.064)	(0.062)	(0.211)
Higher Vocational	0.078	0.080	0.082	0.081	0.05
	(0.095)	(0.096)	(0.094)	(0.097)	(0.159)
Secondary School	0.288***	0.286***	0.296***	0.285***	0.255
	(0.076)	(0.076)	(0.077)	(0.077)	(0.161)
During last 2 years					
% Employed	0.263***	0.270***	0.265***	0.273***	0.245*
	(0.072)	(0.073)	(0.074)	(0.086)	(0.134)
% Unemployed	0.163*	0.150	0.164*	0.145	0.134
	(0.089)	(0.093)	(0.090)	(0.161)	(0.176)
Job Type					
Apprenticeship	-0.731***	-0.723***	-0.728***	-0.721***	-0.810***
	(0.085)	(0.086)	(0.087)	(0.106)	(0.282)
Part Time Job	-0.267***	-0.260***	-0.268***	-0.258**	-0.290***
	(0.076)	(0.077)	(0.076)	(0.101)	(0.097)
Permanent Contract	-0.011	-0.006	-0.006	-0.004	-0.032
	(0.051)	(0.051)	(0.052)	(0.072)	(0.104)
8 Industry Dummies					
F-test	3.96	3.92	3.95	3.94	2.17
R-squared	0.59	0.59	0.59	0.59	0.50
Observations	408.0	408.0	408.0	408.0	408.0

NOTE: dependent variable log(wages); a constant included in the regression; ***, **,
* significant at 1%, 5%, 10% level.

Table 8: Job duration

	OLS	OLS	OLS	IV	IV
Search effort		-0.108		-1.462	
		(0.086)		(1.163)	
Friends			0.741		4.614
			(0.457)		(3.708)
Media			0.610		-0.105
			(0.493)		(4.980)
Dir. Contact			0.799*		2.763
			(0.471)		(6.534)
Other Methods			0.830		-2.333
			(0.512)		(4.422)
Woman	0.173	0.198	0.213	0.519	0.682
	(0.227)	(0.228)	(0.218)	(0.364)	(0.459)
Age < 25	-0.436	-0.425	-0.404	-0.294	-0.274
	(0.284)	(0.283)	(0.289)	(0.391)	(0.607)
Age <35	-0.167	-0.157	-0.115	-0.043	-0.128
	(0.268)	(0.267)	(0.261)	(0.349)	(0.436)
Education (Compulsory)					
Vocational Training	-0.137	-0.131	-0.155	-0.055	0.164
	(0.315)	(0.318)	(0.320)	(0.436)	(1.406)
Higher Vocational	-0.270	-0.279	-0.236	-0.396	0.365
	(0.475)	(0.478)	(0.457)	(0.664)	(0.943)
Secondary School	0.059	0.072	-0.016	0.235	0.194
	(0.339)	(0.338)	(0.344)	(0.471)	(1.214)
During last 2 years					
% Employed	1.345***	1.301***	1.364***	0.747	2.031***
	(0.337)	(0.328)	(0.340)	(0.631)	(0.720)
% Unemployed	0.747	0.815*	0.816	1.676*	1.692
	(0.488)	(0.484)	(0.497)	(0.963)	(1.101)
Job Type					
Apprenticeship	2.625***	2.582***	2.620***	2.040***	3.680*
	(0.425)	(0.426)	(0.437)	(0.740)	(2.061)
Part Time Job	0.271	0.231	0.223	-0.270	-0.165
	(0.308)	(0.307)	(0.308)	(0.559)	(0.636)
Permanent Contract	0.544***	0.522***	0.509**	0.252	0.697
	(0.195)	(0.193)	(0.198)	(0.356)	(0.669)
8 Industry Dummies					
F-test	1.68	1.34	1.59	0.93	0.77
R-squared	0.20	0.21	0.21	.	.
Observations	408.0	408.0	408.0	408.0	408.0

NOTE: dependent variable log job duration in days; a constant is included in the regression; standard errors in parentheses; ***, **, * significant at 1%, 5%, 10% level.

Table 9: Alternative outcome measures: total wage income in 1988, and days employed 1 year after job start

	wage	wage	duration	duration
Search effort	-0.120		-0.033	
	(0.113)		(0.041)	
Friends		-0.100		0.184
		(0.554)		(0.171)
Media		0.312		0.166
		(0.514)		(0.180)
Dir. Contact		-0.364		-0.064
		(0.611)		(0.194)
Other Methods		0.330		0.085
		(0.500)		(0.189)
Woman	0.151	0.091	0.016	0.019
	(0.368)	(0.380)	(0.094)	(0.091)
Experience	0.045	0.042		
	(0.053)	(0.055)		
Age < 25	.	.	-0.001	0.005
	.	.	(0.157)	(0.153)
Age <35	.	.	0.124	0.121
	.	.	(0.126)	(0.123)
Education (Compulsory)				
Vocational Training	0.661	0.671	0.064	0.088
	(0.589)	(0.571)	(0.145)	(0.142)
Higher Vocational	-0.355	-0.382	-0.079	-0.066
	(0.864)	(0.873)	(0.211)	(0.214)
Secondary School	1.528***	1.509***	0.104	0.105
	(0.563)	(0.566)	(0.150)	(0.151)
During last 2 years				
% Employed	2.378***	2.381***	0.872***	0.891***
	(0.669)	(0.643)	(0.196)	(0.195)
% Unemployed	0.698	0.569	0.513*	0.512*
	(0.848)	(0.846)	(0.264)	(0.254)
Job Type				
Apprenticeship	2.340***	2.394***	1.127***	1.198***
	(0.724)	(0.697)	(0.188)	(0.195)
Part Time Job	-0.661	- 0.560	0.007	0.032
	(0.528)	(0.528)	(0.153)	(0.156)
Permanent Contract	0.909**	0.924**	0.367***	0.373***
	(0.425)	(0.447)	(0.108)	(0.109)
R-squared	0.22	0.22	0.26	0.27
Observations	408.0	408.0	408.0	408.0

NOTE: dependent variable log(wages) in columns 1 and 2; days/365 in columns 3 and 4; a constant and industry dummies are included in the regressions; ***, **, * significant at 1%, 5%, 10% level.