Job-Search Methods and Labor Market Transitions

Some Empirical Evidence From Brazil

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Abstract

This paper examines the impact of job search methods on the output of the job search process in a segmented developing economy. Theoretical models of job search, like the widely used search approach, generally contain only one parameter capturing all possible factors affecting the efficiency of search. As the collection of information on vacancies is the main activity of job search, the impact of search methods on the output of the job search process needs further clarification. I argue that vacancies in different labor market sectors (formal/ informal) are promoted via different channels and that part of the labor market segmentation originates from lack of information on vacancies in the formal sector. To evaluate the different search methods, I estimate their impact on exit rates of unemployed Brazilian workers by using multinomial logit models.

1. Introduction

Theoretical models of job search like the search approach tend to treat the process of job search as a uniform activity. No distinction is made between the use of different search channels. In this paper, I examine the effects of various job search methods on the labor market transitions of workers in a segmented developing economy. A special focus of my paper lies on the impact of search methods on exit rates into different occupational states. Using Brazilian labor market data, I consider the following five states: 'employed' (split up into 'formally' and 'informally employed'), 'self-employed', 'searching' and 'inactive'. The separation of employed workers into the two categories, formal and informal, results from the data. Brazil shows one of the highest rates of informal work throughout Latin America and labor market data provides information about informal work. In the year 2000, about 50 % of the economically active population held informal jobs, composed of informal employment and self-employment. As informal workers do not hold labor cards, they do not profit from set wages and labor protection. Also, they are not eligible for unemployment insurance benefits. While contributions to the social security or the pension fund are deducted directly from the wages paid to formal workers, informally employed workers may contribute voluntarily, but more often they do not. The resulting lack of protection and resources in case of emergencies or old age often leads to impoverishment. It is therefore a major concern to increase formal employment and so to provide protection and access to security systems to a larger share of workers. In Brazil, the public sector provides assistance in job search via the National System for Employment (SINE). SINE agencies are organizing qualification and training programs, providing assistance in job placement and job matching to the unemployed and administrating parts of the unemployment insurance like the payments of benefits. Recently, SINE has returned into the focus of political interest, as an evaluation of the program has shown poor performance in all activities.

I argue that vacancies in different labor market sectors (formal/ informal) are promoted via different channels and that part of the labor market segmentation originates from lack of information on vacancies in the formal sector. Some search methods are more effective for finding a job in the formal sector, other channels will rather lead to informal employment. This assumption implies that labor market policies can model labor market transitions up to a certain degree by designing customized job-matching programs. Job placement or job matching could improve labor search processes by facilitating access to labor market information that otherwise may be hard to obtain for unemployed workers. To design an efficient job-placement service, a careful analysis of possible focus groups is essential to maximize efficiency. The design of public job placement assistance might improve the individual welfare by promoting search methods shifting more workers into formal employment. At first glance, labor market segmentation seems to be a problem of

developing countries, but recently, informal work has been increasing in industrialized countries, too (the sociologist Ulrich Beck once called this process observed in Germany the "Brazilianization of the German labor market").

To evaluate the different search methods, I estimate their impact on exit rates of unemployed Brazilian workers by using multinomial logit models. "Exit rates" here designate the probability of transition from one labor market state to another. To obtain more information about the search process, first, the influence of being eligible for unemployment insurance benefits on the choice of search methods is tested. The group of workers not eligible for benefits serves as control group. Second, the effect of different search methods on exit rates in general and exit rates into the different occupational states 'formally employed', 'informally employed', 'self-employed', 'searching' and 'inactive' is investigated.

In this paper, I will first review the sparse studies on the effects of different search channels on exit rates. The purpose of this review is to check for repeating patterns of search method impacts on transition rates of unemployed workers. A short overview over the Brazilian labor market and the public employment service follows in Section 3. The data and its specific properties are treated in Section 4, and the econometric model used for estimation will be explained in Section 5. In Section 6, the estimation results will be discussed in detail and conclusions will be drawn.

2. Search methods in the literature

The process of job search has been quite heavily investigated during the last three decades, both theoretically and empirically. A major focus has been laid on the impact of unemployment benefits on the duration as well as the outcome of the job search. Reservations wages have been subject to another line of research. Atkinson and Micklewright (1991) as well as Devine and Kiefer (1991) provide profound surveys on the research activities in this field. Only very few studies though focus on the impact of search methods on the outcome of the search process (Devine and Kiefer, 1991). Theoretical models of job search, like the widely used search approach, generally contain only one parameter capturing all possible factors affecting the efficiency of search. The search process is treated like one uniform activity, without regarding the possible impact of search channel choice on the outcome of the search process.

Holzer (1988) differentiates between the effects of various job search channels used by unemployed young U.S. workers by analyzing data from the Youth Cohort of the National Longitudinal Survey in 1979. He assumes an endogenous arrival rate of job offers that depends on the search channel chosen, namely 'friends and relatives', 'newspapers', 'state employment agencies', 'direct employer contact' and 'other'. The choice of search methods by the workers depends on the costs and expected

productivities related to the different channels. The decision to accept an offer is determined by the reservation wage. Concerning the impact of search methods on the outcome of the search process, Holzer estimates two probit regressions. The first one is considering the number of methods used, and the second one considers the type of search channel. The results show a positive and significant coefficient for the total number of methods for the first regression and positive and significant coefficients for 'friends and relatives' and, although weaker, 'newspapers', for the second regression.

Blau and Robins (1990) analyze the use of search methods using data from the Employment Opportunity Pilot Projects of 1980 (EOPP). They estimate the job offer and job acceptance rates of U.S. workers conditioned on the use of various search channels. As well unemployed as employed workers enter their sample. Like Holzer, they find positive, significant impacts for the 'friends and family' channel.

Using British labor market data, Gregg and Wadsworth (1996) evaluate the public employment service. They report high rates for the use of this search channel (around 70%), being, together with 'media' (advertisements) the most popular search method. Other methods considered are: 'friends and relatives', 'direct applications', 'private employment agencies' and 'other'. Probit regression is used to estimate exit rates out of unemployment. The analysis shows positive and significant coefficients for 'direct applications', 'advertisements' and 'jobcentre', the latter one showing highest impact for long-term unemployed workers. Gregg and Wadsworth also estimate the probability of using a certain search channel conditional on finding a job. Interestingly, the reception of unemployment insurance benefits is negative and significant for the use of the public employment service, indicating a lower probability of workers receiving benefits to find a job by recurring to the 'jobcentre'. The category 'jobcentre' is also the only one seemingly suited for low-skilled workers and on which the unemployment spell duration has a positive effect.

Addison and Portugal (2001) analyze the impact of search channels on exit rates from unemployment and on future earnings using Portuguese labor market data. The search methods investigated are 'direct approach', 'friends/relatives', 'advertisement', 'public employment agency', 'self employment' 'examinations' and 'other'. The categories 'self employment' and 'examination' are treated like job-finding methods, considered as search channels from the employer's side. Although observing these seven categories of channels, Addison and Portugal focus especially on the effectiveness of the public employment service, here finding low hit rates and job offers that are more likely to be low-paid and of short-term nature. Various factors complicating the analysis of this search channel are reported that leave the results ambiguous.

Table 1: Empirical Studies on The Effects of Job Search Methods

Author	Holzer (1988)	Blau and Robins (1990)	Gregg and Wadsworth (1996)	Addison and Portugal (2001)
Data	U.S. labor market data	U.S. labor market data	British labor market data	Portuguese labor market data
Dependent variable	'job offers received'	offer rates, acceptance rates	exiting unemployment	exiting unemployment
Search channels				
'friends and relatives'	positive effect	positive effect		
'advertisements'	positive effect (weak)		positive effect	
'asked employer'			positive effect	
'public employ-ment service'			positive effect	ambiguous
efficiency of the public employment service	low	low	low	low

All of the above-described studies have been using labor market data from industrialized countries. Still, no distinctive pattern of impact of search methods on labor market transitions can be discerned. This is certainly due to the small number of studies. Also, the structure of the labor markets and design of labor market policies differ for the different countries. Additionally, the samples used for the U.S. studies are not representative for overall U.S. labor market. The Youth Cohort data used by Holzer (1988) only comprises young workers aged 16 to 23, and the data used by Blau and Robins (1990) stems from the EOPP, an experimental program specially designed to assist low income workers, oversampling low and middle income families.
But all studies report that the public employment service has a low efficiency as showing relatively low hit rates compared to other search methods. Especially in the case of Portugal, job offers reported by firms are of bad quality, and numbers of reported vacancies are low. The poor performance of the public employment service seems to be common public opinion held by both employers and job searchers, thus leading to a self enforcing mechanism.

As none of the studies is considering a segmented labor market my aim is now to investigate the effect of different search channels on exit rates into employment split up into various occupational states providing different utilities to workers. My hypothesis is that different search channels lead to different occupational states and that part of the labor force exiting into informal employment or self employment could find formal jobs if they had more access to labor market information and assistance

on the application procedure. The study of segmented labor markets like the Brazilian one might be interesting for the analysis of labor search processes in industrialized countries, too. The segments of the Brazilian labor market may reflect the grouping of jobs with similar qualities that in industrialized countries are all collected under the one labor market state of formal employment.

3. Labor market structure and labor market policies in Brazil

Brazil is one of the countries with the highest rate of informal employment throughout Latin America. Unlike in other countries, the definition of informal employment in Brazil is rather simple: all workers being employed but not holding a labor card are classified as informally employed. In 1999, about 25% of the urban occupied labor force has been employed informally. About 45% have hold formal labor contracts and nearly all of the remaining economically active individuals are falling in the category 'self employed'. This labor market structure is by no means rigid and there is mobility of workers between sectors in both directions.

Employers issuing labor cards must offer their workers labor contracts complying with the labor laws. Formal workers profit from set wages and they can collect unemployment insurance benefits (if fulfilling the necessary conditions). Informal workers are not eligible to these rights, and in case of dismissal they lack resources to maintain living standards and perform an efficient job search. While contributions to the social security or the pension fund are deducted directly from the wages paid to formal workers, informally employed workers may contribute voluntarily, but more often they do not. The resulting lack of protection and resources in case of emergencies or old age often leads to impoverishment. It is therefore a major concern to increase formal employment and so to provide protection and access to security systems to a larger share of workers.

Although 'the informal sector' in Brazil is very inhomogeneous concerning the quality and payment of positions, it clearly offers relatively more low-paid and low-skill job opportunities. Individuals with a higher educational level are more likely to hold formal jobs. A large part of the economically active population working in low-paid sectors therefore remains without access to social protection, while the majority of those occupying better-paid positions find themselves protected by the labor law and is eligible to benefits. One of the main goals of labor market policies is therefore to increase the share of formal workers and to focus on the more indigent groups. Participation in the formal labor market segment can be enhanced by various policies. Improving the educational levels most certainly will lead to an increase of formal work in the long run. Forcing all employers and firms to contract their employees formally, as the law prescribes already, leads to a major control problem. Even countries like Germany with a highly regulated labor market and strict labor law enforcements lately found it hard to control for pseudo-self employment. For

countries with a geographical extension of Brazil and less administrative resources, this task seems impossible. Job placement or job matching could improve labor search processes by facilitating access to labor market information otherwise probably hard to obtain for unemployed workers. To design an efficient job-placement service, a careful analysis of possible focus groups is essential to maximize efficiency.

In Brazil, several public programs have been implemented to assist labor allocation. The only one of them active in the area of job-placement, the National System for Employment (SINE), has been created in 1974 to enhance active labor market policies. SINE agencies have been implemented in most of Brazilian cities, but presence in rural areas is still poor. Core-tasks of the SINE are the organization of qualification and training programs, providing assistance in job placement and job matching to the unemployed and administering parts of the unemployment insurance like the benefit payments. Evaluation of the program by the Brazilian Ministry of Labor (MTE, 1999) has shown very poor performance of most agencies and in all three main activities. A difficult funding concept is adding to that (SINE is financed from a federal fund, but money is first transferred to state funds before reaching the agencies, as the states are responsible for the administration of the SINE). Recently, SINE has been returning to the focus of interest. An improvement of services and infrastructure is discussed. Further more, there have been proposals to link the payment of unemployment insurance benefits to the proof of job search conduct and participation in qualification programs (Chahad 2000).

4. The data

The sample used is taken from a pool of all Monthly Employment Surveys (PME) collected by the Brazilian Institute for Geography and Statistics (IBGE) in 1999. The year 1999 has been chosen for being the most recent. Each monthly data set of the PME contains about 100.000 data observations collected in the seven principle metropolitan areas in Brazil, Belo Horizonte, Curitiba, Porto Alegre, Recife, Rio de Janeiro, Salvador da Bahia and Sao Paulo. The overall sample size is about 1.200.000.

A special methodology of data collection is implemented within the PME: The members of a household are interviewed in four consecutive months. This process is repeated after an interval of eight months. One quarter of the questioned households is newly entering the survey every month, replacing those that already have been questioned for four months. So, every monthly survey is composed of four different lots of households: one quarter is interviewed for the first time, one for the second, one for the third and the last one for the fourth time. This structure allows me to investigate workers transitions from one to another labor market state.

As estimating exit rates requires data of two consecutive months, three blocks of data have been constructed each combining two months of PME survey data. Blocks are composed as follows: January-February, June-July and November-December. This has been done to avoid the same individual entering the sample twice while investigating the probability of labor market reentry when being unemployed or inactive in the month before. Every block of data is treated as an independent one.

The PME distinguishes between the following occupational states: employed, self-employed, employer, searching and inactive. For my analysis, I further divide the employed into formally and informally employed. This can be easily done for Brazilian labor market data, as these two states are defined via the possession of a labor card. Only the formally employed hold a labor card and have access to unemployment insurance benefits. As the group of employers is very small and the frontier between 'self-employed' and 'employer' in a small-scale enterprise with only one or very few employees is diffuse, I join the groups of 'self-employed' and 'employer'. In contrast to most European labor market surveys, job search while being employed is not considered.

The PME questionnaire collects information about the used search method offering the following categories: 'asked employer', 'examination', 'agency or union', 'advertisements', 'asked friends and family' and 'other'. Unfortunately, the PME only allows entering one search method per individual. This may be a certain restriction, as individuals may report one search method but obtain a job by a second channel not reported.

The estimation model used to compute the impact of different search methods on exit rates has a sample size of 9915 observations, the model estimating the choice of channel depending on the former occupational state uses a sample of 7867 observations.

5. The econometric model

To measure the impact of being eligible for unemployment insurance benefits on the choice of search methods I compute the significance of the pre-unemployment occupational states on the choice of one of the above mentioned types of search channels: 'asked employer', 'examination', 'agency or union', 'advertisements', 'asked friends and family' and 'other'. These six categories of the response variable are categorical, e.g. they do not take numerical values. There is also no explicit order (like from best option to worst option) discernable. A type of model that is able to handle multinomial categorical response variables is the multinomial logistic regression. It also allows for multinomial categorical explanatory variables.

The multinomial logit model is a generalized form of the logit model for binary response variables (Christensen 1997, Chapt. 4.6). A usual notation for the standard logit model is:

$$log\left[\frac{p_i}{1-p_i}\right] = \alpha + \beta_i x_{ij} \tag{4.1}$$

for i = *1, …, n* individuals and *j = 1, …, k* explanatory variables, *α* being a constant, β_i the vector of coefficients and x_i the vector of explaining variables. The probability of an event occurring, p_i, is nonlinear not only in X_i but also in β_i, as can be shown by solving equation (4.1) for p_i:

$$p_i = \frac{1}{1+e^{-(\beta_i X_i)}} \tag{4.2}$$

Logit models linearize exponential probability functions by taking the logarithm.

Logit models for a multinomial response are formulated as follows:

$$log\left[\frac{p_{ij}}{p_{iJ}}\right] = \beta_j x_i \tag{4.3}$$

with p_{ij} being the probability that individual *i* falls in category *j*. As before, x_i is a column vector or matrix of variables characterizing individual *i* and β_j is a row vector of coefficients for category *j*, *j = 1, …, J*. Like logit models, multinomial logit models do not calculate direct probabilities of a worker moving into a certain occupational state but the 'odds of probabilities' (Allison 1999, chapt. 5). Unlike in the standard logit model, the multinomial logit model yields odds comparing probabilities of falling in a certain category with the probability of falling in a reference category p_{iJ}. In the following analysis, for example, these odds are the probability of being in a certain labor market state versus the probability of being in the reference labor market state. To simplify explanations, later on in the analysis of the results I will use the expression of 'odds of being in a certain occupational state' to express the above mentioned odds of probabilities. Solving (4.3) for p_{ij} yields

$$p_{ij} = \frac{1}{1+\sum_{j=1}^{J-1} e^{\beta_j x_i}} \tag{4.4}$$

To estimate the impact of former occupational states on the choice of search methods, equation (4.3) would read as the odds of the probability (Allison 1999, p.11) that individual *i* with characteristics given in the vector x_i chooses job search method *j*

to the probability of choosing search method J (the reference category, in this case category 'other'). The vector x_i contains the explanatory variables, here former occupational state, sex, position in the household and educational level.

The effect of the choice of a search method on the exit rates to different occupational states is measured in a similar way. The response variable is the new occupational state with its five categories 'informally employed', 'self-employed', 'searching' and 'inactive'. Explaining variables are the search channel chosen, sex, position in the household and education.

6. Results

The sample used to estimate the impact of the former labor market state on the choice of search methods contains data of 7867 individuals. Of these, 3891 workers (49.45 %) have held formal jobs before unemployment, 3082 (39.18 %) were informally employed and 894 (11.37 %) were self-employed.

The multinomial logit estimation results are displayed in Table 2. Numbers without brackets present the logit estimates: these are the log odds of the probability of using a certain search channel versus the probability of using an average search channel (see equation 4.3). Numbers in brackets are the odds of the probability of using a search channel versus the probability of using the average search channel, obtained by exponentiating the log odds (see equation 4.4). I have only calculated odds for significant log odds.

The category 'formally employed' shows a negative, highly significant impact on the probability to have asked 'friends and family' versus to have chosen the method 'other'. The odds has a value of 0.6796, indicating that individuals which have formerly hold a formal job are less likely to use the 'friends and family' channel compared to an average value of channels calculated. All other estimates of this category and all of the category 'informally employed' are not significant, neither are the estimates for 'sex' and 'head of household'. This may be due to the fact that most of the estimates for the explanatory variable 'education' are highly significant, leaving nothing left for the other explanatory variables to explain. The infinitely large estimates within the category 'no education' in Table 2 indicate quasi-complete separation: Table A in the appendix reveals that absolute numbers for individuals with no education are zero for the use of the channels 'examination' and 'other'. As examinations usually require good reading and writing abilities, it seems reasonable that persons without education will not choose this search method.

TABLE 2: The impact of the former occupational state, sex, household position and education on labor market transitions

	'asked employer' vs. 'other'	'examination' vs. 'other'	'agency or union' vs. 'other'	'advertisement' vs. 'other'	friends and family vs. 'other'
intercept	5.7510**	-1.3436	3.4909**	3.4085	4.3270**
former occup. state					
formally employed	-0.0055	-0.1930	0.2122	0.0731	-0.3862** (0.6796)
informally employed	0.1715	0.2010	0.0924	0.0319	0.2249
sex	-0.0730	-0.1127	0.0335	-0.0640	-0.0689
head of household	-0.1248	-0.0272	-0.0585	-0.0754	-0.0837
education					
no education	∞#	-1.7066	∞#	∞#	∞#
four years of prim. education	-0.6885* (0.5023)	0.2275	-0.9263** (0.3960)	-1.2012** (0.3008)	-0.4190
eight years of prim. education	-1.0759** (0.3410)	-0.1699	-0.8933** (0.4093)	-1.2233** (0.2943)	-1.0383** (0.3540)
high school completed	-2.1424** (0.1174)	0.3166	-1.8690** (0.1543)	-1.7585** (0.1723)	-2.3894** (0.0917)

Source: Instituro Brasileiro de Geografia e Estatistica (IBGE): Pesquisa Mensal de Emprego (PME)
Numbers without brackets are log odds coefficient estimates, numbers in brackets are odds of the probabilities of having chosen one of the five search methods listed in the title row of the table versus being 'searching'.
** significant at the 1%-level, * significant at the 5%-level, + significant at the 10%-level
# there is quasi complete separation in the 'no education' category of the explanatory variable 'education' (there are 0 observations for search method 'other' for individuals which were formally employed and had zero years of schooling).

To control for the quasi-complete separation and the high overall significance of 'education', I estimated the model without 'education'. As the results in Table 3 show, the significance pattern for the categories of 'former occupational state' and 'sex' does not change significantly. To be a 'head of household' now is weakly significant for 'asking employer' and 'asking friends and family'. Both effects are negative, indicating that heads of households are less likely to use these both channels.

Table 3: The impact of the former occupational state, sex, household position and education on labor market transitions

	'asked employer' vs. 'other'	*'examination' vs. 'other'*	*'agency or union' vs. 'other'*	*'advertisement' vs. 'other'*	*friends and family vs. 'other'*
intercept	4.0997**	-0.7543	1.9782**	1.8676**	2.6772**
former occup. state					
formally employed	-0.0866	-0.2112	0.1544	0.0364	-0.5017** (0.6055)
informally employed	0.1896	0.1616	0.1128	0.0367	0.2435
sex	-0.1540	-0.0726	0.0317	-0.0938	-0.1728
head of household	-0.2154^{+} (0.8062)	-0.0543	-0.1134	-0.1112	-0.2147^{+} (0.8069)

Source: Instituro Brasileiro de Geografia e Estatistica (IBGE): Pesquisa Mensal de Emprego (PME)
Numbers without brackets are log odds coefficient estimates, numbers in brackets are odds of the probabilities of having chosen one of the five search methods listed in the title row of the table versus being 'searching'.
** significant at the 1%-level, * significant at the 5%-level, + significant at the 10%-level

With the exception of the negative influence of former formal employment on the use of the channel 'friends and family' there is no further effect discernable. It seems that a certain former occupational state does not automatically lead to a determined search behavior. This result can be interpreted in two ways: First, it could be assumed that there is no difference in the effects of different search channels on the outcome of the search process. Each search method may lead to jobs in each of the different labor market segments. The only difference between search methods lies in their specific hit rate (producing offers that lead to acceptances) and different requirement of search effort, measured in time and money spent. A second assumption could be that different search methods do lead to jobs in different segments. If this assumption holds, the here found result pose a larger puzzle. Either the workers in this sample have found their former job by using a special channel, and if there are different channels for finding jobs in different labor market segments, then the involved individuals did not learn by their former search process. Or measurement errors are involved, as individuals can only report one search method within the PME questionnaire. So they may have reported one used method but found the job via another channel. Table A reveals that search patterns for former informally employed workers and those who held formal jobs do not differ in proportions, with the exception of a slightly higher use of the 'friends and family' channel by former informally employed individuals. The observation that there are

obviously no preferences in search channels related to the former occupational state could lead to the assumption that the choice of search channel does not matter for the search process outcome. This will be evaluated in the following part of this section.

The sample used to analyze the effects of the choice of search channels on the transition rates into different labor market states comprises 9915 observations. The difference in numbers to the sample used above results from the fact, that also persons enter into this sample that did not held a job before. Some absolute numbers characterizing this sample can be found in Table B in the appendix.

Table 4 presents estimation results for the impact of the search channels on the transition into different labor market states. The variables listed in the first column are observed in period *t*, the different categories of the response listed in the first row are observed in period *t+1*. Numbers without brackets present the logit estimates, being the log odds of the probability of being in a certain state versus the probability of being still searching (see equation 4.3). Numbers in brackets are the odds of the probability of being in a certain state versus the probability of being still searching obtained by exponentiating the log odds (see equation 4.4). I have only calculated odds for significant log odds.

The category of search channels used by most individuals of the sample has been 'asked employer' (66 %). In this category three of the four calculated coefficients show significant influence on the direction of transition. Together with the absolute numbers of workers, this channel seems to be a working one for all transitions except the one from 'searching' to 'self employed'. This seems reasonable, too, as persons choosing the latter occupational state will most probably not look for job opportunities by asking employers or would probably not define them as 'employer' but as 'friend and family'. Individuals using this search method also have odds of only 0.87 to move into 'inactivity' versus staying 'searching', if they did not find a job.

The category 'examination' shows only one significant effect regarding the transition from 'searching' to 'inactive': an individual using this search method in period 1 has odds of the probability of being inactive in period 2 versus searching of 1.89. This means the chance to be inactive rather then searching is about 90% higher. This may be explained by various facts. First, in Brazil, this channel is often used to recruit employees for the public sector, but these tests take place rather seldom and there are only few openings. 2000 applicants for five places is a common ratio. Second, the decision process takes some time and it seems natural that people will stay inactive while waiting for the results. From the absolute numbers it can be seen, that slightly more people using this channel and working in the second period transited into informal work than into formal work. This may have two reasons: First, within the PME workers may only report one of the six given categories of search methods. They may have chosen 'examination' as the most important one, as tests requires a

lot of preparation and formal paperwork. The PME does not control for further search activities. As search channels like 'friends and family' may be much more diffuse and require less effort, their use besides the 'examinations' is possible.

Table 4: The impact of search channels, education, sex and household position on labor market transitions

	formally employed vs. searching	***informally employed vs. searching***	***self employed vs. searching***	***inactive vs. searching***
intercept	-2.9734**	-1.7091**	-1,3161**	-0.2201**
search channels				
asked employer	0.4595* (1.5833)	0.3467** (1.414)	0.1199	-0.1431* (0.8667)
examination	-0.7938	-0.7882	0.2906	0.6383** (1.8932)
agency or union	0.2618	0.2920+ (1.3391)	-0.2996* (0.7411)	-0.3618** (0.6964)
advertisements	0.6244** (1.8671)	-0.0249	0.0506	-0.0845
asked friends and family	0.1926	0.4510** (1.5699)	0.2018	0.1597* (1.1731)
education				
no education	-1.1527* (0.3158)	0.2867	0.7933** (2.2107)	0.2911* (1.3379)
four years of prim. education	0.0315	0.2167* (1.2420)	0.3953** (1.4848)	0,1403* (1.1506)
eight years of prim. education	0.3729* (1.4519)	0.1111	-0.1174+ (0.8892)	0.1365** (1.1462)
high school completed	0.4219* (1.5248)	-0.1564* (0.8552)	-0.5431** (0.5809)	-0.1488** (0.8617)
sex	-0.0818	-0.0977** (0.9069)	-0.3499** (0.7047)	0.2963** (1.3449)
head of household	-0.1096* (0.8962)	-0.0489	-0.2780** (0.7573)	0.2964** (1.3450)

Source: Instituro Brasileiro de Geografia e Estatistica (IBGE): Pesquisa Mensal de Emprego (PME)
Numbers without brackets are log odds coefficient estimates, numbers in brackets odds of the probabilities being in one of the four occupational states listed in the title row of the table versus being 'searching'.
** significant at the 1%-level, * significant at the 5%-level, + significant at the 10%-level

Second, next to higher educated white-collar workers for the government and federal administration, there are also policemen and other workers requiring only low educational levels recruited by this way. Refused applicants for these positions may have less chances for other formal occupations and are likely to accept an informal job.

The next category, 'agency or union', is of special interest for the evaluation of active labor market policies as it concerns the public employment service, too. As already mentioned above, the public employment service in Brazil is performed by the SINE agencies. The principal aim of these agencies is the (re-) allocation of workers in the labor market. The unions provide a similar service on a smaller level concerning numbers of service posts and staff occupied in this area. The main goal is to increase the number of formally employed workers to extend access to unemployment insurance and to the social security system. Informal and self-employed workers may make contributions to the latter voluntarily, but their share of contributions is very small. To accomplish their goal, the task of the SINE agencies is to collect information about vacancies and to help workers to apply for these positions.
Still, the odds for moving into formal work versus searching are not significant for this type of search channel. The odds of probabilities for transition into informal work are 1.34, but showing significance only at the 10%-level. One explanation could be that employers post formal job offers at the SINE in the beginning but later on renegotiate this state with the worker. A second factor to be considered is the number and quality of jobs posted at the agencies. Most of them are low paid, therefore attracting more unskilled workers to use the agencies. Although there are reported increases in job offers posted, the level of offers posted is rarely transcending the 5%-level of overall job vacancies. This may lead to a self-enforcing process: Bad performance of the SINE leads to adverse selection and attracts more 'hopeless' cases and proportionally more low skilled workers. This leads to more low quality and hard-to-fill job offers from the employers' side. The low significances for both formal and informal work are in line with the sparse evaluations of the SINE agencies which all state low efficiency. On the other hand, the odds of being self employed or inactive in period two when using 'agency or union' are both significant and smaller than one: both are only about two thirds of the odds of remaining searching. The small odds indicate that individuals rather stay searching than exit into self-employment. From this, I conclude that people recurring to this search channel are looking for work as employees and do not consider self-employment as a possible occupational state. This is supported by the similar and very significant odds for staying 'searching' instead of moving into 'inactivity'.

The category 'advertisements' is a search channel apt to lead to formal employment, the odds of being 'formally employed' are 1.87 times the one of staying 'searching'. the estimate is highly significant which is even more interesting as the estimate for the odds of 'informally employed' to 'searching' is far from showing any significance (p-value = 0.8956). Advertised job offers are certainly addressed to individuals who

are able to read and likely to buy and read newspapers or have access to the internet. About half of the economically active population in Brazil is holding informal jobs and firms are rarely prosecuted for not providing labor cards as it is difficult to control them. Although a large part of informal jobs are located in the low-wage and low-skill levels, there remains still a considerable amount of better-paid informal positions requiring higher educational levels. There seems to be no plausible reason why firms looking for higher-level informal employees should not look for them using the media.

The category 'friends and family' is also a widely used one (14.88 %). This may result mainly out of the fact that it needs little effort of time and resources. On the other hand side, this informal search channel is rather unspecified. It is therefore not very surprising that the only highly efficient estimate in this section is the one for the odds of being 'informally employed' of 1.57 to staying 'searching'. The only other significant coefficient in the category is the one for 'inactive' versus 'searching' with odds of 1.17 at a significance level of 5%. Asking friends and family is a channel most likely to lead to jobs in the social environment of the searching worker. It is also very likely to lead to low-skill jobs. Like the category 'agency or union', this search method may be one of the last resort: likely to be performed when all other channels did not result in work, when work has to be found immediately or when there are no financial resources to use other channels. The reasons why it is used by far more than the also free service of the agencies may be the even lower level of time and mobility required, the lack of an agency at the location of the individual and the rather bad reputation of the efficiency of the agencies. Another fact to be considered is the social binding still existing to a high degree within families: if members of a family get unemployed and can not find a job, the probability of being employed in the business of a relative is quite high. These jobs are often very low or even unpaid. But if the individuals report 'working', they will not show in the 'unemployed' or 'searching' categories of the PME surveys. The Statistical Institute of the Unions (DIEESE 1999) calculates unemployment and underemployment rates for six metropolitan areas considering these circumstances and reports a rate of about 20 % of underemployment, which mainly occurs in informal occupational states.

Of all the search channels, only 'asked employer' and 'advertisements' showed any significance for a transition into formal work versus staying 'searching'. 'asked employer' and 'asked friends and family' proved to be highly significant for the odds of being 'informally employed' versus 'searching'. Using 'agency or union' also showed a slight significance for this occupational state. None of the instruments showed any importance for moving to self-employment. An interesting observation is, too, that the odds for moving to 'inactivity' for both channels 'asked employer' and 'agency or union' are smaller than unity and therefore indicate that workers using these channels are more likely to remain 'searching'.

Other explanatory variables have been considered in the estimation. Of them, the most significant are shown in Table 4. Namely, they are 'education', 'sex' and 'household position'. Further, 'age' and the 'average household income' have been considered but the did not show significant impact. The variable for 'education' follows the expected patterns, as low educational levels lead to higher odds for being informally or self employed, and individuals with higher education are more likely to move to formal positions. The latter are also less likely to transit into 'inactivity' versus searching.

7. Conclusion

The analyzed data reveals two facts: first, there seems to exist no relation between the former occupational state and the search method chosen to look for the next job. Second, effects of different search channels on exit rates into different occupational states can be distinguished. The channel 'asked employer' is significant both for the exit into formal and informal work. 'Advertisements' shows an effect only on the transit rate into formal employment, and asking 'friends and family' shows no effect at all for formal work, but is highly significant for exiting into informal employment or inactivity. The use of the public employment service shows a weak positive impact on moving into informal work and negative effects for the transition into self-employment or inactivity.

These results show that most of the job searchers in Brazil recur to channels that involve directly asking either an employer or friends and family. Search channels that provide collection of information on vacancies are only used by a small share of workers. There is potential of the public employment service to improve the allocation of workers by setting incentives for employers to post their openings with the agencies. Plans to turn the SINE agencies the only place for unemployed workers to collect their unemployment insurance benefits (instead of getting them at the local bank office) would bring more workers into contact with the agencies and so increasing the share of higher skilled workers.

Until now, I have not considered the effect of the unemployment spell on the choice and efficiency of search methods. The estimation of duration dependent models will be the next step in this research project. Also, up to now, I have not paid any attention to the quality of the new job obtained. In future research, I will use the former and actual wages as proxies to evaluate the impact of the different search channels on the efficiency of the search process.

Finally, one other result of this study should not be forgotten: education has a highly significant impact in both regressions performed. In the long run, the best instrument to improve the share of formal work will be the improvement of the educational system and the access to education in Brazil. The improvement of the SINE agencies

will be just short time curing of symptoms of the bad performance of the educational system and the unequal distribution of access to good education.

Appendix

Table A: Cross tabulation of 'former occupational state', 'education' and 'search method used'

		search methods					
former occup. state	educational level	asked employer	examination	agency	advertisement	friends and family	other
formally employed	no education	56	0	3	2	7	0
	4 years of primary educ.	479	1	51	28	28	5
	8 years of primary educ.	933	2	151	84	158	12
	high school	1000	8	164	150	147	25
	superior educ.	187	8	43	65	25	9
informally employed	no education	46	0	2	2	26	0
	4 years of primary educ.	353	1	26	4	150	1
	8 years of primary educ.	830	2	90	4	217	4
	high school	684	5	102	92	119	20
	superior educ.	152	9	22	24	14	7
self employed	no education	31	0	2	2	16	0
	4 years of primary educ.	164	0	8	9	53	0
	8 years of primary educ.	211	0	23	18	81	2
	high school	114	4	17	18	35	5
	superior educ.	46	1	5	14	12	3

Source: Instituro Brasileiro de Geografia e Estatistica (IBGE): Pesquisa Mensal de Emprego (PME)

Table B: Cross tabulation of 'momentary occupational state', 'education' and 'search method used'

		search methods					
momentary occup. state	educational level	asked employer	examination	agency	advertisement	friends and family	other
formally employe	no education	1	0	0	0	1	0
429	4 years of primary educ.	43	0	4	0	4	0
4.32 %	8 years of primary educ.	104	0	15	19	18	1
	high school	128	1	18	14	16	1
	superior educ.	27	0	2	8	4	0
informally employed	no education	20	0	2	1	5	0
	4 years of primary educ.	149	0	13	4	38	0
1023	8 years of primary educ.	275	1	37	15	74	1
10.32 %	high school	229	1	39	21	35	4
	superior educ.	37	0	8	9	3	2
self employed	no education	37	0	4	1	17	0
	4 years of primary educ.	210	0	11	11	54	1
972	8 years of primary educ.	224	2	22	26	71	3
9.8 %	high school	130	2	29	22	30	4
	superior educ.	35	3	4	10	7	2
inactive	no education	41	0	6	2	21	0
	4 years of primary educ.	351	0	27	25	120	3
3390	8 years of primary educ.	850	3	111	75	230	14
34.19 %	high school	811	26	127	117	177	18
	superior educ.	135	18	13	34	28	7

searching	no education	57	0	1	4	15	0
	4 years of primary educ.	419	2	47	28	118	5
4101	8 years of primary educ.	989	3	137	75	192	7
41.36 %	high school	1049	15	190	151	165	32
	superior educ.	237	11	54	51	32	15
	search methods used in %	66.44 %	0.89 %	9.29 %	7.29 %	14.88 %	1.21 %

Source: Instituro Brasileiro de Geografia e Estatistica (IBGE): Pesquisa Mensal de Emprego (PME)
Numbers in the first column are absolute numbers of the labor market states and their corresponding percentages.

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