



Job search in thick markets

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ABSTRACT

I analyze empirically the effects of urban and industrial agglomeration on both search behavior and the efficiency of matching. The analysis is based on a unique panel data set from the Italian Labor Force Survey micro-data, covering 520 randomly drawn Local Labor Market Areas (66% of the total) over the four quarters of 2002. I compute transition probabilities from non-employment to employment by jointly estimating the probability of searching and the probability of finding a job conditional on having searched. I then test whether these are affected by market size, industrial variety and/or industry specialization. The main results indicate that market size and industry-specialization raise job seekers' chances of finding employment (conditional on having searched), while industrial variety is not significantly different from zero. Finally, the effect of agglomeration on non-employed individuals' search behavior cannot be significantly distinguished from zero.

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1. Introduction

In spite of the recent developments of the theoretical literature on urban search and matching models, the amount of empirical work examining the relationship between agglomeration and search is surprisingly scarce. The applied economic geography literature has generally focused on the impact of agglomeration on productivity, wages or employment growth (see Rosenthal and Strange (2004) for a review), rather than on the process of job search and matching.¹ The first empirical papers in the search and matching framework with a local dimension, on the other hand, were mainly directed at correcting the regional aggregation bias, arising when estimating the degree of returns to scale in the matching function without taking into account the interaction of local labor markets (see, for instance, Coles and Smith (1996) and Petrongolo (2001)). More recently, Petrongolo and Pissarides (2006) decompose individual job finding rates into the product of the probability of receiving a job offer and the probability of

accepting it. They find that market size has a positive impact only on the latter (proxied by the mean of the wage offer distribution), although reservation wages rise to fully offset the increase in acceptance rates. Thus, market size does not influence job finding rates on the whole.

In this paper I test whether agglomeration affects more the effort individuals devote to job seeking or their employment chances per unit of search (conditional hazard rates), by decomposing unconditional transitions to employment into the product of the probability of searching and the probability of obtaining employment conditional on having searched.² Knowing whether the shifts in the matching function are due more to technological advances in matching or to individuals' search choices is important, because local hazard rates and job seekers' propensity to search are likely to be differently affected by agglomeration externalities (see Section 2). For instance, if agglomeration raised conditional hazard rates to the same extent that it lowered individuals' search propensity (or vice versa), we would not find any effect on unconditional hazard rates.

While the impact of agglomeration is usually studied *either* at the city or at the industry level, I am able to compare the magnitude of the effect of both market size and industrial agglomeration on job seekers' probability of finding employment. I measure the

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¹ A few papers use a search–matching framework to specifically test agglomeration effects, but they generally focus on the productivity gains induced by the greater degree of positive assortative matching in the most agglomerated areas (see Wheeler, 2001; Andersson et al., 2007) rather than on hazard rates or job search. Patacchini and Zenou (2006) use a search–matching model to analyze the impact of labor market tightness and living costs on the average NUTS3-area search intensity level (and find a positive impact for both), but they do not test agglomeration effects.

² Like Peracchi and Viviano (2004), although these authors do not estimate agglomeration effects. Note that the majority of the literature analyzes unconditional transitions to employment.

Table 1
Mobility attitudes.

<i>Acceptable job location by unemployed individuals</i>			
Own municipality	Daily commuting distance	Anywhere in Italy	Anywhere
37.0	41.6	16.5	4.9
<i>Job location of employed individuals</i>			
Own municipality	Other municipality in same province	No fixed place	Other province or abroad
61.2	26.6	4.7	7.5
<i>Presence in the household at the time of interview</i>			
Present	Absent for less than 1 year	Absent for more than 1 year and searching	Absent for more than 1 year and non-searching
98.3	0.5	0.2	0.9

Source: Author's elaboration on LFS data.

effects of agglomeration with three variables at the local labor market (LLM) level: market size, industry specialization and industry diversity. I proxy the former with LLM population level, the latter with the inverse of an Herfindal index of LLM sectoral employment concentration, and industry specialization with either an industrial district (ID) or a super-district (SID) dummy. IDs are LLMs characterized by a high presence of spatially concentrated small- and medium-sized manufacturing firms (see Section 3 and de Blasio and Di Addario (2005) for further details). SIDs are a subset of IDs with a higher incidence of small- and medium-sized manufacturing employment (see Cannari and Signorini, 2000). Most ID and SID enterprises are specialized in one or few stages of a main manufacturing production; one or more firms of the cluster assemble the parts produced by each subcontractor. This system enables the district to achieve economies of scale (external to the single firm but internal to the cluster) that would not be possible to reach otherwise. The advantage of measuring industrial specialization with ID dummies is that: (i) they are officially devised by the Italian Institute of Statistics (ISTAT) and, thus, are reliable; (ii) they partition the entire Italian territory; (iii) they are based on LLMs, and thus are potentially reproducible in the countries where LLMs have already been singled out (e.g. the UK, France, etc.); (iv) they are comparable to the US Cluster Mapping Project (see Porter, 1990, 1998); (v) they are an entity recognized by the central and local governments, and have received specific subsidies over time.³ The results obtained in this paper might then be useful to assess and to inform policy making.

To my knowledge, the impact of agglomeration on individuals' search propensity and conditional hazards to employment has not been analyzed before. Including agglomeration among regressors is important: the probability of the average agent finding a job conditional on having searched falls from 53.6% points (when not including agglomeration variables) to 52.5% points. Thus, computing conditional hazard rates without controlling for agglomeration would overestimate the true effect.

Italy is a good country to study agglomeration-induced effects because it has a very limited mobility of labor across LLMs. LLMs can therefore be considered as separated markets to a large extent, minimizing the potential problem of spatial sorting into the most

agglomerated markets (for more details see Sections 3.2, 6.2, and 6.3). Indeed, in Italy even the unemployed job seekers, who are generally the most likely to migrate (Dohmen, 2005), are unwilling to move out of their town of residence to find a job. Table 1 provides evidence on the limited mobility of labor in Italy: up to 80% of the non-employed individuals who look for a job are ready to accept an offer only in their LLM of residence, and almost half of them do not intend to seek employment out of their own municipality.⁴ The table indicates that just 1.1% of the non-employed persons of working age have been absent from their household of residence for more than 1 year and that just 0.2% of the interviewed individuals were also looking for a job. Moreover, none of the interviewed people changed municipality of residence between two consecutive quarters in 2002.⁵

Overall, my findings indicate that agglomeration affects job seekers' chances of employment: a 100,000-inhabitant increase in LLM population raises job seekers' probability of employment by 3.7–3.9% points (up to a 1,900,000-inhabitant threshold), and living in an ID or in a SID increases the probability of finding a job by, respectively, 3.8% and 5.6% points. Conversely, the effect of industrial diversity on employment chances and the impact of any of the agglomeration variables on individuals' search behavior cannot be significantly distinguished from zero. These results are robust to the use of alternative econometric models (bivariate probit with sample selection, probit and linear probability models).

Since selected migration is not the only sort of bias potentially plaguing agglomeration studies, because even in the absence of labor mobility there might be omitted variables correlated to both the agglomeration proxies and the error term of the hazard rate equation, I also run instrumental variable estimations. I instrument agglomeration with three sets of variables at the LLM level: population size in 1861, seismic hazard, and 13 soil-type characteristics. Results confirm the existence of agglomeration externalities improving the efficiency of matches: adding 100,000 inhabitants to the average LLM increases the chances of employment by 1.4–1.6% points, and residing in a SID raises the probability of finding a job by 4.4% points. However, in the IV regressions the ID coefficient is not statistically distinguishable from zero, possibly because the large increase in standard errors with respect to OLS does not enable its precise estimation.⁶

The paper is structured as follows. The next section presents the theoretical framework, Section 3 the dataset, the variables and the descriptive statistics. Section 4 reports the empirical model, Section 5 discusses the estimation results and Section 6 the robustness checks. Finally, the last section concludes.

2. Agglomeration, search propensity and conditional hazard rates

Standard search and matching models (for instance, Pissarides, 2000), which are used to analyze the process of job formation in the presence of labor market frictions, are usually taken to operate

⁴ This is a rather impressive figure, since on average Italian municipalities are quite small (37 square kilometers). In Italy there are about 8100 municipalities, amounting to an average of 10.3 municipalities per LLM.

⁵ This result is supported by Di Addario and Patacchini (2008), who find that none of the about 1500 employees present in the panel section of the biannual Bank of Italy's Survey of Household Income and Wealth changed residence between 1995 and 2002. Labor immobility might be partly due to people's preferences for staying close to their families. Dahl and Sorenson (2010) find that even engineers and scientists, who are among the most mobile workers, prefer looking for jobs close to their current homes, their parents, and high school and college classmates.

⁶ There is no clear theoretical explanation of the different result on IDs and SIDs. While the SID subset has been singled out of IDs on the basis of statistical criteria (namely, firm size and sector concentration), it would be important to study more in detail whether it also differs from IDs along other lines (e.g. propensity to innovate, product quality, organization of the production process, etc.).

³ Italy has been providing subsidies to promote and sustain IDs since the 1990s. The Budget Law for the year 2006 (22nd December 2005; articles 366–372), for instance, establishes that firms belonging to IDs can choose to pay taxes through the District as an institution (rather than individually). In this case, the District is also entitled to provide private banks with guarantees to lower the capital adequacy that each firm has to fulfil in order to meet the Basle requirements when applying for a loan.

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