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Neighborhood effects on unemployment? A test *à la* Altonji

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ABSTRACT

This paper aims to test for the influence of neighborhood deprivation on individual unemployment probability, in Lyon (France). We estimate a bivariate probit model of unemployment and location in a deprived neighborhood. Our identification strategy is twofold. First, we instrument neighborhood type by spouse's workplace and gender of the children in the household. Second, we use the methodology proposed by Altonji et al. (2005), which in our case consists of hypothesizing about the correlation between the unobservables that determine unemployment and the unobservables that influence selection into neighborhood types. Our results show that the effect of neighborhood deprivation is not significantly different from zero in the bivariate probit with exclusion restrictions. We show also that correlation among the unobservables as low as 6% of the correlation of observables is sufficient to explain the positive neighborhood effect observed when endogeneity is not taken into account.

1. Introduction

A rapidly growing stream of research in the social interactions literature is focusing on neighborhood effects, that is, the impact of neighbors' characteristics and behaviors on individual socioeconomic outcomes (Durlauf, 2004). The theoretical and empirical evidence suggest that interactions with neighbors are likely to affect, in particular, individual labor-market outcomes through peer effects and role models in the human capital acquisition process (Arnott and Rowse, 1987; Wilson, 1987; Bénabou, 1993), attitudes towards work (Wilson, 1987), and dissemination of information on job opportunities, especially for low-skilled workers who often resort to informal search modes such as personal contacts (see Selod and Zenou, 2006; Zenou, 2008 for theoretical models). As a consequence, the percentage of employed individuals in a neighborhood may influence other residents' access to job opportunities (Topa, 2001; Bayer et al., 2008). Finally, the stigmatization of deprived neighborhoods may lead employers to discriminate against workers on the basis of their residential location (Zenou and Boccard, 2000).

Measuring neighborhood effects raises the issue of location choice endogeneity, which generates correlated effects (Moffitt, 2001; Durlauf, 2004). It has for long been recognized in urban economics that individuals with similar socioeconomic characteristics, labor-market outcomes and unobservable traits tend to sort themselves into certain areas of the urban space. Thus, studies that do not control for endogeneity of social group will produce biased results (Krauth, 2006). Inadequate correction for this bias has been proposed as an explanation for wide divergence in the results from empirical studies (Ginther et al., 2000), and has become one of the major focuses of recent research on neighborhood effects.

This paper aims to test for the existence of neighborhood effects on unemployment focusing on the issue of endogeneity (i) by accounting for the sorting into neighborhoods based on observed and unobserved characteristics, and (ii) by using two different and complementary identification strategies. The present study uses French data. Several theories highlighting the impact of neighborhood composition on individual labor-market outcomes have been proposed in the context of U.S. metropolitan areas, and are supported by numerous empirical studies. In contrast, empirical evidence for Europe is scarce. Exceptions include Fieldhouse (1999) and Bolster et al. (2007) for the UK, Dujardin et al. (2008) for Belgium, Andersson (2004) and Galster et al. (2008) for Sweden.[1] In France, neighborhood effects have been studied alongside

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[1] We consider only studies of neighborhood effects on labor-market outcomes. Note however that, in the European context, including France, other types of outcomes have been highlighted.

spatial mismatch effects for Paris (Gobillon and Selod, 2007) and Bordeaux (Gaschet and Gaussier, 2004). However, these French studies do not perfectly deal with the endogeneity of neighborhood choice, which is the main focus of the present paper.

In what follows, we estimate the impact of neighborhood deprivation on individual unemployment probability, in Lyon, the second largest city in France. In order to take account of threshold effects, as suggested by Crane (1991), in the relationship between neighborhood deprivation and individual outcomes, we classify neighborhoods as deprived or not, on the basis of a data analysis step. We estimate a simultaneous model of unemployment and neighborhood type using two different identification strategies.

The first involves identification based classically on exclusion restrictions. We use spouse's workplace and gender mix of household's children as instruments for neighborhood type. These instruments are discussed and their relevance and validity thoroughly tested. The second strategy follows Altonji et al. (2005), and involves estimation of a simultaneous probit model with no exclusions but with constraints imposed on the correlation of the error terms, which is equivalent to hypothesizing about the intensity of selection into deprived neighborhoods due to unobservables. These assumptions enable to place bounds on the neighborhood effects on unemployment.

The results from a naïve probit model that does not control for location endogeneity, show that living in the most deprived neighborhoods in Lyon (25% of the city) significantly increases the probabilities of being unemployed. However, the effect of neighborhood deprivation vanishes if we take account of endogeneity, whatever the identification strategy used: the results for the instrumental variables (IV) point to the absence of neighborhood effects on unemployment; Altonji et al.'s method shows that only a small degree of correlation between the unobservables (6% of the correlation on observables) is sufficient to explain the positive neighborhood effect observed when endogeneity is not accounted for. We provide robustness checks based on a continuous index of neighborhood deprivation, using both IV and Altonji et al.'s method. Again, dealing with endogeneity cancels out the existence of neighborhood effects on unemployment.

To our knowledge, this application of Altonji et al.'s method to the estimation of neighborhood effects is novel, the only similar example being Krauth (2009). We believe Altonji et al.'s method is particularly relevant in our case where IV estimates point to a null effect. Indeed, as we show below, we do not need to make the extreme hypothesis of equal selection based on unobservables and observables, as a lower level of selection on unobservables leads to the absence of neighborhood effects on unemployment.

The paper is organized as follows: Section 2 discusses the issue of endogeneity and presents the various identification strategies proposed in the literature; Section 3 describes the database and provides overview of the spatial structure of Lyon; Section 4 presents the econometric model and identification strategies; Section 5 presents the results and Section 6 concludes.

2. Identification of neighborhood effects

In a widely cited article, Manski (1993) identifies three types of mechanisms that explain why individuals belonging to the same group tend to behave similarly: (i) endogenous effects whereby individual behavior is influenced by the average behavior of the group; (ii) contextual effects whereby individual behavior is influenced by the average characteristics of the group; and (iii) correlated effects, whereby similar group behaviors are the result of exposure to common unobserved factors or non-random group selection.

The goal of contemporaneous work on social interaction effects is to disentangle these different mechanisms. Indeed, social interaction effects, of which neighborhood effects are a special case defined on a geographical basis, consist of endogenous and contextual effects, each of which has different policy implications (Moffitt, 2001; Glaeser and Scheinkman, 2001). Correlated effects, if not corrected for, bias the estimates of endogenous and contextual effects (Durlauf, 2004). Correlated effects arise because individuals are not distributed randomly across social groups or across neighborhoods; on the contrary, individuals self-select into neighborhoods on the basis of individual characteristics, which are likely to influence outcomes and behaviors. Some of these characteristics are observed and can be controlled for; others are unobservable to the researcher (e.g., motivation or abilities). This generates a non-zero correlation between the unobserved determinants of an outcome and unobserved determinants of belonging to a neighborhood, which is likely to bias estimates of the neighborhood effect. Recent studies have highlighted the reduction in estimated social interaction effects after correcting for such biases (Ginther et al., 2000; Krauth, 2006).

Against this background, the objective here is to estimate the effect of neighborhood deprivation on unemployment, that is, the combined contextual and endogenous effects, while controlling for the bias due to correlated effects. We consider correction for self-selection into neighborhoods as a precondition for the estimation of neighborhood effects and leave the distinction between endogenous and contextual effects for future research.

Various strategies have been proposed in the empirical literature to correct for non-random group selection in neighborhood effect studies. Quasi-experimental situations, in which households are moved from one neighborhood to another through exogenous government intervention are seen as providing fairly reliable estimates of neighborhood effects. The best-known examples of such interventions are the Gautreaux Program and the Moving to Opportunity Program (see Oreopoulos, 2003, for a review). While such studies have been able to show the existence of neighborhood effects on the behaviors and outcomes for teenagers, neighborhood effects for adult labor-market outcomes are of much lower intensity, if any (Kling et al., 2007; Katz et al., 2001). Edin et al. (2003) and Åslund and Fredriksson (2009) use governmental placement of immigrants across municipalities in Sweden to identify the effect of living in an ethnic enclave on labor-market outcomes. Their results confirm the importance of controlling for group selection, as estimates that take into account sorting exhibit important differences—and even different signs—compared to those that do not.

Another strand of the literature estimates neighborhood effects through fixed-effects models using longitudinal data, which enables control for individual unobserved characteristics that are constant across time (Weinberg et al., 2004; Galster et al., 2008). For example, Weinberg et al. (2004) find that hours worked are influenced by neighborhood characteristics but comparison of results with and without fixed-effects suggests that naïve estimates are strongly overestimated. When precise residential location is known, it is possible to identify neighborhood effects using two nested definitions of a neighborhood. Identification then rests on the assumption that the composition of a very small neighborhood is exogenous after conditioning on larger neighborhoods (Bayer et al., 2008; Grinblatt et al., 2008).

Finally, there are instrumental variable techniques, which involve replacing the neighborhood characteristic with a set of variables that are correlated with the neighborhood characteristic but not with the unobserved determinants of the outcome. Finding a good instrument is a difficult task. Many existing studies use instruments defined on an aggregate basis, generally city-level variables. For example, Foster and McLanahan (1996) use city-level labor-market conditions as the instruments for neighborhood dropout rates in their study of education outcomes, and Evans et al. (1992) use a similar strategy. Cutler and Glaeser (1997) study the influence of segregation at city-level on education and income for blacks, using public finance and topographic characteristics as instruments. However, the use of these instruments has been criticized since it is not clear how they account for neighborhood effects within cities (Durlauf, 2004) and it is likely that aggregate-level instruments actually increase the biases (Rivkin, 2001). Instruments defined at the individual level have been used in other research contexts. For example, Currie and Yelowitz (2000) and Goux and Maurin (2005)