DOCUMENT
DE TRAVAIL
N° 605

DIVERSITY AND EMPLOYMENT PROSPECTS: NEIGHBORS MATTER!

Camille Hémet and Clément Malgouyres

October 2016

BANQUE DE FRANCE
EUROSYSTÈME

DIRECTION GÉNÉRALE DES ÉTUDES ET DES RELATIONS INTERNATIONALES

DIRECTION GÉNÉRALE DES ÉTUDES ET DES RELATIONS INTERNATIONALES

DIVERSITY AND EMPLOYMENT PROSPECTS: NEIGHBORS MATTER!

Camille Hémet and Clément Malgouyres

October 2016

Diversity and Employment Prospects: Neighbors Matter!

Camille Hémet [*] Clément Malgouyres [†]

[*]École Normale Supérieure (ENS), Paris School of Economics (PSE)
Contact: camille.hemet@psemail.eu, Webpage: http://sites.google.com/site/camillehemet/
[†]Banque de France
Contact: clement.malgouyres@banque-france.fr

We are grateful to Yann Algan, Bruno Decreuse, Nina Guyon, Jordi Jofre Monseny, Alan Manning, Thierry Mayer, Fabien Moizeau, Hillel Rapoport, Matthieu Solignac, Maxime To, Javier Vásquez Grenno and Yves Zenou for insightful comments and discussion. We are deeply indebted to two anonymous referees whose comments helped us substantially improve the paper. We also thank participants at the following events for their remarks: Workshop on Cultural Diversity (Paris 1 Panthéon-Sorbonne), 10^{th} UEA meeting, 2014 SOLE meeting, IEB seminar, National University of Singapore seminar, PSE Applied Economics lunch seminar, 62nd annual meeting of the French Economic Association (AFSE) and WZB workshop on Ethnic Diversity. The research leading to these results has received funding from the French National Research Agency (Contract reference: ANR-16-FASI-0001-01) and by the OSE Labex. This work is finally supported by a public grant overseen by the French National Research Agency (ANR) as part of the "Investissements d'avenir" program (reference : ANR-10-EQPX-17 - Centre d'accès sécurisé aux données - CASD)

Résumé

Cet article vise à déterminer dans quelle mesure et par le biais de quel mécanisme le niveau de diversité d'un zone géographique affecte la trajectoire sur le marché du travail de ses habitants. En utilisant les données de l'Enquête emploi française, nous mesurons la diversité à deux niveaux d'agrégation géographique: le quartier (niveau local) et le bassin d'emploi (niveau agrégé). La correlation entre diversité et taux d'emploi varie selon l'unité considérée: elle est négative au niveau du quartier et positive au niveau du bassin d'emploi. Nous prenons en compte l'endogéneité du lieu de résidence de deux manières. Nous utilisons des variables instrumentales standards ("shift-share") afin d'instrumenter pour la diversité agrégée. L'effet positif de la diversité au niveau agrégé est réduit à zéro une fois que la diversité est instrumentée, suggérant ainsi que la corrélation positive reflétait principalement une auto-sélection des immigrés dans les bassins d'emploi dynamiques. Deuxièmement, concernant la diversité au niveau local, nous adoptons une stratégie developpée par Bayer *et al.* (2008) qui utilise le tr'es fin niveau de localisation géographique des données. L'effet négatif au niveau local subsiste. Nous montrons également que la diversité en termes de nationalités (un proxy pour la diversité culturelle) a un effet plus net que la diversité en termes des origines nationales des parents (un proxy pour la diversité ethnique). Ces résultats révèlent que la diversité locale puisse agir comme une barrière à la communication entre habitants, empêchant la transmission locale de l'information au sujet des emplois.

JEL Classification : J15, J60, R23, Z13

Mots clés: diversité, emploi, effets de quartier

Abstract

This paper aims at determining whether and how the level of origins' diversity of a community affects its members' employment prospects. Relying on detailed data from the French Labor Force Survey, we measure diversity at two geographic levels: the neighborhood and the local labor market. The correlation between diversity and employment varies accordingly: it is negative at the former level but positive at the latter level. We then tackle the endogenous location selection issue in two ways. First, we rely on a standard instrumental variable approach to deal with diversity at the local labor market level, and propose a new instrument: diversity in the public housing sector. After correcting for endogeneity, the positive effect of diversity at this level is driven down to zero, revealing that it was mostly due to self-selection. Second, regarding neighborhood diversity, we adopt the strategy developed by Bayer *et al.* (2008) which takes advantage of the very precise localization of the data. The negative effect of diversity on employment at the neighborhood level is reinforced. We also show that diversity in terms of nationalities (a proxy for cultural diversity) matters more than diversity based on parents' origins (a proxy for ethnic diversity). These results reveal that local diversity may act as a barrier to communication, preventing job information transmission, and hence reducing employment prospects.

JEL Classification : J15, J60, R23, Z13

Keywords: diversity, employment, neighborhood effects

Non technical summary

Western countries are facing intensified flows of immigration due to trade development and economic integration. Therefore, they have to cope with increasingly mixed populations. Following the recent EU enlargement process and the current massive immigrants' inflows, this feature is particularly salient in the European Union, where the economic and social implications of higher heterogeneity are becoming a central issue. In particular, public opinion is generally hostile to immigrants that are often perceived as a threat to job security and wages, although this is not clear from empirical research.

In contrast to the large literature examining the economic impact of immigration on natives, papers looking at the labor market effect of diversity per se are scarce. Using US cities data, Ottaviano and Peri (2006) jointly estimate a wage and a rent equation and find that diversity is positively associated to both variables. They conclude that diversity has a net positive impact on US-born workers' productivity. In a similar setting, Prarolo et al. (2009) replicate these results for European regions. To the best of our knowledge, these are the only papers in the diversity literature dealing with labor market outcomes, although not directly with employment.

In this paper, we intend to fill this gap by assessing the impact of local diversity on individuals' employment prospects. We ask the following question: to what extent people living in heterogeneous neighborhoods have different employment probabilities than those living in more homogeneous areas? This topic is relevant given rising level of diversity in most Western countries.

At the micro level, if different ethnic or cultural groups are hermetic to each other, in the sense that no interaction takes place across groups, then diversity can act as a barrier to communication and in particular to job information transmission. Given the importance of personal networks in the job search process (see Ioannides and Datcher Loury, 2004), diversity could reduce the chance of finding a job. On the other hand, if communication across groups is not an issue, then mixing people conveying non-redundant pieces of information (e.g. due to different backgrounds) can certainly improve employment prospects.

At a more aggregate level, diversity can affect employment probability through its impact on productivity, leading to ambiguous effects as well. On the bright side, diversity can be beneficial to productivity due to complementarity in workers' skills (see Lazear, 1999; Alesina and La Ferrara, 2005). On the downside, heterogeneity can hinder productivity by preventing social capital formation (Coleman, 1988).

So, the effect of diversity on employment is theoretically ambiguous. We investigate this question empirically using detailed French employment data that allow us to disentangle the neighborhood (local) and labor market (aggregate) effects of diversity. Moreover, we measure diversity using several definitions of origins and at various geographic levels, so as to understand the mechanisms lying behind the diversity-employment relationship. Finally, we adopt several identification strategies in order to bypass the endogeneity issue that is likely to flaw any estimate of the impact of diversity. These three methodological elements are detailed below.

First, the level of diversity is measured at two different geographic levels. As discussed above, diversity could impact employment prospects locally through networks and on a larger scale through productivity. In order to account for both effects, we compute diversity at a very local neighborhood level and at the employment zone (local labor market) level. As far as we know, it is the first time that various geographic scales for diversity are simultaneously considered. Our contribution and that by Algan et al. (2016) are the first conducted at such disaggregated levels. The results reveal that employment probability is negatively correlated with neighborhood diversity, but positively correlated with employment zone diversity. It suggests a negative effect through networks and a positive one through productivity.

Second, we rely on three alternative definitions of origins to measure diversity, namely nationality, birth country, and parents' origins, while the existing literature mostly relies on ethnolinguistic and religious groups. The measure based on parents' origin encompasses first- and

second-generation immigrants and is more closely related to the standard ethnic classification of individuals. By contrast, defining kinship according to nationality introduces the notion of immigrants' integration through naturalization. This distinction allows us to draw conclusions on whether the cultural or the ethnic dimension of diversity prevails. An important crucial finding of this paper is that diversity based on nationality has a larger impact than diversity based on birth country, which is in turn more relevant than diversity based on parents' origins - suggesting a preeminent role of cultural over ethnic diversity.

Third, we tackle the endogeneity issue that is pervasive in the literature on ethnic diversity. An important concern is that individuals have a preference for living close to their co-ethnics and thus tend to gather along ethnic lines, biasing any measure of the effect of diversity. Another issue is that of reverse causality that can arise if immigrants decide to settle in more economically dynamic areas. The endogeneity of employment zones diversity is handled through a traditional instrumental variable approach, where two different instruments are proposed. Following Card (2001) and Saiz (2007), we construct the predicted level of diversity in each employment zone based on the distribution of each origin group across employment zones in 1968 and the current number of individuals from each origin in France over the sample period of the study (2007-2010). An alternative and more innovative instrument is the level of diversity within the public housing tenants of the employment zone (see Algan et al. 2016).

Interestingly, once employment zone diversity is instrumented using any of these two variables, its positive relationship with employment is driven down to zero, confirming the intuition that the effect was actually driven by selection. To deal with the endogeneity of local neighborhood diversity, we assume that although households are able to select the precise area in which they want to live, they are, however, unable to pinpoint an exact neighborhood within this given area (Bayer et al. (2008)). Therefore, after controlling for sorting in a restricted area encompassing local neighborhoods, the assignment of individuals to a specific neighborhood within the selected area is considered as essentially random and provides a useful source of variation to identify the effect of diversity. After controlling for residential sorting, the effect of neighborhood diversity remains significantly negative, though slightly attenuated. This suggests that sorting resulted in more economically deprived individuals living in more diverse neighborhoods.

The main findings of this paper bring new insights to the literature on diversity:

- First, measuring diversity based on various definitions of origins reveals that diversity in terms of nationalities matters more than diversity in terms of parents' origins. This is a key result, as it suggests that diversity of origins plays a role through the variety of cultures and languages rather than through ethnic diversity per se. This is in favor of the idea that diversity affects employment prospects by altering job information transmission;

- Second, measuring diversity at different geographic levels reveals that this effect depends on the level of aggregation. Neighborhood diversity reduces employment prospects, while employment zone diversity is neutral, after correcting for endogenous sorting. This implies that the mechanisms through which diversity hinders employment at a local level are counterbalanced at a more aggregate level. In particular, job seekers might be unable to develop efficient networks in their own neighborhood because of diversity, but they might instead rely on a network established in a larger area.

More generally, this work calls for a new approach of the literature on diversity, since it shows that (i) the notion of diversity hides various aspects that can influence the outcome considered in different ways, and that (ii) the effect of diversity can vary according to the geographical level considered. Although, apart of this paper is devoted to test the hypothesis that the negative impact of local diversity on employment prospects is related to job information transmission, much remains to be done in this direction. In addition, a natural subsequent question is that of the quality of the job found in terms of tenure or wage for instance. These issues remain open for future research.

1 Introduction

Western economies are facing intensified flows of immigration due to trade development and economic integration, and consequently have to cope with increasingly mixed populations. Following the recent EU enlargement process and the current massive immigrants inflows, this feature is particularly salient in European Union countries, where the economic and social implications of higher heterogeneity are becoming central issues. In particular, public opinion is generally hostile to immigrants that are often perceived as a threat to job security and wages, although this is not clear from empirical research. In the latest paper on the topic, Ottaviano and Peri (2012) adopt a general equilibrium approach and show that the massive immigration to the US over the 1990-2004 period actually increased natives wages, contradicting the influential paper by Borjas (2003). In contrast to the large literature studying the economic impact of immigration on natives, papers looking at the labor market effect of diversity *per se* are scarce. Using US cities data, Ottaviano and Peri (2006) jointly estimate a wage and a rent equations and find that diversity is positively associated to both variables. They conclude that diversity has a net positive impact on US-born workers' productivity. Using a similar setting, Prarolo *et al.* (2009) replicate these results for European regions. To the best of our knowledge, these are the only two papers in the diversity literature dealing with labor market outcomes, although not directly with employment.

This paper intends to fill this gap by assessing the impact of local diversity on individuals' employment prospects. It asks the following question: to what extent people living in heterogeneous neighborhoods have different employment probabilities than those living in more homogeneous areas? In other words, this work investigates how individuals cope with increasing levels of diversity, and in particular how this affects their employment prospects. It is relevant in the current context of high unemployment, especially in high immigration countries such as France, Italy and more recently Spain. At the micro level, if different ethnic or cultural groups are hermetic to each other, in the sense that no interaction takes place across groups, then diversity can act as a barrier to communication and in particular to job information transmission. Given the importance of personal networks in the job search process (see Ioannides and Datcher Loury, 2004), diversity could therefore reduce the chance of finding a job. On the other hand, if communication across groups is not an issue, then mixing people conveying non-redundant pieces of information (e.g. due to different backgrounds) can certainly improve employment prospects. At a more aggregate level, diversity can affect employment probability through its impact on productivity, leading to

ambiguous effects as well. On the bright side, diversity can be beneficial to productivity due to complementarity in workers' skills (see Lazear, 1999; Alesina and La Ferrara, 2005). On the downside, heterogeneity can hinder productivity by preventing social capital formation (Coleman, 1988).[1]

As we see from this brief discussion, the effect of diversity on employment is theoretically ambiguous. We investigate this question using detailed French employment data that allow us to disentangle the neighborhood (local) and labor market (aggregate) effects of diversity. We consider this exercise as the main contribution of our work. Specifically, we measure diversity using several definitions of origins and at various geographic levels, so as to understand as precisely as possible the mechanisms lying behind the diversity-employment relationship. In addition, we adopt several identification strategies in order to bypass the endogeneity issue that is likely to flaw any estimate of the impact of diversity. These three methodological elements allowing us to answer the central question of this paper are detailed below.

First, the level of diversity is measured at two different geographic levels. As discussed above, diversity could impact employment prospects locally through networks and on a larger scale through productivity. In order to account for both effects, we compute diversity at a very local neighborhood level and at the employment zone (local labor market) level. As far as we know, it is the first time that various geographic scales for diversity are simultaneously considered. In addition, this and Algan *et al.* (2016) are the first studies conducted at such disaggregated levels. The results reveal that employment probability is negatively correlated with neighborhood diversity, but positively correlated with employment zone diversity, suggesting a negative effect through networks and a positive one through productivity.

Second, we rely on three alternative definitions of origins to measure diversity, namely nationality, birth country, and parents' origins, while the existing literature mostly relies on ethnolinguistic and religious groups. The measure based on parents' origin encompasses first- and second-generation immigrants and is therefore more closely related to the standard ethnic classification of individuals. By contrast, defining kinship according to nationality introduces the notion

[1]Not only is the impact of diversity on productivity unclear, but the impact of productivity on employment is ambiguous as well: Nordhaus (2005) finds that more rapid productivity growth leads to increased rather than decreased employment in manufacturing, a sector that recently experienced a large employment decline. On the contrary, Michelis *et al.* (2013) find a strong negative relationship between TFP growth and labor input.

of immigrants' integration through naturalization. This distinction allows us to draw conclusions on whether the cultural or the ethnic dimension of diversity prevails. An important finding of this paper is that diversity based on nationality has a larger impact than diversity based on birth country, which is itself more relevant than diversity based on parents' origins, suggesting a preeminent role of cultural over ethnic diversity.

Third, we tackle the endogeneity issue that is pervasive in the literature on ethnic diversity. An important concern is that individuals have a preference for living close to their co-ethnics and thus tend to gather along ethnic lines, biasing any measure of the effect of diversity. Another issue is that of reverse causality that can arise if immigrants decide to settle in more economically dynamic areas. The endogeneity of employment zones diversity is handled through a traditional instrumental variable approach, where two different instruments are proposed. Following Card (2001) and Saiz (2007), we construct the predicted level of diversity in each employment zone based on the distribution of each origin group across employment zones in 1968 and the current number of individuals from each origin in France at the time of the study (2007-2010). An alternative and more innovative instrument is the level of diversity within the public housing tenants of the employment zone. It builds on Algan, Hémet and Laitin (2016) who show that the allocation of households across public housing units in France does not take their origins or their preference for diversity into account, so that public housing diversity can be considered as exogenous. Interestingly, once employment zone diversity is instrumented using any of these two variables, its positive relationship with employment is driven down to zero, confirming the intuition that the effect was actually driven by selection. To deal with the endogeneity of local neighborhoods diversity, we follow Bayer, Ross and Topa (2008) and assume that although households are able to select the precise area in which they want to live, they are, however, unable to pinpoint an exact neighborhood within this given area. Therefore, after controlling for sorting in a restricted area encompassing local neighborhoods, the assignment of individuals to a specific neighborhood within the selected area is considered as essentially random and provides a useful source of variation to identify the effect of diversity. After controlling for residential sorting, the effect of neighborhood diversity remains significantly negative, though slightly attenuated. This suggests that sorting resulted in more economically deprived individuals living in more diverse neighborhoods.

The remainder of the paper is organized as follows. In Section 2, we extensively discuss the various channels through which diversity can affect employment prospects, building on existing empirical and theoretical studies. We carefully document our data set and its particular sampling design in Section 3, where we also describe the various measures of diversity. Section 4 deals with the main analysis of the paper: after presenting our baseline specification in Section 4.1, we deal with the issue of endogeneity in Sections 4.2 and 4.3. In Section 5, we propose an interpretation of the previous results and their underlying mechanisms, before concluding in Section 6.

2 Diversity and employment prospects

The interest in the effect of diversity on economic performance and social peace has been rooted in economic research since the seminal paper by Easterly and Levine (1997) showing that Africa's high levels of ethnic diversity help understand its "tragic growth performance". The subsequent literature covers a very broad set of issues. Diversity is generally found to reduce public good provision, because the threat of sanction to punish defectors is not credible across groups, or because different groups do not share the same preferences and cannot aggree on the type of public good to be produced. This result holds in developing countries and developed countries alike (see Miguel and Gugerty (2005) for Kenya, Alesina *et al.* (1999) for the US and Algan *et al.* (2016) for France).[2] Another trend of the literature focuses rather on the social impact of diversity, and shows that it is associated with lower participation to civic life or community activities (Alesina and La Ferrara (2000), Costa and Kahn (2003)) and reduced trust (Alesina and La Ferrara (2002)).

The present paper focuses on employment and is therefore more closely related to the branch of the literature that studies productivity. At the macro level, diversity can affect employment through its effect on productivity. A large part of the literature supports the idea that diversity has a positive impact on diversity related to skills complementarity, that dominates the negative effects linked to coordination issues. Indeed, workers from different origins are more likely to have been exposed to diverse cultures and distinct school systems (especially if they come from different countries), acquiring various skills and learning different approaches to the same problem, so that their collaboration can increase productivity and facilitate innovation. More formally, Hong and

[2]An exception is Glennerster *et al.* (2013) who do not find any particular effect of diversity in Sierra Leone villages.

Page (2001) develop a model showing that team work may benefit more from low-skilled but cognitively diverse workers than from homogenous high-skilled workers. In a different theoretical setting, Lazear (1999) shows that when multicultural workers are complementary in the sense that they can exchange non-redundant and relevant information, the benefits from diversity offset its costs (e.g. barriers to communication).

Several recent papers also bring empirical support to the beneficial impact of diversity on productivity and economic performance more generally. Using data from 160 metropolitan areas in the US, Ottaviano and Peri (2006) jointly estimate a wage and a rent equations and find that diversity, measured in terms of birth countries, is positively associated to both variables. These results are robust to the inclusion of many confounding factors proxying for productivity and amenity shocks across cities, as well as to the instrumentation of diversity to correct for endogeneity. They conclude that diversity has a net positive impact on US-born workers' productivity. A similar methodology is adopted by Prarolo *et al.* (2009) who reach the same conclusion for European regions. Finally, Alesina *et al.* (2013) investigate the relationship between birth country-based diversity and economic development in a cross-section of countries. Potential endogeneity due to reverse causality is addressed through instrumental variable estimation. They compute a predicted measure of immigrants diversity by estimating a gravity model based on exogenous geographic and cultural bilateral variables. They find that while standard ethnolinguistic fractionalization is detrimental to economic success, the impact of diversity in terms of birth countries is positive, especially in more developed countries.[3]

At a more micro level, diversity may affect individuals' employment prospects through the channel of networks and job information transmission, if it prevents communication about relevant information for instance. There is considerable evidence that information transmission plays a key role on the labor market.[4] Many empirical studies conducted over various time periods and on diverse countries aggree that relying on friends and family is a very popular job search method and that on average half of jobs are found through social networks (Corcoran *et al.* (1980), Granovetter (1995), Holzer (1988), Wahba and Zenou (2005)). Theoretically as well,

[3]This paper also provides a comprehensive review of the literature on the costs and benefits of diversity.

[4]Ioannides and Datcher Loury (2004) and Ioannides and Topa (2010) provide comprehensive surveys on the topic.

Calv-Armengol and Jackson (2004) show that employment probability increases both with the number of links an agent has, and with the employment rate in the individual's network. In particular, several papers focus on the role of ethnic and immigrant networks. A recent paper by Battu *et al.* (2011) shows that ethnic minorities in the UK rely extensively on personal networks when searching for a job, although this does not necessarily lead to better employment prospects. The sociology literature also emphasizes the importance of ethnic networks in business relations and entrepreneurship, through an increased capacity to cooperate due to common languages and values (Light and Rosenstein (1995), Light (2005)).

On the other hand, a few recent works investigating the racial dimension of social networks in the United States provide evidence consistent with the notion that interactions within racial groups is more intense than across. This would tend to support the idea that diversity could hinder communication, hence reducing employment prospects. Although this literature remains limited, Hellerstein *et al.* (2008) show for instance that the employment probability of black workers is primarily affected by black job density rather than job density as a whole. Ananat *et al.* (2013) also demonstrate that black workers' wages benefit less from agglomeration economies than native workers' wages. The race specificity of gains associated with higher levels of economic density suggests that the strength of agglomeration economies is weaker across than within races, presumably because of a lower level knowledge spillovers and exchange of ideas between workers in the same location (a demonstrated channel underpinning agglomeration economies). Some insight can also be gained from the literature on "oppositional identities" which investigates the fact that individuals may decide to reject the dominant culture. In particular, the size or the racial composition of a community are put forward as potential determinants of such behavior (see for instance Bisin *et al.*, 2011). Thus, individuals living in more diverse communities may tend to develop oppositional identities (depending on the relative size of the different groups for instance), which could in turn affect their ability to search for jobs (either due to a different access to a given social network, or possibly due to different social skills and norms than those of the dominant group).

Because communication across ethnic groups may be hindered by a tendency to self-segregate, by different religious beliefs and culture, and above all by differences in the languages spoken, diversity may prevent network formation and information transmission, thus having a negative impact on individuals' labor market performances. This effect could be amplified if diversity exists

at the neighborhood level, as networks tend to be very local (see for instance Wellman (1996)). In particular, a few recent studies have shown that local social interactions within neighborhoods do affect employment and wage outcomes. For instance, Weinberg *et al.* (2004) show that a one standard deviation increase in neighborhood employment is associated with a 6.1% increase in annual hours worked for adult males on average. Bayer *et al.* (2008) estimate that living in the same block increases by more than 33% the probability to work at the same location. In a paper dealing explicitly with ethnic networks, Patacchini and Zenou (2012) show that the individual probability of finding a job increases with the number of ties, but that the magnitude of the effect decreases with distance. To summarize, if individuals are unable to create social ties within their neighborhood because they live in a diverse environment, this might hinder their ability to search and find job through the network.

3 Data and descriptive statistics

This paper relies on the French Labor Force Survey (*Enquête Emploi*, INSEE, hereafter the LFS), a quasi-panel surveying about 72,000 individuals quarterly since 2003. The LFS is characterized by a particular sampling scheme that makes it extremely valuable for studying neighborhood effects. Because it is central to our identification of neighborhood diversity effects, we start by providing a detailed description of this sampling design.

The French territory is initially partitioned into about 2,500 "primary units", which are in turn divided into "sectors". Each sector is demarcated by obvious topographical boundaries, such as streets, roads, railways or rivers, and is designed to include between 120 and 240 homes. One sector is then randomly selected in each primary unit, with a probability proportional to the number of homes it contains. The baseline sample is thus made of about 2,500 sectors.These sectors are in turn split into contiguous areas of 20 homes on average, corresponding to what we refer to as "local neighborhoods" (*aires* in French). Sectors containing 120 homes are divided into exactly 6 adjacent local neighborhoods, while larger sectors (a minority) may include more than 6 local neighborhoods. In the former case, all six local neighborhoods are included in the baseline sample; otherwise, six local neighborhoods are drawn randomly. The baseline sample eventually contains all individuals living in the six contiguous local neighborhoods included in each sector. Thus, the sample is not drawn from a selection of homes, but from a selection of local neighbor-

hoods.Only a fraction of this baseline sample is then included in the rotating panel for each wave. More specifically, the first neighborhood of a sector is exhaustively surveyed over six quarters, before being replaced by the second one for the next six quarters. This process goes on until all six neighborhoods of the sector are surveyed.[5] This particular sampling strategy implies that we observe *all* individuals living in these local neighborhoods, so that we can perfectly characterize their socio-economic and demographic environment. Interestingly, it also implies that we are able to observe individuals living in contiguous local neighborhoods within the same sector, a feature that is key to our identification of neighborhood diversity effects, as will be explained in Section 4.3.[6]

The LFS contains precise information about individuals' labor market situation: employment status, wage, type of contract, tenure, job search methods and socio-economic category. It also provides relevant individual characteristics, such as age, gender, education, and marital status. Because we are interested in individuals' employment status, we restrict the sample to working-age individuals (16 to 65 years-old) and we drop the students. Importantly, we can infer individuals' origins using three alternative variables: nationality, birth country, and parents' nationality at birth. This last variable was not properly included in the survey before 2007, so that we limit the study to the 2007 to 2013 period. A final sample restriction comes from the needs of the strategy used to identify the effects of local neighborhood diversity. The general idea is to compare individuals surveyed in a given neighborhood during a given quarter to individuals surveyed in an adjacent neighborhood during the subsequent quarter. This requires us to keep only the first and the first and the last (sixth) observations of each individual, as is carefully explained in Section 4.3. In the end, our sample contains about 396,000 observations. Table 1 summarizes the main employment-related individual characteristics for this sub-sample.

We characterize individuals' origins in three different ways. Not only do we use their nationality and country of birth as reported in the survey, but we also build a third measure combining information on individuals' and their parents'. Importantly, this third measure takes second generation immigrants into account, possibly imputing them a foreign origin even when they were born French in France. More precisely, according to this "parents' origins" classification, an individual

[5]Note that not all sectors were included at the same time in the main sample so that not all households are replaced at once. In fact, only 1/6 of the sample is renewed each quarter.

[6]Refer to INSEE documentation for more details on the sample composition and selection.

belongs to a given non-French category if at least one of her or his parents belongs to this group. For instance, a French person, born in France, but whose parents were born Tunisian, is allocated to the "North African" (or Maghreb) group.[7] The three alternative measures of origins, to which we refer as Nationality, Birth country, and Parents' origins are each divided into the following six categories: France, Southern Europe, other European countries, Maghreb, other African countries and Rest of the World.[8] Table 2 describes the sample along the three dimensions of origins.

Using these various classifications of origins, we compute three corresponding measures of diversity. The level of diversity in a given area reflects the probability that two randomly drawn individuals from the population belong to two different groups. Formally, it is computed using the standard fractionalization index used in the literature (see Alesina *et al.* (2003) for an extensive description):

$$DIV_j = \sum_{i=1}^{N} s_{ij}\,(1 - s_{ij}) = 1 - \sum_{i=1}^{N} s_{ij}^2 \tag{1}$$

where s_{ij} is the share of individuals from group i *(i=1, ..., 6)* (as defined above) in geographic area j. This index takes its minimum at 0 when the population living in area j is fully homogeneous, and it converges to 1 as the population heterogeneity increases. As argued in Section 2, diversity may impact employment through different channels at different geographical areas. To test for this, we assess diversity at two different levels. The first level, called "employment zone", corresponds to a local labor market. It is defined as an area within which most of the labor force lives and works, and in which firms can find most of the labor force necessary to fill the vacant positions. There are about 300 employment zones in mainland France. Measuring diversity at an aggregate level corresponding to a consistent local labor market is particularly useful to capture the potential effect of diversity on employment through the channel of productivity. The second level is much more disaggregated, and corresponds to the local neighborhood

[7]Very few individuals have have parents belonging to two different non-French groups. In the few cases encountered, we assigned the individual to the father's group, but all results presented below hold when either (i) assigning the mother group (ii) dropping the individual from the estimating sample.

[8]In the survey, the parents' origins variables contain 9 categories as opposed to 28 for country of birth and nationality. For the sake of homogeneity between our three measures of origins, we initially divided all of them into 9 identical categories. Then, because some of the defined groups, such as "Northern Europe" or "Asia", represent such small shares of the population living in France, we eventually defined six more aggregate categories.

made of about twenty households (LFS sampling unit). Measuring diversity at such a local level aims at accounting for local interactions between immediate neighbors to test the job information transmission mechanism.

In addition, using three different definitions of origins enables us to capture various dimensions of diversity. We argue that parents' origins-based diversity is the best proxy for *ethnic* diversity as it is more likely to reflect individual's phenotype. For instance, a person whose parents were born Senegalese is very likely to be black, even though s/he is French and born in France. This measure of diversity is therefore the closest to ethnic diversity that we can get using French data. On the other hand, diversity based on nationality tends more to reflecting *cultural* rather than *ethnic* diversity. Indeed, two individuals sharing the same nationality are more likely to speak a common language and to share other cultural traits. This can be true for two native individuals, as well as for naturalized French who spent several years in France, learning French before being naturalized. Given what precedes, we consider birth country diversity as an intermediate measure.

Table 3 describes the levels of diversity prevailing in individuals' local neighborhoods and employment zones. It is immediate to see that diversity is the lowest when measured in terms of nationalities, and the highest when computed based on individuals' and parents' origins, which is not surprising. Consider for instance an area made of three French individuals, one born in France from French parents (e.g. native French), one born in France from Vietnamese parents (e.g. second generation immigrant), and one born in Morocco from Moroccan parents (e.g. first generation immigrant). This population is completely homogeneous (DIV_j=0) if we consider the individuals' nationality only. However, diversity is larger (0.44) once birth countries are taken into account, and even more (0.67) once parents origins are considered. Note also that employment zone diversity is slightly larger than neighborhood diversity.

4 Results

4.1 Baseline specification

In this section, diversity is considered as exogenous, and its impact on employment status is estimated through the following equation:

$$EMP_{it} = \alpha + \beta_1 DIV_{z(i)t} + \beta_1 DIV_{n(i)t} + \eta_1 W^z_{z(i)t} + \eta_2 W^n_{n(i)t} + \gamma X_{it} + \phi_{d(i)} + \phi_t + \varepsilon_{it} \qquad (2)$$

where EMP_{it} is the employment status of individual i living in employment zone $z(i)$ and neighborhood $n(i)$ at time t. It is a dummy variable equal to 1 if the individual is employed, and 0 otherwise (unemployed or inactive).[9] $DIV_{z(i)t}$ and $DIV_{n(i)t}$ refer to diversity, respectively at the the employment zone and neighborhood level at time t. $W^z_{z(i)t}$ and $W^n_{n(i)t}$ are vectors of (average) socio-economic and demographic characteristics at the employment zone and neighborhood level respectively. X_{it} is a set of individual control variables. We also include *départements* fixed effects $\phi_{d(i)}$[10] along with time fixed effects ϕ_t (quarter dummies). Finally, ε_{it} is an error term. The two coefficients of interest are β_1 and β_2.

The various measures of diversity (nationality-based, birth country-based and parents' origin-based) are included separately, in different regressions. The inclusion of average socio-economic and demographic characteristics at both employment zone and neighborhood levels is meant to account for the fact that diversity could otherwise capture other observable neighborhood characteristics. These location-specific covariates control for the average level of education (share of dropouts, lower-education and higher-education graduates, with the intermediate high-school graduates as the reference group), for the share of single-parent households and for the share of individuals with North African (Maghreb) origins, the largest immigrants group in France.[11] Controlling for the share of individuals with North African origins is also important to the extent that this population is more likely subject to employment discrimination, hence affecting their employment prospects as well as their neighbors'.

The set of individual controls X_{it} comprises the standard socio-demographic variables: age (quadratic form), gender, origin, education, socio-economic category and potential experience (quadratic function). The origin variable corresponds to one of the six origin categories described in Section 3. Specifically, we alternatively include nationality, birth country and parents origin

[9] An alternative dummy variable considered takes value 1 if the individual is employed, and 0 if s/he is unemployed, letting aside inactive individuals. Using this alternative dependent variable does not significantly alter the estimated coefficients.

[10] There are 96 departments in metropolitan France, corresponding to administrative units – comparable to counties in the United States – usually in charge of managing a number of social and welfare programs, primary and secondary schools, buildings and technical staff, local roads, rural buses, and other large public infrastructure. Some employment areas stretch over several departments but all departments contain several employment areas.

[11] Given the negligible influence of variables such as average age and share of males, we decided to report results controlling only for average human capital, family structure and share of Maghrebians (which are also the most economically relevant characteristics) in the paper.

indicators when diversity is measured based on nationality, birth country and parents' origin respectively. The education variable describes the highest degree obtained by the individual, aggregated into the following four categories: dropouts, lower-education, high-school and higher-education.[12] We control for six possible socio-economic categories: *Craftsman or Shopkeeper*, *Executive* or other high position, *Intermediate* occupation, *Employee* and *(Factory) worker*. Potential experience is measured as the number of years since the highest degree was awarded.

To get an first insight on the effects of diversity on employment, we start by estimating a linear probability model.[13] The results presented in Table 4 thus derive from simple OLS estimates, with robust standard errors clustered at the employment zone.[14] For simplicity, Table 4 only reports the estimates for diversity in alternative specifications.[15]. The three panels correspond to the alternative measures of diversity (nationality, country of birth and parents' origin), estimated in separate regressions. In column 1, we only include time and geographic fixed effects. We progressively add more controls in the subsequent specifications: individual characteristics in column 2, local average of socio-economic characteristics in column 3, and share of North African individuals in the neighborhood and the employment zone in column 4. Remarkably, the estimates of local neighborhood diversity are significantly negative for all types of diversity and across all specifications, revealing that local diversity is negatively associated to the probability of being employed. The coefficients are attenuated by the inclusion of all the relevant controls, consistent with the notion that they are correlated to diversity. In particular, controlling for the share of North African significantly reduces the estimates. This does not come as a surprise given the high level of correlation between this variable and the diversity measure (around 60 %). For this reason, we use the specification presented in column 3 as the baseline specification in the rest of

[12]Lower-education includes junior high-school (*BEPC*), early vocational training (*CAP*, *BEP*); high school includes general and technical high school degrees (*Baccalauréat général, technologique ou professionel*); higher-education includes *Undergraduate* (two years after the *Baccalauréat*), *Bachelor's* (three years after the *Baccalauréat*), *Graduate* (four years after the *Baccalauréat*), and higher degree (*Master's & PhD*).

[13]Logistic regressions lead to qualitatively similar results, but OLS estimates are displayed for simplicity.

[14]The level of clustering (employment zone) corresponds to the highest-level of variation of the diversity variable as well as other controls. Employment zone level variables are, by definition, perfectly correlated within employment zone which magnifies the downward bias of traditional standard errors in case of an even mild within-employment zone correlation in the error term. (Cameron and Miller, 2015).

[15]The full set of estimates is displayed in Appendix A.2 Table 9

the paper. On the other hand, the estimates for employment zone diversity all have a significantly positive sign across all specifications, except for diversity based on parents' origins. Interestingly, the correlation between diversity and employment is always the largest (in absolute terms) with the nationality measure and the weakest with the parents' origins measure, suggesting a preeminent role of cultural over ethnic diversity.

There are however several reasons to suspect that diversity might actually be endogenous. First, individuals who have a taste for diversity might both self-select into high diversity areas and be more able or willing to communicate with their neighbors. In this case, people living in more diverse area should be more likely to communicate with each other and the negative effect found previously would be overestimated (less negative than the true effect). Reverse causality could also be a problem if immigrants are attracted by more economically dynamic places, where jobs are more abundant. The issue of endogeneity related to the non-random location of individuals is addressed in the next two subsections, where we propose alternative identification strategies for the different levels of diversity.

4.2 Employment zone diversity: an instrumental variable approach

We start by dealing with the issue of endogeneity at the employment zone level. To this aim, we rely on standard instrumental variables estimations. A plausible instrument should be correlated with employment zone level of diversity (e.g. employment zone population composition), but uncorrelated to labor market outcomes. We propose two different instruments that we think satisfy these assumptions.

The first instrument relies on the "shift-share" methodology initiated by Card (2001) and more recently used by Saiz (2007) and Ottaviano and Peri (2006) in a setting close to this paper's. It builds on the idea that new migrants to a country tend to settle where former migrants from the same origin previously settled, i.e. ethnic enclaves (Munshi (2003), Winters *et al.* (2001)). Using past settlements of immigrants from various countries across French employment zones, it is possible to construct a predicted measure of current diversity in each employment zone. More precisely, we use the 1968 population census data to compute the distribution of each origin group across French employment zones. Because employment zones did not exist in 1968, and because their frontiers evolved over time, we apply the 2010 employment zones borders to the

1968 population. The origin groups considered are limited by the information contained in the 1968 census. In particular, no information about parents is available. We alternatively rely on nationalities and birth countries, grouped into the six categories defined previously. Then, for each origin group, we apply the 1968 distribution of groups across employment zones to the current (2007 to 2013) total population in France. Doing so, we compute the expected number of individuals from each origin in each employment zone, solely based on the ethnic enclaves pull factor. From this, we can deduce the predicted composition of each employment zone population. Once the predicted shares of each group are computed, we can eventually construct the predicted level of diversity in each employment zone over the 2007 to 2013 period. By construction, the predicted measure of diversity depends only on 1968 population settlements and not on any employment zone-specific shock (e.g. productivity shock), and can thus be used to instrument actual diversity. A more formal description how the predicted level of diversity is computed can be found in Appendix A.

Although this type of instrument is highly relied upon in the immigration literature, a potential concern may arise if the 1968 distribution of immigrants across zones is related to contemporaneous economic conditions. Immigrants' location in 1968 was actually to a large extent related to regional industrial composition: immigrants were hired in very specific industries which required massive labor force inflows during the post-war reconstruction period (1950s) and the industrialization process (1960s onwards). Immigrants were thus directed towards construction and industry jobs, such that areas characterized by high concentration of jobs in these sectors attracted the bulk of immigrants. To address this issue, we control for the 1968 sectoral composition of the local economy (share of local employment in construction, heavy manufacturing and light manufacturing) and for the 1968 share of low-skilled workers in the employment zones, as potential confounding factors.

The alternative instrument is more innovative and builds on Algan *et al.* (2016). In this paper, the authors provide evidence that the allocation of households across public housing units within French départements does not take their origins or their preference for diversity into account, so that diversity can be considered as exogenous in the public housing sector. Not only do legal rules prohibit housing allocation based on ethnic backgrounds, but the characteristics of the public housing sector, which is very tight and highly regulated, also make it very complicated to bypass

the law in practice. In addition to presenting these general arguments, the authors conduct a variety of formal statistical tests to verify the absence of self-sorting on ethnic characteristics. In particular, they show that the observed spatial distribution of residents across public housing blocks is not statistically different from a random distribution. The level of diversity within the public housing sector of a given area is necessarily correlated to the global level of diversity of this area. Indeed, because the public housing population is part of the total population, fractionalization based only on this sub-population is mechanically proportional to fractionalization based on the population as a whole. Also, it is reasonable to think that individuals living in the private housing market, and who are therefore less constrained upon their location choice, are influenced by the composition of the public housing population. Otherwise stated, people from a given group might be attracted by an area where some of their co-ethnics were located through the public housing allocation process, so that diversity in the area is likely to reflect diversity in the area's public housing sector. In a nutshell, public housing diversity can be considered as exogenous, and it is correlated to general diversity both mechanically and through a magnet effect on immigrants living in the private sector. It can therefore reasonably be used to instrument the general level of diversity.

The effects of diversity on employment are estimated using two-stage least square procedures, where the two instrumental variables described above are alternatively employed. Aside from the inclusion of the instrument, the specification corresponds to our baseline specification.[16] The results are summarized in Table 5, where we only report the coefficients and statistics of interest. For the sake of comparability, we report nave OLS estimates in the first column. Column 2 displays the results obtained using the predicted measure of employment zone diversity as an instrument for employment zone diversity. More precisely, in the first part of the table, which deals with diversity based on nationality, the predicted diversity is also based on nationality. In the second part of the table dealing with birth country-based diversity, we use the predicted diversity based on birth country instead.[17] In both cases, we observe that the coefficient for employment

[16]Note that all specifications include quarter fixed effects (2007Q1, 2007Q2, ... , 2013Q4) so that all identifying variation in our IV regressions comes from cross-sectional variation in exposure to the instruments.

[17]Given that we do not have any information about parents' origins in the 1968 census, we are unable to compute the predicted level of diversity based on this particular measure of origins. As a consequence, we have alternatively instrumented parents' origins-based diversity by the predicted

zone diversity is no longer significant once it is instrumented by the predicted level of diversity. The first-stage KP statistics reported at the bottom of each panel illustrate the strength of the excluded instrument. These results are robust to the inclusions of three potential confounding factors accounting for economic conditions that likely explained immigrants' localization in 1968, as reported in column 3. The results obtained using the second instrument - public housing diversity - reported in column 4 lead to the same observation: the coefficient for employment zone diversity loses significance once instrumented. Note that the results obtained when controlling for the neighborhood and employment zone shares of North Africans (not presented but available upon request) do not differ much from those in the baseline specification. To summarize, these results show that employment zone diversity does not have any causal impact individuals' employment status, confirming the suspicion that the naive estimates derived in the previous section were biased upward, due to a selection of immigrants into more economically dynamic areas.

A comment on local neighborhood diversity is in order here. The corresponding estimates reported in Table 5 are most likely biased due to endogenous selection into local neighborhoods. Yet, we think that running an analysis strictly focused on employment zone diversity (i.e. excluding local neighborhood diversity) would be inappropriate as it would present a risk of omitted variable bias. As we explain in section 2, diversity could influence employment at the local (neighborhood) or aggregate (employment zone) levels through different mechanisms. Excluding local diversity from the regression would imply that the coefficient for diversity at the aggregate level also absorb the effect of local diversity. The next subection specifically deals with endogeneity of local neighborhood diversity. Yet, we now propose a side-specification in which diversity is exogenous at both aggregate and local levels, although in a very specific context.

Building on Algan *et al.* (2016), we use the fact that within a given department, people have very little choices in terms of public housing location, thus making the diversity within public housing plausibly exogenous, conditional on department fixed-effects.[18] In this context, simple OLS estimates of the effect of diversity on employment should be unbiased. Accordingly, we regress employment on local neighborhood and employment zone diversity, including the full set of controls, restricting our sample to the specific subpopulation of public housing tenants.

level of diversity based on nationality and on birth country. The results are comparable to those reported in the table for the other measures of diversity, and are available upon request.

[18]The public housing diversity instrument is also based on this intuition.

The results, reported in Table 10 in Appendix A.2, are qualitatively remarkably in line with those obtained on the full sample: we find a significantly negative effect of local neighborhood diversity and no effect of employment zone diversity on employment. An exception is for diversity based on parents' origins, which has a positive effect though limited and only weakly significant. Expectedly, the magnitude of the local neighborhood diversity effect is larger than in the general case, given that public housing neighborhoods are generally characterized by larger immigration, lower education and more generally, poorer economic situation. Although we do not wish to report these estimates as our main results given the specificities of this subpopulation, they still comfort us on the general direction of the different effects.

4.3 Neighborhood diversity: a local approach

We now specifically deal with the endogeneity of local neighborhoods diversity. The approach adopted here builds on the very local nature of the data. It follows Bayer *et al.* (2008) who study the role of neighbors on work location. The idea is that although households are able to select a given area in which they want to live, they are, however, unable to select a precise neighborhood within this given area. This assumption means that even if households are able to choose a given residential area, there will not be any correlation in unobserved factors affecting employment probability among individuals living in the same neighborhood within the larger selected area.[19]

Here, we assume that the households select into *sectors*, the areas encompassing six contiguous local neighborhoods described in section 3, that is containing on average 120 households. Several standard arguments support the assumption that even if households were able to select a precise sector, they would not be able to chose among the various local neighborhoods within this selected sector. First, because the housing market is very tight, it is reasonable to think that an individual targeting a given sector is very unlikely to have a choice over the precise neighborhood where s/he will end up in this area. This would indeed require that at least one housing unit satisfying the other decision criteria of the individual (e.g. size) be vacant in each local neighborhoods within the target sector at the time when the individual is searching a new place. A second consideration is that it may be difficult for prospecting individuals to identify neighborhood-by-neighborhood

[19] Schmutte (2015) follows a similar approach to study the propensity of neighbors to share information about high employers. We carry out a sorting test on observables in the spirit of that paper.

variation in neighbors and contextual characteristics, prior to moving into the neighborhood. To put it differently, although the individual may have a realistic ex-ante view on the characteristics of the targeted sector, it is less likely that s/he is actually able to identify differences in these characteristics across the various neighborhoods of the sector. This is particularly reasonable when the local neighborhoods considered consist in about twenty households. Finally, the local neighborhoods studied here do not correspond to any administrative or official frontiers (nor do sectors). People do not know where the borders are, and more generally do not even know what a local neighborhood (*aire* in the LFS) is, as it is only used as the sampling unit of the LFS.

For those reasons, it is close to impossible that French households purposely decide to live in a given local neighborhood rather than the next one in a given sector. All these arguments support the validity of the assumption that there should be no correlation in unobserved factors affecting employment among neighbors living in the same neighborhood within the same sector. As a consequence, once we control for the characteristics of the sector selected by the individual, the remaining spatial variance of diversity across neighborhoods within the sector is supposed to be exogenous. This is done through the inclusion of sector fixed effects: in this case the comparison group for individuals living in a given local neighborhood is made of all individuals living in the same sector but in a different local neighborhood.

A potential limit of this approach can come from the fact that, by construction, the comparison group includes individuals who are not surveyed at the same time - although they live in a very limited geographic zone (in cross-section). In other words, when we include sector fixed effects, we use as a "control group" individuals who live in the same place (same sector but different local neighborhood), but at different points in time. Note that all aggregate shocks that have a uniform effect across periods are absorbed by the inclusion of time (quarter) fixed effects. This still ensures that our identifying variation does not rely directly on variation in employment probability across periods. Yet, it does not solve the problem of time varying shocks that could affect different communities differently. To bypass this issue, we propose a more constraining alternative strategy whereby we include fixed effects for an even more restrictive zone, which we call subsector. A subsector encompasses only these two local neighborhoods in a given sector which are surveyed exactly one after the other: individuals living in the same subsector are those surveyed in the last (sixth) wave of a local neighborhood and those surveyed in the first wave of

the adjacent local neighborhood.[20] With this strategy, the reference group is made of individuals who are not only observed living in two contiguous local neighborhoods of the same sector, but who are also observed living there at the same time (at most one quarter apart). It is precisely to allow for the inclusion of these subsectors that we needed to restrict our sample to the the first and last (sixth) wave of each local neighborhood, as mentioned in Section 3.[21]

In addition to the general arguments supporting this strategy presented above, we provide a more formal sorting test to verify that there is very little remaining sorting on the basis of observables once we control for selection into higher level areas (sectors and subsectors). The general idea of the test is to assess whether individuals systematically tend to locate in neighborhoods where residents are similar to themselves regarding a number of observable characteristics (such as educational attainment or origin for instance). If, as we argue, households select their residence at the level of the (sub)sector (at worst), but do not pick a specific area (local neighborhood) within this (sub)sector, then we should not observe much systematic correlation between local neighbors' observable characteristics once we control for (sub)sector fixed effects.

In each local neighborhood, we randomly pick one individual[22] and regress her observable characteristics (education, nationality, age) on the local neighborhood average of the same variable (excluding the individual and her household), alternatively without and with (sub)sector fixed effects. We then collect the R-squared of each regression, which we expect to be large in the unconditional (no fixed effect) regressions, while close to zero (or at least much lower) in the conditional ones. We repeat this process a hundred times and finally compute the average R-squared for each type of regression. The mean R-squared are reported in Table 6. The different observable characteristics that we use to detect sorting are in lines and each column corresponds to an

[20] Consider for instance local neighborhood z, LN_z, which is surveyed six quarters in a row: LN_z^1, LN_z^2,... LN_z^6. Afterwards, the adjacent local neighborhood, LN_{z+1} is included for the next six waves of the survey: LN_{z+1}^1, LN_{z+1}^2,... , LN_{z+1}^6. The last wave of a given local neighborhood, LN_z^6, thus takes place exactly one quarter before the first wave of the subsequent local neighborhood, LN_{z+1}^1.

[21] Obviously, the first wave of survey of the first local neighborhood of a given sector cannot be matched with a previous one, nor can the last wave of the last local neighborhood be matched with a next one. Therefore, we have two observations for people living in LN_2 to LN_5, and only one for those living in LN_1 (LN_1^6) and LN_6 (LN_6^1).

[22] The draw of a single individual in the neighborhood is intended to avoid the systematic negative bias related to the fact that neighborhood averages of covariates exclude the reference individual, as explained in Bayer *et al.* (2008).

alternative specification. In column 1, we report the R-squared of the unconditional regressions. The results presented in column 2 are obtained when we control for department fixed effects, for the sake of comparison. Obviously, departments are rather large administrative areas (96 departments in mainland France) across which people easily sort, and within which sorting is very likely. Therefore, it is not surprising that the R-squared remain very similar to those in column 1. By contrast, as soon as we include sector or subsector fixed effects (in columns 3 and 4 respectively), the R-squared are remarkably reduced towards zero. We clearly see that high-skilled individuals tend to live in areas with a high share of high-skilled neighbors, with an average R-squared of 4.9 %. However including sector fixed-effects drives the R-squared to a low 0.1 %, supporting the assumption that the amount of within-(sub)sector sorting based on college-education is negligible. The same generally holds for other levels of education, age, and the various nationalities.

Table 7 reports the estimates of local neighborhood diversity correcting for sorting through the inclusion of (sub)sectors fixed effects instead of départements fixed effects. The specification used is the baseline specification including the full set of control, and including alternatively sectors fixed effects (column 2) and subsectors fixed effects (column 3). Note that this strategy forces the exclusion of employment zone diversity, since all the variation at this aggregate level is captured by the inclusion of (sub)sector fixed effects. However, excluding this variable does not put the specification at risk of any omitted bias. In addition, any effect of employment zone diversity was ruled out in the previous subsection. For this this reason and for the sake of comparability, column 1 reports the naive estimates with départements fixed effects excluding employment zone diversity. The estimates for local neighborhood diversity reported in columns 2 and 3 are very similar, suggesting similar patterns of selection into sectors and subsectors. This is not surprising given the low residential mobility, especially over short periods of time. The coefficient for all types of diversity are still significantly negative, although smaller (in magnitude) than in the naive regressions. This suggests that individuals sort across neighborhoods in such a way that more economically deprived individuals live in more diverse neighborhoods. A substantial result emerges from comparing the coefficients for the various measures of diversity: the estimated effect of nationality-based diversity (-0.063) is larger (in absolute terms) than that of birth country-based diversity (-0.048), which is also larger than parents' origins-based diversity (-0.033). When we measure the effect in terms of standard deviation of the corresponding diversity measure, the

differences are less pronounced because diversity by parents' origin is much more dispersed than diversity based on nationality, but this ranking remains unchanged: a one standard deviation increase in neighborhood diversity based on nationality leads to a 0.9 % decrease in employment probability, representing 1.25 % of the mean employment. The corresponding figures for local diversity based on parents' origins are 0.6 % and 0.8 %.[23]

These results suggest that that living in a context where people have different nationalities matters more for employment than living in a context where people were born in different countries, and even more than living close to people whose parents are from different origins. As discussed in Section 3, parents' origins more likely reflect ethnicity than nationality, the latter being rather associated to common values and language. An interpretation of these results is therefore that neighborhood diversity lowers the probability of employment because of cultural differences, most likely including language differences, rather than ethnic differences. This reinforces the intuition that diversity affects job finding by limiting job information transmission between neighbors, that we try to test in the next section.

5 Interpretation of the results

So far, we have shown that the positive relationship between employment zone diversity and individuals' employment probability is merely due to self-selection and does not correspond to any causal relationship. By contrast, we have also established that living in a diverse neighborhood actually implies a lower employment probability, although this effect is limited once we correct for residential sorting. This section explores the potential mechanisms by which local diversity reduces individuals' employment prospects. As discussed in Section 2, one of the channels coming to mind when thinking about the relationship between neighborhood diversity and employment is that of communication and job information transmission between agents. Specifically, if neighbors from different origins do not communicate, e.g. because they do not speak the same language, then information about job opportunities or about how to register to an employment agency does not circulate across groups. One of the results obtained in this paper, namely that the negative effect of neighborhood diversity is stronger for nationality diversity than for parents' origins di-

[23] As with the 2SLS results, the estimates for neighborhood diversity are qualitatively similar when we control for employment zone and neighborhood share of North American. They are available upon request.

versity is a first evidence supporting this intuition.

In order to dig into this potential mechanism more formally, we want to see how employment status is affected by the presence of people from the same origin group. Presumably, if the negative effect of neighborhood diversity is due to limited information transmission across groups, then living close to people from the same origin should conversely be related to better employment prospects. To this aim, we compute, for each individual, the share of the local neighborhood population belonging to the same origin group (excluding the reference individual from the computation). We then run a regression of the employment status dummy on this variable, using the same specification as in Table 7, that is including the full set of controls and sector or subsector fixed-effects. The results are presented in Table 8. The estimates presented in column 1 show that the larger the share of neighbors from one's own origin group, the higher one's employment probability. This is especially true when the individual's nationality determines his/her origin group. To put it differently, when communication is free from cultural or language barriers with a larger share of individuals, employment prospects are improved. Mechanically, more diversity implies smaller group shares, contributing to the negative effect of diversity. As a matter of fact, once we control for neighborhood diversity in column 2, the estimates of the share of people from the same group are strongly reduced (and lose their significance except for nationality).

An alternative test of this intuition is to look at the correlation between local diversity and the nature of neighborhood relationships using the 2002 French Housing Survey. Individuals are asked to qualify the relationships with their neighbors as *good*, *average*, *bad*, or *nonexistent*. In addition, we know the precise (block level) place of living of the individuals, and we are able to match it with representative block level measures of diversity from the 1999 population census. The results of multinomial logit regressions of the quality of neighborhood relationships on neighborhood diversity are presented in Appendix A.2 Table 11. Each line corresponds to a separate regression: the first line displays the estimated coefficients of diversity based on nationality at birth, those for birth country-based diversity being reported in the second line. Each regression controls for individual characteristics (age, gender, origin, employment status, education, household income), block level unemployment rate, department fixed effects and a detailed indicator of the social and economic composition of neighborhood in 27 categories.[24] The results reveal that

[24]The socio-economic classification of French neighborhoods into 27 groups is realized by

individuals living in more diverse neighborhoods are less likely to report having good relationships with their neighbors. In particular, they are more likely to report having bad relationships than average relationships than no relationship at all. These simple results tend to support the idea that communication can be hindered in more diverse neighborhoods due to the poor quality of the relationships between neighbors.

The French LFS also provides information on job search and job finding methods that unable us to explore the relationship between job search and finding methods and local diversity using the same set of controls as in our baseline specification, and including sectors fixed effects. We find no evidence of a relationship between local diversity and the use of informal job search method, defined as relying (exclusively or not) on one's personal network. Yet, individuals' origin matter to some extent in explaining the use of networks to search for a job. People with Mediterranean, Maghrebian and other African origins (taking 2nd generation into account) are more likely to rely on personal networks than natives. Interestingly, European (other than South European) and African citizens are also more likely to rely exclusively on networks, revealing a low level of integration for those particular groups.[25]

Then, focusing on employed individuals, we find no relationship between the local diversity and the probability of having found a job through one's personal network. However, any employed foreigner is more likely to have found his/her job using networks than French citizens. This is especially true for individuals of South European and Rest of the World nationalities. The coefficients decrease (or even vanish) as other measures of origins are considered, suggesting that networks are particularly helpful for the least integrated people, i.e. those who are of foreign origin but who have not yet been naturalized.[26] Although these results are to be interpreted with caution because they do not correct for selection and do not control for the search methods that were actually used, they suggest that friends and family network is an important vector of employment for foreign individuals. Therefore, even if diversity is not directly involved in the use of networks to search and find jobs, it might still be an issue for minorities if they live in diverse areas, isolated from the core of their network.

Martin-Houssart and Tabard (2002).

[25]Results are not reported here but are available upon requests.

[26]Results are not reported here but are available upon requests.

6 Conclusion

The findings of this paper bring new insights to the literature on diversity. First, measuring diversity based on various definitions of origins reveals that diversity in terms of nationalities matters more than diversity in terms of parents origins. This is a key result, as it means that diversity of origins plays a role through the variety of cultures and languages rather than through ethnic diversity *per se*. This speaks in favor of the idea that diversity affects employment prospects by altering job information transmission. Second, measuring diversity at different geographic levels reveals that this effect is not independent from the level of observation. Neighborhood diversity reduces employment prospects, while employment zone diversity is neutral, after correcting for endogenous sorting. This implies that the mechanisms through which diversity hinders employment at a local level are counterbalanced at a more aggregate level. In particular, job seekers might be unable to develop efficient networks in their own neighborhood because of diversity, but they might instead rely on a network established in a larger area. More generally, this work calls for a new approach of the literature on diversity, as it shows that (i) the notion of diversity hides various aspects that can influence the outcome considered in different ways, and that (ii) the effect of diversity can vary according to the geographical level considered.

Although part of this paper is devoted to tests the hypothesis that the negative impact of local diversity on employment prospects is related to job information transmission, much remains to be done in this direction. In addition, a natural subsequent question is that of the quality of the job found in terms of tenure or wage for instance. These issues remain open for future research.

Tables

Table 1: Individuals controls

	Min	Max	Mean	(Std Dev)	Median
Demographics					
Age	16	65	44.2	(12.4)	45
Experience	0	63	24.8	(13.8)	25
Male	0	1	49	-	-
Employment Status					
Employed	0	1	0.718	-	-
Inactive	0	1	0.282	-	-
Socio-Economic Category					
Craftsman, shopkeeper	0	1	0.059	-	-
Executive or other high position	0	1	0.146	-	-
Intermediate occupation	0	1	0.231	-	-
Employee	0	1	0.307	-	-
(Factory) worker	0	1	0.244	-	-
Unemployed never employed	0	1	0.011	-	-
Level of Education					
No Degree	0	1	0.20	-	-
Degree Lower than High School	0	1	0.343	-	-
High School	0	1	0.174	-	-
College	0	1	0.283	-	-

Notes: $N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3.

Table 2: Nationality, country of birth and origins: share by group of countries

Group of counties	**Nationality**	**Country of Birth**	**Origins**
French	0.945	0.883	0.813
Southern Europe	0.015	0.021	0.062
Rest of Europe	0.010	0.018	0.034
North Africa	0.014	0.041	0.052
Rest of Africa	0.007	0.016	0.016
Row	0.009	0.020	0.024

Notes: $N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3.

Table 3: Descriptive statistics regarding the diversity index

Statistics	**Nationality**	**Birth country**	**Parents' origin**
1. Local neighborhood level			
Mean	0.0961	0.1891	0.2742
Standard deviation	0.1429	0.1838	0.2065
Median	0	0.1420	0.2400
2. Employment zone level			
Mean	0.1140	0.2164	0.3199
Standard deviation	0.0925	0.1392	0.1694
Median	0.0879	0.1839	0.3025

Notes: $N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3.

Table 4: OLS summary

	(1)	(2)	(3)	(4) (3 + shares of North African)
1. Diversity by nationality				
Local neighborhood	-0.260***	-0.165***	-0.115***	-0.091***
	(0.026)	(0.022)	(0.017)	(0.014)
Employment Zone	0.091***	0.057**	0.064**	0.091***
	(0.034)	(0.028)	(0.027)	(0.033)
2. Diversity by birth country				
Local neighborhood	-0.225***	-0.131***	-0.090***	-0.072***
	(0.014)	(0.013)	(0.011)	(0.009)
Employment Zone	0.088***	0.041**	0.040**	0.056**
	(0.023)	(0.018)	(0.017)	(0.023)
3. Diversity by parents origins				
Local neighborhood	-0.179***	-0.091***	-0.061***	-0.046***
	(0.009)	(0.009)	(0.008)	(0.008)
Employment Zone	0.043**	0.020	0.019	0.023
	(0.022)	(0.015)	(0.014)	(0.017)
Individual controls	No	Yes	Yes	Yes
Departement FE	Yes	Yes	Yes	Yes
Socio-economic Env.	No	No	Yes	Yes

Note: $N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3. All specifications include quarter fixed-effects. * p < 0.1, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses are clustered at the employment zone level. *Individual controls* include: (i) indicators for nationality (ii) four indicators for education, (iii) indicators for socio-economic status. More details on these variables can be found in Tables 1 and 2. *Social-economic environment controls* include employment zone and local neighborhood shares of individuals with no degree, college education as well as the local share of single-parent household.

Table 5: IV regressions

	(1) OLS	(2) IV: Expected Div.	(3) IV: Expected Div.[a]	(4) IV: Public Housing Div.
1. Diversity by nationality				
Employment Zone	0.064**	-0.142	-0.125	0.078
	(0.027)	(0.116)	(0.134)	(0.057)
Local neighborhood	-0.115***	-0.090***	-0.092***	-0.116***
	(0.017)	(0.019)	(0.021)	(0.018)
KP stat		23.97	18.75	147.6
2. Diversity by Birth Country				
Employment Zone	0.040**	-0.048	-0.022	0.032
	(0.017)	(0.059)	(0.069)	(0.034)
Local neighborhood	-0.090***	-0.078***	-0.082***	-0.090***
	(0.011)	(0.013)	(0.014)	(0.012)
KP stat		42.78	33.97	147.7
3. Diversity by Origin				
Exp. diversity based on nationality				
Employment Zone	0.019	-0.036	-0.030	0.031
	(0.014)	(0.047)	(0.056)	(0.029)
Local neighborhood	-0.061***	-0.052***	-0.052***	-0.060***
	(0.008)	(0.011)	(0.011)	(0.009)
KP stat		45.13	40.66	143.1
3. Diversity by Origin				
Exp. diversity based on country of birth				
Employment Zone		-0.010	0.009	
		(0.037)	(0.044)	
Local neighborhood		-0.056***	-0.058***	
		(0.009)	(0.010)	
KP stat		90.73	80.19	

Note: [a]This column includes employment zones shares of construction and industry workers as well as of individuals with no degree in 1968.

$N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3. All specifications include quarter fixed-effects. * p < 0.1, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses are clustered at the employment zone level. *Individual controls* include: (i) indicators for nationality (ii) four indicators for education, (iii) indicators for socio-economic status. More details on these variables can be found in Tables 1 and 2. *Social-economic environment controls* include employment zone and local neighborhood shares of individuals with no degree, college education as well as the local share of single-parent household.

Table 6: Sorting test

Variable	Unconditional	Departement FE	Sector FE	Subsector FE
Nationality				
French	1.83 %	1.01 %	0.19 %	0.26 %
South European	0.15 %	0.11 %	0.03 %	0.04 %
Other European	0.10 %	0.07 %	0.02 %	0.04 %
North African	0.66 %	0.53 %	0.07 %	0.04 %
Other African	0.28 %	0.20 %	0.13 %	0.15 %
Other nationality	0.15 %	0.09 %	0.03 %	0.02 %
Education				
Master, PhD	4.91 %	2.15 %	0.11 %	0.10 %
Graduate	0.18 %	0.11 %	0.04 %	0.03 %
Undergraduate	0.07 %	0.05 %	0.01 %	0.03 %
Lower undergraduate	0.32 %	0.28 %	0.07 %	0.08 %
Technical Baccalaureate	0.16 %	0.10 %	0.03 %	0.03 %
Lower degree	1.84 %	0.90 %	0.19 %	0.17 %
Drop-out	2.71 %	2.07 %	0.22 %	0.23 %
Other				
Age	2.72 %	2.40 %	0.70 %	0.71 %

Notes: In each neighborhood, we randomly draw an individual and compute the average characteristics among his/her neighbors (excluding members of his/her own household). For each observed characteristic, we regress the individual's observation on neighbors' average observation (including quarter fixed effects), and look at the R-squared of the regression. We repeat this process 10 times, and compute the average R-squared, which are reported in the table. Column (1) displays the average R-squared from the unconditional regressions, while columns (2), (3) and (4) display the mean R-squared from regressions including "departement", "'sectors" and "subssectors" fixed effects respectively. The sample includes working age, non-student individuals from 2007 to 2013, in the first and sixth waves of neighborhoods' sampling.

Table 7: Local fixed effects

	(1)	(2)	(3)
1. Diversity by nationality			
Local neighborhood	-0.106***	-0.065***	-0.063***
	(0.015)	(0.008)	(0.010)
2. Diversity by birth country			
Local neighborhood	-0.085***	-0.049***	-0.048***
	(0.010)	(0.007)	(0.008)
3. Diversity by parents origins			
Local neighborhood	-0.056***	-0.033***	-0.033***
	(0.008)	(0.007)	(0.008)
Département FE	Yes	No	No
Sector FE	No	Yes	No
Sub Sector FE	No	No	Yes

Note: $N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3. All specifications include quarter fixed-effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses are clustered at the employment zone level.*Individual controls* include: (i) indicators for nationality (ii) four indicators for education, (iii) indicators for socio-economic status. More details on these variables can be found in Tables 1 and 2.*Social-economic environment controls* include employment zone and local neighborhood shares of individuals with no degree, college education as well as the local share of single-parent household.

Table 8: The impact of own share

Dependent variable:	Employment status			
	(1)	(2)	(3)	(4)
1. Diversity by nationality				
Share of own group	0.078***	0.074***	0.052***	0.054***
	(0.012)	(0.012)	(0.017)	(0.017)
Local neighborhood diversity			-0.033**	-0.030**
			(0.013)	(0.014)
2. Diversity by birth country				
Share of own group	0.022***	0.018**	-0.009	-0.007
	(0.007)	(0.007)	(0.010)	(0.010)
Local neighborhood diversity			-0.054***	-0.052***
			(0.010)	(0.011)
3. Diversity by parents origins				
Share of own group	0.012*	0.010	-0.004	-0.003
	(0.006)	(0.007)	(0.007)	(0.008)
Local neighborhood diversity			-0.036***	-0.035***
			(0.008)	(0.009)
Sector FE	Yes	No	Yes	No
Sub Sector FE	No	Yes	No	Yes

Note: $N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3. All specifications include quarter fixed-effects. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses are clustered at the employment zone level.*Individual controls* include: (i) indicators for nationality (ii) four indicators for education, (iii) indicators for socio-economic status. More details on these variables can be found in Tables 1 and 2.*Social-economic environment controls* include employment zone and local neighborhood shares of individuals with no degree, college education as well as the local share of single-parent household.

A Appendix

A.1 Construction of the predicted level of employment zone diversity

In this appendix, we describe more formally the construction of the "shift-share" instrumental variable. Denote $N^g_{France,1968}$ the number of individuals from origin group $g = 1, ..., g_{max}$ in France in 1968 and $N^g_{EZ_j,1968}$ the number of individuals from origin group $g = 1, ..., N_g$ in employment zone $j = 1, ..., N_j$ in 1968. Then, the share of group g individuals, living in employment zone j in 1968 (out of the total number of group g individuals in France in 1968) can be computed as follows:

$$S^g_{EZ_j,1968} = \frac{N^g_{EZ_j,1968}}{N^g_{France,1968}} \tag{3}$$

with $\sum_{j=1}^{N_j} S^g_{EZ_j,1968} = 1$, for any group g.

Then, the expected number of group g individuals living in employment zone j in year $t = 2007, ..., 2010$ is given by:

$$\widehat{N^g_{EZ_j,t}} = S^g_{EZ_j,1968} * N^g_{France,t} \tag{4}$$

From this, we can deduce the expected share of group g individuals in employment zone j in year t (out of the total number of individuals living in employment zone j in t, all groups included):

$$\widehat{s^g_{EZ_j,t}} = \frac{\widehat{N^g_{EZ_j,t}}}{\sum_{g=1}^{N_g} \widehat{N^g_{EZ_j,t}}} \tag{5}$$

with $\sum_{g=1}^{N_g} \widehat{s^g_{EZ_j,t}} = 1$, for any employment zone j.

Finally, the predicted measure of diversity in employment zone j in t is obtained as follows:

$$\widehat{DIV_{EZ_j,t}} = 1 - \sum_{g=1}^{N_g} \widehat{s^g_{EZ_j,t}}^2 \tag{6}$$

A.2 Appendix tables

Table 9: OLS: all coefficients

	(1) Nationality
Diversity	
Local neighborhood	-0.091***
	(0.014)
Employment Zone	0.091***
	(0.033)
Individual Characteristics	
Nationality	
French	0.126***
	(0.013)
South Europe	0.203***
	(0.011)
Rest of Europe	0.003
	(0.013)
Maghreb	-0.013
	(0.012)
Rest of Africa	0.005
	(0.015)
Rest of the World	(Ref)
Education	
No diploma	-0.073***
	(0.005)
Lower education	-0.018***
	(0.003)
Higher education	0.025***
	(0.002)
High school degree	(Ref)
Occupation	
Craftsman, shopkeeper	0.690***
	(0.011)
Executive or other high position	0.675***
	(0.009)
Intermediate occupation	0.649***
	(0.010)
Employee	0.631***
	(0.010)
(Factory) worker	0.586***
	(0.010)
Unemployed worker that has never worked	(Ref)
Others	
Experience	0.009***
	(0.001)
Experience Squared	-0.000***
	(0.000)
Age	0.057***
	(0.002)
Age square	-0.001***
	(0.000)
Male	0.077***
	(0.003)
Local Controls	
% No degree (in local ngh'd)	-0.113***
	(0.010)
% Degree less than high school (in local ngh'd)	-0.010
	(0.010)
% College degree (in local ngh'd)	-0.038***
	(0.009)
% Single-parent household (in local ngh'd)	-0.094***
	(0.013)
% North African (in local ngh'd)	-0.108***
	(0.030)
% No degree (in Emp Zone)	-0.038
	(0.034)
% Degree less than high school (in Emp Zone)	-0.062**
	(0.028)
% College degree (in Emp Zone)	-0.025
	(0.029)
% Single-parent households (in Emp Zone)	-0.085***
	(0.032)
% North African in EZ	-0.186*
	(0.109)
Observations	396813
Individual controls	Yes
Quarter FE	Yes
Departement FE	Yes
Socio-economic Env.	Yes

Note: $N = 396,823$. The sample contains the first and last observations of each sampled individual during years 2007 to 2013. The sample is described in more details in Section 3. All specifications include quarter fixed-effects. * p < 0.1, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses are clustered at the employment zone level.*Individual controls* include: (i) indicators for nationality (ii) four indicators for education, (iii) indicators for socio-economic status. More details on these variables can be found in Tables 1 and 2.*Social-economic environment controls* include employment zone and local neighborhood shares of individuals with no degree, college education as well as the local share of single-parent household.

Table 10: Public Housing Sample: OLS results

	(1) All Controls	(2) (1) + share North African
1. Diversity by nationality		
Local neighborhood	-0.156***	-0.162***
	(0.021)	(0.022)
Employment Zone	0.066	0.072
	(0.063)	(0.075)
	b/se	b/se
2. Diversity by birth country		
Local neighborhood	-0.140***	-0.136***
	(0.017)	(0.021)
Employment Zone	0.049	0.074
	(0.047)	(0.060)
	b/se	b/se
3. Diversity by parents origins		
Local neighborhood	-0.104***	-0.094***
	(0.017)	(0.019)
Employment Zone	0.075*	0.085*
	(0.040)	(0.049)
Individual controls	Yes	Yes
Departement FE	Yes	Yes
Socio-economic Env.	Yes	Yes

Notes: $N = 52,608$. The sample contains the first and last observations of each sampled individual living in a public housing unit during the years 2007 to 2013. The sample is described in more details in Section 3. All specifications include quarter fixed-effects. * p < 0.1, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses are clustered at the employment zone level. *Individual controls* include: (i) indicators for nationality (ii) four indicators for education, (iii) indicators for socio-economic status. More details on these variables can be found in Tables 1 and 2. *Social-economic environment controls* include employment zone and local neighborhood shares of individuals with no degree, college education as well as the local share of single-parent household.

Table 11: Quality of the relationships with neighbors and diversity

Dep. Var.:	Quality of Neighborhood Relationships (Ref: Good)		
	Average	Bad	No relationship
1. Diversity by nationality	1.434***	1.708***	0.882***
	(0.235)	(0.506)	(0.179)
2. Diversity by birth country	1.617***	1.958**	1.206***
	(0.273)	(0.610)	(0.207)

Note: Each line reports the coefficients from a separate multinomial logit regression. The dependent variable indicates opinion about the relationships with the neighbors. It takes value 1 if the surveyed individual declares having good relationships with his/her neighbors (reference category), 2 if the relationships are average, 3 if they are bad, and 4 if there is no relationship at all. The main variable of interest is the level of diversity, computed at the block level, based on nationalities in the first regression and on birth countries in the second one. In each specification, the following controls are included: individual characteristics (age, gender, origin, employment status, education, household income), block level unemployment rate, department fixed effects and a detailed indicator of the social and economic composition of the neighborhood (27 categories). The data come from the 2002 French Housing Survey and the 1999 population census (INSEE). Standard errors clustered at the neighborhood level are reported in parentheses. * p¡0.10, ** p¡0.05, *** p¡0.001

References

Alesina, A., Baqir, R. and Easterly, W. (1999). Public goods and ethnic divisions. *The Quarterly Journal of Economics*, **114** (4), 1243–1284.

—, Devleeschauwer, A., Easterly, W., Kurlat, S. and Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth*, **8** (2), 155–94.

—, Harnoss, J. and Rapoport, H. (2013). *Birthplace Diversity and Economic Prosperity*. NBER Working Papers 18699, National Bureau of Economic Research, Inc.

— and La Ferrara, E. (2000). Participation in heterogeneous communities. *The Quarterly Journal of Economics*, **115** (3), 847–904.

— and — (2002). Who trusts others? *Journal of Public Economics*, **85** (2), 207–234.

— and — (2005). Ethnic diversity and economic performance. *Journal of Economic Literature*, **43** (3), 762–800.

Algan, Y., Hémet, C. and Laitin, D. (2016). The social effects of ethnic diversity at the local level: A natural experiment with exogenous residential allocation. *Journal of Political Economy*, **forthcoming**.

Ananat, E., Fu, S. and Ross, S. L. (2013). *Race-Specific Agglomeration Economies: Social Distance and the Black-White Wage Gap*. Working Paper 18933, National Bureau of Economic Research.

Battu, H., Seaman, P. and Zenou, Y. (2011). Job contact networks and the ethnic minorities. *Labour Economics*, **18** (1), 48–56.

Bayer, P., Ross, S. L. and Topa, G. (2008). Place of work and place of residence: Informal hiring networks and labor market outcomes. *Journal of Political Economy*, **116** (6), 1150–1196.

Bisin, A., Patacchini, E., Verdier, T. and Zenou, Y. (2011). Formation and persistence of oppositional identities. *European Economic Review*, **55** (8), 1046 – 1071.

Borjas, G. J. (2003). The labor demand curve is downward sloping: Reexamining the impact of immigration on the labor market. *Quarterly Journal of Economics*, **118** (4), 1335–1374.

Calv-Armengol, A. and Jackson, M. O. (2004). The effects of social networks on employment and inequality. *American Economic Review*, **94** (3), 426–454.

Cameron, A. C. and Miller, D. (2015). A practitioner's guide to cluster-robust inference. *Journal of Human Resources*, **50** (2), 317–372.

Card, D. (2001). Immigrant inflows, native outflows, and the local labor market impacts of higher immigration. *Journal of Labor Economics*, **19** (1), 22–64.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, **94** (Supplement: Organizations and Institutions:Sociological and Economic Approaches to the Analysis of Social Structure), S95–S120.

Corcoran, M., Datcher, L. and Duncan, G. (1980). Information and influence networks in labor markets. *Five Thousand American Families: Patterns of Economic Progress*, **7**, 1–37.

Costa, D. L. and Kahn, M. E. (2003). Civic engagement and community heterogeneity: An economist's perspective. *Perspectives on Politics*, **1** (1), 103–111.

Easterly, W. and Levine, R. (1997). Africa's growth tragedy: Policies and ethnic divisions. *The Quarterly Journal of Economics*, **112** (4), 1203–1250.

Glennerster, R., Miguel, E. and Rothenberg, A. D. (2013). Collective action in diverse sierra leone communities. *The Economic Journal*, **123** (568), 285–316.

Granovetter, M. S. (1995). *Getting a Job: a Study of Contacts and Careers*. Cambridge, MA. Harvard University Press, 2nd edn.

Hellerstein, J. K., Neumark, D. and McInerney, M. (2008). Spatial mismatch or racial mismatch? *Journal of Urban Economics*, **64** (2), 464–479.

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

Hong, L. and Page, S. E. (2001). Problem solving by heterogeneous agents. *Journal of Economic Theory*, **97** (1), 123–163.

Ioannides, Y. M. and Datcher Loury, L. (2004). Job information networks, neighborhood effects, and inequality. *Journal of Economic Literature*, **42** (4), 1056–1093.

— and Topa, G. (2010). Neighborhood effects: Accomplishments and looking beyond them. *Journal of Regional Science*, **50** (1), 343–362.

Lazear, E. P. (1999). Globalisation and the market for team-mates. *Economic Journal*, **109** (454), C15–40.

Light, I. (2005). *The Handbook of Economic Sociology*, Princeton University Press, chap. 28. The Ethnic Economy. 2nd edn.

— and Rosenstein, C. (1995). *Race, Ethnicity, and Entrepreneurship in Urban America*. Walter deGruyter Inc.

Martin-Houssart, G. and Tabard, N. (2002). *Représentation socio-économique du territoire, typologie des quartiers et communes de France selon la profession et l'activité socio-économique de leurs habitants*. Working Papers F0208, INSEE.

Michelis, A. D., Estevo, M. and Wilson, B. A. (2013). *Productivity or Employment: Is It a Choice?* Working Paper 13/97, IMF.

Miguel, E. and Gugerty, M. K. (2005). Ethnic diversity, social sanctions, and public goods in kenya. *Journal of Public Economics*, **89** (11-12), 2325–2368.

Munshi, K. (2003). Networks in the modern economy: Mexican migrants in the u.s. labor market. *The Quarterly Journal of Economics*, **118** (2), 549–599.

Nordhaus, W. (2005). *The Sources of the Productivity Rebound and the Manufacturing Employment Puzzle*. Working Paper Series 11354, NBER.

Ottaviano, G. I. and Peri, G. (2006). The economic value of cultural diversity: evidence from us cities. *Journal of Economic Geography*, **6** (1), 9–44.

Ottaviano, G. I. P. and Peri, G. (2012). Rethinking the effect of immigration on wages. *Journal of the European Economic Association*, **10** (1), 152–197.

Patacchini, E. and Zenou, Y. (2012). Ethnic networks and employment outcomes. *Regional Science and Urban Economics*, **42** (6), 938–949.

Prarolo, G., Bellini, E., Ottaviano, G. I. and Pinelli, D. (2009). *Cultural Diversity and Economic Performance: Evidence from European Regions*. Working Papers 2009.63, Fondazione Eni Enrico Mattei.

Saiz, A. (2007). Immigration and housing rents in american cities. *Journal of Urban Economics*, **61** (2), 345–371.

Schmutte, I. M. (2015). Job referral networks and the determination of earnings in local labor markets. *Journal of Labor Economics*, **33** (1), 1–32.

Wahba, J. and Zenou, Y. (2005). Density, social networks and job search methods: Theory and application to egypt. *Journal of Development Economics*, **78**, 443–473.

Weinberg, B. A., Reagan, P. B. and Yankow, J. J. (2004). Do neighborhoods affect hours worked? evidence from longitudinal data. *Journal of Labor Economics*, **22** (4), 891–924.

Wellman, B. (1996). Are personal communities local? a dumptarian reconsideration. *Social Networks*, **18**, 347–354.

Winters, P., de Janvry, A. and Sadoulet, E. (2001). Family and community networks in mexico-u.s. migration. *Journal of Human Resources*, **36** (1), 159–184.

Documents de Travail

590. M. Girotti, “How Monetary Policy Changes Bank Liability Structure and Funding Cost” April 2016

591. E.Monnet and C.Wolf, “Demographic Cycle, Migration and Housing Investment : a Causal Examination” April 2016

592. E. Monnet and D. Puy , “Has Globalization Really Increased Business Cycle Synchronization? ” April 2016

593. N. Cassola and F. Koulischer, “The Collateral Channel of Open Market Operations” May 2016

594. G. Gaballo and A. Zetlin-Jones, “Bailouts, Moral Hazard and Banks' Home Bias for Sovereign Debt” May 2016

595. M. Lemoine and J. Lindé, “ Fiscal Consolidation Under Imperfect Credibility” May 2016

596. C. Thubin, T.s Ferrière, É. Monnet, M. Marx and V. Oung, “The PRISME model: can disaggregation on the production side help to forecast GDP? ” June 2016

597. A. M. Mayda, G. Peri and W. Steingress, “Immigration to the U.S.: A problem for the Republicans or the Democrats? ” June 2016

598. A. Bernales and M. di Filippo, “The Information Contained in Money Market Interactions: Unsecured vs. Collateralized Lending” July 2016

599. M. Bussière, J. Schmidt, F. Vinas, “International Banking and Cross-Border Effects of Regulation: Lessons from France” August 2016

600. M. Mogliani and T. Ferrière, “Rationality of announcements, business cycle asymmetry, and predictability of revisions. The case of French GDP” September 2016

601. R. S.J. Koijen; F. Koulischer; B. Nguyen and M. Yogo, “Quantitative Easing in the Euro Area: The Dynamics of Risk Exposures and the Impact on Asset Prices” September 2016

602. O. de Bandt and M. Chahad, “A DGSE Model to Assess the Post-Crisis Regulation of Universal Banks” September 2016

603. C. Malgouyres, “The Impact of Chinese Import Competition on the Local Structure of Employment and Wages: Evidence from France” September 2016

604. G. Cette, J. Lopez and J. Mairesse, “Labour market regulations and capital labour substitution” October 2016

605. C. Hémet and C. Malgouyres, “Diversity and Employment Prospects: Neighbors Matter!” October 2016

Pour accéder à la liste complète des Documents de Travail publiés par la Banque de France veuillez consulter le site :
www.banque-france.fr

For a complete list of Working Papers published by the Banque de France, please visit the website:
www.banque-france.fr

Pour tous commentaires ou demandes sur les Documents de Travail, contacter la bibliothèque de la Direction Générale des Études et des Relations Internationales à l'adresse suivante :

For any comment or enquiries on the Working Papers, contact the library of the Directorate General Economics and International Relations at the following address :

BANQUE DE FRANCE
49- 1404 Labolog
75049 Paris Cedex 01
tél : 0033 (0)1 42 97 77 24 ou 01 42 92 63 40 ou 48 90 ou 69 81
email : 1404-ut@banque-france.fr