

Non expected discrimination :

The case of social housing in France

Liliane Bonnal* Rachid Boumahdi[†] and Pascal Favard[‡]

6 mai 2011

Abstract This research is a study of the differences in duration of waiting time between European and non-European households to obtain social housing, drawing on the housing survey carried out by France's INSEE (Paris, 2006). The idea here is to bring to light eventual discrimination against non-European households. We show that these households, all else held constant, spend more time on the waiting lists. Appropriate decomposition techniques enable us to demonstrate that a non-negligible portion of this gap could well be due to discrimination.

Keywords Social housing, waiting list, immigrants, social criteria, discrimination

JEL Classification H31 - D12 - R20

*University of Poitiers, Crief and TSE-Gremaq, 93 avenue du Recteur-Pineau BP 623, 86022 Poitiers Cedex, e-mail : bonnal@cict.fr

[†]University of Toulouse 1 Capitole, TSE-Gremaq, e-mail : rachid.boumahdi@univ-tlse1.fr.

[‡]University François-Rabelais of Tours, Gercie, e-mail : pascal.favard@univ-tours.fr

1 Introduction

In most OECD countries, immigration has played (and still plays) an important role in terms of economic growth, but also in terms of population growth. Out of concern for social cohesion, it is important that these populations be integrated into their host country. Successful integration implies access to education, employment, and also to housing. Researchers have taken an active interest in immigrant or colored populations and their integration into the labor market. Recent research by Aeberhardt et al. (2010), carried out on French data, sheds light on two phenomena. The first is related to discriminatory behavior with respect to populations of African origin looking for work. When holding employment, their average salaries are weaker. This difference is essentially explained by the workers' characteristics. Schnepf (2007) shows that the characteristics that can cause migrants to be disadvantaged on the labor market differ according to the country. The important elements for the continental countries are socio-economic characteristics and the level of schooling. Meunier (2011) for Switzerland, and Bonnal et al. (2008) for France, demonstrate that reading and mathematical test scores of children of the immigrants are lower than those of other children, all else held constant. In addition to the language problem, immigrants and their children have on the average a lower level of income and education than nationals (Aeberhardt 2010, Bonnal et al. 2008).

To our knowledge no study exists, in particular for France, that focuses on the accessibility of rental housing for families of immigrant origin. Housing is not only a consumer good, it is a product of the society that can confer a status and an identity, and therefore a more successful integration. Given the socio-economic characteristics of households of foreign origin (see for example, Aeberhardt, 2010 ; Verdugo, 2010), most of them satisfy requirements necessary to apply for social housing. It would seem that for immigrant populations the choice of place of residence is closely linked to the supply of public housing. In this research, we will not be focusing on this choice, but rather on their access to a social lodging. Social housing, in particular HLM (Habitations à Loyer Modéré, moderate-rent accommodations), is intended for households whose revenue is not very high. Since the demand for social housing is superior to the offer of rental dwellings, the attribution of social housing implies a selection among candidates. The objective of this research is on the one hand to seek out the criteria social landlords consider when attributing an accommodation, and on the other to bring to the fore an eventual discriminatory behavior toward "immigrant" households. Very clearly, not

just any difference in access to a collective good such as social housing can be construed as discriminatory. Discrimination is constituted when legitimate criteria for denying access are bypassed in favor of illegitimate criteria such as ethnic origin. Therefore, we will pay particular attention in the remainder of this research to information about ethnic origins.

We work with the complete set of households having applied for social housing at a competent organism, and we concentrate on the length of time required to gain access to this type of dwelling. A first objective will be to see if, all else held constant, the duration of time spent waiting for such housing is different according to the household's ethnic origin. If we uncover such a difference, a second objective will be to try to explain it and to see if it is due to discrimination, applying decomposition methods of the type Oaxaca and Ramson (1994) or Fairlie (1999). Our study is based on the 2006 housing survey carried out by France's INSEE (National Institute of Statistics and Economic Studies).

The second section provides a glimpse at French legislation in terms of access to social housing. Section 3 presents the descriptive statistics associated with the duration variable and with the principal explanatory variables selected in the modeling by ethnic origin. These statistics bring out the differences in characteristics between the two groups. In section 4, we present the selected modeling procedure. The results are given in section 5 and show that, everything else held constant, the duration of time to gain access a social housing unit is longer for immigrant households. The decomposition techniques type Oaxaca and Ramson (1994) and Fairlie (1999) enable us to estimate the portions of the differences in average waiting-period durations between "French" and "immigrant" explained by household characteristics. The conclusion is set forth in the last section of this study.

2 French legislation

Policies implemented relating to social housing symbolize the growing awareness of the economic issue constituted by the housing of the most "disadvantaged" classes. The stock of French rental property is divided into two main types of housing : private-sector rental housing and social rental housing. In 2006, social housing in France could be numbered at 4,314,300 accommodations¹. These units of social housing constitute an important part of the rental stock (roughly 40%) and represent 17% of all dwelling places. Social housing is one of the

1. Data from the Ministry of Ecology, Sustainable Development, Transport and Housing.

principal recourses of modest or deprived households. While the number of social housing units has not ceased to increase (by about 1% a year), it remains insufficient.

The HLM moderate-rent accommodations are especially intended for households whose revenue is not very high. Common law rental measures apply to all HLM dwellings (required rental contract, tenant and landlord obligations, rent payment receipts, tenant deposit guarantee schemes and restitution conditions).

Generally, the attribution of an HLM is subject to the condition of limited resources. The revenue ceilings are readjusted each year in function of the minimum wage. The number of persons composing the household is taken into account when determining of the maximum revenue. Exceptions to these ceilings may exist due to unoccupied rental units in certain territories, or for the purpose of facilitating social diversity.

To benefit from the advantage of a social accommodation, two further conditions must be satisfied. On the one hand, the dwelling must be for the household's principal place of residence ; and on the other, the tenant must either be of French nationality or have a resident's permit that is valid for more than three months. All applicants wishing to obtain a social accommodation are attributed a single departmental number within the month following the application. The purpose of the unique number is to make it possible to guarantee the applicant's rights and to ensure priority examination of non-satisfied applications within a "normal delay". Such delays depend on the Departments and on the zone of the application. According to its exact location, the delays generally vary between 18 and 30 months. For a city such as Paris, the average duration is greater than 5 years. The validity of the application for social lodging is one year. A month before it expires, if the application is not satisfied, the applicant receives notification that he must renew his application. His single number remains unchanged. Four events can lead to the applicant's loss of his single number : the signature of the rental contract for private-sector rental unit, written renunciation of the application for social housing, the non-renewal of the application, or also the rejection of the application by the attribution Commission for social accommodations. This Commission is composed of representatives of the State (Prefecture, Sanitary and Social Action, Department), HLM organisms and associations for housing assistance. The Commission meets once a month. The sole criteria considered when attributing social accommodations are theoretically the applicant's social, economic and financial situation. The Commission should not consider the candidate's ethnic origins, nor should it ask for information concerning his place of birth or

that of his parents. It can only register the candidate's nationality. The applicant must report any modification in his situation (household size, professional situation, loss of revenue ...). In making its attributions, the Commission must be attentive to "social diversity".

3 Data

3.1 Housing survey

The French National Institute of Statistics and Economic Studies (INSEE, Paris) carries out a housing survey every 5 years. We use the 2006 survey here. It is the only available survey in France that deals with household accommodations. This survey bears on the state and structure of housing, as well as on the conditions of household accommodation occupancy in France. It makes it possible to describe simultaneously the physical characteristics of the accommodations, their environment, and the socio-demographic or economic characteristics of the households, the financial assistance the occupants receive, the resources the different household members receive, or even the legal terms of occupancy of their principal residence.

3.2 Samples and groups considered for our analysis

We concentrate on 5,208 households that have applied for social accommodations. The duration before the attribution of the housing unit is observed for all the households whose application has been successful. The length of time the application has remained unsatisfied is known for households still on the waiting list at the time of the survey. Both the time on the waiting list of yet unsatisfied applications and the duration of the waiting period for successful ones are measured in discrete fashion at seven intervals.

We chose to split up the households into two groups according to their ethnic origin. The first group is composed of households whose two members are of French origin or of another European country. Hereafter, we will call this group the "Europeans". It includes 2,689 households, which are 51.6% of the applicants for HLM rental accommodations (Table 1). In the second group, we consider the households of non-European origin. More precisely, we regrouped all the households in which one of the adult members was born in a non-European country (essentially in Africa, Asia, as well as in Turkey), who has foreign nationality or

who has become French by naturalization². This group is made up of 2,519 households, representing 48.4% of candidates for social accommodations (Table 1). Our objective here is to attempt to pinpoint an eventual "skin color" effect in the attribution of social housing.

Place Table 1 here

3.3 The durations observed

Over the 2001-2006 observation period, more than a third of households (38.6%) obtained a social housing unit. The proportion of successful applicants is significantly different according to ethnic origin. It is higher for the European households (51.2 vs. 27.1%).

The distribution of observed durations (censored and uncensored) is presented in Table 2. These distributions are different according to ethnic origin. The distribution of durations is shifted to the left for the European households. The time necessary to obtain a social housing unit is shorter for this population (60% obtain their accommodations during the six months following their candidature as opposed to 40% for the non-European households). In equivalent fashion, less than 10% of European households waited longer than 3 years, vs. 20% for the non-Europeans. The distribution of the waiting period durations is also shifted to the left for European households. For the latter group, the durations are shorter (inferior to a year), whereas they are superior to a year for non-European households.

This first descriptive analysis brings to light differences in terms of waiting time for social accommodations, which we will try to explain the remained of this study.

Place Table 2 here

3.4 The explanatory variables (covariates)

The descriptive statistics associated with the various explanatory variables show differences according to ethnic origin (Table 3). These differences are comparable to those collected by Aaberhardt et al. (2010)³.

2. The principal countries concerned by migration to France are the African and Asiatic countries, plus Turkey. Estimation of the model that includes these various ethnic origins presented in Table 1 shows the pertinence of this regrouping. This estimation is available from the authors on request.

3. In this paper, the authors compare the labour market situation of French workers with French parents and of French workers with at least one African parent. In our population, Europeans are essentially French with French parents (89%) and non-European are essentially African or French with at least one African parent (85%).

In particular, the family units already living in HLM moderate-rent accommodations are relatively less numerous among the non-Europeans households. Inversely, households wishing to live in Paris and the Parisian urban area, as well as those having unpaid rent problems are overly represented in the latter group.

For non-European households, the distribution of revenue and net worth are shifted to the left : they are more numerous in the first intervals (Table 3).

There are more heads of household without a diploma among the non-Europeans. The proportion of degree holders having at least the level of the French Baccalaureate, plus two years of university studies is comparable in both groups. Professional degrees are relatively less frequent among the European households.

The situation on the labor market is also different. Non-European household heads are more frequently unemployed or hired under fixed-term employment contracts and hold civil-servant jobs less frequently than European heads of household.

Single women (with or without children) and couples with children (regardless of their number) are more numerous among non-European households.

This population is perfectly representative of the foreign populations analyzed in various studies done on French data (Aeberhardt et al., 2010 ; Verdugo, 2010).

Place Table 3 here

4 The econometric model

In general, a social accommodation is intended in priority for households having financial difficulties ; which is to say, essentially those family units whose revenue is low. As we have seen in the preceding section, the characteristics of non-European households differ from those of European ethnic origin. In particular, they are less frequently graduates and in a situation of greater precariousness (more frequent unemployment, lower revenue per consumer unit, ...). Given their situation, these households ought to see their applications for social housing more easily satisfied to confine ourselves to the declared policies of social landlords.

The objective of this section is to pinpoint whether, all else held constant, non-European households need more time on the average than households of European origin to obtain a social housing unit. The descriptive statistics bring to light a longer average duration in obtaining social accommodations for non-European than European households. The estimation

of a duration model which makes it possible to control for a certain number of household characteristics such as its size, its household head's qualification level, or also its revenue will allow us to measure the effect of ethnic origin. If, with given characteristics, the mean household duration of non-Europeans is longer than that of Europeans, we will eventually be able to conclude that these non-European households are victims of discrimination.

The duration of access to a social housing unit, which is the variable to be explained, is observed in the discrete sense. We will therefore consider a proportional hazard duration model.

4.1 A discrete duration model

Let us consider $q = k + 1$ intervals of time $[0, b_1[, [b_1, b_2[, \dots, [b_{k-1}, b_k[, [b_k, +\infty[$ and T , the duration of access to social housing. The interval j is defined by $[b_{j-1}, b_j[$. The probability of obtaining a social housing unit during the interval j is defined by :

$$P(T \in [b_{j-1}, b_j]) = S(b_{j-1}; X_j) - S(b_j; X_j) = f_j(X_j),$$

where $S(b_{j-1}; X_j) = S_j(X_j) = P(T > b_{j-1})$ is the survival function defined at the beginning of the interval j , and X_j are characteristics associated to the household⁴ i observed during the interval j . These covariates can be a function of the duration or have a different effect between intervals. In this paper we consider that only the baseline hazard function depends on intervals of time.

The hazard function is defined by :

$$h_j(X_j) = h_j(X) = P(T \in [b_{j-1}, b_j]) = 1 - \frac{S(b_j; X)}{S(b_{j-1}; X)} \quad (1)$$

If we consider that (1) takes a logistic form :

$$h_j(X; \beta_j) = \frac{\exp(\alpha_j + X'\beta_x)}{1 + \exp(\alpha_j + X'\beta_x)},$$

where β_j is the estimated vector for the interval j , defined by $(\alpha_j \quad \beta_x)'$.

The likelihood function of a household with a duration of access to social housing, included

4. The index i is ignored to simplify the notation.

in the interval j , is given by :

$$\begin{aligned} l(\alpha, \beta_x) &= d \text{Ln} (S(b_{j-1}; X) - S(b_j; X)) + (1 - d) \text{Ln} (S(b_{j-1}; X)) \\ &= d \text{Ln} \left(h_j(X; \beta_s) \prod_{s=1}^{j-1} (1 - h_s(X; \beta_s)) \right) + (1 - d) \text{Ln} \left(\prod_{s=1}^j (1 - h_s(X; \beta_s)) \right), \end{aligned}$$

where $\alpha = \{\alpha_j\}_{j=1, \dots, 7}$.

The first part of the likelihood is a household's contribution when duration is uncensored duration (a social housing has been obtained during the j^{th} interval). The second part of the likelihood is the contribution of a family that has not found social housing, which is a censored duration. The dummy variable d takes on the value 1 for uncensored duration. The likelihood of the model is the product of these individual contributions to likelihood for the set of all households.

The baseline hazard function is defined on the basis of constants associated with each interval. Given the definition of the duration model, the explanatory variables have a positive effect (positive coefficient sign) or negative (negative coefficient sign) on the probability of instantaneous exit. Consequently, when the effect of a variable is positive, it signifies that the instantaneous probability of obtaining accommodations rises and that the mean duration for obtaining a social housing unit will be shorter, and inversely so. The analysis is carried out, all else held constant.

The probability density function, the survival function and the cumulative density function are respectively given by equations (2), (3) and (4).

$$f_j(X; \gamma_j) = \begin{cases} h_1(X; \beta_1) & \text{if } j = 1, \\ \left[\prod_{s=1}^{j-1} (1 - h_s(X; \beta_s)) \right] [h_j(X; \beta_s)] & \text{if } j = 2, \dots, k, \\ \left[\prod_{s=1}^{k+1} (1 - h_s(X; \beta_s)) \right] & \text{if } j = k + 1. \end{cases} \quad (2)$$

where the vector of parameters $\gamma_j = (\{\alpha_k\}_{k \leq j} \beta_x)'$.

$$S_j(X; \gamma_j) = P(T > b_{j-1}) = \begin{cases} 1 & \text{if } j = 1 \\ \left[\prod_{s=1}^{j-1} (1 - h_s(X; \beta_s)) \right] & \text{if } j > 1. \end{cases} \quad (3)$$

$$F_j(X; \gamma_j) = 1 - S_j(X; \gamma_j). \quad (4)$$

4.2 Average

Without any information about the exact duration, an uniform distribution for each interval of time has been assumed. Thus, the average duration of access to social housing is given by :

$$E(T) = \sum_{j=1}^{k+1} c_j f_j(X; \gamma_j), \quad (5)$$

where $f_j(X; \gamma_j)$, which is defined by (2) and $c_j = b_j - b_{j-1}$ for $j = 1$ to $k + 1$, is the center of the interval j . Conventionally, the magnitudes of the two last intervals (k and $k + 1$) are equals.

4.3 Decomposition

Let us consider 2 subsamples denoted by the index e and ne , of size N_e and N_{ne} . Let X^e and δ^e (resp. X^{ne} and δ^{ne}) be the covariates and parameters associated with the subsample f and nf .

Any non-linear function $G(X; \delta)$, where X is a set of variables and δ a vector parameter, can be decomposed by the Fairlie (1999) method as following :

$$\begin{aligned} \overline{G(X^e; \delta_j^e)} - \overline{G(X^{ne}; \delta_j^{ne})} &= \frac{1}{N_e} \sum_{i=1}^{N_e} G(X_i^e; \delta_j^e) - \frac{1}{N_{ne}} \sum_{i=1}^{N_{ne}} G(X_i^{ne}; \delta_j^{ne}) \\ &= \left\{ \frac{1}{N_e} \sum_{i=1}^{N_e} G(X_i^f; \delta_j^e) - \frac{1}{N_{ne}} \sum_{i=1}^{N_{ne}} G(X_i^{ne}; \delta_j^e) \right\} + \\ &\quad \left\{ \frac{1}{N_{ne}} \sum_{i=1}^{N_{ne}} G(X_i^{ne}; \delta_j^e) - \frac{1}{N_{ne}} \sum_{i=1}^{N_{ne}} G(X_i^{ne}; \delta_j^{ne}) \right\} \end{aligned} \quad (6)$$

$$\begin{aligned}
\overline{G(X^e; \delta_j^e)} - \overline{G(X^{ne}; \delta_j^{ne})} &= \frac{1}{N_e} \sum_{i=1}^{N_e} G(X_i^e; \delta_j^e) - \frac{1}{N_{ne}} \sum_{i=1}^{N_{ne}} G(X_i^{ne}; \delta_j^{ne}) \\
&= \left\{ \frac{1}{N_e} \sum_{i=1}^{N_e} G(X_i^e; \delta_j^{ne}) - \frac{1}{N_{ne}} \sum_{i=1}^{N_{ne}} G(X_i^{ne}; \delta_j^{ne}) \right\} + \\
&\quad \left\{ \frac{1}{N_e} \sum_{i=1}^{N_e} G(X_i^e; \delta_j^e) - \frac{1}{N_e} \sum_{i=1}^{N_e} G(X_i^e; \delta_j^{ne}) \right\} \tag{7}
\end{aligned}$$

the equation (6) used the parameter structure of subsample e , the equation (7) used the parameter structure of subsample ne .

Depending on the decomposition function that can be computed, the function G can be replaced by $F_j(X, \gamma_j)$, $S_j(X, \gamma_j)$ or by the average function E .

5 The results

We have estimated the duration model by the maximum-likelihood method for the set of all the households in the sample, as well as for the two groups; which is to say, the European and the non-European households. The variables under consideration in these duration models are those presented in Section 3. We begin by commenting on the parameters of the estimations before using them to decompose the differences between the various probabilities associated with the length of time to obtain a social housing unit on the one hand, as well as the differences between mean durations in obtaining this social housing on the other.

The results are given in Table 4. The table shows that the instantaneous probability of obtaining social housing is generally rising in successive intervals, regardless of the group considered. The baseline hazard function is weaker for non-European than for European households.

Place Table 4 here

The attribution of social accommodations depends on the supply of housing, which in the short term is relatively inelastic. The social housing market is not in equilibrium. The disequilibrium is all the greater the more the housing unit requested deviates from the average surface of housing units offered. The number of applications for small apartments increases

continually (see for example, Chardon, Daguet and Vivas, 2008). For a fixed supply of HLM moderate-rent accommodations, the waiting queue for small-surface apartments will be longer, which should lengthen the duration of access to the housing unit on the average. While the demand for large apartments does not evolve, it is just as difficult to gain access to these apartments for altogether other reasons. The latter difficulties are linked to the relatively high cost of mobility, as much monetary as opportunity costs (Gobillon and Le Blanc (2008), Bonnet, Gobillon and Laferrère (2010)). Households occupying large social accommodations tend not to change domiciles. There are, moreover, disparities between regions, even between cities. We have introduced control variables to take into account all these phenomena. They account for the size of the city (indicators characterizing departmental administrative center cities and residential zones), for the region (regional indicators), for the density of the stock of social housing for 1000 inhabitants per region, and the size of the accommodation applied for. The results are in keeping with those found by Simon and Kirszbaum (2001), the larger the city, the longer the access period to obtain social housing (in particular, for Paris). The effect is slightly greater for non-European households. The access duration increases with the density of social housing per 1000 inhabitants.

Socio-demographic factors in fact make it possible to explain in a significant manner the length of the access period in obtaining social housing (Table 4).

The mean access time to a social accommodation is lower for European households (Model 1). Thanks to the estimations of the duration by nationality, we have singled out the explanatory variables that have different effects on this duration. In general, the mean access time to social housing is longer for single women with children. This effect is greater for non-European women. For European families, the duration is shorter for men without children and couples with two children. The mean access duration is longer for non-European families with children, while the access duration is shorter for women without children.

As a general rule, the higher the head of household's level of schooling, the less time the family will need to obtain its social accommodation. For the European households, the level required in terms of diplomas is less important. We again arrive at this result with the two monetary variables. For non-European households, the access duration diminishes with the income level. Moreover, all else held constant, this duration is shorter for a level of net worth between 10,000 and 30,000 €. For the European households, only those having very low income (less than 10,000 €) or high net worth (superior to 30,000 €) have access durations

that are longer in obtaining social housing.

For the set of all households, people holding permanent employment contracts in the public sector have shorter access time to obtain social housing. The same goes for non-European households holding permanent employment contracts in the private sector. As for the European households that are inactive non-retirees, they have shorter access durations. Recall that these inactive individuals are essentially students or persons on pension.

The access duration to social housing is lengthened if a member of the family unit is handicapped, if the household has had unpaid rent problems, as well as if it already lives in social accommodations.

These findings validate the idea according to which social landlords, being little inclined to risk taking, seem to prefer stability in order to be protected against non-payment of the rent as much as possible, leading them to select in priority households with relatively high income and preferably with a diploma. The landlords are yet more demanding for households of non-European origin in terms of educational levels and income.

The results obtained substantiate the existence of differences between Europeans and non-Europeans. To measure these differences, we go on to estimate several indicators : the mean access duration to social housing and various probabilities according to ethnic origin. These estimations (in Table 5) show that households of European origin have shorter access duration. The gap between the two means approaches 2 years in favor of households with European origin. The average access duration in obtaining social housing is less than 3 years for the Europeans, and more than 5 years for the non-Europeans. According to the counterfactual decomposition considered⁵, the unexplained part of the gap varies by between 25 and 50% (Table 6).

The evolution of the cumulative distribution function for waiting-time duration is much slower for non-Europeans than for Europeans (Table 5). The estimated probability of obtaining accommodations during the first month is roughly 10% for the Europeans and 1.5% for the non-Europeans. At the end of a year, nearly 50% of the Europeans' applications are satisfied, while only 15% of the non-Europeans occupy social housing. Finally, although nearly 70% of non-Europeans are still waiting after 5 years, only 34% of the Europeans still

5. Let us note that the non-European counterfactual yields the lower bound of the unexplained part, while the European counterfactual gives the upper bound. All linear combinations of two sets of parameters indicate an unexplained share that is included in this interval (see Cotton, 1988; Fortin et al., 2010).

are⁶. Consequently, the longer the waiting time, the more the gap between the probabilities of access to social housing of Europeans and non-Europeans increases. Can these gaps be explained? The counterfactual decomposition (Table 6) shows once again that, depending on the counterfactual selected, the unexplained share of the gaps varies from between 20% (if the counterfactual is non-European) to more than 45% (if the counterfactual is European). For the very short access durations (less than 3 months), half the gap is not explained. The share of the unexplained part of the gap diminishes afterwards with duration. Beyond a 5-year waiting period, the unexplained part is on the order of 20% (non-European counterfactual). The unexplained share of the gap is often attributed to discrimination. Consequently, our empirical results substantiate in non-negligible fashion discriminatory treatment of non-Europeans in the attribution of social housing. It may be thought that the social landlords combine the criterion of ethnic origin with other social or family criteria when attributing accommodations. This possibility may explain the greater slowness in processing these applications. The social landlords consider that non-Europeans belong to "risky categories" (Simon, 2003), the risk being associated either with a financial problem (non-payment of the rent), a cultural problem (differing ways of life) or with problems of insecurity (property deterioration, violence . . .).

Place Table 5 and 6 here

6 Conclusion

This research is focused on the duration of access to social housing of European and non-Europeans households, exploiting the housing survey conducted by the INSEE in 2006. We have estimated a duration model in discrete time. The results show that, all else held constant, the duration of waiting time for social housing is longer for non-Europeans than for Europeans. Generalization of Fairlie's decomposition method (1999) makes it possible to bring to light discrimination with respect to non-Europeans. It may therefore be thought that the attribution of social housing is not done solely on social criteria. Discrimination may well exist in the attribution of social housing in France.

6. The measurement of this unexplained part depends on the explanatory variables used in the model. The introduction of supplementary explanatory variables that are not available in the database could eventually modify this unexplained share.

Reference

- Aeberhardt R, Fougère D, Pouget J, Rathelot R (2010) Wages and employment of French workers with African origin. *Journal of Population Economics* 23(3) :881-905.
- Bonnal L, Boumahdi R, Favard P, Moreau N (2008) Accès à la propriété, orientation scolaire et inégalités de revenu : une analyse des discriminations. In Report for the MiRe
- Bonnet C, Gobillon L, Laferrère A (2010) The effect of widowhood on housing and location choices. *Journal of Housing Economics* 19 :106-120
- Chardon O, Daguet F, Vivas E (2008) Les familles monoparentales, des difficultés à travailler et à se loger. Insee première No. 1195
- Cotton J (1988) On the decomposition of wage differentials. *Review of Economics and Statistics* 70 :236-243
- Fairlie R.W (1999) The absence of the African-American owned business : an analysis of the dynamics of self-employment. *Journal of Labor Economics* 17(1) :80-108
- Fortin N, Lemieux T, Firpo S (2010) Decomposition methods in economics. NBER Working Paper No. 16045
- Gobillon L, Le Blanc D (2008) Economic Effects of Upfront Subsidies to Ownership : the case of the Prêt à Taux Zéro in France. *Journal of Housing Economics* 17(1) :1-33
- Jacquot A (2006) Cinquante ans d'évolution des conditions de logement des ménages. In : *Données sociales - La société française*, pp 467-473
- Jenkins. S. P (1995) Easy estimation methods for discrete-time duration models. *Oxford Bulletin of Economics and Statistics* 57(1) :129-138
- Laferrère A, Le Blanc D (2004) How do housing allowances affect rents ? An empirical analysis of the French case. *Journal of Housing Economics* 13(1) :36-67
- Laferrère A, Le Blanc D (2006) Housing policy : low-income households in France. In : *A companion to urban economics*. R J Arnott and D P McMillen (eds). Blackwell Publishing Ltd, Oxford
- Meunier M (2011) Immigration and student achievement : evidence from Switzerland. *Economics of education review* 30(1) :16-38
- Oaxaca R, Ransom M (1994) On discrimination and the decomposition of wage differentials. *Journal of Econometrics* 61 :5-21
- Schnepf S.V (2007) Immigrants' educational disadvantage : an examination across ten countries and three surveys. *Journal of Population Economics* 20(3) :527-545

- Simon P. (2003) Le logement social en France et la gestion des populations à risques. *Hommes et Migrations* 1246 :78-91
- Simon P, Kirszbaum T (2001) Les discriminations raciales et ethniques dans l'accès au logement. Note n° 3 du Geld
- Verdugo G. (2010) Public housing and residential segregation of immigrants in France, 1968-1999. IZA Discussion Paper No. 5456

Tableau 1 : Household's ethnic origin

Ethnic origin	European		Non-European			
	Nationality	French	Other European countries	Naturalized French	African	Other countries
Total number	2610	79		442	1697	380
Percentage	50.1%	1.5%		8.5%	32.6%	7.3%

Tableau 2 : Distribution of the duration according to the household's ethnic origin

	European origin						Non-european origin					
	AD	%	UD	%	CD	%	AD	%	UD	%	CD	%
[0,1 month[	345	12.8	241	17.5	104	8.0	110	4.4	35	5.6	75	4.0
[1,3 months[	517	19.3	351	25.3	166	12.8	253	10.0	118	19.0	135	7.1
[3,6 months[	429	15.9	256	18.4	173	13.3	254	10.1	109	17.6	145	7.6
[6,12 months[	504	18.7	227	16.3	277	21.3	382	15.2	107	17.2	275	14.5
[12,36 months[	575	21.4	203	14.6	372	28.6	705	28.0	148	23.9	557	29.4
[36,60 months[	198	7.4	70	5.0	128	9.9	478	19.0	66	10.6	412	21.7
More than 60 months	121	4.5	41	2.9	80	6.1	337	13.3	38	6.1	299	15.7
Sample size	2689	100.0	1389	100.0	1300	100.0	2519	100.0	621	100.0	1898	100.0

Note : AD : all durations ; UD : uncensored durations ; CD : censored durations.

Source : Housing survey, Insee, Paris, 2006.

Table 3 : Descriptive statistics (beginning)

	Household's origin		All
	European	Non-European	
Size of the accomodation			
Less than 3 rooms	29.4	51.4	40.1
Between 3 or 4 rooms	61.7	43.3	52.8
More than 4 rooms	9.0	5.2	7.2
In comparison to the apartment currently occupied, the one applied for is			
Smaller	23.6	9.0	16.5
Larger	41.8	72.1	56.5
Same size	34.5	19.0	27.0
Already leaves in an HLM, moderate-rent accomodation	42.8	29.6	36.4
Housing having already experienced unpaid rent problems	24.7	38.7	31.5
Where the desired accomodation is located			
Rural district	5.8	0.5	3.2
Suburb	37.9	54.9	46.1
City center (except Paris)	56.3	44.6	50.6
Paris et adjoining communes	6.5	28.7	17.3
Remainder of the Parisian agglomeration	13.1	32.4	22.5
Remainder of the "Ile-de-France", cities with more than 100,000 inhabitants	50.4	31.4	41.2
Remainder of the territory	29.9	7.4	19.0
Density of the social housing stock for 1,000 inhabitants per department			
Less than 40	9.3	4.6	7.0
Between 40 and 60	30.5	14.6	22.8
Between 60 and 80	25.3	14.2	19.9
Greater than 80	34.8	66.6	50.2

Tableau 3 : Descriptive statistics (end)

	Household's origin		All
	European	Non-European	
Person with permanent disability in the household	18.6	12.9	15.8
Education level of the household head			
French baccalaureate + 3 or more years of schooling	7.0	11.0	8.9
French baccalaureate + 2 years of schooling	7.1	6.9	7.0
High school	14.5	14.4	14.4
Vocational school	33.2	18.9	26.3
No diploma	38.3	48.7	43.3
Labor market situation			
Temporary job	8.7	16.4	12.4
Private-sector permanent job	39.1	35.9	37.5
Public-sector permanent job	16.7	6.9	11.9
Unemployment	12.9	27.0	19.7
Retired	9.7	4.3	7.1
Others out of the labor force	12.9	9.5	11.3
Household size			
Single man without children	15.7	10.4	13.1
Single woman without children	11.8	22.6	17.4
Single man with children	3.3	2.3	2.8
Single woman with children	18.6	21.8	20.2
Couple without children	30.2	14.0	22.0
Couple with one child	9.9	14.1	11.9
Couple with two children	6.3	7.5	6.9
Couple with more than two children	4.2	7.1	5.6
Household net worth (in thousand of euros)			
Less than 5	34.3	59.0	46.2
Between 5 and 10	20.6	19.6	20.1
Between 10 and 15	14.7	8.3	11.6
Between 15 and 30	12.8	6.1	9.5
More than 30	17.7	7.1	12.6
Annual income by consumer units (in thousand of euros)			
Less than 10	38.4	67.9	52.7
Between 10 and 15	32.1	21.3	26.9
Between 15 and 20	18.1	7.5	13.0
More than 20	11.3	3.3	7.5
Number of households	2689	2519	5208

Table 4 : Baseline Hasard Function (beginning)

	All		Non-European		European	
[0,1 month[	-3.273 (0.24)	***	-4.055 (0.73)	***	-2.917 (0,26)	***
[1,3 months[	-2.477 (0.24)	***	-2.637 (0.71)	***	-2.260 (0,26)	***
[3,6 months[	-2.448 (0.24)	***	-2.483 (0.71)	***	-2.274 (0,26)	***
[6,12 months[	-2.19 (0.24)	***	-2.236 (0.71)	***	-2.012 (0,26)	***
[12,36 months[	-1.549 (0.24)	***	-1.373 (0.71)	*	-1.497 (0,27)	***
[36,60 months[	-1.47 (0.26)	***	-1.208 (0.72)	*	-1.421 (0,29)	***
More than 60 months	-0.795 (0.27)	***	-0.614 (0.73)		-0.631 (0,32)	*

Note : Standard errors are between parentheses. * : significant at 10% level ;
 ** : significant at 5% level ; *** : significant at 1%.

Tableau 4 : Estimation of the duration model (intermediate)

	All		Non-European		European	
Size of the accommodation : more than 4 rooms (ref.)						
Less than 3 rooms	-0.344	***	-1.163	***	0.137	
	(0.12)		(0.22)		(0.15)	
Between 3 or 4 rooms	0.330	***	0.053		0.469	***
	(0.10)		(0.18)		(0.12)	
In comparison to the apartment currently occupied, the one applied for is : same size (ref.)						
Smaller	0.707	***	0.818	***	0.680	***
	(0.07)		(0.13)		(0.08)	
Larger	-0.439	***	-0.695	***	-0.273	***
	(0.06)		(0.11)		(0.08)	
Already lives in an moderate rental accomodation (HLM)	-0.364	***	-0.242	**	-0.458	***
	(0.06)		(0.11)		(0.07)	
Housing having already experienced unpaid rent problems	-0.200	***	-0.188	*	-0.203	***
	(0.06)		(0.10)		(0.08)	
Where the desired accommodation is located \diamond : remainder of the territory (ref.)						
City center (except Paris)	0.139		1.358	**	-0.019	
	(0.13)		(0.60)		(0.14)	
Suburb	0.004		1.041	*	-0.064	
	(0.14)		(0.59)		(0.13)	
Paris and adjoining communes	-1.208	***	-1.370	***	-1.077	***
	(0.18)		(0.30)		(0.24)	
Remaining of Parisian agglomeration	-0.679	***	-1.067	***	-0.414	***
	(0.12)		(0.25)		(0.15)	
Remaining of the "Ile-de-France" and cities with more than 100,000 inhabitants	-0.042		-0.122		-0.072	
	(0.07)		(0.16)		(0.08)	
Density of the social housing stock for 1,000 inhabitants per department : less than 40 (ref.)						
Between 40 and 60	0.106		-0.096		0.133	
	(0.12)		(0.29)		(0.13)	
Between 60 and 80	0.483	***	0.539	*	0.458	***
	(0.12)		(0.29)		(0.13)	
Greater than 80	0.281	**	0.329		0.293	**
	(0.14)		(0.32)		(0.16)	
Person with permanent disability in the household	-0.227	***	-0,297	*	-0,172	*
	(0.07)		(0.15)		(0.09)	
European household	0.461	***				
	(0.06)					

Notes : \diamond 17 indicators characterizing the principal French cities with more than 100,000 inhabitants, as well as regional indicators, were introduced. For reasons of space, the estimated coefficients are not presented here but are available from the authors on request.

Standard errors are between parentheses. * : significant at 10% level; ** : significant at 5% level; *** : significant at 1%.

Source : Housing survey, INSEE, Paris, 2006.

Tableau 4 : Estimation of the duration model (end)

	All	Non-European	European
Education level of head of household : No diploma (ref.)			
French baccalaureate + 3 or more years od schooling	0.329 *** (0.10)	-0.009 (0.16)	0.437 *** (0.14)
French baccalaureate + 2 years od schooling	0.371 *** (0.10)	0.409 ** (0.18)	0.360 *** (0.13)
High school	0.337 *** (0.08)	0.225 (0.15)	0.401 *** (0.10)
Vocational school	0.159 *** (0.06)	0.151 (0.12)	0.158 ** (0.08)
Labor market situation : Temporary job (ref.)			
Private-sector permanent job	0.169 ** (0.08)	0.259 ** (0.13)	0.136 (0.11)
Public-sector permanent job	0.329 *** (0.10)	0.367 ** (0.18)	0.263 ** (0.12)
Unemployment	-0.109 (0.10)	-0.192 (0.15)	-0.048 (0.13)
Retired	-0.153 (0.12)	-0.479 * (0.24)	-0.036 (0.15)
Others out of the labor force	0.327 *** (0.10)	0.271 (0.18)	0.381 *** (0.13)
Size of the household : couple without children (ref.)			
Single man without children	0.238 *** (0.09)	0.210 (0.16)	0.202 * (0.11)
Single woman without children	0.061 (0.08)	0.324 ** (0.15)	-0.032 (0.10)
Single man with children	0.084 (0.16)	0.331 (0.30)	0.187 (0.18)
Single woman with children	-0.421 *** (0.09)	-0.768 *** (0.16)	-0.190 * (0.11)
Couple with one child	-0.217 ** (0.10)	-0.628 *** (0.17)	0.084 (0.12)
Couple with two children	0.062 (0.11)	-0.215 (0.18)	0.291 ** (0.14)
Couple with more than two children	0.059 (0.13)	-0.386 ** (0.19)	0.265 (0.18)
Level of household capital (in thousands €) : more than 30 (ref.)			
Less than 5	0.213 ** (0.09)	0.147 (0.18)	0.271 *** (0.10)
Between 5 and 10	0.297 *** (0.09)	0.300 (0.19)	0.255 ** (0.10)
Between 10 and 15	0.344 *** (0.10)	0.480 ** (0.21)	0.251 ** (0.11)
Between 15 and 30	0.305 *** (0.10)	0.519 ** (0.22)	0.221 ** (0.11)
Annual income by consumer units (in thousands €) : more than 20 (ref.)			
Less than 10	-0.419 *** (0.10)	-0.603 *** (0.23)	-0.391 *** (0.12)
Between 10 and 15	-0.254 ** (0.10)	-0.550 ** (0.23)	-0.174 (0.11)
Between 15 and 20	-0.149 (0.11)	-0.470 * (0.25)	-0.073 (0.12)

Table 5 : Mean duration and probabilities estimation

	Probability that the the accession duration to social housing is						Average Duration
	< 1 month	< 3 months	< 6 months	> 1 year	> 3 years	> 5 years	
European	0.090	0.225	0.332	0.560	0.434	0.337	33.705
Non-European	0.014	0.060	0.106	0.846	0.762	0.688	55.846
Gap	0.076	0.165	0.226	-0.286	-0.328	-0.352	-22.142

Table 6 : Gaps decomposition

	Counterfactual :	gap	Explained part	Unexplained part	
				Value	Percent
< 1 month	European	0.076	0.038	0.038	49.9
	Non-European		0.025	0.051	66.6
< 3 months	European	0.165	0.089	0.076	46.2
	Non-European		0.095	0.070	42.6
< 6 months	European	0.226	0.123	0.103	45.6
	Non-European		0.149	0.077	34.1
> 1 year	European	-0.286	-0.151	-0.135	47.1
	Non-European		-0.195	-0.090	31.6
> 3 years	European	-0.328	-0.173	-0.156	47.4
	Non-European		-0.252	-0.077	23.4
> 5 years	European	-0.352	-0.181	-0.171	48.6
	Non-European		-0.284	-0.067	19.1
Average duration	European	-22.142	-11.576	-10.566	47.7
	Non-European		-16.734	-5.408	24.4