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Are housing benefit an effective way to redistribute income? Evidence from a natural experiment in France

Gabrielle Fack

PSE (*Paris-Jourdan Sciences Economiques*), Joint Research Center CNRS-EHESS-ENPC-ENS, France

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Abstract

In this paper, I show that in-kind benefit such as a housing benefit program may have a significant impact on the price of the subsidized good. I use a French housing benefit reform to evaluate the impact of the subsidy on the level of rents. The results indicate that one additional euro of housing benefit leads to an increase of 78 cents in the rent paid by new benefit claimants, leaving only 22 cents available to reduce their net rent and increase their consumption. This large impact of housing benefit on rents appears to be the result of a very low housing supply elasticity. I show that the housing benefit reform induced additional demand, not only from low income households but also from students who used the benefit to become independent. Unfortunately, this increase in demand was unmatched by increasing housing supply in the short and middle term. The only possible effect of the reform is a small increase in housing quality. These results raise questions about the use of such in-kind transfers when the supply of the subsidized good is almost inelastic. It is therefore very important to estimate the incidence of the subsidy when assessing the efficiency of such welfare programs.

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1. Introduction

Housing benefit has become a major component of redistributive programs in many developed countries. In France, housing subsidies have continuously increased over the

E-mail address: gabrielle.fack@ens.fr.

past thirty years and cost 12.8 billion euros in 2002 (more than 0.8% of French GDP). In comparison, in-work benefit (the French equivalent of EITC) and the so called “revenu minimum d’insertion” (minimum benefit payment for the poorest households) amounted to 2.5 and 4.7 billions euros, respectively. Surprisingly, the efficiency of housing benefit has not often been questioned. The debate on housing benefit usually focuses on the advantages and drawbacks of housing benefit compared with public housing. The latter has been widely criticized since the end of the seventies, both in terms of cost effectiveness and effects on recipient outcomes. Housing benefit has been presented as a more reliable and efficient way to help low income households, because it is better targeted and offers the recipients more choice. However, even if the initial goal of housing subsidies is to reduce the cost of decent housing for poor people, they have also become an important way to redistribute income.

Beyond the traditional analysis of the relative costs of in-kind benefit, such as housing subsidies, and cash benefit, this paper shows that it is very important to take into account the incidence on the price of the subsidized good to assess the efficiency of such welfare programs.

In the absence of market imperfections, it is known that the welfare value of an in-kind transfer cannot be more than the value of an equal cash transfer and may, in fact, be less. In the case of a lump-sum subsidy, if the transfer is inferior to the household consumption of the good before the subsidy, it is equivalent to a cash transfer. If, however, it is greater, it will distort consumption, leading to overconsumption of the subsidized good. In the case of a proportional transfer (which is generally the case for housing benefit), the subsidy always distorts consumption choices.

The classic justification for using in-kind transfers instead of cash transfers is that poorer households do not consume enough of the subsidized good. This may be because they do not take into account externalities (of the surrounding neighborhood for example) or that the household member who chooses the level of consumption in the household does not take into account the level of utility of the other members (typically a parent does not take enough care of the children’s needs). For example, Goux and Maurin (2005) show that overcrowded housing significantly affects children’s performance at school. Currie and Yelowitz (2000) find that public housing has a positive effect on children’s living conditions and education outcomes. In a paper that assesses the effects of housing programs on low income households, Olsen (2001) considers that one of the main goals of these programs is “*to induce the worst housed families at each level to occupy better housing than they would choose if they were given equally costly cash grants with no strings attached*”.

In-kind transfers can also be justified in a world of imperfect information where the government is unable to distinguish between the most needy and others. Nichols and Zeckhauser (1982) and Blackorby and Donaldson (1988) show that when in-kind transfers are specific, they can be used as a way for people who truly need them, to self select. While everybody would be tempted to claim cash transfers, only those who are truly in need would claim an in-kind transfer (because the others have no interest in receiving it). In this case, in-kind transfers can be better than cash transfers. However, this justification does not hold for housing benefit in France, where everybody would be better off receiving it, as there are almost no restrictions imposed on the housing unit. Besides, the procedure to claim the subsidy is simple and there is no stigma attached to the benefit.

Typically empirical studies focus on the evaluation of the “costs” of in-kind transfers, as it is difficult to estimate the potential “benefit” induced from greater consumption of the subsidized good. Several papers ([Moffit, 1989](#); [Slesnick, 1996](#)) have estimated the deadweight loss of receiving in-kind instead of cash transfers, but they usually assume that in-kind transfers do not have any impact on market prices. Some studies have evaluated the incidence of targeted tax subsidies, showing that price effects can be important, especially when the subsidized good is a durable good and the supply is not very elastic. [Poterba \(1984\)](#) looks at tax subsidies to owner occupied housing in the United States. He shows that tax subsidy combined with high inflation rates made homeownership very attractive during the 1970s and this, in turn, affected the demand for houses. His results suggest that tax subsidies could explain as much as 30% of the increase in real house prices during the 1970's. [Goolsbee \(1998\)](#) evaluates the impact of investment tax incentives on the price of equipment goods. He shows that a 10 percent investment tax credit increases equipment prices 3.5–7 percent and concludes that much of the benefit of the program does not go to investing firms but rather to capital suppliers.

More recently, the incidence of housing benefit on rents has been studied in empirical papers, finding significant price effects. [Susin \(2002\)](#) looks at the incidence of rent vouchers in the United States and estimates the impact of the proportion of benefit recipients on the price of low income housing in the area. The study exploits the fact that only 10% of eligible low income households actually receive benefit in the United States and that the proportion of recipients varies greatly over the different metropolitan areas. Susin concludes that rent vouchers caused the rents to rise for all low income households by more than the amount of vouchers distributed, especially hurting eligible households who do not receive housing benefit and resulting in a transfer from low income households to landlords. Using French data, [Laferrère and Le Blanc \(2002\)](#) also find an impact of housing benefit on rents. The authors use a survey that is conducted every trimester in order to update the Price Index and follow each flat for several semesters. They compare the change in the rent for flats whose tenants have started (or stopped) receiving housing benefit to those whose tenants have not experienced any change in benefit reception. They find a significant effect of housing benefit on rents, but their method does not give them a precise estimate of the effect. A study by [Gibbons and Manning \(2003\)](#) in the United Kingdom also finds substantial rent reductions after a reform that cut housing benefit for new recipients.

All of these studies draw a similar overall picture of the housing market for low income households. Housing supply appears to be quite inelastic and landlords seem to be extracting a part of the subsidy. These results suggest that low income households are trapped into low quality units, unable to move out. The task of this paper is to produce a precise estimate of the incidence of housing benefit in France, to evaluate the efficiency of such a transfer.

I exploit a French housing benefit reform passed in the early 1990s as a natural experiment. The reform extended the housing benefit program to some groups of people that were not previously in receipt of the benefit, without affecting other households. I show that one euro of housing subsidies led to an increase of 50 to 80 cents in rents for these subsidized households. Consequently, they did not increase their housing consumption a great deal. The only possible effect would be a small increase in the quality of housing. The large impact of housing benefit on rents appears to have been

caused by a very low housing supply elasticity. These results show that the price effect can entail severe efficiency costs for in-kind transfers programs and raise questions about the use of such programs when the supply of the subsidized good is almost inelastic.

The rest of this paper is organized as follows. First, I describe the French housing benefit system. In Section 2 I discuss the theoretical impact of the housing benefit reform on the rental market. I then explain the empirical method (Section 3), describe the data used for the estimation (Section 4), and show the results (Section 5). The last sections address the effects due to students (Section 6) and the impact on housing quality (Section 7).

2. The French housing benefit system

2.1. A short history of French housing policy since the second world war

Housing Policy has been developing in France since the beginning of the twentieth century but the shortage of dwellings after the Second World War (caused by the damages of the war but also the lack of new investments during the 1920s and 1930s) led to an increase of State subsidized housing. Until the end of the seventies, subsidized housing consisted mainly of government funded construction (housing projects called “Habitations à Loyer Modéré” (HLM)). Housing benefit existed, but it was targeted to particular groups of people. The first type of housing benefit created in France in 1948, “L’Allocation de Logement Familiale” (ALF) aimed at helping low income families with children. In 1971, a second type, “l’Allocation de Logement Sociale” (ALS) was created to help other categories of low income households who could not receive ALF (old people over 65, young workers under 25, etc.).

In the 1970s, housing projects began to attract criticism for their poor quality and, in addition, for not targeting the poor. It became apparent that many households that were originally entitled to rent a flat in a subsidized unit managed to stay, even when their growing income did not entitle them anymore to live in it. To avoid concentration of poverty, managers would prefer to let them stay than to replace them by poorer households. In 1977, the government passed a reform that led to a dramatic shift of subsidized housing. The priority was given to housing benefit, with the objective to spend two thirds on it (with only one third remaining to fund housing projects), and a new type of housing benefit was created, “l’Aide Personnalisée au Logement” (APL).

In the beginning of the 1990’s a reform extended housing benefit to every low income household either in the public or private sector. The extension was made in three years, first for Île-de-France (Paris and the surrounding region) in 1991, then for the other big cities in 1992 and finally in 1993 it was extended to the rest of the country. I am going to exploit this reform to estimate the effects of housing benefit on rents. Let me present briefly the housing benefit program before explaining the reform.

2.2. The French housing benefit system

In France, housing benefit subsidizes rents in public or private units, but also payments for a house mortgage. In this paper, I am focusing on rent subsidies, especially in the

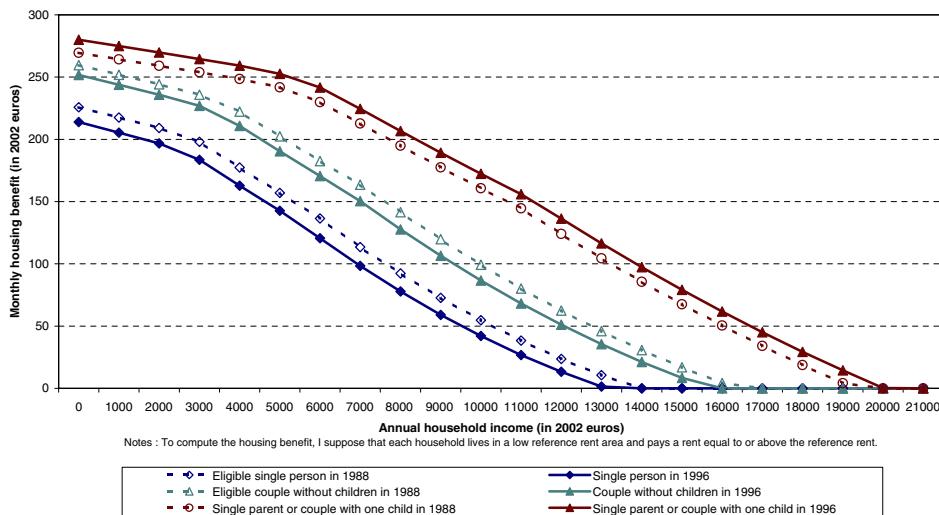


Fig. 1. Theoretical housing benefit payments as a function of household income before and after the reform for representative family structures.

private sector. Among the three subsidy schemes, ALS and ALF differ only by some specific eligibility criteria but the calculation and income eligibility are the same. ALF remains targeted to families, mainly households with children. Before the extension reform, ALS was targeted to specific groups of small households, such as pensioners, disabled, long term unemployed and young employees under 25. The third type of subsidy, APL, can only be used for properties having a special agreement with the state (mainly public housing). Besides this requirement and income eligibility, there is no specific eligibility criteria to the subsidy. APL is also calculated with the same formula as the two others but the income and rent scales are usually more generous. Each household can only receive one benefit at a time. Housing benefit payments are a function of the rent (up to a certain limit), the household income and the family size. During the period studied in this paper, the formula was the following¹:

$$A = K(R + C - R_0)$$

where A is the Housing Allowance, R the rent, up to a reference rent function of family size and geographical location, C a fixed amount (depending of the family size) to cover the service charge, and R_0 the minimum housing expenses that should be paid by the household. K is a coefficient between 0 and 0.9, decreasing in income and increasing with the family size. Although the basic formula is simple, the details to compute K and R_0 are not. Reference rents and income scales can be revised each year but the increase was not automatic during the 1990s. Fig. 1 shows the benefit amount as a function of income for

¹ The formula was modified at the end of the period to simplify and unify the system, but it was implemented only in 2001 for the private sector and does not affect benefit receipt.

some representative eligible households in 1988 and 1996, that is, before and after the reform.² Housing benefit increases with family size and decreases with income. It also increases with the rent paid by the household, up to a limit. Between 1988 and 1996, housing benefit payments for a given household income slightly decreased in real terms for eligible households without children³ and slightly increased for families with children. The increase in housing benefit has been less than inflation except for families with children because of slightly more generous scales for these households. These changes are due to rent and income scale revisions and are small. The extension reform itself has not changed the individual level of benefits.

Compared with other subsidy schemes, the French housing benefit system has some unique aspects. Firstly, the system is universal, implying that every eligible household will receive the allowance if she claims it. This situation is very different from the American case described by [Susin \(2002\)](#) where vouchers are rationed and only a small part of the poor eligible households receive benefit. Secondly, recipients can freely choose their accommodation.⁴ There is no required agreement with the landlord before renting and no restriction on the price of the unit rented, but the rent in excess of the reference rent is not taken into account in the computation of the benefit. The formula also defines a minimum amount to be paid by the household (function of income and family size), so the subsidy never covers 100% of the rent. Indeed, the French system incentivizes people to find units at the reference rent but not more expensive ones. Thirdly, the recipient usually receives the benefit directly in cash in the private sector.⁵ The recipient has to search first for a unit, and once the contract is signed, he can claim benefit. The system itself is therefore not constraining, as the recipient can freely choose accommodation.

2.3. The extension reform

The 1990s reform extended housing benefit to people who were not entitled to receive it before. The reform suppressed all the specific criteria that targeted benefit to particular groups of people (families with children, retired people, long term unemployed...), keeping only income eligibility. The formula to calculate the subsidy has not changed, so households who were already receiving housing benefit have not been affected by the reform. Households with income above the threshold have not been affected either since they do not receive benefit. The reform has affected households who had sufficiently low income to receive housing benefit according to the formula but did not meet the criteria, typically single persons or unmarried couples without children aged between 25 and 64. Students also started to receive subsidies, but only those who were not living with their parents and were renting independent

² I compute benefit assuming that each representative household lives in a low reference rent area and pays a rent equal to or greater than the area/family structure reference rent.

³ Only the specific groups of low income families without children described above could claim housing benefit in 1988.

⁴ In France, subsidized units must only meet minimum inhabitability standards.

⁵ In the private sector, the tenant receives the benefit, unless she has signed an agreement with the landlord to deduct it directly from the rent. In the public sector however, the benefit are usually directly deducted from the rent.

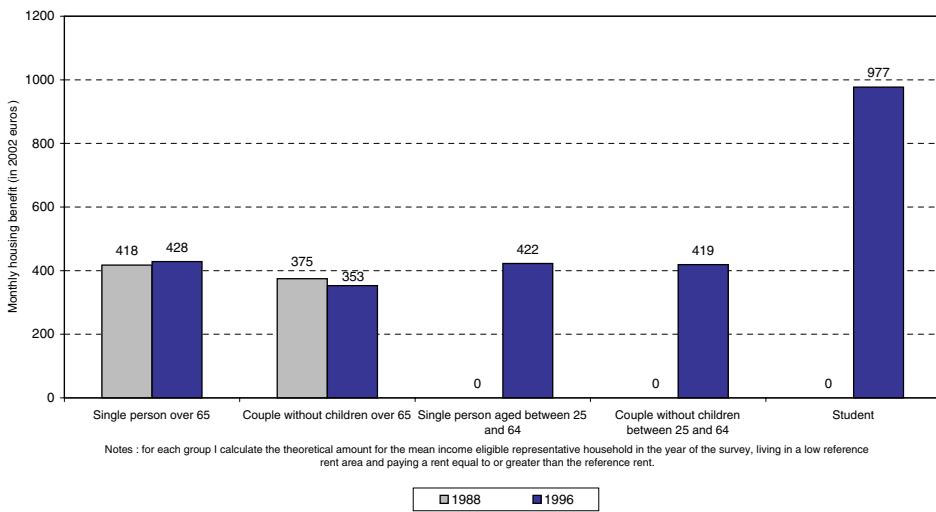


Fig. 2. Theoretical housing benefit payments for specific groups before and after the reform.

units. Fig. 2 plots, for different household types, the benefit payments they could theoretically receive in 1988 and 1996, before and after the reform.⁶ This figure shows that the reform had little effect on the level of benefit payments for those who were already receiving them. The sole effect of the reform was to extend the number of benefit recipients, and the gains for the newly eligible households were large. We can therefore expect that the reform would cause an increase in demand from new recipients searching for a better accommodation. Some newly eligible persons such as students may also decide to move out from their family homes and rent an independent unit to receive the subsidy (we will come back to that point in the part devoted to students). The reform constitutes a quasi natural experiment, because it provides an exogenous source of variation in eligibility, necessary to avoid the reverse causality issues: the increase in housing benefit is due to the reform, not to an increase in rents. Thus the reform allows us to compare the evolution of rents of those who started to receive housing benefit after the reform to the other groups who were unaffected.

3. The impact of the housing benefit reform: theory

The likely impact of housing benefit on the change in rents can be explained using a simple model. Following Susin (2002), I assume the existence of different housing submarkets offering a range of housing quality, where the poor households occupy the lower quality housing, middle income households the middle quality housing and so forth. Houses of different qualities can be more or less substitutable. In the short run I can

⁶ For each group, I calculate the theoretical amount for the mean income eligible representative household in the year of the survey, living in a low reference rent area and paying a rent equal to or greater than the reference rent. I use 1988 and 1996 because they correspond to the years of survey before and after the reform.

assume that each submarket works without connection to the others. However this is not the case in the long run, as landlords can adjust new construction and they may also do some “filtering”. For example, if houses first built for middle income families are not maintained, they will deteriorate and eventually “filter down” to the poor.

To keep things simple, I shall assume that the rental housing market is split into two submarkets of different qualities: the first segment with rent r_1 is for households of income y_1 and the second, for those of income y_2 , with $y_1 \leq y_2$. In period 1, there is no subsidy and each household chooses her consumption of housing services s (in square meters) and of a numeraire composite good c . A housing subsidy reform is passed so that in period 2, low income households y_1 become eligible for a housing allowance, defined as follows: $A = a_i s_i$ where a_i is the subsidy per square meter. Housing can be considered a normal good, so as the housing allowance reduces the price of housing services compared to other goods, there is an increase in the demand for housing by the new recipients. The rent increase is a function of the elasticity of housing supply.

Formally if I assume constant elasticity for housing supply e_s and housing demand e_d , then for a small subsidy given to households y_1 , the rent increase is given by:

$$\frac{\Delta s}{s_{11}} = e_s \frac{(\Delta r_1)}{r_{11}} = -e_d \frac{(\Delta r_1 - \Delta a_1)}{(r_{11} - a_{11})}.$$

Following:

$$\Delta r_1 = \theta \Delta a_1 \text{ avec } \theta = \frac{e_d}{\left[e_s \left(\frac{(r_{11} - a_{11})}{r_{11}} \right) + e_d \right]}.$$

In this simple model, as there is no subsidy in period 1 ($a_{11}=0$), we get:

$$\theta = \frac{e_d}{e_s + e_d}.$$

The incidence of the subsidy will depend on the elasticities of demand and supply curves for housing: the lower the housing supply elasticity compared to housing demand elasticity, the higher θ . A high level of θ implies that an increase of housing benefit will lead to an increase in rents on the low income submarket. In an extreme situation of inelastic housing supply, with a fixed stock of housing supplied by landlords on the low income submarket, the additional demand for housing induced by the subsidies will not be satisfied. As a result, the subsidy will be entirely crowded out by the increase in rents ($\theta=1$).

The situation would be different if there was a unique housing market with pure and perfect competition. The additional demand for housing induced by the subsidies given to households of type y_1 would lead to a shift of the global supply curve. The increase in rents would be smaller and would affect everybody, those receiving benefit as well as those not entitled to them. The increase in rents would also vary with the proportion of households receiving the subsidy. With α equal to the share of housing services initially consumed by low income households, every household would suffer from the following increase in rents after the reform:

$$\Delta r = \alpha \theta \Delta a.$$

In the empirical part, I estimate θ , the proportion of the subsidy that has been crowded out by the rent increase. Before doing so, let us make a few preliminary remarks concerning the interpretation of θ .

- i) Without additional hypothesis, we cannot assume that the effects of housing benefit on rents will be sustained in the long run. It is possible to view this as a transient phenomenon that will disappear after long run adjustment.
But we can also make the hypothesis that substitutability between different markets is not very good because of the specificity of housing. A housing unit can be seen as a bunch of different characteristics that cannot be bought separately. Two housing units can have the same rent but different characteristics, and this heterogeneity implies that housing units are less substitutable when compared with other types of goods.
- ii) Given the French legislation that limits rent increases for continuing tenancies, it may take time before changes in rents reflect the full increase of housing benefit. Tenants are well protected in the French system, as typical rental contracts run for three years. During the term, the rent can be revised only once a year and increases are calculated on the basis of a construction cost index published by the government.⁷ This legislation delays rent changes. However rents can be set freely when the rental agreement is signed for the first time. If, as expected, the housing benefit reform causes newly eligible persons to move into their own housing units, then landlords will be able to increase benefit recipients' rents more rapidly than other households' rents.
- iii) The increase in rents could also be the result of the choice of better quality housing by subsidized households. In this case, the increase in rents should be matched with an increase in housing quality. To test this hypothesis, I have to search for an increase in the housing quality of subsidized households during the period.

4. Empirical specification

I will first present the identification problems of the ordinary least square method and then develop the difference-in-difference method favored to estimate θ .

4.1. The potential biases in the OLS strategy

The OLS estimate of θ is subject to several potential biases that affect the validity of the results. Practically, the OLS regression has the following form:

$$r_{it} = \alpha + \sum \beta_k quartile_{ik} + \delta_t + \sum \gamma_j X_{ij} + \theta a_i + \varepsilon_i$$

where r_{it} is the annual rent per square meter of the housing unit rented by household i , $quartile_{ik}$ are dummies indicating the quartile k of income, δ_t is a time effect, X_{ij} is the

⁷ The construction cost index increased by almost 16% between 1988 and 1996.

value of the characteristic j of the household i , a_i is the annual housing benefit per square meter received by household i and ε_i are the residuals.

Several sources of biases can affect this basic specification. First, as housing benefit is to a certain extent a function of the rent, some non observables affecting the rent could have an effect on the housing benefit. This relationship between the rent and the housing benefit can be rather problematic in the case of a rent rise, as it would lead to an upward bias for the estimate of θ . However this source of potential bias is in fact limited, since the rent taken into account in the formula of housing benefit is limited by a rent cap. For households who already pay a rent above the cap, further increases in the rent will not have any effect on their housing benefit. In 1988, prior to the reform, 65% of tenants in the private market already paid a rent equal to or above the cap (respectively 61% of subsidized tenants and 67% of non-subsidized ones), thus this source of bias would affect only a limited part of the sample.

The estimate may also be biased if some non-observable characteristics not only have an impact on rent, but also alter the benefit receipt. For example, if the households that really care about receiving housing benefit are those that pay the higher rents, then the estimate will be upward biased. On the contrary, there will be a downward bias if the households that actually receive the benefit are the poorest ones with bad quality/cheap housing (and if the observable income gives imperfect information about this poverty state).

Finally, if some control variables, such as income and family size, entirely determine the housing allowance received by the household, then the impact of housing benefit on the change in rents cannot be estimated using the OLS method. The control variables do not, in fact, entirely determine housing benefit receipt in the sample, because of misreporting or non claiming of benefit entitlements. In 1996 only 75% of the first quartile of tenants in our sample reported that they received benefit, whereas theory predicts that everybody in that quartile should receive benefit.⁸ However, it is difficult to interpret the effect identified by the OLS regression as the true effect of housing benefit on rents.

4.2. The difference-in-difference method

To avoid these potential biases, I use a difference-in-difference estimation strategy, exploiting the 1991–1993 extension of the housing benefit program. The difference-in-difference (DD) method compares rents before and after the reform for a group affected by the change (the treatment group T) with before and after rents among a group not affected by the policy reform (the control group C).

The difference-in-difference estimate is an unbiased estimate of the effect of the reform if, in the absence of the reform, the evolution of rents would have been the same for the two groups (after controlling for the structural sociodemographic changes in the population). In other words, this so called “parallel trend assumption” supposes that there

⁸ This low number seems to be the result of misreporting (because in some cases the benefit is directly paid to the landlord and the tenant may not realize that he is actually subsidized) rather than of a low take-up rate.

are no unobservable components that affect the composition of the groups at the same time as the policy change and that the fixed time effects are the same for the two groups.

To be convincing, the DD strategy has to be applied very carefully (Bertrand, Duflo and Mullainathan, 2004). First, it is very important to choose treatment and control groups that are as similar as possible. But it is also fundamental to have a clear break of trend at the time of the reform for the treatment group.

4.3. Implementation of the strategy

The DD strategy is equivalent to an IV regression, using the dummy of the treatment group interacted with the dummy of the post reform period as the instrument. This regression avoids the OLS problem of correlation between the outcome variable and the residuals. Practically, I implement a two stage method, regressing first the housing benefit per square meter on the instruments:

$$a_{it} = \alpha' + \beta'quartile_1 + \gamma'post + \sum \delta_j X_{ij} + \varepsilon'quartile_1 \times post + \mu_{it}$$

where a_{it} is the housing benefit per square meter of household i for the year t , $quartile_1$ is a dummy for the first quartile, $post$ is a dummy for the years after the reform, X_{ij} is the value of the characteristic j for the household i and μ_{it} are the residuals.

Then we regress the rent per square meter on the predicted housing benefit (and the controls):

$$r_{it} = \alpha + \beta'quartile_1 + \gamma'post + \sum \delta_j X_{ij} + \theta Pa_{it} + \mu_{it}$$

where r_{it} is the rent per square meter for household i and Pa_{it} is the predicted housing benefit per square meter.

Without any controls, the estimator of θ is equivalent to the Wald estimator:

$$\hat{\theta} = \frac{[(\bar{r}_{T,1} - \bar{r}_{T,2}) - (\bar{r}_{C,1} - \bar{r}_{C,2})]}{[(\bar{a}_{T,1} - \bar{a}_{T,2}) - (\bar{a}_{C,1} - \bar{a}_{C,2})]}$$

where \bar{r}_{ij} is the mean rent per square meter and \bar{a}_{ij} the mean housing allowance per square meter of group i ($i=T, C$), for the period j ($j=1, 2$).

In our regressions, we add control variables to correct for the observable changes in the composition of the treatment and control groups at the time of the reform.

5. The data

To estimate the incidence of housing benefit, I use the French Housing Survey “Enquête Logement”. This survey is conducted every four to five years by the French Institute of Statistique INSEE (Institut National de la Statistique et des Etudes Economiques). For the purpose of the analysis, I use the data for the past thirty years, corresponding to the following years of survey: 1973, 1978, 1984-85, 1988-89, 1996-97 and 2001-2002. Each survey gives specific information on housing conditions of the

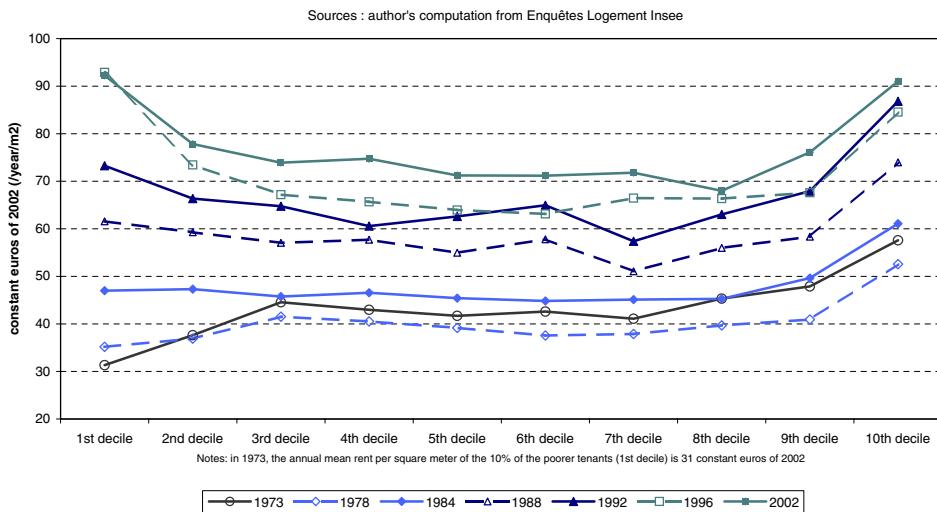


Fig. 3. Annual rent per square meter by decile of income, all tenants, 1973–2002.

households, along with detailed characteristics of each household, including income. The Enquête Logement constitutes a unique source of information to study housing in France over a long period, although it is not a panel. As a robustness check for our results, I use “Enquête Budget des Familles” (the French Family Resources Survey). This survey contains fewer observations and has less detailed information about housing conditions of the households, but it is sufficient to run the basic regression of our model and check the validity of the results obtained with the French Housing Survey.

Before focusing on the 1991–1993 reform, Fig. 3 shows the striking pattern of rents, by decile, in France, during the past thirty years (for both private sector and social sector tenants). Here, I plot the annual rent per square meter by decile for each year of the survey since 1973, computing the deciles of income for the sample of tenants (without correcting with equivalence scale).⁹ Between 1973 and 2002, rents per square meter increased in France faster than the Price Index, but the rise is highest for the first and second deciles of tenants. In 1973 and 1978, the rents for these two groups are lower than the others but the gap is filled in the 1980s and there is a further sharp increase during the 1990s. In 1996 and 2002, the rent of the first decile is as high as the rent of 10th decile, sketching out a U-shaped curve.

⁹ This choice is practical: I need to identify the small poor households, because they constitute the group concerned by the reform. They can be found in the first quartile of “raw” income and it would be more difficult to identify them if I used equivalent income. It is important to keep in mind that with a traditional measure of poverty using equivalence scale, we would not have exactly the same people in the first quartile. Thus, this paper does not pretend to describe the housing situation of all types of poor households.

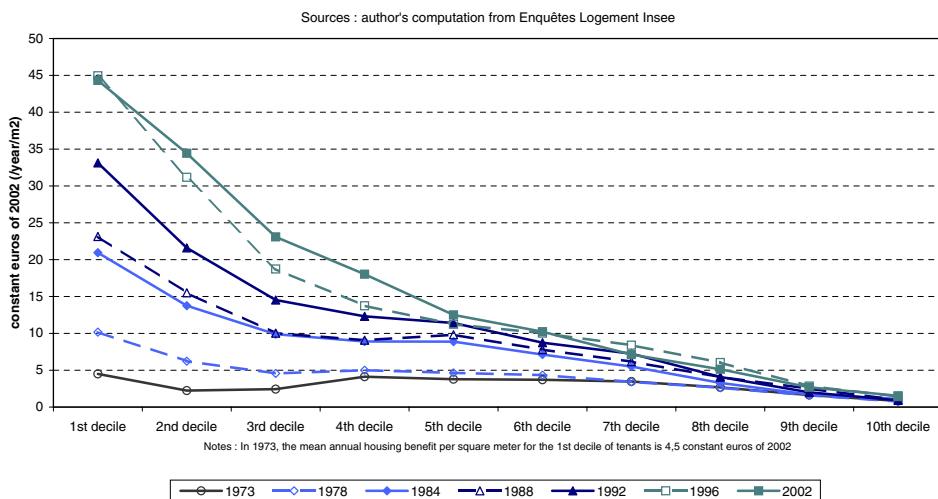


Fig. 4. Annual housing benefit per square meter by decile of income, all tenants, 1973–2002.

This impressive increase in rents for low-income households can be partly explained by changes in the socio-demographic composition of the population. In 1973, many low income households were old people living in rural areas whereas in 2002, poverty is more a problem of a young urban population. These changes have an impact on rents, implying structurally higher rents per square meter. However, even after correcting for the sociodemographic changes, the U-shaped curve still persists (see Fack, 2005).

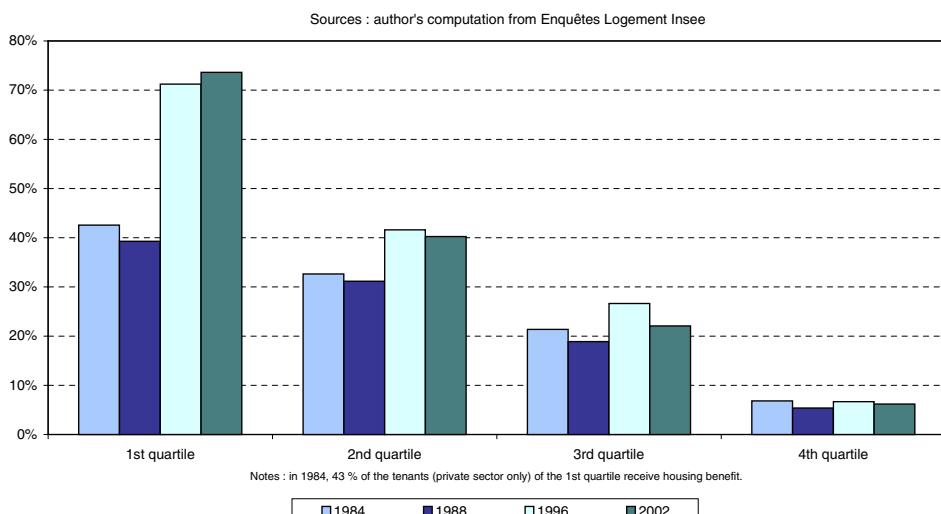


Fig. 5. Percentage of tenants receiving housing benefit by quartile, before and after the reform (private sector only).

Fig. 4 plots housing benefit per square meter by decile of income since 1973 (see Fig. 4). Strikingly, this shows that the increase in housing benefit for low-income households mirrored the increase in rents, with a first increase following the creation of APL after 1978 and a second sharp increase in the 1990s at the time of the housing benefit reform. By exploiting the 1991-93 reform, I show more precisely the incidence of housing benefit.

The following analysis is restricted to the private housing market, since public housing rents are fixed according to specific rules. Moreover, an additional specific reform for public housing was implemented in 1988. By focusing on the private sector only, we can be sure that no other change in the legislation will complicate the identification strategy.

5.1. The control and the treatment groups

The 1991-1993 reform extends the housing benefit to low income households who were not eligible for the previous housing benefit program, for instance small poor households. We want to have these households in our treatment group and a way to do so is to choose the first quartile as the treatment group. The analysis of the data shows that the first quartile is the group to have gained the most from the reform (see Fig. 5). In 1988 (the last disposable survey before the reform) only 39% of the households of the first quartile claimed housing benefit, whereas this increased to

Table 1
Descriptive statistics

		Private tenants				Private tenants, students excluded			
		1984	1988	1996	2002	1984	1988	1996	2002
Annual rents per m ²	1st quartile	46,8	64,1	90,2	94,0	45,7	59,8	78,8	84,2
	2nd quartile	52,8	67,8	79,0	88,9	52,3	67,7	78,0	88,0
Annual housing benefit per m ²	1st quartile	13,9	14,3	34,9	36,6	14,2	14,7	28,9	31,5
	2nd quartile	7,9	7,5	12,3	14,7	7,7	7,7	10,5	11,7
Housing size (m ²)	1st quartile	54,4	52,0	50,2	49,2	55,0	54,3	55,3	54,7
	2nd quartile	61,7	62,8	61,4	60,1	62,0	63,2	63,3	61,7
Proportion of benefits recipients (%)	1st quartile	43	39	71	74	44	42	67	69
	2nd quartile	33	31	0,42	40	32	31	38	34
Annual household income	1st quartile	8510	8837	7223	7333	8575	9384	8320	8482
	2nd quartile	15,962	16,375	14,959	14,845	16,064	16,812	16,170	16,040
Household size	1st quartile	1,7	1,5	1,4	1,4	1,7	1,6	1,5	1,5
	2nd quartile	2,3	2,2	2,0	1,8	2,3	2,2	2,0	1,9
Proportion of units with basic equipment and facilities (%)	1st quartile	39,4	47,9	63,6	86,2	38,9	46,7	60,0	83,7
	2nd quartile	55,8	64,3	72,4	89,7	55,3	66,1	73,3	90,2
Proportion of student households (%)	1st quartile	3,5	8,6	22,2	23,3				
	2nd quartile	1,2	1,4	3,2	3,6				

Sample of private tenants.

Sources: author's computation from Enquête Logement INSEE.

Notes: Rents, housing benefit and household income are expressed in 2002 euros.

Basic equipment and facilities are WC, bathroom and central heating.

A student household is defined as a household whose head is a student.

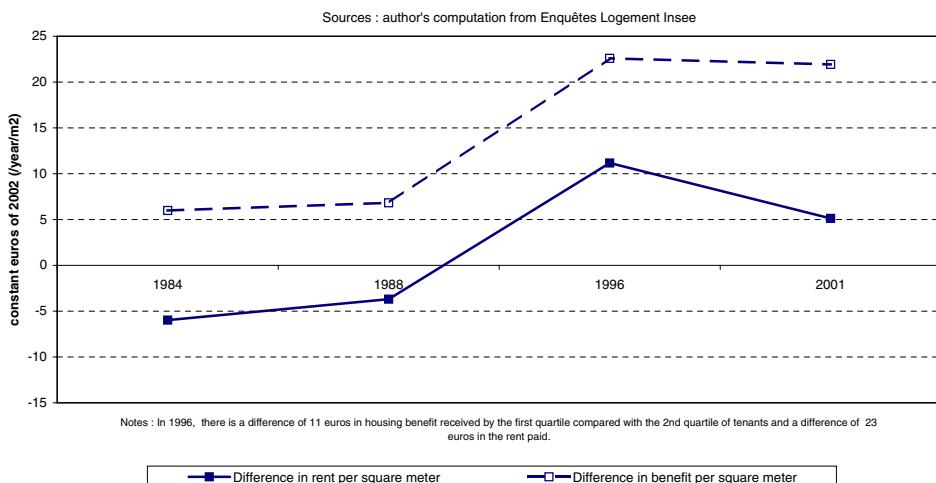


Fig. 6. Differences in mean housing benefit and rents per square meter between the first and the second quartiles before and after the reform, private sector tenants.

more than 70% after the reform in the 1996 and 2002 surveys. During the same time, the percent of claimants in the second quartile rose by only about 10 percentage points. I therefore use the second quartile as the control group, as it is the closest comparable group and has not been much affected by the reform. Table 1 provides descriptive statistics.

The evolution of the two groups before and after the reform can be compared by plotting the differences in mean rents and mean housing benefit per square meter between the first and the second quartile (private tenants only, see Fig. 6). The lines representing the differences in rent and housing benefit are strikingly parallel. The break of trend at the time of the reform is also very clear. Before the reform, there is no change in the differences in rents or in benefit between the two quartiles, whereas there is a sharp increase between 1988 and 1996 at the time of the reform, which ends after 1996.¹⁰ This pattern suggests a strong and long lasting effect of housing benefit on rents.

To check the robustness of our strategy, I can test whether this pattern is specific to our chosen groups by plotting the same differences using the second and the third quartiles instead of the first and the second (see Fig. 7). This figure shows two groups unaffected by the reform and as expected, we observe that the changes are much smaller than in Fig. 6 and there is no detectable break of trend between 1988 and 1996. This placebo graph confirms that the break of trend observed in Fig. 6 is caused by the housing benefit reform and not by some other common event.

¹⁰ I have chosen not to use the 1992 survey because it was completed during the reform years (the reform was implemented between 1990 and 1993) and the interpretation of the data would thus be problematic.

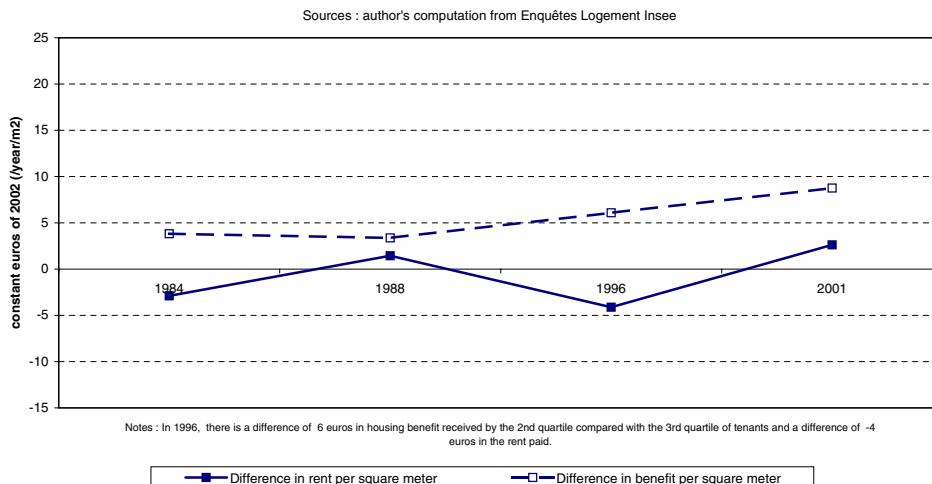


Fig. 7. Differences in mean housing benefit and rents per square meter between the second and the third quartiles before and after the reform, private sector tenants.

I can make a further check with the alternative data set, the French Family Ressources Survey. This survey is conducted every five or six years and the following surveys are at our disposal: 1984-85, 1988-89, 1994-95 and 2000-01. The two earliest surveys were conducted around the same time as the French Housing Survey, but the later surveys do not cover the same time period, giving us additional information on the rent increase over time. When plotting the differences in mean rents and housing benefit per square meter between the first and the second quartile for private tenants only (Fig. 8), I find exactly the same pattern as with the French Housing Survey; namely,

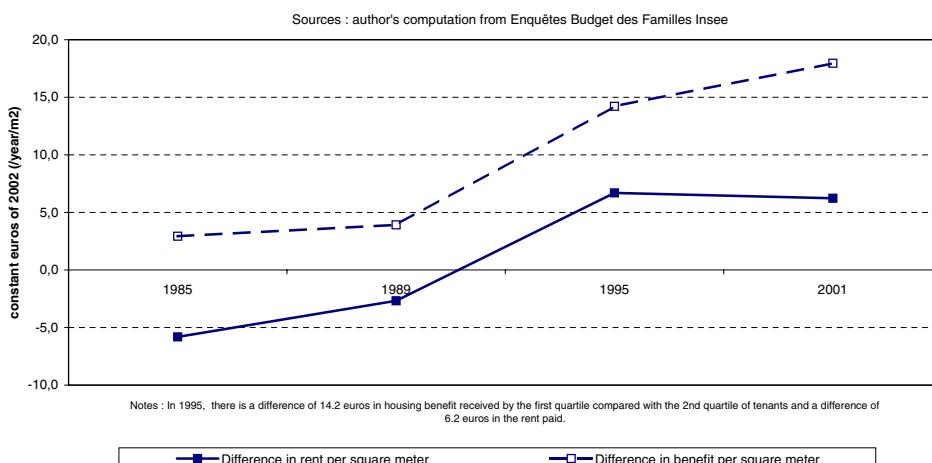


Fig. 8. Differences in mean housing benefit and rents per square meter between the first and the second quartiles before and after the reform, private sector tenants.

Table 2

A simple difference-in-difference estimate of the effects of benefits on rents

		1988	1996	1996 - 1988
Annual rent per square meter (euros of 2002)	1st quartile	64,1 (2,2)	90,2 (2,5)	26,1 (2,3)
	2nd quartile	67,8 (2,2)	79,0 (2,2)	11,2 (2,2)
	1st - 2nd	-3,7 (2,4)	11,2 (2,1)	14,9 (3,2)
Annual housing benefit per square meter (euros of 2002)	1st quartile	14,3 (0,5)	34,9 (1,0)	20,6 (1,4)
	2nd quartile	7,5 (0,2)	12,3 (0,3)	4,8 (0,8)
	1st - 2nd	6,8 (1,0)	22,6 (1,2)	15,8 (1,5)
Wald estimator (14,9/15,8)			0,94 (0,20)	

Notes: Standard errors are between parenthesis.

Sample is the 50% poorest tenants of the private sector.

Sources: author's computation from Enquêtes Logement Insee.

parallel trends in differences and a break at the time of the reform. The regressions results give a precise estimate of the incidence of housing benefit.

6. Results

Table 2 shows the computation of the difference-in-difference estimate of θ without controls. Between 1988 and 1996, the rent increase was greater for the first quartile compared with the second quartile by 14.9 euros (per square meter). Similarly, the first quartile received 15.8 euros more of housing benefit per square meter than the second quartile. The ratio of the two numbers is the Wald estimator and it gives a first estimate of 0.94 for θ . According to this crude estimate without controls, an additional euro of housing benefit per square meter leads to an increase in rent by 0.94 euros per square meter. But this estimate does not take into account the socio-demographic differences which exist between the first and the second quartile so I reran the regressions using controls to account for these differences.

I add several controls to correct for the structural differences between the first and the second quartiles. I first control for the type and size of the household (11 dummy variables to allow for the numbers of adults and children to vary). These variables controls for the fact that larger households live in larger flats, which have usually a cheaper rent per square meter. I also control for the geographical location of households, including dummy variables that represent the type of area (small city, medium city, large city, Paris or rural area) interacted with the region.¹¹ Finally, I add dummy variables that represent the age group of the head of the household (five groups), accounting for the fact that older households tend to have a longer length of tenure, with cheaper rents per square meter. I use the age group instead of the length of tenure in the regression as it may well be the case that the length of tenure is affected by the reform. If people start receiving benefit, they may be inclined to find better housing and move, which affects the length of tenure. Age group is thus a better control than length of tenure.¹²

¹¹ I have run regressions with an additional dummy indicating if the flat is in a city center or a suburb, but it does not change the results.

¹² In fact, using length of tenure as a control does not change the main results.

Table 3

The incidence of housing benefit on rents in the private sector

Method	Variable	(1) Tenants, private sector	(2) Private sector students excluded	(3) Strongest student concentration	(4) Lowest student concentration	(5) Correction for quality changes
DD (88 and 96)	Housing benefit instrumented	0,45* (0,18)	0,39**(0,24)	0,58** (0,32)	0,10 (0,37)	0,29 (0,25)
DDD (84, 88, 96, 02)	Housing benefit instrumented	0,78* (0,31)	1,02* (0,52)	1,34 (0,86)	0,71 (0,47)	0,76** (0,40)
Sample size		4476 (DD) 9635 (DDD)	4248 (DD) 9180 (DDD)	2043 (DD) 4521 (DDD)	1486 (DD) 3196 (DDD)	4476 (DD) 9635 (DDD)
Controls						
Type of area (rural, small, medium, large cities or Paris) × region						
Type and size of the household (11 types)						
Age of the head of the household (5 age groups)						

Private tenants, 1st and 2nd quartile.

Notes: The dependant variable is the amount of annual rent per square meter in private sector for column (1) to (4) and the adjusted rent after correcting for basic quality changes in column (5).

All the regression includes year dummies and quartile dummies.

In the specifications of columns (2) (3) and (4), students are excluded from the sample. The sample for regressions (3) and (4) corresponds respectively to the defined zones 1 and 2.

Standard errors are between parenthesis.

Sources: author's computation from Enquêtes Logement (Insee).

* Significant at 10% level.

** Significant at 5% level.

The first difference-in-difference regression with controls for the private sector ([Table 3](#), column (1), line 1) estimates θ to be around 0.5. The fall of the θ estimate when controls are added implies that the socio-demographic structure of the groups plays a role.¹³ In order to be certain that the differences in the composition of the two groups do not contaminate the estimated effect, I run the regression on the 1984, 1988, 1996 and 2002 surveys, adding a dummy to test for a differential trend between the two groups over the period. The other advantage of these triple difference estimates (DDD estimate) is that they exploit the additional information of the years prior and after the reform. The drawback is that the standard errors are much higher with DDD than DD, leading to less significant estimates of the coefficients. The results are shown on the second line of [Table 3](#).

The estimates of θ are higher with the triple differences method and stay significant.¹⁴ In our preferred specification ([Table 3](#), line 2, column (1)), an additional euro of housing benefit per square meter leads to an increase of 0.78 euros in rents per square meter. In other words, 78% of the benefit is crowded out by the increase in rents and only 22% of the allowance can actually help the low income households to reduce their housing expenses. This high number corresponds to a case where the elasticity of housing supply is lower than the elasticity of housing demand. Using this number, I can also calculate what part of the rent increase in the private sector is explained by the housing benefit reform.

¹³ I have done regressions including controls interacted with year dummies, but it does not change the results.¹⁴ The trend coefficient is not showed, but it is not significant.

Between 1988 and 2002, housing benefit for the first quartile have increased by 22.2 euros and the rents by 29.9 euros. Assuming a linear model with a θ of 0.78, I deduce that housing benefit account for up to 58% of the increase in the low income tenants' rents over the period.

6.1. Robustness checks

I can check the robustness of the results using alternative control and treatment groups. Within the sample of low income households, I restrict the analysis to a more specifically defined group of small households. Low income single persons or couples aged over 65 were already eligible before the reform, so they can be taken as an alternative control group. I compare them with a treatment group consisting of single persons and couples without children, where the household head is between 25 and 64, and meeting the income eligibility criteria. Apart from some specific characteristics not available in the survey (such as long term unemployment or severe disabilities), these households were not eligible before the reform. Only 16% of them received housing benefit in the 1988 survey. They became eligible after the reform and 56% claimed

Table 4
Robustness checks

Method	Variable	(1) Housing Survey	(2) Housing Survey student excluded	(3) Family budget survey	(4) Family budget survey students excluded
DD (88 and 96)	Housing benefit instrumented	0,52* (0,25)	0,59* (0,26)	0,75**(0,45)	0,44** (0,27)
Sample size		1664	1613	1617	1607
Treatment group		Single persons or couples without children 25-64	Single persons or couples without children 25-64	First quartile	First quartile
Control group		Single persons or couples without children 65+	Single persons or couples without children 65+	Second quartile	Second quartile
Controls					
Type of area	YES	YES	YES	YES	YES
Type and size of the household				YES	YES
Age of the head of the household	YES	YES	YES	YES	YES

DD estimates with alternative control groups and alternative dataset.

Private tenants.

Notes: The dependant variable is the amount of annual rent per square meter in the private sector. In the specifications of columns (1) and (2), the sample is restricted to households meeting the income eligibility criteria for the benefits.

All the regressions include year dummies and treatment group dummies.

Standard errors are between parenthesis.

Sources: author's computation from Enquêtes Logement and Enquête Budget des Familles (Insee).

* Significant at 10% level.

** Significant at 5% level.

subsidies in the 1996 survey.¹⁵ When using these comparison groups, I lose information, since I only observe a fraction of low income households affected (and unaffected) by the reform. However, by restricting the sample to groups of the same family size and the same income range, I can compare them without adding many controls and check whether the results are similar. The difference-in-difference estimates are shown in [Table 4](#), column (1). The estimation of 0.59 for θ is close to the previous estimations and significant.

I also check the robustness of the results using the alternative data set, the French Family Ressources Survey. The estimates give results of the same order, although they are less significant, given the smaller sample size (see [Table 4](#), column (3)).

These results imply that more than half of the subsidy was capitalized by landlords. As high as they seem, these estimations are similar to those made by [Gibbons and Manning \(2003\)](#). When investigating the impact of a reduction in housing benefit in UK, they find that between 60% and two-thirds of the incidence of the subsidy reduction was on landlords.

However, the analysis so far concentrates on the raw increase in rents resulting from the housing benefit reform. I now focus more specifically on the impact on students and on quality improvements. First, the reform might have had an impact on students' decision to become independent. Students have gained the right to claim housing benefit, which they did not have before the policy change (unless they were in a specific dwelling which provided a right to APL). The resulting increase in demand among students to become independent households may have contributed to the rent increase for low income housing.

Moreover, the rent increase for low income households could be the result of quality improvements in housing made by people receiving benefit. It is important to know the proportion of the increase in rents that can be explained by an increase in the quality of housing and the proportion that is directly taken by the landlords. The two following sections will deal with these questions.

7. The effect of the reform on students

The housing benefit reform had an unpredicted effect on students, fostering a move from their parents' home to independent housing. It appears that students have benefited a great deal from the policy change. For instance, in 1994, 58% of the new "reform" claimants were students, thus forming a quarter of the total number of ALS claimants.¹⁶ Among the private sector tenants where the head of household was a student (referred to hereafter as the student households), 6% received housing benefit in 1988 but 79% in 1996. During the same time, the proportion of independent student households doubled. We have to account for the increase in the number of college students over the period, but a study by [Laferrère and Le Blanc \(2004\)](#) shows that housing benefit played a role in the

¹⁵ Respectively 52% and 64% of the control group declared housing benefit in 1988 and 1996.

¹⁶ These numbers, given by [Steck \(1995\)](#) are in line with the statistics computed from the French Housing Survey: in 1996, 13.4% of housing benefit recipients are students versus 0.6% in 1988.

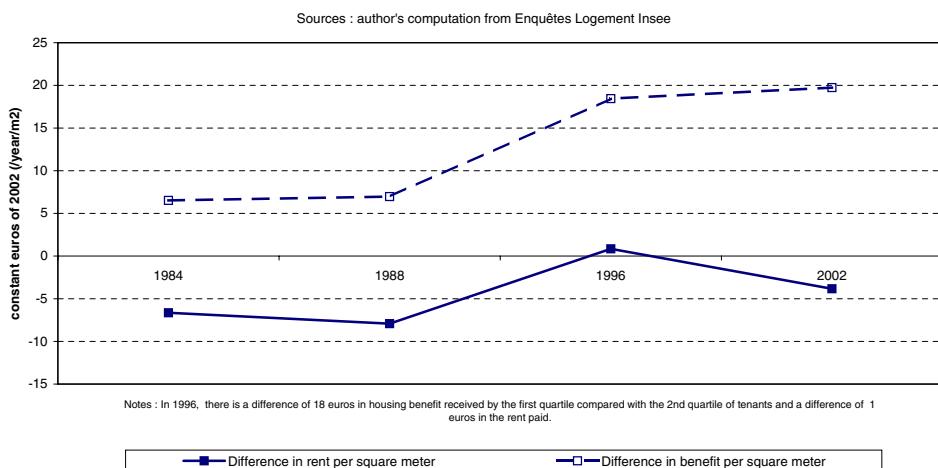


Fig. 9. Differences in mean housing benefit and rents per square meter between the first and the second quartiles before and after the reform, private sector tenants (students excepted).

decision of students to leave their parents' home. This is an interesting consequence and it could affect our estimate of the impact of housing benefit. The increase in rents for low income housing could be partly explained by the demand induced by these newly independent households.

To deal with this problem, I compare the earlier results to estimates that exclude students from the sample. The socio-demographic composition of the groups is therefore more stable over the period (see descriptive statistics in Table 1). Fig. 9 shows the differences in mean rents and mean housing benefit per square meter between the first and second quartile of tenants, after excluding students from the sample. The overall picture is the same as with the whole sample, even if the break of trend is a little less pronounced.

The regressions based on the data without students (Table 3, column (2) and Table 4, columns (2) and (4)) give significant estimates of θ , with values not very different from the earlier estimates. The difference-in-difference estimates are somewhat lower (0.39 instead of 0.45) and the DDD estimates are somewhat higher (1.02 instead of 0.78) than the earlier estimates, suggesting a total crowding out of the housing benefit by the rent increase.

These results imply that the effect of housing benefit on rent is still strong, even if students are excluded. However, the arrival of more students seeking housing should exert an additional pressure on the market for low income housing, leading to rent increases. This is likely to have been the case given the shortage of student halls of residence in France, which forces students to search for accommodation on the private market. The impact of the entrance of students into the housing market can be broken down into two effects: a "straight effect" on the students' rent and a "side effect" on other households' rent. Excluding students from the sample in the regression does not separate these two effects and so I need a new estimation strategy to address this issue.

Table 5

Changes in the proportion of students among tenants (private sector) by zone

	1984	1988	1996	2002
Zone 1	2%	5%	12%	12%
Zone 2	0%	1%	2%	2%

Notes: Zone 1 represents cities with more than 100 000 inhabitants, city centers of urban areas with between 50 000 and 100 000 inhabitants and Paris without the suburbs. Zone 2 groups the rest of France, except rural areas. In 1984, there was 2% of students (as head of households) among tenants in the private sector in zone 1 and no students in zone 2.

To disentangle these effects, I split the sample into two zones and study separately the areas which attract students and the areas which are less attractive for students. The first zone groups the areas where most of the independent students are living, namely Paris (but not its suburbs), the cities of more than 100 000 inhabitants (center and suburbs) and the centers of medium sized cities (between 50 000 and 100 000 inhabitants). The second zone consists of the suburbs of Paris, the suburbs of medium sized cities, and the smaller cities (rural areas are excluded from the sample, to have more homogenous subgroups). Table 5 shows that most of the independent students live in zone 1. The subsamples are carefully designed to avoid grouping all the large urban areas together in one subsample and the small ones in the other.¹⁷ The effect identified will therefore not be mixed with any urban size effect.

I run the regression separately on the two subsamples (students excluded). We might expect that if the entrance of students into the housing market causes the rent to increase, then θ will be higher in zone 1 than in zone 2. The results (Table 3, columns (3) and (4)) show that this is the case, although the difference is not statistically significant.¹⁸

These results confirm that the student newcomers have played a role in the rent increase of low income households by contributing to the rise in the areas where they have moved in. In a situation with inelastic housing supply, this new demand from students induced by the housing benefit reform would reinforce the pressure on rents already caused by the increase in demand from the other new (low income) benefit recipients.

These results also suggest that the housing market is not perfectly competitive and that there is some discrimination, preventing low income recipients from finding better accommodations. As it was pointed out in Section 3, such discrimination is possible because of the specificity of housing. The more specific the housing units rented by new benefit recipients, the easier it is to discriminate. The new housing benefit recipients, and particularly students, are small households searching for small flats. Landlords can discriminate, proposing different prices for different types of flats. For example, they can offer small low quality flats located in city centers at high rent per square meter, such that the total rent for these types of flats is still lower than the rent for bigger flats in the suburbs. Subsidized tenants may still be better off in small high rent flats than in other types of accommodations. Gibbons and Manning also suggest that some negotiation

¹⁷ I exploit the fact that students tends to live more in city centers.

¹⁸ This may be due to the fall in the sample size when it is divided into subgroups, that affects the robustness of the estimation.

between landlord and tenant takes place. As the landlord usually asks for detailed information regarding income and family situation of the potential tenant, she is able to detect eligible tenants and use it during the negotiation. In addition, since new benefit recipients, especially students, were more likely to move after the reform than the unaffected households, landlords may discriminate by increasing rents for new tenancies by more than rents for continuing tenancies.

8. A weak effect of housing benefit on housing quality

As noted in Section 3, the rent increase could reflect an increase in housing quality. If housing benefit gives poor households the means to afford better housing, this should be reflected in either the size or the quality of the rented unit.

8.1. *A very small increase in the size of housing units*

There has not been much change in the size of the housing units rented between 1988 and 1996. When excluding students from the sample, there is no change for the first quartile and a small decrease for the second quartile of private tenants (see [Table 1](#) of descriptive statistics). As the difference is not statistically significant, I conclude that housing size has not changed over the period for the first quartile and that housing benefit recipients have not moved into larger units. However, housing size is a crude indicator of housing quality and households may have improved their housing quality without any change in size.

8.2. *A quality improvement?*

The problem with addressing this issue is that it is difficult to observe quality changes in a survey. For example it is impossible to evaluate changes in the environment of the dwelling with the French Housing Survey. It is also very difficult to have an objective indicator of quality improvements inside the dwelling that is available for all survey years. The best indicator available is whether the basic conveniences such as running water, bathroom, WC or central heating are installed in the unit. This variable is present in all years of surveys and varies greatly for the first quartile over the period (see descriptive statistics in [Table 1](#)). In 1984, more than 30% of households in the first quartile do not have a bathroom, whereas only 3% remain in this state in 2002. Housing quality, measured by basic conveniences, has greatly improved over the period, but this trend is observed before and after the reform. These observations suggest that housing benefit may have helped, but are not the main cause of this improvement.

In order to test more precisely whether the estimated θ mixes “raw” increase in rent with increases due to better housing quality, I simulate the rent of “quality fixed” units, using a hedonic regression. I first evaluate the price of each basic convenience for each year by regressing the rent per square meter on the basic convenience indicator. Then I calculate rents supposing that all the units are equipped with the basic conveniences. This allows me to measure the “pure” increase in rents, having eliminated the “increase-in-quality” component. I run the basic regressions on this simulated corrected rent (see [Table 3](#), column

(5)). The results are not very significant, but they show practically no changes in the estimated coefficients.

The increase in housing quality, as measured here, does not seem to explain the increase in rent for poor households. However, these quality indicators are far from perfect, mirroring only major changes. It may be the case that landlords have made some minor improvements, such as painting or repairing. The quality effect is quite possibly underestimated, but it is clear that it cannot wholly explain the sharp increase in rent experienced by low income households.

9. Conclusion

The results of my preferred specification show that for every euro of housing benefit, 78 cents is absorbed by landlords in the form of rent increases and only 22 cents remain for the low income household. The poor performance of housing benefit is the result of a quite inelastic housing supply in the short and middle term, which has responded very little to the increase in demand provoked by the new subsidies. Furthermore, these rent increases do not appear to be due to increases in quality; controlling for quality of housing does not change the overall results.

More generally, these results show that this type of in-kind transfer may have severe effects on market prices and that this price effect should not be ignored when assessing the efficiency of such programs. When the supply is quite inelastic, subsidizing the consumption of a privately provided good will never be efficient. If the aim of the public policy is to increase housing consumption, it would be better to work directly on housing supply. Alternatively, cash transfers, by giving more choice to households, might minimize these price effects and generate higher welfare gains for poor households.

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