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# **The distributional impact of imputed rents in the United Kingdom**

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## **1. Introduction**

Researchers have long recognised that measures of welfare based solely on monetary income offer an incomplete picture of individual's command over resources. The United Nations System of National Accounts (1977) recommended the inclusion of non-cash income in measures of income. Previous research has shown that owner occupation enhances the control individuals have over resources (Yates 1994; Frick & Grabka 2003). Further to this, it might be expected that those who live in social housing, or private renters who pay less than full market rent, experience definite non cash benefits from doing so. Imputing a rent so as to gain a measure of this benefit, is therefore important so as to fully assess any distributional and/or poverty reduction impacts.

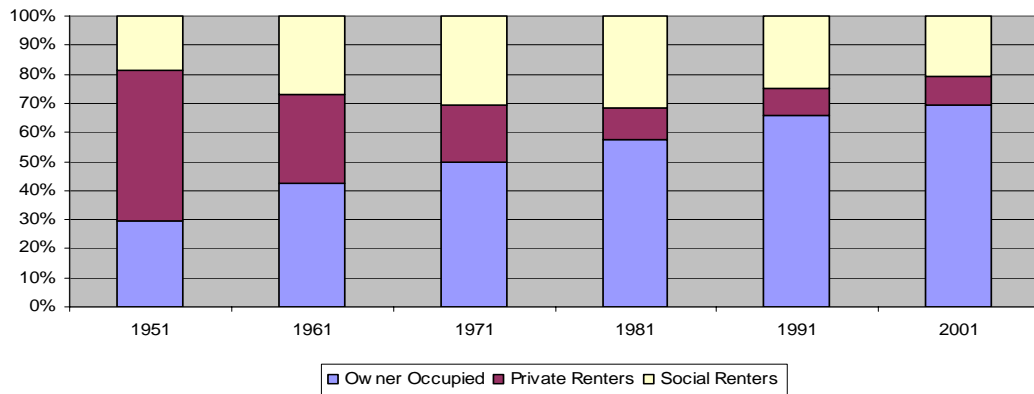
Difficult methodological questions are raised in attempting to implement this recommendation and different methods have been proposed each with specific data requirements. This report discusses the procedures used to impute rent in the UK, and presents results showing the impact of this imputation, with respect to inequality and poverty. Countries in the European Union (EU) differ in important ways in terms of the structure of housing provision and available data. Inevitably this means that results may vary greatly by country. This report begins by discussing the structure of housing provision in the UK. Tenure is examined, focusing on important demographic characteristics. The data and methodology are then discussed and finally results are presented.

## **2. The structure of housing provision in the UK.**

Housing is a fundamental aspect of welfare and as such, can be grouped under differing welfare regimes. The picture shown in figure 2.1 below has led some to regard the UK as a neo-liberal state within the Esping-Anderson typology with respect to housing policy, having an emphasis on private ownership (Balchin & Rhoden (2002). Barlow and Duncan (1994), looking at the supply of housing argue that Britain was a definite example of a liberal approach to housing, where the focus of policy is on owner-occupation, and social housing was cut back. Figure 2.1 shows

how all dwellings in the UK are divided between three broad groups from 1951 to 2001.

Figure 2.1: Tenure in UK (1951 - 2001)<sup>1</sup>



Source: Housing Statistics 2002: Office of the Deputy Prime Minister

The three groups are:

1. Owner Occupied (including those who own outright, and those who have a mortgage)
2. Social renters (including local government housing, housing association accommodation (HA) and registered social landlords (RSL))
3. Private renters (ranging from those who pay full market rent, subsidised or controlled rent, and those who live rent free)

### 2.1 Social Housing

Barely existent at the beginning of the twentieth century social housing grew to provide just over 30% of housing in the UK at the beginning of the 1980s. It then subsequently declined to about 20% of total housing provision. The decline notwithstanding, compared with other countries (in a quantitative sense) social housing in Britain is very important (Harloe 1995). Social housing in the UK is made up of local authority (municipal or council) housing, and housing provided by Housing Associations (HAs). Much of the decline in social housing came about as a result of the 'Right to Buy Scheme' introduced by the conservatives in the 1980s, whereby social tenants were empowered to purchase their previously rented accommodation, from the local authority at greatly reduced prices. By 1989, around 19,000 properties has been purchased (Birchall 1992). It has been argued however,

that this policy merely accelerated an ongoing process whereby tenure status was becoming more 'aligned with social and employment status.' (Lowe 2004: P. 239)

As well as the overall decline in the provision of social housing there has been a shift in the way it is provided. The Housing Act of 1988 reduced to role of local authorities to that of a facilitator, as opposed to a direct provider, placing more of an emphasis on HAs. The origins and organisational structure of HAs are varied but they all share a common feature in that they exist as non-profit making organisations. This ensures that the cost of renting the properties is below that which would prevail under free market conditions. They are involved in building new homes as well as renovating older properties. The work of HAs flourished in the 1970's with the aid of generous government subsidies, however the Conservative government of the 1980s stunted its growth, although the effect of housing policy in the eighties in relation to HAs was not as damaging as it was for council housing. HAs have moved to the centre as chief builders of new social housing (Birchall 1992). Currently about half of their capital expenditure is dealing with homelessness (Balchin & Rhoden 2002).

## *2.2 Home Ownership*

Home ownership is without doubt the pre-eminent form of tenure in the UK. It has been growing steadily throughout the second half of the twentieth century and constitutes about 70% of all tenure in the UK presently. In some part the decline in social housing and the growth in owner-occupation are perfectly correlated, as a result of the introduction by the Conservatives in the 1980s of the 'Right to Buy Scheme'. There are many reasons why home ownership has come to dominate the provision of housing in the UK. Saunders (1990) argues that the attraction of home ownership lies in the control people feel over their homes, and the wealth creating potential associated with owning ones own home. He cites tenants frustrated about investing decades of time and money into properties where ultimately they would not profit, either themselves or as inheritance for their families. This accrual of wealth is the essence of one of the capital market methods of imputing the non-cash income discussed below.

Government policy in the UK in the 1970's was very supportive of home ownership. Policies include:

- Tax relief on mortgage interest payments
- No capital gains tax
- Abolition of stamp duty (1971)
- Zero expenditure tax (VAT) on new properties (1973)
- Grants available for improvements (Housing Acts 1969 & 1979)

These policies made owner-occupation very attractive especially against the backdrop of rising house prices. The Labour government on assuming power in 1997 phased out mortgage interest relief and introduced stamp duty. These policies were intended to stabilise a volatile market, eradicate negative equity and assume some measure of control over the demand for owner occupation. What is interesting about this is that Labour, which had previously been responsible for the dramatic increase in social housing now accepted owner-occupation as the dominant form of tenure, introducing policies that were aimed primarily at stabilising the market.

### *2.3 Private Renting*

The dominant type of tenure at the beginning of the twentieth century, private renting experienced a steady decline and is now clearly the smallest section at around 10%. Government intervention in this sector prior to 1989 took the form of regulating rents, with an implicit bias towards the tenant. Following legislation introduced in 1989, the focus has shifted toward landlords with a view to bolstering the sector. However the effect has been muted. The following set out the main aspects of the private rental market.

- Regulated Lettings (Pre-1989)

Tenants with this type of contract have full security of tenure and the landlord can only gain possession under narrow circumstances. Properties tend to be older as do the tenants with 70% of tenants aged over 60 (Carey 1995). The rent may be registered or not. Registration of rent involves the landlord and tenant coordinating with a rent officer from the local authority, whereupon a fair rent is agreed.

- Assured Letting (Post 1989)
  - Security of tenure: the landlord can only seek possession if tenant is not paying rent or landlord wishes to live there. The rent is not registered.
  
- Assured Shorthold Lettings (Post 1989)
  - As above although the period of letting is fixed (between one and five years) and the landlord can seek possession following the end of the contract.

These are the most common types of contracts and anyone renting now will only have access to these. They consist of mostly young people (55% under 30) in employment and drawn from all socioeconomic groups (Carey 1995).

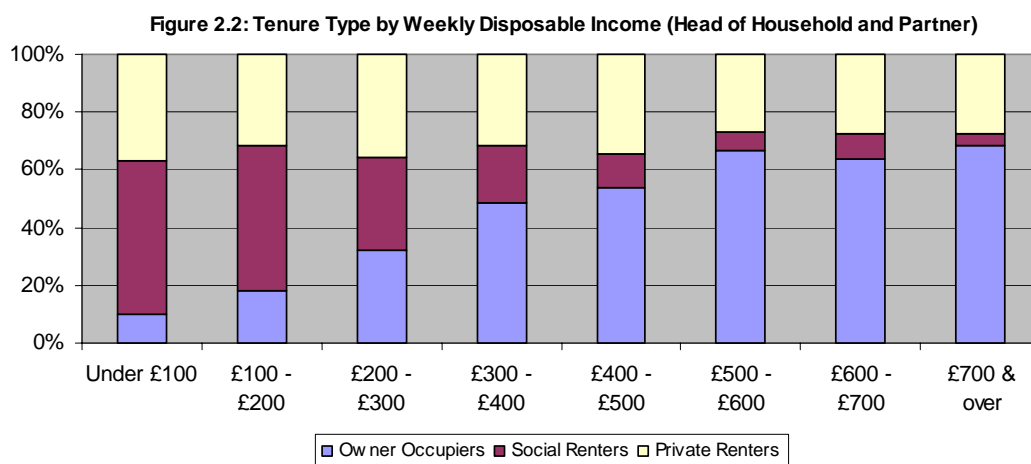
- Lettings not accessible to the public
  - tenants who rent from an employer
  - rent free
  
- Other Lettings
  - no security lettings
  - resident with landlord

## *2.4 Housing Tenure and Demographic Characteristics*

### *2.4.1 Income*

Lowe (2004) argues that the rental sector (both social and private) is now a residual element in a housing landscape dominated by home ownership. He writes that this has resulted in a 'social distillation of household, leaving behind only those unable to move out from the declining, under-funded rental sectors.' (P. 218) It is clear from Figure 2.2 that social renting is declining as disposable income increases and that the share of owner-occupation is rising. But it appears from Figure 2.2 that private renting is relatively more evenly spread across the income distribution. This echoes the point above stating that private renters pervade the social spectrum. This in turn suggests a

heterogeneous market in terms of types and quality of properties being offered for rent by the private sector, and also in terms of the characteristics of people renting in the private sector, which in turn has implications for the methodology employed to impute the rental value of properties. This is discussed further below.

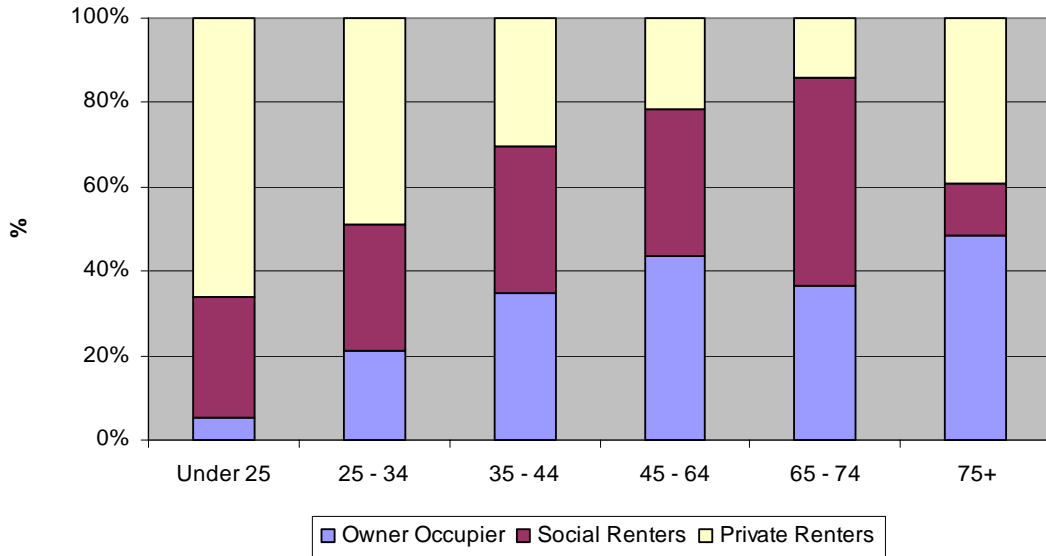


Source: Housing Statistics 2002: Office of the Deputy Prime Minister

#### 2.4.2 Age

Younger age groups are much more likely to be renting property and most of this is in the private sector (Figure 2.3). Approximately two thirds of people under 25, and 50% of people aged 25 – 34, rent in the private sector. At the other end of the age spectrum, about 40% of people over 74 years rent privately. The older and younger private renters are likely to be renting under difference legal frameworks (as set out above), with the younger age groups mostly being assured and assured shorthold tenancies, and the older age group are likely to be regulated tenants. A higher proportion of the older age groups are owner occupiers. Starting at 5% of people under 25, it rises to just under 50% of people aged over 74. A similar pattern holds for social renting with about 50% of people aged 65-74 renting in this sector, although many more younger people are also in this sector (30% people aged under 25, and the same for people aged 25 – 34).

**Figure 2.3: Tenure Type by Age**



Source: Housing Statistics 2002: Office of the Deputy Prime Minister

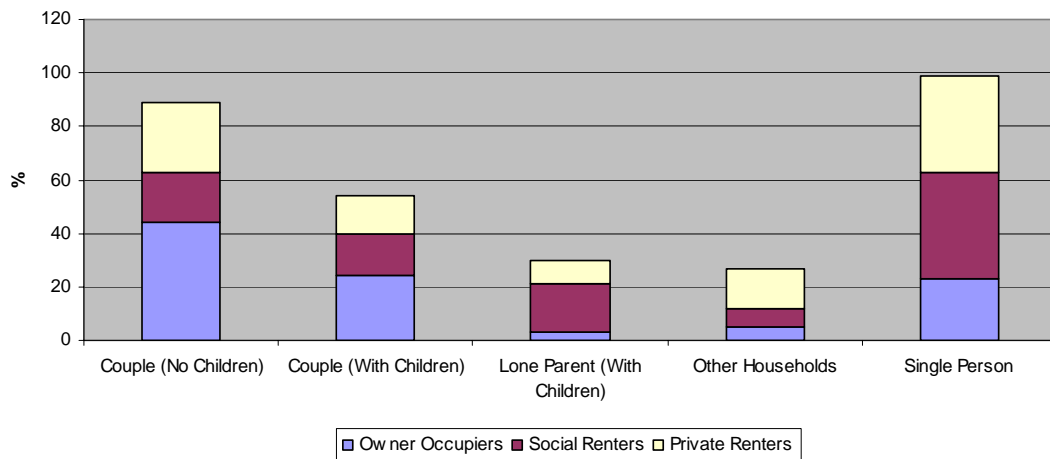
What can be seen clearly in Figure 2.3 is the way in which the transformation of the structure of housing provision in the UK is reflected in different age groups. People aged 65-74 would have been seeking independent housing provision around the time of the boom in social housing. Older people aged 75 and over, would have been looking for housing at a time when the private market was more prevalent than it is today. Finally, the high proportion of younger people in the private sector, reflects the difficulties currently being experienced by this group in getting a foot on the owner occupied property ladder.

### 2.4.3 Household Type

The majority of owner occupiers in the UK are couples (with or without children). In sum these two groups make up just under 70% of all owner occupiers (Figure 2.4). About one quarter of the remaining owner occupiers are single people. These single people are likely to be un the upper bands of the income distribution, but are also likely to be older (perhaps widowed) people who own outright. Amongst the couples there are likely to be a large number of dual earner households, and are also mostly paying back a mortgage. In the UK, lone parents are a key group benefiting from social housing provision. Approximately one fifth of social tenants are lone parents, which represents 60% of lone parents. A very small proportion of lone parents and

other types of households are owner occupiers. This latter group is likely to contain student households. A large proportion of single person households are renting accommodation, perhaps reflecting the difficulty a single person has getting a foot on the property ladder in the UK. This group of single people are divided roughly equally between private renting (36%) and social renting (40%).

**Figure 2.4: Tenure Type by Household Type**



Source: Housing Statistics 2002: Office of the Deputy Prime Minister

### 3. Data and Methodology

In order to impute rent, as much information as possible concerning the type and quality of property is required, as well as detailed information concerning the costs incurred from owner occupation. Unfortunately detailed information about the quality of the property in all sectors is not available. We use the Family Resources Survey 2003/04 (FRS) and the Family Expenditure Survey 2000/01 (FES). Both these data sets are used in EUROMOD and it is intended in future work to incorporate imputed rent for use in policy simulations. With respect to the relationship between the development of these surveys, the FRS was developed by the Department for Work and Pensions (DWP) to better facilitate information needs, previously served by the FES. Both data sets are very similar with respect to their utility in this research. Both contain some information about accommodation in the UK. For example its size and type, whether it is furnished or not; and whether it has central heating or not. They also contain good data relating to various costs associated with owner occupation

including interest paid on mortgages. The FRS contains a much larger sample. The FES contains 6637 households and the FRS contains 28859 households. The sample of private renting households, upon which the imputation is based, is 410 in the FES and 2155 in the FRS. Using both data sets provides a basic consistency check of the methods employed.

There are three methods for calculating imputed rent:

- i. The capital market approach
- ii. The self-assessment approach
- iii. The opportunity cost approach

Frick and Grabka (2003) compare and contrast the differing approaches. The capital market approach focuses on the trade off between investing in ones own home or placing capital in other investment possibilities that would yield a return in income flows over time. One problem with this is that the method might overstate the imputed income. This is exacerbated if inflation is not taken into consideration in the method. Furthermore this method can only be applied to owner occupiers. The self assessment approach involves asking people to place a rental value on their property. This method is highly subjective. The opportunity cost approach seeks to impute a rental value for all property not rented privately paying full market rents, using those households that do pay unsubsidized rents for private properties.

### *3.1 Hedonic Regression Method*

Log rent paid by tenants renting in the private sector is regressed on a number of covariates. Explanatory variables include the type of tenure, dummies for central heating and whether the accommodation is furnished or not. Also the council tax band that the property is in, the number of rooms and the number of years occupying the property; and finally the region the property is in. These are all very standard variables, with the exception of council tax band, which is unique to the UK. Council tax is a local or municipal tax levied on most households in Great Britain, i.e. excluding Northern Ireland. The amount of tax is based on the value of the property with band A being the lowest and Band H being the highest. This provides a rather crude indicator of the quality of the property, assuming of course that the quality of

the property is reflected by its price on the market. Table 1 provides information about the value of the properties that fall within each band in each country in Great Britain.

**Table 1: Council Tax Bands and the Value of the Property**

Band	England (£'000) <sup>1</sup>	Scotland (£'000) <sup>2</sup>	Wales (£'000) <sup>3</sup>
A	up to £40	up to £27	up to £30
B	£40 - £52	+ £27 - £35	+ £30 - £39
C	+ £52 - £68	+ £35 - £45	+ £39 - £51
D	+ £68 - £88	+ £45 - £58	+ £51 - £66
E	+ £88 - £120	+ £58 - £80	+ £66 - £90
F	+ £120 - £160	+ £80 - £106	+ £90 - £120
G	+ £160 - £320	+ £106 - £212	+ £120 - £240
H	+ £320	+ £212	+ £240

The results of the regressions are given in Table 2. Despite the overall goodness of fit, measured using the adjusted R-square statistic, being identical in both regressions, there are many more significant coefficients in the FRS regression. This may influence the predictions and resulting imputed rent. This process is now detailed.

Following the implementation of the regression, rent is predicted for the entire sample. This prediction is then subject to an error modification procedure. The idea behind the procedure is to increase the variation in the imputed rent. A count sequence variable is created assigning, what is in effect, a case number for each observation in the regression (409+1 in FES and 2154+1 in FRS). Then each number contained in this sequence is randomly assigned to each case not included in the regression. This results in multiple cases containing a number in the sequence of all observations in the regression. The residual from each observation in the regression is then assigned to the other cases in the sample, where the randomly assigned numbers are identical to each digit in the count sequence. The imputed rent is calculated as the sum of the predicted rent plus this residual. The exponent of this is taken thereby transforming from log rent, resulting in a gross value of imputed rent. Then, mortgage

<sup>1</sup> [http://www.direct.gov.uk/en/MoneyTaxAndBenefits/CouncilTax/DG\\_10037383](http://www.direct.gov.uk/en/MoneyTaxAndBenefits/CouncilTax/DG_10037383) (FEB 2007)

<sup>2</sup> <http://www.saa.gov.uk/ctbands.html> (FEB 2007)

<sup>3</sup> [http://www.adviceguide.org.uk/nw/wales/life/tax/council\\_tax\\_wales.htm](http://www.adviceguide.org.uk/nw/wales/life/tax/council_tax_wales.htm) (FEB 2007) These bands have recently been reassessed in Wales in 2005, but the data in the table is accurate for the data-sets we use in the report.

interest payments, maintenance costs<sup>4</sup>, charges and structural insurance are deducted for owner-occupiers. The rent actually paid is deducted from those who live in subsidised or reduced rent housing, and also for those who pay part rent/part mortgage. In some cases this results in a negative value for imputed rent. In cases IR is reset to zero. This results in an estimate of net imputed rent, which is then annualised.

**Table 2: Regression Results**

	<b>FES</b>	<b>FRS</b>
Whole house/bungalow, semi-detached	0.09	0.15**
Whole house/bungalow, terraced	0.08	0.19***
Purpose-built flat or maisonette	0.24*	0.35***
Converted house/building	0.05	0.29***
Caravan/mobile home or houseboat	-0.06	0.05
Other		-0.19*
Central Heating	0.10	0.12***
Furnished	0.08	0.10***
Band b	0.12	0.12***
Band c	0.16*	0.21***
Band d	0.28**	0.37***
Band e	0.15	0.48***
Band f	1.00***	0.69***
Band g	0.78***	0.87***
Band h	1.05*	1.29***
Household Not Valued Separately	-0.08	-0.17**
Number of Rooms	0.07***	0.12***
North west and Merseyside	-0.08	0.25**
Yorks and Humberside	-0.25	0.18*
East midlands	-0.20	0.24**
West midlands	-0.03	0.14
Eastern	-0.07	0.36***
London	0.35*	0.65***
South east	0.07	0.41***
South west	-0.08	0.27***
Wales	-0.39*	0.07
Scotland	-0.13	-0.02
Northern Ireland	-0.38*	0.29**
Number of Years	-0.01***	-0.09***
Constant	3.84***	3.69***
Number of Obs.	410	2155
	(28, 381)	(29, 2125)
F	12.68	59.25
Prob > F	0.00	0.00
R-Squared	0.48	0.45
Adjusted R-Squared	0.44	0.44

<sup>4</sup> The average amount spent on maintenance for those who report some expenditure, is imputed for those households who do not report any of these costs.

### *3.2 Stratification Method*

The stratification method basically involves placing all cases within a strata defined in terms of various characteristics relating to the property and also the population. The more characteristics used the more defined the strata, the more refined the approach. Statistics Finland, in adopting this approach, defined 128 strata (Frick et al 2006). The small sample sizes in the data sets restricts the number of strata that can be defined to eleven (FES) and twelve (FRS). There are four variables used to define the strata in this study. These are tenure type (house, flat/other), council tax band<sup>5</sup> (1, 2, 3-6, 7-8, 9 and none<sup>6</sup>), whether the property is in London or not, and the number of rooms in the property (less than six, greater than five). None of these characteristics relate directly to people in the population. The regression results reported above showed these variables to be significant across samples in determining log rent. The variables are more aggregated than they were in the regression, again because of sample size issues. It is important to strike a balance between the number of strata and the number of cases within each strata. Following experimentation it was decided that the stratum in Table 2 were the optimal outcome. Proportionally the strata are very similar in size across the two data sets although there are some notable differences. There are more cases proportionally in strata 1 and 4 in FES, and more cases proportionally in strata 3 in FRS. These differences are not huge.

The mean rent in each of these strata for households that rent in the private sector is imputed to those other households within the strata who do not rent in the private sector. A similar error correction is applied within each strata to that detailed above. There are two important differences though. First of all there are no residuals in a strictly econometric sense. We calculate the difference between the mean rent in each strata (analogous to the prediction following the regression), and the actual rent households pay. The second difference is that the random assignment is done within each strata. One important difference following this procedure in stratification, compared to regression, is that there are a considerable number of negative values of gross rent amongst households where it would not be expected. Namely these are households who are owner occupiers. The reason for this is that the ‘residual’ used is

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<sup>5</sup> See Table 1 above for detailed information about the value of properties falling into these broader categories.

<sup>6</sup> This refers to households in Northern Ireland, which does not have council tax.

in some instances very large and negative, such that adding it to the mean rent within each strata still results in a negative value. This was not an issue with the regression as the residual were relatively tiny. As with the regression, mortgage interest payments, maintenance costs, charges and structural insurance are deducted for owner-occupiers. The rent actually paid is deducted from those who live in subsidized or reduced rent housing, and also for those who pay part rent/part mortgage. Again the cases with a negative value of IR are reset to zero except the cases where gross IR was negative. These negative values are not adjusted. This results in a net value of imputed rent, which is then annualised.

**Table 3: Defining Strata for Opportunity Cost Measure of Imputed Rent**

STRATA	Type of Accommodation (House, Flat/Other)	Council Tax Band	London	Number of Rooms	N		%	
					FES	FRS	FES	FRS
1	House	1	NO	< 6	705	2,023	10.6	7.0
2	House	2	NO	NA	962	4,214	14.5	14.6
3	House	1	NO	> 5	278	2,197	4.2	7.6
4	Any	3 - 6	NO	< 6	1,009	2,673	15.2	9.3
5	Any	3 - 6	NO	> 5	1,617	8,979	24.4	31.1
6	House	1 - 6	YES	NA	471	2,040	7.1	7.1
7	Any	7 - 8	NA	NA	239	1,014	3.6	3.5
8	Any	9	NA	NA	55	204	0.8	0.7
9	Any	None	NA	NA	532	1,917	8.0	6.6
10	Flat	1	NA	NA	527	2,257	7.9	7.8
11	Flat	2	NA	NA	242	1,295	3.6	4.5
12	House	1 - 2	YES	NA	-	46		0.2

NB: 'NA' refers to situations where the variable was not considered in constructing the strata.

Table 4 reports the net mean annual IR produced by both methods for each data set. It can be seen that the stratification method produces a higher net mean value of IR, which may be due to the low number of strata. The IR produced from the stratification method is very similar for both data sets. The IR produced from the OLS regression using the FES data is larger than that produced by the FRS data. This may be the result of the different sample sizes.

**Table 4: Mean Net Imputed Rent by Method and Data Set**

	Mean Annual Net Imputed Rent	ST. Dev.
<b>Regression</b>		
FES	£2,859	2499.067
FRS	£1,892	1917.592
<b>Stratification</b>		
FES	£3,566	2432.033
FRS	£3,693	3175.606

#### 4. Distributional impact of accounting for imputed rents<sup>7</sup>.

This section describes empirical results concerning incidence and relevance of accounting for imputed rents when measuring households disposable income, with particular reference to poverty and inequality analysis. The underlying idea is to compare the baseline cash income distribution picture with the one emerging after imputed rents have been added to beneficiaries. The different groups of beneficiaries – owners outright, owners with mortgage, reduced-rent tenants and rent free tenants- are often analysed separately, as results might differ in a relevant way between them. The unit of analysis is the individual. Individuals are placed in quintiles based on household income, which is equivalised using the OECD equivalence scale<sup>8</sup>.

##### 4.1 Housing Tenure and Imputed Rent

A large percentage of the people of the UK receive a positive IR (80% FRS; 90% FES: Tables A1.1 & A2.1). Broken down by tenure the picture is quite mixed and is quite different in the two years analysed. In FES all owner occupiers receive a positive IR, and 70% of tenants receive it. 90% of those in social housing receive a positive IR. In FRS, 20% of people who are paying a mortgage do not receive a IR. Given that mortgage interest payments and other costs of owner occupation, were subtracted in both years, it is interesting that this has more of an effect in the later year. All those living in social housing receive the IR and none of those receiving housing benefit, benefit from a positive IR. Not all tenants who receive a subsidy from employer or family, benefit from a positive IR. In FES 70% of these tenants

<sup>7</sup> Tables reporting the detail of distributional impact analysis can be found in Appendix. All graphs presented in this section are based on figures reported in those tables.

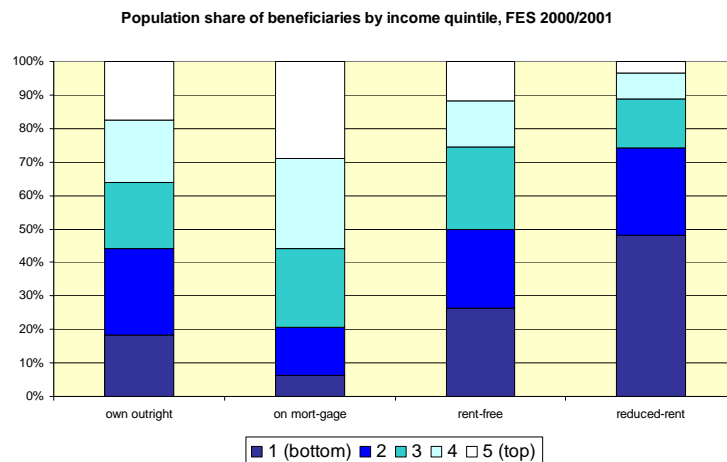
<sup>8</sup> The OECD modified equivalence scale assign weight 1 to the head of the household, weight 0.5 to any other adult and 0.3 to children (aged below 14 years old).

receive positive IR compared to 40% in FRS. One might expect all of these tenants to receive a positive IR but perhaps the rent they do pay is nonetheless greater than the IR, thereby resulting in a negative IR which would be reset to zero. However we can't ignore the potential problems associated with imputing a IR based on such a small sample of the population.

#### 4.2 Imputed rent incidence

The distribution of imputed rent beneficiaries across income quintiles for the four different categories of beneficiaries in FES and FRS are represented in Figure 4.1 (Tables A1.2 & A2.2, Panel 1). The general picture seems to have remained the same in the two analysed years: owners appear to be quite uniformly distributed across income quintiles, while owners still repaying a mortgage seem to be concentrated mainly in the mean-upper part of the distribution, particularly in the top 2 income quintiles. This corroborates the picture in Figure 2.2 that showed owner-occupation increasing with disposable income. Tenants on the other hand appear more concentrated in the lower part of the income distribution.

**Figure 4.1**



Population shares of beneficiaries by income quintile, FRS 2003/04

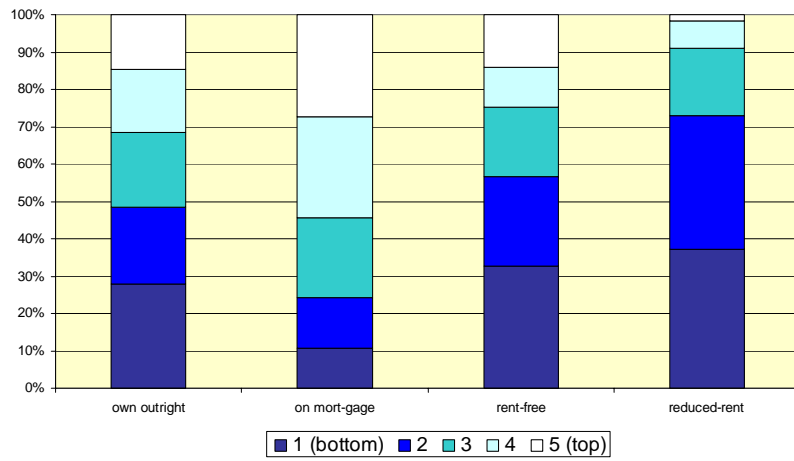
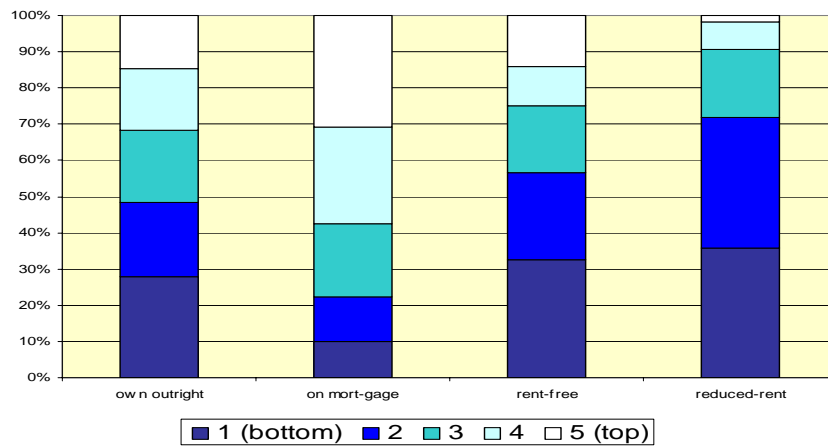
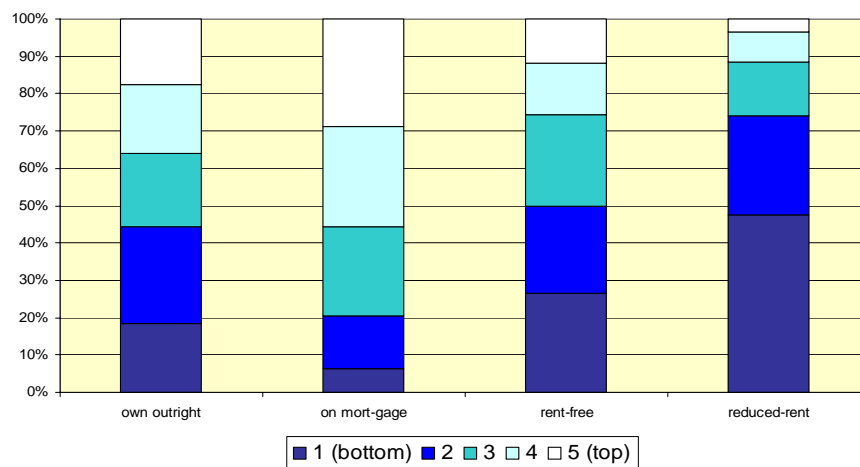


Figure 4.2

Population shares of potential beneficiaries by income quintile, FRS 2003/04



Population share of potential beneficiaries by income quintile, FES 2000/2001



### 4.3 Imputed rent relevance

The income share change for each quintile, after accounting for imputed rent seems negligible in magnitude both in FES and in FRS (Figure 4.3: Table A1.3 & A2.3, panel 1): the change is higher than 1 % in absolute value only for the fifth quintile in FRS. Nevertheless in both years we observe an increase in the income share of the first three quintiles, while the opposite happens in the top two quintiles, pointing at an inequality-reducing effect of imputed rent addition in the resources measure. Adding IR results in a redistribution of the income share from the top two quintiles to the bottom three. This is more pronounced in FRS compared to FES. In both cases it is the top quintile that loses the most with first and second quintile gaining the most in FRS and the second and third quintile in FES.

**Figure 4.3**



We add IR to specific tenure groups and examine the changes in the share of income across the entire distribution (Figure 4.4: Table A1.3 & A2.3, panel 1). There is evidence that the inequality reduction concerns mainly reduced rent tenants and outright owners. It seems that the pattern for all beneficiaries is being driven by these tenure groups. A quite different pattern is observed for owners with mortgage in FES: the income share is reduced in the two lower quintiles and increased in the top ones, pointing at an inequality increase. This suggests perhaps that the cost of owner occupation for those with a mortgage in the lower quintiles, is such that the IR disproportionately benefits those in the upper quintiles who could possibly bear the costs more readily. The effect on income share for this tenure group in FRS is more mixed and very small.

**Figure 4.4**

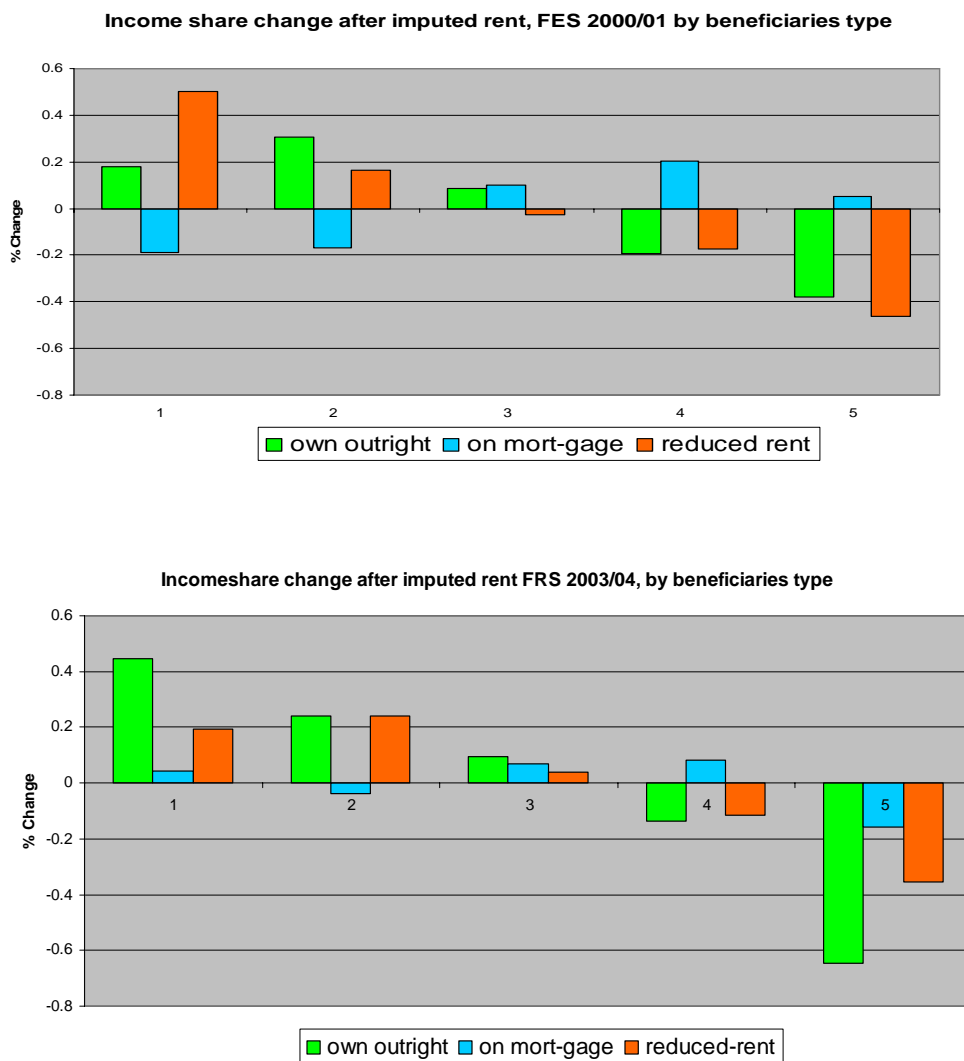
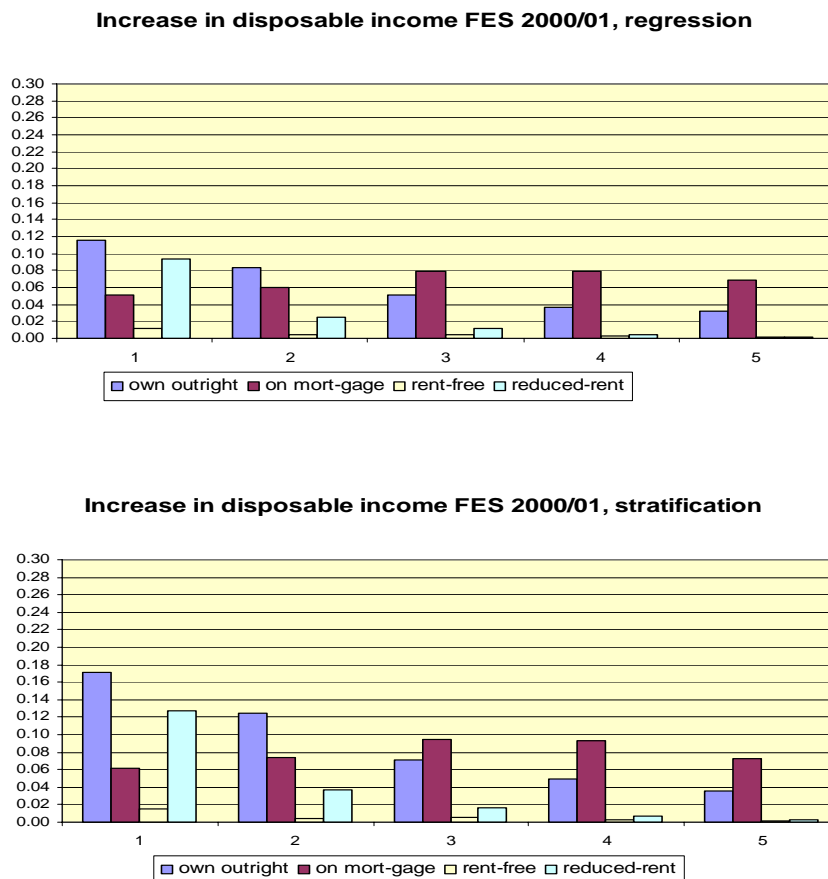
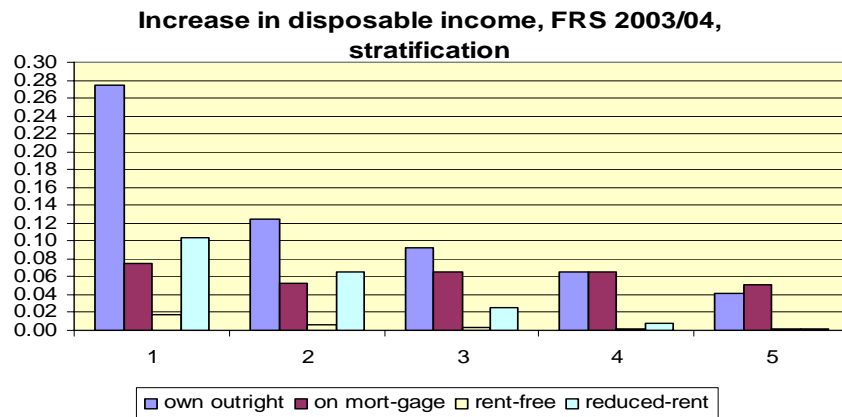
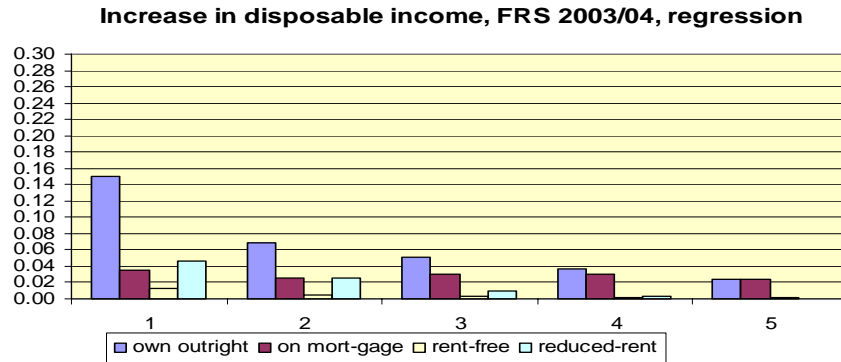


Figure 4.5 (Table A1.3 & A2.3, panel 2) displays the percentage increase in disposable income as a result of adding IR. Noting that a large majority of reduced rent tenants will be living in social housing, it is not surprising to see a large increase in disposable income for this tenure group in the bottom quintile. There are increases in disposable income for those who own outright but the increases decline as pre-IR disposable income increases. Clearly in a proportional sense, outright owners at the bottom of the income distribution benefit more. This group is likely to contain many older owner occupiers. The picture for owner occupiers paying a mortgage is markedly different. As pre-IR disposable income is increasing so is the proportional increase as a result of adding IR. This picture is replicated when the alternative stratification methodology is implemented, but in this case the increase in disposable income results significantly higher. This is not surprising considering the net IR is on average greater (Table 2 above).

**Figure 4.5**



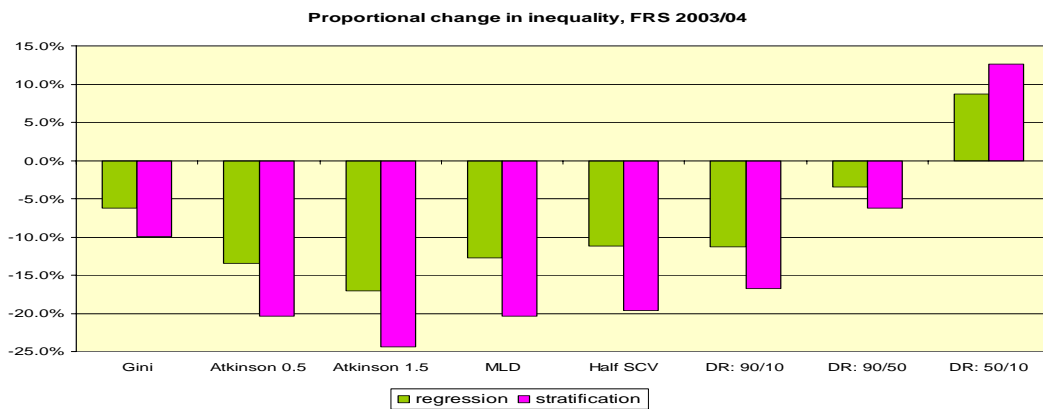
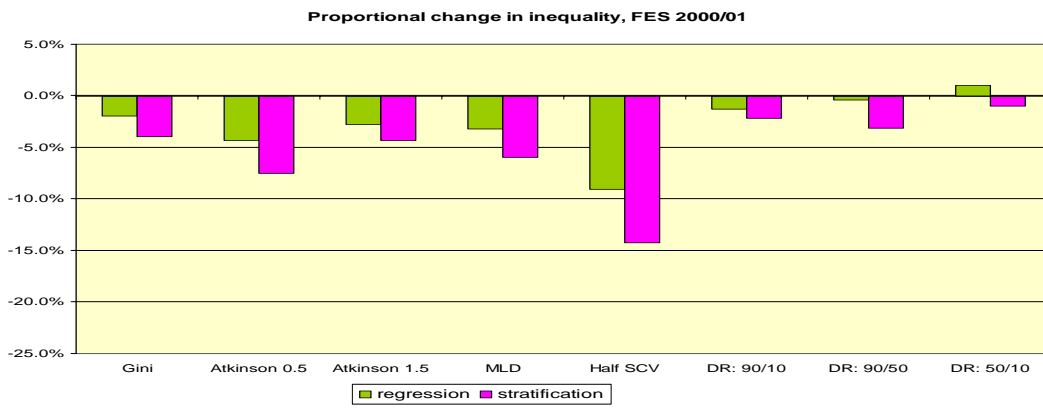


### 4.3 Inequality and poverty impact

Both in 2000/01 and in 2003/04 we consistently find, with reference to a number of indices, that inequality is reduced following the imputation of IR, using both the implemented methodologies (Figure 4.6: Tables A1.6 & A2.6 Panel 2). Imputing rents with the stratification approach seems to result in a higher reduction in inequality compared to the result using regression. Again this is natural given that on average the mean net IR is greater. The inequality reduction seems to be concentrated more at the top of the income distribution in 2000/01, with a particularly high reduction in inequality measured by SCV of about 9% with the regression method, and 14% with the stratification method. In the later year reductions in inequality tend slightly more to the lower end of the distribution. This is evidenced by the high reduction in inequality measured using the Atkinson index. The reduction is more pronounced the higher the aversion to inequality. Considering the different tenure types (Figure 4.7: Tables A1.6 & A2.6 Panel 2), the reduction in inequality is focused

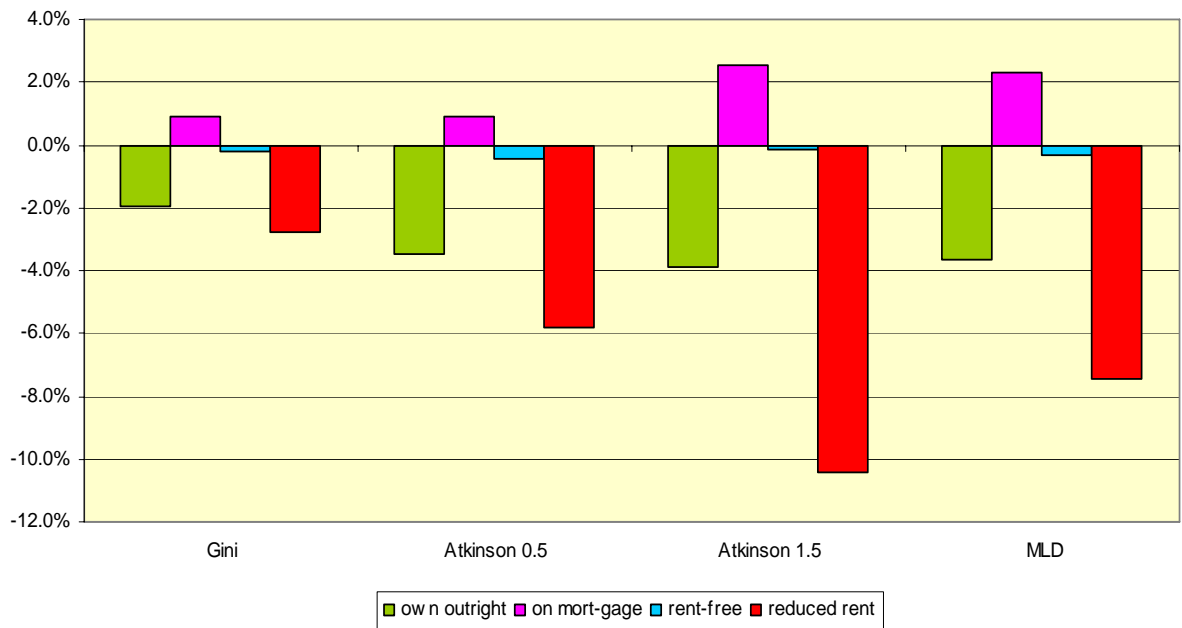
mainly on outright owners and reduced rent tenants, while an increase in inequality is registered for owners with an outstanding mortgage but only in 2000/01.

**Figure 4.6**

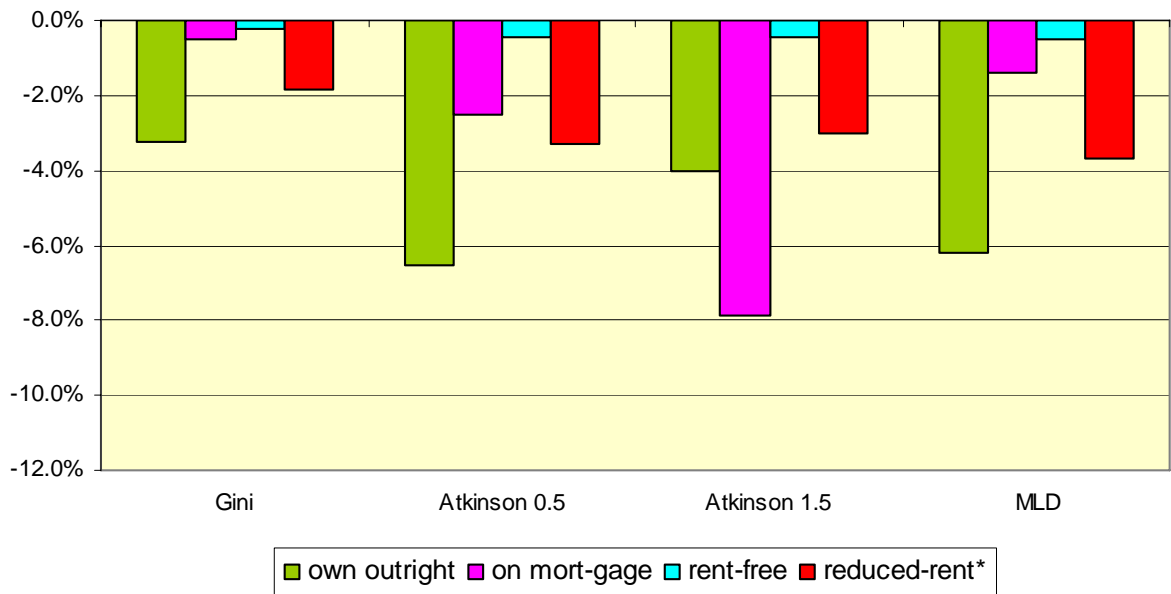


**Figure 4.7**

**Proportional change in inequality, FES 2000/01 by tenure type**



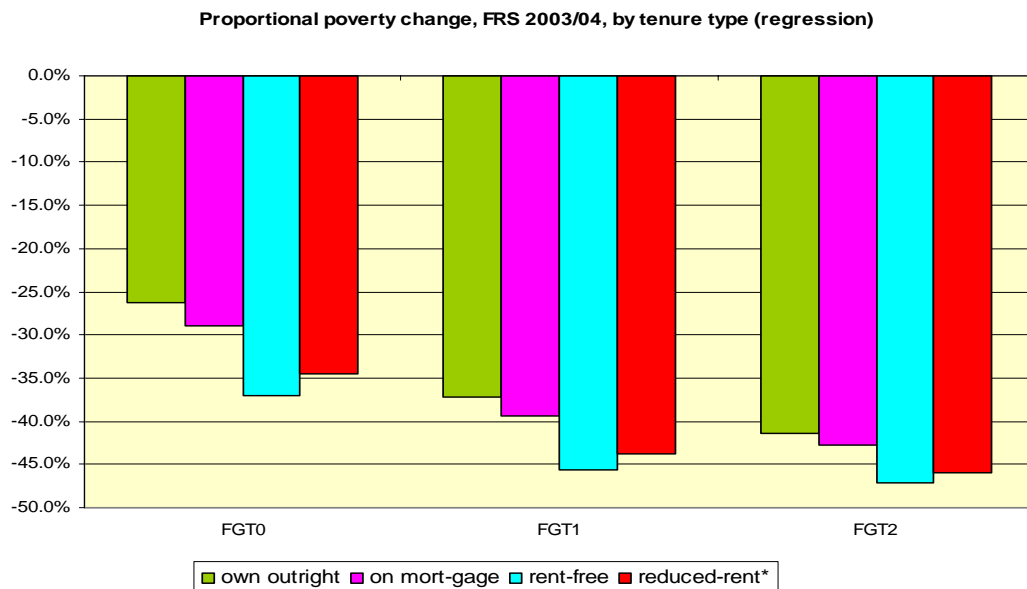
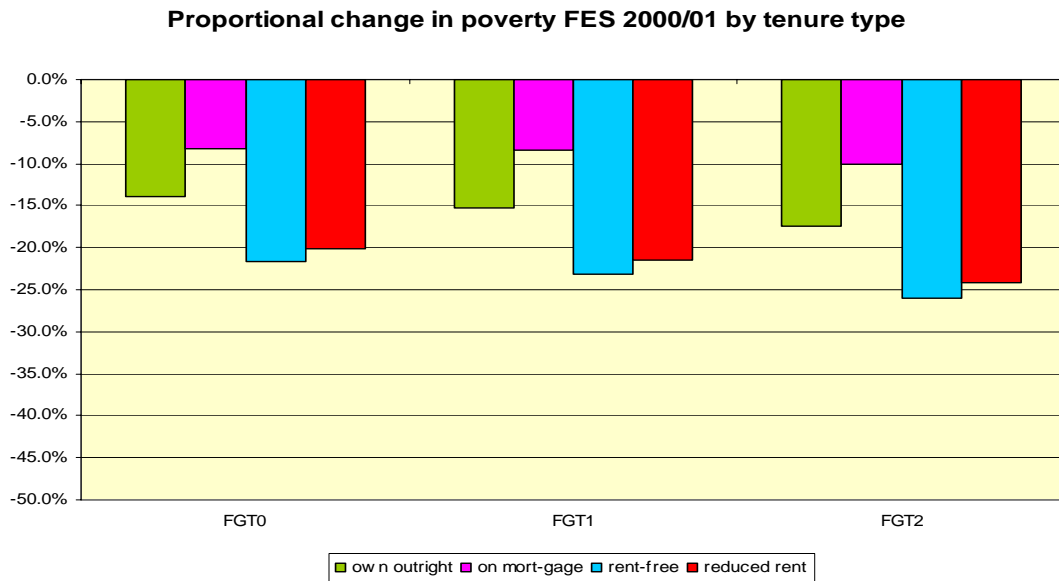
**Proportional inequality change, FRS 2003/04, by tenure type (regression)**



Using the Foster-Greer-Thorbecke (FGT) index, poverty is consistently shown to have decreased for all groups of beneficiaries after imputing rents, mainly for rent free

and reduced rent tenants, with the higher reduction obtained when the indices more sensitive to the poverty gap extent are used (Figure 4.8: Tables A1.6 & A2.6 Panel 2). It is also clear that the impact is stronger in 2003/04 (FRS) than in the earlier year. Furthermore owner occupiers do not fare as well relative to other groups in the FES results.

**Figure 4.8**



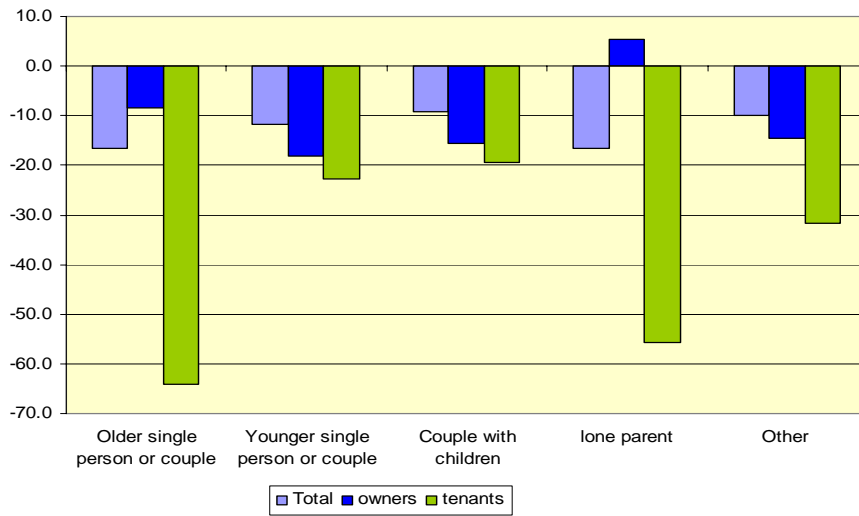
#### **4.4 Inequality and poverty impact across groups**

Inequality and poverty changes can also be analysed across different household characteristics. The imputed rent is added to all beneficiaries and then the population is analysed with recourse to a number of key demographic variables. In this section we present results (Figure 4.9: Table A2.7, Column G ) obtained for 2003/04 when the regression method is used. The inequality results refer to changes in the mean log deviation (MLD). Inequality is significantly reduced for all household types, but relatively more for tenants (including both rent free and reduced rent) than for owners (including both those owning outright and those with an outstanding mortgage). Older singles or couples improve their income position by just under 20%. Lone parent households increase their income position by just over 10%. Given the high proportion of lone parent households living in social housing (Figure 2.4 above) this reveals the benefit offered by this provision. In terms of the socioeconomic status of head of household, pensioners and those who are unemployed seem to benefit the most, again with tenants experiencing inequality reduction to a much higher extent than owners. More education and younger age seem to be negatively correlated to inequality reduction for tenants but not for owners. Within and between groups inequality is reduced across all demographic characteristics analysed.

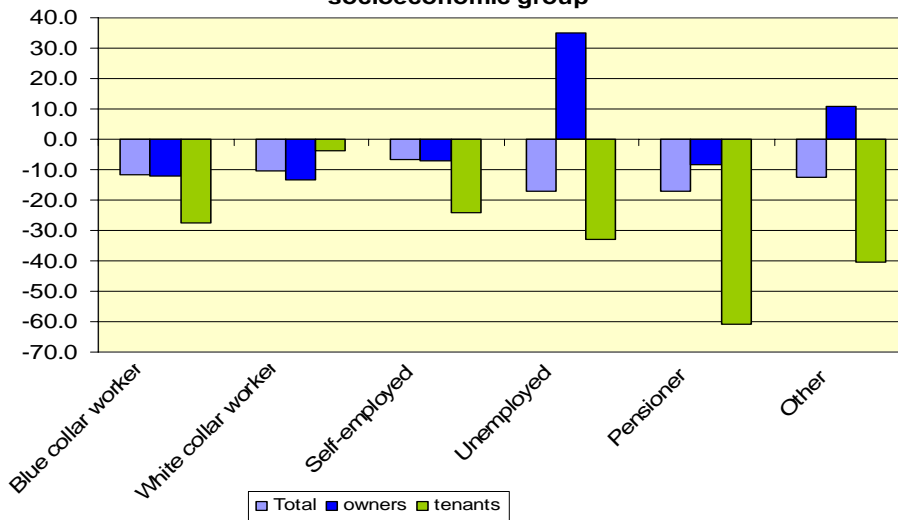
Decomposing the effects using the Foster-Greer-Thorbecke (FGT) index it can be seen that poverty is highly reduced for pensioners and significantly reduced in all the other household types, especially adults with no children and lone parents (Figure 4.10: Table A2.8). Again pensioners turn out to experience a striking poverty reduction, when the decomposition is based on socioeconomic status. Poverty reduction is significant and quite uniform across different head of household education levels, with a particularly high poverty reduction for the less educated. The life-cycle pattern of poverty reduction is again confirmed when looking at the decomposition by head of household age, with poverty reduction constantly increasing with age.

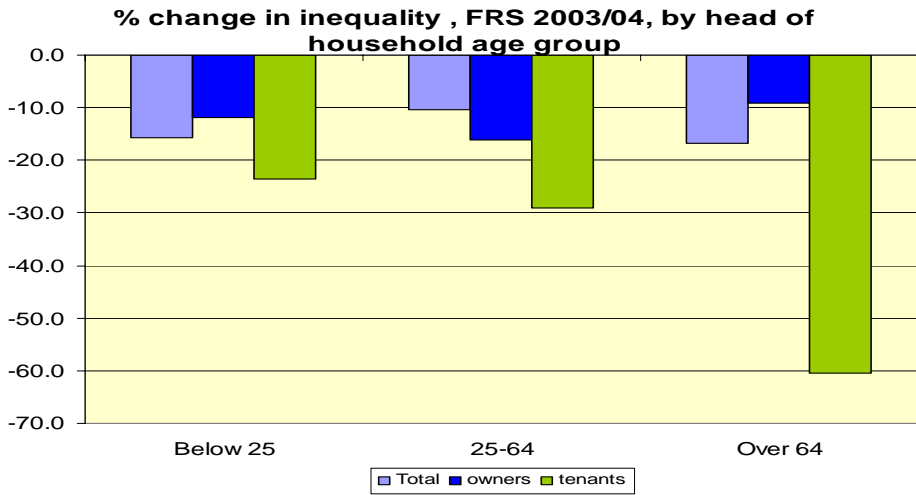
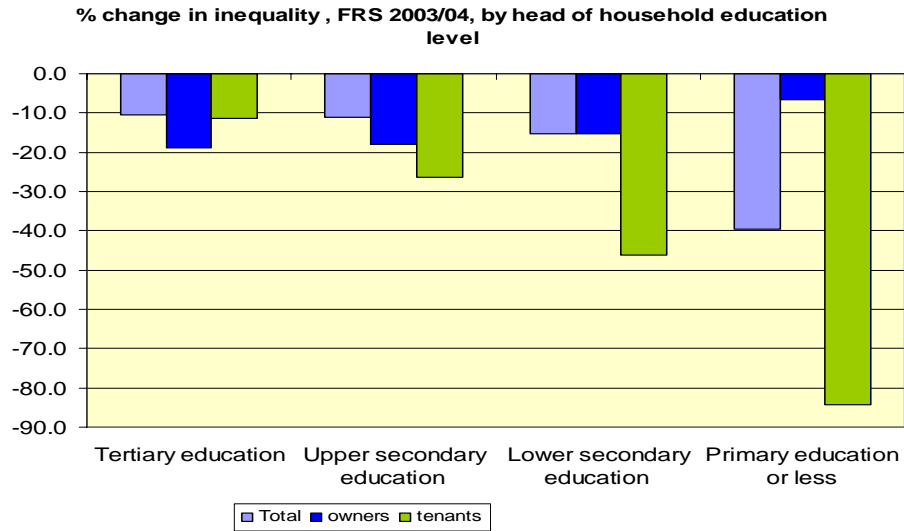
**Figure 4.9**

**% change in inequality , FRS 2003/04, by household type**

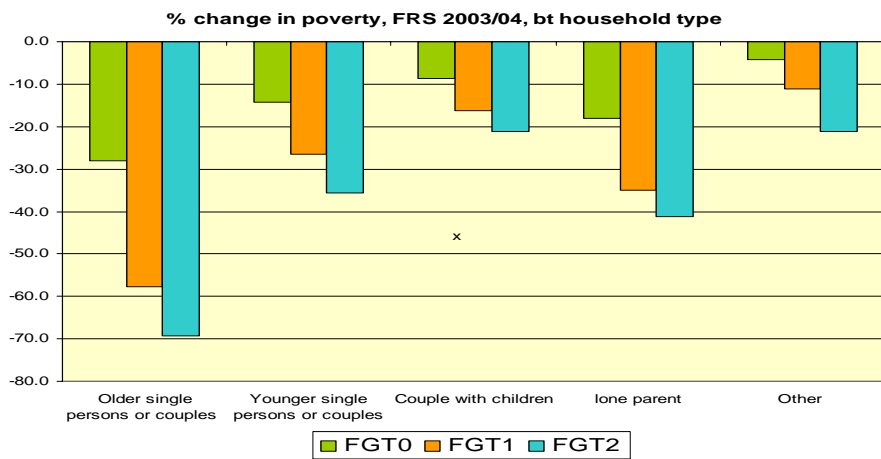


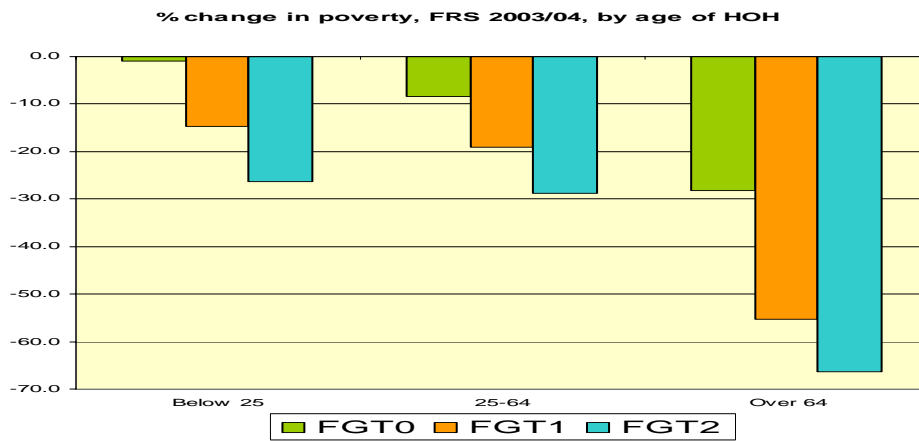
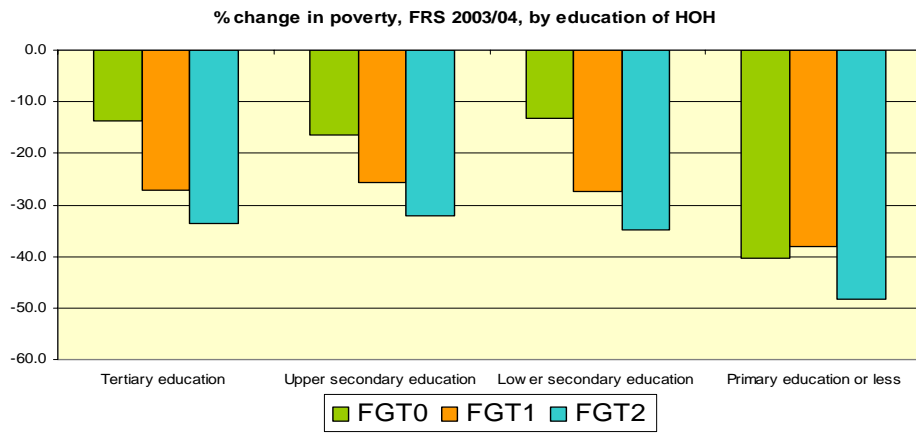
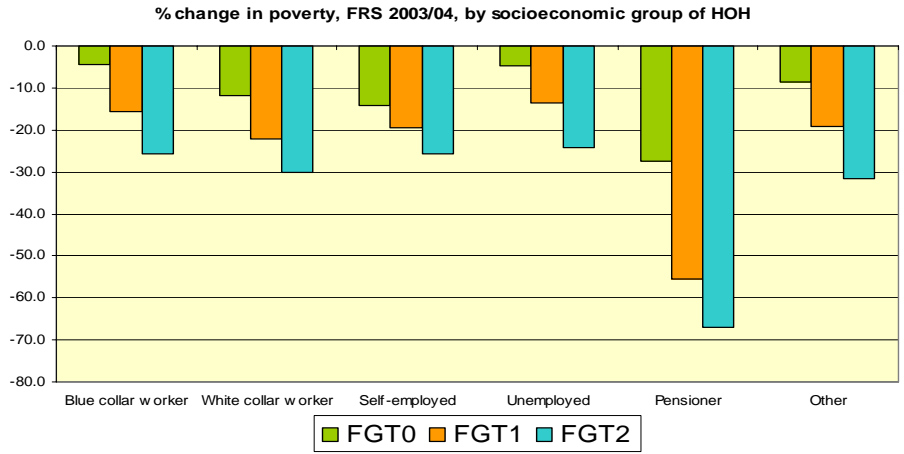
**% change in inequality , FRS 2003/04, by head of household socioeconomic group**





**Figure 4.10**





## 5 Conclusion

In this report we have analysed the distributional impact after accounting for imputed rents in the household disposable income measure, using the Family Expenditure Survey 2000/01 and the Family Resources Survey 2003/4 data. Rent imputation has been performed following an “opportunity cost approach” implemented with two alternative methodologies, based on regression and stratification.

We find a broad inequality and poverty reduction effect when imputed rents are accounted for in the household disposable income definition. Nevertheless, patterns of inequality and poverty change might significantly differ across different types of beneficiaries. Reduced rent tenants, mainly concentrated in the lower part of the baseline income distribution, seem to be the group gaining more, while the distributional picture for rent-free households does not appear to be significantly altered. Relevant differences are also found between owners outright and owners with an outstanding mortgage, with a significant poverty and inequality reduction effect only for the first group. Finally, when other household characteristics are considered, older people see their position particularly improved by rent imputation.

This report has shown that values of imputed rent are quite sensitive to the methods chosen, and also the data used. It is difficult to impute rent in the UK as the size of the private rental market is so small. As a result, representative survey data will yield sample sizes that are relatively small. It has been shown here that owner occupiers paying off a mortgage do well with respect to inequality and poverty reduction in the FRA sample, but not in the FES sample. Comparisons are also made between different methodologies. What this report has shown is that even within a particular methodology (opportunity cost) there can be considerable variation depending on the particular approach adopted.

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**APPENDIX 1 : DISTRIBUTIONAL IMPACT TABLES, FES 2000/01**

**Table A1.1 : Housing tenure and Incidence of IR (using regression)**

<b>Tenure status</b>	<b>Population share</b>	<b>Tenure status</b>	<b>Share with IR=0</b>	<b>Share with IR&gt;0</b>	<b>Total</b>
<i>Owner occupiers</i>	40556233.0	<i>Owner occupiers</i>	76582.0	40479651.0	40556233.0
<i>thereof</i>		<i>thereof</i>			
outright owner	12,874,630	outright owner	18,929	12,855,701	12874630.0
with outstanding mortgage	27,681,603	with outstanding mortgage	57,653	27,623,950	27681603.0
<i>Tenants</i>	16824579.0	<i>Tenants</i>	4958546.0	11866033.0	16824579.0
<i>thereof</i>		<i>thereof</i>			
in private market (non-subsidized)	2,685,087	in private market (non-subsidized)	2,386,913	298,174	2685087.0
rent-subsidized by direct public transfers in cash	1,201,358	rent-subsidized by direct public transfers in cash	1,142,393	58,965	1201358.0
rent-subsidized due to living in social housing	11,295,252	rent-subsidized due to living in social housing	1,213,840	10,081,412	11295252.0
rent-subsidized by landlord (eg. family, employer)	712,625	rent-subsidized by landlord (eg. family, employer)	215,400	497,225	712625.0
rent-free	769,170	rent-free	0	769,170	769170.0
Total	57219725.0	Total	5,035,128	52,184,597	57219725.0

**Table A1.2 : Population Share of Beneficiaries**

Quintile	Population share of beneficiaries (%)															
	<Regression>									<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants				
		Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*		
1 (bottom)	19.99	10.41	10.11	18.38	6.25	46.41	26.44	48.14	10.41	10.11	18.39	6.25	46.41	26.44	47.44	
2	19.99	18.12	18.02	25.89	14.33	26.14	23.33	25.94	18.11	18.01	25.89	14.33	26.14	23.33	26.61	
3	20.02	22.36	22.32	19.65	23.68	14.97	24.63	14.61	22.41	22.37	19.64	23.68	14.97	24.63	14.49	
4	19.99	24.08	24.28	18.63	26.85	8.41	13.76	7.9	24.06	24.26	18.63	26.85	8.41	13.76	8.05	
5 (top)	20.01	25.02	25.27	17.46	28.9	4.08	11.84	3.41	25.01	25.26	17.46	28.9	4.08	11.84	3.41	
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
N in Mil.																
n																

Quintile	% Potential beneficiaries															
	<Regression>									<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants				
		Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*		
1 (bottom)	19.99	1.00	1.00	1.00	1.00	0.83	1.00	0.89	1.00	1.00	1.00	1.00	0.83	1.00	0.94	
2	19.99	1.00	1.00	1.00	1.00	0.83	1.00	0.87	1.00	1.00	1.00	1.00	0.83	1.00	0.95	
3	20.02	0.99	0.99	1.00	1.00	0.83	1.00	0.89	1.00	1.00	1.00	1.00	0.83	1.00	0.95	
4	19.99	1.00	1.00	1.00	1.00	0.69	1.00	0.86	1.00	1.00	1.00	1.00	0.69	1.00	0.94	
5 (top)	20.01	1.00	1.00	1.00	1.00	0.45	1.00	0.83	1.00	1.00	1.00	1.00	0.45	1.00	0.89	
All	100.0	1.00	1.00	1.00	1.00	0.79	1.00	0.88	1.00	1.00	1.00	1.00	0.79	1.00	0.94	

**Table A1.3 : Income Advantages from IR**

Quintile	Income Share														
	Baseline in %	<Regression>							<Stratification>						
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants		
			Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*
1 (bottom)	6.71	6.779	6.752	6.887	6.52	7.229	6.73	7.21	6.795	6.756	6.871	6.499	7.331	6.726	7.314
2	12.256	12.535	12.487	12.563	12.089	12.438	12.283	12.418	12.816	12.787	12.745	12.073	12.523	12.293	12.487
3	17.114	17.314	17.315	17.202	17.213	17.096	17.125	17.086	17.541	17.521	17.349	17.336	17.122	17.117	17.102
4	23.167	23.129	23.199	22.973	23.372	23.02	23.155	22.996	23.25	23.265	23.025	23.531	22.957	23.178	22.955
5 (top)	40.753	40.244	40.248	40.375	40.806	40.216	40.706	40.289	39.598	39.671	40.011	40.561	40.067	40.685	40.142
All	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
N in Mil.															
n															

Quintile	% Increase in disposable income														
	Baseline in %	<Regression>							<Stratification>						
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants		
			Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent
1 (bottom)	6.71	0.18	0.17	0.12	0.05	0.10	0.01	0.09	0.25	0.23	0.17	0.06	0.14	0.02	0.13
2	12.256	0.15	0.14	0.08	0.06	0.03	0.00	0.02	0.20	0.20	0.12	0.07	0.04	0.00	0.04
3	17.114	0.13	0.13	0.05	0.08	0.02	0.00	0.01	0.17	0.17	0.07	0.09	0.02	0.01	0.02
4	23.167	0.12	0.12	0.04	0.08	0.01	0.00	0.00	0.15	0.14	0.05	0.09	0.01	0.00	0.01
5 (top)	40.753	0.10	0.10	0.03	0.07	0.00	0.00	0.00	0.11	0.11	0.04	0.07	0.00	0.00	0.00
All	100.00	0.12	0.12	0.05	0.07	0.02	0.00	0.01	0.15	0.15	0.07	0.08	0.02	0.00	0.02

Quintile	Mean transfer per capita (not equivalized)														
	Baseline (EUR) mean	<Regression>							<Stratification>						
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants		
			Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent
1 (bottom)	7967.33	3056.971	3038.432	2933.612	3300.484	1106.254	3361.003	1212.001	4271.303	4249.911	4369.215	3951.648	1515.016	4622.145	1658.998
2	15555.08	3043.91	3037.064	3003.327	3084.771	1001.233	3337.292	1087.316	4188.123	4188.185	4502.9	3743.151	1452.972	4185.464	1609.892
3	21822.09	3238.34	3211.001	3371.914	3114.4	1291.708	4473.77	1262.459	4153.005	4115.85	4713.698	3756.939	1860.612	5832.077	1879.98
4	28946.11	3574.773	3555.419	3776.665	3460.467	1293.041	4807.351	1464.358	4367.768	4345.994	5039.022	4048.565	1717.818	5754.516	2044.568
5 (top)	47952.70	4869.018	4855.299	5862.352	4501.305	1106.761	6781.052	1867.303	5274.466	5268.051	6629.439	4789.503	1254.121	6168.525	2368.492
All	24453.42	3649.803	3639.941	3630.147	3646.831	1120.797	4094.961	1222.494	4496.421	4483.188	4932.612	4167.064	1546.495	5093.784	1722.221

**Table A1.4 : Income Advantages from IR**

Quintile	Baseline (EUR) mean	Equivalentized IR-transfer (EUR) mean													
		<Regression>							<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
		Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent	
1 (bottom)	4468.7455	797.5663	751.1577	480.0554	271.1023	492.775	46.40858	446.3664	1082.496	1018.386	698.1195	320.2661	643.0099	64.11029	578.8997
2	8161.4385	1223.132	1190.591	629.1504	561.4406	243.3952	32.54118	210.854	1629.466	1589.894	926.9445	662.9498	330.4588	39.57143	290.8874
3	11388.452	1518.717	1471.679	506.6996	964.9789	172.5731	47.03795	125.5352	1930.916	1871.243	711.366	1159.877	243.2845	59.67262	183.6119
4	15430.948	1800.656	1766.397	512.4169	1253.98	112.0552	34.25978	77.79543	2202.865	2162.013	686.0147	1475.999	150.275	40.8522	109.4228
5 (top)	27153.008	2758.921	2728.679	784.5299	1944.149	73.65933	30.24215	43.41719	2943.203	2915.462	876.3146	2039.147	90.55546	27.7409	62.81456
All	13323.19	1620.034	1581.935	582.5881	999.347	218.8429	38.09876	180.74	1958.01	1911.62	779.74	1131.88	291.45	46.39	245.1

Quintile	Baseline (EUR) mean	Disposable income including Imputed Rent (EUR) mean													
		<Regression>							<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
		Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent	
1 (bottom)	4468.7455	5266.312	5219.903	4948.801	4739.848	4961.521	4515.154	4915.112	5551.241	5487.131	5166.865	4789.012	5111.755	4532.856	5047.645
2	8161.4385	9384.57	9352.029	8790.589	8722.879	8404.834	8193.979	8372.293	9790.904	9751.333	9088.383	8824.389	8491.897	8201.01	8452.326
3	11388.452	12907.17	12860.13	11895.15	12353.43	11561.02	11435.49	11513.99	13319.37	13259.69	12099.82	12548.33	11631.74	11448.12	11572.06
4	15430.948	17231.6	17197.34	15943.37	16684.93	15543	15465.21	15508.74	17633.81	17592.96	16116.96	16906.95	15581.22	15471.8	15540.37
5 (top)	27153.008	29911.93	29881.69	27937.54	29097.16	27226.67	27183.25	27196.43	30096.21	30068.47	28029.32	29192.15	27243.56	27180.75	27215.82
All	13323.19	14943.22	14905.13	13905.78	14322.54	13542.03	13361.29	13503.94	15281.20	15234.81	14102.94	14455.07	13614.65	13369.6	13568.3

**Table A1.5 : Income Advantages from IR for Beneficiaries Only**

	Baseline (EUR) mean	<Regression>							<Stratification>						
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants		
			Total	own outright	on mort- gage	Total	rent-free	reduced- rent*		Total	own outright	on mort- gage	Total	rent-free	reduced- rent*
1 (bottom)	4468.7455	2284.998	2255.126	2366.581	1977.167	977.572	2774.04	1043.613	3286.908	3253.257	3586.244	2420.789	1391.507	3838.794	1364.68
2	8161.4385	2001.333	1996.482	2228.268	1669.369	832.9426	2208.978	923.222	2841.985	2841.89	3382.058	2079.568	1273.02	2846.048	1238.667
3	11388.452	2084.471	2057.813	2470.704	1800.225	1096.469	3284.061	1006.717	2708.739	2672.134	3468.98	2186.09	1610.645	4357.699	1401.692
4	15430.948	2246.313	2221.717	2618.475	2051.995	1382.079	3811.297	1173.615	2785.569	2757.408	3516.445	2432.715	1824.183	4577.279	1510.82
5 (top)	27153.008	3162.972	3158.03	4044.552	2843.651	1818.04	3850.469	1820.68	3506.542	3507.06	4651.314	3101.974	1989.217	3434.521	1951.627
All	13323.19	2394.012	2380.112	2651.374	2186.226	1013.343	3020.207	1039.021	3021.873	3003.831	3662.906	2537.834	1441.663	3835.031	1362.203

**Table A1.6 : Inequality and IR**

Inequality indices	Post-Gov.-Inc.	Value of the Index														
		<Regression>							<Stratification>							
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
			Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*	
Gini	0.340	0.333	0.334	0.333	0.343	0.330	0.339	0.331	0.327	0.328	0.330	0.342	0.327	0.339	0.328	
Atkinson 0.5	0.098	0.094	0.095	0.095	0.099	0.092	0.098	0.093	0.091	0.092	0.093	0.099	0.091	0.098	0.091	
Atkinson 1.5	0.284	0.276	0.277	0.273	0.291	0.254	0.284	0.254	0.272	0.273	0.271	0.290	0.250	0.284	0.251	
MLD	0.20464	0.198	0.199	0.197	0.209	0.189	0.204	0.189	0.192	0.194	0.194	0.208	0.186	0.204	0.186	
Half SCV	0.319	0.290	0.291	0.307	0.305	0.304	0.317	0.306	0.273	0.275	0.297	0.298	0.300	0.317	0.302	
DR: 90/10	5.126	5.058	5.074	5.039	5.353	4.592	5.111	4.607	5.014	5.046	5.077	5.406	4.492	5.118	4.499	
DR: 90/50	2.034	2.026	2.029	2.023	2.035	2.005	2.033	2.008	1.970	1.976	2.002	2.035	2.003	2.029	2.010	
DR: 50/10	0.397	0.401	0.400	0.401	0.380	0.437	0.398	0.436	0.393	0.392	0.394	0.376	0.446	0.396	0.447	
FGT0	0.214	0.218	0.217	0.184	0.197	0.172	0.168	0.171	0.212	0.211	0.177	0.187	0.163	0.157	0.161	
FGT1	0.069	0.070	0.069	0.059	0.063	0.055	0.053	0.054	0.071	0.070	0.058	0.062	0.053	0.051	0.053	
FGT2	0.033	0.032	0.032	0.027	0.029	0.025	0.024	0.025	0.034	0.033	0.027	0.029	0.025	0.023	0.024	
N in Mil.																
n																

Inequality indices	Post-Gov.-Inc.	Proportional change in %														
		<Regression>							<Stratification>							
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
			Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*	
Gini	0.340	-2.0%	-1.7%	-2.0%	0.9%	-3.0%	-0.2%	-2.8%	-4.0%	-3.6%	-3.1%	0.5%	-3.8%	-0.3%	-3.5%	
Atkinson 0.5	0.098	-4.3%	-3.8%	-3.5%	0.9%	-6.3%	-0.4%	-5.8%	-7.5%	-6.8%	-5.2%	0.1%	-7.7%	-0.5%	-7.1%	
Atkinson 1.5	0.284	-2.8%	-2.5%	-3.9%	2.5%	-10.6%	-0.1%	-10.4%	-4.3%	-4.0%	-4.5%	2.3%	-12.0%	-0.2%	-11.8%	
MLD	0.20464	-3.2%	-2.8%	-3.7%	2.3%	-7.8%	-0.3%	-7.4%	-5.9%	-5.3%	-5.0%	1.8%	-9.3%	-0.4%	-8.9%	
Half SCV	0.319	-9.1%	-8.6%	-3.7%	-4.4%	-4.5%	-0.5%	-4.0%	-14.3%	-13.7%	-6.8%	-6.5%	-5.9%	-0.7%	-5.2%	
DR: 90/10	5.126	-1.3%	-1.0%	-1.7%	4.4%	-10.4%	-0.3%	-10.1%	-2.2%	-1.6%	-1.0%	5.5%	-12.4%	-0.2%	-12.2%	
DR: 90/50	2.034	-0.4%	-0.2%	-0.5%	0.0%	-1.4%	0.0%	-1.3%	-3.1%	-2.9%	-1.6%	0.0%	-1.5%	-0.2%	-1.2%	
DR: 50/10	0.397	1.0%	0.8%	1.0%	-4.3%	10.1%	0.3%	9.8%	-1.0%	-1.3%	-0.8%	-5.3%	12.3%	-0.3%	12.6%	
FGT0	0.214	1.6%	1.1%	-14.0%	-8.2%	-19.6%	-21.7%	-20.1%	-1.0%	-1.4%	-17.6%	-12.5%	-24.1%	-26.7%	-24.7%	
FGT1	0.069	0.6%	0.2%	-15.2%	-8.5%	-20.8%	-23.2%	-21.4%	2.4%	1.7%	-15.5%	-10.4%	-22.9%	-25.9%	-23.7%	
FGT2	0.033	-0.3%	-0.9%	-17.4%	-10.2%	-23.5%	-26.1%	-24.1%	3.5%	2.8%	-16.3%	-10.6%	-24.6%	-28.0%	-25.5%	

**Table A1.7 : Inequality Decomposition and IR (Regression Only)**

Characteristic of household or household head	A	B				C				D			E				F				G			H				I			
	Pop. share in %	Mean				Income position				% increase in mean equiv.			Mean Log Deviation (MLD)				% change in inequality			% contribution to aggregate inequality											
		Baseline	Including IR			Baseline	Including IR			Including IR			Baseline	Including IR			Including IR			Baseline	Including IR										
Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	Total	owners	tenants					
<b>Household type</b>																															
Older single persons or couples (at least one 65+)	14.44	10022.74	12190	13851.78	8004.308	90	55	42	18	21.6	38.2	-20.1	0.15871	0.1402	0.12177	0.08741	-11.7	-23.3	-44.9	11.2	10.2	8.8	6.7								
Younger single persons or couples (none 65+)	25.15	16428.523	18647	21147.23	12608.03	148	84	63	28	13.5	28.7	-23.3	0.21385	0.1811	0.12382	0.23235	-15.3	-42.1	8.7	26.3	23.0	15.6	31.0								
Couple with children up to 18 (no other HH members)	33.82	13187.928	14865	16750.47	9115.912	119	67	50	21	12.7	27.0	-30.9	0.19182	0.1729	0.14363	0.13866	-9.8	-25.1	-27.7	31.7	29.5	24.4	24.8								
Mono-parental household	6.44	7347.9042	8657	13140.6	6286.489	66	39	39	14	17.8	78.8	-14.4	0.19556	0.1802	0.12684	0.1102	-7.8	-35.1	-43.6	6.2	5.9	4.1	3.8								
Other household types	20.15	13950.665	15348	17019.07	10398.69	126	69	51	23	10.0	22.0	-25.5	0.14591	0.1392	0.10685	0.15185	-4.6	-26.8	4.1	14.4	14.2	10.8	16.2								
% Within groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-10.7	-30.7	-16.5	89.7	82.8	63.9	81.2								
% Between groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-17.5	-52.6	16.3	10.3	8.8	5.0	13.0								
<b>Socioeconomic group of HH head</b>																															
Blue collar worker	26.2	11371.178	12704	14194.21	9868.155	102	57	43	22	11.7	24.8	-13.2	0.11787	0.0992	0.06301	0.12673	-15.9	-46.5	7.5	15.1	13.1	8.3	17.6								
White collar worker	32.72	18130.735	20274	21270.47	15368.43	163	91	64	35	12.8	17.3	-15.2	0.13203	0.1216	0.10045	0.1874	-7.9	-23.9	41.9	21.1	20.1	16.5	32.5								
Self-employed	10.14	16950.063	19136	19994.47	13548.4	153	86	60	30	11.9	18.0	-20.1	0.29164	0.2441	0.24826	0.1573	-16.3	-14.9	-46.1	14.5	12.5	12.6	8.5								
Unemployed	0.13	4667.7256	5287.4	10510.38	4805.25	42	24	32	11	13.3	125.2	2.9	0.07954	0.0616	0	0.03503	-22.6	-100.0	-56.0	0.1	0.0	0.0	0.0								
Pensioner	16.46	9589.3127	11590	13224.98	7691.054	86	52	40	17	20.9	37.9	-19.8	0.13316	0.1221	0.10736	0.06131	-8.3	-19.4	-54.0	10.7	10.1	8.9	5.3								
Other	14.35	7724.1469	9128.9	13092.97	6188.868	70	41	39	14	18.2	69.5	-19.9	0.20408	0.1859	0.13765	0.10043	-8.9	-32.6	-50.8	14.3	13.5	9.9	7.6								
% Within groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-11.3	-26.4	-22.0	75.7	69.4	57.3	64.0								
% Between groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-11.6	-53.5	14.8	24.3	22.2	11.6	30.2								
<b>Educational level of HH head</b>																															
Tertiary education	18.35	19737.764	22238	23796.29	15307.18	178	100	71	34	12.7	20.6	-22.4	0.18278	0.161	0.13453	0.20629	-11.9	-26.4	12.9	16.4	14.9	12.4	20.1								
Upper secondary education	17.58	14821.03	16913	18796.26	10380.03	133	76	56	23	14.1	26.8	-30.0	0.19749	0.175	0.13686	0.19107	-11.4	-30.7	-3.3	17.0	15.5	12.1	17.8								
Lower secondary education	63.29	11115.313	12651	14657.92	8679.73	100	57	44	20	13.8	31.9	-21.9	0.16872	0.1462	0.10303	0.14602	-13.4	-38.9	-13.5	52.2	46.7	32.8	49.0								
Primary education or less	0.78	7797.4059	8519.6	10748.76	7686.469	70	38	32	17	9.3	37.9	-1.4	0.18913	0.1546	0.2053	0.11959	-18.3	8.5	-36.8	0.7	0.6	0.8	0.5								
% Within groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-12.7	-34.0	-10.2	86.2	77.8	58.5	84.0								
% Between groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-2.8	-26.7	-31.1	13.7	13.8	10.4	10.3								
<b>Age of HH member</b>																															
Below 25	3.15	9065.6687	9987.1	16081.37	8378.931	82	45	48	19	10.2	77.4	-7.6	0.2263	0.2043	0.07551	0.18847	-9.7	-66.6	-16.7	3.5	3.3	1.2	3.1								
25-64	79.96	14177.259	15972	18147.82	10157	128	72	54	23	12.7	28.0	-28.4	0.20388	0.1813	0.13561	0.193	-11.1	-33.5	-5.3	79.7	73.2	54.5	81.8								
Over 64	16.89	10073.049	12087	13706.83	8067.506	91	54	41	18	20.0	36.1	-19.9	0.14638	0.1326	0.11718	0.07817	-9.4	-19.9	-46.6	12.1	11.3	9.9	7.0								
% Within groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-10.8	-32.3	-11.0	95.2	87.8	66.3	91.9								
% Between groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-22.8	-46.7	-54.6	4.8	3.8	2.6	2.4								
<b>Housing tenure</b>																															
Owner: own outright	22.5	13325.904	15915			120	72			19.4			0.21921	0.1735			-20.8	-100.0	-100.0	24.1	19.7	0.0	0.0								
Owner: on mortgage	48.38	15987.609	18053			144	81			12.9			0.13541	0.1177			-13.1	-100.0	-100.0	32.0	28.8	0.0	0.0								
Tenant: private market (non-subsidized)	4.69	15089.681	15247			136	69			1.0			0.22289	0.2149			-3.6	-100.0	-100.0	5.1	5.1	0.0	0.0								
Tenant: rent-subsidized by direct cash transfer	2.1	5015.4453	5039			45	23			0.5			0.10642	0.1058			-0.6	-100.0	-100.0	1.1	1.1	0.0	0.0								
Tenant: rent-subsidized due to living in social housing	19.74	7465.473	8303.3			67	37			11.2			0.15074	0.119			-21.0	-100.0	-100.0	14.5	11.9	0.0	0.0								
Tenant: reduced-rent by landlord (family, employer, etc)	1.25	12505.787	13346			113	60			6.7			0.10909	0.1026			-5.9	-100.0	-100.0	0.7	0.6	0.0	0.0								
Tenant: rent-free	1.34	10975.239	13809			99	62			25.8			0.14266	0.1089			-23.7	-100.0	-100.0	0.9	0.7	0.0	0.0								
% Within groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	-16.2	-100.0	-100.0	78.4	67.9	0.0	0.0								
% Between groups inequality	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	.J.	6.2	-100.0	-100.0	21.5	23.6	0.0	0.0								
<b>ALL</b>	100.0	13323	15127	17375	9657	100	100	100	100	100.0	200.0	300.0	0.20464	0.198	0.199	0.189	-3.2	-2.8	-7.8	100.0	100.0	100.0	100.0								



**Table A1.8 (Con't): Poverty Decomposition and IR (Regression Only)**

	FGT2				% change in poverty (FGT2)			% contribution to aggregate poverty (FGT2)			
	Baseline	opportunity cost			opportunity cost			Baseline	Including IR		
		Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	
<b>Household type</b>											
Older single persons or couples (at least one 65+)	0.0323	0.019	0.00771	0.04745	-41.17647	-76.13003	46.90402	0.14349	0.11312	0.1564	0.10161
Younger single persons or couples (none 65+)	0.03098	0.01823	0.00376	0.0532	-41.15558	-87.86314	71.72369	0.23963	0.18905	0.13124	0.20442
Couple with children up to 18 (no other HH members)	0.02885	0.02223	0.01013	0.05912	-22.94627	-64.88735	104.922	0.30013	0.30992	0.50619	0.25775
Mono-parental household	0.11045	0.09486	0.01661	0.13623	-14.11498	-84.96152	23.34088	0.21889	0.25197	0.07265	0.29963
Other household types	0.01579	0.01637	0.00452	0.05146	3.673211	-71.37429	225.9025	0.09786	0.13595	0.13352	0.13659
<b>Socioeconomic group of HH head</b>											
Blue collar worker	0.02511	0.01948	0.00386	0.04921	-22.42135	-84.62764	95.9777	0.20242	0.21047	0.13022	0.2318
White collar worker	0.00972	0.00827	0.00269	0.0357	-14.9177	-72.3251	267.284	0.09782	0.11149	0.14388	0.10288
Self-employed	0.02717	0.01439	0.01483	0.01156	-47.03717	-45.41774	-57.45307	0.08472	0.06015	0.25579	0.00814
Unemployed	0.17787	0.15939	0	0.1741	-10.38961	-100	-2.119525	0.00712	0.00855	0	0.01082
Pensioner	0.03174	0.02013	0.00928	0.046	-36.57845	-70.76244	44.92754	0.16072	0.13665	0.21132	0.1168
Other	0.10134	0.07992	0.02158	0.12319	-21.13677	-78.70535	21.56108	0.44721	0.4727	0.25879	0.52956
<b>Educational level of HH head</b>											
Tertiary education	0.01553	0.00927	0.00332	0.03573	-40.30908	-78.62202	130.0708	0.08764	0.07015	0.09773	0.06282
Upper secondary education	0.03295	0.023	0.00796	0.07516	-30.19727	-75.84219	128.1032	0.1782	0.16672	0.21338	0.15432
Lower secondary education	0.03654	0.02825	0.00807	0.06819	-22.68747	-77.91461	86.61741	0.71132	0.7372	0.66566	0.75621
Primary education or less	0.09536	0.08079	0.05587	0.0901	-15.27894	-41.41149	-5.51594	0.02284	0.02593	0.02323	0.02665
<b>Age of HH member</b>											
Below 25	0.09017	0.08468	0.00007	0.10701	-6.0885	-99.92237	18.67583	0.08735	0.10994	0.00009	0.13914
25-64	0.03091	0.02304	0.007	0.06591	-25.46102	-77.35361	113.232	0.76026	0.7596	0.79945	0.74901
Over 64	0.02934	0.01874	0.00848	0.04417	-36.12815	-71.09748	50.54533	0.15239	0.13045	0.20046	0.11184
<b>Housing tenure</b>											
Owner: own outright	0.02683	0.00915			-65.89638	-100	-100	0.18567	0.08491		
Owner: on mortgage	0.01189	0.00627			-47.26661	-100	-100	0.17695	0.12508		
Tenant: private market (non-subsidized)	0.03083	0.03412			10.67142	-100	-100	0.0445	0.066		
Tenant: rent-subsidized by direct cash transfer	0.15631	0.19914			27.40068	-100	-100	0.10095	0.17237		
Tenant: rent-subsidized due to living in social housing	0.07785	0.06626			-14.8876	-100	-100	0.4727	0.53919		
Tenant: reduced-rent by landlord (family, employer, etc)	0.01875	0.01891			0.853333	-100	-100	0.00718	0.00971		
Tenant: rent-free	0.02914	0.00494			-83.04736	-100	-100	0.01205	0.00274		
<b>ALL</b>	<b>0.03251</b>	<b>0.02426</b>			<b>-25.37681</b>	<b>-100</b>	<b>-100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

**APPENDIX 2 : DISTRIBUTIONAL IMPACT TABLES, FRS 2003/04**

**Table A2.1 : Housing tenure and Incidence of IR (using regression)**

<b>Tenure status</b>	<b>Population share</b>	<b>Tenure status</b>	<b>Share with IR=0</b>	<b>Share with IR&gt;0</b>	<b>Total</b>
<i>Owner occupiers</i>	42459854.0	<i>Owner occupiers</i>	5,249,243	37,210,611	42459854.0
<i>thereof</i>		<i>thereof</i>			
outright owner	14,870,068	outright owner	15,471	14,854,597	14870068.0
with outstanding mortgage	27,589,786	with outstanding mortgage	5,233,772	22,356,014	27589786.0
<i>Tenants</i>	16064245.0	<i>Tenants</i>	6533038.0	9531207.0	16064245.0
<i>thereof</i>		<i>thereof</i>			
in private market (non-subsidized)	3,500,842	in private market (non-subsidized)	3,457,655	43,187	3500842.0
rent-subsidized by direct public transfers in cash	10,424,047	rent-subsidized by direct public transfers in cash	1,819,726	8,604,321	10424047.0
rent-subsidized due to living in social housing	643,659	rent-subsidized due to living in social housing	0	643,659	643659.0
rent-subsidized by landlord (eg. family, employer)	1,097,416	rent-subsidized by landlord (eg. family, employer)	1,097,416	0	1097416.0
rent-free	398,281	rent-free	158,241	240,040	398281.0
<b>Total</b>	<b>58524099.0</b>	<b>Total</b>	<b>11,782,281</b>	<b>46,741,818</b>	<b>58524099.0</b>

**Table A2.2: Population Share of Beneficiaries**

Quintile	Population share of beneficiaries (%)														
	<Regression>								<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
		Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*	
1 (bottom)	20	21.5	17.56	27.88	10.7	36.95	32.61	37.27	20.92	16.76	27.88	10.24	36.08	32.61	36.3
2	20	20.16	16.4	20.62	13.59	34.92	24.05	35.72	20.16	15.9	20.63	13.13	35.71	24.05	36.43
3	20	20.23	20.79	19.87	21.4	18.03	18.49	18	20.03	20.47	19.86	20.83	18.42	18.49	18.41
4	20	19.82	22.94	17.04	26.86	7.58	10.7	7.35	19.96	23.37	17.04	27.07	7.57	10.7	7.37
5 (top)	20	18.29	22.32	14.6	27.45	2.51	14.15	1.66	18.92	23.51	14.6	28.72	2.23	14.15	1.49
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
N in Mil.															
n															

Quintile	% Potential beneficiaries														
	<Regression>								<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
		Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*	
1 (bottom)		0.92	0.95	1.00	0.88	0.86	1.00	0.85	0.98	0.98	1.00	0.96	0.97	1.00	0.97
2		0.89	0.94	1.00	0.88	0.82	1.00	0.81	0.98	0.98	1.00	0.96	0.97	1.00	0.97
3		0.89	0.91	1.00	0.86	0.80	1.00	0.78	0.97	0.97	1.00	0.95	0.95	1.00	0.94
4		0.86	0.86	1.00	0.81	0.80	1.00	0.78	0.95	0.95	1.00	0.93	0.92	1.00	0.92
5 (top)		0.78	0.78	1.00	0.72	0.87	1.00	0.81	0.89	0.89	1.00	0.86	0.90	1.00	0.85
All		0.87	0.88	1.00	0.81	0.83	1.00	0.82	0.95	0.95	1.00	0.92	0.96	1.00	0.96

**Table A2.3: Income Advantages from IR**

Quintile	Baseline in %	Income Share														
		<Regression>							<Stratification>							
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
			Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*	
1 (bottom)	7.502	8.332	8.022	7.947	7.547	7.731	7.532	7.695	8.824	8.024	7.904	7.225	7.578	7.266	7.524	
2	12.33	12.772	12.563	12.572	12.293	12.581	12.351	12.572	13.031	12.597	12.655	11.831	12.686	12.069	12.659	
3	16.776	16.967	16.949	16.872	16.843	16.825	16.779	16.814	16.975	16.944	16.861	16.567	16.77	16.529	16.754	
4	22.775	22.524	22.68	22.638	22.856	22.648	22.768	22.658	22.249	22.611	22.502	22.966	22.482	22.715	22.497	
5 (top)	40.617	39.406	39.787	39.971	40.461	40.215	40.57	40.261	38.921	39.825	40.078	41.412	40.485	41.421	40.565	
All	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
N in Mil.																
n																

Quintile	Baseline in %	% Increase in disposable income														
		<Regression>							<Stratification>							
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
			Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent	
1 (bottom)	0.24	0.19	0.15	0.04	0.06	0.01	0.05	0.47	0.35	0.27	0.07	0.12	0.02	0.10		
2	0.12	0.09	0.07	0.02	0.03	0.00	0.03	0.25	0.18	0.12	0.05	0.07	0.01	0.07		
3	0.10	0.08	0.05	0.03	0.01	0.00	0.01	0.19	0.16	0.09	0.07	0.03	0.00	0.03		
4	0.07	0.07	0.04	0.03	0.00	0.00	0.00	0.14	0.13	0.07	0.07	0.01	0.00	0.01		
5 (top)	0.05	0.05	0.02	0.02	0.00	0.00	0.00	0.09	0.09	0.04	0.05	0.00	0.00	0.00		
All	0.09	0.08	0.05	0.03	0.01	0.00	0.01	0.18	0.15	0.09	0.06	0.03	0.00	0.03		

Quintile	Baseline (EUR) mean	Mean transfer per capita (not equivalized)														
		<Regression>							<Stratification>							
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
			Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent	
1 (bottom)	9452.56	2065.287	2564.561	2909.028	1715.54	1279.778	4011.016	1089.279	3967.291	4829.411	5335.816	3581.254	2610.914	5733.505	2393.119	
2	15497.87	1790.075	2397.482	3001.698	1544.604	1011.887	3942.014	900.662	3599.321	4553.205	5461.256	3271.447	2377.24	5495.381	2258.878	
3	21504.85	1963.018	2259.295	3273.738	1483.435	1057.451	4288.268	889.8273	3829.217	4298.606	5809.884	3142.76	2394.535	5785.163	2218.619	
4	29542.11	2064.388	2135.146	3741.074	1396.879	1403.401	4671.258	1117.86	4061.991	4191.017	6653.017	3059.201	2856.7	6406.722	2546.504	
5 (top)	50183.82	2389.997	2382.388	4832.139	1586.461	2642.497	5693.566	1099.427	4709.28	4730.576	8542.913	3491.944	4002.615	7138.065	2416.871	
All	25231.72	2040.247	2346.084	3352.817	1524.502	1175.516	4279.762	984.5436	4001.875	4522.94	6033.95	3289.823	2528.602	5899.579	2321.22	

**Table A2.4: Income Advantages from IR**

Quintile	Baseline (EUR) mean	Equivalent IR-transfer (EUR) mean													
		<Regression>							<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
		Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent	
1 (bottom)	5794.032	1409.116	1069.959	805.6038	264.3557	339.1563	61.70458	277.4517	2562.696	1944.521	1423.086	521.4345	618.1753	79.46239	538.7129
2	9521.708	1161.091	868.3995	578.2733	290.1262	292.6915	38.3953	254.2962	2183.608	1583.516	1005.594	577.9229	600.0915	51.17451	548.917
3	12954.11	1193.358	1036.553	577.924	458.6288	156.8054	30.40993	126.3955	2223.095	1908.795	980.1923	928.603	314.2999	39.16779	275.1321
4	17592.99	1226.458	1148.065	560.661	587.4036	78.39286	19.12344	59.26942	2312.189	2162.927	951.861	1211.065	149.263	26.06293	123.2001
5 (top)	31373.67	1496.207	1449.293	650.7247	798.5683	46.91389	34.46962	12.44427	2805.514	2741.378	1089.036	1652.342	64.13621	40.51848	23.61773
All	15447.65	1297.24	1114.45	634.63	479.83	182.79	36.82	145.97	2417.4	2068.2	1089.9	978.3	349.2	47.3	301.9

Quintile	Baseline (EUR) mean	Disposable income including Imputed Rent (EUR) mean													
		<Regression>							<Stratification>						
	Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants			
		Total	own outright	on mortgage	Total	rent-free	reduced-rent		Total	own outright	on mortgage	Total	rent-free	reduced-rent	
1 (bottom)	5794.032	7203.148	6863.992	6599.636	6058.388	6133.188	5855.737	6071.484	8356.729	7738.553	7217.119	6315.467	6412.208	5873.495	6332.745
2	9521.708	10682.8	10390.11	10099.98	9811.834	9814.399	9560.103	9776.004	11705.32	11105.22	10527.3	10099.63	10121.8	9572.882	10070.63
3	12954.11	14147.46	13990.66	13532.03	13412.73	13110.91	12984.52	13080.5	15177.2	14862.9	13934.3	13882.71	13268.41	12993.27	13229.24
4	17592.99	18819.45	18741.06	18153.65	18180.39	17671.38	17612.12	17652.26	19905.18	19755.92	18544.85	18804.06	17742.25	17619.05	17716.19
5 (top)	31373.67	32869.96	32823.04	32024.43	32172.28	31420.58	31408.14	31386.11	34179.25	34115.2	32462.76	33026.1	31437.72	31414.19	31397.2
All	15447.65	16744.91	16562.12	16082.29	15927.49	15630.44	15484.47	15593.62	17865.1	17515.9	16537.6	16426.0	15796.8	15494.9	15749.6

**Table A2.5: Income Advantages from IR for Beneficiaries Only**

Quintile	Post-Gov.- Inc.	Income advantage from Imputed Rent (beneficiaries only)													
		<Regression>							<Stratification>						
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants		
			Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*
1 (bottom)	5794.032	1767.176	2084.695	2334.447	1384.956	1200.857	3291.291	1027.253	3164.674	3825.564	4287.685	2643.772	2122.849	4810.075	1932.832
2	9521.708	1550.124	1875.693	2303.935	1188.772	1044.429	3037.232	946.7325	2794.875	3424.123	4208.227	2280.938	1980.121	4278.294	1890.695
3	12954.11	1603.959	1743.276	2379.203	1179.174	1086.703	3091.845	947.3327	2845.941	3122.164	4234.472	2234.344	1983.232	4160.995	1864.688
4	17592.99	1676.671	1709.689	2677.153	1162.97	1336.013	3443.917	1096.63	2966.024	3036.731	4764.181	2194.448	2285.231	4655.868	2061.234
5 (top)	31373.67	2102.937	2096.838	3410.36	1508.686	2291.78	4145.333	1074.521	3614.537	3627.737	6008.499	2740.164	3187.12	5152.507	2064.041
All	15447.65	1723.875	1904.489	2516.579	1289.269	1156.062	3308.814	989.0662	3057.771	3409.817	4538.237	2418.965	2074.835	4611.602	1914.124

**Table A2.6: Inequality and IR**

Inequality indices	Post-Gov.-Inc.	Value of the Index													
		<Regression>							<Stratification>						
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants		
			Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*
Baseline															
Gini	0.331	0.310	0.318	0.320	0.329	0.324	0.330	0.325	0.298	0.312	0.316	0.329	0.318	0.330	0.319
Atkinson 0.5	0.095	0.082	0.086	0.089	0.092	0.091	0.094	0.092	0.075	0.082	0.087	0.092	0.089	0.094	0.089
Atkinson 1.5	0.278	0.231	0.242	0.267	0.256	0.268	0.277	0.270	0.210	0.232	0.264	0.254	0.263	0.277	0.264
MLD	0.190	0.166	0.175	0.178	0.188	0.182	0.189	0.183	0.151	0.168	0.175	0.187	0.177	0.189	0.178
Half SCV	0.349	0.311	0.320	0.330	0.339	0.340	0.349	0.340	0.281	0.298	0.318	0.330	0.330	0.348	0.331
DR: 90/10	4.243	3.762	3.927	3.889	4.253	4.103	4.221	4.119	3.532	3.891	3.872	4.315	3.975	4.222	4.017
DR: 90/50	2.056	1.984	2.006	2.003	2.048	2.027	2.053	2.031	1.928	1.961	1.981	2.046	1.997	2.051	2.000
DR: 50/10	0.485	0.527	0.511	0.515	0.482	0.494	0.486	0.493	0.546	0.504	0.512	0.474	0.502	0.486	0.498
FGT0	0.188	0.162	0.156	0.138	0.133	0.124	0.118	0.123	0.143	0.135	0.105	0.099	0.085	0.076	0.083
FGT1	0.051	0.037	0.036	0.032	0.031	0.029	0.028	0.029	0.032	0.030	0.024	0.023	0.020	0.018	0.020
FGT2	0.024	0.016	0.015	0.014	0.014	0.013	0.013	0.013	0.013	0.012	0.010	0.010	0.009	0.008	0.009
N in Mil.															
n															

Inequality indices	Post-Gov.-Inc.	Proportional change in %													
		<Regression>							<Stratification>						
		Total	Owner-occupiers			Tenants			Total	Owner-occupiers			Tenants		
			Total	own outright	on mortgage	Total	rent-free	reduced-rent*		Total	own outright	on mortgage	Total	rent-free	reduced-rent*
Baseline															
Gini	0.331	-6.2%	-4.0%	-3.3%	-0.5%	-2.1%	-0.2%	-1.8%	-9.9%	-5.7%	-4.4%	-0.4%	-3.8%	-0.3%	-3.5%
Atkinson 0.5	0.095	-13.4%	-9.5%	-6.5%	-2.5%	-3.7%	-0.4%	-3.3%	-20.4%	-13.1%	-8.5%	-3.1%	-6.5%	-0.5%	-6.0%
Atkinson 1.5	0.278	-17.1%	-12.8%	-4.0%	-7.9%	-3.5%	-0.4%	-3.0%	-24.3%	-16.5%	-5.2%	-8.8%	-5.5%	-0.5%	-5.0%
MLD	0.190	-12.7%	-8.1%	-6.2%	-1.4%	-4.2%	-0.5%	-3.7%	-20.4%	-11.9%	-8.2%	-1.8%	-7.2%	-0.6%	-6.6%
Half SCV	0.349	-11.1%	-8.5%	-5.7%	-2.9%	-2.8%	-0.2%	-2.7%	-19.6%	-14.6%	-9.1%	-5.5%	-5.7%	-0.4%	-5.3%
DR: 90/10	4.243	-11.3%	-7.4%	-8.3%	0.2%	-3.3%	-0.5%	-2.9%	-16.8%	-8.3%	-8.7%	1.7%	-6.3%	-0.5%	-5.3%
DR: 90/50	2.056	-3.5%	-2.4%	-2.6%	-0.4%	-1.4%	-0.1%	-1.2%	-6.2%	-4.6%	-3.6%	-0.5%	-2.9%	-0.2%	-2.7%
DR: 50/10	0.485	8.7%	5.4%	6.2%	-0.6%	1.9%	0.2%	1.6%	12.6%	3.9%	5.6%	-2.3%	3.5%	0.2%	2.7%
FGT0	0.188	-13.7%	-16.9%	-26.2%	-29.0%	-34.0%	-37.0%	-34.6%	-23.6%	-28.0%	-44.2%	-47.1%	-54.8%	-59.4%	-55.7%
FGT1	0.051	-27.0%	-29.9%	-37.3%	-39.3%	-43.2%	-45.6%	-43.8%	-36.9%	-41.1%	-53.5%	-55.1%	-60.2%	-63.7%	-60.7%
FGT2	0.024	-34.0%	-36.1%	-41.4%	-42.8%	-45.5%	-47.2%	-46.0%	-45.8%	-48.7%	-57.4%	-58.6%	-62.3%	-64.8%	-62.6%

**Table A2.7: Inequality Decomposition and IR (Regression Only)**

Characteristic of household or household head	A	B				C				D			E				F				G				H				I			
	Pop. share in %	Mean				Income position				% increase in mean equiv.			Mean Log Deviation (MLD)				% change in inequality				% contribution to aggregate inequality											
		Baseline	Including IR			Baseline	Including IR			Including IR			Baseline	Including IR			Including IR				Baseline	Including IR										
			Total	owners	tenants		Total	owners	tenants	Total	owners	tenants		Total	owners	tenants	Total	owners	tenants	Total		owners	tenants									
<b>Household type</b>																																
Older single persons or couples (at least one 65+)	14.45	10856.95	12945	13842.92	10281.16	70.28	77.28	74.79	85.00	19.2	27.5	-5.3	0.13608	0.1134	0.12461	0.04868	-16.7	-8.4	-64.2					10.3	9.9	10.3	3.9					
Younger single persons or couples (none 65+)	23.7	16953.96	18400	20206.83	12955.41	109.75	109.85	109.17	107.11	8.5	19.2	-23.6	0.22954	0.2025	0.18804	0.17752	-11.8	-18.1	-22.7					28.6	28.9	25.5	23.1					
Couple with children up to 18 (no other HH members)	21.82	19502.84	20608	21982.13	14557.93	126.25	123.04	118.76	120.36	5.7	12.7	-25.4	0.16907	0.1534	0.14285	0.13629	-9.3	-15.5	-19.4					19.4	20.2	17.8	16.3					
Mono-parental household	2.94	12515.43	13857	18532.49	11627.21	81.02	82.73	100.12	96.13	10.7	48.1	-7.1	0.12927	0.1077	0.13638	0.05724	-16.7	5.5	-55.7					2.0	1.9	2.3	0.9					
Other household types	37.09	14121.1	15136	16863.81	11464.85	91.41	90.37	91.11	94.79	7.2	19.4	-18.8	0.15531	0.1398	0.13291	0.1063	-10.0	-14.4	-31.6					30.3	31.2	28.2	21.6					
% Within groups inequality										J.	J.	J.	0.17215	0.1528	0.1477	0.1148	-11.2	-14.2	-33.3					90.5	92.0	84.5	63.0					
% Between groups inequality										J.	J.	J.	0.01803	0.0130	0.0121	0.0056	-28.1	-32.9	-69.1					9.5	7.8	6.9	3.1					
<b>Socioeconomic group of HH head</b>																																
Blue collar worker	25.82	12831.93	13809	14748.26	11716.57	83.07	82.44	79.68	96.87	7.6	14.9	-8.7	0.1065	0.0942	0.09378	0.07739	-11.6	-11.9	-27.3					14.5	14.6	13.9	11.0					
White collar worker	34.61	20616.46	21861	22470.81	18047.46	133.46	130.52	121.40	149.21	6.0	9.0	-12.5	0.15387	0.1381	0.13332	0.14799	-10.3	-13.4	-3.8					28.0	28.8	26.4	28.1					
Self-employed	9.39	20961.26	22402	23369.9	16482.67	135.69	133.75	126.26	136.28	6.9	11.5	-21.4	0.24274	0.2268	0.22597	0.18361	-6.6	-6.9	-24.4					12.0	12.8	12.1	9.5					
Unemployed	1.19	8069.97	9097.5	8968.507	9137.247	52.24	54.32	48.45	75.54	12.7	11.1	13.2	0.1453	0.1205	0.19596	0.09724	-17.0	34.9	-33.1					0.9	0.9	1.3	0.6					
Pensioner	16.22	10438.01	12418	13226.34	10270.14	67.57	74.14	71.46	84.91	19.0	26.7	-1.6	0.10714	0.089	0.09842	0.04174	-16.9	-8.1	-61.0					9.1	8.7	9.1	3.7					
Other	12.77	9725.482	10899	13163.95	9553.204	62.96	65.07	71.12	78.98	12.1	35.4	-1.8	0.13746	0.1203	0.15255	0.08175	-12.5	11.0	-40.5					9.2	9.3	11.2	5.7					
% Within groups inequality										J.	J.	J.	0.14015	0.1246	0.1297	0.09092	-11.1	-7.4	-35.1					73.7	75.1	74.3	49.9					
% Between groups inequality										J.	J.	J.	0.05003	0.0412	0.0300	0.0294	-17.7	-40.0	-41.2					26.3	24.8	17.2	16.2					
<b>Educational level of HH head</b>																																
Tertiary education	21.72	21626.44	23076	25073.27	16381.41	140.00	137.77	135.46	135.44	6.7	15.9	-24.3	0.22417	0.2004	0.18201	0.19828	-10.6	-18.8	-11.5					25.6	26.2	22.6	23.6					
Upper secondary education	17.69	17017.41	18405	19997.15	13074.6	110.16	109.88	108.04	108.10	8.2	17.5	-23.2	0.16628	0.148	0.13632	0.12245	-11.0	-18.0	-26.4					15.5	15.8	13.8	11.9					
Lower secondary education	60.43	12777.96	14001	15426.47	10718.19	82.72	83.59	83.34	88.62	9.6	20.7	-16.1	0.14297	0.1211	0.12114	0.07696	-15.3	-15.3	-46.2					45.4	44.1	41.9	25.5					
Primary education or less	0.15	11133.07	12760	16192.54	9843.03	72.07	76.18	87.48	81.38	14.6	45.4	-11.6	0.33924	0.2052	0.3169	0.0532	-39.5	-6.6	-84.3					0.3	0.2	0.3	0.0					
% Within groups inequality										J.	J.	J.	0.165	0.1432	0.1382	0.1056	-13.2	-16.2	-36.0					86.8	86.2	79.1	58.0					
% Between groups inequality										J.	J.	J.	0.02518	0.0226	0.0215	0.0147	-10.2	-14.5	-41.5					13.2	13.6	12.3	8.1					
<b>Age of HH member</b>																																
Below 25	3.91	11375.94	12176	15020.28	11350.86	73.64	72.70	81.15	93.85	7.0	32.0	-0.2	0.13382	0.1128	0.11781	0.10236	-15.7	-12.0	-23.5					2.8	2.7	2.6	2.2					
25-64	79.37	16589.16	17769	19532.62	12556.64	107.39	106.09	105.53	103.82	7.1	17.7	-24.3	0.19084	0.1711	0.16023	0.13537	-10.4	-16.0	-29.1					79.6	81.8	72.8	59.0					
Over 64	16.72	10980.59	12977	13854.5	10485.01	71.08	77.48	74.85	86.69	18.2	26.2	-4.5	0.12477	0.1039	0.11339	0.04933	-16.8	-9.1	-60.5					11.0	10.5	10.9	4.5					
% Within groups inequality										J.	J.	J.	0.17753	0.1575	0.1517	0.1181	-11.3	-14.5	-33.5					93.3	94.9	86.8	64.8					
% Between groups inequality										J.	J.	J.	0.01265	0.0082	0.0080	0.0023	-34.9	-36.6	-82.0					6.7	5.0	4.6	1.3					
<b>Housing tenure</b>																																
Owner: own outright	25.41	14177.83	16676			91.78	99.56			17.6		0.21477	0.1723			-19.8	-100.0	-100.0														
Owner: on mortgage	47.14	18480.7	19499			119.63	116.41			5.5		0.16467	0.1487			-9.7	-100.0	-100.0														
Tenant: private market (non-subsidized)	5.98	16562.81	16634			107.22	99.31			0.4		0.16884	0.1645			-2.6	-100.0	-100.0														
Tenant: rent-subsidized by direct cash transfer	1.88	9534.636	9534.6			61.72	56.93			0.0		0.05425	0.0543			0.0	-100.0	-100.0														
Tenant: rent-subsidized due to living in social housing	17.81	9669.148	10456			62.59	62.43			8.1		0.08113	0.0704			-13.2	-100.0	-100.0														
Tenant: reduced-rent by landlord (family, employer, etc)	0.68	13481.41	14339			87.27	85.61			6.4		0.17548	0.1543			-12.1	-100.0	-100.0														
Tenant: rent-free	1.1	13585.32	16933			87.94	101.10			24.6		0.26896	0.1848			-31.3	-100.0	-100.0														
% Within groups inequality										J.	J.	J.	0.16186	0.1403			-13.3	-100.0	-100.0													
% Between groups inequality										J.	J.	J.	0.02833	0.0254			-10.2	-100.0	-100.0													
<b>ALL</b>		15448	16749	18510	12095	100.00	100.00	100.00	100.00				0.190	0.166	0.175	0.182	-12.7	-8.1	-4.2					0.0	0.0	0.0	0.0					



**Table A2.8 (Con't): Poverty Decomposition and IR (Regression Only)**

Household type	FGT2				% change in poverty (FGT2)			% contribution to aggregate poverty (FGT2)			
	Baseline	opportunity cost			opportunity cost			Baseline	Including IR		
		Total	owners	tenants	Total	owners	tenants	Total	owners	tenants	
Older single persons or couples (at least one 65+)	0.02256	0.00691	0.00605	0.00948	-69.37057	-73.18262	-57.97872	0.13625	0.06356	0.06783	0.05679
Younger single persons or couples (none 65+)	0.04383	0.02821	0.02393	0.0411	-35.63769	-45.40269	-6.228611	0.43399	0.42523	0.44187	0.3989
Couple with children up to 18 (no other HH members)	0.01319	0.01039	0.00986	0.01272	-21.2282	-25.2464	-3.563306	0.12022	0.14414	0.18189	0.08437
Mono-parental household	0.012	0.00706	0.00223	0.00937	-41.16667	-81.41667	-21.91667	0.01474	0.01321	0.0022	0.03065
Other household types	0.01903	0.015	0.0117	0.02201	-21.17709	-38.51813	15.65949	0.29481	0.35385	0.30621	0.42929
<b>Socioeconomic group of HH head</b>											
Blue collar worker	0.02501	0.01861	0.01755	0.02097	-25.58976	-29.82807	-16.15354	0.26989	0.30569	0.32457	0.2758
White collar worker	0.01588	0.01112	0.01065	0.01402	-29.97481	-32.93451	-11.71285	0.22965	0.24466	0.32977	0.1099
Self-employed	0.02035	0.01513	0.01342	0.02557	-25.65111	-34.05405	25.65111	0.07984	0.09037	0.11241	0.05546
Unemployed	0.07671	0.05807	0.08415	0.05005	-24.29931	9.698866	-34.75427	0.03824	0.04407	0.02452	0.07502
Pensioner	0.02268	0.00749	0.00661	0.00981	-66.97531	-70.85538	-56.74603	0.15369	0.07723	0.08087	0.07148
Other	0.04288	0.02931	0.0259	0.03133	-31.64646	-39.59888	-26.93563	0.2287	0.23798	0.12787	0.41234
<b>Educational level of HH head</b>											
Tertiary education	0.02293	0.0152	0.01185	0.02643	-33.7113	-48.32098	15.26385	0.20816	0.21007	0.20578	0.21686
Upper secondary education	0.01859	0.01261	0.01077	0.01874	-32.16783	-42.06563	0.806885	0.13744	0.14184	0.15225	0.12537
Lower secondary education	0.02568	0.01674	0.01456	0.02175	-34.81308	-43.30218	-15.30374	0.64847	0.64342	0.63657	0.65426
Primary education or less	0.0934	0.04835	0.07465	0.026	-48.2334	-20.07495	-72.16274	0.00593	0.00467	0.00541	0.00351
<b>Age of HH member</b>											
Below 25	0.03984	0.02938	0.02853	0.02963	-26.25502	-28.38855	-25.62751	0.065	0.07298	0.026	0.14735
25-64	0.02363	0.01683	0.01448	0.02376	-28.77698	-38.72196	0.550148	0.78376	0.84945	0.89117	0.78338
Over 64	0.02165	0.00729	0.00645	0.00968	-66.32794	-70.20785	-55.28868	0.15124	0.07758	0.08282	0.06927
<b>Housing tenure</b>											
Owner: own outright	0.03053	0.01082			-64.55945	-100	-100	0.3241	0.17492		
Owner: on mortgage	0.01961	0.01461			-25.4972	-100	-100	0.38627	0.43801		
Tenant: private market (non-subsidized)	0.02069	0.02301			11.21315	-100	-100	0.05172	0.08754		
Tenant: rent-subsidized by direct cash transfer	0.01979	0.02777			40.3234	-100	-100	0.01551	0.03312		
Tenant: rent-subsidized due to living in social housing	0.02607	0.02211			-15.18987	-100	-100	0.19398	0.25043		
Tenant: reduced-rent by landlord (family, employer, etc)	0.02625	0.02395			-8.761905	-100	-100	0.00747	0.01037		
Tenant: rent-free	0.04561	0.00804			-82.37229	-100	-100	0.02096	0.00562		
<b>ALL</b>	0.02393	0.01572	0.01328	0.02217	-34.3084	-44.50481	-7.354785				