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The Effect of the "Right to Buy" Scheme on Support for the Conservative Party and Income: Panel Data Approach

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Word Count: 4999   Professor Andrew Oswald[1]

Research Objective

To quantify the effects on income and Conservative Party support that result from sitting tenants purchasing their council and housing association houses, using the "Right to Buy" economic policy.

Abstract

The "Right to Buy" (RTB) economic policy allowed council and housing association tenants to purchase their homes from the UK government at a substantial discount, which created the biggest transfer of capital wealth from the state to the people in the history of the United Kingdom. The literature exploring the consequences of the legislation is predominantly descriptive. The impact of an RTB purchase on political party preferences remains unclear, with studies pointing at positive and insignificant effects, and the question whether income is affected remains unexplored. This paper uses an unbalanced panel dataset of 9,000 households from Great Britain over the period 1991–2008 as well as fixed effects and IV estimation to quantify the effect on the support for the Conservative Party and income that results from sitting tenants purchasing their council houses using the RTB policy. Such a purchase does not have a significant effect on income but does increase the probability of supporting the Tories by 30%. Therefore, policymakers should consider the incentives created by the legislation, before deciding whether to follow the Scottish and Welsh governments in the abolishment of the scheme.

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1   Introduction

After Margaret Thatcher became Prime Minister, a series of policies were implemented with the aim of transferring capital from the state to the people. In 1980, the "Right to Buy" (RTB) scheme allowed eligible council and housing association tenants to purchase their houses from the government at a significant discount (arbitrage profits are limited by resale restrictions). This resulted in nearly three million new homeowners, a sizable portion of which financed their homes using a mortgage.[1]

The importance of the RTB policy is twofold. Firstly, it affects a vulnerable group in our society − council housing tenants, a significant portion of which are from a disadvantaged background. Secondly, the legislation is extremely popular. It is the largest source of public privatisation revenue in the UK and has been widely discussed in the media due to its embeddedness in the Conservative Party agenda (Carr, 2011; Lund, 2013; Disney and Luo, 2017).

The findings of this paper can have political and social implications that can alter the housing sector in the United Kingdom as well as the political parties' agendas. The research is particularly relevant for policy makers in the present because of the social housing shortage created by the RTB policy, which led to the abandonment of the scheme in Scotland and Wales.

The RTB literature is mostly descriptive and focuses on the characteristics of the RTB owners as well as the factors leading to the resale of RTB properties. The consequences for the owners have been subject to little empirical analysis, the question whether their income is affected remains unanswered, and the political consequences of the economic policy after 1991 are unclear.

The two incentives for the creation of the RTB scheme inspired the two hypotheses of the paper. Firstly, Margaret Thatcher believed that homeownership can promote practices of self-help and prudence among social renters, which can benefit them financially (Carr, 2011). Secondly, Thatcher's introduction of the RTB scheme aimed to gain the support of social housing tenants, who predominantly supported the Labour party (Field, 1997).

Hypothesis 1: An RTB purchase creates incentives that increase individuals' income.

Hypothesis 2: An RTB purchase results in an increased probability of supporting the Tories.

The paper quantifies the effect of the RTB policy on income and Conservative Party

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[1]https://www.gov.uk/right-to-buy-buying-your-council-home/selling-your-home

support by using fixed effects and instrumental variable estimation. The analysis suggests that an RTB purchase does not have a statistically significant impact on income but increases the probability for swing voters to support the Conservative Party by 30% (local average treatment effect /LATE/), which reinforces previous findings. Both results are robust to outliers, different model specifications and sample splits.

The findings suggest that the real estate asset is unproductive in the short run and that the scheme does not inspire income inequality–reducing practices of self-help and prudence. Nevertheless, the policy continues to have positive implications for the Conservative Party's image.

2   Literature Review

2.1   RTB Literature

The RTB literature is mostly descriptive and largely lacks econometric analysis of the consequences of the policy. It can be divided into four categories:

The first type of RTB literature describes the characteristics of the individuals exercising the "Right to Buy". In the first years of the policy, RTB owners were predominantly middle-aged tenants, working skilled or semi-skilled jobs and buying the better-value-for-money houses (Jones and Murie, 2006; Ham et al., 2012; Farrall et al., 2016). Over time, this altered the British housing sector by concentrating poor tenants into areas with less desirable properties and lower employment while hiking crime rates in areas with a high concentration of social housing. The proportion of RTB owners from the low-income class increased (Burrows, 1999; Carr, 2011; Ham et al., 2012; Cole et al., 2015; Farrall et al., 2016). Disney and Luo (2017) identified the main gap in the existing literature – the lack of economic analysis. Using pooled cross-section estimates and the British Household Panel Survey (BHPS), they find that higher income increases the probability of becoming an RTB owner, which illustrates the issue of simultaneity bias in my research. The welfare consequences of the RTB policy depend on the quality of the property.

The second type of RTB literature is also mostly descriptive and focuses on the resale of RTB houses, the factors that affect the sale and the new owners. The houses are often resold at relatively low market prices and the new buyers are low- to middle-income households (Williams and Twine, 1994; Forrest et al., 1996; Chaney, 1997; Ham et al., 2012). This literature gives insight into the potential capital gains realised by RTB owners, which vary significantly depending on the market conditions and location of the property.

The third type of RTB literature concerns the moving behaviour of RTB households. Ham et al. (2013) use panel data from the BHPS and econometric analysis to investigate the moving behaviour of RTB households. Their results are not statistically significant, suffer from endogeneity bias and suggest that RTB owners are less likely to make a short-distance and more likely to make a long-distance move than social renters. Homeownership reduces physical mobility, which can negatively affect the socio-economic development of households living in disadvantaged areas (South and Crowder, 1997; South and Crowder, 1998). However, Popham et al. (2015) find no evidence that an RTB-induced change in tenure leads to psychological distress, which leaves room only for economic implications.

The fourth type of RTB literature is about Thatcher's efforts to strengthen the Conservative electorate. Field (1997) uses aggregate-level data between 1981 and 1991 and finds that a 1% decline in council-owned stock is associated with a 0.14% rise in the Conservative vote, even though council tenants are some of the most loyal Labour supporters. The coefficient is biased and captures the expansion of the shareholding electorate, the decline of trade unions and the rise of popular capitalism. Studlar et al. (1990) use survey data, gathered during the 1983 and 1987 general elections, and find that RTB owners are more likely to support the Tories because of the favourable retrospective views of the economy with which the policy is associated. The paper fails to account for the endogeneity of the RTB variable. Huberty (2011) uses panel data between 1991–2005 and matching techniques in his investigation of the link between the Conservative Party vote and the number of homeowners created by policy-stimulating property ownership. He finds no statistically significant relationship but admits that his matching strategy fails to account for the selection on unobservables. My paper contributes to this type of RTB literature by using more recent data and tackling the endogeneity bias present in previous studies.

2.2   Theory and Empirical Findings Outside the RTB Literature

Real estate is a relatively illiquid type of asset that can be a source of rental income or participate in a production process (e.g., home office) as well as generate capital gains and serve as collateral. An intertemporal consumption model with investment suggests that an RTB house can be used to reduce borrowing constraints, which can increase investment and future income (Whalley, 2017).

Temkin et al. (2013) examine the long-term affordable homeownership programs in the USA. They compare rates of return and find that the yield on homeownership is competitive with participation in the stock market. Looking at low- and moderate-income homeowners

and using matching approaches to address selection issues, Grinstein-Weiss et al. (2013) argue that homeownership results in higher short-term increases in net worth and economic well-being than renting. Turner and Luea (2009) provide similar findings by using two-stage least squares, which makes the results more conclusive.

By contrast, there is also evidence that land titling and state-subsidised homeownership fail to reduce poverty levels due to the reluctance of low-income households to use their new assets as collateral and the low asset quality that negatively affects capital gains (Payne et al., 2009; Lemanski, 2010). Both papers are qualitative.

Two empirical papers, which produce reliable results through an IV estimation, suggest that homeownership relaxes borrowing constraints and increases the number of small-business owners (Fairlie, 2012; Adelino et al., 2015). Thus, the RTB legislation can expand the opportunity set of its beneficiaries and improve their financial situation.

A significant portion of the low-income households living in council houses have financed their homes using a mortgage. Hu (2005) uses a model in which a household switches from renting to mortgage-financed homeownership and shows that homeownership crowds out stock market participation, which can negatively affect income. These predictions are not supported by the data as homeowners have higher stock holdings than renters.

2.3 Concluding Remarks on the Literature

There is a need for more quantitative RTB literature that analyses the consequences of the policy. The effects of an RTB purchase on labour market behaviour, community involvement and political engagement remain unclear and should be explored in future research. My paper evaluates some of the economic implications resulting from the legislation and builds upon the existing political analysis.

3 Data

This paper uses panel data from the BHPS, which tracks the same representative sample of individuals between 1991 and 2008. Initially, the panel consisted of 5,500 households and 10,300 individuals from 250 areas in Great Britain. The inclusion of 1,500 households from Wales and Scotland in 1999 and 2,000 households from Northern Ireland in 2001 resulted in a total of 9,000 households.

This is the only dataset which allows for the identification of RTB owners on a yearly basis. The data covers the majority of the RTB period, capturing most of the changes in the

British social housing sector. The panel allows for techniques controlling for time-invariant individual heterogeneity as well as common-for-everyone time changes. Moreover, this is a well-established survey exploring social, economic and housing-related factors relevant for the analysis.

By contrast, no data is available for the first 10 years of the policy period, which saw dynamic changes in the social housing sector. Additionally, the dataset does not allow for the inclusion of general political preferences in the Conservative support regression (there are only a few political variables surveyed in a small number of years).

The dependent variable in the first regression is *ln(Income)*, which is the natural logarithm of individuals' total annual income from all sources in the reference year, measured in pounds. It is a continuous variable which has more than 230,000 observations. The variable has around 3,000 outliers earning less money than the lowest possible unemployment benefits per week. Thus, they are excluded from the regression. The findings are robust to their inclusion.

The dependent variable in the second regression is *Conservative*, which is a binary variable that takes the value 1 if the Conservative Party is the party the respondent favours over the others. Thus, the interpretation of the effect will be the probability of supporting the Conservative Party. There are more than 40,000 support instances.

The explanatory/treatment variable is *Tenure*, which is a categorical variable and the category of interest is RTB. The variable takes the values:

- 0 if the respondent is a council or housing association tenant;
- 1 if the respondent purchased their home using the RTB scheme;
- 2 if the respondent is a non–RTB home owner;
- 3 if the respondent is a non–social housing renter.

The base category is council or housing association tenants, and everything else is compared to it. The paper identifies RTB owners based on the methodology of Ham et al. (2013) (see Appendix). There are more than 13,000 observations.

Table 3 presents a description of each variable. Table 4 provides summary statistics for all continuous variables. The frequency tables section shows the number of observations per category for the categorical variables. Some of the variables, including the RTB category, are subject to measurement error. There are no significant outliers, which can bias the results.

Tables 4 and 5 compare the average social housing tenant, RTB owner and the average person in the sample. Social housing tenants earn the least amount of money and are the most likely to be unemployed. They are also the least likely to be married and have the

most children on average. Social housing tenants support the Conservative Party the least, followed by RTB owners, which matches the evidence provided in the literature. The average RTB owner earns less than the average person in the sample but is more likely to be employed. This huge difference between observable characteristics of the three groups suggests an imbalance in the unobservable characteristics. The groups are not good counterfactuals for each other. Thus, a regression analysis should account for the selection in unobservables and observables.

Figure 3.1 illustrates that an individual's income starts a positive trend three years before an RTB purchase. It is possible that social renters, who become richer for reasons unrelated to their desire to buy their home, eventually purchase their houses. Nevertheless, it could be that there is an additional positive effect on income because of the RTB purchase.

Figure 3.1
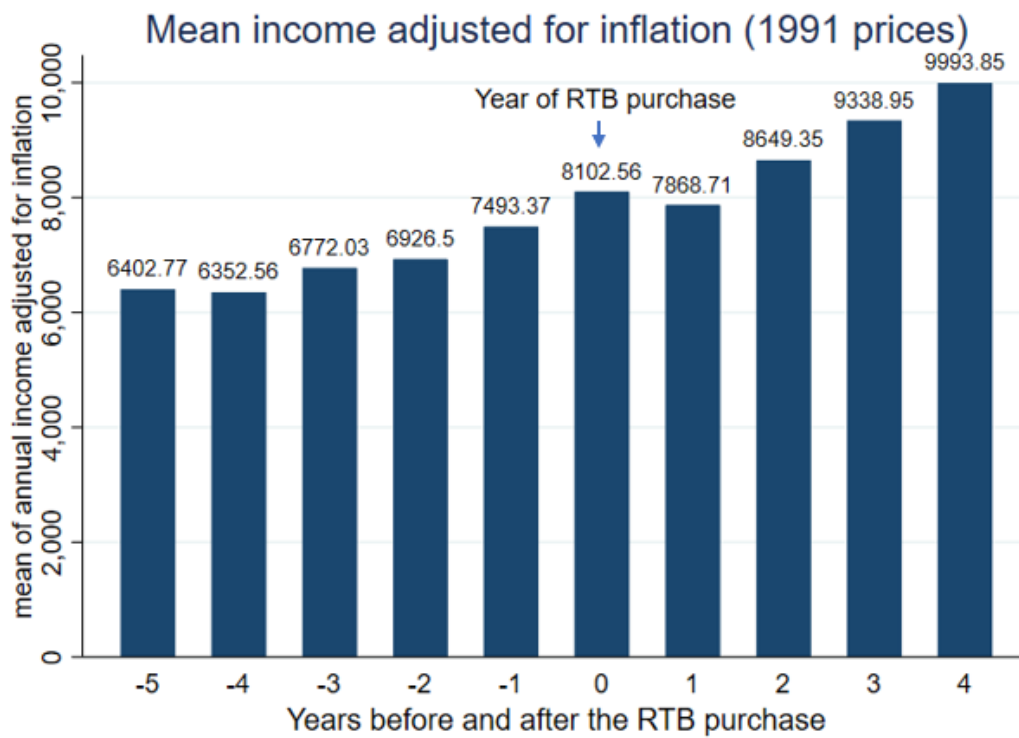
Figure 3.2 illustrates a concave relationship over time. The probability that social renters support the Tories increases after the purchase. However, the increase starts in period two after the purchase rather than period one, which is difficult to explain.

Figure 3.2

Mean of Conservative Party support
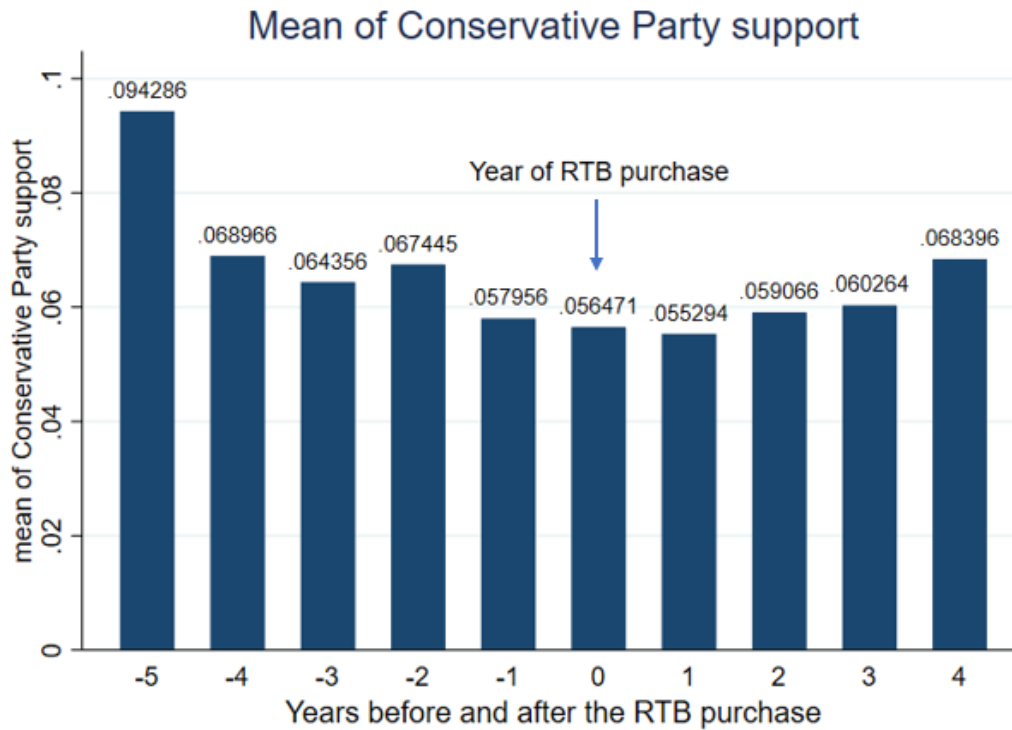
4 Methodology

4.1 Income Regressions

The newly acquired asset can relax borrowing constraints and enable the creation of a small family business (Fairlie, 2012; Adelino et al., 2015). The house can be a source of rental income (e.g., Airbnb). The desire to buy a home or the necessity to repay a mortgage can improve the work ethic of RTB owners. Thus, an RTB purchase should increase income.

Model specifications:
- **OLS regression:**

$$ln(Income)_{it} = \beta_1 RTB_{it} + \beta_2 NonRTBHomeowner_{it} + \beta_3 NonSocialRenter_{it} + \boldsymbol{\gamma} \boldsymbol{X^T}_{it} + a_i + \delta t_t + \pi_i + \epsilon_{it}$$

- **IV regression:**

$$ln(Income)_{it} = \beta_1 \widehat{RTB}_{it} + \beta_2 NonRTBHomeowner_{it} + \beta_3 NonSocialRenter_{it} + \boldsymbol{\gamma} \boldsymbol{X^T}_{it} + a_i + \delta t_t + \pi_i + \epsilon_{it}$$

Fitted values from the first stage:

$$\widehat{RTB}_{it} = \beta_1 DiscountMax_{it} + \beta_2 NonRTBHomeowner_{it} + \beta_3 NonSocialRenter_{it} + \boldsymbol{\gamma} \boldsymbol{X^T}_{it} + a_i + \delta t_t + \pi_i$$

where $ln(Income)_{it}$ is the natural log of individuals' annual income from all sources; $Tenure_{it}$ is a categorical variable (0 − Social renter, 1 − RTB owner, 2 − Non-RTB home-owner, 3 − Renter); X^T is a transposed vector of control variables; t_t are year dummies; a_i are individual fixed effects; π_i are regional fixed effects; $DiscountMax_{it}$ is the maximum discount for the RTB scheme set by the government (instrument). Robust standard errors are used to control for heteroscedasticity.

The X^T vector controls for education, type of work, number of children, age, health issues and hours worked per week. This should account for most of the variation in income outside of the RTB variable. The regional fixed effects should pick up all the time-invariant regional differences in income (i.e., local legislation, wage gaps persisting over time, etc.). The year dummies should control for common time-variant factors such as inflation and legislation changes.

Figure 4.3: Reverse causality issue.
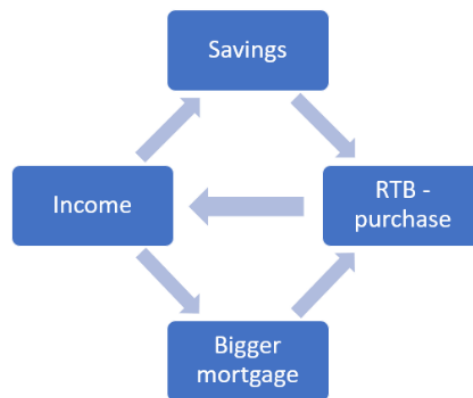
An increase in income has no direct effect on RTB purchases but allows for higher savings or larger mortgages due to increased credit worthiness. Both variables directly increase the probability of becoming an RTB owner.

A Hausman test suggests that fixed effects are preferred to random effects (see Appendix). The inclusion of individual dummies controls for time-invariant individual characteristics that determine income. Nevertheless, OLS estimation remains biased. An IV estimation with fixed effects should account for the reverse causality bias and remove the non-random, time-variant factors from the error term that affect income and the RTB purchase.

The instrument chosen for the analysis is the maximum discount in the RTB scheme set by the government. Since 1999, the Labour government started a gradual reduction of the maximum discount by a few percentage points per year to increase the revenues of the state from the policy (Wilson, 1999). There is a different maximum discount for council and housing associations houses, which creates individual variation not picked up by the time dummies. However, the instrument is likely to have low power because it is not defined on an individual-specific level.

The instrument is relevant with an F-statistic of 46.19. The first-stage regression suggests that the reduction in the maximum discount increases the probability of an RTB purchase, which seems counterintuitive (see Appendix). However, this can be explained by the fact that people are forward-looking. Between 1997 and 2007, it was common to find media articles about the desire to increase state wealth by reducing the maximum discount. Thus, agents, who expected the discount to be reduced even further in the future, bought their houses in the present because postponing the purchase would have effectively cost them money.

Figure 4.4/4.5

The instrument satisfies the conditional exogeneity assumption because the policy change is unrelated to the individual-specific unobservable factors determining income. Ideally, the control variables should be measured prior to the instrument, which ensures their independence. Unfortunately, this analysis is dependent on the assumption that the instrument affects income only through the RTB variable. The very narrow effect of the maximum discount changes builds confidence that the assumption holds. The paper assumes monotonicity (i.e., not everyone might be influenced by the instrument, but those who are must

be impacted in the same way - removes defiers - LATE).

4.2   Conservative Support Regression

Field (1997) argues that Margaret Thatcher created the RTB scheme to gain the support of social housing tenants who were predominantly part of the Labour electorate. Thus, subsidised RTB purchases should make the Conservative Party more popular among RTB owners.

Model specifications:

$Conservative_{it}$ requires limited dependent variable models.

$$Conservative_{it} = \begin{cases} 1, & \text{if } Conservative_{it}^* > 0 \\ 0, & \text{otherwise} \end{cases}$$

- Latent variable:

$$Conservative_{it}^* = \beta_1 RTB_{it} + \beta_2 NonRTBHomeowner_{it} + \beta_3 NonSocialRenter_{it} + \boldsymbol{\gamma Y^T}_{it} + a_i + \delta t_t + \pi_i + \epsilon_{it}$$

$$Conservative_{it}^* = \boldsymbol{x_{it}\beta} + \epsilon_{it}$$

- Latent variable in the IV model:

$$Conservative_{it}^* = \beta_1 \widehat{RTB}_{it} + \beta_2 NonRTBHomeowner_{it} + \beta_3 NonSocialRenter_{it} + \boldsymbol{\gamma Y^T}_{it} + a_i + \delta t_t + \pi_i + \epsilon_{it}$$

$$Conservative_{it}^* = \boldsymbol{x_{it}\beta} + \epsilon_{it}$$

Fitted values from the first stage:

$$\widehat{RTB}_{it} = \beta_1 DiscountMax_{it} + \beta_2 NonRTBHomeowner_{it} + \beta_3 NonSocialRenter_{it} + \boldsymbol{\gamma Y^T}_{it} + a_i + \delta t_t + \pi_i$$

- Linear probability model:

$$E[Conservative_{it}] = U[x_{it}\beta] = x_{it}\beta$$

- Logit model:

$$E[Conservative_{it}] = \Lambda[x_{it}\beta] = exp(x_{it}\beta)/(1 + exp(x_{it}\beta))$$

where $Conservative_{it}^*$ is a latent variable which measures the individual's net utility derived from supporting the Conservative Party; the notation remains the same. Robust standard errors are used to control for heteroscedasticity.

The $\boldsymbol{Y^T}$ vector controls for education, number of children, age, social class, trade union membership and unemployment, which accounts for most of the variation in the Conservative Party support outside of the RTB variable. The regional fixed effects should pick up all the time-invariant regional differences in the Tory support (e.g., regional political preferences). The year dummies control for time-variant common factors such as the party in power, the Prime Minister and legislation changes.

A Hausman test suggests that fixed effects are preferred to random effects. The inclusion of individual dummies picks up the time-invariant individual characteristics. The analysis focuses on swing supporters because people who never change their political party preferences are effectively removed from any fixed-effects analysis.

A logistic regression with fixed effects explores robustness using maximum likelihood estimation. No one in Northern Ireland supported the Conservatives. The category has been dropped in advance so that the marginal effects are estimated.

An IV estimation with fixed effects should account for the endogeneity bias. The instrument chosen for the analysis is the maximum discount, which is the same instrument as in the income regression. It is extremely relevant with an *F-statistic* of 88.32, which is crucial for the elimination of the finite sample bias. The instrument is likely to affect Conservative support only through the RTB variable because of the very narrow effect of the policy change (i.e., the maximum discount changes affect the RTB scheme but not the general welfare policy of the government; individuals are unlikely to change their political ideology based on the changes in the discount). The fixed effects control for constant political preferences in the error, building additional confidence in the conditional exogeneity assumption. However, the reduced-form coefficient might capture other measures affecting the sale of social houses. The analysis assumes monotonicity, which gives us the LATE.

4.3 Limitations

In all regressions, clustered standard errors, which allow individuals to be subject to common shocks within the different council or housing associations, would be preferred to robust standard errors. Clustering the errors would tackle a possible over-rejection of the null hypothesis of no effect. This is not possible, however, as panels are not nested within clusters (i.e., individuals move over time between cities, regions, etc.).

The income regression might suffer from a bad control problem if the RTB purchase affects the individual hours worked. The variable has high explanatory power in the income regression and omitting it biases the coefficients of most variables, including the reduced-form IV coefficient of the maximum discount, which appears to be correlated with the $ln(Hours)$ variable in practice. This can be fixed in future research by using a different instrument.

In the Conservative support regression, it would be ideal to control for general political preferences, which build additional confidence in the exogeneity assumption of the IV analysis. This is not possible because of data limitations.

The IV analysis is as good as the instrument, which might not be perfectly exogenous in practice. Thus, the findings of this paper are suggestive.

5   Results

5.1   Income Regression

Table 5.1 summarises the regression results. In the OLS regressions (1) and (2), after the inclusion of the control variables, the time dummies and the individual and regional fixed effects, the RTB purchase has a statistically significant effect on the income of RTB owners compared to the income of social renters. The IV specifications (3) to (6) should tackle the endogeneity and reverse causality bias. The effect of an RTB purchase on the income of an RTB owner, who was induced to purchase his house because of changes in the maximum discount, is statistically insignificant from zero. These estimates are consistent. IV regressions (5) and (6) split the sample between males and females. The coefficients are very different, with a female RTB coefficient that is almost significant at the 10% level. This illustrates the possibility for an effect depending on sex. In this dataset, there are only 400 female RTB owners, which affects the power of the analysis. With a sample of more RTB instances, a positive effect of the RTB policy on females' wages might be uncovered. However, in this dataset the effect is statistically insignificant for both groups.

The paper provides evidence that Thatcher's aim to inspire practices of self-help and prudence, which have positive financial consequences, was unsuccessful. The analysis indirectly supports the findings of Disney and Luo (2017) that RTB owners buy their houses because they are richer on average and indicates that their equation does not suffer from simultaneity bias. The real estate asset appears to be unproductive, at least in the short run. This matches the qualitative findings of Payne et al. (2009) and Lemanski (2010), who find that state-subsidised homeownership fails to reduce poverty levels. Temkin et al. (2013) find

Table 5.1– Results

VARIABLES	(1) ln(Income)	(2) ln(Income)	(3) ln(Income)	(4) ln(Income)	(5) ln(Income)	(6) ln(Income)
RTB-owners	0.102***	0.038**	0.124	0.219	-0.067	0.433
	(0.015)	(0.016)	(0.193)	(0.211)	(0.302)	(0.298)
Non-RTB homeowners	0.064***	0.026**	-0.012	-0.049	0.071	-0.149
	(0.011)	(0.012)	(0.071)	(0.077)	(0.105)	(0.114)
Normal renters	0.004	0.006	-0.025	-0.061	0.027	-0.132
	(0.011)	(0.012)	(0.060)	(0.065)	(0.089)	(0.095)
Year dummies	X	X	X	X	X	X
ln(Hours)		0.312***	0.334***	0.311***	0.255***	0.313***
		(0.008)	(0.008)	(0.008)	(0.013)	(0.010)
Age		0.061***	0.064***	0.060***	0.081***	0.041***
		(0.005)	(0.005)	(0.005)	(0.007)	(0.007)
Age^2		-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Education controls		X		X	X	X
Number of children		-0.008**		-0.008**	0.015***	-0.033***
		(0.003)		(0.003)	(0.004)	(0.005)
Health limits work		-0.008		-0.010*	-0.020**	-0.001
		(0.005)		(0.005)	(0.008)	(0.007)
Region fixed effects		X		X	X	X
Social class		X		X	X	X
Constant	8.954***	7.149***	6.690***	7.220***	7.066***	7.535***
	(0.010)	(0.144)	(0.144)	(0.159)	(0.216)	(0.227)
Observations	187,394	100,654	106,368	101,316	49,469	51,847
R-squared	0.163	0.417	0.2828	0.3611	0.3903	0.3287
Number of pid	27,427	17,369	18,159	17,446	8,465	8,981
Regression type	FE	FE	FE + IV	FE + IV	FE + IV MALE	FE + IV FEMALE

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

positive capital gains realised by homeowners who purchased state-owned properties using subsidies. Even if positive capital gains are realised by RTB owners, these capital gains do not appear to help the income-generating process.

Fairlie's (2012) and Adelino et al.'s (2015) findings that homeownership relaxes collateral constraints, leading to entrepreneurship and income growth, are not supported by this paper. This can be explained by the fact that the majority of RTB homes are purchased with a mortgage due to the 100% guaranteed mortgage available from the local authority. This limits the amount of additional credit that the individuals can take against the value of their house.

5.1.1   Robustness

Income regressions (3) to (6) demonstrate there is no statistically significant income effect resulting from an RTB purchase. This creates some confidence that the null hypothesis of no statistically significant relationship is not rejected with the inclusion of controls or sample splits. The reader should note that despite being statistically insignificant, the RTB coefficient is sensitive to the inclusion of control variables, which can indicate potential selection bias. This illustrates the need for another instrument, which builds more confidence in the analysis. The findings are robust to the inclusion of the income outliers, and the reduced-form coefficient is also insignificant (see Appendix).

5.2   Conservative Support Regression

Table 5.2 summarises the regression results.

In the linear probability models (1) and (2), after the inclusion of the control variables, the time dummies and fixed effects, the RTB purchase has no statistically significant effect on the probability of an RTB owner to support the Tories compared to a social renter. This outcome is reaffirmed by the coefficient and the marginal effect at means of the logistic regression (3), where the probability of the outcome is bounded between 0 and 1.

In both the LPM and logistic regression, there is endogeneity as well as omitted variable bias in the equation due to dataset incompleteness (e.g., political preferences). The IV specifications (4) to (7) should tackle the endogeneity and omitted relevant variable bias. An RTB owner who has been induced to buy their home because of the maximum discount changes is 30% more likely to support the Conservative Party after the purchase compared to a similar social renter who did not exercise the RTB option. These estimates are still biased but consistent. Moreover, due to the fixed effects, the analysis only looks at swing

supporters as everyone who did not change their political preferences over the time period is captured by the individuals' dummies.

IV regressions (6) to (7) explore robustness by splitting the sample between males and females. The effect does not depend on sex.

Table 5.2 – Results

Cons. = Conservative VARIABLES	(1) Cons.	(2) Cons.	(3) Cons.	(4) Cons.	(5) Cons.	(6) Cons.	(7) Cons.
RTB-owners	0.005	0.001	-0.199	0.284***	0.300***	0.301**	0.307**
	(0.005)	(0.005)	(0.146)	(0.097)	(0.105)	(0.150)	(0.148)
Non-RTB homeowners	0.023***	0.015***	0.400***	-0.086***	-0.095***	-0.098*	-0.096*
	(0.005)	(0.004)	(0.097)	(0.032)	(0.036)	(0.052)	(0.051)
Normal renters	-0.013***	0.012***	0.343***	-0.064**	-0.073**	-0.081*	-0.069*
	(0.004)	(0.004)	(0.103)	(0.026)	(0.029)	(0.042)	(0.039)
Time dummies	X	X	X	X	X	X	X
Number of children		0.002*	0.033		0.002	0.004	0.001
		(0.001)	(0.021)		(0.002)	(0.003)	(0.002)
ln(HouseIncome)		-0.000	0.017		0.002	-0.001	0.003
		(0.001)	(0.029)		(0.002)	(0.003)	(0.002)
Age		-0.001	-0.005		-0.002	-0.007**	0.001
		(0.002)	(0.031)		(0.003)	(0.003)	(0.003)
Age^2		0.000***	0.000*		0.000**	0.000**	0.000
		(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
Education controls		X	X		X	X	X
Regional effects		X	X		X	X	X
Trade union memb.		-0.002	-0.087*		-0.002	-0.005	0.001
		(0.002)	(0.053)		(0.003)	(0.004)	(0.004)
Employed		0.000	0.009		-0.001	-0.001	-0.001
		(0.003)	(0.078)		(0.003)	(0.005)	(0.004)
Social class		X	X		X	X	X
Constant	0.242***	0.257***		0.312***	0.351***	0.574***	0.205
	(0.005)	(0.064)		(0.022)	(0.101)	(0.125)	(0.127)
Observations	236,937	213,168	54,049	234,089	213,631	97,700	115,931
R-squared	0.018	0.018					
Number of pid	32,245	30,092	4,738	32,196	30,155	14,178	15,977
	FE	FE	FE + Logit	FE + IV	FE + IV	MALE: FE + IV	FEMALE: FE+IV

Robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

The results make intuitive sense because the policy has been deeply ingrained in the agenda of the Conservative Party, which has been portraying itself as the party of homeowners. Thus, the considerable increase of the beneficiaries capital wealth is likely to help the

image of the party.

This paper extends the analysis of Field (1997) and Studlar et al. (1990) by looking at a different sample period (1991–2008) and supports their conclusions of a significant positive effect on the probability of supporting the Conservative Party.

This weakens Huberty's (2011) findings of no statistically significant relationship between homeowners (created by policy-stimulating property ownership) and the Conservative Party vote. He admits that his matching approach is unable to account completely for the selection on unobservables. The IV approach theoretically does not have the same limitation.

5.2.1   Robustness

Regressions (4) to (7) illustrate a very robust, significant effect on Conservative support created by RTB purchases. This effect does not depend on sample splits or the inclusion of various control variables, building a lot of confidence in the findings. The fact that the paper uses a different dataset and estimation techniques but reaches the same conclusion as past research on the topic should reassure conservative MPs that the policy helped their party.

6   Conclusion

Margaret Thatcher achieved an expansion of the Conservative electorate by making RTB beneficiaries 30% more likely to support the Tories, but the RTB scheme failed to create a statistically significant increase in beneficiaries' income.

There are some important limitations to the analysis of this paper. Firstly, the IV analysis is as good as the validity of its assumptions, which are rarely completely satisfied. Secondly, the BHPS is the best dataset for the analysis of the RTB scheme but the number of RTB owners in the sample is small. Thus, the findings of this paper are only suggestive.

If societies' goal is to alleviate income inequality, we should explore alternative methods in order to use the state capital more efficiently. The Conservatives should weigh the costs and benefits for their electorate if they decide to use the state's resources in a different way.

The income inequality consequences of the policy are only one side of the token. Society might be willing to sacrifice some state wealth to reduce the overall wealth inequality. Whether the benefits exceed the costs remains a political debate and should be the focus of future papers.

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Appendices

A   Data Section

Table 3: Variable description

Variable	Variable Description
Tenure	Tenure is a categorical variable with 4 categories: – 0 if the respondent is a council or housing association tenant; – 1 if the respondent purchased their home using the RTB scheme; – 2 if the respondent is a non-RTB home owner; – 3 if the respondent is a non-social housing renter. **The variable is constructed using the methodology of Ham et al. (2013)** and identifies RTB owners in two ways. In the first year, a person is an RTB owner if they bought their house as a sitting tenant and the vendor of the home was a local authority or a housing association. For subsequent years, RTB owners are identified by looking at tenure change without a change in the address, conditional on the vendor of the home being a local authority or a housing association (i.e., a household bought their house from a local authority or a housing association and their address did not change).
ln(Income)	The natural logarithm of individuals' total annual income from all sources in the reference year measured in pounds. This is a continuous variable with a proportional interpretation. The variable is not adjusted for inflation.
ln(HouseholdIncome)	The logarithm of annual household income, which sums the values of annual total income in the reference year (i.e., the 12 months prior to the start of the interview period on 1 September) for individuals in the household. The variable is not inflation-adjusted.
Year	A categorical variable for time with 18 categories that captures all the common time-variant shocks for the sample of observations. Controls for inflation, party in power, Prime Minister, common legislation, etc.
Highest educational qualifications (Education controls)	This is a categorical variable with 13 categories measuring the highest educational qualification completed. The categories can be seen in the frequency tables section.
Number of children	A variable measuring the number of own children in the household.
Age	Continuous age variable.
Health limits work	This is a binary variable which takes the value 1 if the respondent's health limits the type of work or the amount of work they can do.
ln(Hours)	The natural logarithm of hours a person is expected to work per week including overtime.
Region	Region is a categorical variable with 19 categories for different regions in the UK.
Social class	The Goldthorpe social class classification for jobs, based on a 3-digit Standard Occupational Classification and employment status variables. The variable has 11 categories. There is a considerable amount of measurement error.

Conservative	Conservative is a binary variable and takes the value 1 if the Conservative Party is the party the respondent favours over others. The question asked was "Which party do you regard yourself as being closer to than the others?".
Trade union member	This is a binary variable which takes the value 1 if a person is a member of a workplace union and 0 otherwise. Trade unions are key players in the political sphere because of their influence over their members' political vote.
Employed	Employed is a binary variable, which takes the value 1 if a person is employed and 0 otherwise.
DiscountMax	DiscountMax is the maximum house discount on the RTB scheme for a given year. The variable is continuous. This variable is added to the dataset using data from Table 682: Social Housing Sales: Annual Financial Data on Right to Buy Sales for England: 1998–99 to 2016–17. Available at: https://www.gov.uk/government/statistical-data-sets/live-tables-on-social-housing-sales
Sex	Categorical variable taking the value 1 if male and 0 if female.
Married	Binary variable taking the value 1 if an individual is married and 0 otherwise.
General happiness (GHQ)	This is a categorical variable which asks the question "Have you recently… been feeling reasonably happy, all things considered?". The variable has four categories (1 – More than usual, 2 – Same as usual, 3 – Less so, 4 – Much less).

Note: The natural logarithm is used instead of the levels of some variables because of an attempt to make their distributions closer to the normal one.

Note: The variable "Which party do you regard yourself as being closer to than the others?" is chosen over "If there were to be a General Election tomorrow, which political party do you think you would be most likely to support?" because the second variable might not capture the true preferences of the individuals. This is because people often vote for strategic reasons (i.e., a person prefers a right-wing party instead of a left-wing one. They are a true supporter of a small right-wing party but would rather vote for a bigger right-wing party so that the big left-wing party does not have a majority.).

Table 4: Maximum discount data from Table 682: Social Housing Sales: Annual Financial Data on Right to Buy sales for England.

	Council houses	Housing association houses
1998-99	50%	50%
1999-00	48%	49%
2000-01	47%	47%
2001-02	44%	46%
2002-03	41%	44%
2003-04	37%	43%
2004-05	33%	41%
2005-06	31%	38%
2006-07	27%	35%
2007-08	24%	30%
2008-09	25%	27%
2009-10	26%	31%
2010-11	25%	30%
2011-12	27%	31%
2012-13	45%	49%
2013-14	47%	51%
2014-15	46%	51%

Table 5: Summary statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
ln(Income)	189,034	9.34995	0.684645	8.00998	13.99039
ln(Household income)	229,631	9.994386	0.726909	8.00998	14.00216
Number of children	238,994	0.593902	0.976832	0	10
Age	238,987	45.27792	18.64392	15	101
Age^2	238,987	2397.685	1845.822	225	10201
ln(Hours worked)	118,504	3.506432	0.522492	0	5.087596
MaxDiscount	238,996	0.06462	0.157557	0	0.5
Conservative	238,996	0.170476	0.376051	0	1
Probability of Homeowner	234,006	0.7323017	0.4427604	0	1
Probability of move	238,996	0.0949514	0.2931484	0	1
Prob. that Health limits work	232,729	0.1975946	0.3981855	0	1
Prob. being in a trade union	230,013	0.1421702	0.3492254	0	1
Prob. being employed	234,782	0.6035216	0.4891669	0	1

Note: The dataset has been cleaned by setting any numerical codes for missing/inapplicable values to "." so that they are not mistaken for real data.

Frequency tables.

Member of workplace union	Freq.
No	197,312
Yes	32,701
Total	230,013

Employment status	Freq.
Under 16 years or No	93,086
Yes	141,696
Total	234,782

Tenure	Freq.
Social renters	41,949
RTB-owners	13,086
Homeowners	159,481
Normal renters	22,421
Total	236,937

Highest educational qualification	Freq.
Higher Degree	5,277
First Degree	21,269
Teaching QF	5,503
Other Higher QF	44,883
Nursing QF	3,295
GCE A Levels	27,184
GCE O Levels or Equivalent	42,248
Commercial QF, No O Levels	5,936
CSE Grade 2-5, Scot Grade 4-5	7,728
Apprenticeship	4,580
Other QF	1,568
No QF	53,392
Still at School No QF	1,505
Total	224,368

Mover household indicator	Freq.
Did not move	216,303
Moved	22,693
Total	238,996

Region	Freq.
Inner London	5,422
Outer London	10,168
R. of South East	32,392
South West	16,013
East Anglia	7,419
East Midlands	14,674
West Midlands Conurbation	6,214
R. of West Midlands	8,895
Greater Manchester	6,698
Merseyside	3,673
R. of North West	8,038
South Yorkshire	4,636
West Yorkshire	5,783
R. of Yorks & Humberside	5,773
Tyne & Wear	3,916
R. of North	6,669
Wales	32,012
Scotland	36,685
N. Ireland	22,654
Total	237,734

Social Class: present job	Freq.
Service class, higher grade	20,513
Service class, lower grade	27,840
Routine non-manual employees	18,221
Personal service workers	11,762
Sml props w employees	2,728
Sml props w/o employees	7,101
Farmers, Smallholders	1,245
Foreman, Technicians	9,084
Skilled manual workers	9,443
Semi, unskilled manual workers	22,469
Agricultural workers	781
Inadequately described, non-stated	106,864
Total	238,051

GHQ: general happiness	Freq.
More than usual	30,658
Same as usual	161,457
Less so	24,979
Much less	4,616
Total	221,710

Health limits type or amount of work	Freq.
No	186,743
Yes	45,986
Total	232,729

Married	Freq.
0	111,160
1	127,836
Total	238,996

Conservative	Freq.
No	198,253
Yes	40,743
Total	238,996

Table 6: Means comparison

	(1) Average without social renters	(2) Average social renter	(2) − (1) Difference in means	(3) Average without RTB owners	(4) Average RTB owner	(4) − (3) Difference in means
ln(Income)	9.425	8.996	-0.428***	9.356	9.243	-0.113***
	(0.690)	(0.530)	(0.004)	(0.688)	(0.613)	(0.007)
Conservative	0.191	0.075	-0.116***	0.172	0.137	-0.035***
	(0.393)	(0.264)	(0.002)	(0.378)	(0.344)	(0.003)
ln(Household income)	10.066	9.446	-0.620***	9.958	9.900	-0.059***
	(0.793)	(0.714)	(0.004)	(0.821)	(0.709)	(0.007)
General happiness (GHQ)	2.004	2.070	0.066***	2.014	2.045	0.031***
	(0.567)	(0.625)	(0.003)	(0.579)	(0.567)	(0.005)
ln(Hours worked)	3.517	3.421	-0.096***	3.506	3.520	0.015**
	(0.511)	(0.599)	(0.005)	(0.526)	(0.470)	(0.006)
Age	44.859	47.245	2.386***	45.068	48.894	3.826***
	(18.137)	(20.750)	(0.100)	(18.704)	(17.183)	(0.167)
Sex	1.447	1.539	0.092***	1.462	1.488	0.026***
	(0.963)	(0.807)	(0.005)	(0.941)	(0.885)	(0.008)
Prob. of being employed	0.652	0.374	-0.278***	0.602	0.631	0.030***
	(0.476)	(0.484)	(0.003)	(0.490)	(0.482)	(0.004)
Prob. of being married	0.570	0.370	-0.200***	0.532	0.589	0.057***
	(0.495)	(0.483)	(0.003)	(0.499)	(0.492)	(0.004)
Number of children	0.563	0.739	0.176***	0.596	0.551	-0.045***
	(0.939)	(1.126)	(0.005)	(0.979)	(0.945)	(0.009)
Prob. of health limiting work	0.169	0.332	0.163***	0.196	0.230	0.034***
	(0.375)	(0.471)	(0.002)	(0.397)	(0.421)	(0.004)
Observations	197,047	41,949	238,996	225,910	13,086	238,996

Table 7: Means comparison

	(5) Council tenant	(6) Housing association tenant	(6) − (5) Difference in means	(7) Average social renter	(8) Average RTB owner	(8) − (7) Difference in means
ln(Income)	8.970	9.086	0.116***	8.996	9.243	0.247***
	(0.522)	(0.548)	(0.007)	(0.530)	(0.613)	(0.006)
Conservative	0.073	0.082	0.008***	0.075	0.137	0.062***
	(0.261)	(0.274)	(0.003)	(0.264)	(0.344)	(0.003)
ln(Household income)	9.420	9.535	0.115***	9.446	9.900	0.454***
	(0.708)	(0.728)	(0.008)	(0.714)	(0.709)	(0.007)
General happiness (GHQ)	2.071	2.068	-0.003	2.070	2.045	-0.025***
	(0.622)	(0.636)	(0.008)	(0.625)	(0.567)	(0.006)
Ln (Hours worked)	3.419	3.429	0.010	3.421	3.520	0.099***
	(0.597)	(0.603)	(0.012)	(0.599)	(0.470)	(0.008)
Age	47.502	46.349	-1.152***	47.245	48.894	1.649***
	(20.596)	(21.257)	(0.244)	(20.750)	(17.183)	(0.200)
Sex	1.548	1.509	-0.039***	1.539	1.488	-0.052***
	(0.749)	(0.984)	(0.009)	(0.807)	(0.885)	(0.008)
Prob. of being employed	0.360	0.420	0.060***	0.374	0.631	0.258***
	(0.480)	(0.494)	(0.006)	(0.484)	(0.482)	(0.005)
Prob. of being married	0.381	0.332	-0.049***	0.370	0.589	0.219***
	(0.486)	(0.471)	(0.006)	(0.483)	(0.492)	(0.005)
Number of children	0.745	0.717	-0.028**	0.739	0.551	-0.187***
	(1.144)	(1.064)	(0.013)	(1.126)	(0.945)	(0.011)
Prob. of health limiting work	0.339	0.311	-0.027***	0.332	0.230	-0.103***
	(0.473)	(0.463)	(0.006)	(0.471)	(0.421)	(0.005)
Observations	32,618	9,331	238,996	41,949	13,086	238,996

Note: The analysis does not differentiate between council and housing association tenants because both groups are eligible for the RTB purchase. Despite the two groups having very similar characteristics, they still appear to have statistically significant differences (Column (5) and (6) in Table 7). For example, council housing tenants are a bit older, earn slightly less and are more likely to be married than housing association tenants. This imbalance between observables might indicate imbalance between unobservable characteristics.

B   Methodology

B.1   Income Regressions

Tables 8 and 9: First-stage regression/Reduced-form regression

VARIABLES	(1) RTB purchase	VARIABLES	(1) lincome
Discount	-0.134***	Discount	-0.032
	(0.020)		(0.031)
Non-social renters	0.254***	Non-social renters	-0.006
	(0.014)		(0.015)
Homeowners	0.307***	Homeowners	0.018
	(0.014)		(0.015)
Year dummies	X	Year dummies	X
Education controls	X	Education controls	X
Number of children	-0.002	Number of children	-0.008***
	(0.001)		(0.003)
Age	0.003*	Age	0.061***
	(0.002)		(0.005)
Age^2	-0.000*	Age^2	-0.001***
	(0.000)		(0.000)
Health limits work	0.001	Health limits work	-0.010*
	(0.002)		(0.005)
ln(Hours)	0.003*	ln(Hours)	0.312***
	(0.002)		(0.008)
Region	X	Region	X
Social class	X	Social class	X
Constant	-0.256***	Constant	7.160***
	(0.045)		(0.143)
Observations	110,319	Observations	101,316
Number of pid	19,092	Number of pid	17,446
R-squared	0.288	R-squared	0.419

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Relevance test

Ho: Discount $= 0$

$F(1, 19091) = 46.18$

$Prob > F = 0.0000$

The reduced form coefficient is also insignificantly different from zero, which builds additional confidence in the findings of the main regression because:

$$LATE\ coefficinet = \frac{Reduced\ form\ coefficient}{First\ stage\ coefficient}$$

Figure A8: Hausman test: Income regression.

```
Test:  Ho:  difference in coefficients not systematic

          chi2(64) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =      4301.39
        Prob>chi2 =       0.0000
        (V_b-V_B is not positive definite)
```

Note: Fixed effects are better than random effects. Random effects assumptions are not satisfied.

B.2   Conservative Support Regressions

Figure A9: Hausman test: Conservative support regression.

```
Test:  Ho:  difference in coefficients not systematic

          chi2(66) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =       497.99
        Prob>chi2 =       0.0000
        (V_b-V_B is not positive definite)
```

Note: Fixed effects are better than random effects. Random effects assumptions are not satisfied.

Relevance test

Ho: Discount = 0

F(1, 30154) = 87.17

$Prob > F = 0.0000$

Tables 10 and 11: First-stage regression/Reduced-form regression

VARIABLES	RTB	VARIABLES	Cons
Discount	-0.094***	Discount	-0.030***
	(0.010)		(0.009)
Year	X	Year	X
Number of children	-0.001	Number of children	0.002
	(0.001)		(0.002)
ln(Household Income)	-0.004***	ln(Household Income)	-0.001
	(0.001)		(0.001)
Age	0.004***	Age	-0.001
	(0.001)		(0.002)
Age^2	-0.000***	Age^2	0.000*
	(0.000)		(0.000)
Education controls	X	Education controls	X
2.aregion	X	2.aregion	X
Trade union memb.	0.001	Trade union memb.	-0.002
	(0.002)		(0.003)
Employed	0.005***	Employed	0.001
	(0.002)		(0.003)
Social class	X	Social class	X
Non-social renter	0.240***	Non-social renter	-0.000
	(0.009)		(0.005)
Homeowner	0.310***	Homeowner	-0.001
	(0.010)		(0.005)
Constant	-0.247***	Constant	0.288***
	(0.041)		(0.092)
Observations	216,196	Observations	216,196
R-squared	0.278	R-squared	0.018
Number of pid	30,379	Number of pid	30,379

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: The reduced-form regression suggests that the decrease the maximum discount increased the support for the Conservative Party by 3% for a 1 percentage point change in the discount. This coefficient must be capturing related policies which are affecting the resale of RTB properties. This suggests that there is still bias in the estimates.

C   Results

Table 12: Income regressions without the removal of the income outliers.

VARIABLES	(1) Ln(Income)	(2) Ln(Income)	(3) Ln(Income)	(4) Ln(Income)	(5) Ln(Income)	(6) Ln(Income)
RTB-owners	0.159***	0.037*	0.155	0.181	-0.005	0.296
	(0.029)	(0.022)	(0.308)	(0.330)	(0.545)	(0.415)
Non-RTB homeowners	-0.063***	-0.020	-0.053	-0.067	0.019	-0.128
	(0.022)	(0.019)	(0.113)	(0.119)	(0.187)	(0.157)
Normal renters	0.004	-0.002	0.001	-0.043	0.010	-0.079
	(0.022)	(0.019)	(0.096)	(0.101)	(0.159)	(0.131)
Year dummies	X	X	X	X	X	X
ln(Hours)		X		X	X	X
		-0.040***		-0.040***	-0.025***	-0.055***
Age		(0.004)		(0.004)	(0.006)	(0.007)
		0.137***	0.148***	0.135***	0.151***	0.121***
Age^2		(0.008)	(0.007)	(0.008)	(0.011)	(0.011)
		-0.002***	-0.002***	-0.001***	-0.002***	-0.001***
Education controls		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of children		0.012		0.008	-0.006	0.018
		(0.008)		(0.008)	(0.012)	(0.012)
Health limits work		0.464***	0.547***	0.463***	0.436***	0.461***
		(0.010)	(0.010)	(0.010)	(0.019)	(0.012)
Region fixed effects		X		X	X	X
Social class		X		X	X	X
Constant	8.497***	5.212***	4.066***	5.285***	5.103***	5.521***
	(0.019)	(0.227)	(0.228)	(0.249)	(0.353)	(0.340)
Observations	217,653	108,394	114,659	109,080	51,864	57,216
R-squared	0.102	0.386	0.4347	0.4709	0.48	0.3777
Number of pid	30,269	18,738	19,580	18,814	8,993	9,821
	FE effects	FE effects	FE effects + IV	FE effects + IV	FE effects + IV/ MALE ONLY	FE effects + IV/ FEMALE ONLY

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: The findings appear to be more robust to the inclusion of controls when the income outliers are not dropped from the analysis.

Note: Due to the limited number of pages in the appendix and the large number of estimated variables, the paper cannot report the full regression results. However, the full tables can be reproduced using the submitted do-file.