How did the Canada Child Benefit affect household bargaining?

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Abstract

Child benefits in Canada are sizeable, targeted to children and paid to custodial mothers, and so might be expected to affect household resource allocations and spousal bargaining. The introduction of the Canada Child Benefit in July 2016 more than doubled the amount of child benefits received by households with children. We estimate the effect of this change on the preferences and resource shares of adult males and females within dual parent households. Resource shares, defined as the fraction of household expenditure consumed by females versus males, are important parameters of collective household models. Using a difference-in-differences strategy within a structural collective household model, we find little evidence that preferences of either adult males or females changed in response to the increase in child benefits. However, we do find evidence that the policy increased female resource shares, but only among homeowner (and not renter) households. We discuss this heterogeneity in the treatment effect between owners and renters and suggest potential underlying mechanisms.

JEL classification: D13, D63, C31

1 Introduction

The Canada Child Benefit (CCB), established in 2016, replaced the existing combined child benefits from the Universal Child Care Benefit, the Canada Child Tax Benefit, and the National Child Benefit. The CCB increased amounts for benefits, had a new label for the comprehensive benefit and was paid to primary caregivers (defaulted to be the female parent in dual parent households). We assess the impact of this policy change on *resource shares*, defined as the fraction of household spending consumed by adult household members, and on preferences within the dual parent households.

Resource shares, influenced by intra-household bargaining power, measure relative consumption of household members, and therefore reflect possible consumption inequality and gender inequality within households., but are not directly observable. Hence, we use the model of Lechene et al. (2022) to identify preferences and resources shares from reduced-form estimates of linear Engel curves for a private assignable good - a good where the person level expenditure or consumption is observable. We use clothing in this paper since the data allows us to assign expenditure on clothing to adult men and women separately. The outcome variable of the reduced form model is the "Engel curve", defined as the fraction of total household expenditure spent on clothing, at a fixed price vector.

We use difference-in-differences variation to identify the response of collective household model parameters to the change in child benefits. In our view, this approach harnesses the "best of both worlds" in terms of using quasi-experimental variation in child benefits (aka: the treatment) to cleanly identify how resource shares within a collective household model respond to child benefit increases (aka: the treatment effect). In our application, the treatment group is dual parent households with children aged 0 to 18 years who are eligible to receive the child benefit and the control group is couples without children residing within the household and thus, not eligible to receive the CCB. The identifying assumption here is that expenditures within households in the treatment and control group follow parallel trends, conditional on covariates. Any changes in the observed time path of households with children after the introduction of the CCB, post 2016, can then be attributed to the policy change. We use 4 years of monthly repeated cross-sectional data from 2014 to 2019 with around 1000 households each month from the Survey of Household Spending (SHS) within a collective model of the household for the analysis.

The CCB transferred money to the primary caregiver, that is, the mother in a dual parent household. Increasing the individual income of mothers may have increased their bargaining power with respect to fathers. Further, since child benefits follow children, and since mothers are more often custodial parents following divorce, this policy also enriched the outside option of married mothers. Therefore, one of our main focus is estimating the effect of this change on the resource shares of the mother and father within the household.

Our approach integrates quasi-experimental variation from the CCB into a structural model, enabling estimation of treatment effects on unobserved structural parameters: individual preferences for different goods and the resource shares of adult men and women within the household. We explore two channels: labeling and targeting. The labeling of the CCB may have an impact on the preferences of adults, in our case, for adult assignable goods. The targeting of CCB to females may have an effect on intra-household bargaining and thus resource shares.

We use data on clothing Engel curves—the relationship between the fraction of expenditure commanded by clothing and the log of total expenditure— to learn about preferences and resource shares in collective households. We start with a differences-in-differences approach that identifies the treatment effect of the child benefit expansion on clothing Engel curves, which are directly observed. Our collective household model relates the intercepts and slopes of clothing Engel curves to the unobserved model parameters that describe preferences and resource shares. We thus can use the model to uncover the implied treatment effects on these model parameters.

Our findings are easy to summarize. First, although the child benefit had the word "child" in it, and the increase in benefits was very substantial, more than doubling the child benefit received by most households, we see no evidence that the policy change affected preferences. Second, we find evidence that the policy increased women's resource shares, but only in owner-occupied households. We provide some speculation about why owners might be affected more than renters through possible mechanisms such as changes in the outside and inside option for women or difference in marginal price of shelter for homeowners and that for renters in the final section of the paper. However, we are unable to provide definitive evidence of these mechanisms and leave that for future research.

Our work builds on Najjarrezaparast and Pendakur (2021), who find that the CCB increased overall consumption and suggest a possible labeling effect on children's clothing, but not adults' clothing. They also identify heterogeneous treatment effects across renters and homeowners, which we account for in our analysis. Evidence from other contexts supports the importance of labeling. Kooreman (2000) use exogenous income from child benefits in the Netherlands and show that the marginal propensity to consume children's clothing from such benefits is higher than from other income sources, for both single- and two-parent households. This suggests that labeling, rather than the recipient's identity, drives the change. However, Kooreman does not consider bargaining power. Our model distinguishes between preference shifts and bargaining-power shifts. While we do not estimate preference changes for children's goods specifically, in contrast to these findings, we find no clear evidence of labeling effects on preferences for adult clothing following the introduction of the newly labeled CCB; instead, we observe an impact on resource shares, particularly among homeowners.

Bargaining power is often measured through survey responses on household decision-making in areas such as reproduction, division of labor, health, social life, children's education, and finances (Conference of European Statisticians Task Force, 2021). However, these survey responses may be inaccurate due to differences in how individuals perceive their role in decision making, and these perceptions can vary depending on context, such as gender, as shown by Acosta et al. (2020). Structural estimates of resource shares provide a more objective alternative, avoiding such perception-based errors. To the best of our knowledge, we are among the first to study the effect of a child benefit policy reform on adults' preferences and resource shares using a structural household model, with García (2022) applying a similar method to a minimum wage employment guarantee program in India. Prior collective household studies incorporating child benefits have used exogenous benefit income to test the income pooling hypothesis and the impact of targeting transfers to women (Lundberg et al., 1997; Alderman et al., 1995), generally rejecting income pooling and finding that resources controlled by women tend to benefit children.

Our findings contribute to the vast literature on the effect of targeting resources towards women. Existing literature has shown that shifting child allowance control from fathers to mothers in the UK increased spending on women's and children's clothing (Lundberg et al., 1997), on food and a more nutritious diet (Armand et al., 2020) and women empowerment (Almås et al., 2018). Attanasio and Lechene (2014) uses the targeted cash transfers of PROGRESA, a welfare program in rural Mexico, as a distribution factor and shows that the collective model can be used to explain the impact of the program on the structure of food expenditure and also cannot reject efficient decision-making within the household.

Our paper also contributes to literature on the effects of child benefit policy changes. Prior studies show that increasing benefit amounts or altering program structure can raise spending on children and improve their physical and mental health (Milligan and Stabile, 2009, 2011; Kooreman, 2000; Hener, 2017). In response to the CCB, Najjarrezaparast and Pendakur (2021) shows that lower-income rental-tenure households increased their annual consumption by roughly $3000 ($1400 on shelter, $700 on food and $300 on clothing), with some evidence that households with more children increased shelter spending disproportionately. Baker et al. (2023) found that the CCB reform substantially reduced child poverty and had no negative effect on maternal labor supply.

Building on both these strands of literature on targeting and child benefit policy changes, our paper focuses on how the policy change affected adult preferences and resource shares, which are potential mechanisms driving changes in children-related expenditure. We find little or no evidence of changes in preference from labeling of the child benefit, but a substantial increase in women's resource shares from targeting benefits to mothers, concentrated among homeowners. This suggests that targeting can influence intra-household resource allocation, potentially benefiting children. Furthermore, we find that these effects may vary by home-ownership which is an important consideration when making policy reforms suggesting the need for further research.

In the next section, we outline the policy context of the CCB. Section 3 describes the dataset used for the empirical analysis. We then introduce the structural model that allows us to decompose the treatment effect into these three separate channels - budget, preferences and resource shares. In Section 5, we provide an analysis of the pre-trends, that is, potential threats to identification, for ensuring a valid comparison group for implementing the difference in differences methodology, followed by the estimation results in Section 6. Finally, we discuss potential explanations for the findings in Section 7 and conclude in Section 8.

2 Canada Child Benefit Policy

In July 2016, the Government of Canada introduced the Canada Child Benefit (CCB), a tax-free transfer to families with children conditional on income levels. Previously, there was a complex system of child benefits provided through the Universal Child Care Benefit, the Canada Child Tax Benefit, and the National Child Benefit. The introduction of the CCB resulted in all the benefits being combined under the single label of the Canada Child Benefit. Though the benefits are not required to be spent directly on the children, the labeling of the benefit as child benefit could lead to adults feeling morally obligated to direct the benefits received towards the child.

The CCB led to a significant rise in child benefits, the maximum benefit being $6,400 for children under six and $5,400 for children aged 6 to 17, payable to families with net incomes below $30,000. At higher family incomes, the benefit is reduced at claw-back rates that vary with the number of children and income bins. The increase in child benefits was large for the households below the median of the income distribution with them receiving an additional amount of approximately $2,300 per child per year.

The CCB essentially plays the role of a basic income scheme for households with children. For instance, a household with zero income would receive around $6,000 per child annually regardless of their employment status under the CCB. When that same household starts earning some market income, the amount of benefits they receive remain the same unless the income exceeds $30,000 per year. After that, their CCB is "clawed back" based on their income levels until the household earns an income in excess of $150,000 after which they no longer receive benefits.

Furthermore, the CCB is paid to the parent who is considered the primary caregiver of the child. As per CRA (2019), if a household has two individuals of the opposite sex who are spouses or common law partners residing along with the child(ren), the female parent is considered the parent who is primarily responsible for the care of the children at home and the female parent receives the CCB unless notified otherwise. Hence, as we do not have data on exceptions of households where the male parent receives the CCB, in this paper, we assume that in a dual parent household with children, the female parent is the one receiving the benefits. If anything, this assumption underestimates our results of the effect of the CCB on bargaining power of the parents.

Therefore, given these features, the CCB can affect within household expenditure shares in at least three ways: (1) budget effect: due to the significantly increased amount of benefits, it will have a direct impact on the household budget; (2) labeling effect: as the entire amount is now labeled child benefit, it may directly shift preferences of parents regarding how they spend the transfer; (3) targeting effect: finally, since the benefit is paid to females in dual parent, male-female households, the CCB can have an effect on the intra-household bargaining power and resource shares.

3 Data

We use the 2014-2019 Surveys of Household Spending (SHS), a national monthly survey. It collects data on household characteristics, spending and savings, housing and dwelling characteristics, income, pensions, spending and wealth. It is primarily used for deriving expenditure weights used in calculating the Consumer Price Index and additionally used for investigating consumer demand behavior. The data are collected using both a questionnaire (interview) and an expenditure diary. The questionnaire is generally used to collect expenditures for more expensive, and less frequently purchased goods and services. The diary is used to collect expenditures for smaller, less valuable items that are purchased more frequently and could be more difficult to recall. However, the diary sample is much smaller and thus, this paper uses data from the interview only.

As described in Najjarrezaparast and Pendakur (2021), there are three features of the SHS that allow us to evaluate how the policy change affected spending. These three features are: (i) they are monthly cross-sections; (ii) they have the exact age of each household member; and (iii) they record spending on clothing for each person as well as total spending of all people on all goods.

To elaborate on these, first of all, each year of the SHS has around 12,000 observations of households, with roughly 1,000 sampled in each calendar month. Thus, we observe repeated cross-sections of households at the calendar-month level over 48 months from January 2014 to December 2017. These cross-sections cover 30 pre-treatment months and 18 post-treatment months. Secondly, using SHS information on the birth month and year of every household member, we exactly identify the age of each household member given the month and year of survey. This allows us to identify households eligible for CCB by calculating the number of children aged less than 18 in the month prior to the survey date. Finally, detailed retrospective spending for different expenditure categories is collected. This includes person level spending in the previous 3 months for clothing and footwear plus household-level spending in the past month for consumables like food and in the past year for semi-durables such as household furnishings. We use the person level expenditure data on clothing and footwear as the assignable good. Dividing these spending amounts by the total household expenditure yields Engel curves for each person's assignable clothing (including footwear).

We restrict our analysis to households with one male adult and one female adult ($N_m = 1$ and $N_f = 1$) with a maximum age of 65 years of either adult. The sample consists of adult couple households with no eligible children (control households) and two-parent households with 1-3 eligible children. We drop households with adult children present. We also drop a small number of households (less than 1the same as number of children three months prior to survey. The eligibility or the amount received from CCB during the clothing recall period would change for these households.

Total household expenditure is measured as the total of expenditure on food, shelter, transport, health, recreation and other household operating expenses, excluding any form of investment expenditure. Since these variables have different recall periods, we annualize all expenditure items to the annual level. Our static consumer demand model does not allow for savings and investment, so we treat everything as a consumption flow. We exclude transportation investment expenditure on purchase of recreational and all terrain vehicles, automobiles, sports utility vehicles, vans and trucks. We exclude investment expenditure on shelter in the form of mortgage paid on owned principle residence.

For renters, we may equate rental expenditures with the shelter consumption flow. However, the rental flow from consumption is not available for homeowners. Hence, we impute the rental flow from consumption for all households. The imputed rent for a household is the predicted value from a linear regression of rents (for rental-tenure households) on dwelling characteristics. These characteristics are: the number of bedrooms, bathrooms, repairs required, how crowded the dwelling is and the period the dwelling was constructed in, plus year and province dummies. In the main specification, we use imputed rent for both renters and homeowners to ensure that systematic measurement error is not arising from the imputation. However, we provide robustness checks using imputed rent for only homeowners and actual reported rent for renters[1].

Potential endogeneity concerns arise as measures of household expenditure often have measurement error (say, due to recall inconsistency). Additionally, our measure of total household expenditure includes imputed rent for all households which could accentuate this measurement error. Finally, because our dependent variable is $W_i = \rho q_i / y$ is linear in $\ln y$, we have that y is on both sides of the equation, which induces endogeneity by construction. To address these endogeneity concerns, we instrument household expenditure with total household income. Household income is less likely to have measurement error, in part because SHS enumerators merge their records with income data from Canada Revenue Agency. We drop observations in the bottom and top 1% of the expenditure and income distribution to exclude possible outliers from the sample.

Recall that our demographic shifters are divided into 3 groups. $\mathbf{z_s}$ affect both preferences and resource shares and are: the ages of the man, the woman and the average age of eligible children within the household; an indicator if the household is a renter as opposed to an owner; and, the number of children in the household. $\mathbf{z_c}$ affect only preferences and are: year and month dummies. B is a vector of treatment dummies, and we will generally report "treatment effect" coefficients on the interaction of the "eligible children present" dummy and

[1] We also ran the reduced form estimation without included shelter expenses in the household expenditure to reduce possible measurement error from imputing rent. The reduced form estimates show larger standard errors which suggests that including shelter does not increase measurement error. Furthermore, as expenditure on shelter comprises a large portion of expenditure for Canadian households, we choose to include shelter expenses in our main text specifications.

the "post policy change" dummy and its interaction with the "renter" dummy. The former will be interpreted as the treatment effect on owners, and the latter will be interpreted as the additional treatment effect for renters.

Table 1: Summary Statistics

	All		Treated		Untreated	
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Demographics						
Age: Male	43.51	11.19	40.14	7.36	46.76	13.11
Age: Female	41.29	11.12	37.60	6.75	44.85	13.16
Average age of children	3.57	4.91	7.27	4.72		
Number of children	0.91	1.04	1.85	0.68		
Proportion of renter (Renter dummy)	0.24	0.43	0.23	0.42	0.26	0.44
Proportion of households with children	0.49	0.50				
Expenditure in dollar amounts						
Total household expenditure	40,990	14,573	44,503	15,124	37,605	13,163
Expenditure on:						
Food	7,986	3,967	9,240	4,216	6,777	3,287
Household operations	1,646	2,846	1,646	2,842	1,645	2,850
Clothing	3,035	2,883	3,787	3,053	2,311	2,505
Transportation	11,845	14,647	12,444	14,751	11,268	14,523
Health	2,794	2,586	2,790	2,563	2,799	2,607
Recreation	5,044	6,796	5,546	6,908	4,560	6,651
Shelter (Imputed rent expenditure)	40,990	14,573	44,503	15,124	37,605	13,163
Total household income	104,842	60,676	108,229	59,642	101,580	61,483
Share in total household expenditure of:						
Adult clothing: Male	0.020	0.024	0.017	0.019	0.022	0.027
Adult clothing: Female	0.031	0.030	0.026	0.025	0.036	0.034
Children's clothing	0.019	0.029	0.038	0.031		

Summary statistics (weighted by the population weights) is provided in Table 1. Columns (1) and (2) report the mean and standard deviation of the variables for the total sample, columns (3) and (4) for the treated population, that is, households eligible for CCB and columns (5) and (6) for the households without children.

In the overall sample, average age of males and females is around 44 and 41 years respectively. Average age of children within the treated population is around 7 years and number of children is around 2. The proportion of renters in the total sample, as well as the treated and untreated population is around 23 to 26%. The proportion of households with children, that is, treated population, is around 49%[2]. All these demographic characteristics vary significantly across the treated and the untreated population and therefore we therefore control for these variables, along with total household expenditure. We also report the breakdown of household expenditure across different sub-categories. Finally, the table presents the share of adult and children clothing in total household expenditure which also varies significantly across the treated and untreated population. This is somewhat expected given the household composition since treated households are likely to direct some spending towards their children away from adult clothing.

4 Model

We use the efficient collective household model of Browning et al. (2013) (hereafter BCL). We impose the identifying restrictions of Dunbar et al. (2013) (hereafter DLP) and use the linear estimator from lechene2022ordinary (hereafter LPW). In an *efficient* collective household model, the members of the household are assumed to reach the Pareto frontier, and therefore the household optimization may be represented as the sum of a set of decentralized decisions, just like in general equilibrium theory. We may therefore think of the household as creating budget constraints for each household member, and each individual making decisions against their personal constraint.

In BCL's model, these shadow constraints are characterized by individual-level shadow budgets and a household-level shadow price vector. The *resource share* of a person is defined as their shadow budget divided by the full household budget, that is, their share of the household budget.

[2]The unweighted number of households in the sample and the sub-categories of treated and untreated population cannot be disclosed due to confidentiality requirements of the Statistics Canada Research Data Center.

Given these shadow budget constraints, each individual decides what quantities to demand, and the household satisfies all these demands by buying a sufficient set of goods in the market. The shadow price vector differs from the market prices because some goods, like transportation and shelter, are shareable and therefore their shadow prices are lower than their market prices. Other goods, like clothing, are not shareable and therefore their shadow prices are the same as their market prices. When the household goes to the market, it has to buy the sum of what individual members want for non-shareable goods. But, the household need not buy the sum for shareable goods; it can satisfy all individual demands with less than that because individuals share consumption (for further detail, see LPW). The identification and estimation methodologies of DLP and LPW allow for any shadow price vector, and therefore any degree of sharing for any good, but they do not identify the shadow price vector within households.

In contrast, the methodologies of DLP and LPW do identify the resource shares of each household member. These are not equal across household members due to differences in bargaining power, and have a one-to-one correspondence with Pareto weights on individual utilities in the household's primal maximization problem.

DLP shows how to identify the resource shares of each household member using Engel curves for *assignable private goods*, defined as goods that are shared and whose quantities are observed for each household member, such as clothing for male and female. DLP shows that resource shares are identified by such data if resource shares do not vary with total expenditure and preferences are similar—but not identical— across people (SAP). LPW shows that if preferences are characterized by linear Engel curves, then the entire model has a linear reduced form where resource shares are given by nonlinear functions of reduced form regression coefficients on (logged) budgets.

An important difference between our work and that of LPW (and DLP) is that they identify children's resource shares as well as those of adults. In contrast, in this work, we focus on the resource shares of adult men and women. We do not identify children's resource shares. Instead, we focus on the fraction of adult consumption that goes to adult women, which is a measure of gender disparity in within-household consumption. The reason we pursue this target—the woman's share of adult resources—is data driven: observed Engel curves for children's clothing violate the identifying restriction used by LPW, discussed in details in the next section.

4.1 Structural Model

This section details the notation and setup of LPW, adapted to our difference-in-differences setting. Let $i = m, f$ index adults (male and female respectively) within the household. Let $N = \sum_i N_i + N_c$ be the total number of individuals in a household, where N_c is the number of children within the household.

We assume that decision-making is carried out by adults, and children are considered as attributes of the household, or, equivalently, spending on children is a non-assignable good that generates utility for adults. We choose this specification because the model requires that the Engel curves of all individual types have slopes in the same direction. But, in the population we are studying (Canadian households), the Engel curves for clothing have slopes with same signs for adult male and female, but the opposite sign for children's clothing. In particular, clothing is a luxury for adults in the data, while it is a necessity for children. So the methodology of LPW to identify their resource shares cannot be applied. Thus, although the model has resources that are allocated to children, we do not identify the size of the children's resource share. Our two-person model is a world where adults share household resources, and adults spend some of their resources on their children and the children do not have decision-making power[3].

[3] An alternative version of the model, also consistent with the estimator, is a world in which children consume an unidentified fraction of the households resources, leaving the rest for adults to divide according to the estimated male and female resource shares. We would still interpret the estimated resource shares as revealing gender inequality (amongst adults) within the household. See Blundell et al. (2025) for details.

Let y denote the observed household budget. The share of household budget allocated to adult i is denoted η_i. These resource shares add up to 1, so that $\sum_i \eta_i = 1$. They can depend on household budgets, prices and other factors. Following DLP, we assume that the resource shares do not depend on the budget[4], that is, $\eta_i(y) = \eta_i$. Furthermore, we estimate the resource shares at a fixed price vector $\mathbf{p}$ as in DLP and LPW[5]. Each adult, $i = \{m, f\}$, within the household gets a personal budget equal to $\eta_i \cdot y$ which is an unobserved shadow budget based on their resource share and the total household budget[6].

Assignable goods are those for which we can observe the expenditure on, or the quantity consumed of, by each type of individual. In this paper, we use clothing as an assignable good where expenditure on clothing for males and females is separately observed. Let ρ indicate the price of person i's assignable good and q_i indicate the quantity purchased of person i's assignable good. Here, we assume that the price of each person's assignable good is the same, but that assumption can be relaxed (see LPW). In the data, we observe household level expenditure on assignable goods, ρq_i, and household-level total expenditure, y. Let $W_i = \rho q_i / y$ be the observed household-level Engel curve for clothing of adult i.

Let $w_i(y)$ be the Engel curve function of adult i for clothing. This is the unobserved function determining what an individual's Engel curve would be if they faced a budget constraint defined by their personal budget and the household shadow price vector. BCL show that

$$W_i = \eta_i(y) w_i(\eta_i(y) y) = \eta_i w_i(\eta_i y)$$

where the first equality is from BCL under the assumption that shadow prices are linear market prices and the second equality follows from the assumption that resource shares do

[4]There is some empirical evidence in the literature that supports this assumption (Cherchye et al., 2015; Menon et al., 2012). Note that we allow the resource shares to depend on other variables, for example, preference shifters and distribution factors. We suppress that conditioning here for expositional simplicity.

[5]We do not observe market prices, and are thus unable to estimate shadow prices, that is, the within-household prices of consumption that accounts for economies of scale.

[6]Our estimation is restricted to households with one adult male and one adult female and thus, the shadow budget does not have to be adjusted for number of individuals of each type $i = \{m, f\}$

not depend on the household budget y.

Since our objective is to see how resource shares respond to the child benefit change (among other things), we now add covariates other than the budget y to the model. Define $\mathbf{z} = [\mathbf{s}\ \mathbf{B}]$ as a vector of preference shifters where $\boldsymbol{s}$ is a vector that include demographics and other factors that affect both preferences and resource shares and $\mathbf{B}$ is a vector of difference-in-differences regressors. As mentioned earlier, as Najjarrezaparast and Pendakur (2021) finds heterogeneous treatment effects across homeowners and renters, so define a Renter dummy R included in the preference shifters $\mathbf{s}$. We have $\mathbf{B} = [K \quad P \quad T \quad T \times R]$ where K is an indicator variable for having children (kids) eligible for the child benefit, P is a dummy indicating calendar time following the change in the child benefit policy (post-treatment), T is an interaction term between K and P, and $T \times R$ is an interaction of that treatment effect with the renter dummy (R).

Dual parent households that do not receive the child benefit policy include households without children and act as the control group ($K = 0$). Couples with children eligible for the child benefit policy make up the treatment group ($K = 1$) such that for this group, T is equal to zero in the period before the policy change and is equal to 1 after the policy change. The dollar value of the CCB received by each family depends on the number of children and income levels of the household. Its dependence on the age of children is relatively small. In contrast, the CCB is roughly linear in the number of children (that is, its value for a household with 2 children is twice that of a household with 1 child). We generally pool all households with children. We do some robustness checks to show that treatment effects are not very heterogeneous with respect to the number of children. However, they are quite heterogeneous with respect to homeowner versus renter status. The interaction term ($T \times R$) allows identification of the treatment effect on renters [7].

[7] We do not include interaction terms of the renter dummy with indicator for households with children ($K \times R$) and indicator variable for calendar time post policy change ($P \times R$). This is because we test for joint significance of the coefficients of these terms in our model and get a chi-square statistic such that we cannot reject the null hypothesis that the terms are jointly not significantly different from zero (test statistics provided in Table C20). As a robustness check, we also provide results including these interaction terms in

DLP and LPW let the individual Engel curve functions for individuals i be in the PIGLOG class (Muellbauer, 1975) and add the argument z to the Engel curve function so that individual Engel curve functions are linear in the log of the household budget for every z: $w_i(y, \mathbf{z}) = \alpha_i(\mathbf{z}) + \beta_i(\mathbf{z}) \ln y$. They further add the similar-across-people restriction on preferences (see DLP) resulting in $\beta_i(\mathbf{z}) = \beta(\mathbf{z})$.

Here, we will be slightly more restrictive than DLP and LPW and let these Engel curve functions be given by the Almost Ideal demand system of Deaton and Muellbauer (1980), so that the slope term does not depend on demographics z: $\beta_i(\mathbf{z}) = \beta(\mathbf{z}) = \beta$. This gives

$$w_i(y, \mathbf{z}) = \alpha_i(\mathbf{z}) + \beta \ln y.$$

Here, the levels of Engel curves are different for males and females i and depend on demographics z, but the budget response β is the same for all people i in all households. Substituting in, we get the structural equation

$$W_i = \eta_i(\mathbf{z})[\alpha_i(\mathbf{z}) + \beta(\ln y + \ln \eta_i(\mathbf{z}) - \ln N_i)] \tag{1}$$

where $\eta_i(\mathbf{z}) = \eta_i(p, \mathbf{z})$ is the resource shares at fixed prices p written to depend on demographic controls $\mathbf{z}$. We call this structural equation because all of its parameters are elements of the structural collective household model.

4.2 Linear Reduced Form

LPW show that the model presented in Equation (1) has a linear reduced form, which we now describe. Although the model is identified with all shifters $\mathbf{z}$ affecting both preferences and resource shares, it is helpful to reduce collinearity by breaking $\mathbf{z}$ into three pieces.

the model (results in Appendix C.7). There is still a positive, significant treatment effect on the bargaining power of females among homeowners, but the difference in the treatment effect between homeowners and renters becomes insignificant. The treatment effect on the preference parameters remain qualitatively similar.

The structural model allows for (but does not require that) different sets of variables to enter preferences from those that enter resource shares. Let $\mathbf{z} = [\mathbf{s}\ \mathbf{B}] = [\mathbf{z_c}\ \mathbf{z_s}\ \mathbf{B}]$ such that preference shifters $\mathbf{s}$ are distinguished as $\mathbf{z_c}$ and $\mathbf{z_s}$. The vector $\mathbf{z_s}$ includes preference shifters that affect both preferences and resource shares. In this paper, this includes ages of the household members, household size and an indicator for being a renter. The other preference shifters ($\mathbf{z_c}$) only affect preferences and not resource shares. These include control variables for year, month, province of residence and city size which may be plausibly excluded from resource shares. We provide tests[8] to show that variables in $\mathbf{z_c}$ indeed do not have any effect on the budget shares through the household budget[9].

We add an error term ε_i to equation (1) and express it as a linear reduced form:

$$W_i(y, \mathbf{z}) = a_i(\mathbf{z_c}\ \mathbf{z_s}\ \mathbf{B}) + b_i(\mathbf{z_s}\ \mathbf{B}) \ln y + \varepsilon_i \tag{2}$$

where

$$a_i(\mathbf{z}) = \eta_i(\mathbf{z_s}\ \mathbf{B})[\alpha_i(\mathbf{z_c}\ \mathbf{z_s}\ \mathbf{B}) + \beta \ln \eta_i(\mathbf{z_s}\ \mathbf{B}) - \beta \ln N_i]$$

and

$$b_i(\mathbf{z_s}\ \mathbf{B}) = \eta_i(\mathbf{z_s}\ \mathbf{B})\beta.$$

We call this the linear reduced form because it is the relationship between observed objects (log-budgets, y, covariates z and budgets shares W) that can be recovered via linear regression methods, e.g., ordinary least squares (OLS), two-stage least squares (2SLS) or generalized method of moments (GMM) regression of budget shares of covariates, log-budgets and covariates interacted with log-budgets.

[8]We replicate the estimation including these preference shifters in the slope term, that is, $\mathbf{z_s}$, and show that the estimated coefficients of these variables are jointly insignificant.

[9]Note that these restrictions are not required for identification of the parameters in the model and are only imposed for simplicity in estimation.

Since $\Sigma_i \eta_i(\mathbf{z_s}\ \mathbf{B}) = 1$, we have

$$\beta = \Sigma_i b_i(\mathbf{z_s}\ \mathbf{B})$$

So, we can rearrange to get

$$\eta_i(\mathbf{z_s}\ \mathbf{B}) = \frac{b_i(\mathbf{z_s}\ \mathbf{B})}{\beta} = \frac{b_i(\mathbf{z_s}\ \mathbf{B})}{\sum_i b_i(\mathbf{z_s}\ \mathbf{B})} \qquad i = \{m, f\} \tag{3}$$

The intuition for the identification of resource shares in this model is the following. The reduced form parameter $b_m(\mathbf{z_s}\ \mathbf{B})$ gives the response of household spending on the man's assignable good to a change in the household budget, and $b_f(\mathbf{z_s}\ \mathbf{B})$ gives the response of household spending on the woman's assignable good. The reduced form parameters depend on the resource share of the person and the preference parameter β. If the response of household spending is greater for the man's assignable good, since their (unobserved) preference parameters are the same, it must be because he has the higher resource share. Thus, the relative responses to changes in the household budget of household spending on assignable goods for different people identify the resource shares of those people.

We approximate the model by letting

$$a_i(\mathbf{z}) = a_i(\mathbf{z_c}\ \mathbf{z_s}\ \mathbf{B}) = a_{i0} + a_{iK}K + a_{iP}P + a_{iT}T + a_{iz_c}\mathbf{z_c} + a_{iz_s}\mathbf{z_s} \tag{4}$$

and

$$b_i(\mathbf{z_s}\ \mathbf{B}) = b_{i0} + b_{iK}K + b_{iP}P + b_{iT}T + b_{iz_s}\mathbf{z_s} \tag{5}$$

Since the structural parameter β is independent of $\mathbf{z}$ we impose the following linear restrictions:

$$\sum_i b_{iT} = \sum_i b_{iK} = \sum_i b_{iP} = \sum_i b_{iz_s} = 0 \tag{6}$$

These restrictions imply that the preference parameter governing the budget response of expenditure on clothing share of individuals does not vary with the preference shifters. We impose this restriction for two reasons. First, since the resource shares are estimated from Equation (3), the resource share would be undefined if β, the denominator came too close to zero. This restriction reduces the possibility of the denominator $(b_{m0} + b_{f0})$ being close to zero. Furthermore, the marginal effect of a covariate on the resource share does not depend on values of the covariates ($\mathbf{z_s}$ and $\mathbf{B}$). For robustness check, we provide the estimation results without imposing these restrictions in Appendix C.2 which show that estimates do not differ much and the results hold qualitatively.[10].

Given these linear restrictions, we have $\sum_i b_i(\mathbf{z_s}\ \mathbf{B}) = b_{m0} + b_{f0}$, implying the following parametric structure for resource shares which is linear in the variables:

$$\eta_i(\mathbf{z_s}\ \mathbf{B}) = \frac{(b_{i0} + b_{iK}K + b_{iP}P + b_{iT}T + b_{iTR}T \times R + b_{iz_s}\mathbf{z_s})}{(b_{m0} + b_{f0})}. \tag{7}$$

b_{iT} identifies the treatment effect on the resource shares for owners :

$$\frac{\partial \eta_i(\mathbf{z_s}\ \mathbf{B})}{\partial T} = \frac{b_{iT}}{(b_{m0} + b_{f0})} \tag{8}$$

and for renters

$$\frac{\partial \eta_i(\mathbf{z_s}\ \mathbf{B})}{\partial T} = \frac{b_{iT} + b_{iTR}}{(b_{m0} + b_{f0})}$$

Since, by assumption, β does not respond to the treatment, the only preference effect is through α_i. We solve for α_i as follows:

$$\alpha_i(\mathbf{z}) = a_i(\mathbf{z})/\eta_i(\mathbf{z_s}\ \mathbf{B}) - \beta \ln \eta_i(\mathbf{z_s}\ \mathbf{B})$$

[10]We find no significant treatment effect on $\beta(\mathbf{z_s}\ \mathbf{B})$ when we estimate the model without imposing these linear restrictions from Equation (6) further providing justification for imposing these linear restrictions. Estimates of β and treatment effect on β are provided in Table C7 and Table C10.

and we identify the treatment effect on preferences by computing the following difference:

$$\alpha_i(T=1, P=1, K=1, \mathbf{z_c}, \mathbf{z_s}) - \alpha_i(T=0, P=1, K=1, \mathbf{z_c}, \mathbf{z_s}) \tag{9}$$

This linear model could be estimated using equation-by-equation OLS or seemingly unrelated regression (SUR). However, because we are concerned about possible endogeneity of the household budget, we use Hansen (1982)'s GMM to estimate the system of equations (2) for $i = \{m, f\}$. We estimate two versions of the GMM model. The first one takes the log household budget as exogenous and therefore it is present in the list of instruments assumed to be orthogonal to the errors (labelled "OLS" in the tables because it analogous to the equation-by-equation OLS estimate). The second takes the log household budget as possibly endogenous and replaces it in the instrument list with the log household annual net income (labelled "IV" in the tables because it analogous to the IV/2SLS equation-by-equation estimate). Given the restrictions imposed by equation (6), both sets of GMM estimates are overidentified, so we can test the validity of the overidentifying restrictions in (6) by computing the Hansen's J statistic. We can also illuminate whether or not instrumenting is necessary by looking at the Hausman test, which asks whether the OLS and IV differ from each other. However, since the Hausman test is only valid with homoskedastic errors, we take these test statistics with more than the usual grain of salt.

Our outcome variable is the budget share for clothing, recalled at the 3-month level. Many households have zero spending on clothing over that recall period: about 25% of observations for adult female clothing and 50% of observations for adult male clothing are zero. However, given that we instrument the logged budget, we can interpret the estimator as giving the conditional mean (including zeroes) of the clothing budget share. In an infrequency model of purchase, this would correspond to the annual consumption flow from clothing (see Blundell and Meghir (1987) for detail).

Standard errors are estimated using multi-way clustering by province, the number of children, year and month. This is because firstly, Jones et al. (2019) suggests that since the child benefit policy in Canada not only vary by province, but also by the family size, standard errors should be clustered by province times number of children. Furthermore, seasonal changes usually affect clothing expenditure. So, we further cluster by year and month.[11].

The linear reduced form (2) illuminates how household Engel curves for clothing vary across the individuals within the household, and in particular identifies the budget response (5) of the household Engel curve for each individual's clothing. The structural model shows that, because we assume similarity across people in the budget response, the resource share is identified by equation (3). This equation says that the resource shares—parameters of the structural collective household model— are identified from the *relative* magnitude of these budget responses. Under the model, if the budget response of the household Engel curve for male's clothing, $b_m(\mathbf{z_s}\ \mathbf{B})$, is larger than that for female's clothing, $b_f(\mathbf{z_s}\ \mathbf{B})$, then the male's resource share is larger. This is true even if the Engel curve for female's clothing lies completely above that for male's clothing, which would occur for example if the level term for the household Engel curve for female's clothing, $a_f(\mathbf{z_s}\ \mathbf{B})$, was much higher than that for male's clothing, $a_f(\mathbf{z_s}\ \mathbf{B})$.

5 Threats to Identification

In this section, we provide the test for pre-trend, and provide some evidence to support the difference-in-differences strategy. We test whether couples with children eligible to receive the benefits followed the same time trend as couples who are not eligible for the benefits. This test aims to show that our control group serves to identify an appropriate counterfactual time-trend for the treatment group, so that we can estimate the treatment effect of the CCB

[11] As a robustness check, we also cluster standard errors by province, number of children, year and quarter. Given the recall period for clothing is three months, clustering by quarters aligns with this recall duration. Results are provided in Table C28 and we find that the results of our main specification hold. One could also block-wild-bootstrap for inference, but we do not pursue this strategy given the limited computing resources available at our local Statistics Canada research data centre.

on spending patterns by comparing the time-trends of treated to untreated households. If we fail parallel trends in the pre-treatment period, it would suggest that parallel trends post-treatment is not reasonable.

For the pre-trend test, first, we restrict the sample to the period prior to the policy change, that is, from January 2014 to July 2016. We then estimate equation (2) using our main estimation strategy, that is - we include imputed rent for all households when measuring household expenditure; cluster standard errors at province, number of children, year and month; and impose summation restrictions on the slope coefficients (Equation 6). We then include interaction terms between indicator variables for year and month. Finally, we include interaction terms between dummy variables for year and month and the indicator variable for being in the treatment group (K). The test for parallel trends is undertaken through a joint test of significance of the coefficient estimates of these latter interaction terms. We include the interaction terms within both the slope and the levels of the budget share equations. The coefficients on these terms represent time trends within the relevant parameters of couples with eligible children relative to the control group.

The joint test for significance of these coefficients in *both the slope and the level term* gives a sample value of the chi-square test statistic of 211.05 with a p-value of 0.00 which means we can reject the null hypothesis that these interaction terms are jointly zero. This is mostly driven by difference in coefficients *in the level term*. The sample value of the chi-square test statistic for the hypothesis that the levels follow parallel trends is of 83.24 and has a p-value of 0.025. This suggests that the pre-trend of the level of the Engel curves may not follow parallel trends. Recall that the preference parameter α_i is identified from both the reduced form coefficients a_i and b_i. So the treatment effect on α_i should be interpreted with caution.

In contrast, the sample value of the chi-square test statistic for the hypothesis that the slope coefficients follow parallel trends is 72.06 with a p-value of 0.14. Hence, we fail to reject the hypothesis that the coefficients of the interaction terms in the slope of the Engel curve are jointly equal to zero, suggesting that the treatment group and the control groups have slopes of Engel curves that follow parallel time trends[12]. Thus, we are comfortable using a difference-in-differences methodology to identify treatment effects on the slopes of Engel curves for assignable goods, and then using those slopes to identify the treatment effects of the policy change on resource shares.

6 Results

6.1 Reduced form estimates

Before discussing the results from the GMM estimation, we first look at the treatment effect of the policy change on log of household budget using an OLS regression (shown in Table 2). The point estimate for the treatment effect on household budget is not significant. However, if we zero in on households below the median income, we see evidence of an increase in household spending, especially for renter households. .[13]

We now present the results from the GMM estimation of the system of equations comprised of adults' budget shares within the households (Equation (2) for $i = \{m, f\}$). As mentioned in previous sections, our main specification uses imputed rent for both owners and renters[14].

[12] Results are similar when the specification does not instrument for household expenditure. When using robust standard errors, for both with and without instruments, we always fail to reject that coefficients of the treatment variable interacted with year and time dummy is jointly equal to zero, for both the slope and the level terms. This provides evidence for parallel trends in the Engel curves of the treatment and control group. Results provided in Table A1

[13] This finding is in contrast to Najjarrezaparast and Pendakur (2021) (referred to as NP hereon), who find a positive significant treatment effect on total household budget among renters and within the total sample, but no significant effect on owners. The difference in our findings can arise for a multitude of reasons. First of all, our measure of household expenditure includes imputed rent while theirs does not. Additionally, our sample is restricted to households with one adult male and one adult female, with or without children. The sample in NP includes households with 1 to 4 adults, with or without children. NP also restricts their sample to those below median income. If we do the same, we similarly see a significant positive treatment effect on the household budgets of renters. In our sample, only 27% are renters (compared to 53% of the sample in NP) which reduces the overall treatment effect on total expenditure. However, unlike NP who seek to identify the treatment effect on total expenditures, we seek to identify the treatment effect on Engel curves conditional on total expenditures, and from there, the treatment effect on resource shares.

[14] Results using imputed rent for only owners and actual rent for renters remain qualitatively the same

Table 2: Treatment effect of CCB on household budget

	Total sample			Below median income		
	(1) Overall	(2) Renters	(3) Owners	(4) Overall	(5) Renters	(6) Owners
Treatment effect on log of household budget	0.001	0.021	-0.003	0.006	0.048**	-0.010
	(0.012)	(0.027)	(0.013)	(0.009)	(0.019)	(0.011)

Standard errors clustered at province, the number of children, year and month in parentheses
*** p<0.01, ** p<0.05, * p<0.1.
Household budget includes imputed rent for homeowners as in out main specification

A renter dummy and an interaction term between the renter dummy and indicator for treatment is included to allow for heterogeneous treatment effects between homeowners and renters[15]. Our specification also uses log of income as an instrument for log of household expenditure[16]. We present results for both specifications - with and without instruments along with Hausman test results for parameter estimates. Our main specification clusters standard errors by province, number of children and year-month[17]. Finally, we impose the linear restrictions from Equation (6) on the slope term[18]. The reference group for the estimation, that is, when all covariates in $\mathbf{z}$ are equal to zero, refers to households in Ontario, in a population center of 100,000 or over, in June 2016 with two children where the children's average age is 10 and adult's age is 40[19].

We first present the reduced form GMM estimates in Table 3. The coefficients in the system of equations of the Engel curves for $i = \{m, f\}$ are evaluated for the reference group. The constant term (a_i), that is, the level of the Engel curve is significant for both male and female.

(provided in Appendix C.6).

[15]Results excluding the renter dummy and interaction term is provided in Appendix C.1.
We also provide the results when additionally including interaction terms of the renter dummy with indicator variables for households with children, and months post policy change in Appendix C.7. The treatment effect on the preference parameters and the bargaining power of homeowners is still robust across specifications. However, the difference in treatment effect between owners and renters is not robust across different specifications when we include these interaction terms.

[16]Results from using squared log of income as instruments for household expenditure are provided in Appendix C.5.

[17]Results using only robust standard errors are qualitatively similar and provided in Appendix C.3 and Appendix C.4

[18]Results from relaxing this restriction are provided in Appendix C.2.

[19]For simplicity, we refer to this as $\mathbf{z} = \mathbf{0}$ without making the distinction between $\mathbf{z_c}$ and $\mathbf{z_s}$.

Table 3: Estimates of the levels and slopes of clothing Engel curves

	IV estimates		OLS estimates	
	(1) female	(2) male	(3) female	(4) male
Level: $a(\mathbf{z}=0)$	0.020***	0.015***	0.023***	0.016***
	(0.002)	(0.002)	(0.002)	(0.001)
Slope: $b(\mathbf{z}=0)$	0.034***	0.012***	0.023***	0.013***
	(0.005)	(0.004)	(0.002)	(0.002)
Instrument for log of budget	Yes (with log of income)		No	

Standard errors clustered at province, the number of children, year and month in parentheses
*** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation of equations 4 and 5 instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation of the same equations without instrument for household budget.

The slope of the Engel curve (b_i), is positive and significant at the 1% level for both adults. This suggests that clothing is a luxury for adults in Canadian households. Identification of resource shares requires: slopes for men and women that have the same sign, and that don't sum to zero. Since both are statistically significantly positive, we are reassured that our model of resource shares is identified.

Next, we look at the coefficient estimates of the treatment effect from the reduced form regression (Table 4). Columns (1)-(3) provide results for the specification including instruments for log of household budget and columns (4)-(6) provides the results without instrumenting. We reject the null hypothesis of the Hausman test statistic (shown in Column 7) at the 5% level, supporting the use of the specification that instruments for household expenditure as our main specification..

The upper left panel of Table 4 shows that the estimated treatment effect on the level term for both male and female Engel curves in not significantly different from zero. The column labelled "difference" gives the difference between estimated treatment effects on male clothing and female clothing Engel curves. Here, we see that the treatment effect on the level term is significantly higher for the female's Engel curve as opposed to the male in home-owning households, but not by much. The lower left panel gives the estimated treatment effects on

Table 4: Treatment effects on levels and slopes of clothing Engel curves

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Treatment effect on level (a)							
Homeowner	0.002	-0.001	0.003**	0.001	0.000	0.001	6.812
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	
Renter	0.001	0.000	0.001	0.001	-0.001	0.002	0.901
on level (a)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	
Treatment effect on slope (b)							
Homeowner	0.011***	-0.011***		0.004*	-0.004*		11.377
	(0.004)	(0.004)		(0.002)	(0.002)		
Renter	-0.013**	0.013**		-0.007***	0.007***		0.995
on slope (b)	(0.006)	(0.006)		(0.003)	(0.003)		
Instrument for log of budget	Yes (with log of income)			No			

Standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation, instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

the slope of Engel curves. Here, we see that treatment effect on the slope term of the female's Engel curve is positive and significant for homeowners, while it is negative and significant for renters. Given the linear restriction (6), the treatment effect is exactly the reverse for the males' Engel curves, so we do not report estimated differences. These results are evident for both instrumented and non-instrumented (aka: OLS) specifications given in the right-hand panels. The change in CCB policy resulted in changes in the slopes of the Engel curves suggesting that it may have affected resource shares.

6.2 Estimates of Structural Parameters

We now move on to the estimates of the structural parameters: preference parameters and resource shares, and the treatment effect on them, are shown in Table 5. Once again, columns (1)-(3) presents results from our main specification, instrumenting for household expenditure ("IV" estimates) and columns (4)-(6) present results that treat household expenditure as exogenous ("OLS" estimates). We first consider the performance of the IV estimates versus the OLS estimates. First, column (7) presents the Hausman test statistic for each parameter. These suggest, particularly for the estimates of resource shares and the treatment effect on resource shares among homeowners, that the IV and OLS estimates are different from each other. The bottom rows of Table 5 presents the Hansen's J-statistic for the validity of the overidentifying restrictions. For the instrumented GMM estimates, we don't reject the null hypothesis that all the overidentifying restrictions are jointly valid. For the exogenous GMM estimates (where we use the observed budget as an instrument for itself), we still have overidentifying restrictions due to the linear restriction imposed in (6), but we reject their validity at 5% significance level. Together, we take from this that household income is a tolerably good instrument for observed household spending, the IV estimates are different from the OLS estimates, and we tend to favour the IV estimates.

We also test whether the coefficients of the variables (year, month, province and city size) excluded from the slope term ($\mathbf{z_c}$) are jointly zero had they been included. We don't reject the hypothesis that they can be excluded. Finally, we also test for the linear restrictions imposed in (6) by testing the null hypothesis that the coefficients of the covariates in the female's Engel curve is jointly equal to that in the male's Engel curves, and once again, fail to reject this hypothesis when using IV estimates. This gives us confidence in imposing these linear restrictions to enable us to estimate well-behaved resource shares[20].

Focusing first on the preference parameter (α_i), for both homeowners and renters, the parameter estimates are significant and positive for both male and female. The difference in the parameter estimates across male and female within household is not significantly different from zero. This suggests that the male clothing Engel curves and female clothing Engel curves have similar levels. For renter households, the policy change does not affect the preference parameter α_i. For home-owning households, the policy change results in a decrease for

[20]Note that given the linear restriction in (6), we will not be observing any treatment effect on β. For robustness check, we relax this restriction and report the results for all parameters (α_i, β and η_i) in Table C7. We find no significant effect on β further increasing our confidence in the specification imposing the restriction.

Table 5: Estimates of structural parameters and treatment effects on structural parameters

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.074***	0.054***	0.020	0.050***	0.071***	-0.021	2.025
	(0.013)	(0.009)	(0.022)	(0.006)	(0.009)	(0.014)	
$\alpha_i(z=0)$: Renter	0.086***	0.062***	0.024	0.054***	0.085***	-0.031*	1.347
	(0.021)	(0.014)	(0.034)	(0.007)	(0.013)	(0.018)	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.036***	0.059***	-0.096***	-0.009	0.021*	-0.030*	4.873
	(0.014)	(0.020)	(0.031)	(0.006)	(0.012)	(0.018)	
0.010	-0.005	0.015	0.017*	-0.021	0.038*	0.057	
	(0.033)	(0.019)	(0.051)	(0.010)	(0.014)	(0.023)	
Resource Shares (η_i)							
η_i: Homeowner	0.462***	0.538***	-0.077	0.579***	0.421***	0.158	6.518
	(0.067)	(0.067)	(0.134)	(0.049)	(0.049)	(0.097)	
η_i: Renter	0.450***	0.550***	-0.100	0.605***	0.395***	0.209*	3.827
	(0.098)	(0.098)	(0.196)	(0.058)	(0.058)	(0.117)	
Treatment Effect on η_i							
Homeowner	0.247***			0.098*			7.019
	(0.080)			(0.056)			
Renters:	-0.029			-0.103			0.346
	(0.147)			(0.076)			
Homeowner vs Renters	0.276**			0.201***			
	(0.138)			(0.071)			
Hansen's J chi2 (dof=9)		13.978			20.503		
p-value		*0.123*			*0.015*		
Test for exclusion on slope		36.216			23.976		
p-value		*0.167*			*0.730*		
Test for linear restriction		13.085			21.417		
p-value		*0.159*			*0.011*		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

the female and increase for the male, both significant at 1% confidence level. The decrease in α_f relative to the increase α_m is also significantly higher, which may be indicative of a preference shift of the mother towards other expenditures (potentially children's goods) related to the labeling aspect of the Canada Child Benefit policy. These results are however not robust across the different specifications as can be seen in Appendix C. But, the combined effect of the change in the preferences ($\alpha_m + \alpha_f$) is 0.023 and is not significantly different from zero. Overall, we do not find strong evidence of any overall effect on the preferences of the parents, suggesting that the new label of the benefit did not shift preferences away from adult's clothing significantly.

A possible reason could be that even though the CCB is an umbrella label for child benefits, the previous child benefits (Universal Child Care Benefit, Canada Child Tax Benefit and the National Child Benefit) all still included the phrase *"child benefit"*. So perhaps this change in label was not very salient or important. Thus, the policy change did not shift preferences away from adult's clothing and towards children's clothing through the labeling channel. Recall from our pre-trend analysis in Section 5, the treatment effect on α_i should be interpreted with caution since we find that the pre-trend of the level of the Engel curves may not follow parallel trends.

Moving our focus to the estimates of the structural parameters for resource shares (η_i), the rows labeled "homeowner η" and "renter η" give the estimates of resource shares for households with children prior to treatment. The pre-treatment point estimates show that females have a resource share of 46% in home-owning households (45% in renter households) while males have a higher share of 54% (55% in renter households). However, we cannot reject the hypothesis that resource shares are equal (50%) for males and females. This finding of near parity is similar to what has been found recently in the literature regarding resource shares of female adults in developed countries (Blundell et al., 2025; Bargain et al., 2022). Graphical illustration of the estimates of resource shares before and after the introduction of the CCB for the homeowners and renters in the treatment and control group is provided in Table B.1 in Appendix B.

The rows labeled "homeowner treatment effect" and "renter treatment effect" give the causal estimate of the policy change on resource shares. We find a significant and sizable increase of around 25% in the resource shares of females due to the introduction of the CCB. The magnitude is quite large and would lead to female adults consuming 70% of the resources post treatment. For comparison, recent literature also finds that increase in income of females lead to increase in resource shares. Blundell et al. (2025) finds that in married couples with children, the relative wage of women increased 30 percentage points, and women's resource shares increased 15 percentage points over 1978 to 2019. Bargain et al. (2022) finds a slightly lower effect such that the wife's resource share increases by around 12% when the wage ratio goes from the lower to upper bounds of its domain, that is, 0 to 1.

The OLS estimates are of a smaller magnitude of around 10%, and much more precisely estimated. The Hausman tests reject sharply for the overall treatment effect, but not so much for the interaction of that treatment effect with renter status. Following Hansen (2017), we use a Stein-like 2SLS estimator to combine OLS and IV estimates[21], yielding a shrinkage estimate of 10% - a sizable effect that underscores the role played by the targeting aspect of the CCB shifting intra-household resource allocation.

On the other hand, using the coefficient on the interaction term between the renter dummy and the treatment, we find no significant treatment effect on the resource shares for renter households. Furthermore, we compare the treatment effect on resource shares between home-

[21] Hansen (2017) computes the Stein-like estimator as follows:

$$\hat{\beta}^* = w\hat{\beta}_{OLS} + (1-w)\hat{\beta}_{2SLS} \tag{10}$$

where

$$w = \begin{cases} \frac{\tau}{H_n} & \text{if } H_n \geq \tau \\ 1 & \text{if } H_n < \tau \end{cases} \tag{11}$$

and τ is equal to the number of endogenous regressors (m) minus 2 if $m > 2$, is 1 if $m = 2$, and is 0.25 if $m = 1$. Like the regular Stein estimator, this estimator is biased and possibly has better mean-squared error properties than either the OLS or IV estimates. We invoke it to allow the reader to get a sense of the balance between the IV and OLS estimates, but take the estimate as suggestive only.

owners and renters and find that the difference is significant at the 5% confidence level. These results qualitatively hold true for the specification without instrumenting and for all the different specifications used for robustness checks in Appendix C.

The heterogeneity in treatment effect by homeowners and renters might raise concerns about the treatment effect arising due to heterogeneity in household type or composition or income. In Appendix C.8 and C.9, we consider several types of analyses along these lines. These analyses yield quite imprecise estimates, but are broadly consistent with our main story.

First, we considered heterogeneity across the number of children in the household, which might be expected to arise due to the dependence of the size of the child benefit on the number of children. Though we control for number of children in our main specification, we also pick a sub-sample of the most common household composition (approximately 70% of our sample) in our data - households with two adults (male and female) and two children aged under 12. The results are provided in Appendix C.8. All the effects for both specifications are of similar magnitude and direction. The treatment effect on homeowners in the IV estimate is also significant. However, the rest of the estimates are not significant due to larger standard errors, possibly arising from the small sample size. Thus, we think that the results hold even if we restrict the household composition to one family structure[22].

Next, we considered heterogeneity across the income distribution, which might be expected to arise because the child benefit is means-tested in the sense that the full child benefit amount is delivered only to households whose income is below roughly the median household income (the threshold changes every year). Above the threshold, the child benefit is clawed back at a very slow rate, so that some child benefit is received by households even if their incomes are in the neighborhood of $150,000 or more.

[22]We also account for education levels of the adults in the household, both by directly controlling for education (Table C29) and additionally restricting the sample to households where both the male and female have at most bachelor's degree (Table C30). Note that data on education is missing for a lot of individuals, and thus the sample here is approximately 60% and 50% respectively of the main specification. Even with the smaller sample, the treatment effect on η_i for both homeowners and renters are significant, in similar direction and slightly larger magnitude. The estimates for treatment effect on α_i are also similar.

To assess whether these effects vary based on household income distribution, we replicate the estimation for the sub-samples of bottom half and top half of expenditure (see Tables C25 and C26). Note that we proxy expenditure for income, since our data only provides the previous year's income. The estimates of the treatment effect on η_i for the sample of bottom half expenditure are in similar direction and of similar magnitude. However, due to the smaller sample size, all the estimates are insignificant. The treatment effect on α_i are also all mostly similar. For the sub-sample of the top half of expenditure, the IV estimates of η_i are beyond the economically meaningful range and thus the treatment effect on α_i cannot be estimated for homeowners. These estimates should thus be interpreted cautiously, but, qualitatively, the treatment effect on η_i of homeowners persists. The OLS estimates are very similar to that of our main specification, both in magnitude and direction, but once again, with the much smaller sample, the standard errors are large and estimates are not significant.

Additionally, we re-do the analysis for a sub-sample of households which had household income below CAD90,000 in the previous year. The assumption here is that the income distribution has not changed drastically over the year and the sub-sample is a representation of households with income levels such that the child benefit is clawed back by half at most. However, our sample drops to around 40% of the main specification, and due to insufficient data, the precision of the estimates drop too much to say anything meaningful (see table C27). Overall, our results suggest that the introduction of the CCB increased bargaining power of females, but only within households which are homeowners and this effect was significantly different from the negative, but insignificant treatment effect on the resource shares among renters. In the next section, we discuss possible explanations for this heterogeneity in the treatment effect on resource shares.

7 Discussion

Our analysis of the structural estimates of preference and resource shares show that the treatment effect on renters and homeowners is different, echoing the findings about treatment effects on consumption in Najjarrezaparast and Pendakur (2021). The treatment effect we observe is mainly on the resource shares, with the main distinction being that the women's resource share increases in homeowner households, while we see no significant effect on resource shares in renter households. The target population of the child benefit is families in material deprivation. Since renters are on average materially worse off than homeowners, our findings that the child benefit does not affect the resource share in renter households suggests that it does not change gender inequality amongst the poor, that is, amongst the target population.

Since the treatment effect hinges on homeownership, we analyze whether the change in the CCB has any effect on the probability of the households moving (or changing their location of residence). We use a difference-in-differences methodology in a linear probability model on the likelihood of a household moving within the months of August 2014 to December 2017[23]. The identifying assumption here is that the probability of moving between treatment and control group before and after the treatment would follow the same trend had there not been a policy change. As in Najjarrezaparast and Pendakur (2021)[24], we find that after the change in the CCB, relative to households without children, homeowners with children are less likely to move whereas renters with children are significantly more likely to move. Further, after the introduction of the CCB, renters with children are also significantly more likely to move relative to homeowners with children. These results are illustrated in columns

[23]We exclude the months prior to August 2014 such that the treated months (August 2016-December 2017) coincide with the months before the policy change (August 2014-December 2015) as the probability of moving can vary highly with the time of the year.

[24]The estimates slightly differ between our paper and Najjarrezaparast and Pendakur (2021) due to differences in sample and a slight coding error in the latter paper's estimation. The results are qualitatively similar.

(1) and (2) of Table 6.[25]

Table 6: Treatment effect on probability of moving location of residence

	Indicator for moving residence		Indicator for moving residence	
	(1)	(2)	(3)	(4)
Homeowners: Treatment effect	-0.026***	-0.005	0.002	-0.006
	(0.009)	-0.010	(0.009)	-0.010
Renters: Treatment effect	0.103***		-0.044	
	(0.023)		(0.037)	
Treatment effect: Homeowners vs renters	0.129***		-0.046	
	(0.026)		(0.040)	
Renter dummy	Yes	No	Yes	No
$K \times R$ interaction term	No	No	Yes	Yes
$P \times R$ interaction term	No	No	Yes	Yes

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
$K \times R$ denotes renter dummy interacted with indicator for households with children
$P \times R$ denotes renter dummy interacted with indicator for post policy change time period

Several possibilities exist to explain this difference in treatment effects between renters and owners. The most obvious is that owners are richer than renters. However, since the regressions control for total expenditure, which is correlated with (read: determined by) both rent and income, this is probably not the core of the story. Further, as noted above, we observe this pattern even in a sample that throws out the higher expenditure households.

A second possible story is related to the limited commitment intertemporal collective household model, wherein the woman's resource shares change only if the value of her exit changes in a way that makes the exit utility exceed the utility attained with the resource share they had (Chiappori and Mazzocco, 2017). The CCB, by increasing benefits targeted at females, improves both the inside *and* the outside option, so might not change resource shares much. We think this is roughly the story for renters. However, owners face a constraint—they

[25] We note that these findings are *not* robust to adding controls for renter dummy interacted with the indicator variable for households with children and the months post policy change (columns (3) and (4) of Table 6). That is, if we run the analysis separately for a sample of homeowners and renters, we observe no significant effect of the policy change on the probability of moving for either homeowners or renters. On the other hand, we cannot reject the restriction that renter dummy interacted with the indicator variable for households with children and the months post policy change do not belong in the model. This suggests that our analysis of moving is underpowered, due to the fact that the majority of our sample is homeowners. So, we take our discussion of mechanisms as suggestive rather than definitive.

cannot adjust their shelter very easily. If women with children have a stronger preference for shelter spending than do men with children, this wedge might make exit more attractive for women, and therefore might increase the bargaining power of owner occupier women.

We could gain better insight on this mechanism if we ran the model with shelter excluded from the total budget (as is sometimes done in the consumer demand literature). Here, the reduced form estimates have slopes that are much smaller than those reported in our main results, and so the model is less well identified. As a consequence the standard errors of estimated resource shares and treatment effects corresponding to this model are very large, so large that no conclusions can be drawn. Thus, we take our story about a limited commitment model with heterogeneous preferences for shelter as speculative only.

8 Conclusion

We show how the resource shares (defined as the fractions of household spending allocated to each member) and preferences of household members responded to the doubling of the child benefit in Canada in July 2016. Using monthly repeated cross-sectional data on household expenditures from the Surveys of Household Spending 2015-2019, we use differences-in-differences type variation to identify how parameters in a collective household model responded to the increase in the child benefit. This approach gives the best of both worlds: we use quasi-experimental variation that is thus plausibly exogenous to identify parameters of a structural model of the household. We find no evidence that the change in benefits affected individual preferences (demand functions). We do find evidence that the increase in the child benefit increased women's resource shares in homeowner households that were affected by the benefit increase after the increase took place. However, we find no evidence that women's resource shares increased in rental-tenure households.

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A Pre-trend

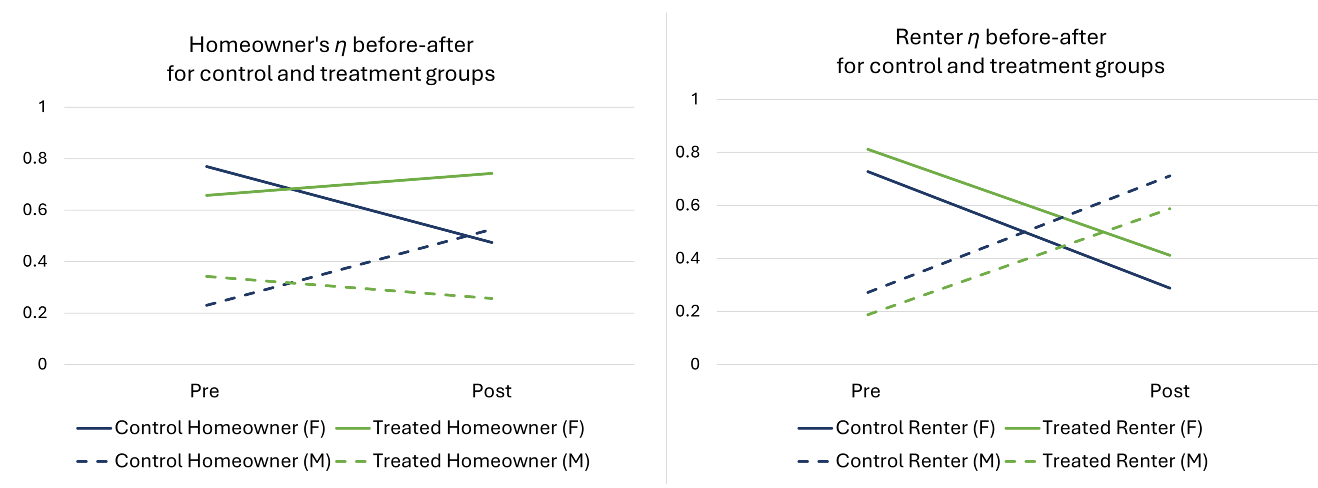
Table A1: Reduced form estimates

	(1)	(2)	(3)	(4)
Level term (a_m and a_f)				
Chi-square test statistic	83.24	101.06	55.11	70.12
p-value	*0.0252*	*0.0007*	*0.6545*	*0.1745*
Slope term (b_m and b_f)				
Chi-square test statistic	72.06	61.77	48.89	44.69
p-value	*0.1368*	*0.4128*	*0.8468*	*0.9300*
Errors	Cluster	Cluster	Robust	Robust
Instrument of log household expenditure	Yes	No	Yes	No

Linear restrictions on the slope term do not affect the pre-trend test statistics

B Graphical illustration of resource share estimates (η_i)

Figure B.1: Difference-in-Differences illustration of resource share estimate



Note: The parameter estimates are computed using the main specification which instruments for expenditure and includes control variables, as in columns (1)-(3) of Table 5.

C Robustness checks

C.1 Estimates from specification excluding renter dummy

In this section, we provide the results without distinguishing between homeowners and renters.

Table C2: Estimates of the levels and slopes of clothing Engel curves

	(1) female	(2) male	(3) female	(4) male	(5) female	(6) male	(7) female	(8) male
Level: $a(\mathbf{z} = 0)$	0.025***	0.017***	0.026***	0.018***	0.025***	0.017***	0.026***	0.018***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Slope: $b(\mathbf{z} = 0)$	0.023***	0.011	0.018***	0.008	0.023***	0.011	0.018***	0.008
	(0.002)	(0.002)	(0.004)	(0.003)	(0.002)	(0.002)	(0.004)	(0.003)
Errors	Clustered		Clustered		Robust		Robust	
Summation restriction on slope	Yes		No		Yes		No	

Standard errors (robust or clustered at province, the number of children, year and month in parentheses) *** p<0.01, ** p<0.05, * p<0.1.
All specifications include use log of income as an instrument for household budget.

Table C3: Treatment effects on levels and slopes of clothing Engel curves

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) female	(8) male	(9) diff	(10) female	(11) male	(12) diff
Treatment effect on level (a)	0.002	-0.002		0.001	-0.002	0.003	0.002	-0.002	0.000	0.001	-0.002	0.003
	(0.002)	(0.002)		(0.003)	(0.003)	(0.004)	(0.002)	(0.002)	0.000	(0.004)	(0.003)	(0.004)
Treatment effect on slope (b)	0.001	-0.001	0.002	0.001	0.000	0.002	0.001	-0.001	0.002	0.001	0.000	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Errors		Clustered			Clustered			Robust			Robust	
Summation restriction on slope		Yes			No			Yes			No	

Standard errors (robust or clustered at province, the number of children, year and month in parentheses) *** p<0.01, ** p<0.05, * p<0.1.

Table C4: Estimates of structural parameters and treatment effects on structural parameters

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) female	(8) male	(9) diff	(10) female	(11) male	(12) diff
Preferences ($\alpha_i(z=0)$)	0.590***	0.410***	0.180*	0.589***	0.411***	0.178	0.590***	0.410***	0.180*	0.589***	0.411***	0.178
	(0.052)	(0.052)	(0.104)	(0.058)	(0.058)	(0.117)	(0.051)	(0.051)	(0.102)	(0.057)	(0.057)	(0.114)
Treatment Effect on $\alpha_i(z=0)$	0.050	0.000	0.000	0.057	0.000	0.000	0.050	0.000	0.000	0.057	0.000	0.000
	(0.057)	0.000	0.000	(0.064)	0.000	0.000	(0.055)	0.000	0.000	(0.063)	0.000	0.000
Resource Shares (η_i)	0.049***	0.073***	-0.024	0.048***	0.071***	-0.022	0.049***	0.073***	-0.024	0.048***	0.071***	-0.022
	(0.006)	(0.010)	(0.015)	(0.007)	(0.011)	(0.016)	(0.006)	(0.010)	(0.015)	(0.007)	(0.012)	(0.016)
Treatment Effect on η_i	-0.003	0.009	-0.012	-0.004	0.010	-0.014	-0.003	0.009	-0.012	-0.004	0.010	-0.014
	(0.006)	(0.011)	(0.017)	(0.007)	(0.013)	(0.018)	(0.006)	(0.011)	(0.016)	(0.007)	(0.013)	(0.018)
Hansen's J chi2 (dof=7)		16.116						16.116				
p-value		*0.024*						*0.024*				
Test for exclusion on slope		23.971			56.866			24.029			53.897	
p-value		*0.730*			*0.518*			*0.728*			*0.629*	
Test for linear restriction		18.173						17.406				
p-value		*0.011*						*0.015*				
Errors		Clustered			Clustered			Robust			Robust	
Summation restriction on slope		Yes			No			Yes			No	

Standard errors (robust or clustered at province, the number of children, year and month in parentheses) *** p<0.01, ** p<0.05, * p<0.1.

C.2 Relaxing linear restriction on slope coefficients

In this section, we present the results from relaxing the linear restrictions that imply that the preference parameter governing the budget response of expenditure on clothing share of individuals does not vary with the preference shifters, that is, Equation (6).

Table C5: Estimates of the levels and slopes of clothing Engel curves

	(1) female	(2) male	(3) female	(4) male
Level: $a(\mathbf{z}=0)$	0.021***	0.016***	0.024***	0.017***
	(0.002)	(0.002)	(0.002)	(0.001)
Slope: $b(\mathbf{z}=0)$	0.032***	0.011	0.018***	0.009
	(0.009)	(0.007)	(0.004)	(0.003)
Instrument for log of budget	Yes (with log of income)		No	

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table C6: Treatment effects on levels and slopes of clothing Engel curves (no summation restriction)

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Treatment effect on level (a)							
Homeowner	0.002*	-0.001	0.003**	0.001	0.000	0.001	6.788
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	
Renter	0.002	0.001	0.001	0.000	-0.001	0.002	0.072
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	
Treatment effect on slope (b)							
Homeowner	0.018***	-0.007		0.003	-0.004		5.301
	(0.007)	(0.005)		(0.004)	(0.003)		
Renter	-0.004	0.019**		-0.007	0.007*		0.943
	(0.013)	(0.010)		(0.005)	(0.004)		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Table C7: Estimates of structural parameters and treatment effects on structural parameters (no summation restriction)

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.077***	0.037***	0.040	0.049***	0.068***	-0.019	1.656
	(0.025)	(0.013)	(0.036)	(0.007)	(0.010)	(0.015)	
$\alpha_i(z=0)$: Renter	0.113	0.032	0.082	0.054***	0.085***	-0.031	0.184
	(0.125)	(0.022)	(0.146)	(0.008)	(0.015)	(0.020)	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.041	0.077***	-0.118***	-0.010	0.024*	-0.034*	1.642
	(0.026)	(0.023)	(0.043)	(0.008)	(0.014)	(0.019)	
Renter	-0.017	0.022	-0.039	0.014	-0.025	0.040	0.059
	(0.129)	(0.026)	(0.152)	(0.012)	(0.016)	(0.024)	
Budget response (β (at $z=0$))							
Homeowner	0.032***	0.000	0.000	0.032***	0.000	0.000	0.001
	(0.008)	0.000	0.000	(0.005)	0.000	0.000	
Renter	0.022*	0.000	0.000	0.035***	0.000	0.000	1.209
	(0.013)	0.000	0.000	(0.006)	0.000	0.000	
Treatment Effect on budget response (β (at $z=0$))							
Homeowner	0.011			-0.001			2.225
	(0.010)			(0.005)			
Renters	0.015			0.000			0.701
	(0.019)			(0.007)			
Resource Shares (η_i)							
η_i: Homeowner	0.400***	0.600***	-0.200	0.576***	0.424***	0.153	3.381
	(0.110)	(0.110)	(0.221)	(0.055)	(0.055)	(0.109)	
η_i: Renter	0.291	0.709**	-0.418	0.605***	0.395***	0.210*	1.249
	(0.287)	(0.287)	(0.575)	(0.061)	(0.061)	(0.122)	
Treatment Effect on η_i							
Homeowner	0.316***			0.112*			4.127
	(0.120)			(0.064)			
Renters	0.138			-0.109			0.680
	(0.310)			(0.080)			
Homeowner vs Renters	0.178			0.221***			
	(0.258)			(0.076)			
Test for exclusion on slope		74.953			59.938		
p-value		*0.066*			*0.405*		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.

C.3 Robust standard errors with linear restriction on slope coefficients

This section replicates the main specification using robust standard errors instead of clustered standard errors.

Table C8: Estimates of the levels and slopes of clothing Engel curves

	(1) female	(2) male	(3) female	(4) male
Level: $a(\mathbf{z}=0)$	0.020***	0.015***	0.023***	0.016***
	(0.002)	(0.002)	(0.002)	(0.001)
Slope: $b(\mathbf{z}=0)$	0.034***	0.012	0.023***	0.013
	(0.005)	(0.005)	(0.002)	(0.002)
Instrument for log of budget	Yes (with log of income)		No	

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

Table C9: Treatment effects on levels and slopes of clothing Engel curves

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Treatment effect on level (a)							
Homeowner	0.002	-0.001	0.003**	0.001	0.000	0.001	6.605
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	
Renter	0.001	0.000	0.001	0.001	-0.001	0.002	0.749
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	
Treatment effect on slope (b)							
Homeowner	0.011***	-0.011***		0.004*	-0.004*		9.836
	(0.004)	(0.004)		(0.002)	(0.002)		
Renter	-0.013*	0.013*		-0.007***	0.007***		0.797
	(0.007)	(0.007)		(0.003)	(0.003)		
Instrument for log of budget		Yes (with log of income)			No		

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

Table C10: Estimates of structural parameters and treatment effects on structural parameters

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.074***	0.054***	0.020	0.050***	0.071***	-0.021	2.006
	(0.014)	(0.009)	(0.022)	(0.006)	(0.009)	(0.014)	
$\alpha_i(z=0)$: Renter	0.086***	0.062***	0.024	0.054***	0.085***	-0.031	1.438
	(0.021)	(0.013)	(0.033)	(0.007)	(0.013)	(0.019)	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.036***	0.059***	-0.096***	-0.009	0.021*	-0.030*	4.903
	(0.014)	(0.020)	(0.030)	(0.006)	(0.012)	(0.017)	
Renter	0.010	-0.005	0.015	0.017*	-0.021	0.038*	0.050
	(0.035)	(0.019)	(0.054)	(0.010)	(0.014)	(0.023)	
Resource Shares (η_i)							
η_i: Homeowner	0.462***	0.538***	-0.077	0.579***	0.421***	0.158*	6.151
	(0.067)	(0.067)	(0.134)	(0.047)	(0.047)	(0.095)	
η_i: Renter	0.450***	0.550***	-0.100	0.605***	0.395***	0.209*	4.195
	(0.097)	(0.097)	(0.193)	(0.060)	(0.060)	(0.121)	
Treatment Effect on η_i							
Homeowner	0.247***			0.098*			6.498
	(0.080)			(0.054)			
Renters	-0.029			-0.103			0.299
	(0.156)			(0.077)			
Homeowner vs Renters	0.276*			0.201***			
	(0.148)			(0.070)			
Hansen's J chi2 (dof=9)		13.978			20.503		
p-value		*0.123*			*0.015*		
Test for exclusion on slope		31.833			24.152		
p-value		*0.327*			*0.721*		
Test for linear restriction		12.766			20.532		
p-value		*0.173*			*0.015*		
Instrument for log of budget		Yes (with log of income)			No		

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

C.4 Robust standard errors relaxing linear restriction on slope coefficients

This section replicates the GMM estimation relaxing the linear restrictions in Equation (6) and using robust standard errors instead of clustered standard errors.

Table C11: Estimates of the levels and slopes of clothing Engel curves(no summation restriction)

	(1) female	(2) male	(3) female	(4) male
Level: a($\mathbf{z} = 0$)	0.021***	0.016***	0.024***	0.017***
	(0.002)	(0.002)	(0.002)	(0.001)
Slope: b($\mathbf{z} = 0$)	0.032***	0.011	0.018***	0.009
	(0.009)	(0.007)	(0.004)	(0.003)
Instrument for log of budget	Yes (with log of income)		No	

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

Table C12: Treatment effects on levels and slopes of clothing Engel curves (no summation restriction)

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Treatment effect on level (a)							
Homeowner	0.002*	-0.001	0.003**	0.001	0.000	0.001	6.166
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	
Renter	0.002	0.001	0.001	0.000	-0.001	0.002	0.081
	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	
Treatment effect on slope (b)							
Homeowner	0.018***	-0.007		0.003	-0.004		5.295
	(0.007)	(0.005)		(0.004)	(0.003)		
Renter	-0.004	0.019*		-0.007	0.007*		0.900
	(0.013)	(0.010)		(0.005)	(0.004)		
Instrument for log of budget		Yes (with log of income)			No		

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

Table C13: Estimates of structural parameters and treatment effects on structural parameters (no summation restriction)

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.077***	0.037***	0.040	0.049***	0.068***	-0.019	1.633
	(0.025)	(0.013)	(0.037)	(0.007)	(0.011)	(0.015)	
$\alpha_i(z=0)$: Renter	0.113	0.032	0.082	0.054***	0.085***	-0.031	0.188
	(0.123)	(0.022)	(0.144)	(0.008)	(0.016)	(0.021)	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.041	0.077***	-0.118***	-0.010	0.024*	-0.034*	1.631
	(0.025)	(0.023)	(0.043)	(0.007)	(0.014)	(0.019)	
Renter	-0.017	0.022	-0.039	0.014	-0.025	0.040	0.061
	(0.127)	(0.027)	(0.150)	(0.012)	(0.017)	(0.025)	
Budget response (β (at $z=0$))							
Homeowner	0.032***	0.000	0.000	0.032***	0.000	0.000	
	(0.008)	0.000	0.000	(0.005)	0.000	0.000	
Renter	0.022*	0.000	0.000	0.035***	0.000	0.000	
	(0.012)	0.000	0.000	(0.006)	0.000	0.000	
Treatment Effect on budget response (β (at $z=0$))							
Homeowner	0.011			-0.001			
	(0.010)			(0.005)			
Renters	0.015			0.000			
	(0.019)			(0.007)			
Resource Shares (η_i)							
Homeowner	0.400***	0.600***	-0.200	0.576***	0.424***	0.153	3.119
	(0.113)	(0.113)	(0.226)	(0.053)	(0.053)	(0.107)	
Renter	0.291	0.709**	-0.418	0.605***	0.395***	0.210*	1.253
	(0.287)	(0.287)	(0.575)	(0.063)	(0.063)	(0.126)	
Treatment Effect on η_i							
Homeowner	0.316***			0.112*			3.769
	(0.122)			(0.062)			
Renters	0.138			-0.109			0.679
	(0.311)			(0.081)			
Homeowner vs Renters	0.178			0.221***			
	(0.257)			(0.075)			
Test for exclusion on slope		56.230			57.492		
p-value		*0.541*			*0.494*		
Instrument for log of budget		Yes (with log of income)			No		

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

C.5 Instrument with square of log income

In this section, we provide the results from the main specification, instrumenting for expenditure with log of income and additionally using the square of log income as instruments as well.

Table C14: Estimates of the levels and slopes of clothing Engel curves

	(1) female	(2) male	(3) female	(4) male	(5) female	(6) male	(7) female	(8) male
Level: $a(\mathbf{z}=0)$	0.021***	0.015***	0.022***	0.016***	0.021***	0.015***	0.022***	0.016***
	(0.002)	(0.002)	0.000	0.000	(0.002)	(0.002)	(0.002)	(0.002)
Slope: $b(\mathbf{z}=0)$	0.035***	0.010	0.031***	0.007	0.035***	0.010	0.031***	0.007
	(0.005)	(0.004)	(0.007)	(0.010)	(0.005)	(0.005)	(0.008)	(0.006)
Errors	Clustered		Clustered		Robust		Robust	
Summation restriction on slope	Yes		No		Yes		No	

Standard errors (robust or clustered at province, the number of children, year and month in parentheses) *** p<0.01, ** p<0.05, * p<0.1.
All specifications include renter dummy and treatment indicator interacted with renter dummy.

Table C15: Treatment effects on levels and slopes of clothing Engel curves

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) female	(8) male	(9) diff	(10) female	(11) male	(12) diff
Treatment effect on level (a)												
Homeowner	0.002	-0.001	0.003*	0.002*	-0.001	0.003**	0.002	-0.001	0.003*	0.002*	-0.001	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Renter	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.000	0.000	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Treatment effect on slope (b)												
Homeowner	0.014***	-0.014***		0.021***	-0.008	0.030***	0.014***	-0.014***		0.021***	-0.008	0.030***
	(0.004)	(0.004)		(0.007)	(0.005)	(0.008)	(0.004)	(0.004)		(0.007)	(0.005)	(0.008)
Renter	-0.015**	0.015**		-0.010	0.018*	-0.027**	-0.015**	0.015**		-0.010	0.018*	-0.027**
	(0.006)	(0.006)		(0.012)	(0.009)	(0.013)	(0.007)	(0.007)		(0.012)	(0.010)	(0.013)
Errors		Clustered			Clustered			Robust			Robust	
Summation restriction on slope		Yes			No			Yes			No	

Standard errors (robust or clustered at province, the number of children, year and month in parentheses) *** p<0.01, ** p<0.05, * p<0.1.
All specifications include renter dummy and treatment indicator interacted with renter dummy.

Table C16: Estimates of structural parameters and treatment effects on structural parameters

	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) female	(8) male	(9) diff	(10) female	(11) male	(12) diff
Preferences ($\alpha_i(z=0)$)												
Homeowner	0.050***	0.071***	-0.021	0.049***	0.068***	-0.019	0.050***	0.071***	-0.021	0.049***	0.068***	-0.019
	(0.006)	(0.009)	(0.014)	(0.007)	(0.010)	(0.015)	(0.006)	(0.009)	(0.014)	(0.007)	(0.011)	(0.015)
Renter	0.054***	0.085***	-0.031*	0.054***	0.085***	-0.031	0.054***	0.085***	-0.031	0.054***	0.085***	-0.031
	(0.007)	(0.013)	(0.018)	(0.008)	(0.015)	(0.020)	(0.007)	(0.013)	(0.019)	(0.008)	(0.016)	(0.021)
Treatment Effect on $\alpha_i(z=0)$												
Homeowner	-0.009	0.021*	-0.030*	-0.010	0.024*	-0.034*	-0.009	0.021*	-0.030*	-0.010	0.024*	-0.034*
	(0.006)	(0.012)	(0.018)	(0.008)	(0.014)	(0.019)	(0.006)	(0.012)	(0.017)	(0.007)	(0.014)	(0.019)
Renter	0.017*	-0.021	0.038*	0.014	-0.025	0.040	0.017*	-0.021	0.038*	0.014	-0.025	0.040
	(0.010)	(0.014)	(0.023)	(0.012)	(0.016)	(0.024)	(0.010)	(0.014)	(0.023)	(0.012)	(0.017)	(0.025)
Resource Shares (η_i)												
Homeowner	0.415***	0.585***	-0.170	0.319**	0.681***	-0.363	0.415***	0.585***	-0.170	0.319**	0.681***	-0.363
	(0.070)	(0.070)	(0.141)	(0.130)	(0.130)	(0.261)	(0.069)	(0.069)	(0.138)	(0.131)	(0.131)	(0.263)
Renter	0.426***	0.574***	-0.149	0.228	0.772**	-0.543	0.426***	0.574***	-0.149	0.228	0.772**	-0.543
	(0.103)	(0.103)	(0.205)	(0.313)	(0.313)	(0.626)	(0.098)	(0.098)	(0.195)	(0.308)	(0.308)	(0.616)
Treatment Effect on η_i												
Homeowner	0.299***			0.403***			0.299***			0.403***		
	(0.083)			(0.139)			(0.082)			(0.140)		
Renters	-0.021			0.161			-0.021			0.161		
	(0.145)			(0.338)			(0.153)			(0.335)		
Homeowner vs Renters	0.321**			0.242			0.321**			0.242		
	(0.136)			(0.275)			(0.146)			(0.273)		
Summation restriction on slope		Yes			No			Yes			No	

Standard errors (robust or clustered at province, the number of children, year and month in parentheses) *** p<0.01, ** p<0.05, * p<0.1.
All specifications include renter dummy and treatment indicator interacted with renter dummy.

C.6 Results using imputed rents for only owners and actual rent for renters

Here, we provide the results from the main specification using imputed rent for only the owners, and the actual reported rent for renters. While this would potentially reduce measurement error for renters' rent, it could amplify systematic differences in measurement error across renters and homeowners.

Table C17: Estimates of the levels and slopes of clothing Engel curves

	IV estimates		OLS estimates	
	(1) female	(2) male	(3) female	(4) male
Level: a($\mathbf{z} = 0$)	0.020***	0.015***	0.023***	0.016***
	(0.002)	(0.002)	(0.002)	(0.001)
Slope: b($\mathbf{z} = 0$)	0.033***	0.011	0.022***	0.012
	(0.005)	(0.004)	(0.002)	(0.002)
Instrument for log of budget	Yes (with log of income)		No	

Standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

Table C18: Treatment effects on levels and slopes of clothing Engel curves

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Treatment effect on level (a)							
Homeowner	0.001	-0.001	0.003*	0.000	0.000	0.000	6.422
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	
Renter	0.001	0.000	0.001	0.001	-0.001	0.002	0.620
	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	
Treatment effect on slope (b)							
Homeowner	0.011***	-0.011***		0.003	-0.003		12.268
	(0.004)	(0.004)		(0.002)	(0.002)		
Renter	-0.012**	0.012**		-0.008***	0.008***		0.713
	(0.006)	(0.006)		(0.002)	(0.002)		
Instrument for log of budget	Yes (with log of income)			No			

Standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

Table C19: Estimates of structural parameters and treatment effects on structural parameters

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.071***	0.054***	0.017	0.048***	0.072***	-0.024	
	(0.014)	(0.010)	(0.023)	(0.006)	(0.010)	(0.015)	
$\alpha_i(z=0)$: Renter	0.078***	0.061***	0.017	0.050***	0.084***	-0.034*	
	(0.019)	(0.014)	(0.032)	(0.007)	(0.013)	(0.019)	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.035**	0.058***	-0.093***	-0.008	0.019	-0.027	
	(0.014)	(0.021)	(0.032)	(0.006)	(0.013)	(0.018)	
Renter	0.008	-0.005	0.013	0.021**	-0.026*	0.048**	
	(0.028)	(0.018)	(0.045)	(0.010)	(0.014)	(0.023)	
Resource Shares (η_i)							
η_i: Homeowner	0.472***	0.528***	-0.056	0.593***	0.407***	0.187*	6.118
	(0.072)	(0.072)	(0.144)	(0.052)	(0.052)	(0.105)	
η_i: Renter	0.466***	0.534***	-0.068	0.620***	0.380***	0.240**	3.618
	(0.101)	(0.101)	(0.201)	(0.060)	(0.060)	(0.120)	
Treatment Effect on η_i							
Homeowner	0.243***			0.087			6.872
	(0.084)			(0.060)			
Renters	-0.028			-0.139*			0.811
	(0.145)			(0.077)			
Homeowner vs Renters	0.271**			0.226***			
	(0.134)			(0.071)			
Hansen's J statistic (dof=9)		25.789			21.790		
p-value		*0.002*			*0.010*		
Test for exclusion on slope		37.501			21.624		
p-value		*0.134*			*0.835*		
Test for linear restriction		22.731			25.192		
p-value		*0.007*			*0.003*		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

C.7 Results including interaction terms of renter dummy with indicators for households with children and post-policy

In our main specification, we do not include interaction terms of the renter dummy with indicator for households with children ($K \times R$) and indicator variable for calendar time post policy change ($P \times R$). In this section, we test for joint significance of the coefficients of these terms in our model which suggest that we cannot reject the null hypothesis that the terms are jointly not significantly different from zero. We also provide results including these interaction terms in the model in this section.

Table C20: Joint test of significance of coefficients of interaction terms

	(1)	(2)
Slope and level term (a_m, a_f and b_f)		
Chi-square test statistic	6.76	6.87
p-value	*0.34*	*0.33*
Errors	Cluster	Cluster
Instrument of log household expenditure	Yes	No

Table C21: Estimates of the levels and slopes of clothing Engel curves

	IV estimates		OLS estimates	
	(1) female	(2) male	(3) female	(4) male
Level: $a(\mathbf{z} = 0)$	0.020***	0.015***	0.023***	0.016***
	(0.002)	(0.002)	(0.002)	(0.001)
Slope: $b(\mathbf{z} = 0)$	0.036***	0.011	0.024***	0.012***
	(0.005)	(0.005)	(0.002)	(0.002)
Instrument for log of budget	Yes (with log of income)		No	

Standard errors clustered at province, the number of children, year and month in parentheses
*** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

Table C22: Treatment effects on levels and slopes of clothing Engel curves

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Treatment effect on level (a)							
Homeowner	0.002*	-0.001	0.003*	0.001	0.000	0.001	3.926
	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	
Renter	-0.001	-0.003	0.002	-0.005	0.000	-0.005	4.664
	(0.004)	(0.003)	(0.006)	(0.004)	(0.003)	(0.004)	
Treatment effect on slope (b)							
Homeowner	0.011***	-0.011***		0.005**	-0.005**		2.963
	(0.004)	(0.004)		(0.002)	(0.002)		
Renter	-0.009	0.009		-0.017***	0.017***		0.496
	(0.012)	(0.012)		(0.005)	(0.005)		
Instrument for log of budget		Yes (with log of income)			No		

Standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1. IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

Table C23: Estimates of structural parameters and treatment effects on structural parameters

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.062***	0.063***	-0.001	0.054***	0.064***	-0.010	0.767
	(0.012)	(0.012)	(0.023)	(0.008)	(0.009)	(0.015)	
$\alpha_i(z=0)$: Renter	0.096*	0.063**	0.033	0.038***	0.178*	-0.139	1.266
	(0.052)	(0.029)	(0.080)	(0.008)	(0.101)	(0.108)	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.024**	0.051**	-0.076**	-0.013*	0.029**	-0.041**	1.423
	(0.012)	(0.020)	(0.030)	(0.007)	(0.012)	(0.019)	
Renter	-0.006	-0.002	-0.004	0.033***	-0.114	0.146	0.466
	(0.057)	(0.032)	(0.089)	(0.012)	(0.100)	(0.109)	
Resource Shares (η_i)							
η_i: Homeowner	0.481***	0.519***	-0.037	0.536***	0.464***	0.073	1.196
	(0.075)	(0.075)	(0.150)	(0.056)	(0.056)	(0.111)	
η_i: Renter	0.396*	0.604***	-0.209	0.833***	0.167	0.666***	5.086
	(0.227)	(0.227)	(0.454)	(0.118)	(0.118)	(0.236)	
Treatment Effect on η_i							
Homeowner	0.232***			0.141**			2.387
	(0.086)			(0.062)			
Renters	0.033			-0.331***			2.855
	(0.251)			(0.128)			
Homeowner vs Renters	0.199			0.472***			
	(0.267)			(0.146)			
Hansen's J statistic (dof=9)		15.333			36.072		
p-value		*0.168*			*0.000*		
Test for exclusion on slope		35.967			23.793		
p-value		*0.175*			*0.739*		
Test for linear restriction		15.550			26.238		
p-value		*0.159*			*0.006*		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

C.8 Estimates from sub-sample of household composition

This section replicates the main results for a sub-sample of the households, namely, households with 2 adults and 2 children aged below 12.

Table C24: Estimates of structural parameters and treatment effects on structural parameters (Sub-sample: Households with 2 children aged below 12)

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.074***	0.053***	0.021	0.048***	0.072***	-0.024	3.120
	0.017	0.012	0.028	0.008	0.013	0.020	
$\alpha_i(z=0)$: Renter	0.109***	0.051***	0.058	0.053***	0.086***	-0.033	3.139
	0.033	0.014	0.046	0.009	0.018	0.025	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.038**	0.078**	-0.116	-0.001	0.014	-0.016	7.783
	0.015	0.035	0.044	0.008	0.016	0.024	
Renter	0.002	-0.001	0.003	0.018	-0.024	0.042	0.050
	0.074	0.029	0.103	0.019	0.020	0.037	
Resource Shares (η_i)							
η_i: Homeowner	0.479***	0.521***	-0.042	0.603***	0.397***	0.205	6.713
	0.079	0.079	0.158	0.063	0.063	0.126	
η_i: Renter	0.396***	0.604***	-0.208	0.624***	0.376***	0.248*	8.095
	0.108	0.108	0.217	0.073	0.073	0.146	
Treatment Effect on η_i							
Homeowner	0.245***			0.060			14.435
	0.085			0.070			
Renters	-0.221			-0.122			0.114
	0.318			0.124			
Homeowner vs Renters	0.466			0.182			
	0.321			0.127			
Hansen's J chi2 (dof=9)		5.255			13.325		
p-value		0.73			0.101		
Test for exclusion on slope		35.333			32.816		
p-value		0.194			32.816		
Test for linear restriction		5.151			9.509		
p-value		0.741			9.509		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

C.9 Estimates from sub-samples for distributional analysis

This section replicates the main results for different sub-samples of the income distribution. We divide the households into lower and upper 50% of household expenditure, and also look at households with income level less than CAD90,000 in the previous year.

Table C25: Estimates of structural parameters and treatment effects on structural parameters (Sub-sample: Bottom 50% of expenditure)

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.039**	0.088**	-0.048	0.029***	0.089***	-0.060*	0.513
	0.017	0.035	0.051	0.007	0.025	0.031	
$\alpha_i(z=0)$: Renter	0.073**	0.069**	0.004	0.033***	0.110***	-0.077**	1.493
	0.033	0.032	0.063	0.008	0.032	0.039	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.024	0.143	-0.166	-0.004	0.018	-0.021	1.394
	0.019	0.225	0.238	0.009	0.038	0.046	
Renter	-0.004	0.005	-0.009	0.019	-0.043	0.062	0.204
	0.053	0.053	0.106	0.012	0.034	0.045	
Resource Shares (η_i)							
η_i: Homeowner	0.651***	0.349**	0.301	0.711***	0.289***	0.422**	0.279
	0.143	0.143	0.285	0.085	0.085	0.170	
η_i: Renter	0.468***	0.532***	-0.064	0.726***	0.274***	0.453***	2.636
	0.182	0.182	0.363	0.087	0.087	0.174	
Treatment Effect on η_i							
Homeowner	0.217			0.033			1.308
	0.197			0.114			
Renters	0.019			-0.158			0.486
	0.283			0.124			
Homeowner vs Renters	0.198			0.192			
	0.293			0.138			
Hansen's J chi2 (dof=9)		8.4			12.35		
p-value		0.494			0.194		
Test for exclusion on slope		20.857			27.304		
p-value		0.864			27.304		
Test for linear restriction		8.181			15.07		
p-value		0.516			15.07		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

Table C26: Estimates of structural parameters and treatment effects on structural parameters (Sub-sample: Top 50% of expenditure)

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner				0.060***	0.083***	-0.024	-13.495
				0.016	0.026	0.041	
$\alpha_i(z=0)$: Renter				0.106**	0.058***	0.048	-4.995
				0.047	0.021	0.068	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.010	0.025	-0.035	-0.010	0.025	-0.035	N/A
	0.017	0.032	0.048	0.017	0.032	0.048	
Renter				0.020	-0.007	0.027	-0.065
				0.079	0.028	0.106	
Resource Shares (η_i)							
η_i: Homeowner	-0.108	1.108***	-1.217	0.583***	0.417***	0.166	5.053
	0.332	0.332	0.663	0.124	0.124	0.248	
η_i: Renter	-0.102	1.102**	-1.203	0.387**	0.613***	-0.227	0.848
	0.559	0.559	1.117	0.176	0.176	0.351	
Treatment Effect on η_i							
Homeowner	0.905**			0.115			5.751
	0.356			0.135			
Renters	-0.098			-0.055			0.003
	0.840			0.246			
Homeowner vs Renters	1.003			0.171			
	0.773			0.224			
Hansen's J chi2 (dof=9)		27.789			28.115		
p-value		0.001			0.001		
Test for exclusion on slope		31.487			24.861		
p-value		0.343			24.861		
Test for linear restriction		16.523			17.831		
p-value		0.057			17.831		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.

IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

Table C27: Estimates of structural parameters and treatment effects on structural parameters (Sub-sample: Income last year is below CAD90,000)

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.019	0.169	-0.150	0.035***	0.076***	-0.041*	0.903
	0.018	0.240	0.257	0.008	0.018	0.024	
$\alpha_i(z=0)$: Renter				0.039***	0.092***	-0.052*	-23.429
				0.008	0.023	0.029	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.003	0.007	-0.010	-0.001	-0.003	0.003	0.006
	0.027	0.373	0.399	0.008	0.019	0.026	
Renter				0.012	-0.028	0.040	-1.564
				0.010	0.023	0.031	
Resource Shares (η_i)							
η_i: Homeowner	0.940***	0.060	0.879	0.651***	0.349***	0.302**	1.551
	0.244	0.244	0.487	0.075	0.075	0.151	
η_i: Renter	0.903***	0.097	0.806	0.674***	0.326***	0.347**	0.683
	0.289	0.289	0.579	0.082	0.082	0.165	
Treatment Effect on η_i							
Homeowner	-0.349			-0.027			0.411
	0.510			0.089			
Renters	-0.257			-0.115			0.174
	0.355			0.097			
Homeowner vs Renters	-0.092			0.088			
	0.520			0.092			
Hansen's J chi2 (dof=9)		9.93			25.874		
p-value		0.356			0.002		
Test for exclusion on slope		15.05			31.172		
p-value		0.985			31.172		
Test for linear restriction		7.462			14.406		
p-value		0.589			14.406		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

C.10 Clustering standard errors using province, number of children, year and quarter

In this section, we provide the results of clustering standard errors by province, number of children, year and quarter, instead of month.

Table C28: Estimates of structural parameters and treatment effects on structural parameters (Standard errors clustered by province, number of children, year and quarter)

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.074***	0.054***	0.020	0.050***	0.071***	-0.021	3.778
	0.014	0.009	0.022	0.006	0.009	0.015	
$\alpha_i(z=0)$: Renter	0.086***	0.062***	0.024	0.054***	0.085***	-0.031	2.691
	0.021	0.014	0.034	0.007	0.013	0.019	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.036***	0.059***	-0.096	-0.009	0.021*	-0.030*	4.904
	0.014	0.019	0.030	0.006	0.012	0.018	
Renter	0.010	-0.005	0.015	0.017*	-0.021	0.038*	0.049
	0.035	0.020	0.054	0.010	0.014	0.023	
Resource Shares (η_i)							
η_i: Homeowner	0.462***	0.538***	-0.077	0.579***	0.421***	0.158	6.679
	0.067	0.067	0.133	0.049	0.049	0.098	
η_i: Renter	0.450***	0.550***	-0.100	0.605***	0.395***	0.209*	4.247
	0.095	0.095	0.190	0.058	0.058	0.116	
Treatment Effect on η_i							
Homeowner	0.247***			0.098*			7.774
	0.078			0.056			
Renters:	-0.029			-0.103			0.294
	0.156			0.075			
Homeowner vs Renters	0.276*			0.201***			
	0.143			0.069			
Hansen's J chi2 (dof=9)		13.978			20.503		
p-value		0.123			0.015		
Test for exclusion on slope		35.664			25.341		
p-value		0.184			25.341		
Test for linear restriction		16.513			19.641		
p-value		0.057			19.641		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and quarter in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

C.11 Education level of male and female adult in household

In this section, we include controls for education level of the male and female adult in the household. We also provide results for a sub-sample of households with adults acquiring at most bachelor's degree, that is, households with lower education levels.

Table C29: Estimates of structural parameters and treatment effects on structural parameters (Added control for education of male and female)

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.082***	0.050***	0.032	0.038***	0.078***	-0.040	2.597
	0.029	0.017	0.045	0.009	0.020	0.027	
$\alpha_i(z=0)$: Renter	0.082***	0.068***	0.013	0.044***	0.089***	-0.045	1.787
	0.030	0.025	0.053	0.010	0.024	0.033	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.037*	0.067*	-0.104	-0.007	0.037	-0.044	2.562
	0.020	0.035	0.042	0.007	0.025	0.030	
Renter	0.016	-0.009	0.025	0.016	-0.024	0.040	0.000
	0.046	0.029	0.074	0.013	0.023	0.034	
Resource Shares (η_i)							
η_i: Homeowner	0.436***	0.564***	-0.127	0.646***	0.354***	0.292*	4.987
	0.129	0.129	0.258	0.089	0.089	0.177	
η_i: Renter	0.517***	0.483***	0.034	0.648***	0.352***	0.297	1.445
	0.147	0.147	0.294	0.098	0.098	0.196	
Treatment Effect on η_i							
Homeowner	0.308***			0.127*			7.224
	0.101			0.075			
Renters	-0.143			-0.111			0.024
	0.238			0.111			
Homeowner vs Renters	0.451**			0.238**			
	0.228			0.099			
Hansen's J chi2 (dof=9)		25.966			16.779		
p-value		0.007			0.115		
Test for exclusion on slope		33.99			30.87		
p-value		0.24			30.87		
Test for linear restriction		18.892			19.304		
p-value		0.063			19.304		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.

IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.

Table C30: Estimates of structural parameters and treatment effects on structural parameters (Sub-sample of male and female with at most bachelor's degree, and adding control for education of male and female)

	IV estimates			OLS estimates			
	(1) female	(2) male	(3) diff	(4) female	(5) male	(6) diff	(7) H-stat
Preferences ($\alpha_i(z=0)$)							
$\alpha_i(z=0)$: Homeowner	0.110**	0.043**	0.067	0.058***	0.060***	-0.002	1.129
	0.052	0.017	0.068	0.016	0.016	0.031	
$\alpha_i(z=0)$: Renter	0.107**	0.059**	0.048	0.063***	0.072***	-0.009	0.849
	0.050	0.024	0.073	0.017	0.020	0.035	
Treatment Effect on $\alpha_i(z=0)$							
Homeowner	-0.074	0.097*	-0.171	-0.025**	0.064**	-0.090**	1.266
	0.045	0.057	0.064	0.012	0.033	0.036	
Renter	0.042	-0.015	0.057	0.005	-0.009	0.014	0.085
	0.127	0.031	0.156	0.019	0.019	0.037	
Resource Shares (η_i)							
η_i: Homeowner	0.417***	0.583***	-0.165	0.495***	0.505***	-0.009	0.556
	0.153	0.153	0.306	0.111	0.111	0.223	
η_i: Renter	0.439**	0.561***	-0.123	0.522***	0.478***	0.045	0.419
	0.173	0.173	0.347	0.115	0.115	0.231	
Treatment Effect on η_i							
Homeowner	0.413***			0.275***			2.601
	0.123			0.088			
Renters	-0.309			-0.032			0.613
	0.378			0.131			
Homeowner vs Renters	0.722*			0.307**			
	0.376			0.121			
Hansen's J chi2 (dof=9)		25.16			26.75		
p-value		0.009			0.005		
Test for exclusion on slope		30.427			32.284		
p-value		0.393			32.284		
Test for linear restriction		17.176			24.062		
p-value		0.103			24.062		
Instrument for log of budget		Yes (with log of income)			No		

Robust standard errors clustered at province, the number of children, year and month in parentheses *** p<0.01, ** p<0.05, * p<0.1.
IV estimates refer to GMM estimation instrumenting household budget/expenditure with income. OLS estimates refer to GMM estimation without instrument for household budget.