Online Appendix for 'Less is More': Consumer Spending and the Size of Economic Stimulus Payments

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A Survey Questions

The question asked for the one month temporary shock in the SHIW wave of 2010 is:

> *Suppose you suddenly receive a reimbursement equal to how much your household earns in one month. Which part of this sum would you save and how much would you spend? Give the percentage that would be saved and the percentage what would be spent.*

Notice that the sum of both percentages must add to 100 in order to enforce consistency.

The question asked for the one year temporary shock in the SHIW wave of 2012 is:

> *Suppose you receive an unexpected inheritance equal to how much your family earns in one year. In the next 12 months, how would you use this unexpected sum? Consider 100 to be the total, divide it in these three types of possible uses:*
>
> - *Amount saved for future expenses or to repay debts*
> - *Amount used within the year in goods or services that last in time (precious items, cars or other transport means, home renovation, furniture, dentist, et cetera) that otherwise you would not have bought or that you were waiting to buy*
> - *Amount used within the year in goods or services that do not last in time (food expenses, clothing, travel, vacations, etc) that usually you would not have bought*

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We calculate the MPC in this question by summing the durable and non durable purchases. All expenses must add to 100. We do a number of sensitivity checks in Section D to ameliorate concerns regarding the different wordings between the different questions. To construct the measure of non-essential consumption we take the spending in food consumed at home and away from home and construct the share of food spending on food away from home. The two questions are:

> *What was the average monthly expense for food consumption only at home? Consider the expense for food staples in supermarkets and similar establishments.*
> *Average monthly expense for food consumption at home ___€per month in 2012*

> *What was the average monthly expense for food consumption only away from home? Consider the expense for meals eaten regularly away from home.*
> *Average monthly expense for food consumption away from home ___€per month in 2012*

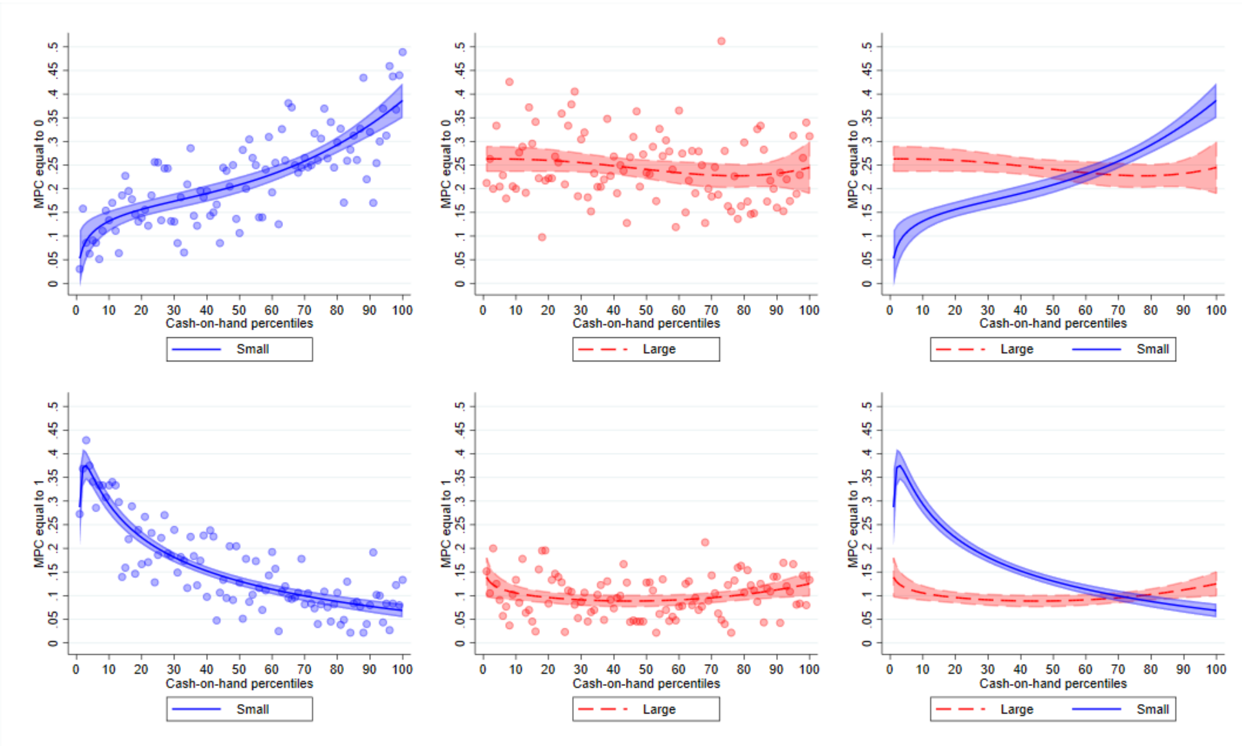
B Further empirical results

In this Appendix, we present additional empirical results on our MPC measures.

Extensive margins. In Figure B.1, we present the shares of households with MPC equal to zero (top panels) and with MPC equal to zero (bottom panels) along the cash-on-hand distribution for both small and large shocks. This figure is the counterpart of Figure 2. The first column reveals that both extensive margins help to explain the response to small shocks: among poorer households, the fraction of households spending nothing is low, about 10%, the share of those spending all is large, around 35%. The opposite pattern appears among affluent households, with a large share (up to 50%) spending nothing and a small share spending everything (about 10%). On the other hand, we do not find a particular pattern on the extensive margin for the large shock in the second column. That is, the fraction of household spending nothing or everything is constant across the cash-on-hand distribution. If anything, it is interesting to note a slightly higher fraction of households spending everything at the top of the distribution, in line with the non-homothetic preference model. As it is the case for the MPC values in Figure 2, the two lines for shocks of different size cross: the number of affluent households that spend nothing out of the large shock is lower than its small shock counterpart. Similarly, we note a larger fraction of affluent households who spend everything out of the large shock. These results point to the fact that the extensive margins in MPC responses behave similarly to the overall response.

Intensive margin. Figure B.2 presents the complementary analysis to Figures 2 and B.1 for the intensive margin of MPC responses. It plots the average MPC conditioning on the answer being strictly greater than zero. The first panel plots the MPC out of a small (one month) shock, the second out of a large (one year) shock, and the third plots the fitted line of both MPCs together for comparison. The chart reveals that for a small shock, low cash-on-hand households exhibit a high MPC, almost 0.8 for the first decile. The MPC declines up to 0.53 for households with the highest cash-on-hand. On the other hand, the MPC out of a large shock does not vary much across the liquid wealth distribution, hovering around 0.59. The main result in Figure 2 carries through when conditioning to strictly positive MPCs:

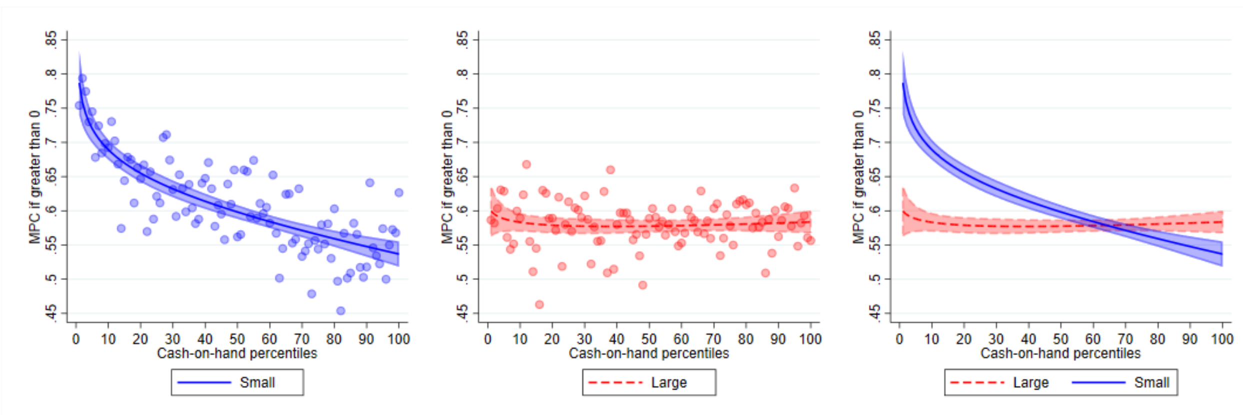
Figure B.1: The distribution of MPC equal to 0 or 1 by cash-on-hand percentiles for small income gains (in blue) and large income gains (in red)



Notes: The plot shows the proportion of MPC equal to 0 and 1 by each cash-on-hand percentile in 2010 and fit a fractional polynomial with 95% confidence bands based on the percentile bins. Cash-on-hand is the sum of disposable income and financial assets. The first column plots the MPC out of a small gain, the second one out of a large gain, the third one plots both fractional polynomials together. The first row plots the results for the fraction of MPCs being equal to 0 and the second row for being equal to 1. The sample consists of households present in both surveys.

poor households have a higher MPC out of the small shock while the opposite is true for rich households. In particular, among affluent households, the $MPC|MPC > 0$ increases with the shock size, consistent with a model with non-homothetic preferences and non-essential spending. This compares favourably with theories of non-convex adjustment costs, which predict that, conditional to a positive response, the MPC should decrease with shock size, independently of household resources.

Figure B.2: The distribution of MPC conditioned on the MPC being greater than 0 by cash-on-hand percentiles for small income gains (in blue) and large income gains (in red)



Notes: The plot shows the average MPC conditioned on the MPC being strictly greater than 0 by each cash-on-hand percentile in 2010 and fit a fractional polynomial with 95% confidence bands based on the percentile bins. Cash-on-hand is the sum of disposable income and financial assets. The first column plots the MPC out of a small gain, the second one out of a large gain, the third one plots both fractional polynomials together. The sample consists of households present in both surveys.

C MPC across U.S. economic payments of different size: April 2020 versus January 2021

Our empirical results are based on questions asked to a representative sample of Italian households about their spending under hypothetical scenarios that vary the size of their income gain. A possible concern is that our estimates may not apply to the actual spending decisions of families in other countries. While it is always hard to ameliorate external validity concerns of this kind, we report here the estimates on actual spending by Chetty, Friedman and Stepner (2021) about the MPCs of American households along the income distribution for payments of different sizes.

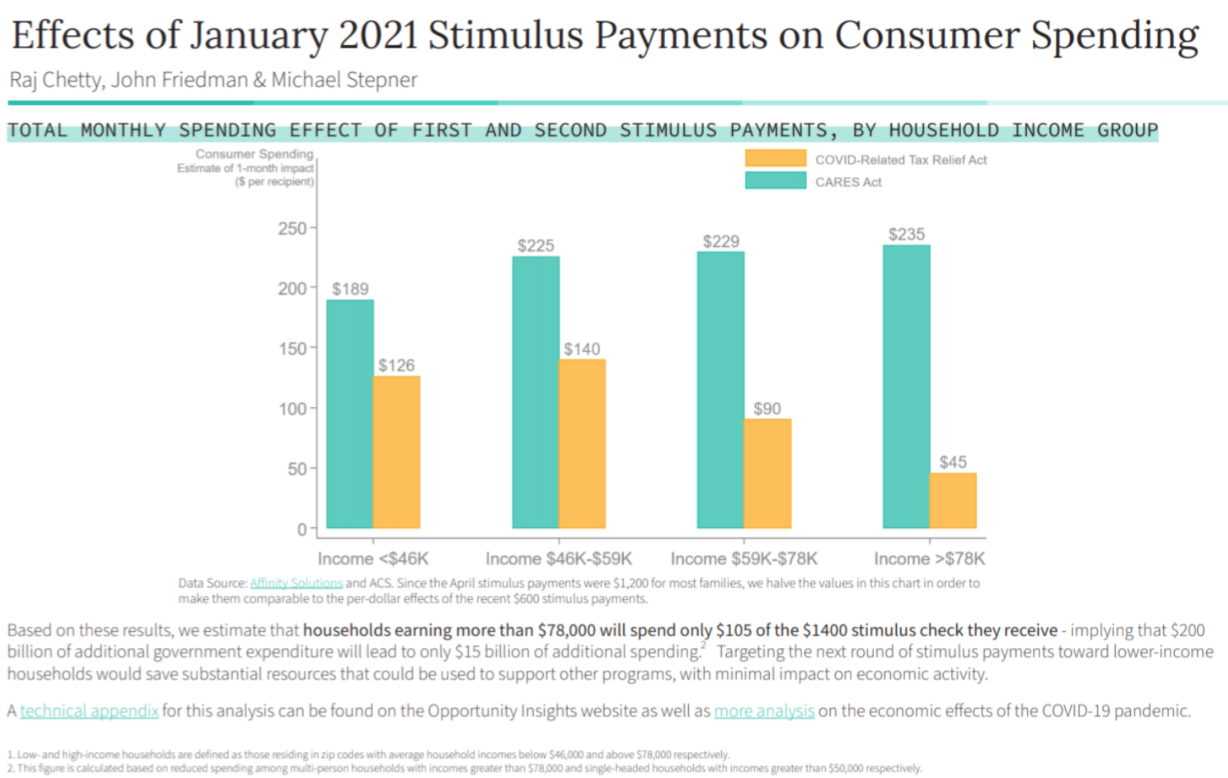
The two temporary income shocks refer to the economic payments disbursed by the U.S. government in April 2020 as part of the CARES Act and in January 2021 through the COVID-related Tax Relief Act, respectively. The size of the April 2020 payment (in green in Appendix Figure C.1) was around 1200$ per household while the one of January 2021 (in yellow) was about 600$. The vertical axis reports the average amount spent out of each payment, normalized by its amount for comparability across shock size. The horizontal axis refers to different income groups, from lowest to highest. A main result of the analysis in Chetty, Friedman and Stepner (2021) is that, consistent with our empirical findings, the MPC tends to decrease with income when the gain is small but it increases with income when the gain is large. Furthermore, also among affluent households in the U.S., the MPC out of the larger gain (of April 2020) is significantly larger than the MPC out of the smaller gain (of January 2021).[1]

Admittedly, this comparison can only be suggestive and it is worth mentioning two caveats. First, the evidence in Chetty, Friedman and Stepner (2021) hints that the MPC may not vary significantly with shock size among poor American families, while we document a larger MPC out of the smaller gains among Italian households with low cash-on-hand.

[1] As detailed in Section II.A and Appendix B of Chetty, Friedman and Stepner (2024), their evidence on MPC heterogeneity out of the April 2020 U.S. payments is based on daily national consumer spending series constructed using Affinity Solutions Inc, an aggregator of consumer credit and debit card data capturing nearly 10% of debit and credit card spending across U.S. zip codes. Chetty, Friedman and Stepner (2021) show that their estimated MPCs across zip code income groups align remarkably well with the MPC heterogeneity on household-level spending documented by Cox et al. (2020) using high-frequency household-level bank account data.

Second, the larger gain in our sample is 12 times as large as the smaller gain whereas the ratio of the two U.S. ESPs is only about 2. While it is hard to identify what size of income gain may trigger a different spending behaviour on actual data, we interpret our evidence as potentially indicative of a broader pattern across shocks of different size and conjecture that the large gain difference simulated in the SHIW questions has probably been instrumental to elicit a different spending behaviour under the hypothetical scenarios, for which is key that the same household clearly understands that one shock is significantly larger than the other.

Figure C.1: *MPC* differences across U.S. economic payments of different sizes.



Notes: Full description of the data, research design and estimates in Chetty, Friedman and Stepner (2021) can be found here: https://opportunityinsights.org/wp-content/uploads/2021/02/secondstimulus_tech_appendix.pdf

D Sensitivity Analysis

In this Appendix, we assess the sensitivity of our empirical findings to a wide array of robustness exercises.

Extended samples summary statistics. Table D.1 displays the same summary statistics as in Table 1 expect that here we do not restrict the sample to only households whom we observe in both waves. Rather, we focus on all respondents in each wave, independently on whether they also participated in the other wave. A comparison of the means and distributions across the two tables reveals that the characteristics of the households in the restricted sample are very similar to those in the full sample.

Durables vs non-durables. Of independent interest is whether our results may be driven by a specific sub-category of spending. Unfortunately, the question about non-durables and durables was only asked in the 2012 wave and therefore in this section we will be able to report results only for the case of large shocks. In Figure D.1, we present the MPC distributions by cash-on-hand percentiles. The first panel reproduces the MPC for total expenditure as in the second panel of Figure 2. The second (third) panel shows the MPC only for non-durable (durable) expenditure. The chart shows that the average MPC out of durables is higher than for non-durables, with the former hovering around 0.26 and the latter around 0.19. Furthermore, the overall patterns in each sub-categories is similar to the one for total spending: the MPC does not vary much with cash-on-hand and, if anything, it mildly increases along this distribution.

The split between durable and non-durable spending can also be used to gauge our mechanism with non-homothetic preferences if durable expenditures are more tilted towards non-necessities than durable expenditures. To this aim, we first establish that durable spending is a good proxy of non-essential spending. in Figure D.2, we show how the probability of having positive spending on durables is positively related to the cash-on-hand distribution, in a parallel to Figure 2 for eating out share. Moving from the lowest percentiles of cash-on-hand to the highest ones, we move from a probability of about 25% to above 60%.[2] Having

[2]The SHIW asks for durable purchases as valuables, cars, other means of transport, furniture, furnishings,

established that durable spending can used as a further proxy for non essential spending, we now turn to see if it can have an effect on MPCs. In Table D.2, we show two sets of regressions that are parallel to Table 3. In columns 1 to 4 we show how the dummy that takes value one for durable spending is related to MPCs unconditionally. In columns 4 to 8 we do the same regressions with cash-on-hand deciles and demographic controls. The MPCs we explore pertain to the 2012 question for large gains, as it has the split between durables and non-durables. Columns 1 and 5 use the total MPC used in the main specifications. Columns 2 and 6 present the results for the MPC on non-durables. Columns 3 and 7 show the results for the MPC on durables. Finally, columns 4 and 8 present the results for the difference of these MPCs: durables MPC less non-durable MPC.

First of all, we can see that households who spend on durables have higher MPCs, with similar point estimates irrespective of whether we include or not controls. The total expenditure MPC is 0.058 higher for those who spend on durables (column 5). We can see this pattern especially for the MPC on durables, there the durables MPC is 0.046 higher for those who spend anything on durables. The non-durables MPC is also higher for those how spend on non-durables, but less so in terms of magnitudes. This implies that the difference between the two MPCs is positive at 0.018, although not strongly significant. This exercise shows that we can use durable expenditures as an additional proxy for non-essential expenditures and that results are particularly important for the MPCs of durables spending.

Understanding the questions. A potential problem with survey data is that households might misinterpret the question they are asked. A benefit of the SHIW is that at the end of each questionnaire the interviewer must assess what he or she judges to be the general level of understanding of the interviewee. The SHIW asks the interviewer *what is your judgment on the level of comprehension of the questions by the interviewee?* on a scale from 1 to 10, with 1 being the worst level of understanding and 10 the maximum. Armed with this useful feature of the SHIW, we rerun the specifications of the last three columns of Table 2, conditioning on households who have a very good understanding the the questions, as measured by a grade at least as high as 8. The first three columns of Table D.3 present the results of this exercise.

household appliances, and sundry equipment. We take a value of one is a household has purchased any durable.

Column 3 mirrors column 6 of Table 2: it shows the coefficients on the decile of cash-on-hand in a regression where the dependent variable is the difference in MPCs between a small and large shock and the controls include demographic variables as well as the change in log real cash-on-hand between 2012 and 2010. The results are very similar to the baseline in Table 2, if not stronger for the top deciles of cash-on-hand distribution.

Financial literacy. A related question is whether households may struggle with some of the questions because they are not financially literate. Here again, we benefit from the richness of the SHIW questionaire. In the 2010 wave, the interview contains three questions on financial literacy. The questions check if the interviewee understands the difference between a fixed or variable rate mortgage, the effect of inflation on savings, and the effects of diversification on risks. In the next exercise, we condition on households who answered correctly to at least two of these questions. Columns 4 to 6 of Table D.3 presents the results with this cut of the data. The specifications are the same as in the previous three columns of Table 2. In column 6, we note that also among financially literate households it emerges the same pattern that we have documented for unrestricted sample: poorer households exhibit a higher MPC out of the small shock (a difference of 0.19 in the first decile), whereas the opposite is true for affluent household (a difference of −0.07 in the highest decile of cash-on-hand). These are comparable with values of 0.18 and −0.07 we have obtained in the baseline specification of Table 2 column 6.

Household debt. Two potential issues regarding our results concern the role of household debt. First of all, the literature on the wealthy hand-to-mouth points to the fact that households with high level illiquid wealth (e.g. mortgage debt) can display high MPCs. It is worth noting that the wealthy hand-to-mouth mechanism cannot explain our main results as this theory predicts a higher MPC out of the smaller shocks. The reason is that a bigger shock makes it more likely to overcome the cost of portfolio rebalancing and thus leads to a reoptimization of the household consumption plans. The second reason for excluding debtors pertains to the wording of the survey questions that elicit the MPC. In the 2010 wave (for a one month shock), the question asks the fraction of the disbursement that would be spent and that would be saved. On the other hand, in the 2012 wave (for a one year shock), the question makes explicit that saving includes also repaying debts.[3] One might worry that households did not fully understand that in the 2010 question saving included also debt repayments. To ameliorate this concern, we run our baseline regressions excluding households who have any debt. It is useful to point out that relatively low share of households have debt in Italy: in our main regression sample, this is around a quarter. Columns 7 to 9 of Table D.3 present the results conditioning on household with no debt. The specification is the same as the columns 4 to 6 of Table 2, that is, we include demographic controls and the log real change in cash-on-hand between 2012 and 2010 in the regression with the difference in MPCs as dependent variable. Excluding debtors does not alter our main results.[4] Households on the first and second cash-on-hand deciles exhibit a higher MPC out of the small shock than out of the large one, with 0.19 and 0.12 point estimates, respectively (these compare to 0.18 and 0.11 in column 6 of Table 2). At the other side of the liquid wealth distribution, households in the ninth and tenth deciles exhibit a value for the difference in MPC of −0.09 and −0.05, respectively (these compare to −0.07 and −0.07 in column 6 of Table 2). We can conclude that the presence of wealthy hand-to-mouth or any possible misunderstanding of the question on debt repayments does not affect our conclusions.

Heterogeneity in risk-aversion and discount factor. Households differ in many ways and one important dimension if their tolerance for risk and discount factor. This is important in our context as this preference heterogeneity can be related to the MPCs and horizons of households and it could potentially alter our conclusions. Moreover, the time horizon for spending out of the large shock is one year, no spending reference period is specified in the question about the one month income gain. Therefore, households with higher discount factor and higher risk aversion could be more likely to interpret the 2010 question on the small shock as pertaining to a shorter horizon than a year. While we do find that risk aversion and the discount factor are related to affluence levels and to MPC the overall results on the relationship between cash-on-hand and the MPC of different sizes remain present and strong. We measure risk aversion and impatience with two dummy variables which take

[3] The framing for the amount saved is: *Amount saved for future expenses or to repay debts.*

[4] As an additional experiment, we tried to control for whether an household has debt rather than excluding debtors and the results are very similar to the baseline presented in Figure 2. They are available upon request.

value one for more risk averse households and more impatient households, respectively. In Figure D.3, we show how cash-on-hand varies with the two measures risk aversion. We show the share of households who are risk averse and impatient by decile of cash-on-hand and plot a fit linear of these shares. Poorer households are more risk averse and more impatient. Both measure decline strongly with cash-on-hand. More than 55% of households are risk averse by our measure at the first decile of cash-on-hand, whereas less than 30% are among the richest households. Table D.4 presents the counterpart of Table 2 with these controls. Specifically, we replicate columns 4 to 6 of Table 2 in 3 sets. Columns 1 to 3 add the control for risk aversion, columns 4 to 6 add the control for impatience, and columns 7 to 9 add both controls in the same regression. First of all, notice that more risk averse households have a lower MPC, in line with the predictions of a non-homothetic model with risk: households who have their necessities covered are less risk averse and have a higher MPC. Furthermore, notice how the effect is negative for both MPCs, but is higher for the large shock. Turning to impatience, we can see how more impatient households have a higher MPC for a small shock. The coefficient for the large shock is insignificant. By looking at columns 3, 6, and 9 we can see how our results on the differential response of rich to poor people to shocks of different magnitude: poor people have a higher MPC out of a small shock, whereas the opposite is true for rich households. Table D.5 presents the same results as Table 2 where we condition on households who are not very risk averse or very impatient. Again, we replicate columns 4 to 6 of Table 2 with the two different cuts. In columns 1 to 3 we condition on households who do not exhibit high risk aversion and in columns 4 to 6 we condition on those households who do not exhibit high impatience. In line with the results of Table D.4, both the small and large MPCs are lower for these households, either with low risk aversion in columns 1 and 2 or with low impatience in columns 4 and 5. More interestingly in this experiment, the difference in MPCs exhibit a similar behavior to the overall sample. For the case of no high risk aversion in column 3, the difference goes from 0.17 in the first decile to -0.07 in the highest decile. Similarly, for no high impatience in column 6 the difference goes from 0.16 to -0.09. Both these results are quite close with 0.18 to -0.7 in the baseline regression in column 6 of Table 2. This implies that it is unlikely that the question of a small shock has a significantly different reference period than the question of a large shock. If it were the case, one would have expected to see a change in the difference between responses, when we condition on households who are more likely to have a longer reference period (the ones without high risk aversion or high impatience).

Errors non-normality. In the baseline specification of Table 2, we used a Tobit estimator as the MPC variable is censored from below, at 0, and from above, at 1, and the change in MPC variable is censored at -1 and 1. However, the Tobit model relies on the error being normal and homoskedastic for the estimates to be consistent. For this reason, Table D.6 shows the same specification as in Table 2, except that we use OLS with heteroskedasticity robust standard errors. It is reassuring that the results are almost identical to the Tobit case. In the sixth column, where we regress the change in MPC across the two shocks with the deciles of cash-on-hand and with all the controls we can see how from the 8^{th} decile the difference is negative and statistically significant. We move from a difference of 0.17 for the first decile and arrive to -0.07 for the tenth. This compares to coefficients in the same specification that move from 0.18 to -0.07 from the first to the tenth decile with the Tobit estimator. As a side note on coefficient interpretation, with the Tobit estimator the coefficients can be directly interpreted as marginal effects on the latent variable (here the difference in MPC if it were not censored). Therefore, a 0.18 coefficient for the first decile implies that the poorest household have an uncensored MPC 18% higher for small shocks than for large shocks. This is what a researcher is actually interested when interpreting results and when comparing the reduced form estimates with structural models that do not embed censoring. Furthermore, if one were interested in the marginal effects on the censored variable (here the observed censored difference in MPC), for a specific household, we would be scaling all coefficients by the same factor depending on the probability of being at the cutoffs. This implies that we would not be able to interpret directly the absolute magnitude of each coefficient, but we can still interpret the sign, the significance, and, most importantly, the relative magnitude of the different coefficients directly.[5]

Income versus financial wealth. Cash-on-hand conveniently summarizes financial resources readily available to households. As it is constructed by summing income and financial

[5]For a textbook treatment see chapter 16 of Cameron and Trivedi (2005).

assets, it is interesting to study separately the role of each component. This is relevant, as in a recent paper, Crawley and Kuchler (2023) show on Danish data that liquid wealth is a stronger predictor than income for the cross-section of MPCs out of small income gains. To study separately the role of financial assets and income, we proceed with a two way crossing between the two variables: conditioning on each financial asset quintile, we study the MPCs across each income quintile; and vice-versa, conditioning on each income quintile, we study the MPCs across each financial asset.[6] In Table D.7, we show the results of this experiment. The top panel shows the MPC out of a small shock, the middle panel reports the MPC out of a large shock, and the bottom panel displays the difference. In columns 1 to 5, we condition on each financial asset quintile while in columns 6 to 10 we control for each income quintile. A few results stand out. First, for the small shock MPC, we corroborate the result in Crawley and Kuchler (2023): most of the variation in MPCs occurs across financial asset quintiles conditioning on a given income quintile. In other words, a household with more financial assets has a lower MPC out of a small income shock than a household with less financial assets, even if they belong to the same income bin (columns 6 to 10 in the top panel). However, our results also show a role for income, especially for the large shock. Columns 1 to 5 in the middle panel reveal that conditioning on a given financial asset quintile, a household with more income has a higher MPC out of a large shock. We find this result consistent with our non-homothetic preferences explanation as income might be a better proxy for lifetime wealth than financial assets. Finally, when we look at the difference across MPCs in the bottom panel, we find that both dimensions of income and financial assets are important: the top left corner (low income/low financial assets) exhibit positive coefficients, whereas the bottom right corner (high income/high financial assets) display negative point estimates.

Extended samples - all households present in each wave. We address issues related to the sample selection in Table D.8, where we present results for a Tobit regressions on the whole sample for both MPCs. In odd columns we regress the MPC out of a one month shock measured in 2010 on the cash-on-hand deciles and the demographic controls measured in 2010 for all households present in the SHIW in 2010 for whom we have data. Similarly,

[6]We report each of the two splits because both sets of regressions include demographic controls, and we want to make sure that the choice of the conditioning variables is not driving our results.

in even columns we perform the same regressions on the MPC out of a one year shock measured in 2012 with controls measured in 2012 for all households present in the SHIW in 2012 for whom we have data. This set of regressions does not allow to compare directly for the same household what they responded to the two different questions, but allows us to see if households present in both samples responded differently to the overall population. First of all, we see a negative slope for the small shock from the first to the tenth decile of cash-on-hand both without (column 1) and with (column 3) controls. The magnitudes are similar to those in Table 2, we move from 0.74 to 0.28 without controls here and from 0.74 to 0.27 in the restricted sample and with controls from 0.65 to 0.31 here and from 0.65 to 0.31 in the restricted sample. Similarly, when we compare the large shock we can also see a flat pattern across deciles of the cash-on-hand distribution in this broad sample and in the restricted sample. When we look at demographic controls, most are quite similar in sign, size, and significance; the only ones that stand out are the controls on city size for large shocks (column 4 of Table D.8 and column 5 of Table 2); in the restricted sample these coefficients are all strongly positive, implying that residents in smaller cities have a higher MPC out of large shocks than residents in cities above $500,000$ inhabitants.

Extended samples - 2016 data instead of 2010. A possible issue is whether the results are driven by the particular years, 2010 and 2012, in which the question were asked. With respect to 2012 we cannot do anything as the question on the MPC out of a large shock was asked only that year; however, we can swap 2010 with 2016. In 2016, the exact same question on the MPC out of a small shock was asked as in 2010. This allows us to use 2016 as a robustness check. The wave in 2016 has the additional benefit of having the same question on budget devoted to eating food away from home and at home, allowing us to also assess the robustness of the measure of non-homotheticity in consumption. In Tables D.9 and D.10 we replicate Tables 2 and 3 with 2016 data. The main drawback from this exercise is that the sample size shrinks substantially. The reason is that 2012 and 2016 are two waves apart, with 2014 being in between, increasing attrition. We move from 4524 to 2978 observations. The results from this exercise are very similar to the baseline specification in Table 2, the difference in MPCs goes from positive for low cash-on-hand households to negative for high cash-on-hand households. The magnitude is also quite similar, in column 6, in the first decile we move from 0.18 to 0.09 with the second decile being quite similar from 0.12 to 0.13. The new results on wealthier households remain with the same magnitude, from -0.07 to a even lower -0.09, both significant at the 99% level. The magnitude for other households with a negative coefficient (7th, 8th, and 9th deciles) is quite similar, but we lose significance on a few of these coefficients, possibly due to the lower sample size. In Table D.10 we have even stronger results than in Table 3 as support for the non-homotheticity. Coefficients are higher, with the same pattern emerging. With a small shock, we still cannot detect non homotheticity when we do not control for financial constraints (column 1), we already can with a large shock, where financial constraint matter less (column 2). When we control for the cash-on-hand distribution and for demographic controls we can see that both are positive and statistically significant, with the coefficient for the small shock (column 5) being smaller than the one for the large shock (column 6), in line with the non-homothetic model.

Table D.1: Summary statistics for all households observed in any wave

	2010						2012					
	mean	p10	p25	p50	p75	p90	mean	p10	p25	p50	p75	p90
Cash-on-hand	52.85	9.51	16.98	29.16	53.80	100.96	49.94	8.51	15.14	25.66	47.90	96.65
Net disposable income	23.11	7.05	12.74	19.81	28.07	39.52	21.26	6.38	11.66	18.21	26.01	36.85
Financial assets	29.41	0.00	1.45	7.00	25.68	64.49	28.30	0.00	0.76	5.68	20.97	62.14
Male	0.55	0.00	0.00	1.00	1.00	1.00	0.55	0.00	0.00	1.00	1.00	1.00
Married	0.62	0.00	0.00	1.00	1.00	1.00	0.61	0.00	0.00	1.00	1.00	1.00
Years of education	9.28	5.00	5.00	8.00	13.00	17.00	9.39	5.00	5.00	8.00	13.00	17.00
Family size	2.49	1.00	1.00	2.00	3.00	4.00	2.46	1.00	1.00	2.00	3.00	4.00
Resident in the South	0.32	0.00	0.00	0.00	1.00	1.00	0.33	0.00	0.00	0.00	1.00	1.00
Unemployed	0.04	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00
City size less then 20,000	0.26	0.00	0.00	0.00	1.00	1.00	0.25	0.00	0.00	0.00	0.00	1.00
City size 20,000-40,000	0.18	0.00	0.00	0.00	0.00	1.00	0.18	0.00	0.00	0.00	0.00	1.00
City size 40,000-500,000	0.47	0.00	0.00	0.00	1.00	1.00	0.48	0.00	0.00	0.00	1.00	1.00
City size larger than 500,000	0.09	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00
Marginal Propensity to Consume	0.48	0.00	0.10	0.50	0.80	1.00	0.45	0.00	0.10	0.50	0.70	1.00
Eating outside share							0.11	0.00	0.00	0.05	0.20	0.33
Observations	7940						8138					

Notes: The first 6 columns show 2010 data and the second 6 columns show 2012 data. Each variable is displayed with its mean and the 10th, 25th, 50th, 75th, and 90th percentiles. All households in each wave are present, even if some are not observed in both waves. Cash-on-hand, net disposable income, and financial assets are expressed in 2010 thousands of Euros. Cash-on-hand is the sum of disposable income and financial assets. Eating outside share is the share of food budget spent on food away from home. Marginal Propensity to Consume in 2010 represents the MPC out of a one month income transitory shock, in 2012 out of a one year income transitory shock.

Table D.2: Tobit regression results split by durable and non-durables expenditures.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Total	Non-Dur	Dur	DiffDND	Total	Non-Dur	Dur	DiffDND
Spending on durables	0.055***	0.025**	0.046***	0.018*	0.058***	0.022*	0.046***	0.019*
	(0.015)	(0.011)	(0.012)	(0.011)	(0.016)	(0.011)	(0.012)	(0.011)
I cash-on-hand decile					0.379***	0.055***	0.173***	0.087***
					(0.029)	(0.021)	(0.022)	(0.021)
II cash-on-hand decile					0.383***	0.059***	0.180***	0.078***
					(0.026)	(0.019)	(0.020)	(0.018)
III cash-on-hand decile					0.366***	0.069***	0.161***	0.068***
					(0.025)	(0.019)	(0.020)	(0.018)
IV cash-on-hand decile					0.387***	0.068***	0.195***	0.093***
					(0.024)	(0.017)	(0.018)	(0.017)
V cash-on-hand decile					0.383***	0.065***	0.198***	0.095***
					(0.024)	(0.018)	(0.018)	(0.017)
VI cash-on-hand decile					0.372***	0.074***	0.183***	0.080***
					(0.023)	(0.017)	(0.018)	(0.017)
VII cash-on-hand decile					0.432***	0.108***	0.216***	0.088***
					(0.023)	(0.017)	(0.018)	(0.017)
VIII cash-on-hand decile					0.419***	0.117***	0.195***	0.060***
					(0.023)	(0.017)	(0.018)	(0.017)
IX cash-on-hand decile					0.430***	0.106***	0.221***	0.094***
					(0.024)	(0.017)	(0.018)	(0.017)
X cash-on-hand decile					0.400***	0.096***	0.197***	0.087***
					(0.025)	(0.018)	(0.020)	(0.018)
Observations	4,524	4,524	4,524	4,524	4,524	4,524	4,524	4,524
Demographic Controls	NO	NO	NO	NO	YES	YES	YES	YES

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included in columns 5 to 8. Demographic controls are: age in[18,30], age in(30,45], age in(45,60], male, married, years of education, family size, resident in the South, unemployed, and the real log change in household cash-on-hand between 2012 and 2010. All other controls are measured in 2010. The left hand side variables all pertain to the MPC out of a large (one year) shock. For columns 1 and 5 the MPC is for total expenditures; in columns 2 and 6 is the MPC for non-durable expenditures; in columns 3 and 7 is the MPC for durables expenditures; and finally, in columns 4 and 8 the LHS is the difference in MPC for durable less the MPC for non-durable expenditures. The sample consists of households present in both surveys.

Table D.3: Tobit regression results sensitivity

VARIABLES	(1) Small	(2) Large	(3) Diff	(4) Small	(5) Large	(6) Diff	(7) Small	(8) Large	(9) Diff
I cash-on-hand decile	0.612***	0.342***	0.172***	0.665***	0.375***	0.195***	0.663***	0.362***	0.195***
	(0.042)	(0.038)	(0.037)	(0.040)	(0.038)	(0.036)	(0.033)	(0.033)	(0.031)
II cash-on-hand decile	0.567***	0.326***	0.157***	0.572***	0.350***	0.152***	0.566***	0.386***	0.120***
	(0.039)	(0.036)	(0.034)	(0.038)	(0.036)	(0.034)	(0.029)	(0.029)	(0.027)
III cash-on-hand decile	0.497***	0.330***	0.113***	0.470***	0.334***	0.089***	0.562***	0.367***	0.127***
	(0.036)	(0.033)	(0.032)	(0.034)	(0.032)	(0.030)	(0.029)	(0.030)	(0.027)
IV cash-on-hand decile	0.497***	0.379***	0.085***	0.476***	0.407***	0.048*	0.542***	0.386***	0.100***
	(0.032)	(0.029)	(0.028)	(0.031)	(0.029)	(0.028)	(0.028)	(0.029)	(0.026)
V cash-on-hand decile	0.482***	0.385***	0.067**	0.473***	0.347***	0.091***	0.525***	0.450***	0.048*
	(0.030)	(0.028)	(0.027)	(0.030)	(0.029)	(0.027)	(0.029)	(0.029)	(0.027)
VI cash-on-hand decile	0.401***	0.371***	0.027	0.418***	0.373***	0.036	0.465***	0.397***	0.051*
	(0.029)	(0.027)	(0.025)	(0.028)	(0.027)	(0.025)	(0.028)	(0.028)	(0.026)
VII cash-on-hand decile	0.401***	0.415***	-0.000	0.392***	0.398***	-0.003	0.416***	0.435***	-0.010
	(0.028)	(0.026)	(0.025)	(0.028)	(0.026)	(0.025)	(0.028)	(0.028)	(0.026)
VIII cash-on-hand decile	0.348***	0.433***	-0.053**	0.345***	0.421***	-0.048**	0.359***	0.412***	-0.043*
	(0.027)	(0.025)	(0.024)	(0.027)	(0.025)	(0.024)	(0.027)	(0.027)	(0.025)
IX cash-on-hand decile	0.311***	0.444***	-0.085***	0.344***	0.418***	-0.050**	0.347***	0.469***	-0.089***
	(0.027)	(0.025)	(0.024)	(0.027)	(0.025)	(0.024)	(0.028)	(0.028)	(0.026)
X cash-on-hand decile	0.295***	0.415***	-0.072***	0.302***	0.405***	-0.066***	0.319***	0.399***	-0.054*
	(0.029)	(0.026)	(0.025)	(0.028)	(0.026)	(0.025)	(0.029)	(0.029)	(0.028)
Age in[18,30]	0.003	0.031	-0.018	-0.001	0.014	-0.001	0.092	-0.016	0.069
	(0.068)	(0.062)	(0.059)	(0.067)	(0.063)	(0.060)	(0.070)	(0.072)	(0.066)
Age in(30,45]	0.020	-0.017	0.031	0.026	-0.030	0.042	0.084***	0.026	0.042
	(0.030)	(0.027)	(0.026)	(0.029)	(0.028)	(0.026)	(0.030)	(0.030)	(0.028)
Age in(45,60]	0.059**	-0.015	0.050**	0.061**	-0.028	0.060***	0.104***	0.008	0.063***
	(0.025)	(0.022)	(0.021)	(0.024)	(0.023)	(0.021)	(0.023)	(0.023)	(0.021)
Male	-0.011	-0.024	0.004	-0.007	-0.014	0.002	-0.012	-0.015	0.001
	(0.021)	(0.020)	(0.019)	(0.021)	(0.020)	(0.019)	(0.020)	(0.020)	(0.018)
Married	-0.005	-0.023	0.017	0.020	-0.023	0.032	0.006	0.000	0.008
	(0.027)	(0.024)	(0.023)	(0.026)	(0.025)	(0.023)	(0.025)	(0.025)	(0.023)
Years of education	0.005*	0.008***	-0.002	0.002	0.008***	-0.003	0.007***	0.010***	-0.001
	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Family size	-0.006	-0.006	0.002	-0.011	-0.009	0.001	-0.002	-0.009	0.006
	(0.011)	(0.010)	(0.009)	(0.010)	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)
Resident in the South	0.265***	0.146***	0.078***	0.271***	0.131***	0.098***	0.249***	0.142***	0.081***
	(0.023)	(0.021)	(0.020)	(0.022)	(0.021)	(0.020)	(0.020)	(0.021)	(0.019)
Unemployed	0.010	0.015	-0.025	-0.028	-0.036	0.004	-0.033	-0.002	-0.033
	(0.065)	(0.058)	(0.056)	(0.057)	(0.053)	(0.051)	(0.058)	(0.057)	(0.053)
City size less then 20,000	-0.137***	0.149***	-0.191***	-0.155***	0.104***	-0.167***	-0.161***	0.156***	-0.212***
	(0.039)	(0.036)	(0.034)	(0.039)	(0.037)	(0.035)	(0.038)	(0.039)	(0.035)
City size 20,000-40,000	-0.146***	0.151***	-0.191***	-0.137***	0.138***	-0.180***	-0.158***	0.169***	-0.224***
	(0.041)	(0.038)	(0.036)	(0.041)	(0.039)	(0.037)	(0.040)	(0.040)	(0.037)
City size 40,000-500,000	-0.101***	0.099***	-0.129***	-0.115***	0.051	-0.107***	-0.092**	0.117***	-0.146***
	(0.037)	(0.034)	(0.032)	(0.037)	(0.035)	(0.033)	(0.036)	(0.037)	(0.034)
Observations	3,266	3,266	3,266	3,151	3,151	3,151	3,351	3,351	3,351
Conditioning on Understanding Questions	YES	YES	YES	NO	NO	NO	NO	NO	NO
Conditioning on High Financial Literacy	NO	NO	NO	YES	YES	YES	NO	NO	NO
Conditioning on No Debt	NO	NO	NO	NO	NO	NO	YES	YES	YES

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included. Columns 3, 6, and 9 also adds the real log change in household cash-on-hand between 2012 and 2010. All other controls are measured in 2010. The left hand side in columns 1, 4, and 7 is the MPC out of a small (one month) shock, measured in the 2010 survey; in column 2, 5, and 8 is the MPC out of large (one year) shock, measured in the 2012 survey; in columns 3, 6, and 9 is the difference in MPCs, the MPC out of a small shock less the MPC out of a large shock. The sample consists of households present in both surveys. Columns 1 to 3 condition only on households who the interviewer deemed that understood very well the survey overall (grade 8 or higher in a scale that goes from 1 to 10). Columns 4 to 6 condition only on households who are financially literate (answered correctly at least 2 of the 3 questions asked to gauge it). Columns 7 to 9 condition on household who do not have any debt.

Table D.4: Tobit regression results with controls for risk aversion and impatience.

VARIABLES	(1) Small	(2) Large	(3) Diff	(4) Small	(5) Large	(6) Diff	(7) Small	(8) Large	(9) Diff
Risk Aversion	-0.043***	-0.125***	0.064***				-0.050***	-0.125***	0.059***
	(0.016)	(0.015)	(0.014)				(0.016)	(0.015)	(0.014)
Impatience				0.113***	-0.018	0.091***	0.118***	-0.004	0.085***
				(0.021)	(0.020)	(0.019)	(0.021)	(0.020)	(0.019)
I cash-on-hand decile	0.655***	0.380***	0.178***	0.635***	0.371***	0.171***	0.639***	0.380***	0.166***
	(0.030)	(0.028)	(0.027)	(0.030)	(0.028)	(0.027)	(0.030)	(0.028)	(0.027)
II cash-on-hand decile	0.548***	0.381***	0.112***	0.537***	0.376***	0.109***	0.539***	0.382***	0.106***
	(0.027)	(0.025)	(0.024)	(0.027)	(0.025)	(0.024)	(0.027)	(0.025)	(0.024)
III cash-on-hand decile	0.522***	0.364***	0.105***	0.511***	0.358***	0.102***	0.513***	0.364***	0.099***
	(0.026)	(0.025)	(0.023)	(0.026)	(0.025)	(0.023)	(0.026)	(0.025)	(0.023)
IV cash-on-hand decile	0.507***	0.385***	0.084***	0.505***	0.381***	0.085***	0.506***	0.385***	0.083***
	(0.025)	(0.023)	(0.022)	(0.025)	(0.024)	(0.022)	(0.025)	(0.023)	(0.022)
V cash-on-hand decile	0.501***	0.382***	0.081***	0.503***	0.381***	0.083***	0.503***	0.382***	0.083***
	(0.025)	(0.024)	(0.022)	(0.025)	(0.024)	(0.022)	(0.025)	(0.024)	(0.022)
VI cash-on-hand decile	0.442***	0.381***	0.046**	0.444***	0.375***	0.052**	0.447***	0.381***	0.049**
	(0.024)	(0.023)	(0.022)	(0.024)	(0.023)	(0.022)	(0.024)	(0.023)	(0.022)
VII cash-on-hand decile	0.388***	0.431***	-0.024	0.394***	0.431***	-0.021	0.394***	0.431***	-0.020
	(0.025)	(0.023)	(0.022)	(0.025)	(0.023)	(0.022)	(0.025)	(0.023)	(0.022)
VIII cash-on-hand decile	0.354***	0.419***	-0.041*	0.364***	0.423***	-0.038*	0.362***	0.418***	-0.035
	(0.024)	(0.023)	(0.022)	(0.024)	(0.023)	(0.022)	(0.024)	(0.023)	(0.022)
IX cash-on-hand decile	0.331***	0.431***	-0.066***	0.340***	0.437***	-0.065***	0.337***	0.431***	-0.061***
	(0.025)	(0.023)	(0.022)	(0.025)	(0.023)	(0.022)	(0.025)	(0.023)	(0.022)
X cash-on-hand decile	0.299***	0.398***	-0.060**	0.312***	0.414***	-0.064***	0.305***	0.397***	-0.056**
	(0.027)	(0.025)	(0.024)	(0.026)	(0.025)	(0.024)	(0.026)	(0.025)	(0.024)
Age in[18,30]	-0.012	-0.024	0.016	0.005	0.002	0.008	-0.006	-0.024	0.020
	(0.056)	(0.052)	(0.050)	(0.056)	(0.053)	(0.050)	(0.056)	(0.052)	(0.050)
Age in(30,45]	0.019	-0.030	0.038*	0.028	-0.019	0.036	0.023	-0.030	0.042*
	(0.025)	(0.024)	(0.022)	(0.025)	(0.024)	(0.022)	(0.025)	(0.024)	(0.022)
Age in(45,60]	0.063***	-0.032	0.063***	0.069***	-0.020	0.058***	0.064***	-0.032	0.064***
	(0.021)	(0.019)	(0.018)	(0.021)	(0.019)	(0.018)	(0.021)	(0.019)	(0.018)
Male	-0.002	-0.021	0.011	-0.001	-0.016	0.008	-0.003	-0.021	0.010
	(0.018)	(0.017)	(0.016)	(0.018)	(0.017)	(0.016)	(0.018)	(0.017)	(0.016)
Married	-0.011	-0.021	0.012	-0.004	-0.017	0.014	-0.006	-0.022	0.016
	(0.022)	(0.020)	(0.019)	(0.022)	(0.021)	(0.019)	(0.022)	(0.020)	(0.019)
Years of education	0.005**	0.007***	-0.001	0.006***	0.009***	-0.002	0.005**	0.007***	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Family size	0.002	-0.004	0.006	0.001	-0.003	0.004	0.001	-0.004	0.005
	(0.009)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)
Resident in the South	0.245***	0.126***	0.085***	0.243***	0.137***	0.075***	0.239***	0.127***	0.080***
	(0.018)	(0.017)	(0.016)	(0.018)	(0.017)	(0.016)	(0.018)	(0.017)	(0.016)
Unemployed	0.039	-0.000	0.021	0.035	-0.008	0.022	0.038	-0.000	0.019
	(0.048)	(0.045)	(0.042)	(0.048)	(0.045)	(0.042)	(0.048)	(0.045)	(0.042)
City size less then 20,000	-0.159***	0.128***	-0.191***	-0.164***	0.122***	-0.190***	-0.161***	0.128***	-0.193***
	(0.034)	(0.032)	(0.030)	(0.033)	(0.032)	(0.030)	(0.033)	(0.032)	(0.030)
City size 20,000-40,000	-0.162***	0.133***	-0.197***	-0.161***	0.132***	-0.195***	-0.160***	0.133***	-0.196***
	(0.035)	(0.033)	(0.031)	(0.035)	(0.033)	(0.031)	(0.035)	(0.033)	(0.031)
City size 40,000-500,000	-0.096***	0.095***	-0.131***	-0.102***	0.092***	-0.132***	-0.101***	0.095***	-0.134***
	(0.032)	(0.030)	(0.028)	(0.032)	(0.030)	(0.028)	(0.032)	(0.030)	(0.028)
Observations	4,524	4,524	4,524	4,524	4,524	4,524	4,524	4,524	4,524

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included. Columns 3 and 6 also adds the real log change in household cash-on-hand between 2012 and 2010. All other controls are measured in 2010, including risk aversion and impatience. The left hand side in columns 1 and 4 is the MPC out of a small (one month) shock, measured in the 2010 survey; in column 2 and 5 is the MPC out of large (one year) shock, measured in the 2012 survey; in columns 3 and 6 is the difference in MPCs, the MPC out of a small shock less the MPC out of a large shock. The sample consists of households present in both surveys. To measure risk aversion we use a question asking *in managing financial investments are you a person more oriented to investments that have a profile of: (1) very high returns with a high risk of losing part of the invested capital, (2) good returns with a OK level of security in the invested capital, (3) OK returns with a good level of security in the invested capital, and (4) low returns with a no risk of capital loss.* We classify a household as risk averse (the dummy has value one) if they answer (4) to this question. Impatience is a dummy that takes value one if a household would be willing to give up more than 20% of a lottery win worth one year of income to get it today instead of in one year from now.

Table D.5: Tobit regression results conditioning for low risk aversion or low impatience.

VARIABLES	(1) Small	(2) Large	(3) Diff	(4) Small	(5) Large	(6) Diff
I cash-on-hand decile	0.695***	0.438***	0.172***	0.593***	0.359***	0.159***
	(0.045)	(0.041)	(0.041)	(0.035)	(0.033)	(0.032)
II cash-on-hand decile	0.650***	0.484***	0.101***	0.520***	0.409***	0.081***
	(0.041)	(0.038)	(0.037)	(0.031)	(0.029)	(0.028)
III cash-on-hand decile	0.579***	0.441***	0.087**	0.498***	0.349***	0.100***
	(0.039)	(0.037)	(0.036)	(0.030)	(0.029)	(0.027)
IV cash-on-hand decile	0.545***	0.422***	0.081**	0.483***	0.381***	0.072***
	(0.035)	(0.033)	(0.032)	(0.027)	(0.026)	(0.024)
V cash-on-hand decile	0.529***	0.473***	0.036	0.479***	0.367***	0.080***
	(0.034)	(0.032)	(0.031)	(0.027)	(0.025)	(0.024)
VI cash-on-hand decile	0.503***	0.463***	0.027	0.407***	0.373***	0.027
	(0.034)	(0.032)	(0.031)	(0.026)	(0.024)	(0.023)
VII cash-on-hand decile	0.423***	0.487***	-0.041	0.357***	0.440***	-0.052**
	(0.033)	(0.030)	(0.030)	(0.026)	(0.024)	(0.023)
VIII cash-on-hand decile	0.346***	0.492***	-0.104***	0.335***	0.431***	-0.065***
	(0.031)	(0.029)	(0.028)	(0.025)	(0.023)	(0.022)
IX cash-on-hand decile	0.342***	0.473***	-0.086***	0.324***	0.439***	-0.079***
	(0.031)	(0.029)	(0.029)	(0.026)	(0.024)	(0.023)
X cash-on-hand decile	0.301***	0.423***	-0.074***	0.291***	0.420***	-0.089***
	(0.031)	(0.029)	(0.028)	(0.027)	(0.025)	(0.024)
Age in[18,30]	-0.065	-0.014	-0.030	0.017	0.002	0.012
	(0.068)	(0.063)	(0.062)	(0.060)	(0.056)	(0.054)
Age in(30,45]	0.013	-0.073**	0.065**	0.022	-0.015	0.029
	(0.033)	(0.031)	(0.030)	(0.027)	(0.025)	(0.024)
Age in(45,60]	0.053*	-0.057**	0.074***	0.055**	-0.018	0.049**
	(0.027)	(0.026)	(0.025)	(0.022)	(0.021)	(0.020)
Male	0.003	-0.034	0.024	-0.018	-0.028	0.007
	(0.024)	(0.022)	(0.022)	(0.019)	(0.018)	(0.017)
Married	0.015	-0.020	0.029	0.010	-0.011	0.019
	(0.030)	(0.028)	(0.027)	(0.024)	(0.022)	(0.021)
Years of education	0.006**	0.007**	0.000	0.005**	0.009***	-0.002
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
Family size	-0.001	0.003	-0.001	-0.002	-0.010	0.007
	(0.012)	(0.011)	(0.011)	(0.010)	(0.009)	(0.009)
Resident in the South	0.197***	0.060**	0.104***	0.272***	0.167***	0.073***
	(0.025)	(0.024)	(0.023)	(0.020)	(0.019)	(0.018)
Unemployed	0.084	0.095	-0.013	-0.012	-0.004	-0.010
	(0.069)	(0.062)	(0.062)	(0.055)	(0.052)	(0.050)
City size less then 20,000	-0.181***	0.180***	-0.246***	-0.132***	0.159***	-0.195***
	(0.044)	(0.041)	(0.040)	(0.036)	(0.034)	(0.032)
City size 20,000-40,000	-0.214***	0.161***	-0.251***	-0.144***	0.171***	-0.209***
	(0.045)	(0.042)	(0.041)	(0.037)	(0.035)	(0.033)
City size 40,000-500,000	-0.111***	0.075*	-0.124***	-0.077**	0.125***	-0.135***
	(0.041)	(0.038)	(0.037)	(0.034)	(0.032)	(0.030)
Observations	2,378	2,378	2,378	3,710	3,710	3,710
Conditioning on Low Risk Aversion	YES	YES	YES	NO	NO	NO
Conditioning on Low Impatience	NO	NO	NO	YES	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included. Columns 3 and 6 also adds the real log change in household cash-on-hand between 2012 and 2010. All other controls are measured in 2010, including risk aversion and impatience. The left hand side in columns 1 and 4 is the MPC out of a small (one month) shock, measured in the 2010 survey; in column 2 and 5 is the MPC out of large (one year) shock, measured in the 2012 survey; in columns 3 and 6 is the difference in MPCs, the MPC out of a small shock less the MPC out of a large shock. The sample consists of households present in both surveys. To measure risk aversion we use a question asking *in managing financial investments are you a person more oriented to investments that have a profile of: (1) very high returns with a high risk of losing part of the invested capital, (2) good returns with a OK level of security in the invested capital, (3) OK returns with a good level of security in the invested capital, and (4) low returns with a no risk of capital loss.* We classify a household as risk averse (the dummy has value one) if they answer (4) to this question. In columns 1 to 3 we condition on households who we do not classify as risk averse. Impatience is a dummy that takes value one if a household would be willing to give up more than 20% of a lottery win worth one year of income to get it today instead of in one year from now. In columns 4 to 6 we condition on households who we do not classify as impatient.

Table D.6: Baseline OLS regression results

VARIABLES	(1) Small	(2) Large	(3) Diff	(4) Small	(5) Large	(6) Diff
I cash-on-hand decile	0.655***	0.439***	0.215***	0.591***	0.423***	0.172***
	(0.017)	(0.017)	(0.021)	(0.019)	(0.019)	(0.026)
II cash-on-hand decile	0.559***	0.436***	0.123***	0.530***	0.423***	0.109***
	(0.017)	(0.016)	(0.021)	(0.017)	(0.017)	(0.022)
III cash-on-hand decile	0.524***	0.418***	0.106***	0.514***	0.416***	0.099***
	(0.018)	(0.017)	(0.023)	(0.017)	(0.017)	(0.023)
IV cash-on-hand decile	0.514***	0.435***	0.079***	0.508***	0.428***	0.080***
	(0.016)	(0.015)	(0.021)	(0.016)	(0.015)	(0.021)
V cash-on-hand decile	0.506***	0.429***	0.077***	0.507***	0.429***	0.079***
	(0.016)	(0.016)	(0.021)	(0.016)	(0.015)	(0.021)
VI cash-on-hand decile	0.471***	0.425***	0.046**	0.474***	0.429***	0.045**
	(0.016)	(0.015)	(0.020)	(0.015)	(0.015)	(0.020)
VII cash-on-hand decile	0.421***	0.458***	-0.037*	0.437***	0.462***	-0.026
	(0.016)	(0.015)	(0.020)	(0.016)	(0.015)	(0.020)
VIII cash-on-hand decile	0.393***	0.452***	-0.058***	0.417***	0.461***	-0.045**
	(0.015)	(0.015)	(0.021)	(0.015)	(0.015)	(0.021)
IX cash-on-hand decile	0.369***	0.453***	-0.083***	0.399***	0.463***	-0.066***
	(0.015)	(0.015)	(0.020)	(0.015)	(0.016)	(0.021)
X cash-on-hand decile	0.365***	0.444***	-0.080***	0.387***	0.451***	-0.067***
	(0.016)	(0.015)	(0.021)	(0.017)	(0.017)	(0.023)
Age in[18,30]				0.003	0.005	-0.003
				(0.034)	(0.034)	(0.048)
Age in(30,45]				0.017	-0.014	0.030
				(0.016)	(0.016)	(0.021)
Age in(45,60]				0.042***	-0.013	0.054***
				(0.013)	(0.013)	(0.017)
Male				-0.003	-0.010	0.007
				(0.011)	(0.011)	(0.015)
Married				-0.003	-0.011	0.008
				(0.014)	(0.014)	(0.018)
Years of education				0.004***	0.006***	-0.002
				(0.001)	(0.001)	(0.002)
Family size				0.003	-0.003	0.006
				(0.005)	(0.005)	(0.007)
Resident in the South				0.170***	0.092***	0.078***
				(0.012)	(0.011)	(0.015)
Unemployed				0.020	-0.008	0.028
				(0.029)	(0.028)	(0.038)
City size less then 20,000				-0.096***	0.083***	-0.178***
				(0.021)	(0.020)	(0.029)
City size 20,000-40,000				-0.098***	0.086***	-0.183***
				(0.022)	(0.021)	(0.030)
City size 40,000-500,000				-0.059***	0.061***	-0.120***
				(0.020)	(0.019)	(0.027)
Change in cash-on-hand						-0.000
						(0.000)
Observations	4,524	4,524	4,524	4,524	4,524	4,524
R-squared	0.662	0.635	0.048	0.684	0.643	0.070

Notes: Robust standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All regressions are ran with OLS. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included. All controls are measured in 2010 except Change in Cash on Hand, which is the real log change in household cash-on-hand between 2012 and 2010. The left hand side in columns 1 and 4 is the MPC out of a small (one month) shock, measured in the 2010 survey; in column 2 and 5 is the MPC out of large (one year) shock, measured in the 2012 survey; in columns 3 and 6 is the difference in MPCs, the MPC out of a small shock less the MPC out of a large shock. The sample consists of households present in both surveys.

Table D.7: Tobit regression results by income and and financial assets with demographic controls

VARIABLES	(1) Small	(2) Small	(3) Small	(4) Small	(5) Small	(6) Small	(7) Small	(8) Small	(9) Small	(10) Small
I income quintile	0.738***	0.571***	0.447***	0.341***	0.276***					
	(0.044)	(0.041)	(0.044)	(0.057)	(0.090)					
II income quintile	0.620***	0.477***	0.455***	0.431***	0.390***					
	(0.044)	(0.034)	(0.035)	(0.044)	(0.069)					
III income quintile	0.582***	0.522***	0.470***	0.371***	0.353***					
	(0.054)	(0.034)	(0.034)	(0.036)	(0.055)					
IV income quintile	0.562***	0.473***	0.422***	0.388***	0.311***					
	(0.070)	(0.042)	(0.036)	(0.032)	(0.040)					
V income quintile	0.541***	0.508***	0.431***	0.398***	0.295***					
	(0.093)	(0.063)	(0.046)	(0.037)	(0.038)					
I financial asset quintile						0.682***	0.602***	0.590***	0.608***	0.597***
						(0.042)	(0.040)	(0.047)	(0.060)	(0.090)
II financial asset quintile						0.586***	0.469***	0.510***	0.495***	0.526***
						(0.046)	(0.037)	(0.035)	(0.043)	(0.072)
III financial asset quintile						0.510***	0.484***	0.465***	0.405***	0.392***
						(0.050)	(0.038)	(0.034)	(0.037)	(0.053)
IV financial asset quintile						0.395***	0.433***	0.353***	0.375***	0.383***
						(0.061)	(0.046)	(0.035)	(0.034)	(0.042)
V financial asset quintile						0.234***	0.374***	0.370***	0.342***	0.294***
						(0.090)	(0.067)	(0.049)	(0.037)	(0.038)
Observations	833	846	909	973	963	865	879	879	920	981
Income Quintile	.	.	.	.	.	1	2	3	4	5
Financial Assets Quintile	1	2	3	4	5	.	.	.	.	.

VARIABLES	(1) Large	(2) Large	(3) Large	(4) Large	(5) Large	(6) Large	(7) Large	(8) Large	(9) Large	(10) Large
I income quintile	0.369***	0.353***	0.350***	0.382***	0.343***					
	(0.041)	(0.041)	(0.043)	(0.053)	(0.080)					
II income quintile	0.364***	0.393***	0.346***	0.327***	0.286***					
	(0.042)	(0.034)	(0.034)	(0.041)	(0.064)					
III income quintile	0.328***	0.439***	0.387***	0.373***	0.463***					
	(0.052)	(0.034)	(0.032)	(0.034)	(0.050)					
IV income quintile	0.373***	0.389***	0.387***	0.427***	0.475***					
	(0.066)	(0.042)	(0.035)	(0.030)	(0.036)					
V income quintile	0.459***	0.386***	0.489***	0.473***	0.504***					
	(0.088)	(0.062)	(0.044)	(0.035)	(0.034)					
I financial asset quintile						0.330***	0.384***	0.352***	0.423***	0.509***
						(0.038)	(0.039)	(0.046)	(0.060)	(0.077)
II financial asset quintile						0.286***	0.399***	0.438***	0.395***	0.450***
						(0.042)	(0.036)	(0.035)	(0.044)	(0.062)
III financial asset quintile						0.283***	0.343***	0.381***	0.402***	0.542***
						(0.046)	(0.037)	(0.034)	(0.038)	(0.046)
IV financial asset quintile						0.329***	0.319***	0.355***	0.417***	0.527***
						(0.055)	(0.044)	(0.035)	(0.034)	(0.036)
V financial asset quintile						0.350***	0.287***	0.438***	0.407***	0.494***
						(0.080)	(0.066)	(0.048)	(0.038)	(0.032)
Observations	833	846	909	973	963	865	879	879	920	981
Income Quintile	.	.	.	.	.	1	2	3	4	5
Financial Assets Quintile	1	2	3	4	5	.	.	.	.	.

VARIABLES	(1) Diff	(2) Diff	(3) Diff	(4) Diff	(5) Diff	(6) Diff	(7) Diff	(8) Diff	(9) Diff	(10) Diff
I income quintile	0.224***	0.162***	0.067	-0.026	-0.030					
	(0.037)	(0.039)	(0.043)	(0.050)	(0.077)					
II income quintile	0.166***	0.072**	0.079**	0.087**	0.060					
	(0.036)	(0.033)	(0.034)	(0.038)	(0.061)					
III income quintile	0.163***	0.062*	0.055*	0.000	-0.067					
	(0.044)	(0.033)	(0.032)	(0.031)	(0.048)					
IV income quintile	0.124**	0.073*	0.029	-0.026	-0.111***					
	(0.056)	(0.040)	(0.035)	(0.029)	(0.035)					
V income quintile	0.045	0.074	-0.038	-0.049	-0.131***					
	(0.075)	(0.059)	(0.044)	(0.032)	(0.033)					
I financial asset quintile						0.224***	0.144***	0.161***	0.130**	0.061
						(0.036)	(0.036)	(0.043)	(0.058)	(0.075)
II financial asset quintile						0.197***	0.050	0.049	0.063	0.039
						(0.038)	(0.033)	(0.032)	(0.043)	(0.060)
III financial asset quintile						0.160***	0.095***	0.057*	0.004	-0.101**
						(0.041)	(0.034)	(0.031)	(0.036)	(0.044)
IV financial asset quintile						0.057	0.089**	-0.001	-0.026	-0.098***
						(0.050)	(0.041)	(0.032)	(0.033)	(0.035)
V financial asset quintile						-0.059	0.047	-0.047	-0.039	-0.135***
						(0.074)	(0.060)	(0.047)	(0.037)	(0.032)
Observations	833	846	909	973	963	865	879	879	920	981
Income Quintile	.	.	.	.	.	1	2	3	4	5
Financial Assets Quintile	1	2	3	4	5	.	.	.	.	.

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except income quintiles are demeaned. This table splits the results of cash-on-hand in its components: disposable income and financial assets. All the regressions include demographic controls: age in[18,30], age in(30,45], age in(45,60], male, married, years of education, family size, resident in the South, unemployed, city size less then 20,000, city size 20,000-40,000, city size 40,000-500,000, and the real log change in household cash-on-hand between 2012 and 2010. All other controls are measured in 2010. No constant is included. All other controls are measured in 2010. The left hand side in the first sub-table is the MPC out of a small (one month) shock, measured in the 2010 survey; in the second sub-table is the MPC out of large (one year) shock, measured in the 2012 survey; in the third sub-table is the difference in MPCs, the MPC out of a small shock less the MPC out of a large shock. Going from column 1 to 5 we condition only on household in the financial asset quintile going from 1 to 5. Going from column 6 to 10 we condition only on household in the income quintile going from 1 to 5. The sample consists of households present in both surveys.

Table D.8: Tobit regression results with extended sample

VARIABLES	(1) Small	(2) Large	(3) Small	(4) Large
I cash-on-hand decile	0.742***	0.423***	0.648***	0.412***
	(0.020)	(0.018)	(0.022)	(0.020)
II cash-on-hand decile	0.580***	0.396***	0.544***	0.391***
	(0.020)	(0.018)	(0.020)	(0.019)
III cash-on-hand decile	0.523***	0.408***	0.514***	0.413***
	(0.020)	(0.018)	(0.019)	(0.018)
IV cash-on-hand decile	0.484***	0.409***	0.480***	0.410***
	(0.019)	(0.018)	(0.019)	(0.018)
V cash-on-hand decile	0.489***	0.410***	0.489***	0.413***
	(0.019)	(0.018)	(0.019)	(0.018)
VI cash-on-hand decile	0.432***	0.408***	0.440***	0.411***
	(0.020)	(0.018)	(0.019)	(0.018)
VII cash-on-hand decile	0.366***	0.413***	0.393***	0.415***
	(0.020)	(0.018)	(0.019)	(0.018)
VIII cash-on-hand decile	0.320***	0.398***	0.364***	0.405***
	(0.020)	(0.018)	(0.019)	(0.018)
IX cash-on-hand decile	0.279***	0.431***	0.326***	0.432***
	(0.020)	(0.018)	(0.020)	(0.019)
X cash-on-hand decile	0.276***	0.393***	0.311***	0.390***
	(0.020)	(0.018)	(0.021)	(0.020)
Age in[18,30]			0.011	0.023
			(0.036)	(0.038)
Age in(30,45]			0.036*	-0.025
			(0.019)	(0.018)
Age in(45,60]			0.044***	-0.030**
			(0.016)	(0.015)
Male			0.015	-0.001
			(0.013)	(0.013)
Married			-0.037**	-0.026*
			(0.016)	(0.015)
Years of education			0.006***	0.010***
			(0.002)	(0.002)
Family size			0.008	-0.006
			(0.007)	(0.006)
Resident in the South			0.271***	0.129***
			(0.014)	(0.013)
Unemployed			0.021	-0.009
			(0.036)	(0.030)
City size less then 20,000			-0.188***	0.039*
			(0.023)	(0.023)
City size 20,000-40,000			-0.170***	0.022
			(0.024)	(0.024)
City size 40,000-500,000			-0.119***	0.025
			(0.022)	(0.021)
Observations	7,853	8,031	7,853	8,031

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included. Controls are measured in 2010 in columns 1 and 3 and in 2012 in columns 2 and 5. The left hand side in columns 1 and 3 is the MPC out of a small (one month) shock, measured in the 2010 survey; in column 2 and 4 is the MPC out of large (one year) shock, measured in the 2012 survey. The sample consists of all households present in either survey for whom there is data, it does not condition to households present in both surveys as in the baseline results.

Table D.9: Tobit regression results with 2016 data

VARIABLES	(1) Small	(2) Large	(3) Diff	(4) Small	(5) Large	(6) Diff
I cash-on-hand decile	0.626***	0.451***	0.109***	0.553***	0.414***	0.090***
	(0.035)	(0.029)	(0.028)	(0.038)	(0.032)	(0.032)
II cash-on-hand decile	0.600***	0.425***	0.110***	0.577***	0.382***	0.129***
	(0.034)	(0.028)	(0.027)	(0.035)	(0.029)	(0.029)
III cash-on-hand decile	0.493***	0.361***	0.092***	0.495***	0.347***	0.106***
	(0.033)	(0.029)	(0.028)	(0.034)	(0.029)	(0.028)
IV cash-on-hand decile	0.482***	0.449***	0.014	0.482***	0.437***	0.024
	(0.035)	(0.030)	(0.029)	(0.035)	(0.030)	(0.029)
V cash-on-hand decile	0.445***	0.440***	-0.001	0.453***	0.440***	0.005
	(0.035)	(0.029)	(0.028)	(0.034)	(0.029)	(0.028)
VI cash-on-hand decile	0.428***	0.411***	0.009	0.420***	0.412***	0.001
	(0.035)	(0.029)	(0.028)	(0.034)	(0.029)	(0.028)
VII cash-on-hand decile	0.427***	0.448***	-0.017	0.435***	0.460***	-0.021
	(0.034)	(0.029)	(0.028)	(0.034)	(0.029)	(0.028)
VIII cash-on-hand decile	0.367***	0.433***	-0.047*	0.400***	0.454***	-0.042
	(0.033)	(0.028)	(0.027)	(0.033)	(0.028)	(0.027)
IX cash-on-hand decile	0.327***	0.407***	-0.043	0.350***	0.442***	-0.056**
	(0.032)	(0.027)	(0.026)	(0.033)	(0.028)	(0.028)
X cash-on-hand decile	0.281***	0.412***	-0.079***	0.299***	0.438***	-0.086***
	(0.031)	(0.026)	(0.025)	(0.034)	(0.028)	(0.029)
Age in[18,30]				0.089	0.052	0.013
				(0.111)	(0.094)	(0.093)
Age in(30,45]				0.090**	-0.013	0.068**
				(0.039)	(0.033)	(0.032)
Age in(45,60]				0.062**	-0.003	0.042*
				(0.027)	(0.023)	(0.023)
Male				0.005	-0.018	0.019
				(0.023)	(0.019)	(0.019)
Married				-0.039	-0.031	-0.006
				(0.028)	(0.023)	(0.023)
Years of education				0.003	0.007***	-0.002
				(0.003)	(0.003)	(0.002)
Family size				0.030***	-0.014	0.031***
				(0.012)	(0.010)	(0.010)
Resident in the South				0.112***	0.171***	-0.055***
				(0.024)	(0.020)	(0.020)
Unemployed				0.073	-0.003	0.041
				(0.055)	(0.047)	(0.045)
City size less then 20,000				-0.205***	0.037	-0.166***
				(0.045)	(0.039)	(0.038)
City size 20,000-40,000				-0.144***	0.050	-0.133***
				(0.047)	(0.040)	(0.039)
City size 40,000-500,000				-0.118***	0.048	-0.122***
				(0.042)	(0.036)	(0.035)
Observations	2,978	2,978	2,978	2,978	2,978	2,978

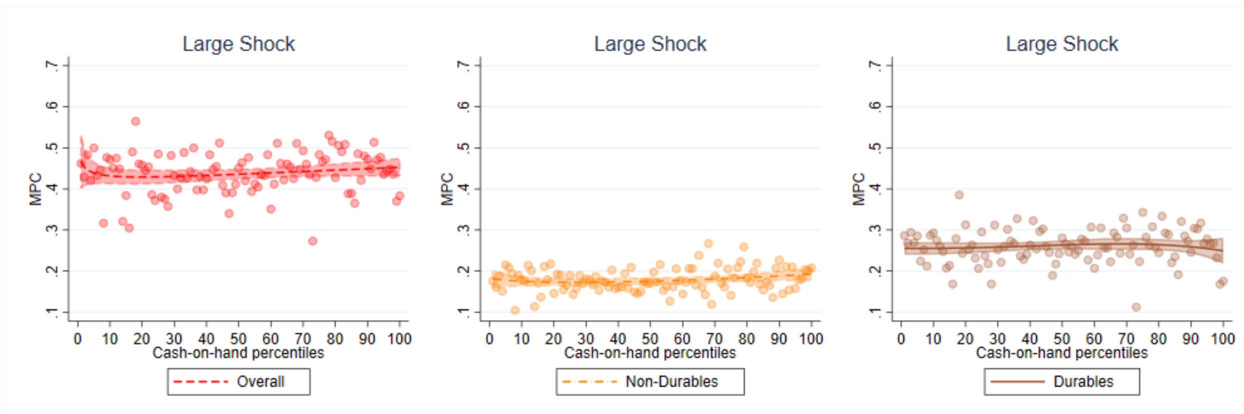
Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included. The last column also adds the real log change in household cash-on-hand between 2016 and 2012. All other controls are measured in 2016. The left hand side in columns 1 and 4 is the MPC out of a small (one month) shock, measured in the 2016 survey; in column 2 and 5 is the MPC out of large (one year) shock, measured in the 2012 survey; in columns 3 and 6 is the difference in MPCs, the MPC out of a small shock less the MPC out of a large shock. The sample consists of households present in both surveys.

Table D.10: Non-necessity Tobit regression results with 2016 data

VARIABLES	(1) Small	(2) Large	(3) Small	(4) Large	(5) Small	(6) Large
Eating outside share	0.052	0.224***	0.306***	0.253***	0.181**	0.218***
	(0.074)	(0.062)	(0.077)	(0.065)	(0.081)	(0.068)
I cash-on-hand decile			0.647***	0.470***	0.574***	0.439***
			(0.035)	(0.029)	(0.040)	(0.033)
II cash-on-hand decile			0.617***	0.440***	0.589***	0.397***
			(0.034)	(0.028)	(0.035)	(0.030)
III cash-on-hand decile			0.509***	0.373***	0.508***	0.356***
			(0.034)	(0.029)	(0.034)	(0.029)
IV cash-on-hand decile			0.489***	0.455***	0.487***	0.444***
			(0.035)	(0.030)	(0.035)	(0.030)
V cash-on-hand decile			0.444***	0.440***	0.452***	0.439***
			(0.034)	(0.029)	(0.034)	(0.029)
VI cash-on-hand decile			0.419***	0.404***	0.422***	0.408***
			(0.035)	(0.029)	(0.034)	(0.029)
VII cash-on-hand decile			0.419***	0.442***	0.429***	0.453***
			(0.034)	(0.029)	(0.034)	(0.029)
VIII cash-on-hand decile			0.358***	0.426***	0.385***	0.449***
			(0.033)	(0.028)	(0.033)	(0.028)
IX cash-on-hand decile			0.311***	0.395***	0.340***	0.429***
			(0.033)	(0.027)	(0.034)	(0.028)
X cash-on-hand decile			0.261***	0.396***	0.283***	0.419***
			(0.032)	(0.026)	(0.036)	(0.030)
Observations	2,978	2,978	2,978	2,978	2,978	2,978
Demographic Controls	NO	NO	NO	NO	YES	YES

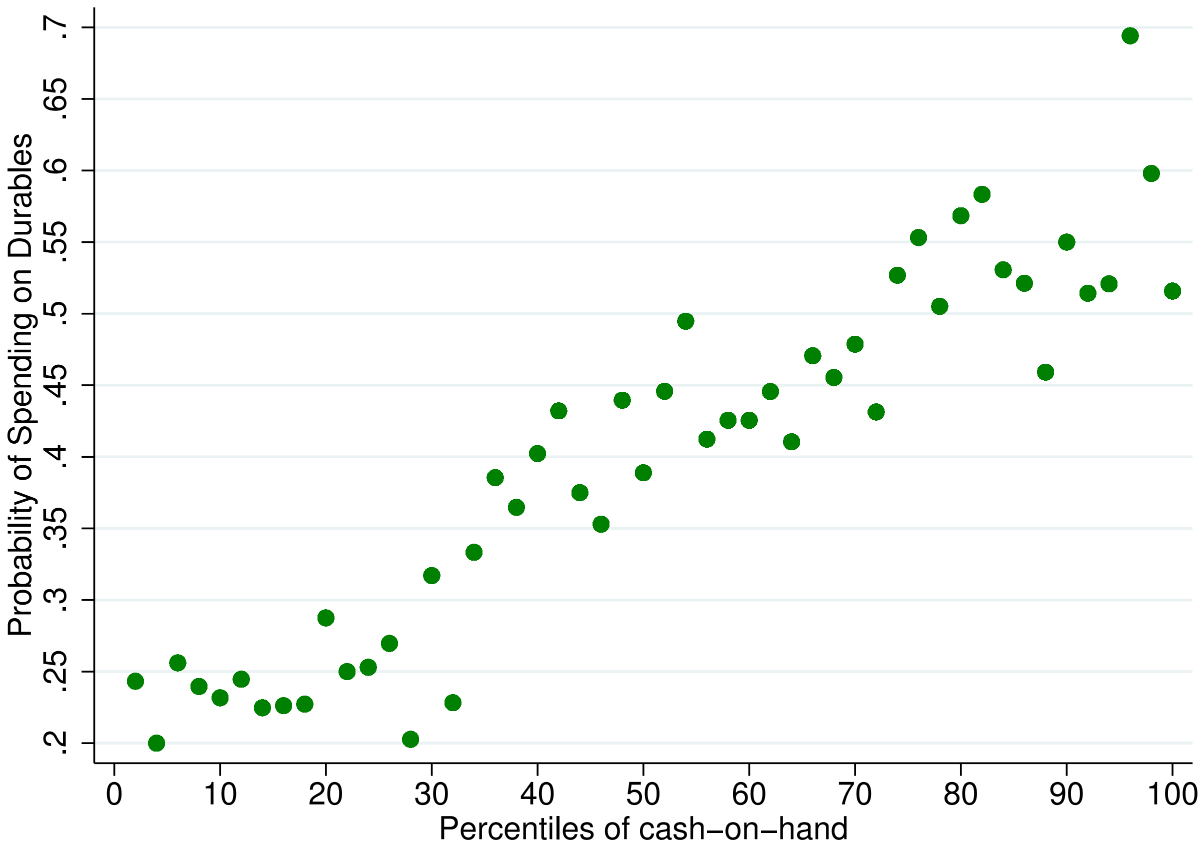
Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included in columns 3 to 6. Demographic controls are: age in[18,30], age in(30,45], age in(45,60], male, married, years of education, family size, resident in the South, unemployed, and the real log change in household cash-on-hand between 2016 and 2012. All other controls are measured in 2016. The left hand side in columns 1, 3, and 5 is the MPC out of a small (one month) shock, measured in the 2016 survey; in columns 2, 4, and 6 is the MPC out of large (one year) shock, measured in the 2012 survey. The sample consists of households present in both surveys.

Figure D.1: The distribution of MPC out of large income gains by spending category: total expenditure (in red), non-durable goods and services consumption (in orange), and durable goods expenditure (in sienna)



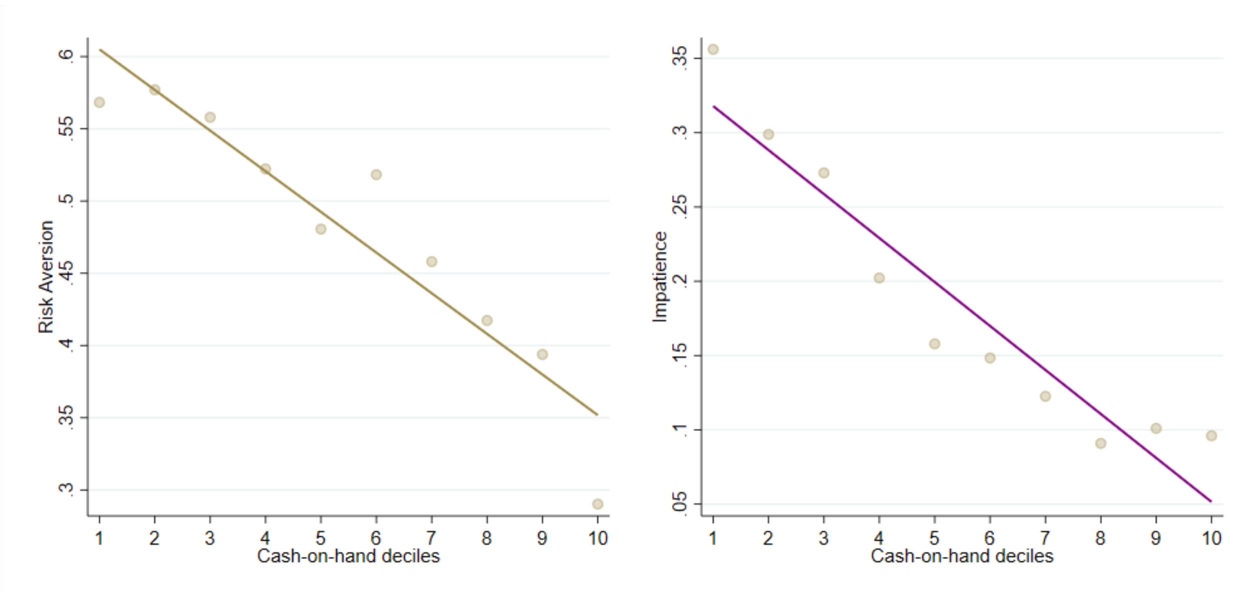
Notes: The figure shows the MPCs out of a large gain along the cash-on-hand distribution in 2010. Cash-on-hand is the sum of disposable income and financial assets. We fit a fractional polynomial with 95% confidence bands based on the percentile bins. The first panel plots the MPC for total expenditure, the second chart displays the MPC for non-durable consumption only, the third column reports the MPC for durable expenditure only. The sample consists of households present in both surveys.

Figure D.2: Probability of spending on durables and cash-on-hand



Notes: The plot shows 50 equal sized bins of cash-on-hand in 2010 and presents the probability for any durable consumption spending share for each bin. Each bin corresponds to 2 percentiles. The probability of spending on durables is the probability that we observe a positive spending on durable goods and services, measured in 2010. Cash-on-hand is the sum of disposable income and financial assets.

Figure D.3: Risk aversion and impatience by cash-on-hand deciles.



Notes: The plot shows how risk aversion and impatience vary by each cash-on-hand deciles in 2010 and fit a linear fit based on the decile bins. Both risk aversion and impatience are dummies so that each scatter point represents the fraction of positive values of each dummy: a higher value implies more risk averse households in the first panel and more impatient households in the second. Cash-on-hand is the sum of disposable income and financial assets. All variables are measured in 2010. The sample consists of households present in both surveys for comparability with other results. To measure risk aversion we use a question asking *in managing financial investments are you a person more oriented to investments that have a profile of: (1) very high returns with a high risk of losing part of the invested capital, (2) good returns with a OK level of security in the invested capital, (3) OK returns with a good level of security in the invested capital, and (4) low returns with a no risk of capital loss.* We classify a household as risk averse (the dummy has value one) if they answer (4) to this question. Impatience is a dummy that takes value one if a household would be willing to give up more than 20% of a lottery win worth one year of income to get it today instead of in one year from now.

E Regional Heterogeneity

This appendix presents results on regional heterogeneity. Table E.1 shows the distribution of cash-on-hand across regional deciles. Tables E.2 and E.3 mirror Tables 2 and 3. Figure E.1 mirrors Figure 2. We assign a household to the South if they live in one of the following regions: Molise, Campania, Apulia, Basilicata, Calabria, Sicily, or Sardinia. Otherwise we assign them to the rest of the country (or North).

As it is well known, the Italian Mezzogiorno (i.e. the South) is different from the rest of the country along a number of social and economic dimensions, spanning from institutions to labor markets, financial constraints, social mobility, and civic capital among many others (Fortunato, 1911).[7] It is therefore, of independent interest to assess whether our results vary across these two macro-regions.

A few result stand out from this exercise. The distribution of cash-on-hand in the South is stochastically dominated from the one in the rest of the country, as shown in Table E.1. A household in the tenth decile of the South has a lower median cash-on-hand than somebody in the ninth decile in the Northern part of the country. Someone on the fifth decile in the South has a lower median cash-on-hand than somebody in the second decile in the Northern part of the country. Moreover, the poor households in the South have a very low cash-on-hand, with those in the first decile having the sum of disposable income and financial assets equal to 3700€per year.

Notice that the southern regions present an MPC unconditionally higher across the cash-on-hand distribution and size of the shock, this can be seen by comparing columns 1 and 2 with column 7 and 8 of Table E.2. Moreover, the South is best explained by a traditionally financial constraint model, as the wealthier households respond similarly to a small and large income shock. We can see this in columns 9 and 12 of Table E.2, where the coefficient associated to the 10th decile is negative but not statistically significant, and on the third panel of the second line of Figure E.1, with both lines crossing at the top of the cash-on-hand distribution.

While the South and the North of Italy differ for many reasons, the South of Italy has

[7]For up to date analyses on the economic divide between South and North, see Ciani and Torrini (2019), AIPB-Census (2019) and Banca d'Italia (2015, 2020).

lower income and wealth than the Northern half of the country and it is likely that financial constraints are more prevalent with harder access to credit. For these reasons, when we look at the rest of the country we find more evidence calling for a non-homotheticity explanation. In columns 3 and 6 of Table E.2 a negative coefficient from the fifth decile of cash-on-hand and a negative and statistically significant coefficient from the sixth, that is from above the median household. Moreover the coefficient becomes even more negative, with the coefficient associated to the tenth decile being -0.111 from -0.069 from Table 2 (in column 6 for both tables). The widening of the gap makes it even harder for the standard financial constraint model to explain this result.

Additionally, in Table E.3 we see how the columns associated with the Northern part of Italy present stronger results on the measure of non-necessity consumption. The coefficient associated to the share of food expenses on eating outside is now positive and statistically significant (albeit small) also for the small shock without any constraint. Moreover, this coefficient is now higher across specifications with the coefficient being higher for the large than for the small shock (this is present also for the South, see columns 5 and 6 for the Northern regions and 11 and 12 for the Southern ones). Northern regions both display a higher response to a large shock rather than a small shock and a stronger association between non-necessity consumption and the MPC, making the non-homothetic explanation quite promising.

The final result we would like to highlight from the regional heterogeneity can be seen in Figure E.1. If we look at the red lines for both regions, we can see how out of large shocks the MPC is higher for wealthier households than for poorer ones. We could not see this as clearly in the national results, as Southern households are both poorer (even the wealthiest as shown in Table E.1) and have a higher MPC, creating a compositional issue. We do not need this feature to explain our results, as some wealthy households could still be financially constraint (e.g. as wealthy hand to mouth), as discussed in section 5. However, this positive relationship makes it even harder to justify an explanation only based on financial constraint world and points to a model based on non-necessity consumption.

Table E.1: Regional heterogeneity in cash-on-hand

	1	2	3	4	5	6	7	8	9	10
Cash-on-hand South	3.753	7.839	10.55	13.73	17.26	20.85	25.28	31.68	41.12	79.33
Cash-on-hand North	9.500	16.47	21.56	26.47	32.40	39.93	50.41	65.60	94.19	191.4

Notes: The table shows the median value of cash-on-hand for decile of the distribution in each region. Cash-on-hand is the sum of disposable income and financial assets. As in the main regressions, the sample includes only households that we observe in both waves. The values pertain to 2010 in current thousands of Euros.

Table E.2: Regional heterogeneity Tobit regression results

VARIABLES	(1) Small	(2) Large	(3) Diff	(4) Small	(5) Large	(6) Diff	(7) Small	(8) Large	(9) Diff	(10) Small	(11) Large	(12) Diff
I Regional cash-on-hand decile	0.486***	0.273***	0.134***	0.495***	0.287***	0.136***	0.839***	0.490***	0.239***	0.821***	0.515***	0.202***
	(0.035)	(0.032)	(0.030)	(0.037)	(0.034)	(0.033)	(0.040)	(0.040)	(0.037)	(0.044)	(0.044)	(0.042)
II Regional cash-on-hand decile	0.429***	0.329***	0.063**	0.456***	0.341***	0.076**	0.780***	0.472***	0.210***	0.776***	0.485***	0.196***
	(0.036)	(0.033)	(0.030)	(0.036)	(0.034)	(0.031)	(0.040)	(0.040)	(0.038)	(0.042)	(0.041)	(0.039)
III Regional cash-on-hand decile	0.404***	0.323***	0.051*	0.425***	0.332***	0.061**	0.711***	0.358***	0.249***	0.718***	0.370***	0.248***
	(0.034)	(0.031)	(0.029)	(0.034)	(0.031)	(0.029)	(0.038)	(0.038)	(0.036)	(0.039)	(0.039)	(0.037)
IV Regional cash-on-hand decile	0.391***	0.348***	0.027	0.409***	0.351***	0.037	0.639***	0.460***	0.128***	0.658***	0.463***	0.140***
	(0.034)	(0.031)	(0.029)	(0.033)	(0.031)	(0.029)	(0.037)	(0.037)	(0.035)	(0.037)	(0.037)	(0.035)
V Regional cash-on-hand decile	0.315***	0.325***	-0.001	0.319***	0.333***	-0.003	0.657***	0.450***	0.146***	0.665***	0.456***	0.148***
	(0.033)	(0.030)	(0.028)	(0.032)	(0.030)	(0.028)	(0.039)	(0.039)	(0.037)	(0.038)	(0.039)	(0.036)
VI Regional cash-on-hand decile	0.291***	0.378***	-0.052*	0.295***	0.379***	-0.050*	0.674***	0.444***	0.168***	0.684***	0.434***	0.182***
	(0.033)	(0.029)	(0.028)	(0.032)	(0.029)	(0.027)	(0.035)	(0.036)	(0.034)	(0.035)	(0.036)	(0.034)
VII Regional cash-on-hand decile	0.283***	0.387***	-0.062**	0.281***	0.386***	-0.063**	0.646***	0.456***	0.139***	0.645***	0.465***	0.131***
	(0.032)	(0.029)	(0.027)	(0.031)	(0.029)	(0.027)	(0.037)	(0.038)	(0.035)	(0.037)	(0.038)	(0.035)
VIII Regional cash-on-hand decile	0.275***	0.428***	-0.101***	0.259***	0.423***	-0.110***	0.693***	0.482***	0.163***	0.691***	0.472***	0.169***
	(0.032)	(0.028)	(0.027)	(0.032)	(0.029)	(0.027)	(0.037)	(0.037)	(0.035)	(0.037)	(0.037)	(0.035)
IX Regional cash-on-hand decile	0.305***	0.422***	-0.072***	0.298***	0.413***	-0.074***	0.554***	0.484***	0.052	0.548***	0.465***	0.061*
	(0.031)	(0.028)	(0.026)	(0.031)	(0.029)	(0.027)	(0.035)	(0.035)	(0.033)	(0.035)	(0.036)	(0.034)
X Regional cash-on-hand decile	0.183***	0.351***	-0.095***	0.141***	0.328***	-0.111***	0.474***	0.534***	-0.042	0.463***	0.513***	-0.033
	(0.033)	(0.029)	(0.027)	(0.035)	(0.031)	(0.029)	(0.036)	(0.037)	(0.035)	(0.038)	(0.039)	(0.038)
Age in[18,30]				0.012	0.047	-0.023				0.002	-0.083	0.077
				(0.073)	(0.066)	(0.063)				(0.086)	(0.087)	(0.081)
Age in(30,45]				0.041	-0.003	0.037				-0.028	-0.067*	0.028
				(0.032)	(0.030)	(0.028)				(0.039)	(0.040)	(0.037)
Age in(45,60]				0.065**	0.002	0.042*				0.070**	-0.067**	0.092***
				(0.027)	(0.025)	(0.023)				(0.031)	(0.032)	(0.030)
Male				-0.016	-0.012	-0.005				0.020	-0.014	0.023
				(0.023)	(0.021)	(0.020)				(0.027)	(0.027)	(0.026)
Married				0.034	-0.006	0.032				-0.080**	-0.039	-0.028
				(0.029)	(0.026)	(0.024)				(0.033)	(0.033)	(0.031)
Years of education				0.008***	0.010***	-0.001				0.001	0.008**	-0.005
				(0.003)	(0.003)	(0.003)				(0.003)	(0.003)	(0.003)
Family size				-0.020*	-0.020*	0.002				0.033***	0.023*	0.010
				(0.012)	(0.011)	(0.010)				(0.012)	(0.012)	(0.012)
Unemployed				0.042	-0.007	0.017				0.065	-0.019	0.059
				(0.076)	(0.069)	(0.065)				(0.058)	(0.057)	(0.054)
City size less then 20,000				-0.240***	0.039	-0.182***				-0.046	0.272***	-0.213***
				(0.045)	(0.041)	(0.038)				(0.049)	(0.051)	(0.047)
City size 20,000-40,000				-0.285***	0.081*	-0.242***				0.060	0.209***	-0.087*
				(0.046)	(0.042)	(0.040)				(0.053)	(0.054)	(0.050)
City size 40,000-500,000				-0.198***	0.013	-0.134***				0.058	0.227***	-0.121***
				(0.043)	(0.039)	(0.037)				(0.046)	(0.048)	(0.044)
Observations	2,983	2,983	2,983	2,983	2,983	2,983	1,541	1,541	1,541	1,541	1,541	1,541
Area	North	North	North	North	North	North	South	South	South	South	South	South

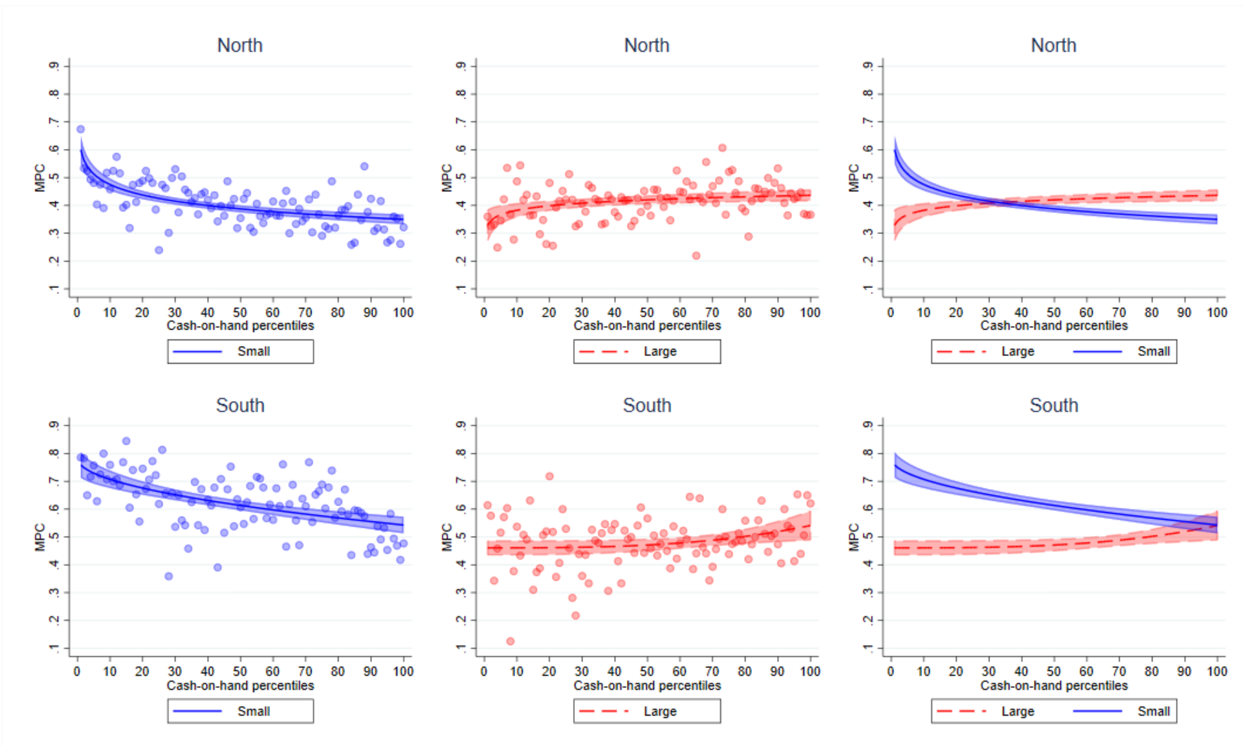
Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included. The columns 6 and 12 also add the real log change in household cash-on-hand between 2012 and 2010. All other controls are measured in 2010. Columns 1 to 6 pertain to household living in northern regions; column 7 to 12 pertain to household living in southern regions. The left hand side in columns 1, 4, 7, and 10 is the MPC out of a small (one month) shock, measured in the 2010 survey; in column 2, 5, 8, and 11 is the MPC out of large (one year) shock, measured in the 2012 survey; in columns 3, 6, 9, and 12 is the difference in MPCs, the MPC out of a small shock less the MPC out of a large shock. The sample consists of households present in both surveys.

Table E.3: Regional heterogeneity non-necessity Tobit regression results

VARIABLES	(1) Small	(2) Large	(3) Small	(4) Large	(5) Small	(6) Large	(7) Small	(8) Large	(9) Small	(10) Large	(11) Small	(12) Large
Eating outside share	0.168**	0.373***	0.344***	0.335***	0.285***	0.301***	-0.225***	-0.127	-0.121	-0.160*	-0.183**	-0.159*
	(0.076)	(0.068)	(0.078)	(0.070)	(0.082)	(0.074)	(0.086)	(0.086)	(0.085)	(0.087)	(0.090)	(0.092)
I Regional cash-on-hand decile			0.505***	0.291***	0.524***	0.302***			0.837***	0.486***	0.836***	0.523***
			(0.035)	(0.032)	(0.038)	(0.035)			(0.040)	(0.040)	(0.045)	(0.045)
II Regional cash-on-hand decile			0.449***	0.349***	0.477***	0.359***			0.775***	0.466***	0.777***	0.487***
			(0.036)	(0.033)	(0.037)	(0.034)			(0.041)	(0.040)	(0.042)	(0.042)
III Regional cash-on-hand decile			0.418***	0.337***	0.439***	0.344***			0.710***	0.356***	0.728***	0.374***
			(0.034)	(0.031)	(0.034)	(0.031)			(0.038)	(0.038)	(0.039)	(0.040)
IV Regional cash-on-hand decile			0.400***	0.355***	0.414***	0.360***			0.634***	0.454***	0.653***	0.465***
			(0.033)	(0.031)	(0.034)	(0.031)			(0.037)	(0.037)	(0.037)	(0.038)
V Regional cash-on-hand decile			0.317***	0.328***	0.326***	0.333***			0.658***	0.451***	0.666***	0.464***
			(0.032)	(0.029)	(0.033)	(0.030)			(0.039)	(0.039)	(0.038)	(0.039)
VI Regional cash-on-hand decile			0.287***	0.375***	0.288***	0.378***			0.674***	0.444***	0.675***	0.438***
			(0.032)	(0.029)	(0.032)	(0.029)			(0.035)	(0.036)	(0.035)	(0.036)
VII Regional cash-on-hand decile			0.276***	0.380***	0.271***	0.381***			0.647***	0.458***	0.645***	0.452***
			(0.032)	(0.029)	(0.032)	(0.029)			(0.037)	(0.038)	(0.037)	(0.038)
VIII Regional cash-on-hand decile			0.266***	0.419***	0.253***	0.413***			0.693***	0.483***	0.683***	0.468***
			(0.032)	(0.028)	(0.032)	(0.029)			(0.036)	(0.037)	(0.037)	(0.038)
IX Regional cash-on-hand decile			0.294***	0.410***	0.276***	0.403***			0.557***	0.488***	0.542***	0.467***
			(0.031)	(0.028)	(0.032)	(0.029)			(0.035)	(0.035)	(0.036)	(0.036)
X Regional cash-on-hand decile			0.164***	0.331***	0.125***	0.311***			0.480***	0.543***	0.464***	0.502***
			(0.033)	(0.029)	(0.036)	(0.032)			(0.036)	(0.037)	(0.039)	(0.041)
Observations	2,983	2,983	2,983	2,983	2,983	2,983	1,541	1,541	1,541	1,541	1,541	1,541
Demographic Controls	NO	NO	NO	NO	YES	YES	NO	NO	NO	NO	YES	YES
Area	North	North	North	North	North	North	South	South	South	South	South	South

Notes: Standard errors in parentheses. P-values correspond to: *** p<0.01, ** p<0.05, * p<0.1. All variables except cash-on-hand deciles are demeaned. Cash-on-hand is the sum of disposable income and financial assets. No constant is included in columns 3 to 6 and 9 to 12. Demographic controls are: age in[18,30], age in(30,45], age in(45,60], male, married, years of education, family size, unemployed, and the real log change in household cash-on-hand between 2012 and 2010. All other controls are measured in 2010. Columns 1 to 6 pertain to household living in northern regions; column 7 to 12 pertain to household living in southern regions. The left hand side in odd columns is the MPC out of a small (one month) shock, measured in the 2010 survey; in even columns is the MPC out of large (one year) shock, measured in the 2012 survey. The sample consists of households present in both surveys.

Figure E.1: The distribution of MPC in the North and in the South of Italy by cash-on-hand percentiles for small income gains (in blue) and large income gains (in red)



Notes: The plot shows the MPC by each regional cash-on-hand percentile in 2010 and fit a fractional polynomial with 95% confidence bands based on the percentile bins. Cash-on-hand is the sum of disposable income and financial assets. The first column plots the MPC out of a small gain, the second one out of a large gain, the third one plots both fractional polynomials together. The first row plots the results for the northern part of the country and the second row for the southern one.

F Non-homothetic model detailed derivations

F.1 Proofs

In this part of the appendix we provide the proofs and detailed derivations of the non-homothetic model. The problem of the household can be written as:

$$\max_{\{c_{a,t},c_{b,t}\}_{t=0}^{\infty}} U(\{c_{a,t}, c_{b,t}\}_{t=0}^{\infty}) = \sum_{t=0}^{\infty} \beta^t \left[\frac{c_{a,t}^{1-\frac{1}{\gamma_a}}}{1-\frac{1}{\gamma_a}} + \frac{c_{b,t}^{1-\frac{1}{\gamma_b}}}{1-\frac{1}{\gamma_b}} \right]$$

$$s.t.$$

$$Y = \sum_{t=0}^{\infty} \sum_{i=a,b} p_{i,t} c_{i,t} = \sum_{t=0}^{\infty} X_t$$

With budget shares: $s_{i,t}^{Y} \equiv \frac{p_{i,t}c_{i,t}}{Y}$ and $s_{i,t}^{X} \equiv \frac{p_{i,t}c_{i,t}}{X_t}$. The Lagrangian of problem is standard:

$$\mathcal{L} = \sum_{t=0}^{\infty} \beta^t \left[\frac{c_{a,t}^{1-\frac{1}{\gamma_a}}}{1-\frac{1}{\gamma_a}} + \frac{c_{b,t}^{1-\frac{1}{\gamma_b}}}{1-\frac{1}{\gamma_b}} \right] + \lambda \left[Y - \sum_{t=0}^{\infty} \sum_{i=a,b} p_{i,t} c_{i,t} \right]$$

The first order condition of the problem:

$$\beta^t c_{i,t}^{-\frac{1}{\gamma_i}} = \lambda p_{i,t} \qquad \forall t, i$$

$$c_{i,t} = \beta^{t\gamma_i} \lambda^{-\gamma_i} p_{i,t}^{-\gamma_i} \tag{6}$$

In order to find the income elasticity, we plug in the FOCs into the budget constraint and find the derivative of the Lagrangian multiplier with respect to a permanent income change by virtue of the implicit function theorem.

$$Y = \sum_{t=0}^{\infty} \sum_{i=a,b} p_{i,t} c_{i,t}$$

$$Y = \sum_{t=0}^{\infty} \sum_{i=a,b} p_{i,t} \beta^{t\gamma_i} \lambda^{-\gamma_i} p_{i,t}^{-\gamma_i}$$

$$dY = \sum_{t=0}^{\infty} \sum_{i=a,b} -\gamma_i p_{i,t} \beta^{t\gamma_i} \lambda^{-\gamma_i - 1} p_{i,t}^{-\gamma_i} d\lambda$$

$$\frac{d\lambda}{dY}\frac{1}{\lambda} = -\frac{1}{\sum_{t=0}^{\infty} \sum_{i=a,b} \gamma_i p_{i,t} c_{i,t}} \tag{7}$$

Armed with this relationship we can prove lemma 1.

Proof of Lemma 1. Take the derivative of (6) and use (7) to find the income elasticity of demand e_i^Y:

$$\frac{\partial c_{i,t}}{\partial Y} = -\gamma_i \beta^{t\gamma_i} \lambda^{-\gamma_i} p_{i,t}^{-\gamma_i} \frac{\partial \lambda}{\partial Y}\frac{1}{\lambda}$$

$$\frac{\partial c_{i,t}}{\partial Y} = -\gamma_i c_{i,t} \frac{\partial \lambda}{\partial Y}\frac{1}{\lambda}$$

$$\frac{\partial c_{i,t}}{\partial Y} = \frac{\gamma_i}{\sum_{\tau=0}^{\infty} \sum_{i=a,b} \gamma_i p_{i,\tau} c_{i,\tau}} c_{i,t}$$

$$e_i^Y = \frac{\partial c_{i,t}}{\partial Y}\frac{Y}{c_{i,t}} = \frac{\gamma_i}{\sum_{\tau=0}^{\infty} \sum_{i=a,b} \gamma_i s_{i,\tau}^Y}$$

Which is the income elasticity for any good i. ■

With this result we can move to the proof of the next lemma, as by definition, a non-necessity good is a good whose income elasticity is greater than one.

Proof of Lemma 2. Notice that budget shares need to sum to one so, $\sum_t s_{a,t}^Y + \sum_t s_{b,t}^Y = 1$. Plug this into the expression for e_a^Y in (2) and massage it:

$$e_a^Y - 1 =$$

$$\frac{\gamma_a}{\gamma_a \sum_{t=0}^{\infty} s_{a,t}^Y + \gamma_b \sum_{t=0}^{\infty} s_{b,t}^Y} - 1 =$$

$$(\gamma_a - \gamma_b)\frac{\left(\sum_{t=0}^{\infty} s_{b,t}^Y\right)}{\gamma_a \sum_{t=0}^{\infty} s_{a,t}^Y + \gamma_b \sum_{t=0}^{\infty} s_{b,t}^Y}$$

Which is greater than zero for $\gamma_a > \gamma_b$. The same argument can let as conclude that $e_b^Y < 1$ for $\gamma_a > \gamma_b$. ■

We can now prove the last lemma.

Proof of Lemma 3. Take the derivative of period t expenditures and plug in (2).

$$\begin{aligned} MPC_t &= \frac{\partial X_t}{\partial Y} \\ &= p_{a,t}\frac{\partial c_{a,t}}{\partial Y} + p_{b,t}\frac{\partial c_{b,t}}{\partial Y} \\ &= p_{a,t}\frac{c_{a,t}}{Y}\frac{Y}{c_{a,t}}\frac{\partial c_{a,t}}{\partial Y} + p_{b,t}\frac{c_{b,t}}{Y}\frac{Y}{c_{b,t}}\frac{\partial c_{b,t}}{\partial Y} \\ &= s_{a,t}^Y e_a^Y + s_{b,t}^Y e_b^Y \end{aligned}$$

■

Before proving the two propositions, a few remarks on the MPC are useful. Notice that MPC is positive as all its elements are. Moreover, due to Engel's aggregation, the sum of all MPCs is one:

$$\begin{aligned} \sum_t MPC_t &= \sum_t s_{a,t}^Y e_a^Y + \sum_t s_{b,t}^Y e_b^Y \\ \sum_t MPC_t &= e_a^Y \sum_t s_{a,t}^Y + e_b^Y \sum_t s_{b,t}^Y \\ \sum_t MPC_t &= \frac{\gamma_a}{\sum_\tau \sum_{i=a,b} \gamma_i s_{i,\tau}^Y} \sum_t s_{a,t}^Y + \frac{\gamma_b}{\sum_\tau \sum_{i=a,b} \gamma_i s_{i,\tau}^Y} \sum_t s_{b,t}^Y \\ \sum_t MPC_t &= 1 \end{aligned}$$

This implies that if that $s_{i,t}^Y$ is equal to $\Xi \sum_t s_{i,t}^Y$ for both $i = a, b$ and for any Ξ (an example could be $\beta^t(1-\beta)$ if share of each good is constant over present expenditures), then MPC_t is a constant and does not vary with income, this predicts the content of proposition 1. Also notice that the MPC is closely related to the average IES:

$$IES_t^Y = s_{a,t}^X \gamma_a + s_{b,t}^X \gamma_b \tag{8}$$

To build intuition we are going to establish the limiting behavior of this model. We are seeing how the MPC and other key metrics behave when permanent income approaches zero and infinity. Start with the Lagrange multiplier. We know that it is decreasing in income and its relationship is governed by :

$$Y = \sum_t \left[\beta^{t\gamma_a}\lambda^{-\gamma_a}p_{a,t}^{1-\gamma_a} + \beta^{t\gamma_b}\lambda^{-\gamma_b}p_{b,t}^{1-\gamma_b}\right] \tag{9}$$

We can see form here that λ approaches zero as Y tends to infinity and vice-versa. Furthermore, we can use this relationship to show what happens to consumption shares.

$$\sum_t s_{a,t}^Y = \frac{\sum_t \beta^{t\gamma_a}\lambda^{-\gamma_a}p_{a,t}^{1-\gamma_a}}{\sum_\tau \left[\beta^{\tau\gamma_a}\lambda^{-\gamma_a}p_{a,\tau}^{1-\gamma_a} + \beta^{\tau\gamma_b}\lambda^{-\gamma_b}p_{b,\tau}^{1-\gamma_b}\right]}$$
$$\sum_t s_{a,t}^Y = \frac{\sum_t \beta^{t\gamma_a}p_{a,t}^{1-\gamma_a}}{\sum_\tau \left[\beta^{\tau\gamma_a}p_{a,\tau}^{1-\gamma_a} + \beta^{\tau\gamma_b}\lambda^{\gamma_a-\gamma_b}p_{b,\tau}^{1-\gamma_b}\right]}$$

As income tends to infinity this share will tend to one, as $\gamma_a > \gamma_b$. By the same token it will tend to zero as income tends to zero. The opposite is true for $\sum_t s_{b,t}^Y$, which tends to 1 as households become poorer and to 0 as they become richer and consume only non-necessities. This results helps as to see what happens to the income elasticities. e_a^Y will tend to one as income tends to infinity and to γ_a as it approaches zero, on the other hand e_b^Y will tend to γ_b as income tends to infinity and to one as it approaches zero. Furthermore, $s_{a,t}^Y$ will tend to zero as income declines as it is weakly positive in each period and its infinite sum tends to zero. On the other hand, as income increases it will tend to a finite number weakly below one: $s_{a,t}^Y \rightarrow_{Y\rightarrow\infty} \frac{\beta^{t\gamma_a}p_{a,t}^{1-\gamma_a}}{\sum_\tau\left[\beta^{\tau\gamma_a}p_{a,\tau}^{1-\gamma_a}\right]}$. Similarly. $s_{a,t}^Y$ will tend to $\frac{\beta^{t\gamma_b}p_{b,t}^{1-\gamma_b}}{\sum_\tau\left[\beta^{\tau\gamma_b}p_{b,\tau}^{1-\gamma_b}\right]}$ and zero as income goes to zero and infinity respectively. Finally, we can see that the MPC will tend to $s_{a,t}^Y|_{Y\rightarrow\infty} = \frac{\beta^{t\gamma_a}p_{a,t}^{1-\gamma_a}}{\sum_\tau\left[\beta^{\tau\gamma_a}p_{a,\tau}^{1-\gamma_a}\right]}$ as income goes to infinity and to $s_{b,t}^Y|_{Y\rightarrow 0} = \frac{\beta^{t\gamma_b}p_{b,t}^{1-\gamma_b}}{\sum_\tau\left[\beta^{\tau\gamma_b}p_{b,\tau}^{1-\gamma_b}\right]}$ as income goes to zero. By this token, notice that the MPC will be higher at $Y \rightarrow \infty$ than at $Y \rightarrow 0$ when $s_{a,t}^Y|_{Y\rightarrow\infty} > s_{b,t}^Y|_{Y\rightarrow 0}$, a result that does generalize as we can see in proposition 1, which we now prove.

Proof of Proposition 1.

For ease of exposition we split the proof in several building blocks.

Part 1. To see how the MPC varies with income let us fist find how expenditure shares and income elasticities vary with income.

$$\begin{aligned}\frac{\partial s^Y_{a,t}}{\partial Y} &= \frac{\partial p_{a,t}c_{a,t}/Y}{\partial Y} \\ &= -p_{a,t}c_{a,t}/Y^2 + p_{a,t}/Y\frac{\partial c_{a,t}}{\partial Y} \\ &= -s^Y_{a,t}/Y + s^Y_{a,t}e^Y_a/Y \\ &= \frac{1}{Y}s^Y_{a,t}\left(e^Y_a - 1\right)\end{aligned}$$

That is, expenditure shares increase for non-necessities a and decline for necessities b as income increases in each period . We can make this explicit:

$$\frac{\partial s^Y_{a,t}}{\partial Y} = \frac{1}{Y}s^Y_{a,t}(\gamma_a - \gamma_b)\frac{\left(\sum_\tau s^Y_{b,\tau}\right)}{\gamma_a \sum_\tau s^Y_{a,\tau} + \gamma_b \sum_\tau s^Y_{b,\tau}}$$

Now find how the income elasticity varies with income:

$$\begin{aligned}\frac{\partial e^Y_a}{\partial Y} &= \frac{\partial\left(\frac{\gamma_a}{\gamma_a \sum_\tau s^Y_{a,\tau} + \gamma_b \sum_\tau s^Y_{b,\tau}}\right)}{\partial Y} \\ &= -\gamma_a \frac{1}{\left(\gamma_a \sum_\tau s^Y_{a,\tau} + \gamma_b \sum_\tau s^Y_{b,\tau}\right)^2}\left(\gamma_a \sum_\tau \frac{\partial s^Y_{a,\tau}}{\partial Y} + \gamma_b \sum_\tau \frac{\partial s^Y_{b,\tau}}{\partial Y}\right) \\ &= -\gamma_a \frac{1}{\left(\gamma_a \sum_\tau s^Y_{a,\tau} + \gamma_b \sum_\tau s^Y_{b,\tau}\right)^2}\left(\gamma_a \sum_\tau \frac{1}{Y}s^Y_{a,\tau}\left(e^Y_a - 1\right) + \gamma_b \sum_\tau \frac{1}{Y}s^Y_{b,\tau}\left(e^Y_b - 1\right)\right) \\ &= -\gamma_a \frac{1}{Y}\frac{1}{\left(\gamma_a \sum_\tau s^Y_{a,\tau} + \gamma_b \sum_\tau s^Y_{b,\tau}\right)^2}(\gamma_a - \gamma_b)^2 \frac{\left(\sum_\tau s^Y_{b,\tau}\right)\left(\sum_\tau s^Y_{a,\tau}\right)}{\gamma_a \sum_\tau s^Y_{a,\tau} + \gamma_b \sum_\tau s^Y_{b,\tau}} \\ &< 0\end{aligned}$$

The income elasticity is declining in income for both goods, but it is doing so more quickly for the non-necessity good as all the expression is the same across the two goods except for the initial power term (and we know $\gamma_a > \gamma_b$). We can rewrite it as:

$$\frac{\partial e_a^Y}{\partial Y} = -e_a^Y \frac{1}{Y} \frac{1}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)} \left(\gamma_a \sum_\tau s_{a,\tau}^Y \left(e_a^Y - 1\right) + \gamma_b \sum_\tau s_{b,\tau}^Y \left(e_b^Y - 1\right)\right)$$

Part 2. Now move to how the MPC varies with income:

$$\begin{aligned}\frac{\partial MPC_t}{\partial Y} &= \frac{\partial s_{a,t}^Y e_a^Y + s_{b,t}^Y e_b^Y}{\partial Y} \\ &= \frac{\partial s_{a,t}^Y}{\partial Y} e_a^Y + s_{a,t}^Y \frac{\partial e_a^Y}{\partial Y} + \frac{\partial s_{b,t}^Y}{\partial Y} e_b^Y + s_{b,t}^Y \frac{\partial e_b^Y}{\partial Y}\end{aligned}$$

For simplicity, and due to symmetry in the problem, we start by working with the first 2 terms:

$$\begin{aligned}&\frac{\partial s_{a,t}^Y}{\partial Y} e_a^Y + s_{a,t}^Y \frac{\partial e_a^Y}{\partial Y} = \\ &= \frac{1}{Y} s_{a,t}^Y \left(e_a^Y - 1\right) e_a^Y \\ &- s_{a,t}^Y e_a^Y \frac{1}{Y} \frac{1}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)} \left(\gamma_a \sum_\tau s_{a,\tau}^Y \left(e_a^Y - 1\right) + \gamma_b \sum_\tau s_{b,\tau}^Y \left(e_b^Y - 1\right)\right) \\ &= \frac{1}{Y} s_{a,t}^Y e_a^Y \frac{1}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)} \left[\gamma_a - \left(\gamma_a \sum_\tau s_{a,\tau}^Y e_a^Y + \gamma_b \sum_\tau s_{b,\tau}^Y e_b^Y\right)\right] \\ &= \frac{1}{Y} s_{a,t}^Y e_a^Y \frac{1}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)^2} \left[\gamma_a \gamma_b \sum_\tau s_{b,\tau}^Y - \gamma_b^2 \sum_\tau s_{b,\tau}^Y\right] \\ &= \frac{1}{Y} s_{a,t}^Y \left(\sum_\tau s_{b,\tau}^Y\right) \frac{\gamma_a \gamma_b}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)^3} \left[\gamma_a - \gamma_b\right] > 0\end{aligned}$$

Similarly for the other terms:

$$
\begin{aligned}
&\frac{\partial s_{b,t}^Y}{\partial Y} e_b^Y + s_{b,t}^Y \frac{\partial e_a^Y}{\partial Y} = \\
&= \frac{1}{Y} s_{b,t}^Y \left(e_b^Y - 1\right) e_b^Y \\
&- s_{b,t}^Y e_b^Y \frac{1}{Y} \frac{1}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)} \left(\gamma_a \sum_\tau s_{a,\tau}^Y \left(e_a^Y - 1\right) + \gamma_b \sum_\tau s_{b,\tau}^Y \left(e_b^Y - 1\right)\right) \\
&= -\frac{1}{Y} s_{b,t}^Y \left(\sum_\tau s_{a,\tau}^Y\right) \frac{\gamma_a \gamma_b}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)^3} \left[\gamma_a - \gamma_b\right] < 0
\end{aligned}
$$

These two expressions are specular besides the two terms in front and the change in sign. We can use this to find expression for the change in MPC with respect to income:

$$
\begin{aligned}
\frac{\partial MPC_t}{\partial Y} &= \frac{\partial s_{a,t}^Y e_a^Y + s_{b,t}^Y e_b^Y}{\partial Y} \\
&= \frac{\partial s_{a,t}^Y}{\partial Y} e_a^Y + s_{a,t}^Y \frac{\partial e_a^Y}{\partial Y} + \frac{\partial s_{b,t}^Y}{\partial Y} e_b^Y + s_{b,t}^Y \frac{\partial e_b^Y}{\partial Y} \\
&= \frac{1}{Y} s_{a,t}^Y \left(\sum_\tau s_{b,\tau}^Y\right) \frac{\gamma_a \gamma_b}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)^3} \left[\gamma_a - \gamma_b\right] \\
&- \frac{1}{Y} s_{b,t}^Y \left(\sum_\tau s_{a,\tau}^Y\right) \frac{\gamma_a \gamma_b}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)^3} \left[\gamma_a - \gamma_b\right] \\
\frac{\partial MPC_t}{\partial Y} &= \left[s_{a,t}^Y \left(\sum_\tau s_{b,\tau}^Y\right) - s_{b,t}^Y \left(\sum_\tau s_{a,\tau}^Y\right)\right] \frac{1}{Y} \frac{\gamma_a \gamma_b}{\left(\gamma_a \sum_\tau s_{a,\tau}^Y + \gamma_b \sum_\tau s_{b,\tau}^Y\right)^3} \left[\gamma_a - \gamma_b\right] \qquad (10)
\end{aligned}
$$

Where the last equation is the derivative of the MPC with respect to income we need.

Part 3. Notice that all elements following the first one in square brackets in (10) are positive, if we rearrange that element we can see the result that the MPC is increasing with income if:

$$
\frac{s_{a,t}^Y}{s_{b,t}^Y} > \frac{\left(\sum_\tau s_{a,\tau}^Y\right)}{\left(\sum_\tau s_{b,\tau}^Y\right)}
$$

To show the condition (4) and to prove that the sign depends only on prices and preference parameters plug in the FOCs there and simplify to show that the condition does not depend neither on income, nor on the Lagrange multiplier:

$$\frac{\beta^{t\gamma_a}\lambda^{-\gamma_a}p_{a,t}^{1-\gamma_a}/Y}{\beta^{t\gamma_b}\lambda^{-\gamma_b}p_{b,t}^{1-\gamma_b}/Y} > \frac{\left(\sum_\tau \beta^{\tau\gamma_a}\lambda^{-\gamma_a}p_{a,\tau}^{1-\gamma_a}/Y\right)}{\left(\sum_\tau \beta^{\tau\gamma_b}\lambda^{-\gamma_b}p_{b,\tau}^{1-\gamma_b}/Y\right)}$$
$$\frac{\beta^{t\gamma_a}p_{a,t}^{1-\gamma_a}}{\beta^{t\gamma_b}p_{b,t}^{1-\gamma_b}} > \frac{\left(\sum_\tau \beta^{\tau\gamma_a}p_{a,\tau}^{1-\gamma_a}\right)}{\left(\sum_\tau \beta^{\tau\gamma_b}p_{b,\tau}^{1-\gamma_b}\right)}$$

■

Whereas the sign of the derivative of the MPC with respect to income does not depend on the income level, its magnitude does, so that how an agent will respond to shocks of different sizes differently depending on her position along the income distribution. To this aim, we move to the final proof.

Proof of Proposition 2.

Part 1. Let's start by finding the second derivative of the MPC with respect to income:

$$\begin{aligned}
\frac{\partial^2 MPC_t}{\partial Y^2} = &\left[(e_a^Y-1)s_{a,t}^Y\left(\sum_\tau s_{b,\tau}^Y\right)+(e_b^Y-1)s_{a,t}^Y\left(\sum_\tau s_{b,\tau}^Y\right)-(e_a^Y-1)s_{b,t}^Y\left(\sum_\tau s_{a,\tau}^Y\right)\right.\\
&\left.-(e_b^Y-1)s_{b,t}^Y\left(\sum_\tau s_{a,\tau}^Y\right)\right]\frac{1}{Y^2}\frac{\gamma_a\gamma_b}{\left(\gamma_a\sum_\tau s_{a,\tau}^Y+\gamma_b\sum_\tau s_{b,\tau}^Y\right)^3}\left[\gamma_a-\gamma_b\right]\\
&-\left[s_{a,t}^Y\left(\sum_\tau s_{b,\tau}^Y\right)-s_{b,t}^Y\left(\sum_\tau s_{a,\tau}^Y\right)\right]\frac{1}{Y^2}\frac{\gamma_a\gamma_b}{\left(\gamma_a\sum_\tau s_{a,\tau}^Y+\gamma_b\sum_\tau s_{b,\tau}^Y\right)^3}\left[\gamma_a-\gamma_b\right]\\
&-3\left[s_{a,t}^Y\left(\sum_\tau s_{b,\tau}^Y\right)-s_{b,t}^Y\left(\sum_\tau s_{a,\tau}^Y\right)\right]\frac{1}{Y^2}\frac{\gamma_a\gamma_b}{\left(\gamma_a\sum_\tau s_{a,\tau}^Y+\gamma_b\sum_\tau s_{b,\tau}^Y\right)^4}\left[\gamma_a-\gamma_b\right]\\
&\left[\gamma_a\left(\sum_\tau s_{a,\tau}^Y\right)(e_a^Y-1)+\gamma_b\left(\sum_\tau s_{b,\tau}^Y\right)(e_b^Y-1)\right]\\
\frac{\partial^2 MPC_t}{\partial Y^2} = &\frac{\partial MPC_t}{\partial Y}\frac{1}{Y}\left[\frac{\gamma_a+\gamma_b}{\left(\gamma_a\sum_\tau s_{a,\tau}^Y+\gamma_b\sum_\tau s_{b,\tau}^Y\right)}-3-3\frac{(\gamma_a-\gamma_b)^2\left(\sum_\tau s_{a,\tau}^Y\right)\left(\sum_\tau s_{b,\tau}^Y\right)}{\left(\gamma_a\sum_\tau s_{a,\tau}^Y+\gamma_b\sum_\tau s_{b,\tau}^Y\right)^2}\right]\\
\frac{\partial^2 MPC_t}{\partial Y^2} = &\frac{\partial MPC_t}{\partial Y}\frac{1}{Y}\frac{1}{\left(\gamma_a\sum_\tau s_{a,\tau}^Y+\gamma_b\sum_\tau s_{b,\tau}^Y\right)^2}\\
&\left[\gamma_a^2\left(\sum_\tau s_{a,\tau}^Y\right)+\gamma_a\gamma_b+\gamma_b^2\left(\sum_\tau s_{b,\tau}^Y\right)-3\gamma_a^2\left(\sum_\tau s_{a,\tau}^Y\right)-3\gamma_b^2\left(\sum_\tau s_{b,\tau}^Y\right)\right]
\end{aligned}$$

Which gives the expression for the second derivative of the MPC with respect to income.

$$\frac{\partial^2 MPC_t}{\partial Y^2} = \frac{\partial MPC_t}{\partial Y}\frac{1}{Y}\frac{1}{\left(\gamma_a \sum_\tau s^Y_{a,\tau} + \gamma_b \sum_\tau s^Y_{b,\tau}\right)^2}\left[\gamma_a\gamma_b - 2\gamma_a^2\left(\sum_\tau s^Y_{a,\tau}\right) - 2\gamma_b^2\left(\sum_\tau s^Y_{b,\tau}\right)\right] \tag{11}$$

Part 2. The results comes form inspecting (11). We consider the case of increasing MPC in income, $\frac{\partial MPC_t}{\partial Y} > 0$. Therefore the sign the second derivative depends only on the last term in the square brackets. From there we can see that for high values of income the MPC is always concave as we have $\gamma_a > \gamma_b$:

$$\begin{aligned}\lim_{Y\to\infty} \gamma_a\gamma_b - 2\gamma_a^2\left(\sum_\tau s^Y_{a,\tau}\right) - 2\gamma_b^2\left(\sum_\tau s^Y_{b,\tau}\right) &= \gamma_a\gamma_b - 2\gamma_a^2 \\ &< \gamma_a\gamma_a - 2\gamma_a^2 \\ &= -\gamma_a^2 \\ &< 0\end{aligned}$$

With respect to the behavior for low values of income we can see how for $\gamma_b < \frac{\gamma_a}{2}$ we have a convex MPC:

$$\begin{aligned}\lim_{Y\to 0} \gamma_a\gamma_b - 2\gamma_a^2\left(\sum_\tau s^Y_{a,\tau}\right) - 2\gamma_b^2\left(\sum_\tau s^Y_{b,\tau}\right) &= \gamma_a\gamma_b - 2\gamma_b^2 \\ \gamma_a\gamma_b - 2\gamma_b^2 &> 0 \\ \gamma_b &< \frac{\gamma_a}{2}\end{aligned}$$

Part 3. Finally, we can find the threshold output $\bar{Y}$ and threshold contemporaneous expenditures $\bar{s}^X_{a,0}$ from noticing that both are monotonically related (both increasing) to the threshold implied by the term in the square bracket:

$$\overline{\left(\sum_{\tau} s^Y_{b,\tau}\right)} = \frac{\gamma_b(\gamma_a - 2\gamma_b)}{2(\gamma_a^2 - \gamma_b^2)}$$

To see that, take the derivative of the average expenditures with respect to income:

$$\begin{aligned}
\frac{\partial \sum_\tau s^Y_{a,\tau}}{\partial Y} &= \frac{\partial}{\partial Y} \frac{\sum_\tau \beta^{\tau\gamma_a} p_{a,\tau}^{1-\gamma_a}}{\sum_\tau \left[\beta^{\tau\gamma_a} p_{a,\tau}^{1-\gamma_a} + \beta^{\tau\gamma_b}\lambda^{\gamma_a-\gamma_b} p_{b,\tau}^{1-\gamma_b}\right]} \\
&= \frac{\sum_\tau \beta^{\tau\gamma_a} p_{a,\tau}^{1-\gamma_a}}{\left(\sum_\tau \left[\beta^{\tau\gamma_a} p_{a,\tau}^{1-\gamma_a} + \beta^{\tau\gamma_b}\lambda^{\gamma_a-\gamma_b} p_{b,\tau}^{1-\gamma_b}\right]\right)^2} \left(\sum_\tau \beta^{\tau\gamma_b}\lambda^{\gamma_a-\gamma_b} p_{b,\tau}^{1-\gamma_b}\right)(\gamma_a - \gamma_b)(-1)\frac{\partial \lambda}{\partial Y} > 0
\end{aligned}$$

Which is positive as all elements are besides the last two. We can make a similar argument for the current share if we notice that we can write it in a similar way:

$$\begin{aligned}
\frac{\partial}{\partial Y} s^X_{a,t} &= \frac{\partial}{\partial Y} \frac{s^Y_{a,t}}{s^Y_{a,t} + s^Y_{b,t}} \\
&= \frac{\partial}{\partial Y} \frac{\beta^{t\gamma_a} p_{a,t}^{1-\gamma_a}}{\left[\beta^{t\gamma_a} p_{a,t}^{1-\gamma_a} + \beta^{t\gamma_b}\lambda^{\gamma_a-\gamma_b} p_{b,t}^{1-\gamma_b}\right]} \\
&= \frac{\beta^{t\gamma_a} p_{a,t}^{1-\gamma_a}}{\left[\beta^{t\gamma_a} p_{a,t}^{1-\gamma_a} + \beta^{t\gamma_b}\lambda^{\gamma_a-\gamma_b} p_{b,t}^{1-\gamma_b}\right]^2} \left(\beta^{t\gamma_b}\lambda^{\gamma_a-\gamma_b} p_{b,t}^{1-\gamma_b}\right)(\gamma_a - \gamma_b)(-1)\frac{\partial \lambda}{\partial Y} > 0
\end{aligned}$$

This implies that we can define the threshold in terms of output and current observable shares. ■

F.2 Simplified model

To build intuition for proposition 1 we take a simplified setting, one where there is a constant trend growth in prices for both goods such that: $p_{a,t} = (R^{-1}g_a)^t p_{a,0}$ and $p_{b,t} = (R^{-1}g_b)^t p_{b,0}$, where R^{-1} is there in order to signal how prices are growing after discounting at the market rate. Plug this into 4 for MPC_0:

$$
\begin{aligned}
\frac{p_{a,0}^{1-\gamma_a}}{p_{b,0}^{1-\gamma_b}} &> \frac{\left(\sum_{\tau=0}^{\infty}\beta^{\tau\gamma_a}p_{a,\tau}^{1-\gamma_a}\right)}{\left(\sum_{\tau=0}^{\infty}\beta^{\tau\gamma_b}p_{b,\tau}^{1-\gamma_b}\right)} \\
\frac{p_{a,0}^{1-\gamma_a}}{p_{b,0}^{1-\gamma_b}} &> \frac{\left(\sum_{\tau=0}^{\infty}\beta^{\tau\gamma_a}p_{a,0}^{1-\gamma_a}(R^{-1}g_a)^{\tau(1-\gamma_a)}\right)}{\left(\sum_{\tau=0}^{\infty}\beta^{\tau\gamma_b}p_{b,0}^{1-\gamma_b}(R^{-1}g_b)^{\tau(1-\gamma_b)}\right)} \\
\left(\sum_{\tau=0}^{\infty}\beta^{\gamma_b\tau}(R^{-1}g_b)^{\tau(1-\gamma_b)}\right) &> \left(\sum_{\tau=0}^{\infty}\beta^{\gamma_a\tau}(R^{-1}g_a)^{\tau(1-\gamma_a)}\right) \\
\beta^{\gamma_b}(R^{-1}g_b)^{(1-\gamma_b)} &> \beta^{\gamma_b}(R^{-1}g_a)^{(1-\gamma_a)} \\
g_b^{(1-\gamma_b)} &> g_a^{(1-\gamma_a)}(R\beta)^{\gamma_a-\gamma_b}
\end{aligned}
$$

For $\beta^{\gamma_b}(R^{-1}g_a)^{(1-\gamma_a)} < 1$ and $\beta^{\gamma_b}(R^{-1}g_b)^{(1-\gamma_b)} < 1$. In the empirically plausible case of $\gamma_a > 1 > \gamma_b$, with $R\beta \leq 1$, we need growth in non-necessities price to be high enough: $g_a > g_b^{\frac{\gamma_b-1}{\gamma_a-1}}(R\beta)^{\frac{\gamma_a-\gamma_b}{\gamma_a-1}}$. Take various cases:

- If $g_b = 1$ and $R\beta = 1$ we just need positive trend growth for non-necessities: $g_a > 1$.
- If $g_b > 1$ and $R\beta = 1$ notice that the condition weakens, a lower trend growth g_a is enough with a threshold < 1. This might appear counterintuitive, but the reason is that, with $\gamma_b < 1$ income effects are stronger than substitution effects for good b, so households would tilt consumption expenditures away from where it is cheaper, that is today with $g_b > 1$.
- For any γ_b, having $R\beta < 1$ also allows for a lower threshold for g_a. The reason is that the present becomes relatively more beneficial, so agents would tilt consumption relatively more to commodities which are easier to shift intertemporally: the non-necessities. This can be seen from the exponent to $R\beta$ being $\gamma_a - \gamma_b$.

Further notice that even if $\gamma_a > \gamma_b > 1$ the expression remains $g_a > g_b^{\frac{\gamma_b-1}{\gamma_a-1}}(R\beta)^{\frac{\gamma_a-\gamma_b}{\gamma_a-1}}$, but now the exponent on g_b is positive, but below one. This implies that even in this case $g_a > g_b > 1$ would be sufficient to guarantee an increasing MPC on income.

The question is whether the condition is satisfied in the data. First of all, in the data it is likely that, especially recently, $R\beta < 1$, making it more likely that the condition is satisfied for any g_a and g_b. Furthermore, the data seem to point to $g_a > g_b > 1$, making the condition trivially satisfied for $\gamma_a > 1 > \gamma_b$. The first two panels of Figure G.1 provides support for $g_a > g_b$ both for Italy and the United States taking food consumption at home and away from home as a proxy. The bottom two panels of the same figure present evidence on how sub-indices of the CPI which plausibly include more non-necessity goods have been growing faster in both Italy and the United States for the past 25 years.

F.3 Calibration

In this subsection, we discuss the calibration of the simplified model to bring it to the data, in order to construct Figures 5 and 6. The calibrated parameters are in Table F.2. We normalize prices in period 0 to one for both goods. The calibration of β and R is standard and it maps exactly to the Aiyagari (1994) model. With respect to the calibration of γ_a and γ_b, we do not have direct empirical evidence that reflects on the overall budget of the households.[8] However, we have indirect evidence of how the average IES varies along the income distribution, and this metric maps directly to the MPC expression in equation (8) of Appendix F.1. More specifically, Attanasio, Banks and Tanner (2002) estimate IESs for non-stock market participants (which we view as low-income households) and stock market participants (which we regard as affluent families) from household expenditure survey data and the nominal interest rate on Treasury bills (see their Table 2). We map their estimates to γ_a and γ_b using the expression in equation (8) of Appendix F together with data on non-necessities shares along the household cash-on-hand distribution in Table F.1.[9] For poor households, we set $\gamma_b = 0.1168$, which is the inverse of the IES estimate of 8.564 estimated by Attanasio, Banks and Tanner (2002), according to the notion that low-income families consume a negligible share of non-necessities (i.e. $s^X_{a,t} = 0$). As for γ_a, we use equation (8) again, the calibrated value of 0.1168 for γ_b, the inverse of the IES for rich households

[8] Crossley and Low (2011) estimate the good specific IES on a subset of goods for which they have good price data, but cannot estimate it for all categories. Notice that, on this subset, they find evidence for $\gamma_a > 1 > \gamma_b$ and for $\gamma_a > 2\gamma_b$ necessary for proposition 2.

[9] As additional evidence, the recent work by Calvet et al. (2021) on detailed Swedish data and using Epstein-Zin preference to separately identify the IES and the risk aversion coefficient also find heterogeneous IES estimates that are in line with with our calibration: households with a higher wealth to income ratio tend to have a higher IES.

estimated by Attanasio, Banks and Tanner (2002) (i.e. one over 0.458) and the non-necessity consumption share for the tenth decile of the cash-on-hand distribution (i.e. $s^X_{a,t} = 0.167$). This results in $\gamma_a = 10.3651$. In Appendix Section I.2, we account for the uncertainty around the parameters γ_a and γ_b.

Finally, we calibrate $g_a = 1.03$ and $g_b = 1.015$ from data on inflation on food at home and outside form home in Italy and in the United States presented in Figure G.1.[10] The other parameters β and R are standard are calibrated to the same values as in the Aiyagari (1994) model at 0.95 and 1.01 respectively.

F.4 From expenditure shares to MPC

As discussed in 5.2, in this class of non-homothetic models we do not have scale invariance with respect to the income scale choice, but we do have it with respect to observable expenditure shares on necessities and non necessities ($s^X_{a,0}$ and $s^X_{b,0}$). We use this insight to map the model to the data where we use data from Table F.1.[11]

For a given calibration and an expenditure share $s^X_{a,0}$, we take the following steps:

1. Compute the all set of prices $\{p_{a,t}, p_{b,t}\}_{t=0}^{\infty}$
2. Obtain the Lagrange multiplier numerically with the expression for the FOCs (6):

$$s^X_{a,0} = \frac{\lambda^{-\gamma_a} p_{a,0}^{1-\gamma_a}}{\lambda^{-\gamma_a} p_{a,0}^{1-\gamma_a} + \lambda^{-\gamma_b} p_{b,0}^{1-\gamma_b}}$$

3. Compute Y from (9)
4. Obtain $Y_{1m} = Y + Y(1-\beta)/12$ and $Y_{1y} = Y + Y(1-\beta)$
5. Compute resulting λ_{1m} and λ_{1y} from (9)

[10] Our model implies that affluent households frontload their consumption of non-essential as their price is expected to increase over time relative to the price of essentials. It is important to emphasize, however, that this does not imply that affluent households necessarily go into debt during their first years. The reason is that, as in the data, affluent households have not only a high level of income but also exhibit a high level of (liquid) financial assets.

[11] In order to deal with zero shares and to ensure interior solutions we add an "eps" of 2.2204e-16% to the necessity shares in the computation.

Table F.1: Statistics by deciles of cash-on-hand

	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eigth	Ninth	Tenth
Consumption	14.25	13.40	16.80	18.60	20.40	23.40	25.20	28.75	30.60	41.21
Income	5.349	10.80	14.31	17.63	21.02	23.16	25.01	28.05	31.42	42.94
Financial assets	0	0	2.426	3.696	5	9.500	15.38	25.32	46.59	103
Cash-on-hand	6.354	12	16.91	21.48	26.29	32.52	40.87	53.74	78.27	149.9
Eating out share	0	0	0	0	0.0400	0.0667	0.103	0.111	0.130	0.167

Notes: The table shows the median value for each variable for each decile of cash-on-hand. Cash-on-hand is the sum of disposable income and financial assets. The sample includes households we observe in both waves as in the main regressions. Consumption, income, financial assets, and cash-on-hand are 2010 values in current thousands of Euros.

Table F.2: Non-homothetic model calibration

Parameter	Value	Description
β	0.95	Discount Factor
R	1.01	Interest Rate
γ_a	10.3651	Non-Necessities IES
γ_b	0.1168	Necessities IES
g_a	1.03	Non-Necessities Inflation
g_b	1.015	Necessities Inflation

Notes: The first two parameters are standard and match the Aiyagari (1994) model calibration. The two power elasticity parameters are calibrated by matching the average IES for poor and rich households estimated by Attanasio, Banks and Tanner (2002). The inflation parameters come from the inflation on food at home and away from home in Italy.

6. Obtain the MPCs out of these two income levels with (6), (2), and (3)

7. Check slope and convexity of the MPC with (10) and (11)

To find $\bar{Y}$ for proposition 2 we take similar steps as above, but rather than starting from an expenditure share $s_{a,0}^X$ we simply iterate on Y until we find zero convexity in the MPC with (11). As shown in the proof of proposition 2, if the conditions outlined are satisfied, the second derivative of the MPC with respect to income is continuous and crosses zero only once on the strictly positive and finite space, guaranteeing a unique solution.

G Macro Price Data Description

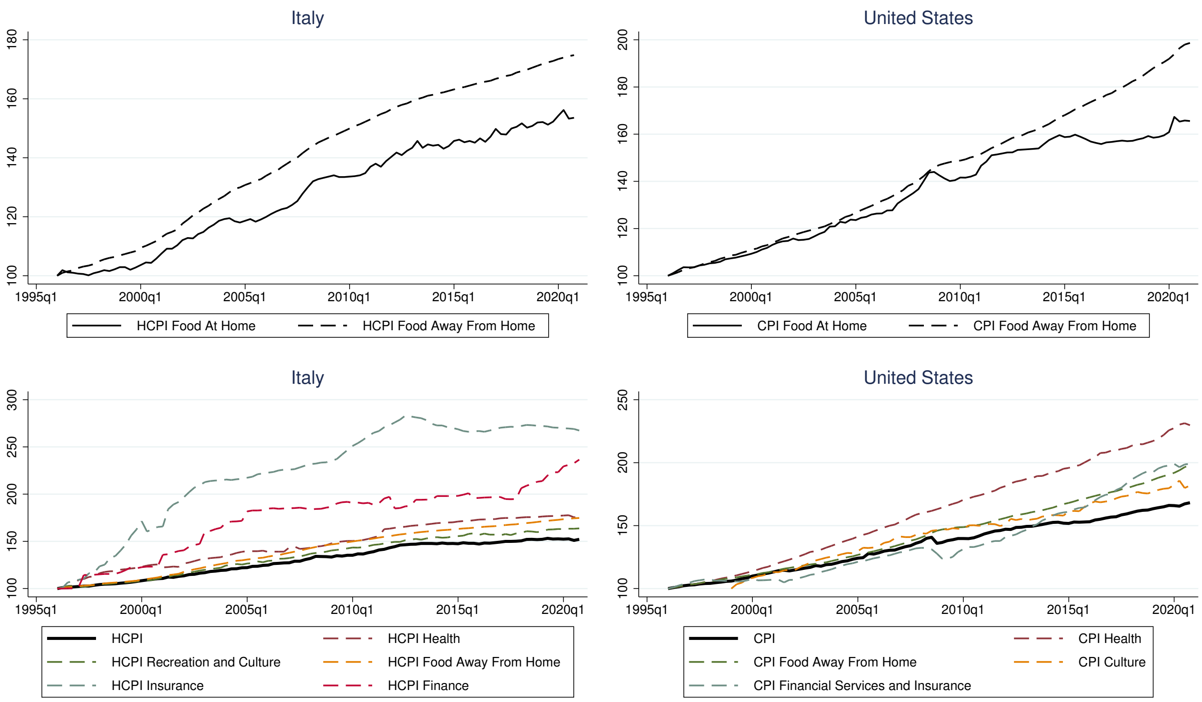
In this appendix, we provide the details on how we constructed Figure G.1. All data comes from FRED, to construct quarterly data we used end of quarter monthly data. We normalize all series at 100 on 1996Q1, except for the US series for Culture, which starts in 1999Q1. For that series we normalize at 100 on this date. In Table G.1 we report all series codes with their description.

Table G.1: Macro price data description

Series Name	FRED Code	Description
CPI	cpiaucsl	Consumer Price Index for All Urban Consumers: All Items in U.S. City Average
CPI Food Away From Home	cusr0000sefv	Consumer Price Index for All Urban Consumers: Food Away from Home in U.S. City Average
CPI Food At Home	cusr0000saf11	Consumer Price Index for All Urban Consumers: Food at Home in U.S. City Average
CPI Health	cpimedsl	Consumer Price Index for All Urban Consumers: Medical Care in U.S. City Average
CPI Financial Services and Insurance	difsrg3q086sbea	Personal consumption expenditures: Financial services and insurance (chain-type price index)
CPI Culture	cusr0000ss62031	Consumer Price Index for All Urban Consumers: Admission to Movies, Theaters, and Concerts in U.S. City Average
HCPI	cp0000itm086nest	Harmonized Index of Consumer Prices: All Items for Italy
HCPI Food Away From Home	cp1111itm086nest	Harmonized Index of Consumer Prices: Restaurants, cafés, and the Like for Italy
HCPI Food At Home	cp0110itm086nest	Harmonized Index of Consumer Prices: Food for Italy
HCPI Health	cp0600itm086nest	Harmonized Index of Consumer Prices: Health for Italy
HCPI Recreation and Culture	cp0940itm086nest	Harmonized Index of Consumer Prices: Recreational and Cultural Services for Italy
HCPI Insurance	cp1250itm086nest	Harmonized Index of Consumer Prices: Insurance for Italy
HCPI Finance	cp1260itm086nest	Harmonized Index of Consumer Prices: Financial Services, Not Elsewhere Classified for Italy

Notes: All data can be downloaded from FRED with the code shown in the second column. All series starting with CPI refer to the United States, all series starting with HCPI refer to Italy. The underlying data sources are the U.S. Bureau of Labor Statistics for US data and Eurostat for Italian data.

Figure G.1: Consumer Price Indices for different categories and sub-categories of household expenditure proxying essential and non-essential consumption in Italy and the United States



Notes: All data comes from FRED. Monthly series are converted to quarterly ones with end of quarter values. CPI Culture starts in 1999Q1, all other in 1996Q1. All series are normalized at 100 on their starting period.

H Aiyagari's Model Derivations

We solve a partial equilibrium version of the model by Aiyagari (1994). Households maximize a standard CRRA utility with elasticity of intertemporal substitution equal to γ and where they can invest in a riskless asset a_t with gross rate R, cannot have negative wealth $a_{t+1} \geq 0$, and face idiosyncratic income risk:

$$
\begin{aligned}
\max_{\{c_t, a_{t+1}\}_{t=0}^{\infty}} \mathbb{E}_0 & \left[\sum_{t=0}^{\infty} \beta^t \frac{c_t^{1-\frac{1}{\gamma}} - 1}{1 - \frac{1}{\gamma}} \right] \\
s.t.& \\
a_{t+1} + c_t &\leq y_t + R a_t \\
a_{t+1} &\geq 0 \\
y_t &= \exp(\eta_t + \varepsilon_{2,t}) \\
\eta_t &= \rho \eta_{t-1} + \varepsilon_{1,t}
\end{aligned}
$$

Income y_t has two components, a persistent one η_t and a transitory one $\varepsilon_{2,t}$. The persistence of η_t is governed by ρ and its shock is $\varepsilon_{1,t}$, which is an iid normal income shock with standard deviation σ_1. $\varepsilon_{2,t}$ is also distributed as an iid normal with standard deviation σ_2. We solve for the policy functions $c(a, \eta, \varepsilon_2)$ and $a'(a, \eta, \varepsilon_2)$ globally with value function iteration with the Howard's improvement algorithm and compute the MPC out of a one-off income shock by picking different values of ε_2. As our calibration is annual, we pick $\exp(\varepsilon_2) = 1 + 1$ for the one year shock, $\exp(\varepsilon_2) = 1 + 1/12$ for the one month shock, and $\exp(\varepsilon_2) = 1 + 0$ for the comparison under no shock. Notice that the expression for y is multiplicative in $\exp(\eta)$ and $\exp(\varepsilon_2)$, so that any temporary shock $\exp(\varepsilon_2)$ multiplies the persistent income $\exp(\eta)$; consequently, agents with a higher persistent income have a one month (year) shock relative to their income, as in the data. For any wealth and persistent income state pair (a, η), we compute cash-on-hand as $cash(a, \eta) = \exp(\eta) + Ra$ under no shock and the corresponding

MPCs numerically with these two shocks plugged in the policy functions:

$$MPC_{1y}(a,\eta) = \frac{c(a,\eta,\ln(1+1)) - c(a,\eta,\ln(1))}{\exp(\eta)(1+1) - \exp(\eta)1} = \frac{c(a,\eta,\ln(1+1)) - c(a,\eta,\ln(1))}{\exp(\eta)}$$
$$MPC_{1m}(a,\eta) = \frac{c(a,\eta,\ln(1+1/12)) - c(a,\eta,\ln(1))}{\exp(\eta)(1+1/12) - \exp(\eta)1} = \frac{c(a,\eta,\ln(1+1/12)) - c(a,\eta,\ln(1))}{\exp(\eta)1/12}$$

Next, we need aggregate these MPCs to be consistent with the data. Specifically, notice how cash on hand in the model is relative to an average per capita annual income of 1. Therefore, as a first step, we transform the data by dividing cash on hand over average income (all per capita). As a second step, we compute the deciles of this transformed cash on hand. Third, for a given shock size, we average all theoretical MPCs with cash on hand comprised by these empirical decile thresholds. Finally, we plot this result with a lowess smoother. The upper panel of figure 5 shows the outcome of this exercise.

We take a standard calibration that is as comparable as possible with the non-homothetic model. We calibrate the elasticity of intertemporal substitution $\gamma = 0.995$, which is equal to the IES for the non-homothetic model for a household with an average income, by using equation (8) with $s^X_{a,t} = 8.57\%$. We also match the discount factor β and the real interest rate on saving (agents cannot borrow in this model) R to the non-homothetic model. Their values are standard and are equal to 0.95 and 1.01, respectively. The other parameters are standard at $\rho = 0.8$, $\sigma_1 = 0.01$, and $\sigma_2 = 0.03$.

The results are standard for this class of models. When agents are relatively closer to the borrowing limit, they exhibit stronger precautionary saving behavior because of the utility function prudence, thereby lowering the MPC for low level of cash-on-hand. On the other hand, agents at the borrowing constraint exhibit higher MPC as they would borrow if they could, thereby increasing the MPC for low levels of cash-on-hand, with this effect prevailing on the previous one. This implies that the MPC is higher for poor households than for wealthier ones for a given shock size. Moreover, a bigger shock size results into a lower MPC for a given affluence level as a bigger shock is more likely to push the agent away from the borrowing constraint.

I Mixture of Models Further Results

I.1 MPC levels

In this appendix, we provide an additional result on the mixture of models presented in Section 5 and its ability to match the data. We kept both the borrowing constraint and the non-homothetic models as simple as possible in order to highlight the economic mechanisms and to obtain close form expressions on the behavior of the MPC for the novel non-homothetic model. Despite the simplicity, the mixture of the two model explains, quantitatively, the main empirical finding that poorer households exhibit a higher MPC out of small shocks than large shocks, whereas the opposite is true for richer households. One common drawback of these simple models is that they cannot explain the overall high levels of MPCs found empirically. To complete the analysis, we present the predictions for the levels of the MPCs for the mixture of models and show that, despite not hitting the overall level, the model can match the overall shape of the MPC behavior across shock size and cash-on-hand deciles.

Figure I.1 is the counterpart in level of Figure 6. It plots the theoretical predictions and empirical coefficients for the MPCs out of the large and small shocks in levels along the cash-on-hand distribution. It presents the theoretical predictions obtained by mixing the borrowing constraint model and the non-homothetic model, with the same method discussed for Figure 6. The empirical predictions, with the 95% bands, come from the coefficients on the cash-on-hand deciles from columns 4 (for the small shock) and 5 (for the large shock), controlling for demographic controls, from the tobit regressions presented in Table 2.

The level of the theoretical MPCs is lower than the one for the empirical estimates by about 0.25 points. The MPC out of a small shock at the lowest cash-on-hand decile for the theoretical prediction is around 0.4, whereas the empirical one is 0.65. At the other end, for the highest decile, the theoretical prediction is 0.05 and the empirical is 0.3. The theoretical MPC prediction for the small shock is a parallel shift downward of the empirical one, that preserves the overall shape. A similar pattern emerges while comparing the theoretical and empirical MPCs for the large shock. Both curves are essentially flat along the cash-on-hand distribution, with the empirical one being slightly increasing, and the theoretical one having a small negative slope for the lowest deciles. The crossing of the small and large MPCs is between the sixth and seventh deciles for both the theoretical and empirical cases.

I.2 Parameter uncertainty

In this appendix, we address the uncertainty in the parameters governing the intertemporal elasticities of substitution: γ_a and γ_b in the non-homothetic model, and γ in the Aiyagari (1994) model. We do this by exploiting the uncertainty in the IES estimates provided by Attanasio, Banks and Tanner (2002). We draw 1000 times from the distribution of the inverse of the IESs: for the poor households we draw the inverse of the IES from a truncated normal, with positive support, a mean of 8.564 and a standard deviation of 4.165. For rich households, we draw from a truncated normal, with positive support, a mean of 0.548 and a standard deviation of 0.149. We compute γ_a and γ_b using the same methodology as in Appendix F.3. We keep the draws that result in positive γ_a and γ_b. For each draw, we then calculate the IES corresponding to the average household income using equation (8) and $s^X_{a,t} = 8.57\%$. This is γ for the Aiyagari (1994) model. Given these parameters, we compute the MPC out of small and large shocks as well as their difference in each model and their mixture. This yields a distribution of parameters and of differences in MPCs: the results of this exercise are presented in Table I.1 below.

In the first column of Table I.1, we report the point estimates of the γ's as well as the point estimates of the differences in MPCs (small less large shock). These correspond to the black dashed model line presented in Figure 6 of the main text. Table I.1 reveals a substantial variation in the IESs parameters, with γ_a going from 7.185 to 15.951 moving from the 10th to the 90th percentile and γ_b ranging from 0.072 to 0.305. Moreover, the IES of an average income household also moves significantly, from 0.762 to 1.542. At the same time, the prediction on the differences in MPC along the cash-on-hand distribution is robust to uncertainty in the parameters governing the intertemporal elasticities of substitution: poor households are always characterized by a larger MPC out of a smaller windfall (i.e. a positive difference) while the most affluent families persistently exhibit a larger MPC out of a bigger windfall (i.e. a negative difference).

Table I.1: Accounting for uncertainty in the intertemporal elasticities of substitution

		point estimate	p10	p25	p50	p75	p90
Diff	I cash-on-hand decile	0.167	0.149	0.156	0.169	0.183	0.204
	II cash-on-hand decile	0.108	0.096	0.102	0.110	0.120	0.135
	III cash-on-hand decile	0.108	0.096	0.102	0.110	0.070	0.077
	IV cash-on-hand decile	0.036	0.036	0.039	0.043	0.047	0.053
	V cash-on-hand decile	0.023	0.015	0.021	0.024	0.027	0.030
	VI cash-on-hand decile	0.011	-0.006	0.002	0.010	0.015	0.018
	VII cash-on-hand decile	-0.004	-0.029	-0.015	-0.004	0.004	0.009
	VIII cash-on-hand decile	-0.017	-0.052	-0.033	-0.016	-0.005	0.002
	IX cash-on-hand decile	-0.039	-0.095	-0.065	-0.038	-0.018	-0.008
	X cash-on-hand decile	-0.118	-0.259	-0.184	-0.115	-0.063	-0.033
	γ^a	10.365	7.166	8.445	10.103	12.431	15.992
	γ^b	0.117	0.070	0.087	0.118	0.174	0.285
	γ	0.995	0.764	0.859	1.011	1.226	1.527

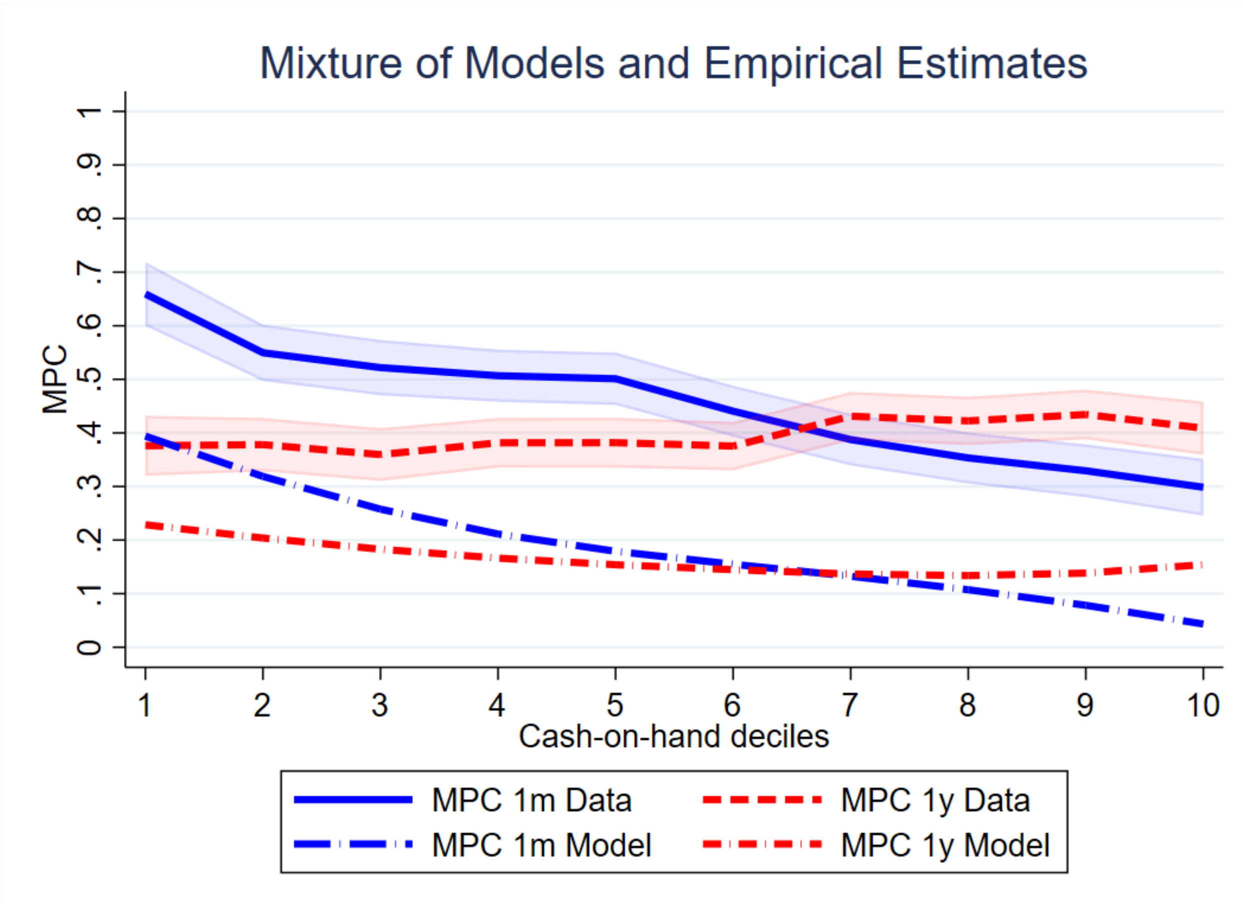
Notes: The table accounts for uncertainty in the intertemporal elasticities of substitution: γ_a and γ_b and the resulting γ. It draws from the distribution of IESs in Attanasio, Banks and Tanner (2002) to compute γ_a and γ_b for the non-homothetic model and it computes the corresponding γ for the Aiyagari (1994) model with equation (8). For each draw, it computes the implied MPCs for each model and the mixture of models to construct the implied difference in MPCs across the cash-on-hand distribution ("Diff" is the one month MPC less one year MPC).

I.3 Changes in Macroeconomic Conditions

In 2012, macroeconomic conditions deteriorated significantly in Italy, due to the European sovereign debt crisis. Therefore, it is possible that the high MPC we observe in 2012 might be due to higher interest rate and higher uncertainty. We address this concern in this appendix by solving the model for the large shock (measured in 2012) with a different calibration. Specifically, we increase the value of the short run interest rate from 1% to 2% (the Italian t-bill rate in 2010 was 1.1333% and in 2012 1.859%. See annual values in FRED: INTGSTITM193N). Moreover, for the Aiyagari model, we double the standard deviation in the income process both for the temporary (from 0.03 to 0.06) and persistent (from 0.01 to 0.02) shocks.

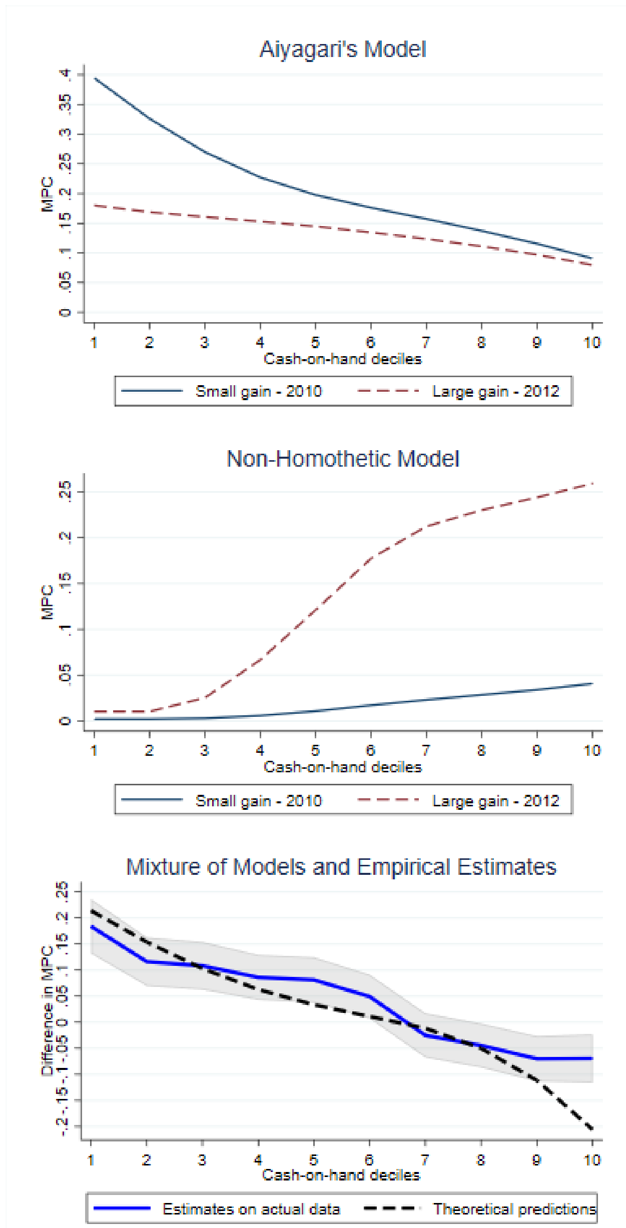
Figure I.2 shows the results of this exercise. The new model predictions are close to the old ones. If anything, the MPCs difference becomes even more negative for richer households because, the non-homothetic model predicts a higher MPC out of a large shock. If anything, the Aiyagari model on its own would have predicts a lower MPC out of a large shock, as the higher income uncertainty leads to a lower MPC for unconstrained households.

Figure I.1: MPC levels across shock size by cash-on-hand deciles — models and estimates.



Notes: The figure plots the MPCs out of the small gain (equal to one month of income) and the MPCs out of the large gain (equal to one year of income) in levels. The empirical estimates and the 95% confidence interval refer to the Tobit regression displayed in columns 4 and 5 of Table 2 and represent the marginal effects of the deciles of cash-on-hand on the latent uncensored MPC levels controlling for demographic characteristics for the small (with the blue solid line) and large gain (with the red dashed line), respectively. The theoretical predictions are obtained combining the quantitative results of the models with borrowing constraints and non-homothetic preferences about the MPC levels for shocks of size equal to one month (with the blue dot-long dash line) and one year (with the red dot-short dash line) of income, respectively. The models are mixed such that the probability that the observed spending behaviour is generated by the non-homothetic preference model in each decile of the cash-on-hand distribution is equal to the average individual cash-on-hand of that decile over the average in the tenth decile.

Figure I.2: MPC out of large income gains, small income gains, and MPC differences across shock size in the theoretical models with different macroeconomic conditions.



Notes: The first panel plots the MPCs from a Aiyagari model, the second panel plots the MCPs from the non-homothetic model. The first two panels show the MPCs out of a small (one month, in blue) and of a large (one year, in red) temporary income shocks. Each line is plotted with a lowess smoother. The x-axis moves along the theoretical counterpart to the empirical cash-on-hand distribution for 2010. In the third panel, the MPC differences are calculated as the difference between the MPC out of the small gain (equal to one month of income) less the MPC out of the large gain (equal to one year of income). The empirical estimates and the 95% confidence interval refer to the Tobit regression displayed in column 6 of Table 2 and represent the marginal effects of the deciles of cash-on-hand on the latent uncensored MPC difference controlling for demographic characteristics. The theoretical predictions are obtained combining the quantitative results of the models with borrowing constraints and non-homothetic preferences about the MPC difference for shocks of size equal to one month and one year of income, respectively. The models are mixed such that the probability that the observed spending behaviour is generated by the non-homothetic preference model in each decile of the cash-on-hand distribution is equal to the average individual cash-on-hand of that decile over the average in the tenth decile. The theoretical model predictions for the one month shock are calibrated with 2010 macroeconomic data, for the one year shock are calibrated with 2012 macroeconomic data.

J Additional Fiscal Experiments

In section 6, we show how fiscal stimuli targeting a small transfer to a large number of poor households increase aggregate consumption more than stimuli of the same aggregate size which target a larger transfer to a smaller number of poor households. In this appendix, we show how this result also broadly applies to the tax side. For a given fiscal consolidation amount over GDP, it is generally less contractionary to target a large number of affluent households with a relatively small tax amount, than imposing a larger tax on a smaller pool of very affluent households.

Table J.1 presents the results of additional fiscal experiments on the tax side. We raise a given amount of taxes over GDP in each panel (1, 2, 3, and 4% of GDP) on the most affluent households and we ask how to raise it more efficiently given the stated MPCs. In the first row (i) of each panel, we tax one month income from the top of the cash-on-hand distribution with the threshold stated in the first column. As an example, in panel A, we raise 1% of GDP, if we tax one month of income we tax the top 10%, or equivalently we tax from the 90th percentile onward of the cash-on-hand distribution. In the second row (ii) of each panel, we raise the same amount but with a tax of one year income on the top of the distribution, with the threshold always specified on the first column. We show the weighted average tax bill of the respondents in the second column and the corresponding average MPC in the third column. In the fourth column, we show the negative aggregate consumption response of these policies. We move from the revenues to GDP to the amount we need to raise in our sample by diving the revenue to GDP by the private consumption to GDP in 2010 (0.61011094) from national statistics and we multiply this by aggregate consumption in the sample.[12] A caveat of this exercise is that we assume that the positive MPC we have from the SHIW would apply equally to a negative income shock. However, notice that Christelis et al. (2019) report that affluent households display very similar MPCs across income gains and income losses of equal size.

Three results stand out from this exercise. The first one is the most surprising, in all panels except the last one, that is when we raise less than 4% of GDP in taxes, the aggregate

[12] We use the same procedure in table 4.

consumption cost is higher if we tax the super-rich a lot (one year income) rather than if we tax the merely well-heeled a bit (one month income). The reason is that, as shown in Figure 2, households from the 7th decile of the cash-on-hand distribution have a larger MPC out of a large income shock than a small one. The second result is that if the government needs to raise a lot of resources, here 4% of GDP in taxes, then the result on aggregate consumption flips, as, with a one month tax, we start taxing poorer households (we start from the 30 percentile, the top 70%) with high MPC, so that in that case the drop in consumption is lower by taxing one year income from the top 2%. Finally, an interesting remark is that the post-tax income distribution is highly right-skewed, to raise the same amount of resources we need to tax one year from the top 0.2% or one month from the top 10% to raise 1% of GDP, or one year from the top 2% or one month from the top 70% to raise 4% of GDP.

Table J.1: Fiscal experiments - fiscal consolidation

PANEL A - AGGREGATE TAX INCREASE EQUAL TO 1% OF GDP

POLICY EXPERIMENTS	Average Taxes		Aggregate
	Value(€)	MPC	Consumption
i) One month income from top 10%	4618	0.35	-0.58%
ii) One year income from top 0.2%	121902	0.42	-0.66%

PANEL B - AGGREGATE TAX INCREASE EQUAL TO 2% OF GDP

POLICY EXPERIMENTS	Average Taxes		Aggregate
	Value(€)	MPC	Consumption
i) One month income from top 26%	3385	0.37	-1.21%
ii) One year income from top 0.7%	105422	0.45	-1.42%

PANEL C - AGGREGATE TAX INCREASE EQUAL TO 3% OF GDP

POLICY EXPERIMENTS	Average Taxes		Aggregate
	Value(€)	MPC	Consumption
i) One month income from top 45%	2821	0.39	-1.91%
ii) One year income from top 1.4%	92662	0.41	-1.97%

PANEL D - AGGREGATE TAX INCREASE EQUAL TO 4% OF GDP

POLICY EXPERIMENTS	Average Taxes		Aggregate
	Value(€)	MPC	Consumption
i) One month income from top 70%	2368	0.42	-2.73%
ii) One year income from top 2.0%	86713	0.37	-2.38%

Notes: The aggregate tax increase amount is constant in each panel. In the first (second) row the tax disbursement is equal to one month (year) of income for households at the top of the cash-on-hand distribution as indicated in the first column. The average tax payment is presented in the second column, and the resulting average MPC is in the third column. All variables are weighted by the population weights to be representative of the Italian population. Cash-on-hand is the sum of disposable income and financial assets. The change in aggregate consumption presented in the fourth column is computed as the ratio between the sum of the spending decreases by the households who pay the tax and the level of total aggregate consumption by all households.

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