Poor Households and the Weight of Inflation

Jan Schulz*[1] and Leonhard Ipsen[1,2]

[1]Institute of Economics, University of Bamberg, Feldkirchenstraße 21, 96052 Bamberg, Germany

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Abstract

Lower-income households systematically report higher perceived and expected inflation, even though household-specific basket inflation varies little across income groups. We propose budget-weighted inflation, which measures the increase in the cost of a fixed consumption basket relative to current income, as a proxy for the material pressure of inflation on household resources. Using microdata for ten euro-area countries, we show that budget-weighted inflation closely reproduces the income gradient in inflation perceptions and expectations, unlike conventional household-specific inflation measures. This result is robust across alternative specifications and is supported by household-level evidence linking tighter budget commitments to higher inflation reports and stronger adjustment to price changes. Budget-weighted inflation therefore offers a promising proxy for systematic heterogeneity in household inflation beliefs.

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1 Introduction

Across surveys, lower-income households report higher past inflation and expect higher future inflation (Easterly and Fischer, 2001; Bruine de Bruin et al., 2010; Weber et al., 2022; D'Acunto et al., 2023; Stantcheva, 2024). These household inflation beliefs have become a central object of study in research on expectation formation and in interpreting consumer surveys (Weber et al., 2022). Yet, the economic source of the income gradient remains unclear.

*Corresponding author: jan.schulz-gebhard@uni-bamberg.de

The most direct explanation would be that poorer households simply face higher inflation. The evidence is, however, less supportive than the clear survey pattern suggests. Studies that construct household-specific inflation rates from expenditure baskets typically find income differentials that are modest, unstable, and highly dependent on which prices move in a particular episode (Hobijn and Lagakos, 2005; Gürer and Weichenrieder, 2020; Kaplan and Schulhofer-Wohl, 2017; Argente and Lee, 2021; Jaravel, 2021; Strasser et al., 2023; Sologon et al., 2025). In the ECB Consumer Expectations Survey (CES), we show perceived inflation to differs sharply by income, while basket-cost inflation is nearly flat across income quintiles. This leaves a simple puzzle: why is the income ordering of subjective inflation so much more systematic than the income ordering of household-specific basket inflation?

We argue that the answer is to be found in household budgets. Standard household inflation indices ask how much more expensive a given consumption basket has become. For the household, however, the same increase in basket cost can be much harder to absorb when consumption already takes up a large share of current income. We therefore study *budget-weighted inflation*: the increase in the cost of a fixed basket expressed relative to current income. The measure rescales basket-cost inflation by the household's consumption share of income as a proxy for the pressure that a given price increase places on the household budget.

Our headline result is that this simple change in perspective organizes the otherwise puzzling income heterogeneity in inflation beliefs. Across ten euro-area countries from 2020 to 2025, the bottom-to-top income-quintile gap is only 0.31 percentage points for basket-cost inflation. It is 3.53 percentage points for budget-weighted inflation. The corresponding gaps in perceived and expected inflation are 2.92 and 2.48 percentage points. Once common country-month inflation levels are removed, subjective inflation and budget-weighted inflation retain similarly ordered income profiles, whereas basket-cost inflation remains close to horizontal.

The reason is structural rather than tied to a particular inflation episode. Basket composition produces an income gradient only when categories that are disproportionately consumed by one income group experience different price growth. In our data, that composition channel changes sign across years and is close to zero on average. By contrast, the share of income devoted to consumption declines strongly and almost identically with income in the 2015 and 2020 Eurostat expenditure vintages. Budget weighting therefore adds a stable cross-sectional component to an otherwise episode-specific household inflation measure.

A similarity in pooled means cannot by itself establish that budget exposure is economically informative, as two issues warrant closer examination. First, lower-income respondents give more dispersed and more extreme numerical inflation answers, so the observed mean gradient could reflect response tails rather than systematic differences in perceived inflation. Second, budget-weighted inflation is expected to inherit an income gradient from the average propensity to consume: this is not an artifact of the measure, but a direct implication of its substantive interpretation. If the same increase in consumption costs is more burdensome when consumption absorbs a larger share of income, lower-income households should mechanically exhibit greater budget exposure. The relevant question is therefore not whether this gradient exists, but whether variation in budget commitments predicts inflation beliefs in ways consistent with the proposed mechanism. We address both issues directly. The subjective-inflation gradient remains in

medians and trimmed means, showing that it is not driven by response tails. We then move within country–income-quintile–month cells and compare renters who face the same broad income and inflation environment but differ in their housing commitments. Larger commitments are associated with higher perceived and expected inflation. This within-cell evidence is consistent with the proposed budget-pressure mechanism and cannot be attributed to the pooled income gradient in the average propensity to consume.

We also ask whether budget pressure surfaces in actual behaviour, rather than only in numerical survey answers. Renters with larger housing commitments report more actions taken in response to price changes, particularly more active price search, saving drawdown, and income adjustment. The association remains positive when perceived inflation is included as a control, under alternative definitions of both burden and adjustment, in separate survey periods, and when each country is omitted in turn. The behavioural evidence is relevant because it links the proposed proxy to choices households report making in response to price changes, not merely to a reporting style.

The paper contributes to three strands of literature. First, it connects research on household-specific inflation with research on subjective inflation by identifying a simple object that can generate a persistent income gradient even when basket-specific price growth does not. Second, it separates an episode-specific basket-composition channel from a stable consumption-share channel and shows empirically that the latter dominates the pooled income gradient. Third, it provides two forms of household-level corroboration that do not rely on the same cross-income accounting relation: housing commitments predict both subjective inflation and reported adjustment within narrowly defined inflation environments.

The broader implication is that systematic heterogeneity in inflation perceptions and expectations may contain a material exposure component alongside information, salience, experience, and financial literacy. Budget-weighted inflation is therefore useful as a parsimonious proxy for the part of subjective inflation heterogeneity that is related to affordability and current resources. Whenever consumption shares of income differ systematically across households, equal basket inflation thus need not imply equal inflation experience.

The remainder of the paper follows a standard structure. Section 2 relates the argument to the literatures on household inflation, subjective inflation, and consumption commitments. Section 3 presents the model and its empirical predictions. Section 4 describes the data and empirical strategy. Section 5 reports the main results and robustness checks. Section 6 concludes and discusses implications.

2 Related Literature

This paper connects two strands of literature that have largely developed in parallel. One measures how inflation differs across household consumption baskets. The other studies why households report different inflation perceptions and expectations. The empirical tension between them motivates our contribution: basket-based inflation heterogeneity is often episode-specific, while the income gradient in subjective inflation is strikingly persistent.

2.1 Household-Specific Inflation and Distributional Incidence

The standard approach to inflation inequality weights category-level price changes by household or group expenditure shares (Crawford and Oldfield, 2002; Hobijn and Lagakos, 2005; Kaplan and Schulhofer-Wohl, 2017; Argente and Lee, 2021; Gürer and Weichenrieder, 2020; Jaravel, 2021; Strasser et al., 2023; Sologon et al., 2025). These indices are the natural objects for measuring differences in the rate at which household baskets become more expensive. They document meaningful heterogeneity across households, but the income gradient depends on the composition of the price shock. Inflation can appear regressive, progressive, or approximately neutral depending on whether food, energy, housing, transport, or services are driving the aggregate episode.

Our measure uses the same prices and expenditure information but changes the economic object. Instead of asking only how fast the reference basket becomes more expensive, budget incidence asks how large the associated cost increase is relative to current income. This connects inflation exposure to Engel's law and to the literature on consumption and saving shares, both of which imply that consumption as a share of current income falls with income (Engel, 1857; Dynan et al., 2004). The distinction is useful precisely because the two channels need not move together: basket composition can vary sharply across episodes while the consumption share of income can generate a persistent cross-sectional gradient.

2.2 Subjective Inflation

The evidence on subjective inflation is more uniform. Perceived and expected inflation vary with demographics, information, personal experience, financial literacy, and the prices households observe frequently (Bruine de Bruin et al., 2010; Cavallo et al., 2017; Malmendier and Nagel, 2016; D'Acunto et al., 2021, 2023; Weber et al., 2022). Lower-income respondents, nevertheless, tend to report higher inflation and greater concern about its consequences across surveys and episodes (Easterly and Fischer, 2001; Stantcheva, 2024). For Germany, Heuermann and Krämer (2026) find that individual consumption baskets explain only a limited part of perceived-inflation gaps.

Most explanations of subjective inflation focus on how households process price information: salience, purchase frequency, memory, experience-based learning, or financial literacy. Our argument adds a material dimension. A price increase that absorbs a larger share of current income is more consequential and may therefore receive more attention or be interpreted through affordability. This mechanism is complementary to cognitive explanations rather than a substitute for them. The empirical question is whether an income-normalised exposure measure organises the systematic income gradient that household-specific basket inflation leaves largely unexplained.

2.3 Budgets, Commitments, and Household Adjustment

The household-level tests connect this argument to extant research on mental accounting and consumption commitments. Households often organise spending through category budgets, and recurring commitments restrict short-run adjustment (Thaler, 1985, 1999; Heath and Soll, 1996;

Hastings and Shapiro, 2013; Kőszegi and Matějka, 2020; Zhang et al., 2022). This literature suggests that economic experiences are mediated through budgets, spending constraints, and the ease with which expenditures can be adjusted.

Rent provides a useful empirical margin because it is large, recurring, and difficult to change at monthly frequency. Among renters in the same country, income quintile, and month, variation in housing commitments therefore offers a check on whether budget pressure is reflected in inflation reports even after the broad income and inflation environment is held fixed. The CES price-response module allows us to push the same idea one step further and ask whether larger commitments are also associated with search, substitution, saving, credit, and income adjustment. In this way, the paper links the distributional measurement of inflation to both belief heterogeneity and household responses to price changes.

3 A Simple Model of Budget Exposure

3.1 Two Measures of Household Inflation

Consider a household that enters an inflation episode with a fixed consumption basket. Let x_{hj} denote household h's expenditure on category j in the base period, let $C_h = \sum_j x_{hj}$ denote total consumption expenditure, let Y_h denote current disposable income, and let π_j denote the proportional price change in category j. A conventional household-specific basket-cost inflation in the form of a Laspeyres index is

$$\pi_h^e = \sum_j \frac{x_{hj}}{C_h} \pi_j. \tag{1}$$

The weights sum to one, so (1) measures the proportional increase in the cost of the pre-shock basket.

The additional expenditure required to purchase that same basket is

$$\Delta C_h = C_h \pi_h^e. \tag{2}$$

Expressing this cost increase relative to current income gives budget-weighted inflation,

$$\pi_h^b = \frac{\Delta C_h}{Y_h} = \sum_j \frac{x_{hj}}{Y_h} \pi_j = \frac{C_h}{Y_h} \pi_h^e = \mathrm{APC}_h \pi_h^e, \tag{3}$$

where $\mathrm{APC}_h = C_h / Y_h$ is the average propensity to consume.

We use *budget-weighted inflation* when comparing the measure with subjective inflation and *budget incidence* when emphasizing its interpretation. The object is the same in both cases. Basket-cost inflation measures percentage growth in the cost of the basket. Budget incidence measures the share of current income required to absorb that increase. The distinction is one of exposure, not a competing estimate of the price level.

A simple example illustrates the difference. Suppose two households both face a ten-percent increase in basket costs. Household A earns 20,000 euros and consumes 24,000 euros, while household B earns 80,000 euros and consumes 60,000 euros. Maintaining the old baskets requires an additional 2,400 euros for A and 6,000 euros for B. Basket inflation is ten percent for both

households, but the additional cost corresponds to twelve percent of A's income and 7.5 percent of B's income. The richer household pays the larger euro amount; the poorer household faces the larger claim on current resources.

3.2 The Income Gradient

To separate the sources of cross-income variation, suppose the average propensity to consume and basket inflation vary with income according to

$$\mathrm{APC}_h = \mathrm{APC}_0 Y_h^{\kappa}, \qquad \pi_h^e = \pi_0^e Y_h^{\eta}. \tag{4}$$

Substituting into (3) yields

$$\pi_h^b = \mathrm{APC}_0 \pi_0^e Y_h^{\kappa+\eta}, \tag{5}$$

and hence

$$\frac{\partial \log \pi_h^b}{\partial \log Y_h} = \kappa + \eta. \tag{6}$$

The composition elasticity η captures how basket-cost inflation changes with income. Its sign depends on the categories experiencing unusually high inflation in a given episode. The consumption-share elasticity κ captures how the share of current income devoted to consumption changes with income. When $\kappa < 0$, budget incidence can have a stable negative income gradient even if η is close to zero on average or changes sign over time.

This decomposition is the central theoretical observation. As our estimates show, basket composition can generate large distributional effects in particular episodes, but it need not generate a persistent income ranking. A declining consumption share of income adds exactly such a persistent component. Budget-weighted inflation therefore provides a natural candidate proxy for systematic income heterogeneity in subjective inflation.

3.3 Empirical Predictions

The model yields four empirical predictions. First, when the composition elasticity is small, perceived and expected inflation should display a steeper negative income gradient than basket-cost inflation and should be more closely aligned with budget-weighted inflation. Second, if this relationship reflects a shift in subjective inflation rather than only greater response noise among lower-income households, the income ordering should remain visible in robust measures of central location such as medians and trimmed means. Third, the cross-income profile should have a household-level analogue. Among households facing the same broad income and inflation environment, larger expenditure commitments should be associated with higher perceived and expected inflation. This prediction is useful because it does not rely on the cross-quintile average propensity to consume that enters budget-weighted inflation mechanically. Fourth, if the proxy captures economically meaningful budget pressure rather than only a survey-reporting pattern, larger commitments should also be associated with stronger adjustments to price changes.

4 Data

4.1 Eurostat Expenditure Shares, Income, and Prices

The construction of basket-cost and budget-weighted inflation combines Eurostat Household Budget Survey expenditure shares, quintile-level consumption and income aggregates, and monthly HICP inflation rates. The main specification uses the 2020 expenditure vintage. The 2015 vintage is used to test whether the central consumption-share gradient depends on a particular survey year.

For country c, income quintile q, and month t, basket-cost inflation is

$$\pi^{e}_{cqt} = \sum_{j} w^{C}_{jcq} \pi_{jct}, \qquad w^{C}_{jcq} = \frac{x_{jcq}}{C_{cq}}, \tag{7}$$

where π_{jct} is the annual HICP inflation rate for category j. Budget-weighted inflation is

$$\pi^{b}_{cqt} = \mathrm{APC}_{cq} \pi^{e}_{cqt}, \qquad \mathrm{APC}_{cq} = \frac{C_{cq}}{Y_{cq}}. \tag{8}$$

The expenditure shares and average propensities to consume are fixed at the survey vintage, while the price vector changes monthly. This construction separates a persistent income-group consumption-share structure from the changing category composition of inflation.

The matched analysis covers Austria, Belgium, Finland, France, Germany, Greece, Ireland, the Netherlands, Portugal, and Spain. Italy is excluded because the corresponding Eurostat expenditure and income inputs required for the matched construction are unavailable.

4.2 ECB Consumer Expectations Survey

The ECB Consumer Expectations Survey is a monthly online panel of adult consumers (European Central Bank, 2021, 2026; Georgarakos and Kenny, 2022). We use waves from April 2020 through December 2025. The full file contains approximately 987,000 household-month observations for the ten matched countries. The main pooled regression sample contains about 738,000 observations with matched country–quintile–month inflation measures and non-missing controls.

Respondents report how much higher or lower they believe prices in general are than twelve months earlier and how much they expect prices to change over the next twelve months. We refer to these variables as perceived and expected inflation. The CES also records country, income quintile, age, gender, education, household composition, employment status, and respondent identifiers.

For the main regression analysis, numerical responses outside $[-50, 100]$ percent are set to missing and the remaining values are winsorized at the first and ninety-ninth percentiles within country and survey wave. The distributional analysis instead uses the available raw responses. It reports survey-weighted means, 5–95 percent trimmed means, medians, interquartile ranges, selected quantiles, focal multiple-of-five answers, and tail responses below zero or above 30 percent. The CES blended weights are applied within country and country statistics are then averaged equally, so pooled profiles describe the average country rather than placing more weight on larger countries.

4.3 Empirical Strategy: Cross-Quintile Design

The first part of the empirical strategy asks whether the income profile of subjective inflation is better organized by budget exposure than by basket-specific price growth. The object of interest is therefore the cross-income gradient rather than the average level difference between subjective and measured inflation. We compare bottom-to-top quintile gaps in perceived inflation, expected inflation, basket-cost inflation, and budget-weighted inflation. Country-month-demeaned profiles remove common inflation levels and isolate the cross-quintile ordering.

We complement the profiles with separate household-level regressions,

$$s_{icqt} = \alpha + \beta m_{cqt} + X'_{icqt}\gamma + \delta_c + \tau_t + \varepsilon_{icqt}, \tag{9}$$

where s_{icqt} is perceived or expected inflation and m_{cqt} is either π^e_{cqt} or π^b_{cqt}. The controls X_{icqt} cover age, household composition, education, and employment; δ_c and τ_t denote country and survey-wave fixed effects. Standard errors are clustered by country–income-quintile. Because the main identifying variation ultimately comes from a small number of countries, we also report country-level sign-randomization p-values for budget-weighted inflation.

The two exposure measures enter separate specifications. Since budget-weighted inflation is the product of basket inflation and the average propensity to consume, a joint regression would not compare two independent shocks. We instead compare their signs and their incremental R^2 relative to the same fixed-effect and control baseline. This specification deliberately retains the persistent cross-income variation that motivates the paper.

The distributional analysis serves a different purpose. Lower-income households give more dispersed numerical answers, so a mean gradient could reflect extreme responses rather than a different central assessment of inflation. We therefore examine medians and trimmed means alongside dispersion and focal-response measures. A decline in the center of the distribution is evidence that the income gradient is not generated only by noisier tails.

4.4 Empirical Strategy: Housing Commitments and the Within-Cell Design

The cross-quintile pattern partly reflects the fact that budget-weighted inflation incorporates the average propensity to consume. This is not a mechanical artifact to be eliminated, but a central implication of the proposed mechanism: when consumption absorbs a larger share of income, a given increase in the cost of consumption places greater pressure on household resources. Still, the cross-income profile alone cannot establish that this budget pressure is reflected in households' inflation reports. We therefore exploit a second source of variation that holds the broad income gradient fixed.

The CES topical housing module records rent and mortgage payments in brackets. We convert rent brackets to midpoint monthly payments, annualise them, and link the nearest housing-module observation to the respondent's monthly CES records within a six-month window. For renter i in country c, income quintile q, and month t, we define housing burden as

$$b_{icqt} = \frac{R_{icqt}}{\bar{Y}_{cq}}, \tag{10}$$

where R_{icqt} is annualised rent and $\bar{Y}_{cq}$ is the country–quintile income benchmark. Within a country–quintile–month cell, the denominator and broad inflation environment are common, so variation in b_{icqt} comes from the respondent's rent bracket. The upper tail is winsorised at the ninety-ninth percentile.

We estimate

$$y_{icqt} = \alpha_{cqt} + \beta b_{icqt} + X'_{icqt}\gamma + \varepsilon_{icqt}, \tag{11}$$

where α_{cqt} denotes country–income-quintile–month fixed effects. In the first renter test, y_{icqt} is perceived or expected inflation. Exact-cell fixed effects absorb basket inflation, budget-weighted inflation, the group average propensity to consume, and common month-specific conditions. The coefficient β therefore asks whether larger household commitments predict higher subjective inflation among renters who share the same broad income and inflation environment. Standard errors are two-way clustered by respondent and exact cell.

The primary renter sample covers all ten countries from August 2022 to August 2025 and contains approximately 125,000 numerical-response observations from 11,416 households in 1,850 exact cells. A five-country extension reaching back to August 2021 is reported in the Online Appendix.

4.5 Price-Response Outcomes

The CES price-response module asks which actions respondents took over the previous twelve months because of changes in prices in general. The primary six-item count records whether the respondent: (i) shopped around more actively; (ii) substituted cheaper alternatives; (iii) saved less or liquidated savings; (iv) used more credit; (v) obtained a pay rise or moved to a better-paid job; and (vi) increased income in other ways. We also construct channel-specific counts for price search and substitution, saving and credit, and income adjustment. Bringing durable purchases forward is reported separately, and alternative five-item and all-action counts are used as robustness checks.

The price-response module is available in August and October 2023 and January, April, and July 2024. After requiring complete outcomes and controls, the behavioural sample contains 16,266 observations from 5,844 households in 250 exact cells. We estimate the same exact-cell specification in (11). These regressions are unweighted because the available CES cross-sectional weights are not designed for selection into the combined renter, housing-module, and price-response sample.

5 Results and Robustness

5.1 Budget Weighting and the Income Gradient

The elasticity decomposition shows why basket-cost inflation and budget-weighted inflation behave differently across income groups. Table 1 reports an income elasticity of the average propensity to consume of -0.378 using the 2020 Eurostat vintage and -0.376 using the 2015 vintage. The consumption-share gradient is therefore both large and remarkably stable across the two expenditure vintages: lower-income groups devote a substantially larger share of current

income to consumption.

Table 1: Income Elasticities of Consumption Shares and Inflation Exposure

Quantity	Estimate	Clustered s.e.	R^2	N
APC elasticity κ, 2020 vintage	-0.378***	(0.052)	0.579	50
APC elasticity κ, 2015 vintage	-0.376***	(0.048)	0.753	45
Pooled basket-inflation elasticity η, 2020 vintage	-0.001	(0.070)	0.000	3,586
Pooled basket-inflation elasticity η, 2015 vintage	0.001	(0.077)	0.000	3,623
Direct budget-incidence elasticity, 2020 vintage	-0.383***	(0.098)	0.035	3,586
Direct budget-incidence elasticity, 2015 vintage	-0.390***	(0.113)	0.042	3,227

Notes: Log–log regressions across country–income-quintile cells or country–quintile–month observations. Clustered standard errors use country clusters. The direct budget-incidence slope closely matches $\widehat{\kappa} + \widehat{\eta}$. $^{***}p < 0.01$.

The composition elasticity behaves very differently. It is essentially zero in the pooled sample and changes sign across years, ranging from -0.24 in 2024 to 0.39 in 2023 (Online Appendix Table OA.1). The direct income elasticity of budget-weighted inflation is approximately -0.38, almost exactly the sum implied by (6). The result clarifies the mechanism behind the headline pattern. Basket composition determines who faces higher basket inflation in a particular episode. The consumption share of income supplies the persistent negative gradient that survives across episodes.

The 2015-vintage comparison is an important robustness check. If the result depended on an unusual expenditure pattern in the 2020 Household Budget Survey, the case for a general proxy would be weak. The near-identical elasticity in the earlier vintage shows that the key cross-income consumption-share pattern predates the inflation episode studied in the CES.

5.2 Subjective Inflation and Budget Exposure

Figure 1 presents our central result. Perceived inflation falls from 11.13 per cent in the bottom income quintile to 8.21 per cent in the top, a difference of 2.92 percentage points, while expected inflation falls by 2.48 points. Conventional basket-cost inflation is almost flat across the income distribution, with a bottom-to-top difference of only 0.31 percentage points. Budget-weighted inflation, by contrast, declines by 3.53 percentage points of income from the bottom to the top quintile.

The figure shows that these differences are not driven by the two endpoints. Perceived and expected inflation decline systematically across income quintiles. Basket-cost inflation remains nearly horizontal, whereas budget-weighted inflation displays a pronounced income gradient that closely resembles the ordering of subjective inflation. The economically relevant comparison is therefore the income gradient rather than the level gap between subjective and measured inflation.

After country-month demeaning, the perceived-inflation profile runs from about $+1.5$ percentage points in Q1 to -1.4 in Q5. The budget-weighted profile runs from about $+2.1$ to -1.4, while the basket-cost profile remains nearly horizontal. Country panels preserve the same broad ordering. The correspondence is not exact: budget-weighted inflation is steeper than subjective inflation in several countries and years. This is consistent with its interpretation as a proxy for budget exposure rather than a literal model of reported inflation. Households can respond to

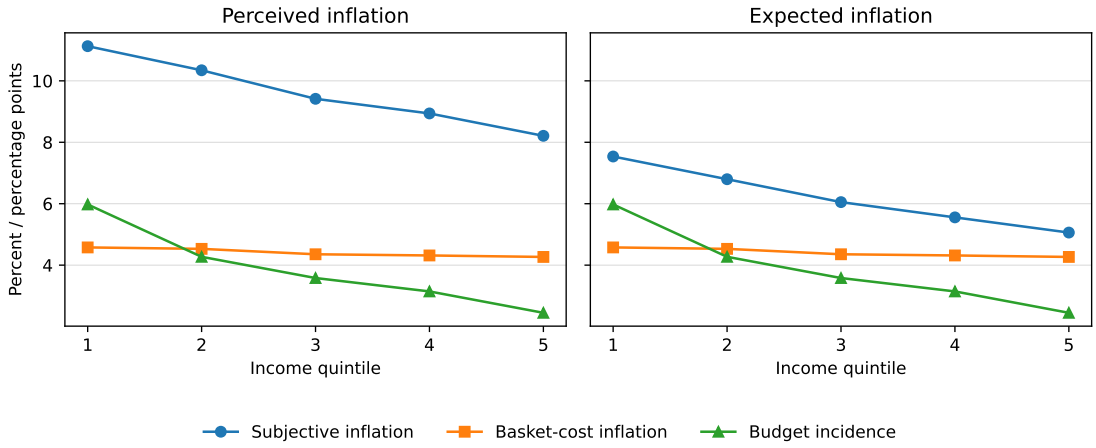

Figure 1: Subjective Inflation and Exposure Measures across Income Quintiles

price pressure through saving, borrowing, substitution, or reduced consumption, while subjective inflation reports also reflect information and cognition.

The household-level regressions put the comparison into a common statistical framework. Adding budget-weighted inflation to the country, wave, and demographic baseline increases R^2 by 0.0016 for perceptions and 0.0022 for expectations. Basket-cost inflation increases it by 0.0003 for either outcome. These gains are small relative to total person-level variation because both exposure measures vary only at the country–quintile–month level. The relevant comparison is therefore not whether they explain most individual variation, but whether they capture the systematic income ordering in inflation beliefs. On that margin, budget-weighted inflation does considerably more. The country-level sign-randomisation p-values are 0.004 for perceptions and 0.002 for expectations.

Table 2: Pooled Predictive Associations with Subjective Inflation

Outcome	Measure	Coefficient	s.e.	R^2	ΔR^2	N
Perceived inflation	Basket-cost inflation π^e	0.0798***	(0.0222)	0.1882	0.0003	737,987
Perceived inflation	Budget-weighted inflation π^b	0.1724***	(0.0243)	0.1895	0.0016	737,987
Expected inflation	Basket-cost inflation π^e	0.0676***	(0.0151)	0.1045	0.0003	737,894
Expected inflation	Budget-weighted inflation π^b	0.1535***	(0.0209)	0.1064	0.0022	737,894

Notes: Each exposure measure enters a separate unweighted OLS regression with country and survey-wave fixed effects and household controls. Standard errors are clustered by country–income-quintile. ΔR^2 is relative to the fixed-effect and control baseline. Country-level sign-randomization p-values for budget-weighted inflation are reported in the text. Source: ECB Consumer Expectations Survey and Eurostat. $^{***}p < 0.01$.

The sign-randomisation exercise addresses a specific inference problem. With ten countries, conventional asymptotic precision can give a misleading sense of certainty about a relationship driven by grouped exposure measures. Randomising signs at the country level asks whether a pattern as consistently positive as the observed one would be unusual if the country-level relationship had no systematic direction. The low randomisation p-values show that the pooled association is not simply the product of a few highly influential grouped observations.

5.3 Robustness of the Cross-Income Result

The first robustness question is whether the subjective-inflation gradient is merely an artefact of noisier numerical answers at lower incomes. Table 3 shows that lower-income respondents are indeed more dispersed, more frequently give focal answers, and are more likely to appear in the tails. But the centre of the distribution also shifts. The bottom-to-top gap is 2.35 percentage points in the 5–95 per cent trimmed mean of perceived inflation and 2.03 points for expected inflation. The corresponding median gaps are 1.47 and 0.70 points.

Table 3: The Income Gradient in Subjective Inflation: Location and Dispersion

	Perceived inflation			Expected inflation		
Statistic	Q1	Q5	Q1–Q5	Q1	Q5	Q1–Q5
Mean	11.33	8.20	3.13	7.77	5.08	2.69
5–95% trimmed mean	9.73	7.38	2.35	6.47	4.44	2.03
Median	7.45	5.98	1.47	4.35	3.65	0.70
Standard deviation	14.69	9.41	5.28	13.11	7.62	5.49
Interquartile range	11.92	8.30	3.62	8.60	5.02	3.58
Share at multiples of five	0.463	0.375	0.088	0.444	0.330	0.114
Share below 0 or above 30	0.123	0.067	0.056	0.116	0.082	0.034

Notes: CES survey-weighted statistics are calculated by country and income quintile and then averaged with equal country weights. The trimmed mean retains responses between the weighted fifth and ninety-fifth percentiles. Focal responses are multiples of five percentage points. The final row records responses below zero or above 30 percent. Source: ECB Consumer Expectations Survey.

This check is relevant because symmetric response noise can widen a distribution without changing its centre. The persistence of the gradient in trimmed means and medians therefore rules out the interpretation that the pooled mean difference is generated only by a small set of extreme answers. Subjective-inflation inequality has both a dispersion component and a directional location component.

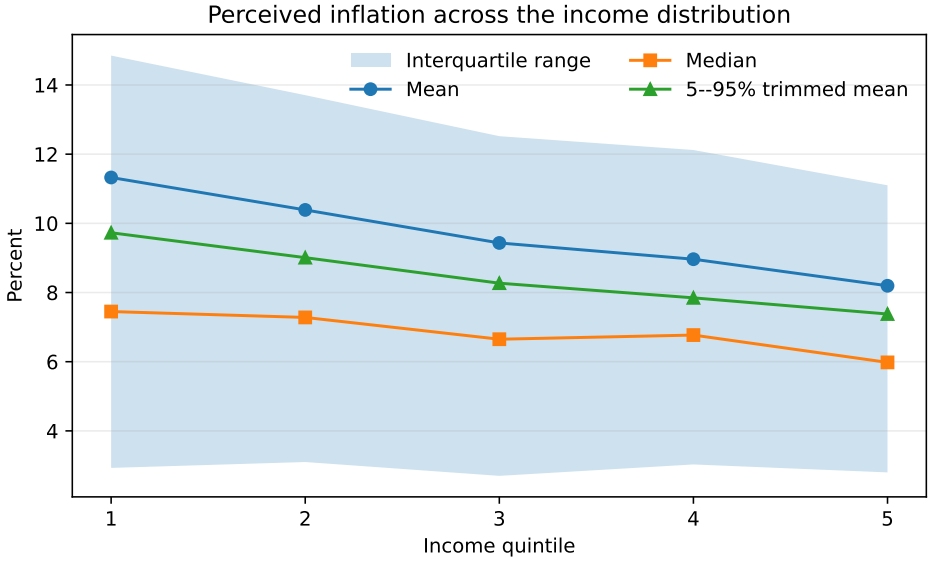

Figure 2: Location and Dispersion of Perceived Inflation by Income Quintile

A second set of checks asks whether the headline match is an artefact of pooling. Country-

month demeaning removes common inflation levels before the income profiles are compared, so the result cannot be driven simply by low-income respondents living disproportionately in high-inflation country-months. Country-specific panels show the broad ordering in the underlying national samples. Annual profiles reveal meaningful variation in fit: budget-weighted inflation is weak or oppositely ordered in 2020, steeper than subjective inflation in 2021 and 2022, and closer from 2023 onward. This temporal variation is informative rather than problematic for the proxy interpretation. The model predicts a persistent force from consumption shares, not a one-for-one mapping between budget incidence and reported inflation in every episode. The full country and annual profiles are reported in the Online Appendix.

5.4 Within-Cell Evidence from Renters

The renter design provides the most important independent test of the proposed mechanism. Budget-weighted inflation is expected to vary systematically across income groups because it incorporates the share of income devoted to consumption: households with tighter budgets are more exposed to a given increase in consumption costs. To test whether budget pressure also matters beyond this cross-income pattern, we exploit variation within country–income-quintile–month cells. Renters are therefore compared only with households facing the same broad income and inflation environment, so group-level basket inflation, budget-weighted inflation, and the average propensity to consume are held fixed. The remaining variation comes from differences in households' own rent commitments within that common environment.

The estimates are positive for both numerical outcomes. A one-unit increase in housing burden is associated with 0.75 percentage points higher perceived inflation (s.e. 0.50) and 0.71 points higher expected inflation (s.e. 0.35). The expectation estimate is statistically distinguishable from zero at the five-per cent level. The perception estimate is positive but less precise. Year-specific coefficients are positive for both outcomes in every year from 2022 through 2025. The important point is not the exact size of the coefficient, but the direction of the within-cell relationship: higher commitments predict higher subjective inflation even after the pooled income-gradient mechanism has been absorbed by fixed effects.

The Online Appendix reports a within–between specification ladder. It shows that the positive exact-cell coefficient is carried by within-cell variation rather than by differences in average burden across income cells. Approximately 64 per cent of the variance in the main burden measure is available within exact cells, so the result is not being estimated from a negligible residual margin.

5.5 Behavioral Corroboration

The price-response module provides additional evidence on the proposed mechanism. If larger housing commitments increase the pressure households experience from rising prices, they should predict not only higher inflation perceptions and expectations, but also stronger reported responses to price changes. We therefore test whether households with larger housing commitments are more likely to adjust their behaviour when prices change.

Table 4 shows that a one-unit increase in rent burden is associated with 0.208 additional actions on the six-item count. The association is concentrated in active price search, saving

drawdown, and income adjustment. A ten-percentage-point increase in burden corresponds to 0.021 additional actions; moving from the twenty-fifth to the seventy-fifth percentile corresponds to about 0.056 actions, or 3.3 per cent of the outcome mean.

Table 4: Housing Commitments and Actions Taken Because of Price Changes

Outcome	Mean	Burden coefficient	s.e.	p
Six-item coping count (items 3-8)	1.683	0.208***	(0.071)	0.003
Standardized six-item index	0.010	0.076***	(0.027)	0.006
Price-search/substitution count	0.914	0.103**	(0.046)	0.026
Saving/credit count	0.440	0.048*	(0.028)	0.088
Income-adjustment count	0.329	0.058**	(0.027)	0.033
Shopped around more actively	0.534	0.077***	(0.027)	0.005
Saved less / liquidated savings	0.344	0.056**	(0.026)	0.028

Notes: Exact country–income-quintile–month fixed-effect estimates in the unweighted renter sample. Housing burden is upper-winsorized at its ninety-ninth percentile. All models include household controls and two-way clustered standard errors by respondent and exact cell. The primary count records active search, cheaper substitution, saving drawdown, credit use, employer-related income adjustment, and other income adjustment. Source: ECB Consumer Expectations Survey. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$.

Several robustness checks clarify what this association does and does not reflect. Adding perceived inflation asks whether high-burden renters simply report higher inflation and then report more responses for the same reason. The burden coefficient remains positive and precisely estimated at 0.192 (s.e. 0.071), indicating that commitments contain behavioural information beyond the numerical perception measure. Alternative five-item and all-action counts show that the result is not tied to the exact coding of the primary outcome. Log burden and within-cell threshold indicators show that it is not driven by a linear functional-form assumption or by a small number of very high burdens. Separate 2023 and 2024 estimates are positive, which makes the result less likely to be specific to one module period. Finally, every leave-one-country-out estimate retains the same sign, so no single national sample generates the behavioural association.

6 Conclusion and Discussion

A persistent empirical fact about household inflation beliefs is that poorer households report higher perceived and expected inflation. Household-specific basket inflation does not reproduce that pattern particularly well. Across ten euro-area countries, its bottom-to-top income-quintile gap is only 0.31 percentage points, compared with 2.92 points for perceived inflation and 2.48 points for expected inflation. Expressing the same fixed-basket cost increase relative to current income produces a 3.53-point gradient. The central result of the paper is therefore not that poorer households necessarily buy baskets with much faster price growth. It is that the same basket-cost increase places a systematically larger claim on their current resources.

This distinction suggests a useful way to interpret heterogeneity in household inflation beliefs. Budget-weighted inflation is a simple proxy for the material exposure component of subjective inflation. It does not require households to calculate an index. It only requires the economic consequences of price increases to be more salient when those increases absorb a larger share of the household budget. The evidence is consistent with that interpretation: the subjective

gradient appears in medians and trimmed means, the consumption-share gradient is stable across expenditure vintages, and larger housing commitments predict both higher inflation reports and more adjustment within narrowly defined country–income–month environments.

The implication for the expectations literature is that systematic differences in reported inflation need not be read only as differences in information quality, attention, financial literacy, or idiosyncratic shopping experiences. Some of that heterogeneity may encode differences in affordability. In applications that seek to explain household inflation perceptions or expectations, budget-weighted inflation can therefore serve as a parsimonious covariate for material exposure. Doing so may help separate a budget-pressure component from the cognitive and informational channels already emphasised in the literature.

The measurement implication is equally straightforward. Basket-cost inflation and budget incidence answer different questions and are most informative when reported together. The first asks how fast a household's reference basket becomes more expensive. The second asks how much of current income is required to absorb that increase. For distributional monitoring, the latter can reveal a systematic gradient that a conventional household price index misses. It is deliberately not a complete welfare measure: assets, debt, substitution, taxes, transfers, and longer-run adjustment can all alter the consequences of inflation. But those additional margins do not remove the usefulness of a simple proxy for short-run budget exposure.

Future work can test the same idea with household-level expenditure and income data, experimentally induced price-information shocks, or settings in which commitments can be observed more precisely. The central prediction is portable: when two households face similar basket inflation but differ in the share of income needed to absorb it, their inflation experience and their reported inflation beliefs need not be the same.

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Data and code availability

The ECB Consumer Expectations Survey microdata are available to approved researchers from the European Central Bank and cannot be redistributed by the authors. Eurostat inputs are publicly available. The replication package contains the analysis code, non-confidential derived tables and figures, validation reports, and instructions for placing the restricted CES files. Upon acceptance, all materials permitted under the data agreement will be deposited in an appropriate public repository.

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