

The Impact of the Cost-of-Living Crisis on European Households

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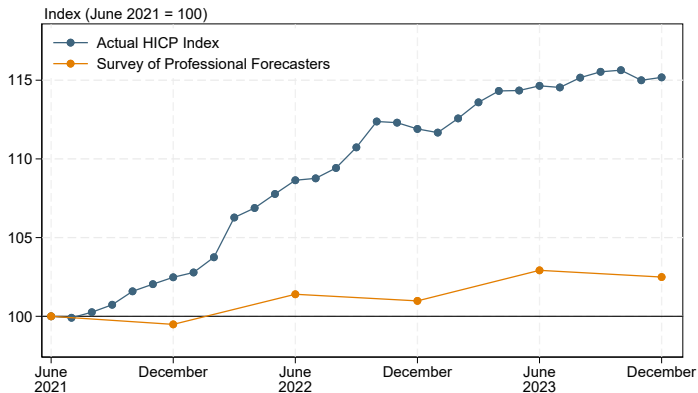
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ECFIN-JRC Internal Seminar – June 2024

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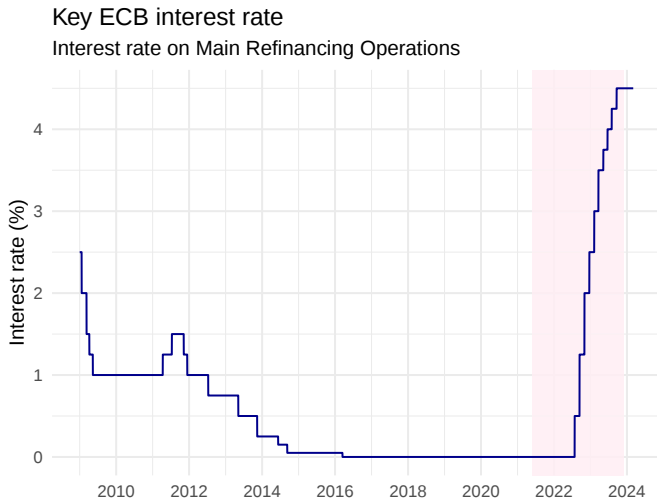
Recent and unexpected spike in EU inflation



Source: Eurostat and ECB

Inflation triggered bold policy responses

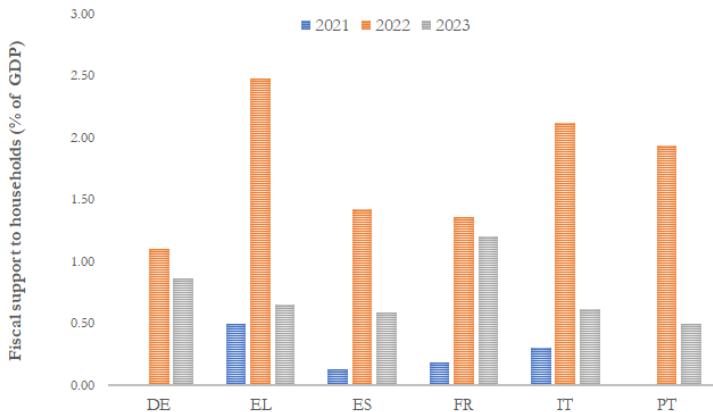
Monetary policy



Source: ECB

Inflation triggered bold policy responses

Fiscal policy



Source: G. Bethuyne, W. Balcerowicz and M. Erdei (2024 – DG ECFIN)

This paper

- We assess the **heterogeneous impact** of the cost-of-living crisis on EU households in 2021:S2-2023. Including:
 - **The effects of inflation:** Fisher effect, relative consumption and nominal income channels.
 - **The effects of the policy response:** monetary and fiscal policy.
- We quantify the **size of each channel** for household groups in EA countries.
 - We focus on Income groups and Age groups.
 - Country coverage: DE, FR, EL, ES, IT, PT.

Inflation affects hh's through different channels

Three main direct channels:

1. **Fisher effect:** Revaluation of nominal assets & liabilities
2. **Nominal income channel:** Change in real value of nominal incomes
3. **Relative consumption channel:** Relative price changes affect effective inflation rates of households with $\neq$ consumption baskets

⇒ Most of the literature has focused on (2) and (3).

Policy also has heterogeneous effects on households

Fiscal policy:

- **Price-side measures:** Reduce inflation and, hence, its effects.
- **Income-side measures:** Support hh income directly.

Monetary policy:

- **Increasing interest rate:** Increase in cost/return of liabilities/assets.

⇒ No analyses of the impact of monetary policy response.

Main results

1. The **Fisher and nominal income channels** are an order of magnitude larger than relative consumption channel.
2. **Low-income, elderly and non-mortgage holders** suffered the largest relative losses.
3. **Fiscal policy** response helped to mitigate the effects of the crisis, but significant losses remain.
4. **Monetary policy** (interest rate) response had heterogeneous effects on households & it tends to favour high-income/elderly individuals

Literature

- Our framework largely builds on the work of **Auclert (2019) and Cardoso et al. (2022)** on the heterogeneous effects of inflation and MP.
- As well as on **Amores et al. (2023)**, who study the impact of fiscal response to inflation via income and consumption effects using EUROMOD.
- **Pallotti et al. (2023)** conduct an exercise similar to ours. Main differences: data sources for policy effects, GE (them) vs. first-order effects (us), and treatment of interest rate response (us).
- Many other studies of the cost-of-living crisis: **Battistini et al. (2022)**, **Menyhert (2022)**, **Dao et al. (2023)**, **Ampudia et al. (2023)**, etc.

Our framework

We use a simple approach based on three steps:

1. Specify the household budget constraint.
2. Formally derive the effects of inflation and of policy on hh wealth.
3. Measure those effects using survey data and microsimulation.

The household budget constraint

$$\underbrace{\sum_k P_{k,t} c_{j,k,t}}_{\text{Consumption}} = \underbrace{P_t y_{j,t}}_{\text{Income}} - \underbrace{P_t T_{j,t}}_{\text{Net taxes}} + \underbrace{B_{j,t-1}^{(t)} + \sum_{s \geq 1} Q_t^{(t+s)} (B_{j,t-1}^{(t+s)} - B_{j,t}^{(t+s)})}_{\text{Nominal assets decumulation}} \\
 + \underbrace{P_t b_{j,t-1}^{(t)} + \sum_{s \geq 1} q_t^{(t+s)} P_{t+s} (b_{j,t-1}^{(t+s)} - b_{j,t}^{(t+s)})}_{\text{Real assets decumulation}}$$

⇒ General formulation that accounts for:

- Heterogeneity in consumption baskets
- Accumulation of nominal/real assets & liabilities of different maturities.
- Income from various sources
- Taxes & transfers

Our measure of impact: households' wealth

The budget constraint determines the **accumulation of wealth** to the next period:

$$\begin{aligned} P_t a_{j,t} = & P_t y_{j,t} + \sum_{s \geq 0} Q_t^{(t+s)} B_{j,t-1}^{(t+s)} + \sum_{s \geq 0} q_t^{(t+s)} P_{t+s} b_{j,t-1}^{(t+s)} \\ & - P_t T_{j,t} - \sum_k P_{k,t} c_{j,k,t} \end{aligned}$$

(using $P_t a_{j,t} \equiv \sum_{s \geq 1} Q_t^{(t+s)} B_{j,t}^{(t+s)} + \sum_{s \geq 1} q_t^{(t+s)} P_{t+s} b_{j,t}^{(t+s)}$)

- We focus on **the effects of the cost-of-living crisis on households' wealth**, $a_{j,t}$.
- We only look at the **first-order-effects** of the crisis.

Main assumptions

- A1:** The shock is unexpected and one-period. In all others, inflation is as expected and normalised to $\bar{\pi}$:

$$\pi_{\tilde{t}} = \begin{cases} \bar{\pi} & \text{at } \tilde{t} \neq t \\ \bar{\pi} + d\pi & \text{at } \tilde{t} = t \end{cases}$$

and $\mathbb{E}_t[\pi_{t+1}] = \bar{\pi}$ for all t .

- A2:** The monetary authority responds to the inflationary shock by increasing interest rates at time t by dR moving all bond prices $dQ/Q = -dR/R$.
- A3:** Nominal incomes are partially rigid: incomes in t are agreed upon in $t - 1$, and are partially indexed to inflation.

The impact of inflation

First-order impact of inflation on household wealth is:

$$da_{j,t}^{(\tilde{\pi})} = - \left[\underbrace{NNP_{j,t}}_{\text{Fisher effect}} + \underbrace{(1 - \lambda_j)y_{j,t-1}^{(t)}}_{\text{Nominal income}} + \underbrace{\left(\frac{d\tilde{\pi}_j}{d\tilde{\pi}} - 1\right)c_{j,t}}_{\text{Relative consumption}} \right] d\tilde{\pi}.$$

$\tilde{\pi} = \pi - \Delta\tau^c$ is a measure of inflation that excludes the effects of indirect taxes.

Fisher and Relative consumption channels

Fisher effect: $-NNP_{j,t}d\tilde{\pi}$

- NNP is the individual's **Net Nominal Position**

$$NNP_{j,t} = \sum_{s \geq 0} Q_t^{(t+s)} B_{j,t-1}^{(t+s)}$$

- Net nominal creditors (debtors) lose (gain) from inflation.

Relative consumption channel: $\left(\frac{d\tilde{\pi}_j}{d\tilde{\pi}} - 1\right)c_{j,t}$

- Because of heterogeneity in consumption patterns, individuals face different effective inflation rates $\tilde{\pi}_j$
- Higher $\tilde{\pi}_j$ (compared to aggregate inflation $\tilde{\pi}$) implies bigger relative losses from inflation.

Nominal income revaluation channel

Nominal income channel: $(\lambda_j - 1)y_{j,t-1}^{(t)}d\tilde{\pi}$

- Derives from the assumption that **nominal incomes are sticky** and only partially adjust to inflation in the short-term:

$$P_t y_{j,t} = (1 + \lambda_j \pi_t) P_{t-1} y_{j,t-1}^{(t)}$$

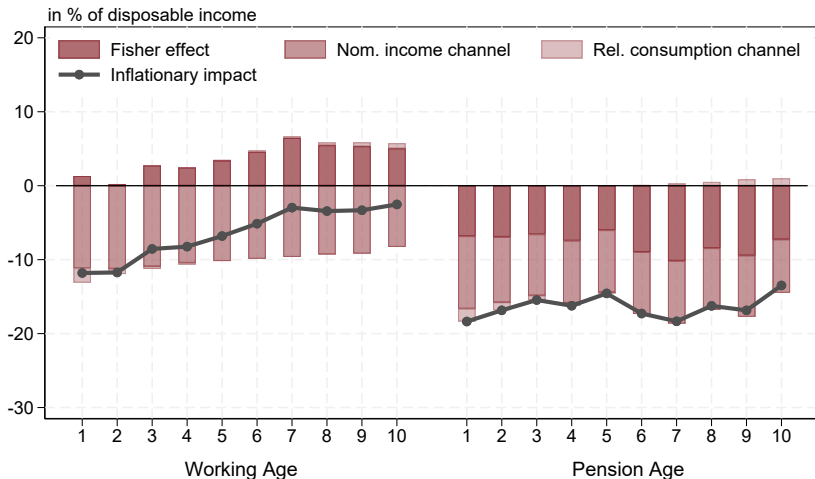
→ $P_{t-1} y_{j,t-1}^{(t)}$ is assumed to be agreed upon in time $t - 1$, before π_t is realised.

- When $\lambda_j < 1$, individuals face real income losses when inflation rises.

Empirical strategy

- **Household Balance Sheet data** from HFCS
 - ⇒ Household wealth & its composition, consumption, income.
- **Effective rates of inflation** from HBS/Eurostat
 - ⇒ Computation of households' consumption weights.
 - ⇒ Computation of households' specific inflation rates.
- **Evolution of disposable income** from EUROMOD
 - ⇒ Using PET to isolate the effect of policy changes.

Direct effects of inflation



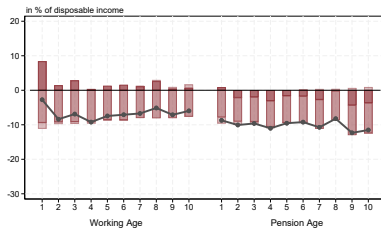
Direct effects of inflation

GER vs. GRE

Germany



Greece



Fiscal Policy response

$$da_{j,t}^{(\tau)} = \underbrace{d\tilde{T}_{j,t}}_{\text{Income-side measures}} + \underbrace{\left[c_{j,t} \left(\frac{d\tau_j^c}{d\tau^c} - 1 \right) + \left(NNP_{j,t} + (1 - \lambda_{j,t}) y_{j,t-1}^{(t)} \right) \right] d\tau_t^c}_{\text{Price-side measures: spending \& wealth/income effects}}$$

We report separate results for:

- **Income measures**, e.g. targeted measures to low-income individuals.
- **Price measures**: Effects of VAT cuts, excise reduction etc, affecting households through impact on inflation and relative price changes.

Empirical strategy

- **Income-side measures** from EUROMOD
 - ⇒ Based on Amores et al. (2023).
 - ⇒ Extended to the period 2021H2 - 2023 based on budget cost.
- **Price-side measures** from Eurostat
 - ⇒ Comparing inflation rates at constant taxes vs non-constant taxes.

Effect of fiscal measures



Monetary Policy response

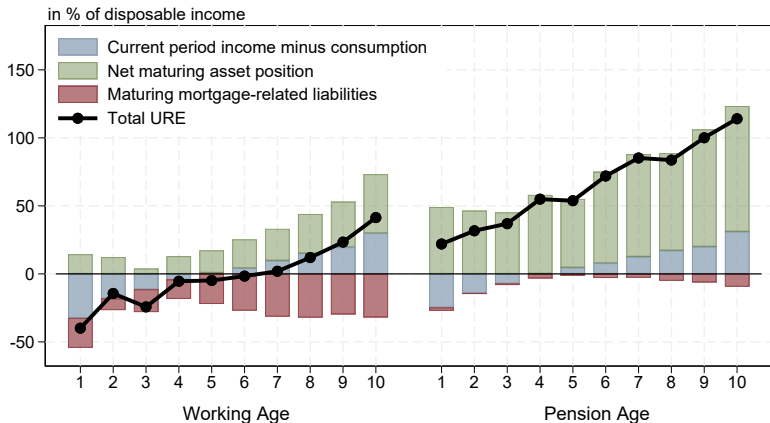
- We study the impact of **interest rate changes** on households
- Exposure to changes in interest rate depend on the household's “**Unhedged Interest Rate Exposure (URE)**” (Auclert, 2019):

$$da_{j,t}^{(R)} = URE_{j,t} dR$$

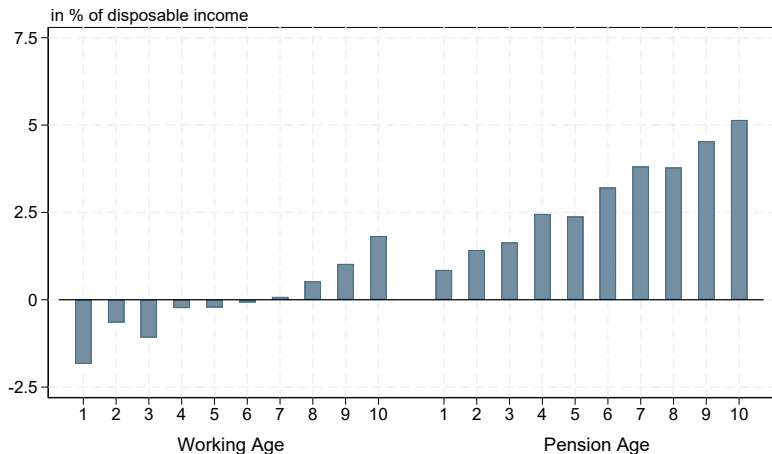
- The **URE** is the difference between the maturing assets and maturing liabilities of the household. It captures net savings/financing needs exposed to the current interest rate

$$URE_{j,t} = \frac{B_{t-1}^{(t)}}{P_t} + b_{t-1}^{(t)} + y_{j,t} - T_{j,t} - \sum_k \frac{P_{k,t}}{P_t} c_{j,k,t}$$

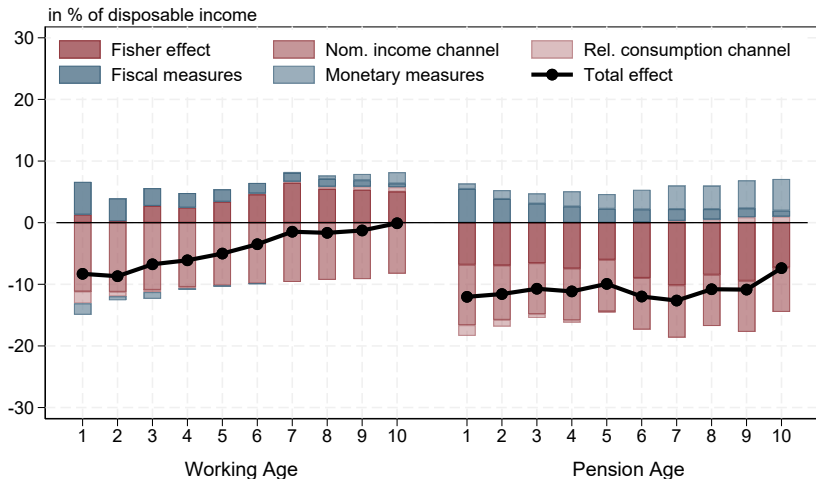
The interest rate exposure of households



Effect of interest rate response

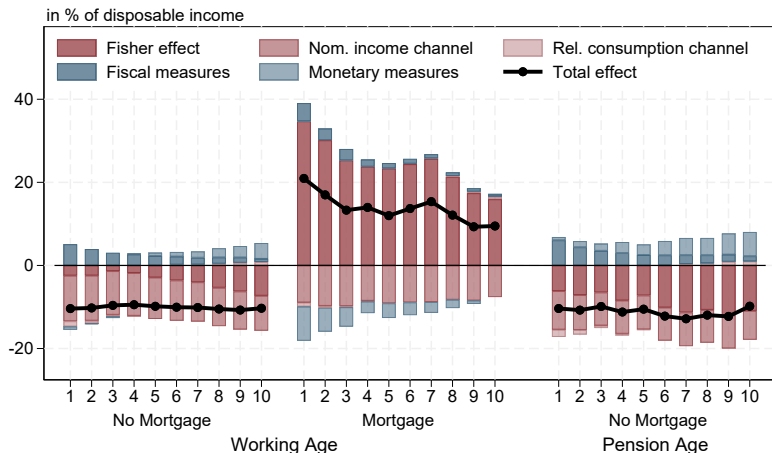


The impact of the cost-of-living crisis



The role of wealth and its composition

Mortgage



The role of wealth and its composition

Adjustable vs Fixed rate

Germany



Spain



Conclusions

- We analyse the effects of the **cost-of-living crisis** in the Eurozone.
- We focus on the **direct impact of inflation** and **policy responses**
- **Fisher and Nominal Income channels** are the main drivers of direct effects.
- **Low-income, elderly and hh's without mortgages** were the most negatively affected by inflation.
- Contrary to the common wisdom, **hh with mortgages, including those with adjustable rate**, have generally be among the main winners.

Thanks!