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Inflation and household income distribution

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I would like to thank the European Economic Association (EEA) for inviting me to take part in this event.

After a decade of inflation being persistently low, its surge since mid-2021 and its persistence has brought back the debate on the economic consequences of a significant increase in inflation. In my address today, I would like to focus on how inflation affects and redistributes wealth across households. People are afraid of inflation because it makes them “poorer”; however, as we will see, its effect is not homogeneous.

I will start by describing the three main channels through which an unexpected increase in inflation can affect an individual’s wealth.

First, inflation redistributes real wealth from lenders to borrowers by changing the real value of nominal assets and liabilities. This is commonly known as the wealth or Fisher channel.¹ By real wealth I mean nominal wealth (e.g. in euros or dollars) expressed in units of a basket of consumer goods and services; in other words, nominal wealth rescaled by the level of consumer prices. The impact of inflation on real wealth is fully captured by the net nominal position, defined as the difference between nominal assets and nominal liabilities. While inflation will reduce the real value of both of these, the net effect on a given household’s real wealth will depend on the relative size of such assets and liabilities in that household’s balance sheet.

Second, nominal income sources, such as wages, move slowly in most advanced economies. They are “sticky”. Therefore, during an initial phase, unexpected high inflation episodes tend to reduce the real value of nominal income, and consequently of real wealth. However, after the unexpected shock, wages and other sources of income may evolve differently across workers, while in many countries some sources of income, such as pensions, are indexed to inflation. Thus, inflation could have an uneven impact on the real income of individuals. Let me call this the “income channel”.

Third, inflation does not typically affect all prices homogeneously and the origin of inflation matters. For instance, inflation in Spain in 2021 was mainly driven by energy prices, which accounted for more than 54% of the rise in the Consumer Price Index. Given that individuals of different ages, income levels and wealth typically consume different baskets of goods and services, an increase in prices that is heterogeneously distributed across these goods and services will impact those individuals differently. For those who consume a higher share of goods and services that are experiencing larger price increases, their *individual* (or *expenditure-adjusted*) inflation rate will be higher, as the cost of their consumption basket increases proportionally more. Thus, they will experience a larger drop in their real wealth. This is the case of low-income households when inflation has a considerable impact on staple goods and services. We may label this the “relative consumption channel”.

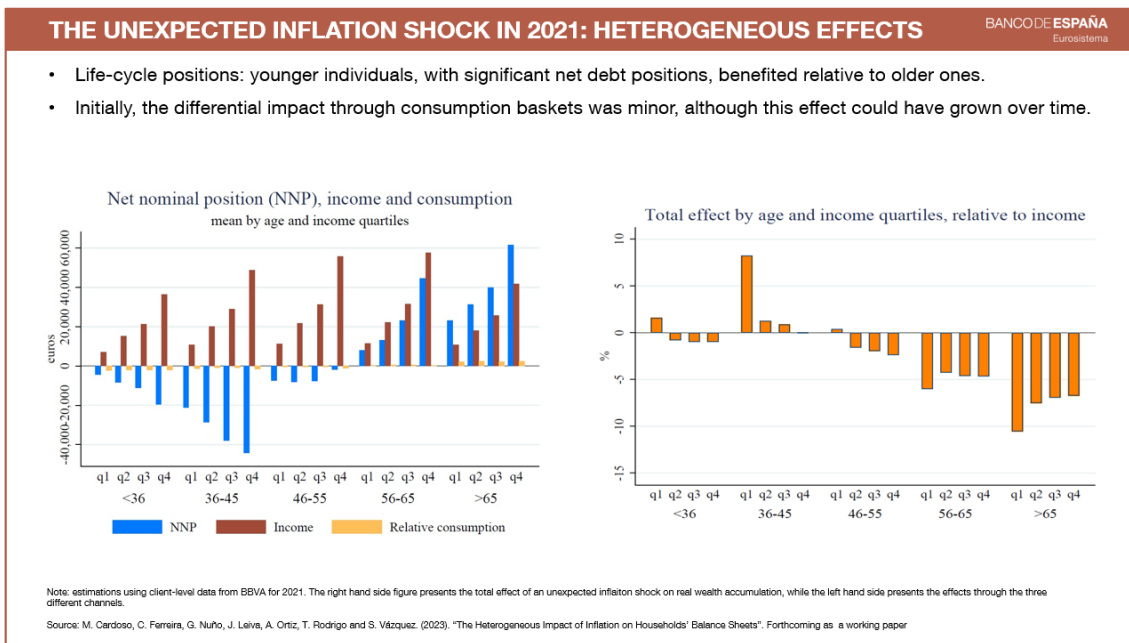
Let me focus now on quantifying these channels during the most recent inflationary episode, on the back of recent research co-authored by Banco de España researchers.² Drawing on

¹ Thus named after Fisher’s (1933) seminal paper, which famously analysed the role that nominal debt plays in amplifying the effect of a recession when the average price level falls.

² See M. Cardoso, C. Ferreira, G. Nuño, J. Leiva, A. Ortiz, T. Rodrigo and S. Vázquez. (2023). “The Heterogeneous Impact of Inflation on Households’ Balance Sheets”.

customer-level commercial bank information on spending transactions, labour-related income and asset and liability positions (such as deposits and current accounts, mortgages and consumer loans), the authors quantified the above three channels for Spain in 2021, the first year of the current inflationary episode.

Two interesting conclusions emerge.



First, on average, both the Fisher and the income channels turned out to be one order of magnitude larger than the relative consumption channel. This implies that heterogeneity in consumption baskets played a smaller role than the other two channels. The reason is that the dispersion in individual inflation rates across the population in Spain during 2021 was not large enough to generate significant relative losses or gains.

Second, the magnitudes of the Fisher and income channels are comparable in absolute value. However, through the income channel inflation reduces the real wealth of most households, whereas through the Fisher channel it increases the real wealth of net debtors and reduces that of net creditors³

An important caveat is that these results apply to the Spanish case, but they should not be automatically generalised to other countries. In fact, in its Spring 2023 Fiscal Monitor⁴, the International Monetary Fund has followed the same methodology to analyse the relative impact of these three channels – income, wealth, and consumption – on a wider sample of

³ This implies that middle-aged individuals, those between 36 and 45 years of age, were largely unaffected by, or even benefited from, the rise in inflation in 2021, as they typically have relatively high mortgage debt and therefore large negative net nominal positions. In contrast, older people experienced the largest decline in real wealth, as they very often have large positive net nominal positions. These results are qualitatively similar when employing two alternative, publicly-available representative surveys: a consumer expenditure survey (Encuesta de Presupuestos Familiares (EPF)), and a representative consumer finance survey (Encuesta Financiera de las Familias (EFF)), both of which are carried out by the Banco de España.

⁴ See IMF Fiscal Monitor. April 2023. [Chapter 2: "Inflation and Disinflation: What Role for Fiscal Policy?"](#).

countries, including advanced and emerging economies, and the results for the same episode vary widely depending on each country's economic structure and institutions.

Moreover, two interesting and quantitatively relevant features of these conclusions should be mentioned.

First, these estimations capture the effect of unexpected inflation during the first year after its surge. But they do not capture the subsequent adjustment in individuals' balance sheets through asset prices, indexation of wages, pensions, benefits or other sources of income, or changes in consumption baskets that might occur over time, in particular if the inflation episode proves to be larger and more persistent than initially expected. Indeed, this has been the case in Spain and the euro area: inflation rates were much higher in 2022 than in 2021.

Second, these results do not capture the effect of policy responses to the inflation shock. Two such responses were significant within the euro area: the discretionary fiscal measures implemented by governments and the monetary policy response. However, these policy responses were not immediate, so the results on the initial impact of inflation that I described above were initially meaningful.

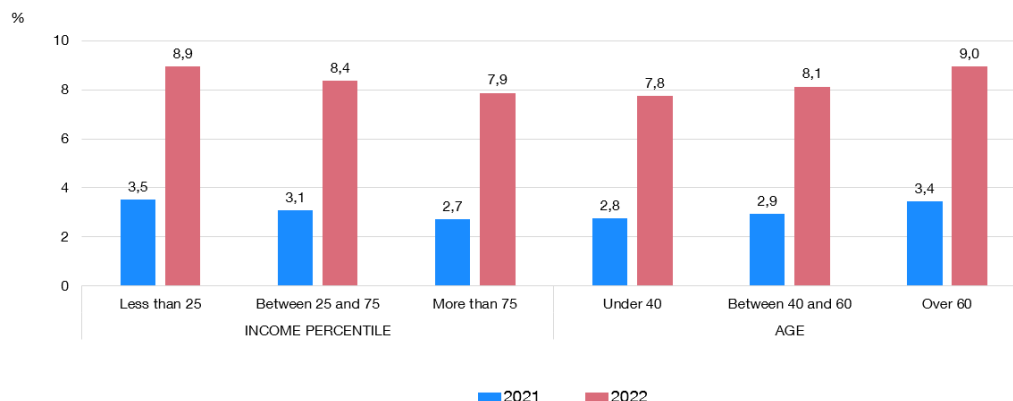
Let me now illustrate these two factors by providing more details first on why the dynamics of adjustments after the initial unexpected shock are relevant, and how they can affect the way in which we evaluate the impact of inflation on individuals and households. I will move later briefly to the impact of economic policies.

Indeed, as inflation intensifies and becomes more persistent, the role, for instance, of differences in consumption baskets can become more important. In particular, although the impact of inflation through the relative consumption channel was relatively small during 2021 in Spain, as inflation subsequently intensified this effect may have increased and may have become correlated with the income channel. Poorer households experience higher expenditure-adjusted inflation rates due to the composition of their consumption basket (as they spend proportionally more on energy and food, the latter being another major driver of inflation in 2022). In addition, they face greater difficulties in modifying their consumption patterns as prices rise.⁵ These two features could accentuate the asymmetric impact of inflation through this channel, by hitting relatively vulnerable households harder.

⁵ See Alina Bobasu, Virginia di Nino and Chiara Osbat. (2023). "[The impact of the recent inflation surge across households](#)", ECB Economic Bulletin, Issue 3; Niccolò Battistini, Virginia Di Nino, Maarten Dossche and Aleksandra KoIndrekaj. (2022). "[Energy prices and private consumption: what are the channels?](#)", ECB Economic Bulletin, Issue 3; and Evangelos Charalampakis, Bruno Fagandini, Lukas Henkel and Chiara Osbat. (2022). "[The impact of the recent rise in inflation on low-income households](#)", ECB Economic Bulletin Issue 7.

- As inflation intensified and became more persistent, the role of differences in consumption baskets increased

HOUSEHOLD-SPECIFIC INFLATION BY INCOME PERCENTILE AND AGE



Source: Basso, Dimakou, Pidkuyko (2022), using Spanish Household Budget Survey.

In 2021, the increase in energy prices pushed up the inflation rate faced by the average household in Spain to 3.1%⁶. As low-income households dedicated a larger share of their spending to electricity, gas and other fuels, their average expenditure-adjusted inflation rate was higher (3.5%)⁷. In contrast, high-income households, which allocated a lower share of their spending to those energy items, faced an average inflation rate of 2.7%. Expenditure-adjusted inflation rates also varied depending on the age of the household head: households whose head was aged over 60 faced an average inflation of 3.4%, compared to average inflation of 2.8% faced by households whose head was aged under 40.

These patterns were accentuated in 2022. Inflation faced by the average household rose to 8.4%, 60% of which was driven by energy and food. As low-income households again spent a larger share of their total consumption on those two items compared to high-income households, this further widened the gap between the expenditure-adjusted inflation faced by these two groups: low-income households experienced an average inflation rate of 8.9%, while that experienced by high-income households was 7.8%.

⁶ See H. Basso, O. Dimakou and M. Pidkuyko. (2022). “How Inflation Varies Across Spanish Households”, ICE Revista de Economía, 929.

⁷ Increases in the price of food, electricity, gas and other fuels accounted for around 76% of the inflation experienced by low-income households.

Considering 2021 and 2022 jointly, the gap in household-specific inflation rates between the bottom and top quartiles of the income distribution was almost 2 percentage points (pp). And the gap that emerged during this period between the inflation rate experienced by younger and older households was of a similar magnitude⁸. In this latter case, however, the fact that some sources, such as pensions, are fully indexed to inflation ex post in many countries, including Spain, while wages adjusted only partially to inflation should have helped to reduce the above mentioned age gap through the income effect, showing again the importance of considering the inflation effects on the income distribution over time.

As to the policy response to the inflation episode, the impact of fiscal policy measures on inequality crucially depends on whether they are sufficiently targeted to the hardest-hit agents. On the available evidence for Spain⁹, the bulk of the public actions adopted since late 2021 to address the fallout from high inflation appear to have benefited Spanish households (and firms) across the board. Specifically, measures targeting the economic agents most vulnerable to the energy crisis and rising prices account for 15% to 20% of the estimated overall budgetary cost in the period running from 2021 to 2025.¹⁰

As to the impact of the monetary policy response, the evidence available for Spain shows that this can also be very heterogeneous across households.¹¹ The effects of higher interest rates on households' wealth and income are uneven across households, as they depend, among other factors, on their level of indebtedness and type of debt and their financial and real asset holdings. All these factors tend to vary by income level.

As an illustration of one of the potential channels of monetary policy, the pass-through of higher interest rates to the average cost of Spanish household debt is estimated to have been highly uneven: a 4 pp market rate increase raises their net interest expenses by between 1.1% (low income households) and 2.2% (high income households) of their income, depending on the quintile of the income distribution in which they stand, once the conditions on floating rate loans have been incorporated. These figures reflect a lower proportion of indebted households in lower income percentiles and the fact that the proportion of households with floating rate loans is lower for low income households (close to 30% for the total population; 11% for households with income below the 20th percentile).¹²

Let me briefly conclude.

⁸ Interestingly, inflation differentials across the income and age distributions were not a feature unique to the recent inflationary surge. Differences in expenditure-adjusted inflation rates also manifested themselves between 2006 and 2020, a period with lower, and relatively stable, inflation rates. Households in the bottom quartile of the income distribution experienced an average annual inflation rate that was 0.2 pp higher than those in the top quartile. This adds up to a gap of 2.5 pp over 15 years.

⁹ García-Miralles, Esteban. (2023). "Support measures in the face of the energy crisis and the rise in inflation: an analysis of the cost and distributional effects of some of the measures rolled out based on their degree of targeting". *Economic Bulletin – Banco de España*, 2023/Q1, 15. <https://doi.org/10.53479/29769>

¹⁰ Checherita-Westphal and Dorrucci (2023) show that the measures adopted in the euro area as a whole have also been of an eminently general nature.

¹¹ Report on the Financial Situation of Households and Firms. First half of 2023. Banco de España (2023).

¹² See Banco de España. (2023). "[The current episode of price pressures in the euro area, the monetary policy response and its effects](#)". In Banco de España, Annual Report 2022, Chapter 3, pp. 140-180.

The findings I have just described, which are the result of ongoing research at the Banco de España, highlight several relevant angles that need to be taken into account when discussing how inflation affects different households.

First, an inflation surge has heterogeneous effects on households' real wealth, depending on balance sheet composition, the level and sensitivity of nominal income sources, and differences in the composition of expenditure.

Second, consumption baskets, as well as the ability to shift spending across items in response to shocks, vary across households, and tend to be significantly correlated with income and age.

Third, as inflation becomes more persistent than expected, the relative importance of the channels I have outlined could vary over time. Households will naturally start to shift their asset portfolios and their consumption baskets away from assets whose value is fixed in nominal terms and from goods or services whose prices increase above average. In addition, wage negotiations will gradually incorporate compensation for past and expected price increases, while some income sources, such as pensions, will be fully compensated ex-post by the price increases. The ability to carry out such adjustments, however, varies across households in ways that can affect how such a shock is transmitted to the economy as a whole.

Fourth, discretionary fiscal measures can counterbalance these heterogeneous effects on households if targeted to the hardest-hit agents. In this regard, with a view to improving the design of public policies, it is crucial to combine the information available on household income, wealth and expenditure.

Finally, the monetary policy response can also have very heterogeneous effects across households, with a significant larger impact on indebted households with floating rate loans.

All these results underscore the importance of bringing inflation back to levels consistent with our 2% medium-term objective. Indeed, price stability is the best contribution that monetary policy can make to supporting sustainable economic growth and employment, and hence to reducing inequality.

Thank you.