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Inflation is back: a challenge for public policy

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Inflation is coming back to levels not seen for over 40 years. It has reignited the debate on the causes of price rises, their economic and social consequences, and the economic policy measures to tackle them. Indeed, when inflation reaches high levels, it becomes a major concern due to its harmful effects on household purchasing power (if prices rise faster than wages) and businesses' competitiveness, generating tension on the sharing of value added. This *Note* uses micro-data to document the effects of successive shocks to energy prices and imported production inputs (agricultural raw materials, fertilisers, etc.). The rise in these imported costs accounts for around a third of inflation. In particular, companies "pass through" almost all of the rise in energy prices they incur to their selling prices. However, they pass through very few of the cost reductions, translating into persistent inflation risk. The high level of pass-through between energy prices and producer prices justifies that public policy focuses on households.

Households are exposed to rising prices in different ways. This *Note* shows that, in the current inflationary episode, the usual categories for analysing inequalities (income groups, age groups, place of residence, etc.) do not explain much of the observed difference in exposure to inflation. The greatest differences lie within these categories, depending on consumption baskets. Understanding and documenting this heterogeneity is crucial to designing appropriate public policy responses. This requires supplementing the current statistical apparatus with more frequent measurements of inequalities in inflationary contexts.

The government quickly introduced the electricity and gas price shield to mitigate the inflationary shock. We assess its effects in this note. Although it has significantly reduced inflation for households, it has a high budgetary cost because it benefits all households, including the most affluent, and it does not encourage energy sobriety because it does not preserve the price signal. We show that more effective, fairer and less costly public policy options are possible in the very short term based on regulated sales tariffs and energy vouchers. In particular, rapidly ending the electricity tariff shield for the wealthiest 20% of households would majorly impact public finances. In the longer term, to better account for the highly differentiated effects of energy inflation for households, we recommend targeting future aid via schemes indexed to past consumption.

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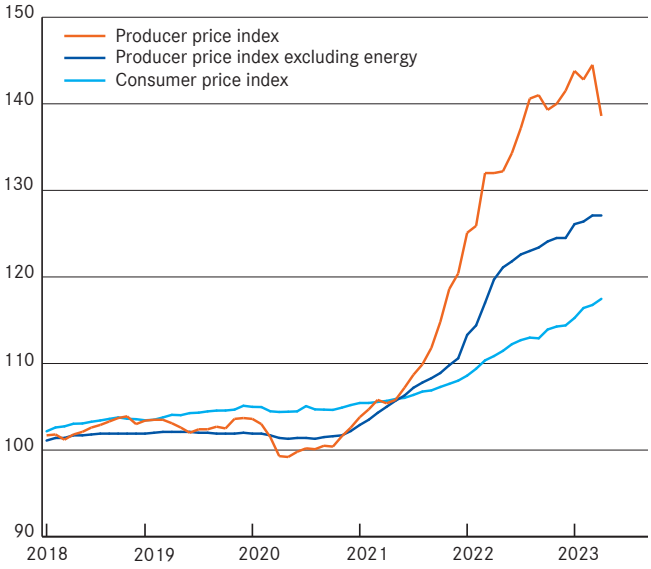
The return of inflation brings out legitimate debates about the causes of price rises, their economic and social consequences and, finally, the economic policy measures likely to limit their negative effects. When inflation is contained — at around 2% — it does not enter into the day-to-day considerations of economic agents, consumers and businesses. Conversely, when it reaches high levels, it becomes a major concern because it reduces the purchasing power of households if wages do not rise at the same time, affects the competitiveness of businesses and generates tensions on the sharing of value added. Prices have risen sharply since 2021. As an illustration, the consumer price index (base 100 for 2015) reached just 104.2 points in January 2021, before jumping to 116.6 points in April 2023 (see figure 1). By then, the inflation rate in France was 6.9% (7% for the eurozone as a whole), almost twice the rate seen after the 2008 crisis and the highest for over 40 years.

In Europe, the causes of the return of inflation from 2021 are to be found first and foremost in the rise in energy prices. However, since mid-2022, food prices and, to a lesser extent, services also played a significant role. However, it is as important to consider the causes of inflation as to understand the mechanisms that maintain it at high levels. The question of the existence of "wage-price spiral" and "profit-price spiral" has given rise to a great deal of debate, both in policy-making circles and among economists.

Figure 1. Consumer and producer price indexes (base 100 in 2015)



Source: Insee, 2023.

Analysing inflation is a complex exercise, requiring both appropriate measurement tools and a detailed analysis of its potential sources, its transmission mechanisms into the economy and the heterogeneity of its effects. This detailed understanding is necessary to adapt public policy responses.

Various economic policy tools have been activated with the return of inflation. On the monetary front, the European Central Bank has raised key rates six times, with a cumulative increase of 350 basis points between July 2022 and May 2023 (i.e. rates rising from 0% to 3.5% in just a few months). This conventional policy has come with a strong return to fiscal policy, with a large number of measures adopted at the national and European level. In France, the energy price shield was introduced, along with direct transfers (energy vouchers, fuel allowances, mobility aids). These unprecedented budgetary responses were taken as a matter of urgency in a crisis situation. We now need to assess their effectiveness. In the short term, we need to consider alternatives to these costly and poorly targeted policies. In the longer term, we must build upon recent experience to consider the range of public policy instruments able protect the purchasing power of the most exposed agents. Especially in the context of the climate crisis and energy transition, policy-makers might need to distinguish between the price rises for polluting goods inherent to the energy transition, and the undesirable and temporary price rises that may justify public action.[1]

This *Note* provides an overview of what we know about the dynamics of inflation, its causes and effects on the economy in general and on households purchasing power in particular. It shows that external shocks such as rising input and energy prices help to explain a part of the rise in producer prices. These shocks are largely passed through to consumers by companies. The *Note* also explains the issues at stake in measuring inflation, which is crucial to improving the targeting of household support policies. Our analysis shows that the French policy measures, including the tariff shield, have helped to contain inflation. However, their high cost strongly incentivises designing more targeted measures aimed at the most affected households, under specific income conditions. Lastly, recommendations are put forward to develop the French statistical system and household support measures.

The sources of inflation

We analyse the various factors that may explain current inflation. We recall the macroeconomic context of the inflationary shock, before analysing in detail the role of external shocksand examining the mechanisms that could explain the persistence of inflation.

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[1] See Chapter 11 "By 2030, the climate transition creates a significant risk of inflationary configuration" (ed. Stéphane Dees) of the report Pisani-Ferry J. and Mahfouz S. (2023): Les incidences économiques de l'action pour le climat, France Stratégie, May.

Macroeconomic analysis of the inflationary shock

The primary cause of inflation is the explosion of energy costs, which in the case of France represents "cost-push inflation" or "imported inflation", with direct consequences for the balance of trade. In this respect, we can see that while the rise in the consumer price index has been particularly strong from 2021 onwards, the rise in the producer price index has been much greater, reaching almost 145 index points in mid-2023 (base 100 in 2015), whereas it was close to 100 in 2021 (see figure 1). The rise in energy prices contributes mechanically to this increase, but it does not explain all of it. Imported inflation has been particularly pronounced on energy products, but also on many other imported inputs, particularly raw materials, due to the pressure on supply chains and international logistics during the Covid crisis.

The effects of plans to support household purchasing power during the health crisis might also contribute to inflation. In the United States, the fall in the household savings rate is stimulating consumption and, therefore leading to price rises. In France, this phenomenon appears to be more limited: the savings rate in 2022 is still three points above its pre-crisis level.[2] As a result, the extra savings accumulated during the health crisis remain high and could reach more than 12.6% of annual household income in 2024.[3] Households could use these savings to support consumption in the face of rising prices, but they are unevenly distributed across the population.

Finally, while the initial cause of inflation seems to be linked to the energy crisis and partly to the health crisis, its persistence depends on monetary policy. In the United States and Europe, there is a lively debate about the direction of monetary policy.

External shocks and cost inflation

Energy prices and the rising cost of certain raw materials constitute a major source of cost-push inflation. In addition to directly impacting consumers, higher input prices spread to the rest of the economy via various channels, notably by increasing production costs in downstream sectors. The food sector, for example, is particularly hard hit. It is exposed to both energy inflation and the rising price of certain agricultural raw materials on world markets. Rising fertiliser and energy prices account for almost half of the 20% increase in selling prices in the agricultural sector. Nearly all of this increase will be passed through selling prices of the agri-food industry, with the rise in agricultural raw materials accounting for 10 points of the total 17.5% increase between 2019 and 2022.[4] However, in the agricultural and agri-food sectors, as in all others, price rises are difficult to assess in detail and are far from uniform.

A study[5] has used microeconomic data on producer prices to understand the importance of these external factors and attempt to measure their contribution to price rises accurately. This study aims to better understand the extent to which the rise in business costs, whether due to the energy shock or to the higher cost of imported inputs, is passed through to selling prices (pass-through study). On average, 30% of imported input price rises were passed through to producer prices in the sample of manufacturing companies studied. Energy price rises were entirely passed through (pass-through close to 100%). This pass-through rate varies little according to company size, but exposure to shocks is highly heterogeneous, even within the same sector. This disparity in the cost structure of companies explains why the inflation induced by the combination of the two shocks is highly variable, even within the same sector (see figure 2). In addition, transmission rates are asymmetrical. While increases in energy costs are passed through in full to producer prices, only 40% of decreases in energy costs are passed on, so companies increase their margins when energy costs fall.

Finding 1. Companies are passing through almost 100% of energy price rises and 30% of imported input price rises to their customers. Deferrals of cost increases are significantly higher than deferrals of cost reductions.

Finding 2. Exposure to external shocks is highly heterogeneous, including between companies in the same sector. As a result, the inflationary impact of the external shocks observed since 2021 is highly variable.

The same study estimates that the rise in the price of imported inputs contributes directly to producer price inflation in the manufacturing sector, by 1.9 percentage points between January 2021 and July 2022. The energy shock adds around 1.6 percentage points. The chemicals and metals industries are particularly hard hit by these two external factors, with a combined excess impact on sectoral inflation of 10%. Overall, these factors explain around 20% of the inflation observed in the producer price index over the period under review.

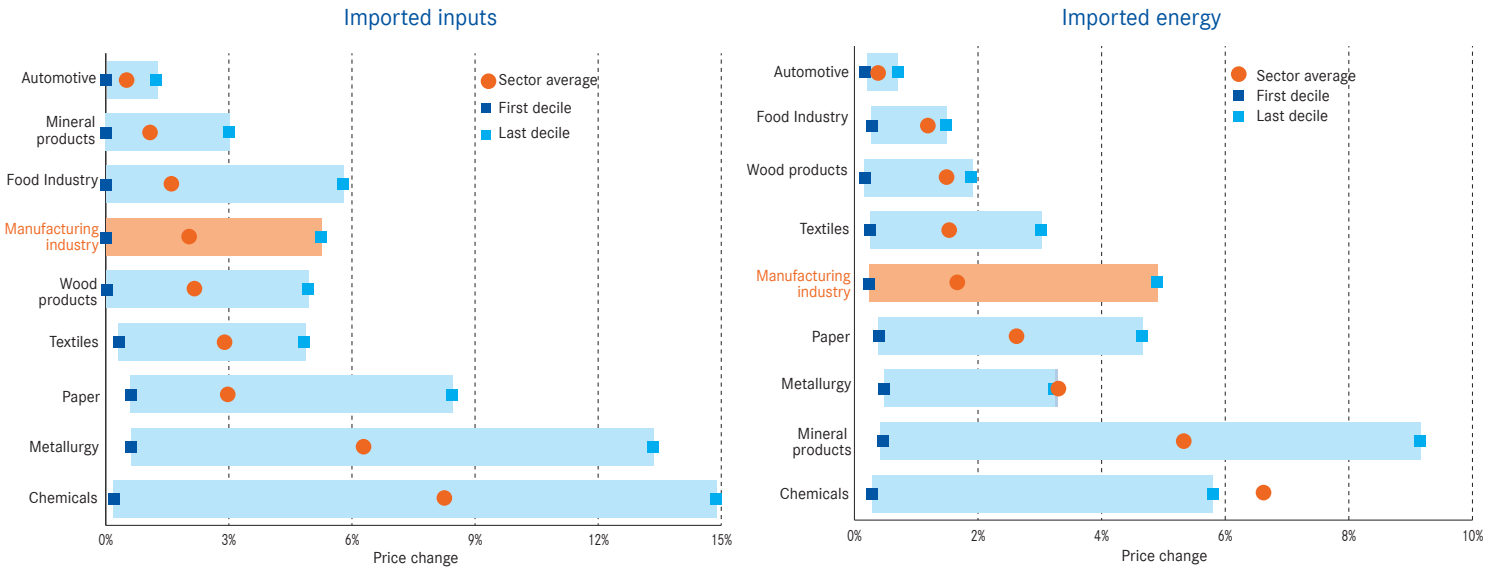
[2] The savings rate in France rose from 14.7% in the last quarter of 2019 to 21.1% in the first quarter of 2021. Dossche M. and Zlatanos, S. (2020): "Covid-19 and the increase in household savings: Precautionary or forced?", European Central Bank. See also, Dao M. C., Dizioli A., Jackson C., Gourinchas P.-O., and Leigh D. (2023): "Unconventional fiscal policy in Times of High inflation", ECB forum on Central Banking, June.

[3] These estimates were produced in April 2023 in OFCE's Policy Brief 114, "The price of inflation: 2023-2024 outlook for the French economy".

[4] See the "Update of findings on rising food prices" dated 3 March 2023, which revisits the report by Bolliet Q., Brand T., Chamouard P., El Issami M., Hemous C., Perrot A. and Veillon P-A. (2022): "L'inflation des produits alimentaires", Report, IGF.

[5] Lafrogne-Joussier R., Martin J. and Méjean I. (2023): "Cost pass-through and the rise of inflation", CAE, Focus n°94 and Insee, Working Papers, May.

Figure 2. Impact on producer prices of price shocks linked to imported inputs and energy, between sectors and between companies within a sector



Source: Lafrogne-Joussier R., Martin J. and Méjean I. (2023): "Cost Pass-Through and the Rise of Inflation", CAE, *Focus* n°94 and Insee, *Working Papers*, May.

Reading: In the chemicals sector, the rise in the price of imported inputs led to an average increase in producer prices of around 8.5%. The light blue bar represents dispersion, i.e. the interval between the 10% of firms whose prices increased the least and the 10% whose prices increased the most.

However, the transmission of the shock along value chains amplifies the direct effect: manufactured goods whose price rises are used as inputs in producing other goods and services. To assess the amplification effect on other inputs, we start from the average direct effects represented in figure 2 and the input-output table for the French economy, which measures productive interdependencies between sectors, and we calculate the total effect of the shock on the consumer price index (CPI).[6] From 1st quarter 2021 to 2nd quarter 2022, the total effect of shocks affecting the manufacturing sectors would contribute 2.1 percentage points to CPI growth, including 1.3 percentage points from second-round effects.

Over this period, CPI growth is 6.1% (3.8% excluding energy). External shocks affecting companies in the manufacturing sector therefore explain a third of inflation. Over the same period, the rise in energy costs directly contributed another third. The remaining third is therefore explained by the combined effect of wage inflation, the rise in prices of other inputs and the increase in margins.

Finding 3. The combined effect of higher prices for imported inputs and energy accounts for 20% of inflation in the industries concerned. These direct effects are amplified by their propagation through the value chains. In total, they contribute 2.1 percentage points to consumer price index inflation between 1st quarter 2021 and 2nd quarter 2022, or one-third of observed inflation.

Two major conclusions emerge from this analysis. Firstly, the fall in energy prices observed from the beginning of 2023 will prove insufficient to limit the pressure on prices, which are more rigid to decrease. On the other hand, the fact that companies pass on all energy price increases to their customers justifies concentrating aid on households, at least in the short term, since these are the agents who ultimately suffer from the inflationary impact of external shocks.[7]

The mechanisms that sustain inflation: the existence of price-wage and price-profit spirals?

According to the Banque de France, wage growth is expected to reach 5.9% in 2023 for the commercial sectors, a figure higher than the projections for the harmonised consumer price index (5.4%).[8]

[6] The method used is similar to that of Bourgeois A. and Lafrogne-Joussier R. (2022): «La flambée des prix de l'énergie: un effet sur l'inflation réduit de moitié par le 'bouclier tarifaire'». Insee Analyses No. 75.
[7] In the longer term, companies may also be affected, for example through a decline in their competitiveness, sales or even productivity through returns to scale.
[8] Banque de France (2022): "Macroeconomic projections - December 2022", Economic forecasts.

This is fueling fears of a wage-price spiral. However, according to an International Monetary Fund study based on historical data (since the 1960s), a small minority of price-wage spiral episodes have been maintained or accelerated over time.[9] Inflation and nominal wage growth have tended to stabilise. In addition, this rise in France follows an episode of real wage compression, and the Ministry of Labour's statistical department notes that increases in the minimum wage have had more of a compression effect on the distribution of low incomes than on the wage scale as a whole.[10] In the first quarter of 2023, basic monthly wages rose by an average of 4.6% over one year (5.5% and 4.9% for manual and clerical workers, and 3.6% for managerial staff).[11] Wages are rising but not keeping pace with inflation.

The risk of a "price-profit spiral" also needs to be examined. At her press conference on 16 March 2023, Christine Lagarde, President of the ECB, raised the issue, arguing that "many companies have been able to increase their margins in sectors that have suffered from supply restrictions and the resurgence of demand". Analysis of national accounts data highlights the role of rising unit profits in explaining growth in the GDP deflator in Europe.[12] In France, INSEE's June 2023 Economic Outlook also highlights a slight increase in the margin rate of non-financial companies, from 31.3% in 1st quarter 2022 to 32.3% in 1st quarter 2023, part of which can be explained by changes in taxation.[13] However, these trends should be analysed with caution. Aggregate trends conceal major disparities between companies, with some sectors driving growth in average unit profits. For this reason, it will be necessary to monitor corporate margins over the coming quarters.

All unequal in the face of inflation

Inflation has multiple redistributive effects: on nominal incomes (depending on whether they are indexed and/or renegotiated), on the assets and liabilities of economic agents (inflation operates a "transfer" from creditor agents to indebted agents) and on the cost of living (price variations of certain categories, such as food or energy, differentially expose individuals depending on their consumption basket). We focus here on inequality from the cost-of-living perspective.

Consumer price indices and inequality

Inflation is measured by the consumer price index (CPI). While there is a single (i.e. aggregate) CPI, we know that CPIs are very heterogeneous due to differences in consumer baskets.[14] For example, a household that spends a large proportion of its income on electricity or food is particularly exposed to the inflationary shock of 2021-2022.

Using data from INSEE's 'Family Budget' survey, we have reconstructed the inflation rate faced by households to study its distribution.[15] There is considerable variability in inflation rates between households: for example, in 2017, 16% experienced inflation twice the average and 11% less than half the average. These figures explain why many households perceive inflation diffrently from the official figures, which give an average masking considerable heterogeneity. We can also see that household differences are increased during periods of high inflation. Figure 3 shows a greater dispersion of household inflation rates in 2022 than in 2017 or 2021, when inflation was low.

These significant differences between households are partly linked to characteristics such as income, age and place of residence insofar as they explain the heterogeneity of consumer baskets. The share of food expenditure in the total consumption of the 10% of households with the lowest incomes is higher than that of the 10% with the highest incomes (around 18% compared with 16%). Energy expenditure on housing represents between 7.5% and 8% of the total consumption of the first decile, compared with 6.7%, on average, for the last decile.[16] Low-income households are therefore more exposed to energy and food price shocks.

Nevertheless, income explains a small part of the heterogeneity in the face of inflation. For example, inflation was slightly higher for the lowest 20% of households (6.3%) than for the highest 20% (5.9%) in April 2023. However, we know that there are significant differences within these categories. Among households in the top living standards quintile, a quarter have inflation below 4.8%, while a quarter have inflation above 7.9%. Differences in the energy intensity of

[9] Alvarez J. A., Bluedorn J. C., Hansen N.-J. H., Huang Y., Pugacheva E. and Sollaci A. (2022): "Wage-price spirals: What is the historical evidence?", IMF Working Paper, no. 2022/221.

[10] Hentzgen C., Labau F., Lagouge A. and Ramajo I. (2023): What effect does inflation have on current wage growth, Dares, February.

[11] Labau F. and Lagouge A. (2023): La situation du marché du travail au 1er trimestre 2023, Dares, May.

[12] Arce O., E. Hahn and G. Koester (2023): "How tit-for-tat inflation can make everyone poorer", The ECB Blog, 30 March.

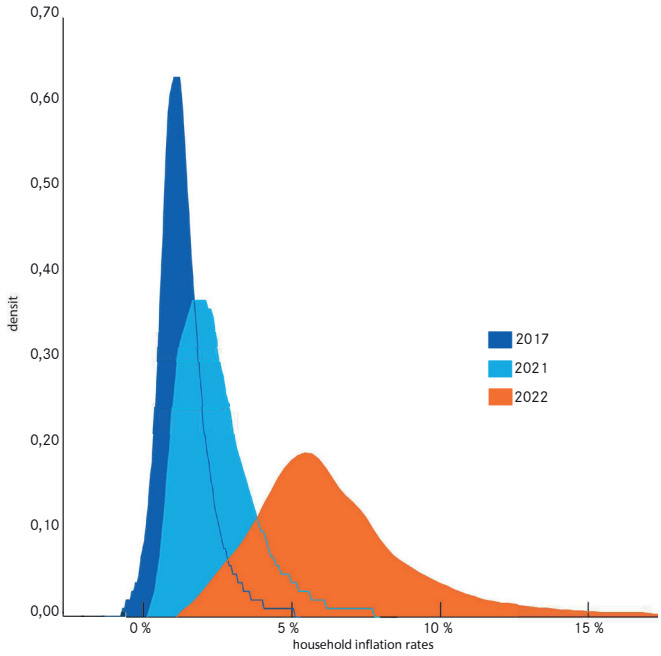
[13] See Table 2 in Heyer É., Timbeau X., Plane M., Aurissergues E., Coquet B., Jullien de Pommerol O., Madec P. and Sampognaro R. (2023): "The price of inflation: 2023-2024 outlook for the French economy", OFCE, Policy brief 114, April.

[14] Several studies on French and American data demonstrate this. See Jaravel X. (2021): "Inflation inequality, measurement, causes, and policy implications", Annual Review of Economics, vol. 13, May; Jaravel, X. (2019): "The unequal gains from product innovations: Evidence from the us retail sector" The Quarterly Journal of Economics 134, no. 2, pp. 715-783. On the current inflationary episode see Cusset P-Y and A. Trannoy (2023): "Food, housing, transport: on whom does inflation weigh most?", Note d'analyse n°119, France Stratégie, February; Madec P., Plan M. and Sampagnaro R. (2023): "Une analyse des mesures budgétaires et du pouvoir d'achat en France en 2022 et 2023", OFCE, Policy brief n° 112, February; or Insee (2023): "La croissance résiste, l'inflation aussi", Note de conjoncture, March.

[15] Astier J., Jaravel X. and Péron M. (2023): "Measuring the heterogeneous effects of inflation on households", CAE , Focus no. 99, July.

[16] Astier J., Jaravel X. and Péron M. (2023): op. cit.

Figure 3. Distribution of household inflation rates in 2017, 2021 and 2022



Source: Astier J., Jaravel X. and Péron M. (2023): «Mesurer les effets hétérogènes de l'inflation sur les ménages», CAE, Focus n°99, July.

Reading: The areas represent the distribution of inflation rates per household within a given interval. For 2017, for example, inflation peaked at around 1%, meaning that a large proportion of households experienced inflation of 1%.

equipment and housing are an example that could give rise to this heterogeneity.

Similarly, age and/or municipality of residence explain only a small proportion of inequalities in the consumer price index, i.e. heterogeneity in inflation is greater within each group than between age groups or categories of municipality. However, age-related inflation differentials are slightly greater: households aged 60 to 74 have an inflation rate 1.5 points higher than that those under 30 due to much higher spending on food and housing.[17]

Inflation thus creates very diffuse inequalities, with heterogeneous effects within income groups, age groups or places of residence that might have been considered homogenous. This observation explains why a central challenge for public policy is to design properly targeted support schemes for households, i.e. that provide support for those most at risk. Such targeting cannot be based solely on income, which is not a good marker of exposure to the shock.[18]

Finding 4. Households' exposure to inflation is very heterogeneous due to disparities in the structure of consumer baskets. Differences between income groups, age groups or types of municipalities are small compared with intra-category heterogeneity.

Heterogeneity of behavioural responses to inflation

While exposure to changes in relative prices is heterogeneous between households, so is their price elasticity to these shocks, i.e. how they modify the structure of their consumption in response to changes in relative prices. These price elasticities are under particular scrutiny in the current episode, where aggregate inflation is strongly driven by the rise in the relative price of certain consumption items such as energy and food. A low price elasticity of consumption leads to a strong impact of relative price shocks on household purchasing power, while a high price elasticity absorbs part of the shock.

The results of an Insee – CAE study on fuel price elasticities[19] show that these elasticities vary considerably from one individual to another. The study underlines that the standard socio-economic variables (age, income and place of residence) are insufficient to understand the observed differences. As with the consumer price index, intra-category variations are greater than inter-category variations. Only past consumption is a good determinant of price elasticity. In the case of fuel, the elasticity is estimated at -1.06 for the lowest consumption quintile, i.e. a 1% rise in the price of fuel leads to a 1.06% fall in the consumption in volume terms. The price elasticity is significantly lower for the top 20% of fuel-consuming households, at -0.32.

Two conclusions emerge from this study. On the one hand, the lower elasticity for households that consume the most reinforces the need to target support at them, as they are less able to adjust their behaviour and therefore suffer a greater loss of purchasing power. On the other hand, many households have high elasticities which shows the importance of designing household support schemes that preserve the price signal to reduce the consumption of fossil fuels (motor fuels, electricity, gas).

[17] Insee (2023): «L'inflation reflue, la croissance hésite», *Note de conjoncture*, June.

[18] In addition, the same inflation rate can have different effects on household's well-being depending on its income, in particular its ability to absorb a shock to purchasing power thanks to its savings.

[19] Bonnet O., Fize E., Loisel T. and Wilmer L. (2023): «Comment les automobilistes ajustent leur consommation de carburant aux variations de prix», CAE and Insee, *Focus* no. 98, July.

How can we improve the measurement of inequality in the face of inflation?

Current data on inflation would benefit from improvement in order to better measure the heterogeneity of situations and facilitate the development of public policies specifically targeting the most affected households. There are two possible areas for improvement.

The first area concerns consumption weights by household category (age, place of residence, etc.), which are not updated as frequently in France as in comparable countries. The current measure of inflation by household category is based on the annual national accounts (used to produce the average inflation rate), modulated by data published by the 'Family Budget' surveys (BDF survey), the most recent dating back to 2017. This survey makes it possible to 'distribute' the weights of the national accounts among the different categories of consumers, according to their relative share in sales of each product category. For example, this survey data is now used to calculate the inflation rate applied to the minimum wage, using the consumption basket of the lowest 20% of households.

However, as the most recent BDF survey dates back to 2017, it is possible that changes in consumption for certain groups of households are not being properly tracked, particularly during periods of crisis such as a pandemic or energy crisis, when consumption patterns change. As a result, the French statistical system may lack precision in measuring differences in inflation between groups of households. Other countries — such as the United States, Italy and Germany - have annual surveys frequently updating the measurement of inflation by income group or other socio-demographic criteria. To remedy this limitation, one solution would be to conduct the 'Family Budget' survey more frequently, ideally every year, requiring INSEE to be given additional financial and human resources.

A second area would be to explore the relevance of new databases, which exist at high frequency, to describe inequalities in the face of inflation. In particular, the use of bank or retail cash register data is promising for obtaining real-time information on consumption behaviour by socio-demographic groups. For example, an American study using bank data during the pandemic estimated a consumer price index higher than the official rate in the United States and ten other countries, including France.[20] Cash register data has the advantage of offering an unmatched level of granularity for products with barcodes such as those purchased in supermarkets; it also includes information on consumers, obtained via a questionnaire or loyalty cards. The US statistical institute, the Bureau of Labor Statistics, has launched an initiative to integrate this type of data into its inflation calculation by socio-demographic group.[21]

Recommendation 1. Give official statistics the means to explore different ways of improving the calculation of heterogeneity in the face of inflation, in particular by conducting the 'Family Budget' survey annually.

The energy tariff shield: assessment and outlook

The preceding analyses show that the energy shock has played a central role in the inflation dynamics in France. The effects of this shock on inequality are nuanced, as inflation is heterogeneous within income groups that might have been thought to be homogeneous.

In France, the energy tariff shield is the main tool for supporting households: we will review this policy before proposing possible changes.

Tariff shields in Europe

In response to the energy crisis, European Union member states have introduced fiscal policy tools designed to absorb some of the inflationary impact of rising energy prices. While the various European measures are all financed by public debt, they differ in the tools used: tax cuts, direct transfers, price controls, etc. (see Box 1). Introducing such "unconventional" fiscal policies to deal with inflation calls for a best practice assessment before claiming a new policy paradigm to deal with future price shocks. It should be noted, however, that these policies are part of a new trend: more active use of fiscal policy for economic stabilisation.

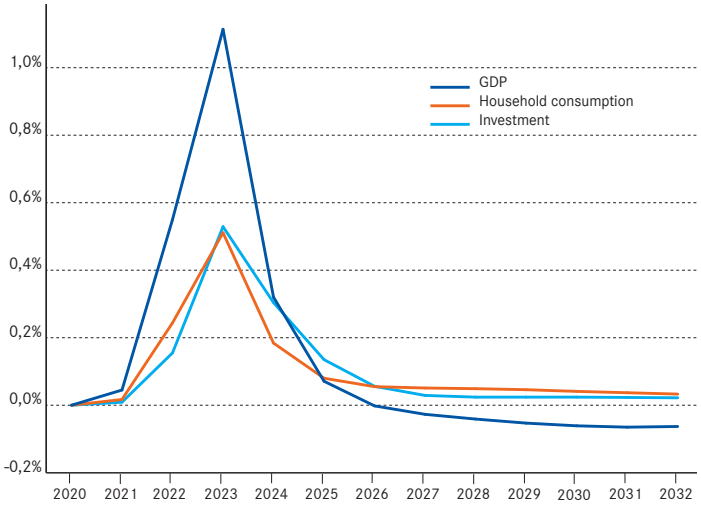
The French tariff shield has been regulating electricity and gas prices growth since 2021. In the case of electricity, it could be extended until 2025. In February 2023, regulated electricity and gas tariff increases were limited to 15% for households and small businesses. A government order of February 2022 had already limited price growth to 4% in 2022. According to the energy regulator, the Commission de Régulation de l'Energie (CRE), regulated electricity tariffs would have risen by almost 100% in 2023 and by around 35% in 2022 in the absence of the shield.[22] This major policy is also accompanied by a number of more targeted measures, such as energy vouchers, which are distributed to 40% of households. The budgetary cost of the tariff shield for 2023

[20] Cavallo A. (2020): "Inflation with Covid consumption baskets", No. w27352, National Bureau of Economic Research.

[21] National Academies of Sciences (2022): Modernizing the Consumer Price Index for the 21st Century.

[22] See the CRE Deliberation of 19 January 2023 proposing regulated tariffs for the sale of electricity and the information letter dated February 2022.

Figure 4: Impact of the tariff shield on the French economy (%)



Source: Malliet P. and Saumtally A. (2023): op.cit.

Reading: The tariff shield increased consumption by 0.34% in 2023 compared with an economy without the shield (the figure 0 therefore represents the value of the variables without the shield).

is still uncertain, as it depends on energy price trends for the entire year.

Initial assessments of the French tariff shield suggest that it has limited the loss of purchasing power (OFCE, Insee, Cepremap), contained inflation (Insee, OFCE) and supported growth (Insee). But it appears insufficiently targeted and, unlike other policies in force in Germany and the Netherlands, it does not encourage moderation in energy consumption.

The effects of the energy shield on the French economy

To refine these analyses, simulations have been carried out by the OFCE using the ThreeMe model.[23] The initial step is to forecast changes in energy prices with and without the tariff shield.

The study confirms that the tariff shield has considerably limited the rise in gas prices. The transitory nature of the rise in gas prices, with a rapid decrease in 2023, is noteworthy and unexpected. The price of electricity without the tariff shield should also fall, but with a delay compared with the price of gas. While the tariff shield has protected households from a transitory rise in energy prices by passing the cost on to the State budget, the rapid fall in energy prices is proving beneficial from the point of view of public finances. Figure 4 summarises our evaluation of the tariff shield, showing its effect compared to a counterfactual without the shield.

Thus, in the ThreeME simulations, the tariff shield would have helped to support activity, consumption and investment in 2023. Together with the fuel rebate, it would have helped to increase gross disposable income by €1,021 per consumption unit between 2019 and 2023.[24] In April 2023, in the Stability Plan, the government estimated its budgetary cost at around €31 billion, compared with more than €40 billion in September 2022 in the Finance Act. These differences are due to changes in energy prices over the period. Furthermore, by reducing the price of energy, the tariff shield has supported energy demand, contributing to a 0.24 point increase in the trade balance in 2023 and a 2.5% increase in direct CO_2 emissions from households, compared with a world without the shield.

The impact of this measure on households varied according to their standard of living. It would have limited the impact of the shock to 4.3% of the standard of living for the first income decile, compared with 1.5% for the top decile. Nevertheless, in absolute terms, the wealthiest households benefited more from the tariff shield than the lowest-income households.

The main advantage of the French tariff shield is its simplicity, a considerable advantage for a quick implementation. Nonetheless, its budgetary cost, while lower than expected due to the fall in gas prices, remains high.

> **Finding 5.** The tariff shield significantly reduces inflation for all households, which maintains purchasing power and contains the risk of a price-wage loop, but generates a high budget cost and does not encourage energy sobriety.

It therefore seems necessary to consider possible changes to the tariff shield in the light of international experience. Indeed, other countries have managed to target aid to households and thus better contain the impact on public finances.

Perspectives for the energy tariff shield

The debate on the future of the tariff shield must distinguish between two timeframes. In the short term, the current tools need to evolve to take account of severe operational constraints. In the longer term, the systems need to evolve more fundamentally to be better prepared for the next crisis. In both cases, the key issue is to target aid to households

[23] Malliet P. and Saumtally A., (2023): «Les effets macroéconomiques du bouclier tarifaire: une évaluation à l'aide du modèle ThreeME», CAE, Focus no. 97, July.

[24] Madec P., Plane M., Sampognaro R. (2023): «Une analyse des mesures budgétaires et du pouvoir d'achat en France en 2022 et 2023», OFCE, Policy brief n° 112.

Box 1. Measures to combat energy inflation in Europe

German-style shield: dual pricing based on past consumption

At the beginning of 2023, the German government introduced a scheme to protect a portion of household energy consumption from rising prices : 80% of their observed past consumption, either for the year N-1 or for the year N-2, and benefits from price ceilings on gas (12 cents/kWh) and electricity (40 cents/kWh). The remaining 20% is subject to suppliers' contractual prices.

The German system has the dual advantage of:

- preserving the "price signal" with a marginal price aligned with the non-subsidised price, which is an incentive to reduce consumption;
- taking into account the differences in energy exposure of households, which we have seen to be significant within each decile (see above).

Dutch-style shield: dual pricing based on basic consumption

At the beginning of 2023, the Dutch government introduced a system designed to protect households on a volume of consumption equivalent to the average annual basic consumption of a household, i.e. 1,200 m3 of gas and 2,900 kWh of electricity, with price ceilings for gas (€1.45/m3) and electricity (40 cts/kWh), the rest of the consumption being subject to the supplier's contractual prices.

The Dutch system has the dual advantage of:

- preserving the "price signal" with a marginal price aligned with the non-subsidised price which, in principle, has an incentive effect to reduce consumption, beyond the norm of "basic" consumption;
- reducing inequalities in the face of energy price rises, as the most modest households are, in principle, fully covered by subsidised tariffs. In contrast, more affluent households would remain exposed to unsubsidised tariffs on part of their consumption.

However, several kinds of criticisms are addressed to the German and Dutch shields:

- for the German shield, the main problems are operational : its implementation requires suppliers to trace the historical consumption of each customer. It also has poor redistributive properties due to its universal nature (following the example of the French shield): energy consumption increases on average with income. The richest households are the biggest beneficiaries in absolute terms even though they are better able to bear the rise in energy prices;
- for the Dutch shield, the reference to basic consumption does not take account of the intra-decile heterogeneity of households. In practice, however, the basic consumption used as a reference for the Dutch system seems relatively generous and would fully cover between 70% and 90% of the population;[a]
- for the German and Dutch shields, their effectiveness in preserving the price signal has yet to be demonstrated, as several studies show that consumers refer more to a notion of average price than marginal price when adjusting their behaviour.[b] Both types of shield may also suffer from a perverse effect that could encourage suppliers to raise their prices: German households, provided they manage to reduce their consumption by at least 20%, would benefit in this case;[c] Dutch households, which are largely covered, would be unaffected.[d]

In Italy and Spain, reductions in VAT rates on energy have been adopted. Indeed, Spain and Portugal are able, through the "Iberian exception", to set electricity and gas prices. They have also frozen taxes on electricity and natural gas temporarily. A subsidy has also been allocated to producers to guarantee a gas price of 48.8 euros/MWh, which will gradually increase. Italy has also introduced a fuel rebate (25 cts/L) and lower excise duties, in addition to a number of specific measures.

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[a] See Haan M. and Schinkel M.P. (2023): "Energy price ceilings with partial cover: A Dutch master?", Journal of the European Court of Auditors.

[b] See K. Ito (2014): 'Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing", AER 104(2). The argument that consumers respond more to an average price than to a marginal price needs to be put into perspective. Academic work on this subject, based in particular on the five levels of Californian tariffs applied in the early 2000s, generally attributes this result to a lack of accurate information for consumers about their consumption and also highlights the difficulties in understanding pricing. However, the environment is now different: households are now equipped with meters that allow them to closely monitor their energy consumption, and a scheme such as a subsidy on 80% of past consumption is fairly easy to understand, unlike the complex and repeatedly modified Californian tariffs.

[c] See Dertwinkel-Kalt M., Wey C. (2022): "Why Germany's 'Gas Price Brake' Encourages Moral Hazard and Raises Gas Prices", CESifo Working Papers.

[d] Haan M. and Schinkel M.P. (2023): op. cit.

better, to reduce the impact on public finances[25] and to preserve the price signal better in order to encourage energy sobriety.

In the short term, the fall in energy prices means the tariff shield can be quickly reconfigured. A rapid exit from the gas price shield is now possible: in fact, the government has decided to deactivate the shield on 1st July.

By adjusting the level of the domestic consumption tax on natural gas (TICGN), it is nevertheless possible and justified to maintain a floor price for gas, to partially cover the scheme's costs over the last two years. The shield should be designed as an insurance instrument against temporary increases in energy prices: its cost to public finances during periods of rapid price rises should be offset by revenue when prices fall.

Box 2. How can the most vulnerable households be helped to cope with energy inflation?

To compare several public policy measures designed to combat the effects of rising electricity prices on households, we carry out simulations for three of them.[a]

Measure A: price regulation (similar to the tariff shield)

Upstream price regulation is one of the possible measures, and can be implemented in two ways

- Measure A.1: maintaining prices at their reference level for all households;
- Measure A.2: keeping prices at their benchmark level for the bottom 50% of households;

Measure B: flat-rate assistance (energy cheque)

- Measure B.1: flat-rate assistance for all households, offsetting the average rise in electricity prices
- Measure B.2: flat-rate assistance for households whose standard of living is below the median (50% of the least well-off households), offsetting the average rise in electricity prices for this group.

Measure C: targeted, individualised aid based on past electricity consumption

- Measure C.1: specific aid for all households, equal to a proportion of their actual electricity consumption
- Measure C.2: specific assistance for households below the median standard of living, equal to a proportion of their actual electricity consumption.

These measures are examined in the light of three essential criteria in this context:

Criterion 1) Impact on overall electricity consumption

Criterion 2) The total cost of the system for public finances

Criterion 3) The redistributive nature, i.e. the quality of the targeting towards the households that need it most.

The calibration of the three measures is chosen to equalise the cost to public finances. Mechanically, this cost is lower when targeted at the bottom 50% of households. However, the other criteria highlight the superiority of individualised measures based on past consumption.

Measures A lead to an increase in electricity consumption, which is undesirable in the context of supply tension and from the point of view of CO_2 emissions. Because of their flat-rate nature, measures B lead to over- and under-compensation, since the level of consumption varies greatly from one household to another (see the above-mentioned analyses of heterogeneity).

This analysis shows that measures C, based on actual household consumption, have the advantage of combining the good redistributive properties of measures A (no under/overcompensation) with the good efficiency properties of measures B (reduction in electricity consumption). Targeting households below the median is a good way of reducing the programme's total cost of the without compromising the measure's redistributive aspect.

[a] The methodology and data used for these simulations are described in Astier J., Jaravel X. and Péron M. (2023): «Mesurer les effets hétérogènes de l'inflation sur les ménages», CAE, *Focus* no 99, July.

[25] On an unchanged basis, the cost of the tariff shield in 2024 would be in the region of €10 billion to €30 billion, depending on the price scenarios used. By excluding households in the top two deciles of the income distribution, the cost of the system would be reduced by 26% (the share of these households in total household electricity consumption), representing a gain for public finances of €5.2 billion in the central scenario. Implementing this targeted system requires sharing information on household income with electricity suppliers, which could be done in the same way as for social electricity tariffs, which have been abolished since 1 January 2018.

On the other hand, due to a less marked fall in prices, the electricity tariff shield could be retained in 2024. However, given the burden on public finances, a return to the regulated tariff should be considered, with the most affluent households exiting the shield more quickly. In contrast, low-income households would continue to benefit from support. A first approach would be to make eligibility for the tariff shield conditional in 2024, by excluding the wealthiest households, for example the 20% of households with the highest incomes. The end of the tariff shield for high-income households must be achieved without introducing excessive threshold effects and must therefore lead to a gradual reduction in the amounts, it being understood that the pace of the reduction depends on the budgetary gain targeted. Another approach end to the tariff shield for all households in 2024, but with targeted compensation measures for the lowest-income households, such as an energy voucher. Both approaches would encourage a reduction in electricity consumption while guaranteeing the purchasing power of all but the most affluent households, with substantial budgetary savings.

Recommendation 2. Maintain a floor for the price of gas as long as the budgetary cost of the shield is positive.

Recommendation 3. Put an end to the electricity tariff shield for the wealthiest households.

Furthermore, in the event of a new crisis in the longer term, it would be useful to design a system that uses past household consumption to enable better targeting. Energy prices have a very heterogeneous impact on household purchasing power, mainly within income deciles. Vouchers do not allow aid to be finely targeted at this level, while regulated prices do not encourage energy sobriety. Using households' past consumption enables much better targeting. We detail the effects of the different public policy options in box 2.[26]

The scheme we are proposing would simply involve giving each household a subsidy varying according to the household's usual electricity expenditure, for example 40% of the previous year's bill. Such a scheme would provide assistance tailored to the needs and uses of each household, equal to a fraction of their electricity expenditure in previous years.[27] It would also provide an incentive to reduce energy consumption. Finally, a ceiling on the amounts paid would ensure that public money is not used to fund the biggest consumers, who are known to be the richest households.

The two main shortcomings of such a system are the operational difficulty of setting it up and the dissemination of information that is accessible (and acceptable) to households. These two shortcomings seem manageable, since past consumption has been paid for and could be used as a benchmark to encourage households to reduce their consumption. Ideally, this system would be put in place in the short term and would make it possible to get out of the electricity tariff shield without resorting to the approach proposed in recommendation 3.

Recommendation 4. To target aid more effectively, deploy a system allowing transfers indexed to households' past energy consumption as soon as possible.

Such a system could be implemented quickly without requiring an overhaul of the statistical system. A simple solution would be to ask individuals wishing to benefit from the transfer to provide information on their past consumption via their electricity bill and to indicate their income (or their tax identifier).

While not essential, this overhaul of the statistical system would nevertheless be of definite interest to future public policies. Indeed, knowing the level of past energy consumption and how it has evolved is an essential prerequisite for implementing better-targeted public support policies and for the quality of their ex-post evaluation. Firstly, Enedis should be able to provide suppliers with the quantities consumed per item over the course of a year, as is currently possible, to serve as a benchmark (particularly when households change suppliers). Secondly, if the scheme were also to be targeted according to income, energy suppliers' data would have to be cross-referenced with that of the tax authorities so that suppliers could be informed of their eligible customers. The legal framework exists, since this has already been implemented with the adoption of the so-called social tariffs. The only challenge now is to ensure the technical quality of the matching. In this respect, it is worth noting the great progress made in this area over the last 10 years.[28] Lastly, operational provisions still need to be found for collective residential customers.

Over and above the problems associated with the operational implementation of targeted aid, more extensive knowledge of energy prices and consumption is needed, but it also responds to the need for better measurement of inflation and the major challenges posed by the energy transition. Significant

[26] Astier J., Jaravel X. and Péron M. (2023): *op.cit.*

[27] Past consumption is a very good predictor, given the data observed on bank accounts (Crédit Mutuel Alliance fédérale): for households whose accounts distinguish between energy-labelled direct debits, we observe that annual energy expenditure in 2021 explains 99% of that in 2022. See Astier J., Jaravel X. and Péron M. (2023): *op.cit.*

[28] See, for example, this CNIS article.

progress has been made in this monitoring, but more needs to be done to assess the impact of different public policy measures linked to the transition (housing renovation, incentives for load shedding, tertiary sector, etc.).

Recommendation 5. Improve the public statistics infrastructure to provide accurate, real-time information on household and business energy consumption levels, in terms of both quantity and value.

Conclusion

The tariff shield was a quick and effective way of limiting the impact of the energy crisis on household purchasing power. However, its cost to the public finances means that it needs to be quickly replaced by a more targeted system that encourages energy sobriety.

Furthermore, the energy crisis has shown the limits of statistical knowledge of energy consumption, which will prove damaging in the context of the environmental transition.

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