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Inflation and food prices: what does economics teach us?

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Food prices are rising sharply

The price of food in supermarkets has increased by 3% in one year according to the IRI index of May 2022 reported in the specialist magazine LSA. For some items, the increase has been more spectacular: the price of pasta rose by more than 15% and the price of oil went up by nearly 10%.

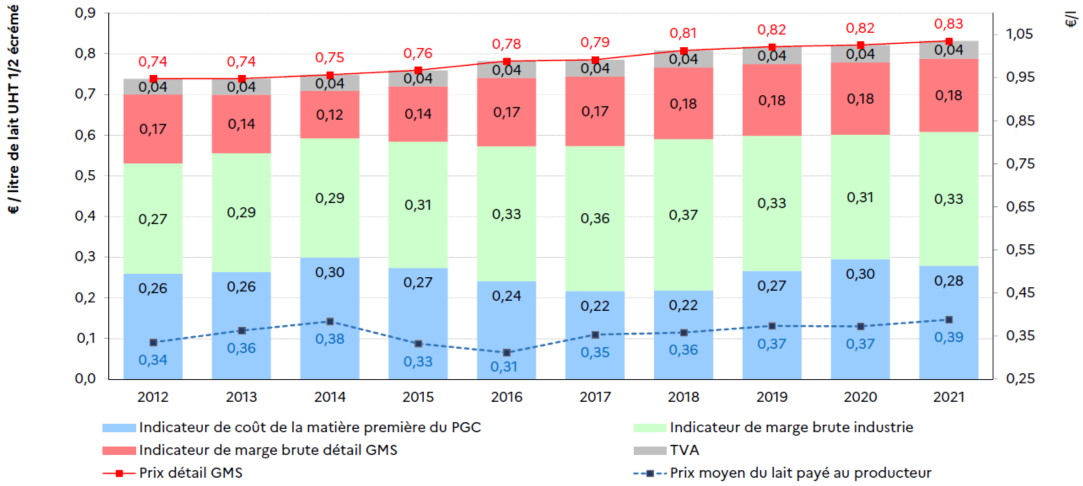
These price hikes, commonly called inflation, are currently at the heart of a public debate about household purchasing power. Since suggestions are coming from all directions about how to deal with this phenomenon, it seems useful to take some time to investigate how food prices are created and what leads to their increase.

The pricing of foodstuffs

If we follow the value chain of a food item backwards from the consumer, we will usually meet a retailer, then a manufacturer and finally an agricultural producer. The price of a food item depends on the one hand on the so-called horizontal relationships among actors in the same category (for example, competition among retailers to sell the item in question), and on the other hand the so-called vertical relationships, in which two categories interact (for example, negotiations between agricultural producers and the firms that transform their product).

In the report to Parliament of June 2022 by *the Observatoire de la Formation des Prix et des Marges* (OFPM, Price and Margins Monitoring Centre) , we can see the respective roles of these three groups of actors in the formation of the prices of numerous foodstuffs. Take for example a litre carton of UHT milk: sold on average for 0.83€ to the consumer in big supermarkets, the cost of agricultural production is around 0.28€, the gross margin of the manufacturer is around 0.33€ and that of the distributor 0.18€; the remaining 0,04€ is VAT (Figure 1).

Figure 1. Décomposition du prix au détail du lait UHT ½ écrémé



Source : OFPM d'après FranceAgriMer d'après SSP, Insee, Atla, Kantar Worldpanel et enquêtes FranceAgriMer

Why do food prices fluctuate and where does inflation come from?

When an external disturbance affects one of the links in the producer – manufacturer – distributor chain, prices are likely to be renegotiated at each stage, affecting all the actors. This is called price transmission. Economists who specialise in empirical industrial organisation have long been interested in this question, especially in the case of agricultural products.

The nature of the disturbances that affect prices can vary greatly along the value chain.

On the one hand, agricultural production costs vary, because of, inter alia, random weather events, geopolitics, and international prices of agricultural inputs and other raw materials such as stock feed. Today, the war in Ukraine and the sanctions imposed on Russia are directly affecting the prices of some major crops, including wheat, sunflowers, and fertiliser, which has repercussions for the price of a great many agricultural products. We can add to this the cost of energy (oil, gas), which also affects manufacturing firms.

On the other hand, retailers want to adjust their prices in line with customer expectations and their changing preferences (such as the desire for new products, for organic produce, etc.) and their capacity to pay. With the recent hike in energy costs that restrain household budgets, customers become more sensitive to food prices and retailers have an interest in limiting the prices of their products.

But the term "inflation" in macroeconomics also refers to a phenomenon of increases in prices and wages that are self-perpetuating: an increase in cost often entails a price increase, which can lead to demands for wage increases, which in turn increases costs at every step in the production and marketing chain. For some products, like baguettes, the share of the price of the raw agricultural material in the sales price to the consumer is very small (less than 10%

according to OFPM), while the wages share is great, which makes the price highly sensitive to change in the general wage levels.

Who decides the prices and how do cost increases affect them?

Economic theory predicts that, the distribution of margins and price transmission within a sector depends chiefly on the market power of the various actors. For many essential agricultural products, producers are mostly small operators supplying a homogenous product with little possibility of differentiating themselves (except those producing organic or geographically designated items), and so they have little market power.

By contrast, processing industries can be very concentrated, as is the case for milk products in France. Thus they are in a position to negotiate lower purchasing prices for raw agricultural material and higher selling prices for the finished products.

As for distributors, they join forces, in central purchasing bodies, to negotiate with manufacturers and farmers, thereby increasing their market power. The introduction of such buying centres in France in 2014 has allowed retailers to negotiate a 7% reduction in the purchasing price of bottled water and to increase by 15% their share of the profits generated by that commodity (Allain et al., 2022).

How do economists study empirically the way in which cost hikes affect food commodities?

Economists, especially those interested in empirical industrial economics, usually tackle the question of price transmission in two ways.

In the absence of observation data on company costs, the first method is to form hypotheses about the mechanisms that drive pricing choices (the kind of competition and contracts in the sector), then to analyse these choices empirically in interaction with consumer demand and external disruptions, and thereby to infer company costs and margins. To be effective, this requires consumption data that can identify the products on offer and the presence of sufficiently significant cost and demand shocks during the period of analysis.

In a 2014 article, Celine Bonnet et S. Berto Villas-Boas use this method to analyse the price fluctuations for coffee in supermarkets after price shocks. They observed that consumers react more to prices when they drop than when they rise, which encourages retailers to pass on price rises more than price drops. This is precisely the kind of increased cost shock that we are currently seeing for numerous foodstuffs.

The second method consists in estimating a production function by using detailed accounting data on the inputs and outputs of the firm in question, then to watch how the sales price changes when the price of an input increases.

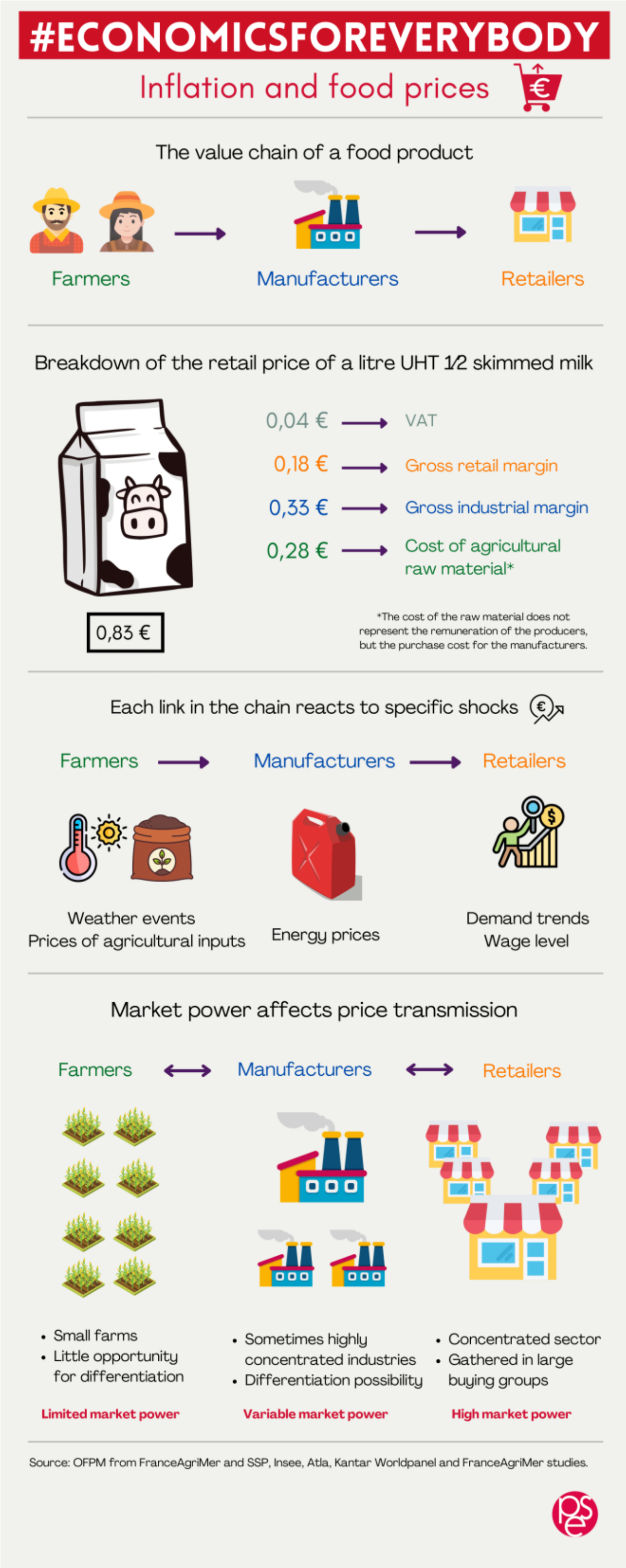
For example, Remi Avignon (2022) uses data from the *Enquête Annuelle Laitière* (annual milk product survey) and the European PRODCOM data base to quantify front margins (for retailers) and back margins (for milk producers) in the milk processing industry in France. He shows that the processors he studied buy milk from farmers at 15% lower than its marginal value as an input into the competitive powdered milk market and sell their products to retailers at 45% higher than their marginal production cost. In addition, Avignon also notes that the back margin is adjusted by the processing industry according to the economic health of the sector: if milk production costs rise temporarily, the sector will agree to give a greater share of the value created to the farmers in this period, in the interest of assuring a steady supply. Thus one link in the chain can sometimes give up its margins temporarily in order to maintain equilibrium in the sector.

What conclusion can be drawn for agriculture and food policies aimed at limiting price fluctuations, especially prices increases?

Food prices transmit changes in production costs, but only through the distorting lens of market power relations among the main actors in the sector. Public policies relating to food prices must anticipate these strategic interactions if they are to attain their objectives.

For example, freezing the retail price of some food items can have repercussions for the margins of producers and processors involved. Moreover, subsidising the purchase of certain products (organic, local, fresh fruit and vegetables) is likely, through the interplay of prices, to benefit other product categories (meat, pasta) to whose prices consumers are more sensitive.

Thus, it is essential that an interventionist public policy consider a certain stage in the food chain or a certain group of foodstuffs not in isolation but while taking into account the likely reactions of other actors and their respective power in the market.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Inflation and food prices
The value chain of a food product
Farmers
Manufacturers
Retailers
Breakdown of the retail price of a litre UHT 1/2 skimmed milk
0,04 € VAT
0,18 € Gross retail margin
0,33 € Gross industrial margin
0,28 € Cost of agricultural raw material*
0,83 €
*The cost of the raw material does not represent the remuneration of the producers, but the purchase cost for the manufacturers.
Each link in the chain reacts to specific shocks
Farmers
Manufacturers
Retailers
Weather events
Prices of agricultural inputs
Energy prices
Demand trends
Wage level
Market power affects price transmission
Farmers
Manufacturers
Retailers
• Small farms
• Little opportunity for differentiation
Limited market power
• Sometimes highly concentrated industries
• Differentiation possibility
Variable market power
• Concentrated sector
• Gathered in large buying groups
High market power
Source: OFPM from FranceAgriMer and SSP, Insee, Atla, Kantar Worldpanel and FranceAgriMer studies.

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