

Quality Adjustment, Inflation Measurement, and the Ecological Transition

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The issue of measuring inflation in the context of the environmental transition is raised in the synthesis of the thematic report “*Inflation*” within the Pisani-Mahfouz report, as well as in its introduction, which contains a box specifically addressing this topic.

Synthesis in the “Inflation” section of the Pisani-Mahfouz Report (2023)

These developments would be taken into account in the inflation measured by official statistics. Other developments may appear as a quality adjustment rather than an outright increase (or decrease) in prices. For example, in the price index, an electric vehicle is considered a different product from a comparable combustion engine car: in other words, the replacement of combustion vehicles by more expensive electric ones does not raise the price index. On the contrary, the likely fall in the price of electric vehicles will contribute negatively to the price index.

Introduction

Carbon emission regulations can drive up the prices of products affected by the new standards: for instance, higher vehicle costs can be anticipated if the sale of combustion engines is banned by 2035. Nevertheless, despite the increase in the price of goods that benefit from improved environmental quality, the measurement of inflation (consumer price index) will treat these goods as new products, thereby not taking into account their potential effect in terms of losses of purchasing power (see Box 1 on the following page).

Box 1 Definitions and Measures of Inflation

The Consumer Price Index (CPI) published by Insee is an annually chained Laspeyres index: it reflects the monthly change in the prices of a fixed and representative basket of goods and services consumed across the national territory. The weights used to aggregate prices are the shares of these products in household consumption expenditure from the previous year; they are updated each year to reflect changes in household consumption and to ensure representativeness. Prices are collected in a variety of ways: by Insee surveyors in physical retail outlets, online manually by Insee staff or using automated tools, and through the transmission of checkout data from supermarkets and hypermarkets.

How is the evolution of the environmental quality of products reflected in the price index?¹ The Consumer Price Index tracks products or services with very precise characteristics. When a characteristic attached to a product changes — for example, its environmental quality — official statistics most often consider it as a new product. The price change related to this change in characteristics therefore does not appear in the price index. On the other hand, it is reflected in the change in the volume of household consumption, since final household consumption expenditure is generally deflated using the detailed results of the CPI. The methodological manual on the Harmonised Index of Consumer Prices (HICP, Eurostat 2018) considers that a quality change occurs when the characteristics of the replacement product that matter to consumers differ from those of the product being replaced.

Even if the evolution of the environmental quality of products does not primarily affect the level of prices, it can nonetheless be visible in price developments. Take the example of the expected increase in the share of electric vehicles in car sales. When the electric car enters the CPI, this has no effect on the CPI because it is considered a new product. It enters with a relatively high price, as the technology is still immature at that stage, and its price tends to fall thereafter, as economies of scale and improvements in production technologies take hold. Thus, even though the average price of a new car rises as the fleet shifts from combustion vehicles to electric ones, the contribution of vehicles to the Consumer Price Index would rather be downward. Behind this apparent paradox lies the improvement in the environmental quality of vehicles. Indeed, a car is not just a means of transport, it also has many other characteristics, including its climate impact through greenhouse gas emissions over its life cycle. This mechanism is not unique to the ecological transition; it is seen in the same way with any other product whose price tends to fall over time (for example, a computer).

Does the choice of policy instrument used — a tax or an environmental standard — affect the price index? Yes. On the one hand, an environmental tax makes a product more expensive and is therefore, in principle, considered a price increase in the CPI. On the other hand, an environmental standard will most often be considered a quality effect, insofar as it entails a modification of a product characteristic that is a priori valued by consumers, as indicated above. That said, there may be differences in how the same standard is treated depending on the country. Eurostat (2018) specifies how such changes

in environmental characteristics should be incorporated into the price index. It happens that product categories are subject to new legal requirements regarding safety, health, or environmental protection, and their characteristics are modified accordingly. These modifications are considered quality changes insofar as they lead to changes in user functionality as perceived by consumers at the time of purchase. If the modifications are of a type that consumers care little about, they are then less significant as quality changes. It could be useful to adopt a convention whereby, in case of doubt, product modifications due to legal requirements should not be subject to quality adjustment. Depending on whether the consumer (or the compiler of the price index) values a given environmental characteristic, its evolution should therefore be considered either as a quality effect or as a price effect.

The construction of production indices follows the same logic. For instance, the calculation of the construction cost index uses a hedonic model encompassing a large number of housing characteristics, including their energy performance. The improvement in housing quality is therefore not visible in prices, but in volumes.

¹The thematic report on Well-being complements these questions by examining the link between the ecological transition and consumer well-being, of which the price of consumed goods is only one aspect. See *France Stratégie* (2023), *The Economic Implications of Climate Action. Well-being*, thematic report coordinated by Didier Blanchet, May.