

# Cooling

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## Economic outlook

15 December 2022

The issues of *Economic Outlook* are available as soon as they are published on the INSEE website [www.insee.fr](http://www.insee.fr).

ISSN: 2827-4660

ISBN: 978-2-11-162376-7

Completed on 14 December 2022

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# Cooling

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# Cooling

## The global economy is facing persistent difficulties, which differ according to the country

Over several quarters, global activity has slowed and inflation has become widespread, leading the main central banks to tighten their monetary policies, while most governments have taken budgetary measures aimed at limiting price increases or supporting income. World commodity and energy prices have fallen overall in H2 2022 but they remain high, reflecting both the decline in growth prospects on the one hand and the persistence of supply tensions on the other.

Not all countries are similarly exposed to these headwinds. The Chinese economy is the only one where recent fluctuations were directly linked to the waves of the Covid-19 epidemic. It is expected to bounce back moderately over the next few quarters, subject to the effective easing of health restrictions. In the United States, inflation has fallen back for several months, but its core component remains high, linked to the dynamism of the labour market. After standing firm in H2 2022, activity in the US could weaken in H1 2023. Meanwhile, despite a significant rebound in October, the UK economy is expected to remain in recession, against a background of very high inflation aggravated by supply constraints due to Brexit.

Within the Eurozone, despite fiscal support measures and residual catch-up effects after the health crisis, activity could fall back during the winter, a little more strongly in Germany and Italy than in France, depending, among other things, on the degree of sectoral exposure of each country to the European energy crisis. Inflation differentials between the main countries remain considerable: the year-on-year variation in consumer prices is much higher in Germany and Italy than in France and now even than Spain. A large proportion of these differences continue to stem from different methods and schedules for fixing (and limiting) energy prices. By mid-2023, year-on-year prices could start to decline in most countries, partly and automatically due to strong “base effects”, though price levels look set to continue to increase.

## The energy crisis mainly affects certain industrial branches facing sharp increases in electricity and gas prices

Despite a tendency to stabilise, supply difficulties remain considerable in France according to the responses received from business leaders in the business tendency surveys. These constraints do not affect the different branches of activity in the same way. Industry in particular is most exposed to the current energy price shock. Within the manufacturing sector some branches use a lot of energy in their production processes (chemicals, paper-cardboard, metallurgy, manufacture of other non-metallic mineral products). In addition, at the level of each individual business, exposure to the shock depends not only on energy consumption but also on their types of supply chain contract.

In order to assess the consequences for companies of the rise in electricity and gas prices, a specific question was added to our business tendency surveys. More than half of the French industrial companies questioned in November 2022 appeared to be particularly exposed to the electricity price rise, because they depend either on a fixed-price contract over a contractual period that expires at the end of 2022 or during 2023, or on a contract indexed directly to the market price. The increases in unit price invoiced (before any use of help measures) that industrial companies are anticipating for 2023 are very varied, averaging over 100%, after +75% estimated for 2022.

In this context, the majority of manufacturing companies said they intend to pass on at least part of the energy price rise in their own selling prices and a significant proportion of them anticipate reducing their margins. The proportion of companies saying they intend to reduce their production is lower: responses to the survey suggest an aggregate drop in manufacturing output of around 1½% linked directly with the rise in energy prices. In addition, more than half of companies plan to make investments to permanently reduce their energy costs.

Recent trends in margin rates are also markedly sectoral in nature: recent gains are focused precisely on the energy and transport services branches, linked to the very sharp rise in sea freight rates coming out of the health crisis, and the increase in the electricity sale price, itself driven by gas prices. The introduction of a tariff shield enabled the electricity sale price to follow its usual determinants without this price rise being passed on in full to final and intermediate consumer electricity prices. In the opposite direction, however, the rise in the energy companies' sale prices was limited by extending the ARENH mechanism and by the State mechanism to recover the so-called infra-marginal rents.

## In France, the contrasting short-term signals point to an industrial decline and hence a moderate downturn in economic activity at the end of 2022, before a gradual rebound, notably in spring 2023

In France, the composite business climate indicator was eroded in spring and summer before stabilising this autumn slightly above its long-term average, although the situation is still not promising in the most energy-intensive industrial branches. The calculation of this indicator is mainly based on the answers to the qualitative questions in the business

tendency surveys on expected change in activity. Any drop in activity expected by companies are therefore all considered in the same way, regardless of their magnitude: this may help to minimise the impact on the overall business climate of major reductions in activity in some companies.

In fact, the activity statistics available for October show a decline, both in terms of industrial production and household consumption of goods. This decline goes beyond the seemingly one-off effects of strikes in refineries and the lack of availability of the nuclear power plants, which hampers electricity production. It seems to be confirmed by some high-frequency data available for November (electricity consumption by major industrial companies connected directly to the RTE, aggregate amounts of bank card transactions).

French GDP could therefore falter slightly in Q4 2022 (-0.2% forecast, after +0.2% in Q3), with the effect of declining industrial output and sluggish activity in services. Household consumption is likely to contract substantially, mainly due to a strong decline in energy consumption (linked to the mild weather conditions in October-November but also to austerity behaviour, partly spontaneous, partly linked to price rises) and a downturn in spending on accommodation-catering. After a strong catch-up this summer in vehicle purchases, investment is expected to remain at a standstill. Foreign trade is likely to support the trend in activity at the end of the year, with in particular some major aeronautical and naval deliveries.

The start of 2023 is expected to be marked by rising electricity and gas prices, for businesses and households alike. Activity should nevertheless rebound very slightly in Q1 (+0.1% forecast), as a result of the expected rebound in coke production and refining after strikes in the autumn, and the plan to restart several nuclear reactors that are currently undergoing maintenance. The rebound is expected to be stronger in Q2 (+0.3% forecast) with an acceleration of activity in services.

All in all, annual growth looks set to reach +2.5% in 2022 (after +6.8% in 2021). For 2023, the mid-year GDP growth overhang (i.e. the growth that would have been obtained on the assumption that activity in Q3 and Q4 remains at the same level as that forecast for Q2) is expected to be positive but modest (+0.4%). For the other main Eurozone countries, this mid-year carry-over for 2023 is likely to range from -0.2% for Germany to +1.1% for Spain, via +0.3% for Italy.

This forecast scenario assumes no power cuts this winter, and a gradual rebound in the availability of the French nuclear power plants. Alongside other uncertainties that may affect economic activity upwards or downwards (geopolitical developments in eastern Europe, health situation in China, effectiveness of budget support measures, impact of ongoing monetary tightening, etc.), there is also a technical uncertainty linked to the restarting of the French nuclear reactors: the fact they have not been available would appear to have taken about 0.4 points off GDP in 2022.

### **Inflation (measured by consumer price index) is expected to reach about 7% this winter, before falling back in the spring as a result of the “base effect”**

Since mid-2021, inflation has risen sharply and spread to a large number of goods and services. This extension does not bode well for a decline in the very short term, even though we observe a relative easing of the price of energy and some commodities and a slowdown in some production prices. Expectations of change in sale prices do indeed remain high, according to the business tendency surveys.

The trend in inflation over the next few months will depend, among other things, on developments in measures to limit energy prices and fluctuations in oil prices. The planned increase in regulated gas and electricity prices, and the end of the reduction at the pump, are likely to contribute to increasing headline inflation, which is expected to reach +7% year-on-year at the beginning of January 2023. The year-on-year variation in food prices looks set to reach about 13%. From the spring, headline inflation could nevertheless fall back by the “base effect” (+5.5% forecast in June), with prices continuing to increase month by month but less sharply than a year earlier. Core inflation is expected to remain above 5%, particularly given the continued rise in input prices.

In this context, wages are expected to be fairly dynamic in nominal terms, affected by several things, including increases in the minimum wage, wage negotiations and the value sharing bonus, but it is likely that real wages will continue to decline. The purchasing power of gross disposable income is likely to be sustained until the end of 2022 (+0.7% forecast per consumption unit, after +0.8% in the previous quarter), benefitting from several measures (abolition of the television and radio licence fee, the continuing reduction in the in the housing tax, the exceptional energy cheque). It is expected to slip back in H1 2023 (-1.2% forecast in Q1, -0.5% in Q2) because of the buoyancy of prices and the expected slowdown in employment.

### Employment: in search of lost productivity

Since 2021, quarter after quarter, employment has shown surprising strength, more sustained than that of activity. The good performance of the employment climate calculated from the business tendency surveys also reflects this vigour. As a result, in Q3 2022, payroll employment was 3.6% above its level at the end of 2019, when GDP exceeded its level by 1.1%.

In this respect, the situation is contrasted within the Eurozone: per capita productivity has more or less recovered its pre-health crisis level in Germany, it has exceeded it in Italy, whereas it is still well below in France and Spain. This decline in productivity is probably due to several factors. One, specific to France over the recent period, probably accounts for about half of the decline: it is the massive boom in apprenticeships which has contributed directly to around a third of the growth in payroll employment since 2019. In addition, some sectors, like energy production, and especially electricity, may have suffered from specific difficulties in France, with no impact on employment. Finally, other factors (reduction compared to pre-health crisis in the effective duration of work in connection with the increase in sick leave, labour hoarding in a context of tensions over hiring, including in sectors where production has fallen, such as the automobile sector, etc.) could also concern other European countries.

Given the scenario envisaged for activity, employment is expected to slow over the next few quarters (+0.2% forecast in Q4 2022, then +0.1% in Q1 and Q2 2023). Over the forecasting period, the unemployment rate is likely to remain stable (at 7.3% of the active population), because the active population and employment are expected to grow at the same pace. ●

# French economic outlook



## Companies coping with rising energy prices: contrasting situations and reactions

*In November 2022, in its business tendency surveys, INSEE questioned companies in the industry sector (with more than 20 employees) and the services sector (regardless of their size) on the nature of their energy contracts (electricity and gas), on past and expected change in the energy prices they are facing, and on their reactions to these price increases.*

*The impact of the energy crisis depends mainly on the type of contract that each company has signed and its expiry date. In industry, 44% of the companies surveyed said they get their electricity via a fixed-price contract over a contractual period. Of these, almost half said that this contract expires at the end of 2022, and for almost a third their contract expires during 2023, which therefore potentially exposes them to a considerable increase in market prices. If we add the 21% of companies whose contracts are indexed to the market price, then more than half (56%) of industrial businesses are particularly exposed to the rise in electricity prices. With regard to gas, this proportion is about two-thirds of those industrial companies using gas (i.e. about three-quarters of all companies). For those companies whose contracts expired in H2 2022, they have already been affected by market conditions.*

*It is more common for service companies to have an electricity supply contract at a regulated tariff, or indexed to this tariff (around 45% of these companies). Nevertheless, 27% would seem to be particularly exposed to the electricity price rise. In services, far fewer companies use gas than in industry and they are concentrated in accommodation-catering and real estate services.*

*Because of these differences in contracts, price rises would necessarily be very varied. For example, 42% of industrial companies expect their unit price for the purchase of electricity to at least double in 2023 compared to 2022, while a quarter of them did not expect any particular price rise over the same period. The average increase expected by business leaders is 132% for electricity (after +75% estimated by companies in 2022). However, these price rises that companies have declared may not take into account all the available aid schemes.*

*While the majority of companies (65% in industry, 31% in services) say that they intend to pass on at least some of this energy price increase on to their own sale price, a significant proportion expect to see a reduction in their margins, and a smaller proportion (8% in industry, 3% in services) expect to reduce their activity as a result of this rise. All in all, the decline in industrial production linked to the rise in energy prices is expected to be of the order of -1.5%. In addition, INSEE's Avionic model based on these survey results suggests that the distribution of the energy price shock in 2023 could result in an increase in producer prices of almost 4% in industry.*

### The surge in market prices does not immediately or fully have an impact on the energy prices that companies pay

Energy prices (gas and electricity) have increased considerably on the markets since 2021, and especially since the outbreak of the war in Ukraine. However, the scale of the price increase that French companies faced in 2022 was much more contained. While the producer price index in industry for electricity sold wholesale at the spot price (IPPI spot) rose by 564% between August 2021 and August 2022 (its historic peak), the producer price index in industry for electricity sold to companies<sup>1</sup> (IPPI B-to-B) increased by “only” 13% over this same period (► **Figure 1**). For gas, over the same month of August, the year-on-year variation in the producer price index for gas sold wholesale increased by 331%, against +101% for the price index for gas sold to companies as final consumers.

Regarding electricity, the sharp increase in its market price can be explained in particular by the specific features of the European electricity market, whose operation was developed in the 2000s and which fixes the final price in relation to the marginal cost of production proposed by the last power plant called on, often gas. In the current context of gas supply chain tensions in the European countries, the explosion in the price of gas during summer 2022 led to particularly high market prices for electricity. Conversely, the Regulated Access to Historic Nuclear Electricity (*Accès Régulé à l'Électricité Nucléaire Historique - ARENH*), a mechanism specific to France and which ensures a fixed electricity purchase price for alternative suppliers, partly protects businesses from increases in market price (► **Box 1**).

### The electricity supply contracts of more than half of industrial companies are likely to be very exposed to the current explosion in energy prices

Beyond these market mechanisms, the price increase ultimately experienced by each company depends on both the type of contract that ties it to its energy suppliers and its renewal period.

In this respect, in November 2022, INSEE introduced into its business tendency surveys questions about the energy prices (electricity and gas) that companies in industry and services were having to cope with (► **electronic appendix** for detailed



results). In the tendency surveys in industry, only companies with 20 or more employees are questioned. In services, all companies are questioned, with no size criterion (► [Appendix 1](#)).

First, the share of companies with an electricity contract indexed to the wholesale market price (and whose prices have therefore already increased sharply) is a minority, but quite a sizeable one: the companies concerned represent 21% of the turnover for industry and 9% of that for services<sup>2</sup> (► [Figure 2a](#)). This type of contract particularly concerns the transport equipment manufacture branch (37%).

Unlike electricity, not all companies consume gas. Within the scope of the business tendency surveys, 75% of industrial companies have a gas<sup>3</sup> supply contract and only 22% of services companies. Among the companies supplied with gas, about a quarter are bound by a contract indexed on the wholesale market price (27% in industry, 24% in services, ► [Figure 2b](#)). These proportions are higher for the manufacture of transport equipment (32%) and also in the chemical industry (39%).

## Box 1: how the wholesale electricity market operates

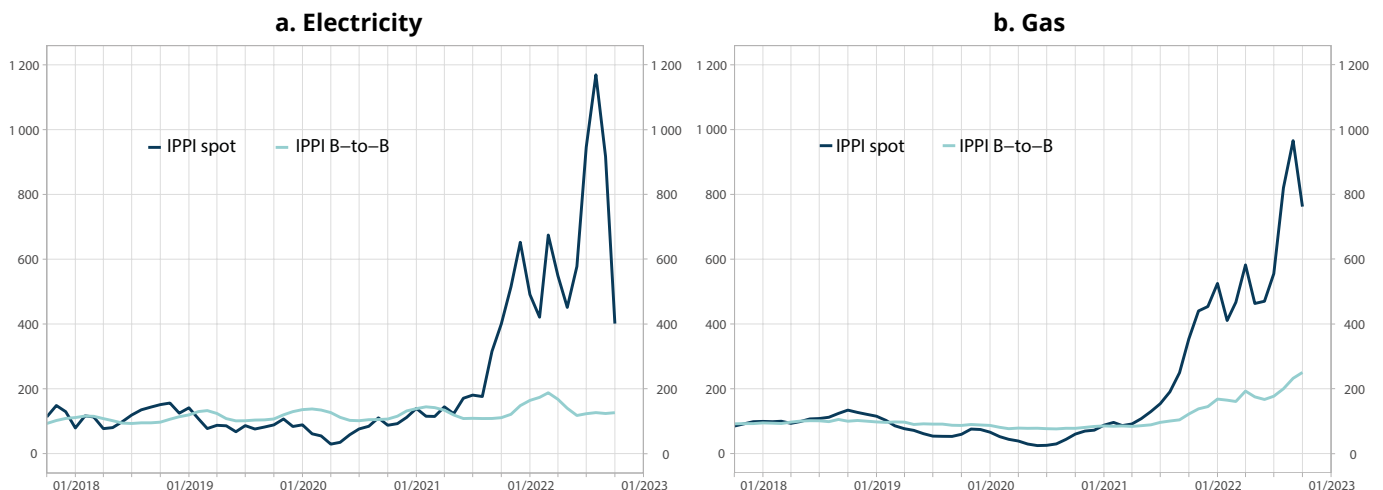
Since the liberalisation and creation of a European electricity market in the 2000s, the wholesale price of electricity is fixed on the marginal cost of production of the last power plant called on in the order that is known as “economic precedence” –i.e. from the cheapest power plant to the most expensive, whether domestic or foreign. Thus, the demand for electricity is first satisfied by renewable energies (wind power, solar power, etc.) whose marginal production costs are virtually zero. Next come nuclear plants, then thermal power stations (coal, gas, fuel oil).

Given the surge in gas prices in the context of the war in Ukraine and the supply chain problems European countries are encountering, production costs at gas power plants have increased considerably. As these power plants are among those that are called on as a last resort in France, i.e. those that “determine” the price of electricity sold on the markets, the wholesale market price of electricity also rose sharply. In addition to this geopolitically based factor, electricity production in France has also been eroded by the shutdown of a number of nuclear reactors, and even more so by the drought during the summer which reduced the possibilities of producing hydroelectric power. These reductions in domestic production meant that electricity had to be imported at a high price.

In France, the Regulated Access to Historic Nuclear Electricity mechanism (Accès Régulé à l'Électricité Nucléaire Historique - ARENH) helps to mitigate the impact of these shocks on the prices that companies have to pay. The ARENH makes the historic producer EDF sell some of the electricity from its nuclear plants to alternative<sup>8</sup> suppliers at a fixed price of €42/MWh, a very favourable price in the present climate. ●

## ► 1. Monthly change in the price of electricity and gas exchanged on the markets and sold to companies in France

base 100 in 2015



Last point: October 2022.

Note: IPPI spot designates the industrial production price index for electricity (or gas) sold wholesale at the spot price. The IPPI B-to-B for electricity designates the industrial production price index for electricity sold to companies that have signed a contract for power greater than or equal to 36 kVA. For gas, it designates the production price index for trade in gas by pipeline to end-user companies.

Source: INSEE, industrial producer price index

# French economic outlook

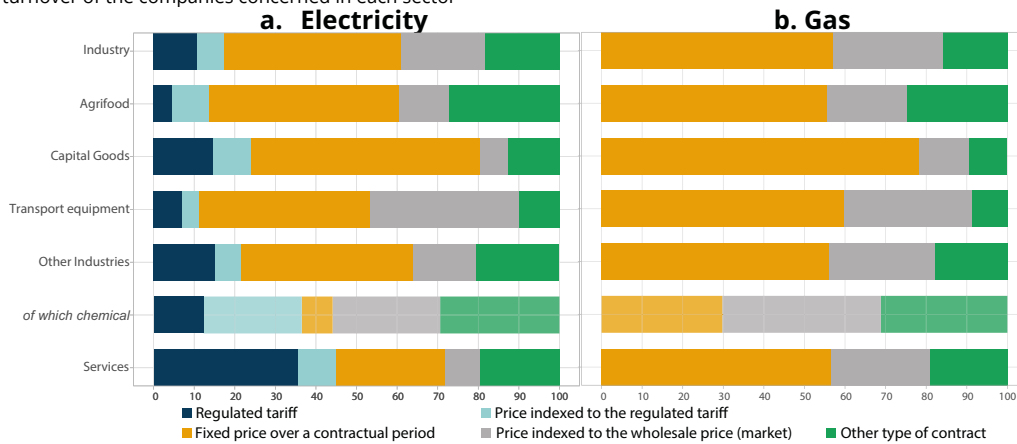
In services<sup>4</sup>, almost 45% of companies have an electricity contract at the regulated sales tariff (TRV) or at a price indexed to it. There are far fewer in industry<sup>5</sup> (17%). In fact, very small businesses that are not very electricity-intensive can benefit in the same way as households from the TRV for electricity –unlike gas where access to the TRV for small businesses was abolished in 2020. These companies, which are mostly services companies, given the eligibility criteria, therefore benefit from the “tariff shield” which limited the increase in TRV for electricity to 4% for 2022.

The results of the business tendency surveys also show that many companies have opted for a fixed-price electricity contract over a set period: this seems to represent 44% of industrial companies and 27% of services companies. The proportions are even greater for gas (almost 60% in both sectors). For these companies, the duration of the contract is a determining factor in future developments in the cost of energy. For example, a company that signed a fixed-price multi-year contract at the beginning of 2021 (before the surge in energy prices) for three years will in principle benefit from a much lower energy price in 2023 than a company with the same economic characteristics (sector, size, etc.) but whose contract expired in summer 2022.

In addition, 48% of current fixed-price electricity contracts over a set period in industry and 33% in services are expected to expire before the end of 2022. These figures are likely to be slightly lower for gas: 36% of fixed-price contracts in industry and 17% in services respectively will probably expire before the end of 2022 (► **Figure 3a** for electricity and ► **Figure 3b** for gas).

## ► 2. Type of company energy contracts according to sector of activity at the end of 2022

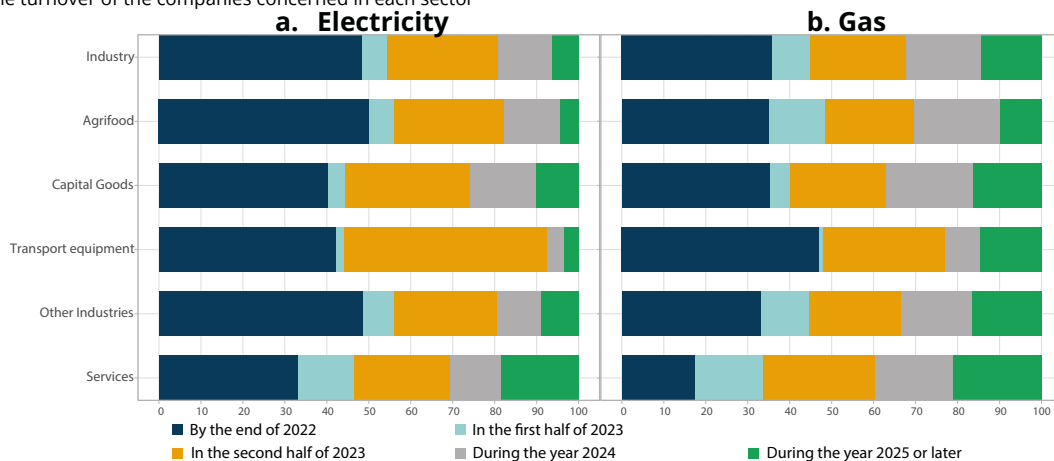
- (a) as a % of sector turnover
- (b) as a % of the turnover of the companies concerned in each sector



- (a) How to read it: 11% of companies in the industry sector say they have an electricity contract at the regulated tariff.
- (b) How to read it: among the companies in the industry sector with a gas contract, 57% say they have a contract that supplies gas at a fixed price over a contractual period.
- Note: results are weighted according to turnover of the companies questioned. The services sector represented here does not include rail and air transport services, as they are not included in the business tendency surveys.
- Source: INSEE, business surveys in industry and services

## ► 3. Expiration of fixed-price multi-year contracts

- (a) as a % of sector turnover
- (b) as a % of the turnover of the companies concerned in each sector



- (a) How to read it: 48% of companies in the industry sector have an electricity supply contract that expires before the end of 2022.
- (b) How to read it: of the companies in the industry sector that have a gas supply contract, 36% of them have a contract that expires before the end of 2022.
- Note: results are weighted by turnover of the companies questioned. The services sector represented here does not include rail transport services as they are not questioned in the business tendency surveys.
- Source: INSEE, business surveys in industry and services

If we consider as particularly exposed any contract where prices are either indexed to the market, or fixed but which expire before the end of 2023, the business tendency surveys suggest that this applies to almost 56% of electricity contracts in industry, against 27% in services. Concerning gas, the figures are likely to be similar in industry, with 66% of gas contracts particularly exposed.

## The energy price rises estimated by companies in 2022 and expected for 2023 are very varied

This wide variety in contracts, both in terms of type (fixed price, regulated price, price indexed to the market, etc.) and expiry date, suggests variations in energy prices for 2022 and 2023 which will also be very contrasted between companies. Given the questions asked and the data collection schedule, it is possible that companies did not all incorporate the entire range of available support schemes in their replies.

Companies' responses (► [Figure 4a](#) for industry and ► [Figure 4b](#) for services) suggest first of all that the rise in electricity prices over 2023 is expected to be more pronounced in industry, where contracts are more often particularly exposed (i.e. indexed to the market price or due for renewal before the end of 2023), than in services. In industry, the median variation<sup>6</sup> in electricity prices is expected to be +40% in 2022 and +90% forecast by companies in 2023<sup>7</sup>. The average rise weighted by turnover, on the other hand, is likely to be +75% in 2022 and +132% in 2023. In services, the median variation in the price of electricity is likely to be around +20% in 2022 according to the companies questioned, and the same in 2023 (however, the average rise weighted by turnover will probably increase from +29% in 2022 to +56% in 2023).

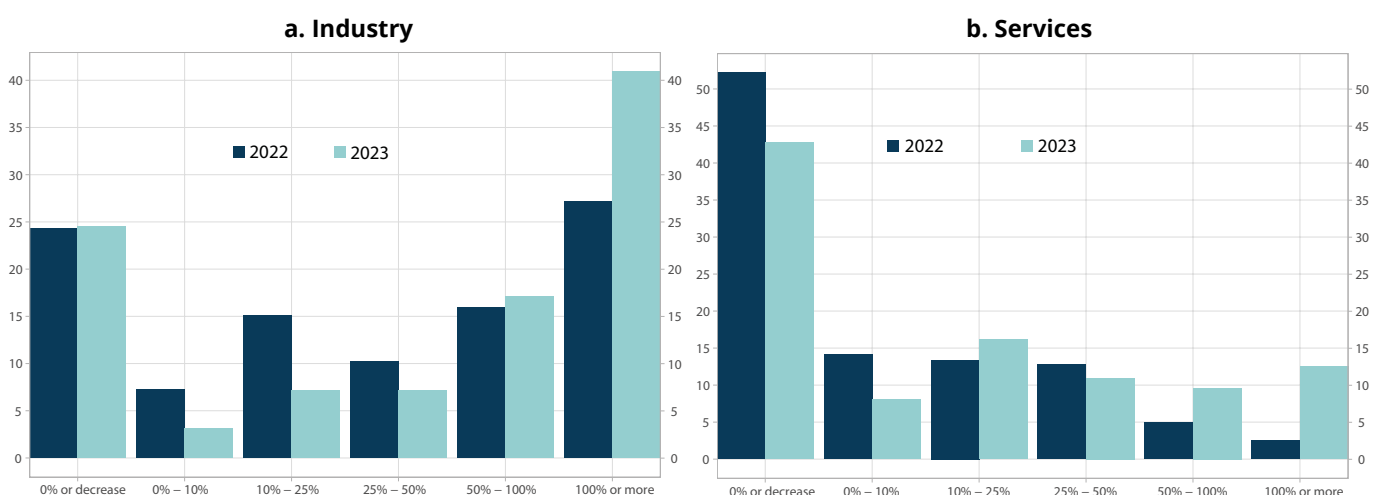
In addition, within each sector, expectations can vary considerably from one company to another. For 2023, a quarter of industrial companies did not anticipate the rise in electricity prices, while 42% did forecast at least a doubling of the price of electricity. In services, 43% of companies did not foresee price rises for 2023, while for the same period, 12% anticipated at least a doubling of the price of electricity.

## Many more companies are planning to pass on at least part of the energy price rise to their own sale price rather than consider reducing their production

In the November 2022 business tendency surveys, INSEE also asked companies about their reactions given the current context of rising gas and electricity prices (► [Figure 5](#)). They could give several types of reaction simultaneously. The results suggest that more than 66% of industrial businesses plan to increase their sale price in order to cope with the soaring price of energy inputs, against 31% in services. In addition, more than one third of industrial companies (against a little under 20% of services companies) said they would react to the increase in energy prices by squeezing margins.

Finally, rising energy prices could have a direct effect on economic activity. While a total cessation of activity seems to be a relatively marginal reaction according to company declarations (less than 1% envisage this solution), about 7% of industrial companies and 3% of services nevertheless plan to reduce their activity to cope with the increase in energy prices.

### ► 4. Distribution of the variation in electricity prices estimated in 2022 and expected for 2023 in % of sector turnover



How to read it: in industry, 42% of companies expect an increase of 100% or more in the price they will pay for their electricity in 2023. Note: results are weighted by turnover of the companies questioned. The services sector represented here does not include rail transport services as they are not questioned in the business tendency surveys. Source: INSEE, business surveys in industry and services

# French economic outlook

All in all, taking all companies into account (whether or not they plan to reduce their activity), the expected average drop in activity (weighted for turnover) in connection with the energy price increases is likely to be around -1.5% in industry (► **electronic appendix**). This expected decline is particularly strong in energy-intensive industries like metallurgy (-4.5%) or the wood and paper industry (-3.8%). Services companies, on the other hand, anticipate a more moderate decline in activity in connection with the energy price increases (-0.7%), but with more marked effects in road freight transport (-2.3%).

## The increase in the price of energy inputs forecast by companies in 2023 is expected to lead to an increase in production prices of almost 4% in industry

In the light of these survey results, using a calibration of INSEE’s Avionic model, it is possible to describe at macroeconomic level the distribution of the increase in the cost of energy inputs (gas and electricity) on the production prices of the different branches of activity (► **Box 2**). Companies’ production prices are affected by the rise in energy prices both directly and indirectly, with companies mobilising intermediate consumptions which are themselves sometimes energy-intensive. For example, to the extent that metal products are inputs for the automotive industry, the rise in energy prices could increase production prices in the automotive industry due both to the direct effect (energy inputs used by the automotive industry) and the indirect effect (rising metal product prices). The Avionic model used here enables us to take into account these direct and indirect effects.

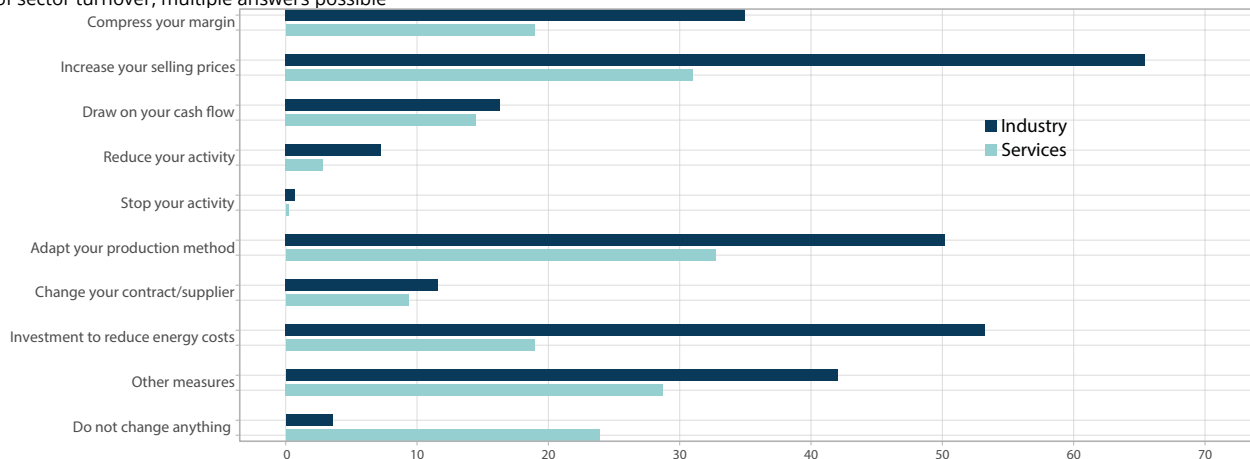
The results from the model suggest that the additional energy shock (gas and electricity) in 2023, all other things being equal, could push up production prices by +2.6 percentage points on average across the economy, of which 2 points would be attributable to the direct effect and 0.6 points to the indirect distribution effects (► **Figure 6**). Production prices in the manufacturing industry are expected to increase more sharply than those in services: +3.7 percentage points (58% from a direct effect) against +0.6 points in services (45% from a direct effect).

At a detailed sectoral level, the steel industry, metallurgy, manufacture of glass or chemical products sectors, which are very energy-intensive (► **Simon, 2022**), could experience some particularly high additional production prices, of at least 9 percentage points. ●

*Bruno Bjai, Charles-Marie Chevalier, Hugues Génin, Clément Lefebvre, Guillaume Roulleau*

### ► 5. Companies’ reactions to the increase in energy prices

as % of sector turnover, multiple answers possible



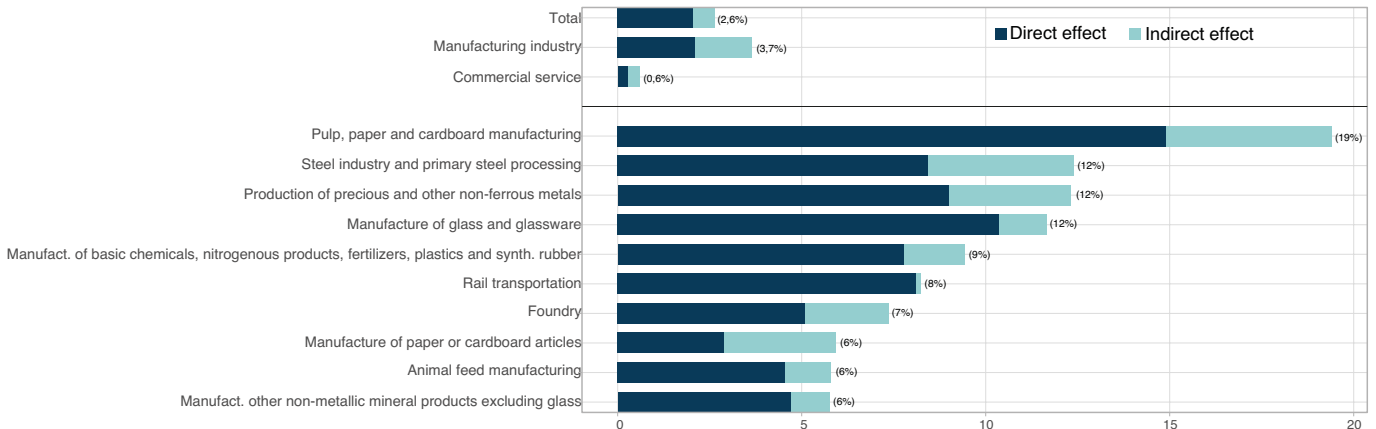
How to read it: in industry, more than 66% of companies plan to increase their sales prices.

Note: results are weighted by turnover of the companies questioned. The services sector represented here does not include rail transport services as they are not questioned in the business tendency surveys.

Source: INSEE, business surveys in industry and services

## ► 6. Impact on production prices of the variation in electricity and gas prices expected by companies in 2023 (10 most affected sectors)

in % point



How to read it: the expected rise in electricity and gas prices for companies could generate a rise in production prices of 2.6 percentage points in the economy. Source: INSEE, Avionic model calibrated with business survey results

### Box 2: modelling the distribution of the energy crisis across production prices

In the *Avionic* model (► Bourgeois et Briand, 2019 and Bourgeois et Lafrogne-Joussier, 2022), calibrated here at a very detailed sectoral level (NAF level A138 on 2018 data), the variation in the price of a product is passed on to others through the intermediate consumption used to produce it: when energy becomes more expensive, it has the effect of causing a supply shock that spreads into the downstream sectors of the economy.

The model assumes that companies do not pass on in their prices all of the cost variations that they record. Thus the model incorporates a rigidity  $Y_j$  into the price adjustment (because of the staggering of contracts, menu costs, lack of coordination, etc.) in each sector  $j$  (an alternative hypothesis would be to assume a perfect transmission of prices, i.e. no margin compression, in which case the impact of the energy shock on production prices would be greater).

Let  $a_{ij}$  be the quantity of products  $i$  needed for production in branch  $j$ :

$$a_{ij} = C_{ij} / P_j$$

We can then estimate the impact of a rise in energy prices  $\Delta p_{gas}^j$  and  $\Delta p_{elec}^j$  on the price of product  $j$ :

$$\Delta p_j = \underbrace{\Delta p_{elec}^j a_{elec,j} + \Delta p_{gas}^j a_{gas,j}}_{direct\ effet} + \underbrace{\sum_{k \neq gas, elec} Y_k \Delta p_k a_{kj}}_{indirect\ effet}$$

Results from the business tendency surveys suggest, however, that exogenous shocks on the price of gas and electricity and the direct transmission of these shocks would probably differ between sectors. Thus for each sector  $j$  of the economy, we calibrate the energy shocks as the averages (weighted by turnover) of the price variation expected for 2023 by companies declaring that they will pass on the increase in energy prices in their sales prices, according to the business tendency surveys.

Let  $\omega_f$  be the weight of company  $f$  in sector  $j$ , then  $\Delta p_{elec,f}$  and  $\Delta p_{gas,f}$  are the variation in price expected by  $f$  in 2023 for electricity and gas and  $\mathbf{1}_{f \in increase}$  is a dummy equal to 1 if  $f$  says it will pass on the energy price rise to its sales prices according to the business tendency surveys. The exogenous energy shocks for a given sector  $j$  are calibrated as:

$$\Delta p_{elec}^j = \sum_f \omega_f \times \Delta p_{elec,f} \times \mathbf{1}_{f \in increase}; \Delta p_{gas}^j = \sum_f \omega_f \times \Delta p_{gas,f} \times \mathbf{1}_{f \in increase} \bullet$$

## Appendix 1: characteristics of business tendency surveys of companies

The data exploited in this study derive from a dedicated module of questions added in November 2022 to INSEE's monthly business tendency surveys of companies in industry and services. Detailed information on the methodology of these surveys, the results of which are used each month to calculate the business climate in France, is available in the Data Sources and Indicators section on the INSEE website.<sup>10</sup> The questionnaire used for the dedicated module can be found in the electronic appendix.

### Monthly tendency survey in industry

The survey of industry covers a sample of about 4,000 companies (in the sense of legal units or profiled units) mainly in the manufacturing industry, or divisions 10 to 33 in the French classification of activities (NAF rev. 2) (excluding the tobacco industry div. 12, manufacture of coke div. 19.10Z and the construction of military combat vehicles div. 30.40Z). Observations on extractive industries are not included in this analysis.

Only companies with 20 or more employees are questioned in this survey.

### Monthly tendency survey in services

The survey of services covers a sample of about 4,500 companies (in the sense of legal units or profiled units) in the following sectors: accommodation and catering (NAF codes 55.10Z, 55.20Z, 56.10A, 56.10B, 56.10C, 56.21Z, 56.30Z); information and communication (divisions 58 to 63); real estate activities (division 68 of NAF, excluding 68.32B); specialist, scientific and technical activities (divisions 69, 70, 71, 73 and 74, excluding 70.10Z); administrative and support service activities (divisions 77 to 82, excluding 81.30Z); other service activities (divisions 95 and 96). Concerning transport services, the survey covers only road freight transport and thus does not include the rail freight transport or passenger transport sectors.

Unlike the survey in industry, there is no size criterion (turnover or number of employees) for companies questioned in this survey and therefore some very small businesses are included. ●

## Bibliography

**Bourgeois A. and Briand, A.**, (2019), "AVIONIC (Variational Input/Output Analysis, National Imported and Content): The Input/Output Model of National Accounts", *Document de travail*, n° G2019/02, INSEE, April 2019

**Bourgeois A. and Lafrogne-Joussier R.** (2022) "Soaring energy prices: its effect on inflation halved by the "tariff shield"", *INSEE Analyses* n°75, September 2022

**Simon O.** (2022) "Which are the branches of activity where production is most dependent on energy?", *Economic outlook Focus*, 6 October 2022. ●

## Notes

- <sup>1</sup> This is the sale price index for companies that have taken out a contract for power greater than or equal to 36kVA. INSEE publishes numerous electricity market price indicators, in particular a sale price index at the EPEX (European power exchange) market price and two indices of sale price to companies according to the power selected for subscription (for sites supplied with subscribed power of less than 36kVA – residential customers, artisans, etc. – and sites supplied with subscribed power greater than or equal to 36kVA).
- <sup>2</sup> All of the statistics from questions on energy prices introduced in November 2022 in the business tendency surveys are weighted according to company turnover. The proportions of companies presented in this Focus must therefore be interpreted as proportions of the turnover of the sectors considered, even if they are inaccurately described as proportions of companies.
- <sup>3</sup> This result is consistent with figures from INSEE's Annual Survey on Industrial Energy Consumption (EACEI).
- <sup>4</sup> Rail transport services, which are particularly electricity-intensive, are however not included in the surveys.
- <sup>5</sup> It should be noted that, for industry, the business tendency surveys are intended to be representative of companies with at least 20 employees, which automatically excludes the majority of industrial companies eligible for the TRV.
- <sup>6</sup> In other words, there are as many companies that would be facing a price increase of under 40% as a price increase of over 40%.
- <sup>7</sup> These results are aggregates at sectoral level; a given company may experience different price trends in 2022 and 2023
- <sup>8</sup> The ARENH ceiling is normally 100 TWh; it was raised exceptionally in 2022 to 120 TWh in the context of the "tariff shield" scheme (at a price of €46.2/MWh for the extra 20 TWh).
- <sup>9</sup> For the sectors of activity not represented in the business tendency surveys in industry and services (notably agriculture, rail transport, trade and construction) we impute these shocks from the average shocks in the economy.
- <sup>10</sup> Industry survey: <https://www.insee.fr/en/metadonnees/source/operation/s2061/processus-statistique>  
Services survey: <https://www.insee.fr/en/metadonnees/source/operation/s2065/processus-statistique> ●

## Recent trends in margin rates: wide disparities between branches in a context of general price increases

Margin rate, the ratio of gross operating surplus (GOS) to value added, can be used to analyse the profitability of the French economy. In Q3 2022, after the strong trends observed during the health crisis, its level was close to its 2018 average. However, changes in margin rate differ according to branch of activity, with recent gains being concentrated in the energy and transport services branches.

By breaking down changes in margin rates and gross operating surpluses in the branches according to the main economic and accounting factors the role of the different changes in prices can be highlighted in a context of rising input costs and the return of inflation. Thus, the increase in gross operating surpluses of the energy and transport services branches is because the rise in their selling prices more than offset the rise in their intermediate consumption prices and their hourly wages paid. For other branches, however, these increases were not offset and the gross operating surplus fell in industry, excluding energy, while remaining stable in services excluding transport. In addition to the wide disparities between branches, there is also sometimes a considerable variety within the branches themselves, especially in transport services.

### In 2022, the margin rate of the French economy was close to its 2018 level

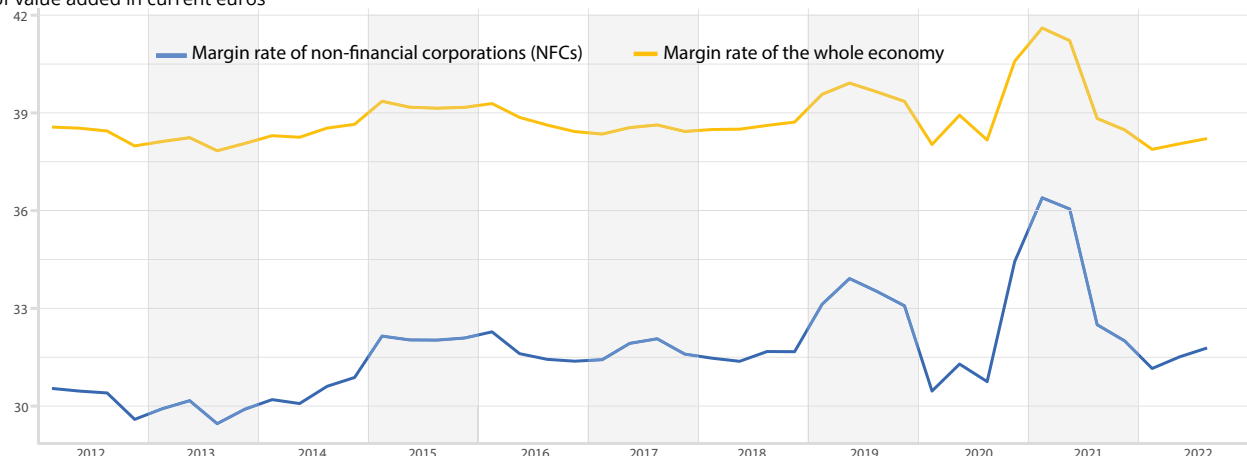
In Q3 2022, the margin rate of non-financial corporations (NFC), which is the ratio of their gross operating surplus (GOS) to their value added, stood at 31.8%, a level close to its 2018 average (31.5%, ► **Figure 1**). Between 2019 and 2021, it experienced some irregular fluctuations, first in 2019 when the simultaneous accounting of the tax credit for competitiveness and employment (CICE) and the reduction in social contributions that replaced it resulted in a one-off increase, then again in 2020 and 2021 during the health crisis.

The current climate, characterised by large-scale movements in production prices and companies' intermediate consumptions, is likely to influence changes in the margin rate, both at the aggregated level and that of each branch of activity separately. In this context of considerable shocks, it is likely that the estimates presented here will be revised as new information is incorporated into successive versions of the quarterly and annual national accounts. In particular, microeconomic business statistics (ESANE), based on company tax returns, are only partially integrated into the 2019 and 2020 accounts, and are not available for 2021 and of course not for 2022. Estimates of the national accounts for these years are not based on direct observation of businesses' results but are deduced from the available macroeconomic short-term indicators, which mainly cover output and wages in the different branches of activity, production prices, foreign trade and consumption of different products, also the taxes and contributions paid by companies and households and the subsidies they receive, all summarized in the quarterly and annual national accounts. These estimates are therefore likely to be revised with the publication of the definitive national accounts for 2019 to 2022 (May 2023 to May 2025).

The aim of this Focus is to study whether the change in margin rate at the aggregated level is matched within the different branches of the economy or whether, on the contrary, it masks disparities between branches. To do this, our analysis must move away from the scope of NFCs only and consider all institutional sectors combined (NFCs, financial corporations, sole proprietors, general government, home-owning households, etc.). Although this choice is dictated by

### ► 1. Quarterly margin rate of the French economy and non-financial corporations

in % of value added in current euros



Source: quarterly national accounts

# French economic outlook

the absence of any breakdown by branch of the figures for NFCs alone, movements in the aggregated margin rate and the margin rate of NFCs do appear to be similar in recent years. Data from the quarterly accounts can therefore be used to calculate a margin rate at the level of all branches of the economy but also at the level of each branch of activity.

In Q3 2022, the margin rate for all branches combined stood at 38.2% of the value added of the economy. This is higher than that of NFCs alone, mainly because sole proprietors are taken into account, whose GOS makes up the majority of added value. However, in Q3 2022, the aggregated margin rate was close to its 2018 average (38.6%), like the margin rate of NFCs.

## For the economy as a whole, the effect of the drop in hourly productivity on margin rate is offset by the drop in net taxes on production

In national accounting, the generation of income account enables value added to be divided into three parts: employee compensation, taxes net of subsidies on production, which go back to general government, and lastly gross operating surplus, which goes to producers to remunerate capital and finance investment. The part that goes to employees increases if wages change more quickly than the value added produced, which depends on relative changes in productivity and wages per capita, and on the relative prices of value added and consumption.

The usual breakdown of variations in margin rate isolates the contributions of per capita productivity gains and relative prices, which have a positive effect, and the real average wage per capita<sup>1</sup>, the employer contribution rate and taxes net of subsidies, which have a negative effect.

This is the breakdown used here to analyse margin rates (aggregated and by branch) but with a few adjustments, in particular an argument for hourly rather than per capita productivity and taking into account the increase in the number of sole proprietors over the period (► **Box 1**):

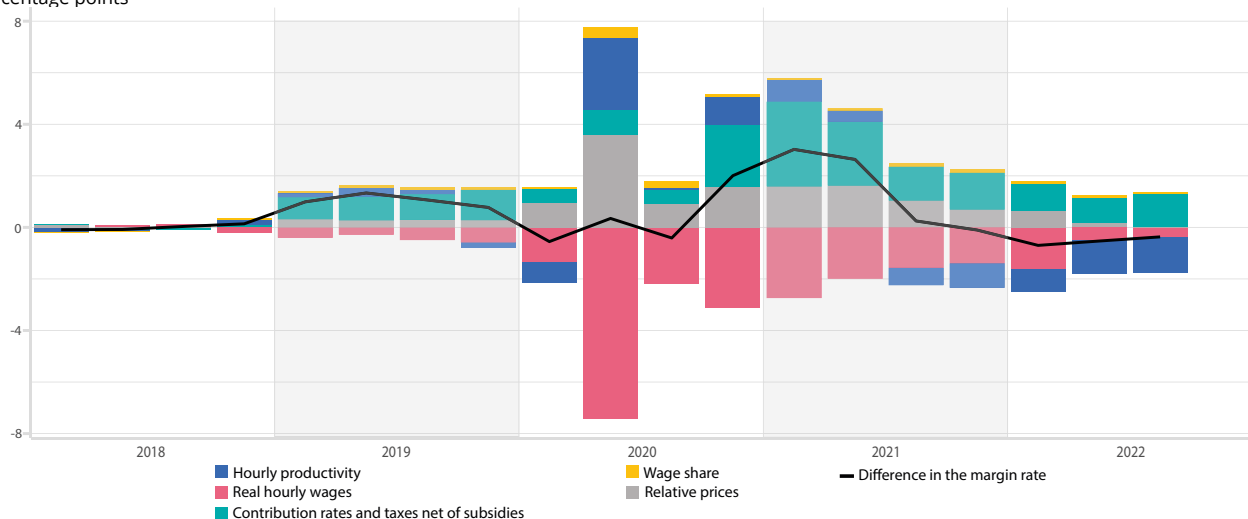
Between 2018 and Q3 2022, the relative stability of the aggregated margin rate resulted from two main factors, which act in opposite directions and offset each other overall (► **Figure 2**):

- the drop in hourly productivity (-1.9% in Q3 2022 compared to the 2018 average), which affects the margin rate (contribution of -1.4 points to this change)
- taxes on production net of subsidies, where the aggregated amounts were less dynamic than the value added over the period, which supported the margin rate (contribution of +1.3 points). This is mainly due to the reduction in production taxes in 2021 and the payment of aid for hiring and for paying apprentices.

The real average hourly wage and relative prices contribute little to this change. Average wages, consumer prices and value added prices therefore evolved in a similar way across the whole of this period, although some differences may have emerged during the health crisis before being reduced.

## ► 2. Margin rate for the whole of the economy, compared to its 2018 average, and contributions to this difference

in percentage points



Source: quarterly national accounts, INSEE calculations



## For the economy as a whole, the rise in selling prices made it possible to offset the rise in input prices, to increase the payroll paid and to increase the gross operating surplus

The fact that the aggregate margin rate is close to its 2018 average does not mean that the GOS for the economy as a whole remained stable across the period. Compared to its average for 2018, it increased by almost €24 billion in Q3 2022, an increase in value added of €67 billion (in current euros).

The change in value added in current euros and in the GOS, between 2018 and Q3 2022, can be understood in accounting terms from the production accounts and generation of income accounts within the national accounting (► **Box 2**). By expressing contributions to change in GOS in billions of euros, this breakdown makes it easier to measure them within a branch but also between branches.

In Q3 2022 and compared to its 2018 average, production in the whole of the economy increased by €206 billion in current euros, the majority of which (€161 billion) stemmed from the buoyancy in production prices (i.e. for example “factory-gate” prices in the case of industry), the rest originated from the increase in volumes produced at constant prices (► **Figure 3**). At the same time, the intermediate consumption needed for this production increased by €139 billion, again mainly due to their increased prices (€108 billion).

Thus the increase in the value of total production attributable to prices (€161 billion) remains greater than that of intermediate consumption (€108 billion). This means that overall and on average, producers have indeed been able to pass on the increase in their input prices through their selling prices, thus allowing an increase in value added in current euros through the effect of price alone (€52 billion). All in all, the €67 billion increase in total value added results from the increase in volume of activity but also, and above all, from the fact that overall, the rise in production prices more than offset the rise in input prices. This finding is established for the economy as a whole, but masks some very contrasting situations according to the branches, with some having benefited from selling prices that rose more than their input prices and the wages they paid, whereas others, conversely, were penalised.

The increase in value added in current euros (€67 billion) is then divided between taxes on production and employers’ contributions net of subsidies, at €8 billion; gross wages at €36 billion, and gross operating surplus at €24 billion.

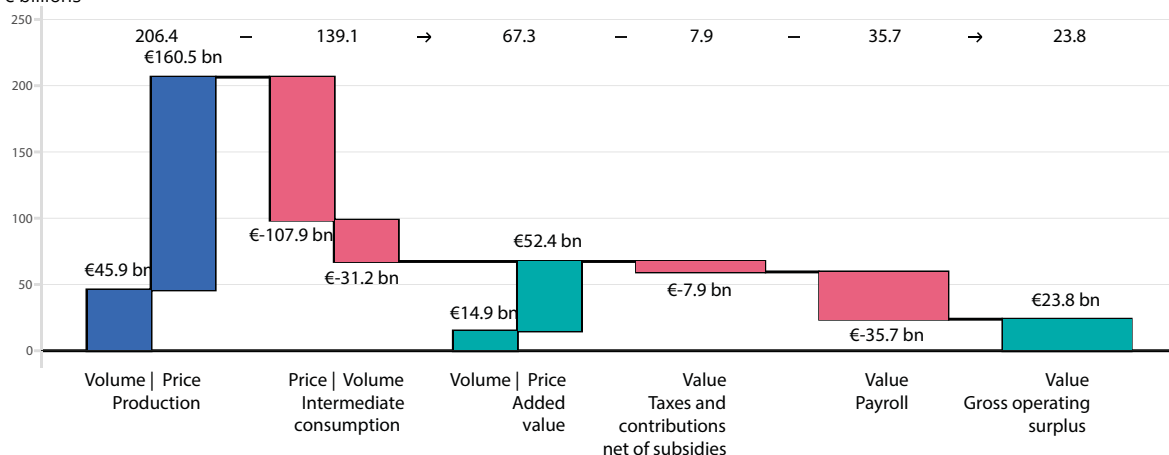
The fact that the share of additional value added attributable to the GOS (35.4%) is slightly less than the 2018 margin rate is reflected in a small decline in the margin rate over the period. Overall, however, the rise in prices was not accompanied by any significant distortion in the distribution of value added.

### Some very strong disparities between branches

The relative stability of the aggregated margin rate, between its average level for 2018 and that of Q3 2022, nevertheless masks some major disparities between branches (► **Figure 4**). In particular, the margin rate increased significantly in the energy branches<sup>2</sup> (where it reached 63.8% in Q3 2022 after 55.3% in 2018 and more than 70% in H1 2022) and transport services (54.1% after 30.4%). In fact it is at a historically high level in both these branches.

### ► 3. From production in the whole economy to gross operating surplus: situation in Q3 2022, compared to 2018

in current € billions



Source: quarterly national accounts, INSEE calculations

# French economic outlook

The margin rate, on the other hand, declined sharply in industry excluding energy<sup>3</sup> (34.6% in Q3 2022 after 36.4% in 2018), building construction (31.1% after 35.9%) and market services excluding transport (41.0% after 43.8%).

The margin rates of the different branches also show significant differences in level, which are largely due to structural factors specific to each branch, especially the capital intensity of production processes, which involves devoting a larger share of value added to renewing the productive capital. This analysis focuses on short-term aspects, however, which account for differences in changes in margin rate but not differences in level.

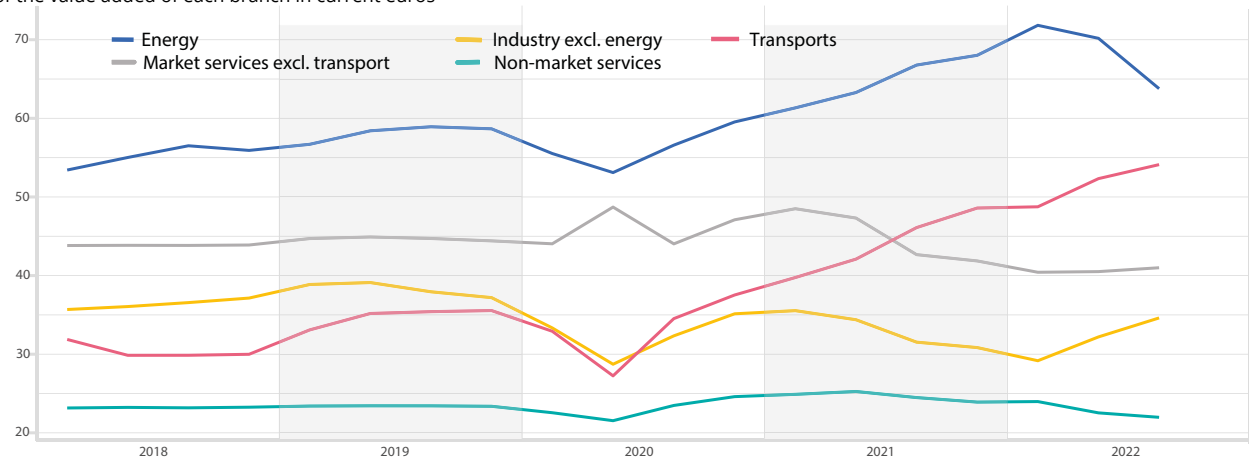
Changes in the margin rate therefore differ considerably from branch to branch. The same is true for factors contributing to these changes. Relative prices in particular have made a major contribution to the rise in margin rate in the energy branches and transport services and are the main factor for change; conversely, they hold back change in margin rate in the industrial branches excluding energy and in market services excluding transport (► **Figure 5**). These opposite contributions reflect the fact that in the energy branches and transport services in particular, the price of value added (i.e. the resultant of selling price and price of inputs) increased much faster than the average household consumer price, whereas this was not the case in other branches. Overall, these changes offset each other in the total economy.

In the same way, the contribution of the real hourly wage differs according to the branch: it supports the margin rate in industry excluding energy and transport services, whereas it hampers margin rate in services excluding transport. Lastly, although it is present in most branches (excluding transport services), the decline in productivity per hour weighs most heavily on the margin rate in industry (including the energy branches) and in construction.

Next we consider change in the margin rate in branches where it has increased substantially (energy and transport services) and in those where it has decreased (industry excluding energy and market services excluding transport).

## ► 4. Margin rate by branch (all institutional sectors combined)

in % of the value added of each branch in current euros



Source: quarterly national accounts, INSEE calculations

## ► 5. Breakdown of change in margin rates by branch

	Productivity per hour	Share of employees	Real hourly wage	Relative price	Contribution rate and taxes net of subsidies	Difference in margin rate
<b>All</b>	<b>-1.4</b>	<b>0.1</b>	<b>-0.4</b>	<b>0.0</b>	<b>1.3</b>	<b>-0.4</b>
Agriculture	-0.1	-0.6	-0.3	1.7	-2.0	-1.2
Energy	-9.5	-0.2	0.4	16.4	1.5	8.5
Industry excluding energy	-4.7	0.0	2.9	-2.0	1.9	-1.8
Construction	-6.9	0.2	1.4	0.3	0.3	-4.8
Transport	1.7	2.4	1.8	16.5	1.3	23.7
Market services excluding transport	-0.4	0.1	-0.8	-3.0	1.2	-2.9
Non-market services	-0.9	0.1	-1.7	-0.3	1.5	-1.2

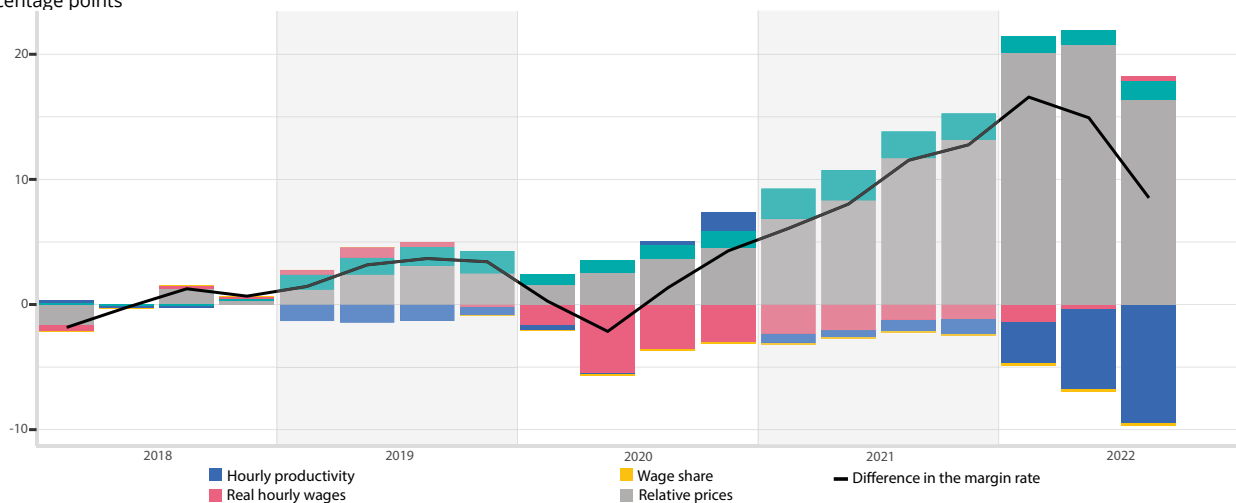
Source: quarterly national accounts, INSEE calculations

## Margin rate in the energy and transport services branches increased sharply from the effect of the rise in their value added price

In the energy branches and transport services, margin rate has increased substantially since the end of 2020. In Q3 2022, it stood at 63.8% in the energy branches and at 54.1% in the transport services branch, or 9 and 24 points above their respective 2018 levels (► **Figures 6 and 7**). This strong increase is mainly the result of the rise in relative prices in these two branches, due to their soaring value added price (+57% in the energy branches and +38% in transport services). These increases are due in particular to the very substantial rise in sea freight rates coming out of the health crisis, and the rise in selling prices of electricity, driven by gas prices which were well above the increase in the average costs of production for power producers. For these producers, the introduction of the tariff shield meant that selling prices could follow their usual determinants without this increase being passed on fully to final and intermediate consumer prices for electricity, whereas the State mechanism to recover charges for the public energy service (CSPE) tends to limit the increase in the power providers' selling prices.

### ► 6. Margin rate in the energy branches, compared to its 2018 average, and contributions to this difference

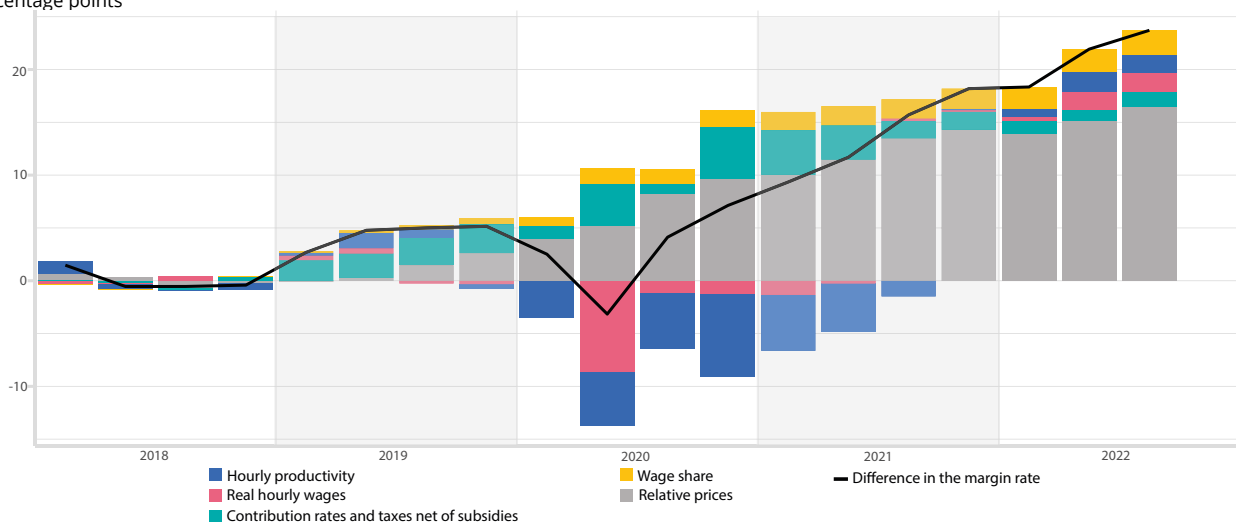
in percentage points



Source: quarterly national accounts, INSEE calculations

### ► 7. Margin rate in transport services, compared to its 2018 average, and contributions to this difference

in percentage points



Source: quarterly national accounts, INSEE calculations

# French economic outlook

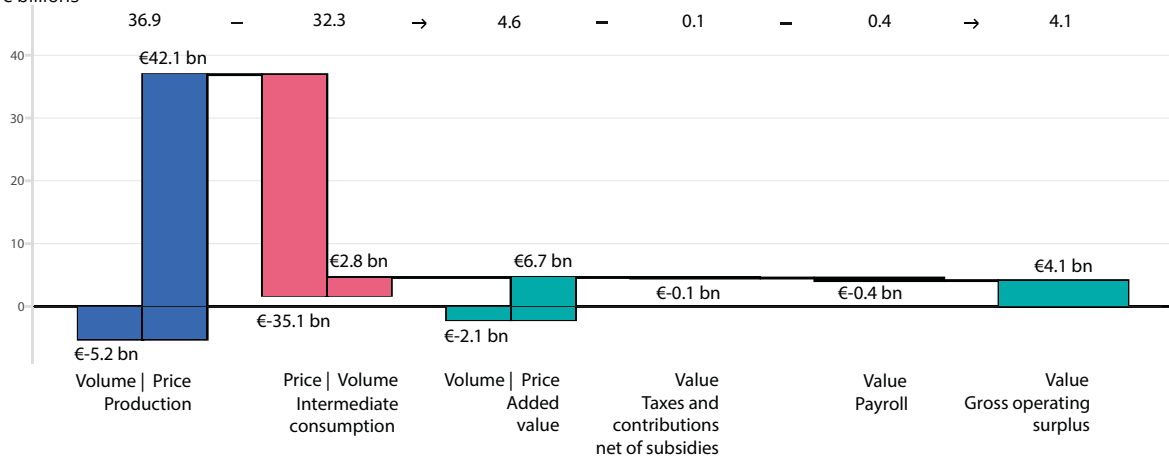
In the energy branches, the contribution of the real hourly wage to change in margin rate was very slightly positive, which reflects an increase in the hourly wage overall in line with the increase in the consumer price of all goods and services. In transport services, the contribution of the real hourly wage to change in margin rate was much more positive: the nominal hourly wage increased less quickly than the consumer price. Payroll rose by €1.1 billion, i.e. significantly less than value added.

In the energy branches, the decline in productivity per hour at the start of 2022 held the margin rate back, in a context of falling electricity production, with several nuclear reactors being closed for maintenance.

In transport services, the contribution of the share of employees was fairly significantly positive. Self-employment has certainly been very dynamic in this branch since 2018, with the very large increase in home delivery jobs, taxis and chauffeur-driven vehicles. All other things being equal, this momentum in self-employment contributed positively to the increase in margin rate, since the self-employed do not pay wages, their work is remunerated *via* their mixed income, which supports the gross operating surplus of the branch. However, this positive contribution by self-employment is cancelled out in part by a smaller contribution in productivity gains: the jobs concerned, especially home deliveries, in fact have lower productivity than those in the rest of the branch.

## ► 8. From production in the energy branches to their gross operating surplus: situation in Q3 2022, compared to 2018

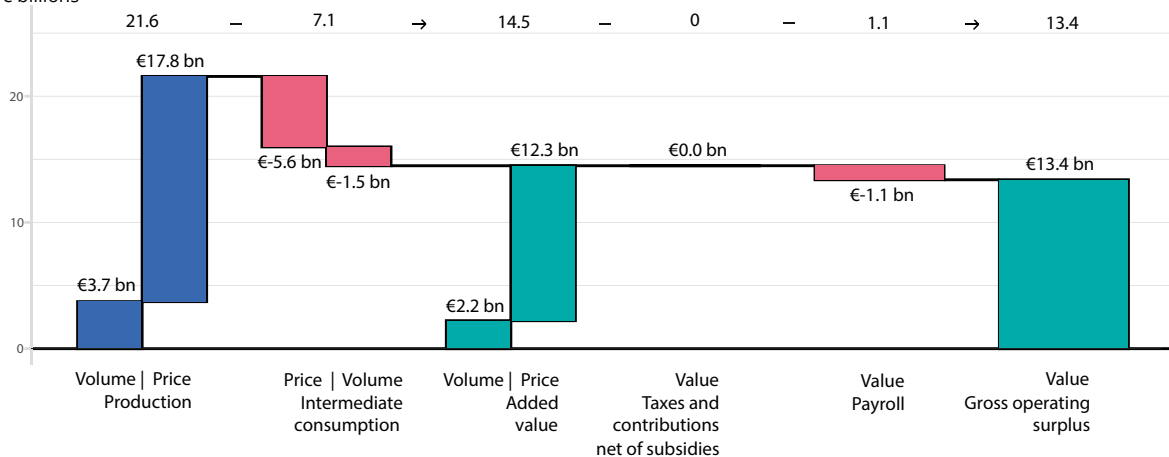
in current € billions



Source: quarterly national accounts, INSEE calculations

## ► 9. From production in the transport services to their gross operating surplus: situation in Q3 2022, compared to 2018

in current € billions



Source: quarterly national accounts, INSEE calculations

In line with these increases in margin rate there have been correspondingly significant gains in gross operating surplus since 2018: GOS increased by €4 billion in the energy branches between 2018 and Q3 2022, and by €13 billion in transport services (► **Figures 8 and 9**). In both branches, the rise in GOS almost entirely reflects the increase in value added in current euros, which is itself driven by the surge in its price.

In fact, in both the energy and transport services branches, the production price rose sharply between 2018 and Q3 2022, generating a production gain of €42 billion in constant volumes in the energy branches, and €18 billion in transport services (especially due to the increase in the selling price of sea freight). These gains exceed the increase in costs generated by the increasing price of inputs (€35 billion in the case of the energy branches and €6 billion for transport services). Ultimately, this results in a gain in value added, from €5 billion in the energy branches and €15 billion in transport services, most of which is attributable to the rise in prices (€7 billion and €12 billion respectively).

In the energy branches, payroll has increased by 12.4% since 2018, with an increase in the hourly wage, as we have seen, similar to that of consumer prices. However, the share of payroll in value added is, structurally, fairly weak in this branch (24% in 2018), so that the effect of the rise in payroll is at a relatively limited level (+€0.4 billion), compared to that of value added. Thus the increase in value added is almost entirely reflected in the gross operating surplus.

To these significant disparities between branches can be added disparities within a branch. This is certainly the case in transport services, where the increase in value added and GOS is probably concentrated in one or more sub-branches. However, the precision and level of publication of the quarterly accounts mean that it is not possible to extend the analysis within the branches.

### **In industry (excluding energy), the drop in productivity and the deterioration in relative prices have hampered change in the margin rate**

Unlike the energy branches, the margin rate in the industrial branches, excluding energy, fell by 1.8 points between 2018 and Q3 2022 (► **Figure 10**). One of the main reasons for this decline is the fall in hourly productivity (-6.1% in Q3 2022 compared to its 2018 average) especially in the manufacture of transport equipment. This decline caused a drop of 4.7 points in margin rate in the industrial branches excluding energy.

The second factor to cause a fall in margin rate in these branches is the deterioration in relative prices (contribution of -2.0 points), reflecting a weaker momentum in the price of value added compared to the consumer price. The deterioration in relative prices is offset by the decline in real hourly wages paid, which supports the margin rate (+2.9 points).

However, taxes on production net of subsidies contributed positively to change in margin rate in these branches, by 1.9 points in Q3 2022 compared to 2018, mainly due to the lasting downturn in production taxes in 2021.

In accounting terms, value added in current euros was stable between 2018 and Q3 2022, whereas GOS fell by €1 billion (► **Figure 11**). The volume of activity declined but this was offset by the increase in the price of value added. In fact, the increase in selling prices (€34 billion in production gains at constant volumes) was just above that of input prices (additional cost of €30 billion at constant volumes). As elsewhere, the payroll of the branch increased over the period, while GOS was down slightly, by €1 billion.

### **In services (excluding transport), in addition to the deterioration in relative prices, the rise in wages affected change in margin rate**

Margin rate in market services excluding transport also fell in Q3 2022, compared to its 2018 average (-2.9 points, ► **Figure 12**). Here, the main factor was the decline in relative prices, which caused around 3.0 points of change in margin rate between 2018 and Q3 2022. Real hourly wages also affected change in margin rate (-0.8 points), although to a lesser extent, particularly in financial and insurance services where nominal hourly wages were more buoyant than consumer prices.

In contrast to industry, productivity had only a very moderate effect on change in margin rate in market services excluding transport. Productivity fell back in some branches, especially trade, but conversely it improved in financial and insurance services, also in information-communication services.

In accounting terms, GOS increased by €4 billion between 2018 and Q3 2022, while value added in current euros increased by €29 billion (► **Figure 13**). The increase in value added in current euros was the result of the momentum in activity (for €17 billion) and, to a lesser extent, the increase in the price of value added (for €12 billion). In fact, the rise in production prices (gains of €31 billion at constant volumes) more than offset the rise in input prices (costs of €19 billion

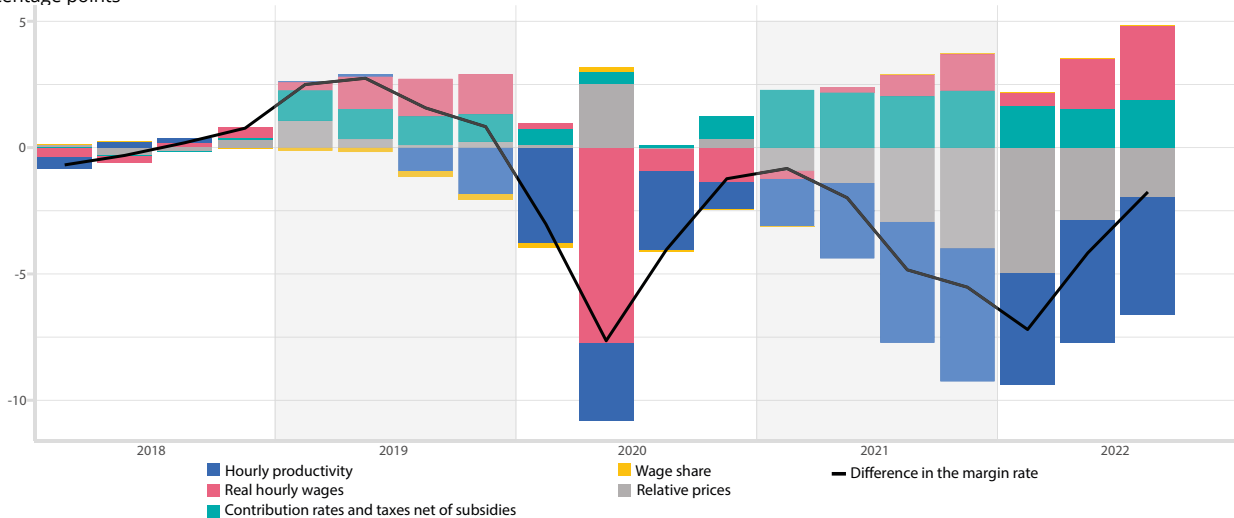
# French economic outlook

at constant volumes). However, payroll increased by €20 billion over the period, with two-thirds of this rise resulting from the rise in hourly wages. Thus the increase in value added in current euros was largely absorbed by the rise in payroll, and also by taxes and contributions based on this payroll, with the result that GOS increased little over the period. ●

*Thomas Laurent, Benjamin Quevat*

## ► 10. Margin rate in industry excluding energy, compared to its 2018 average, and contributions to this difference

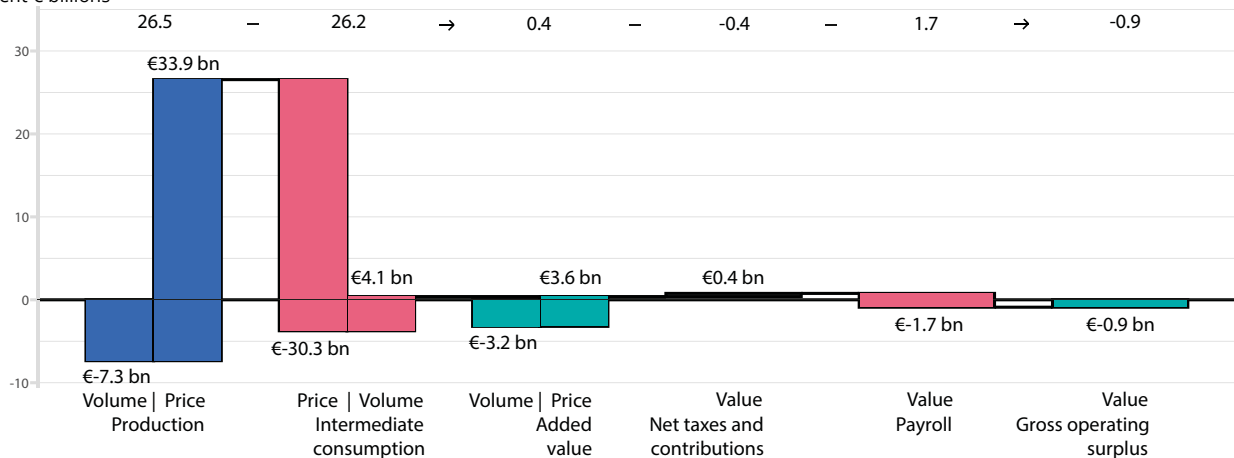
in percentage points



Source : quarterly national accounts, INSEE calculations

## ► 11. From production in the industrial branches (excluding energy) to their gross operating surplus: situation in Q3 2022, compared to 2018

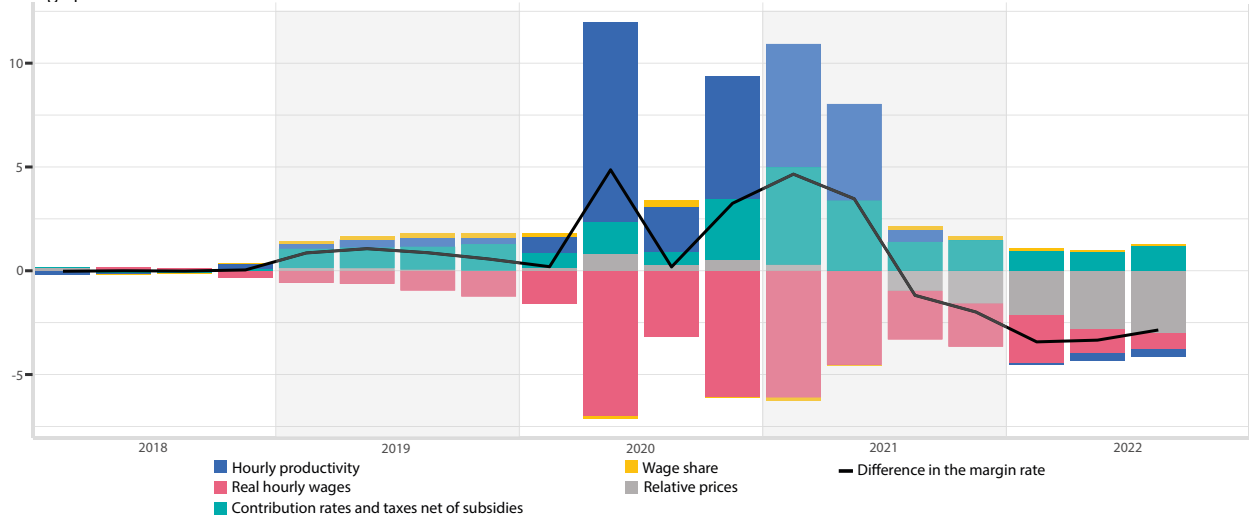
in current € billions



Source : quarterly national accounts, INSEE calculations

## ► 12. Margin rate in market services excluding transport, compared to its 2018 average, and contributions to this difference

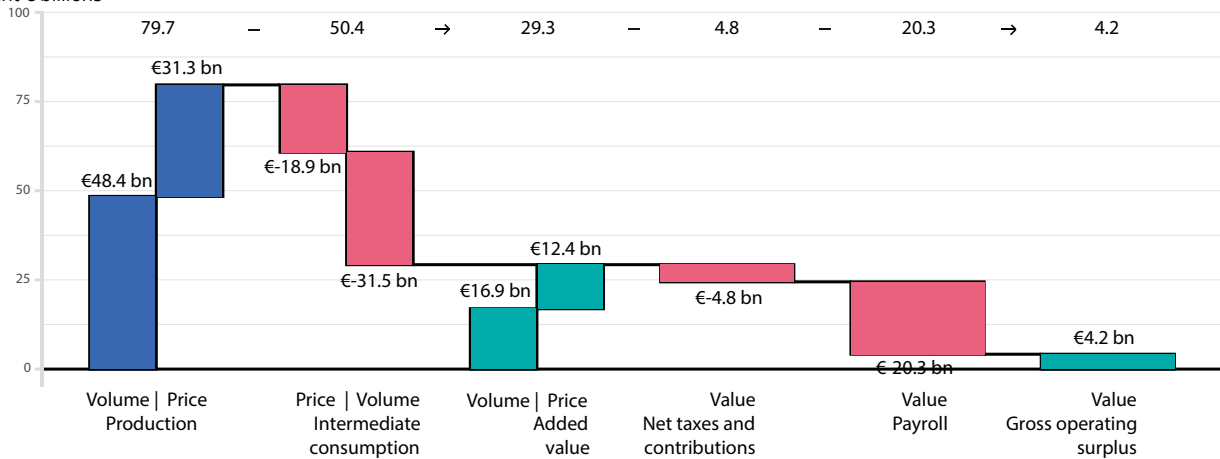
in percentage points



Source: quarterly national accounts, INSEE calculations

## ► 13. From production in market services (excluding transport) to their gross operating surplus: situation in Q3 2022, compared to 2018

in current € billions



Source: quarterly national accounts, INSEE calculations

### Notes

- 1 This is the average per capita wage deflated by the consumer price, which can also be seen as the purchasing power of the average wage.
- 2 Here the energy branches are the coke and refined petroleum production branch and the energy, water and waste management branch.
- 3 Industry excluding energy includes the agri-food industry, the manufacture of transport equipment, the manufacture of capital goods and "other industrial branches" (chemical industry, metallurgy, wood and paper, textiles, etc.).

### Box 1: accounting breakdown of changes in margin rate

The margin rate is the ratio of the gross operating surplus to gross value added by value. It is written thus:

$$MR = \frac{GOS}{VA} = 1 - \frac{D1}{VA} - \frac{\text{taxes} - \text{subs.}}{VA}$$

where the term  $\frac{D1}{VA}$ , which designates the share of value added paid as remuneration can be rewritten:

$$\frac{D1}{VA} = (1+t) * \frac{VHT}{VA_{vol}} * \frac{W}{VHE} * \frac{VHE}{VHT} * \frac{P_c}{P_{VA}}$$

In this equation,  $t$  is the rate of employer contributions,  $VA_{vol}$  is value added by volume,  $VHE$  the number of hours worked by employees,  $VHT$  the total number of hours worked,  $P_c$  consumer price,  $P_{VA}$  the price of value added and  $\frac{W}{VHE} = \frac{D1}{P_c * VHE}$  the real average hourly wage, as deflated by the household consumer price.

Thus, change in margin rate can be broken down into:

- change in hourly productivity  $\frac{VA_{vol}}{VHT}$  that has a positive effect: all other things being equal, the rise in productivity from one hour worked increases the margin rate;
- changes in the real average hourly wage  $\frac{W}{VHE}$  and in the employer contribution rate  $t$  which have a negative effect (a rise in hourly wage or contribution rate, with productivity remaining unchanged, results in a drop in margin rate);
- the share of paid hours worked by employees in the hourly volume worked, ratio  $\frac{VHE}{VHT}$  of the number of hours worked by employees to the total number of hours worked, which has a negative effect: when the share of employees in a branch decreases, more workers are non-wage-earning sole proprietors, whose work is remunerated *via* "mixed income" which they pay themselves, and which is counted in the gross operating surplus, which supports it;
- change in relative prices, i.e. the ratio  $\frac{P_{VA}}{P_c}$  of the price of value added to the consumer price, which has a positive effect. When the price of value added increases faster than the consumer price, the margin rate improves because, in order to maintain a real average constant wage, companies must increase their employees' wages by less than the increase in their value added prices. For the economy as a whole, these relative prices can in turn be broken down into three factors: (i) the ratio of the deflator of final domestic demand to the deflator of GDP (terms of domestic trade), which depends on the ratio of the imports deflator to the exports deflator, i.e. the terms of foreign trade ([► note on INSEE blog](#) terms of trade), (ii) the ratio of the price of GDP to the price of value added, which depends on taxes on products (VAT, TICPE – domestic duty on consumption of energy products, etc.) minus subsidies on products. Note that this ratio was applied in 2022 with the introduction of different tariff shields on energy, which helped to bring down the deflators of GDP and consumption against that of value added. Finally, more marginally, (iii) the ratio of the price of final domestic demand to consumer prices, which depends on the deflators of the other final demand items (investment and consumption by general government in particular);
- taxes paid on production minus production subsidies received.

In 2019, the CICE (tax credit for encouraging competitiveness and jobs), treated in the national accounts as a subsidy on production, was abolished and replaced by a uniform reduction in the rate of employers' contributions. Thus, in the breakdown above, the CICE effect on the margin rate, which appeared under the heading "Taxes net of subsidies", switched in 2019 to the heading "Contribution rate". In addition, recording in the national accounts involved a time lag: the CICE was recorded under subsidies until the end of 2019, however, the reduction in the contribution is recorded from the beginning of 2019, which thus implies a double payment in 2019, and this, exceptionally, boosted the margin rate. In the following breakdowns of margin rate and GOS, these two components are therefore grouped together (as the employers' contribution rate has not undergone any significant change, apart from the switch of the CICE). This deviates from the practice common in this type of analysis of sharing value added, of counting social contributions with payroll in the share attributable to employees.

This breakdown can be performed for the economy as a whole or for each branch taken separately. In this case, it is the aggregates specific to the branch (productivity, price of value added, hourly wage, taxes, subsidies and contributions, employee ratio) that are used for the breakdown. Only the deflator for household consumption, which is used to calculate real wages and relative prices, is always considered for all goods and services consumed by households: since employees use their wages to consume a set of goods and services, it is indeed the change in the prices of this set of goods that must be considered to calculate their real wages. ●



## Box 2: additive breakdown of change in gross operating surplus

The production account links production ( $P1$ ), intermediate consumption ( $P2$ ) and value added ( $VA$ ):

$$VA = P1 - P2$$

Similarly, the generation of income account links gross operating surplus ( $GOS$ ), value added, taxes on production ( $D29$ ), subsidies on production ( $D39$ ), employers' social contributions ( $D12$ ) and gross payroll ( $D11$ ):

$$GOS = VA - D29 + D39 - D11 - D12$$

The difference in relation to the reference period (2018) is defined simply:

$$\Delta X_t = X_t - \frac{X_{2018}}{4}$$

And we obtain the following breakdowns:

$$\Delta VA_t = \Delta P1_t - \Delta P2_t$$

$$\Delta GOS_t = \Delta VA_t - \Delta(D29_t - D39_t + D12_t) - \Delta D11_t$$

For measuring the production account, we can also divide according to volume-price of the change::

$$\Delta X_t = \Delta X_t^{vol} \frac{X_{2018}}{X_{2018}^{vol}} + \left( \Delta X_t - \Delta X_t^{vol} \frac{X_{2018}}{X_{2018}^{vol}} \right)$$

where the first term corresponds to the volume effect, i.e. the increase that would have been observed if prices had remained constant since 2018 and the second term to the difference between the increase in value and the volume effect, hence the price effect.

It should be remembered that production is valued at basic prices, i.e. at the prices at which the producer sells it, from the point of view of the producer (hence excluding taxes on products, trade and transport margins and including subsidies on products), and that intermediate consumption is valued at market prices, i.e. the prices actually paid by the producers as users of the goods and services consumed intermediately, including taxes on products and margins and excluding subsidies on products.

Thus the price effect on value added is equal to the difference between the price effect on production and that on intermediate consumption, and measures the passing-on of input prices to production prices, sometimes called cost "pass-through": a positive value shows that the rise in intermediate consumption prices has been more than fully passed through to the production prices. A negative value indicates only a partial pass-through of this increase. ●

### Bibliography

**Victor Amoureux, Nicolas Carnot et Thomas Laurent** (2022) "Termes de l'échange et revenu intérieur réél : mesurer le pouvoir d'achat de la nation", blog INSEE 9 September 2022. <https://blog.insee.fr/termes-echange-revenu-interieur-et-pouvoir-d-achat/> ●

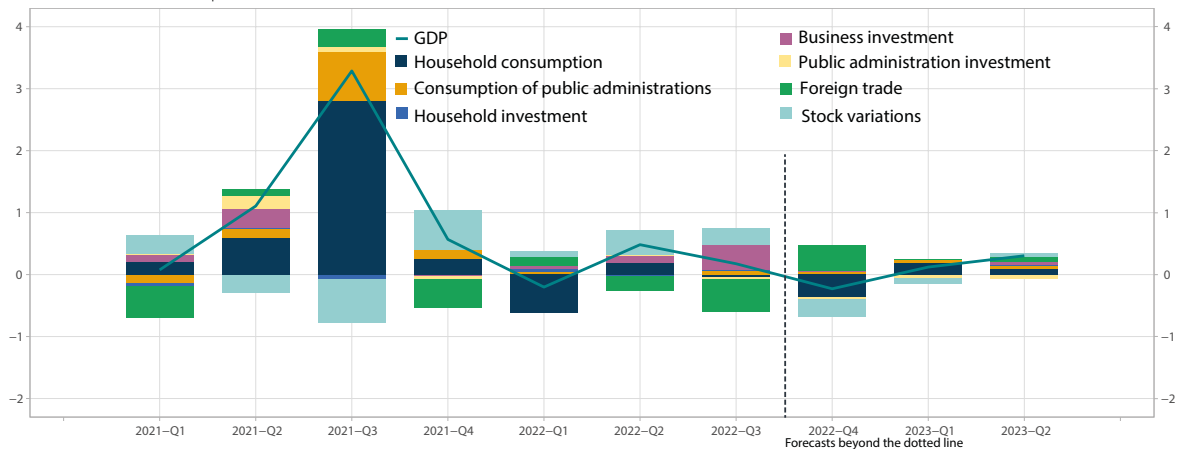
## Economic activity

In Q3 2022, French GDP slowed (+0.2%, according to the detailed results from the quarterly accounts published at the end of November, after +0.5% in Q2), in a context of high prices for many commodities and fears over energy supplies, thereby putting pressure on market prices. Household consumption remained sluggish, with purchases of goods continuing to decline and the catch-up effects in services tending to fade. Corporate investment, sustained by a rebound in vehicle purchases, made the only significant contribution to growth in domestic demand. Meanwhile, foreign trade affected the development of activity, with a strong momentum in imports of goods and spending by French tourists abroad (► **Figure 1**).

The end of the year is marked by the persistence of major constraints on production. Companies, and industrial companies in particular, are faced with rising energy prices, for example when renewing their gas or electricity contracts (► **Focus** on the situations of companies faced with rising energy prices). This is also the case for households, even though most are protected by the “tariff shield” placed on regulated gas and electricity prices. Energy supply chains are also still under threat as a result of geopolitical tensions in Eastern Europe, to which are added production difficulties at national level in the nuclear power plants. In this context, the public authorities encouraged energy-saving behaviours, facilitated by the mild temperatures in October and November. In the shorter term, strikes in the oil refineries, mainly from the end of September to the beginning of November, hampered activity in the manufacture of coke and refined petroleum products sector causing fuel shortages across a large part of the country (► **Focus** on supply chain difficulties in service stations).

### ► 1. Quarterly variations in GDP and contributions of main demand items

variations in % and contributions in points

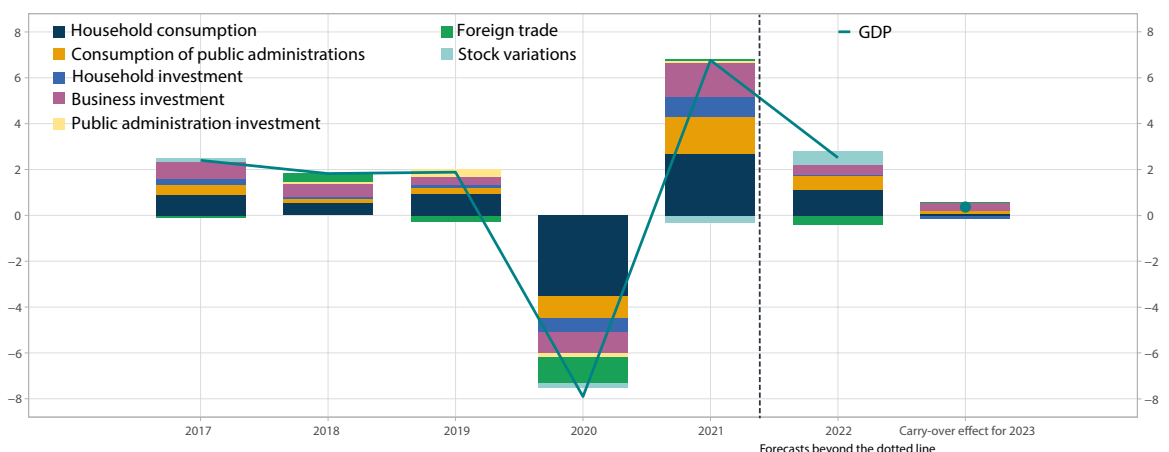


How to read it: in Q4 2022, GDP is expected to decrease by 0.2% compared to Q3 2022; the contribution of investment by non-financial enterprises (NFE) is expected to be about -0.4 points.

Source: INSEE

### ► 2. Annual variations in GDP and contributions of main demand items

quarterly variations (in %) and contributions in points



How to read it: in 2022, GDP would increase by 2.5%; the contribution of household consumption would be 1.1 points.

Source: INSEE

The latest available indicators thus show a relative deterioration in the short-term economic situation in industry. In October, industrial output fell significantly in “other industrial branches”, which include those most exposed to energy constraints (chemical industry, metallurgy, wood and paper, etc.), and in the manufacture of transport equipment. There was also a notable drop in production in the manufacture of coke and refined petroleum products and in the energy sector, linked to production difficulties in nuclear power plants. For November, electricity consumption data for businesses connected directly to the RTE network suggest that in “other industrial branches” and the manufacture of transport equipment, production would appear to have remained significantly lower than the Q3 average (► **Focus** on monitoring electricity consumption). Finally, the latest business tendency surveys show a relative deterioration in the business climate in industry, although it is showing some resilience, and still stands above its long-term average (► **Figure 3a**). Notably, although supply chain difficulties remain at high levels, they seem to be easing gradually, according to business leaders. However, the climate is well below average in “other industrial branches”, especially in the chemical industry and metallurgy, and the outlook remains unfavourable (► **Figure 3b**).

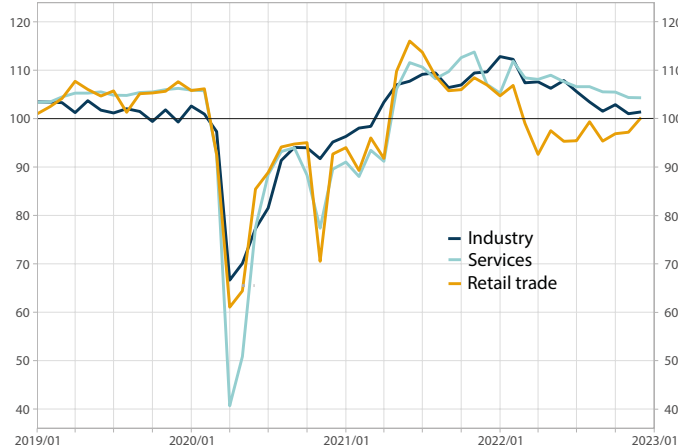
These factors are likely to affect economic activity in Q4 and the French GDP is expected to fall slightly (-0.2% forecast, ► **Figure 4**). The reason for such a downturn is likely to be the decline in industrial activity, not only in the manufacture of coke and refined petroleum products (strikes in the refineries) but also in energy (electricity production, ► **Box**) and more generally in those branches that are exposed to energy price rises (“other industrial branches” in particular) (► **Figure 5**). At the same time, market services are expected to be at a standstill, after being the main driver of growth in previous quarters. At this stage, the catch-up potential of the sectors worst affected by the health restrictions now seems exhausted, and accommodation-catering, for instance, has shrunk considerably. Activity in transport services is expected to be sluggish, but to a lesser extent.

Within the main demand items, household consumption is expected to decline considerably in Q4 2022, the reason being a very much reduced energy consumption –due both to the favourable weather conditions in October and to austerity behaviour or reaction to prices– and a downturn in spending on accommodation and catering. Investment is expected to be very much at a standstill, affected particularly by the effect of the downturn in purchases of vehicles by companies. Finally, foreign trade is expected to bolster the trend in activity, notably with some large aeronautical and naval deliveries, but these are likely to contribute to a reduction in inventory.

In H1 2023, the economic context is still likely to be affected by tensions over energy –if it is assumed in this forecast scenario that gas and electricity supplies would be sufficient to satisfy demand, businesses and households would still be faced with a rise in energy prices– and by high inflation, although this should be easing slightly from spring onwards. Activity should rebound moderately (+0.1% forecast for Q1 then +0.3% in Q2). Industrial production is expected to pick up again, thanks to the automatic rebound in the manufacture of coke and refined petroleum products branch –with the end of the strikes– and the restarting of several nuclear reactors. Meanwhile, activity in services is likely to accelerate slightly in Q2. In particular, growth should remain relatively sustained in information-communication.

### ► 3a. Business climate in the main sectors of activity

standardised with mean 100 and standard deviation 10



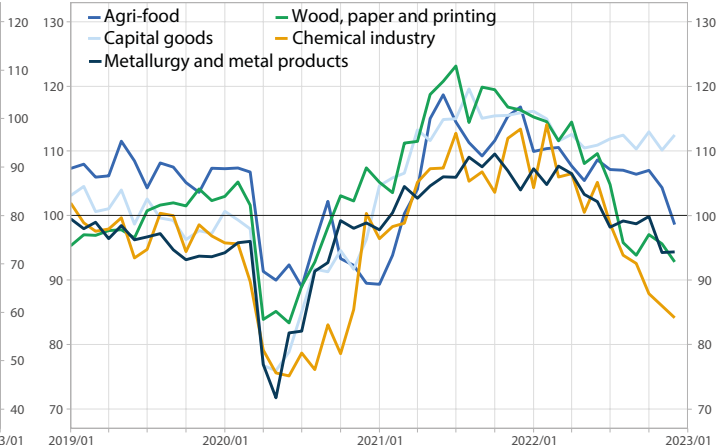
Last point: December 2022.

Note: the business climate in services stood at 104 pts in December 2022, above its long-term average (100).

Source: INSEE

### ► 3b. Business climate in different branches of the manufacturing industry

standardised with mean 100 and standard deviation 10



Last point: December 2022.

Note: the business climate in the metalworking industry stood at 94 pts in December 2022, above its long-term average (100).

Source: INSEE

# French economic outlook

On the demand side, household consumption is expected to pick up modestly, with the high level of inflation continuing to affect households' purchasing decisions. Investment is likely to remain sluggish, in line with the weak momentum of activity and in a context of monetary tightening. Foreign trade is expected to contribute to the development of activity, in line with the schedule of aeronautical and naval deliveries, which will once again boost exports in Q2.

All in all, over the whole of 2022, GDP growth of +2.5% (after +6.8% in 2021) looks likely, with modest growth overhang for 2023, at around 0.4% by mid-year (► **Figure 2**). These forecasts remain highly dependent not only on geopolitical developments, but also on price increases and households' and businesses' reaction to them, as well as the effectiveness of government support. Energy supply chains also remain a key factor with uncertainties over the schedule for reopening the nuclear power plants and, in the event of a harsh winter, tensions could be exacerbated. Finally, the effects of monetary tightening could start to slow down activity in the coming quarters. ●

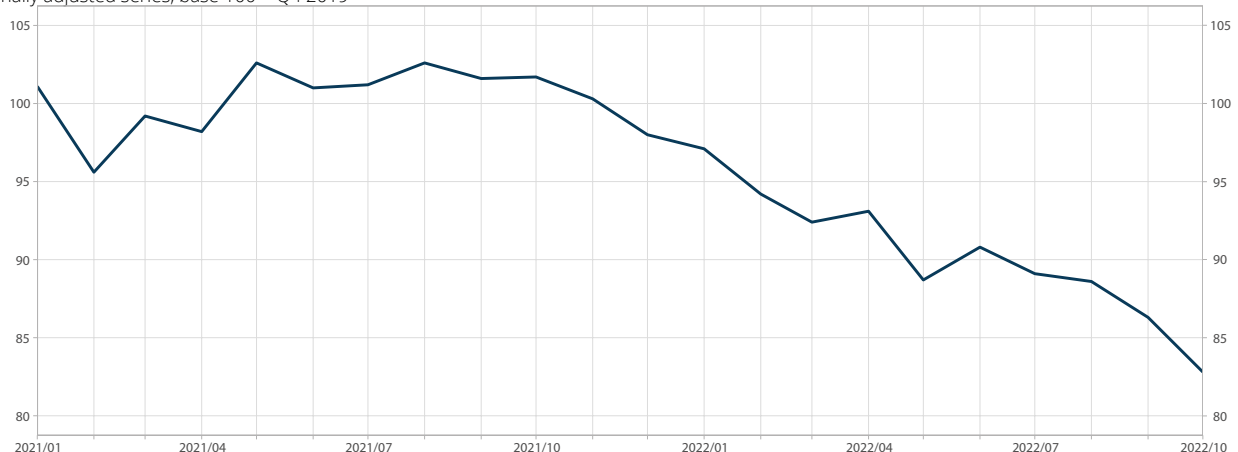
## The continuing decline in activity in the “energy, water, waste treatment” branch during 2022 is likely to reduce annual growth in the French economy by 0.4 points

Since the end of 2021, activity in the “energy, water, waste treatment” branch has been in continuous decline: its value added fell by 17% between Q4 2021 and Q3 2022, and now stands at 18% below its level before the health crisis (end of 2019). This decline in activity is linked to production difficulties affecting the nuclear power plants: in the “production, transport and distribution of electricity” sector, the industrial production index has been on a distinctly downward trajectory since the summer of 2021 (► **Graph**).

The momentum for the months to come depends on the maintenance schedule for the nuclear reactors, according to the analysis by RTE in its report on the prospects for the electricity system for autumn and winter 2022-2023.<sup>1</sup> Based on the information published in this outlook, and particularly that relating to a return to electricity production from November, activity in the “energy, water, waste treatment” branch is expected to decline once again in Q4 2022, although less sharply than in the previous quarter (-1.4% forecast in Q4, after -5.8% in Q3). All in all, over the whole of 2022, activity in the “energy, water, waste treatment” branch is likely to reduce annual GDP growth by 0.4 points. ●

### ► Industrial production index in the “production, transport and distribution of electricity” sector

seasonally adjusted series, base 100 = Q4 2019



Last point: October 2022

How to read it: in October 2022, the industrial production index in the “production, transport and distribution of electricity” sector stood at 83% of its Q4 2019 average.

Source: INSEE

<sup>1</sup> Perspectives pour le système électrique pour l'automne et l'hiver 2022-2023", RTE, updated in November 2022.

## ► 4. Goods and services: resources-uses balance at chain-linked prices for the previous year, in quarterly and annual change

quarterly and annual changes (in %), seasonally adjusted data - YTD

	2020				2021				2022				2023		2020	2021	2022	2023 (ovhg)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2				
<b>Gross domestic product</b>	-5.5	-13.5	18.3	-0.9	0.1	1.1	3.3	0.6	-0.2	0.5	0.2	-0.2	0.1	0.3	-7.9	6.8	2.5	0.4
Imports	-5.5	-19.1	17.9	0.4	1.5	2.1	0.9	4.5	1.4	1.6	3.5	-0.3	-0.4	0.8	-13.0	7.8	8.9	2.0
Total resources	-5.4	-14.6	17.9	-0.1	0.4	1.4	2.7	1.2	0.4	0.8	0.8	-0.4	0.1	0.4	-8.8	7.4	4.0	0.7
Household consumption expenditure	-5.3	-11.5	18.3	-5.4	0.4	1.2	5.6	0.5	-1.2	0.4	-0.1	-0.7	0.4	0.2	-6.8	5.2	2.2	0.0
General government consumption expenditure**	-3.3	-11.8	17.2	-0.4	-0.5	0.7	3.4	0.7	0.2	0.0	0.2	0.2	0.2	0.3	-4.2	6.4	2.8	0.6
<i>of which individual general government expenditure</i>	-4.5	-12.8	18.8	-0.3	0.0	1.0	4.8	0.5	0.2	-0.4	0.3	0.1	0.2	0.4	-5.8	8.3	3.0	0.6
<i>of which collective general government expenditure</i>	-1.0	-9.8	15.3	0.0	-1.7	-0.1	-0.1	0.7	0.1	0.8	0.1	0.2	0.1	0.0	-0.8	2.8	1.3	0.5
Gross fixed capital formation (GFCF)	-9.5	-14.2	23.7	2.6	0.9	2.2	0.0	-0.1	0.5	0.5	1.7	0.0	-0.1	0.0	-8.4	11.4	2.2	0.9
<i>of which Non-financial enterprises (NFE)</i>	-8.6	-13.2	24.0	2.0	0.9	2.1	0.1	-0.1	0.4	0.9	3.1	0.1	0.1	0.4	-6.9	11.4	3.2	2.2
Households	-14.2	-16.3	28.8	6.1	0.3	4.0	1.2	-0.6	0.1	0.0	-0.7	-0.5	-0.9	-1.1	-11.9	17.0	0.7	-2.4
General government	-5.0	-12.6	17.1	0.4	-1.3	0.4	-1.9	-0.3	1.1	-0.5	0.3	0.4	0.0	0.1	-5.4	2.7	-0.1	0.4
Exports	-6.7	-25.3	22.3	3.5	-0.2	2.6	2.0	3.1	2.0	0.9	2.0	1.0	-0.4	1.0	-17.0	8.6	8.1	2.4
Contributions (in points)																		
Domestic demand excluding inventory**	-5.8	-12.2	19.6	-2.4	0.3	1.3	3.7	0.4	-0.4	0.3	0.4	-0.3	0.2	0.2	-6.6	7.0	2.4	0.4
Changes in inventories**	0.6	0.4	-1.8	0.6	0.3	-0.3	-0.7	0.6	0.1	0.4	0.3	-0.3	-0.1	0.1	-0.2	-0.3	0.6	0.0
Foreign trade	-0.3	-1.6	0.5	0.8	-0.5	0.1	0.3	-0.5	0.1	-0.2	-0.5	0.4	0.0	0.1	-1.1	0.1	-0.4	0.0

■ Forecast

\* Consumption expenditure of general government and non-profit institutions serving households (NPISH)

\*\* Changes in inventories include acquisitions net of valuable items

How to read it: in Q4 2022, exports would increase by 1.0% compared to the third quarter of 2022; the contribution of foreign trade to quarterly GDP growth would be positive at +0.4 points.

Source: INSEE

## ► 5. Quarterly changes in economic activity by industry

quarterly changes (in %), forecast from Q4 2022

Branch	weight	2020				2021				2022				2023	
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
<b>Agriculture, forestry and fishing</b>	2	-2.3	-2.0	-0.6	-0.5	0.1	0.3	0.6	0.2	0.4	0.2	0.3	-0.6	0.1	0.2
<b>Industry</b>	14	-5.9	-17.7	20.0	2.6	-1.0	-0.5	-0.2	-0.4	-0.4	-1.1	-0.8	-2.1	0.4	0.6
Manufacture of food products, beverages and tobacco-based products	2	-1.5	-8.6	7.3	-1.0	1.2	0.7	0.6	-0.3	0.0	-1.2	-0.1	-0.5	-0.7	-0.1
Coke and refined petroleum	0	0.8	10.3	13.4	9.8	-30.9	-2.5	-13.9	4.5	22.0	4.9	-0.6	-23.0	29.9	0.0
Manufacture of electrical, electronic, computer equipment; manufacture of machinery	2	-6.9	-18.3	21.6	3.9	1.7	-0.1	0.2	0.4	1.2	0.1	2.4	-0.5	-0.2	-0.1
Manufacture of transport equipment	2	-19.5	-50.0	69.0	4.8	-3.9	-5.2	-1.4	0.1	-2.7	5.3	4.8	-1.0	-0.4	-0.2
Manufacture of other industrial products	6	-5.7	-18.6	23.7	3.2	-0.1	-1.0	-0.8	-0.7	2.0	0.0	-0.2	-1.6	-1.3	-0.4
Extractive industries, energy, water, waste treatment and decontamination	3	-1.9	-9.3	10.5	2.5	-3.8	1.2	0.6	-0.5	-6.0	-6.0	-5.8	-1.4	0.5	3.7
<b>Construction</b>	6	-12.4	-22.5	38.6	-0.4	2.5	2.2	-0.1	-0.1	0.1	-1.3	-0.7	0.2	-0.3	-0.4
<b>Mainly market services</b>	57	-4.7	-12.6	15.2	-1.8	0.0	1.9	5.0	1.1	-0.2	1.3	0.6	0.2	0.1	0.4
Trade; repair of automobiles and motorcycles	10	-5.9	-11.9	21.4	-1.4	0.0	-0.6	2.0	0.6	-1.0	-0.3	0.3	0.1	-0.4	0.1
Transport and storage	5	-6.9	-22.8	22.2	-3.0	3.6	2.7	8.6	3.4	0.9	3.4	0.0	-0.2	-0.2	0.3
Financial and insurance activities	4	-3.3	-8.4	12.3	0.7	1.9	1.7	2.8	0.4	-0.4	0.5	-0.1	0.2	0.2	0.3
Real estate activities	13	-1.2	-2.4	2.7	0.1	-0.1	0.4	0.8	0.3	0.4	0.5	0.3	0.2	0.1	0.2
Accommodation and catering	3	-17.8	-48.3	89.2	-29.2	-12.4	30.1	43.4	-0.5	-2.2	9.5	0.0	-2.4	0.0	1.1
Information and communication	5	-1.6	-5.8	7.5	1.9	2.2	1.5	2.5	1.5	0.5	1.6	2.4	1.2	0.6	0.7
Scientific and technical activities; administrative and support services	14	-3.7	-13.0	15.0	0.5	-0.4	1.5	2.8	0.7	-0.2	0.8	0.8	0.4	0.2	0.5
Other service activities	3	-11.5	-34.1	39.8	-11.0	-1.7	4.5	24.9	6.6	-0.1	1.9	0.5	0.3	0.0	0.3
<b>Mainly non-market services</b>	22	-5.0	-12.3	20.2	-0.8	0.3	-0.1	1.8	0.2	0.1	-0.2	0.0	0.2	0.2	0.2
<b>Total VA</b>	100	-5.3	-13.6	17.8	-0.9	0.1	1.1	3.2	0.6	-0.1	0.5	0.2	-0.1	0.1	0.3
Taxes and subsidies		-7.5	-13.0	22.5	-1.2	0.1	1.3	3.9	0.0	-1.0	0.5	-0.1	-1.2	0.1	0.2
<b>GDP</b>		-5.5	-13.5	18.3	-0.9	0.1	1.1	3.3	0.6	-0.2	0.5	0.2	-0.2	0.1	0.3

■ Forecast

How to read it: in Q3 2022, the value added of the manufacture of transport equipment branch increased by 4.8%. It is expected to decline by 1.0% in Q4 2022.

Source: INSEE calculations from various sources

## French economic outlook

### Amid tensions over energy prices and production, how do electricity consumption data describe household and enterprise behaviour?

*High-frequency monitoring of household and business electricity consumption, based on Enedis and RTE (Electricity Transmission Network) data, provides useful information for assessing the economic situation in Q4 2022, marked by the uncertainties associated with energy.*

*In the manufacturing industry, excluding the coke and refined petroleum products branch, affected as it is by occasional strikes, consumption by industrial sites connected directly to RTE, adjusted for seasonal variations, fell by 13% in October compared to its average over Q3 2022. During November, the decline intensified, to -16%. While this lower consumption may be partly the result of energy savings with no impact on production, it may also reflect a decline in industrial activity.*

*In October and November, household electricity consumption, adjusted for seasonal variations, looks set to be down 17% compared to the Q3 2022 average. Temperatures were particularly mild in October and November, which probably accounts for about half of this decline. The other half could be the result of changes in behaviour linked to price increases (past or anticipated), and with instructions on energy-saving.*

*As a result of the fall in domestic demand, the electricity trade balance, which was strongly negative during the summer, picked up temporarily in October and November, according to data published daily by RTE.*

Production and consumption were affected by many exogenous factors in Q4, such as strikes in refineries, the continuing unavailability of a large proportion of the country's nuclear plants, geopolitical tensions that kept energy prices at relatively high levels, and mild temperatures in October and November. Given this context, daily data were used to monitor electricity consumption by businesses and households. In fact, in some industrial branches, electricity consumption by businesses has proved to be fairly well correlated to activity<sup>1</sup>, while for households, the available electricity consumption data give a good understanding of this field in the context of national accounting.

#### **Electricity consumption in the manufacturing industry, excluding the manufacture of coke and refined petroleum products, was down 13% in October and 16% in November, compared to Q3**

To monitor companies' electricity consumption, data on the daily withdrawal of electricity from sites connected directly to RTE were used. RTE is the electricity transmission system operator for high voltages above fifty kilovolts. Thus structurally, the 460 sites connected directly to the network have a high electricity consumption: in sectors where the number of companies connected to the network is high, their electricity consumption is sufficiently representative of that of all the companies in the branch. It can then demonstrate a strong correlation with production in this branch. This correlation is highest in the manufacturing industry<sup>2</sup>, and in particular in the sectors of the manufacture of coke and refined petroleum products, manufacture of transport equipment and "other industrial branches" (metallurgy, chemicals, textiles, etc.).

In the "manufacture of coke and refined petroleum products" branch, by monitoring the electricity consumption of companies connected to RTE it is possible to analyse the decline in activity in the sector and the effect of the strikes that touched most of the refineries. In October, electricity consumption<sup>3</sup> by the businesses concerned was 46% down on the average consumption in Q3 2022. This substantial downturn is related to the considerable decline in production in the branch for this same month (industrial production index down 48% compared to the Q3 average). During November, electricity consumption rebounded, reflecting a gradual return to normal activity (► **Figure 1**). Assuming a return to normal in December, all in all, production in the manufacture of coke and refined petroleum products branch is expected to be down considerably across all of Q4 (-23% forecast compared to Q3, or a contribution of -1.2 points to the 2.2% drop in industrial production forecast in Q4).

In the rest of manufacturing industry, electricity consumption by companies connected to RTE also appeared to be well down in October and November: -13% in October<sup>4</sup> then -16% in November, compared to the Q3 2022 average. Consumption declined significantly in the manufacture of transport equipment (-7% in October then -6% in November, compared to the Q3 average) also in "other industrial branches" (-9% in October then -16% in November).

In these two branches, the drop in electricity consumption by companies connected to RTE seems to be too great to be the result only of energy-saving behaviour, without any effect on production. In October, production did indeed decline significantly in the manufacture of transport equipment (-1.5% compared to the average

in Q3) and in “other industrial branches” (-1.0%). Part of this downturn in production can no doubt be interpreted as a consequence of the increase in energy prices which companies in this sector are coping with, especially in “other industrial branches”, which include some sectors that consume large amounts of energy.

In the manufacture of transport equipment and in “other industrial branches”, monthly electricity consumption, as measured from the RTE withdrawal data, is particularly well correlated to their production index (► **Figure 2**). This suggests that in November, production is expected to remain well below its Q3 level (-2.8% in “other industrial branches”). Assuming that in December, production in these two branches retains its November level (in line with activity penalised by energy prices), production would then be in decline across the whole of Q4, by 1.0% for the production of transport equipment

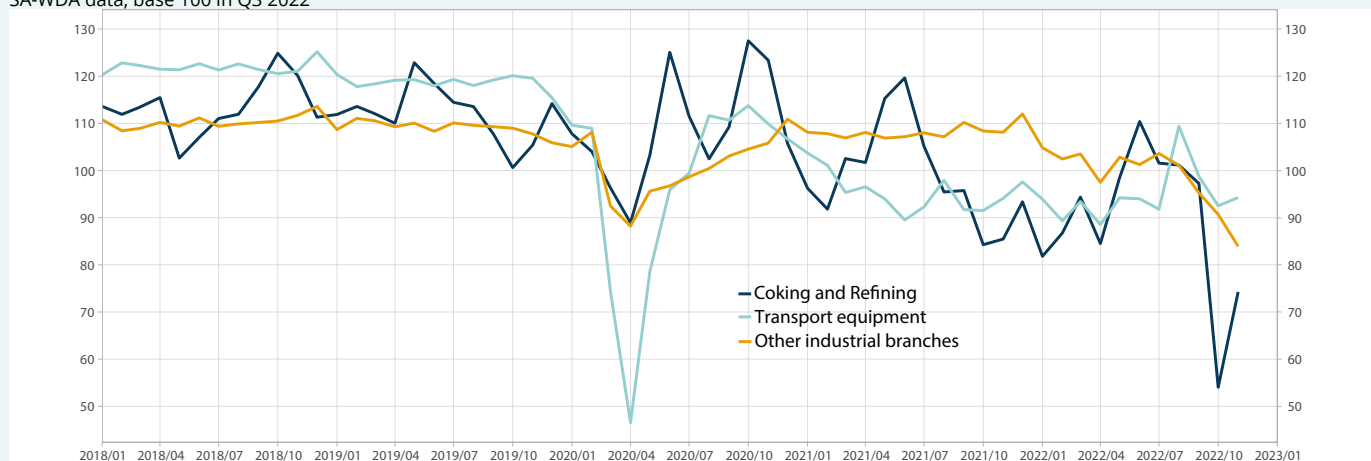
and 1.6% in “other industrial branches”, compared to Q3. These two branches are therefore likely to account for a little less than one point in the drop in industrial production forecast in Q4.

## The mild temperatures in October and November do not fully explain the drop in household electricity consumption

In October, electricity consumption by households within the meaning of national accounting declined by 14% compared to the average observed in Q3. Using daily residential electricity consumption data supplied by Enedis<sup>5</sup>, the leading distributor of electricity in France, households’ overall electricity consumption could be estimated for November. These data<sup>6</sup> suggest that the drop in consumption is likely to continue significantly into November<sup>7</sup>, at 20% below the Q3 2022 average.

### ► 1. Monthly electricity consumption by industrial companies connected directly to RTE, by branch of activity

SA-WDA data, base 100 in Q3 2022



Last point: Novembre 2022.

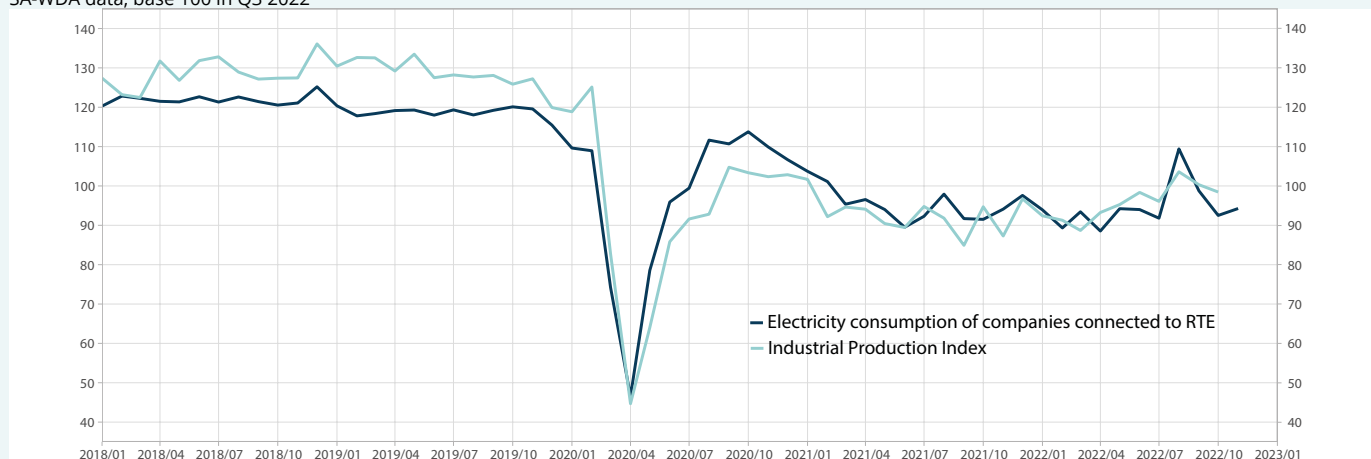
\* “Other industrial branches” include the textile, wood, cardboard, printing, chemicals, rubber and plastics industries and the manufacture of mineral and metallurgical products.

How to read it: within the “Coke and refined petroleum” branch, the electricity consumption of companies connected directly to the RTE network declined significantly in October 2022, dropping by 46% compared to the average consumption in 2018 and 2019.

Source: RTE, INSEE calculations

### ► 2. Industrial production and electricity consumption by companies connected to RTE, in the manufacture of transport equipment

SA-WDA data, base 100 in Q3 2022



Last point: November 2022 for electricity consumption, October 2022 for production.

How to read it: in October 2022, electricity consumption by companies in the “transport equipment” sector connected directly to RTE was 7.5% below the Q3 2022 average.

Source: RTE, INSEE, INSEE calculations

# French economic outlook

This sharp reduction in household electricity consumption came at a time when weather conditions were particularly mild in October and November. By adjusting electricity consumption for variations in the outside temperature (► **Figure 3**), we estimate that in October, 8 percentage points of the 14% decline were probably linked to the favourable weather conditions that month. In November, this contribution is expected to have risen to 9 points (out of 20).

Without the effect of weather conditions, household consumption in October and November would therefore have been 6% and 10% respectively below the average level for Q3 2022. This decline can no doubt be associated with changes in behaviour, due to previous and anticipated increases in electricity prices, uncertainties linked to the energy supply chain, also public encouragement to save energy.

If we assume that in December, weather conditions return to normal<sup>8</sup> but that behavioural effects are maintained, household electricity consumption would decrease by 14% over the whole of Q4. Assuming that household gas consumption falls in the same proportions, their consumption in the “energy, water, waste treatment” branch would fall by around 11% in Q4. This substantial decline would affect total household consumption by around 0.5 points.

## The electricity trade balance depends both on production and domestic demand

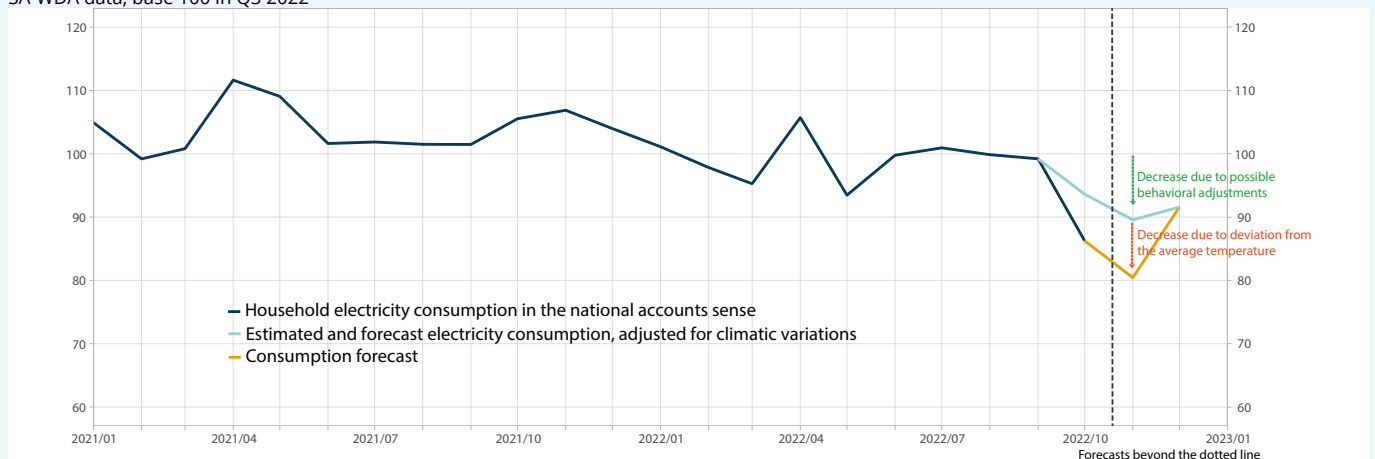
The drop in electricity consumption by companies and households in Q4 has implications for foreign trade in electricity. RTE data on cross-border electricity<sup>9</sup> trading suggest an upturn in the electricity trade balance, which has been in deficit since March 2022 (more electricity imported than exported). This balance therefore returned to surplus once again in November (► **Figure 4**).

Maintenance work in the nuclear plants affected electricity production from February 2022 onwards, which led to an increase in electricity imports to satisfy domestic demand. At this point the electricity trade balance tumbled, remaining in deficit between March and October 2022. The return to a surplus balance in November, after a sizeable reduction in the deficit in October, is probably linked to a reduction in imports of electricity at the start of Q4, in line with the fall in demand for electricity by households and companies and despite a context where electricity production was still reduced because of the maintenance operations being carried out in the nuclear power plants. Assuming that domestic demand picks up more quickly than production capacities at the very end of the year, the electricity trade balance is likely to decline once again. ●

*Émilie Cupillard, Vianney Ducatel, Jérémy Marquis*

### ► 3. Monthly electricity consumption by households, with and without adjustment for climate variations for October and November

SA-WDA data, base 100 in Q3 2022



Last point: October 2022 for consumption data in the national accounts sense; December 2022 for forecasts.

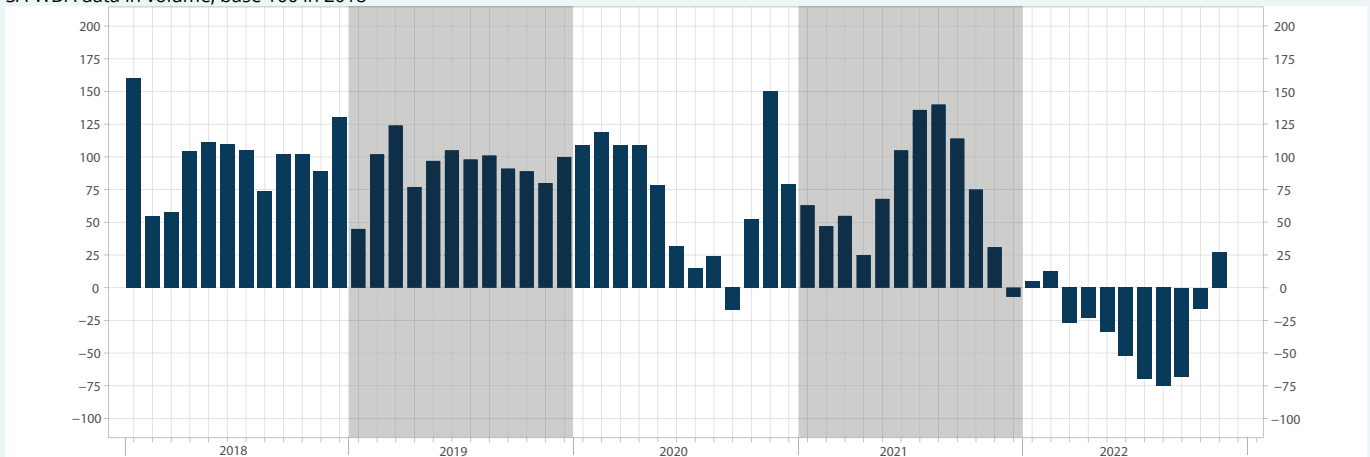
Note: in November 2022, electricity consumption by households would appear to have been 20% lower than its Q3 2022 average. Of this 20% decline, 9 points would seem to be due to the mild temperatures in November.

Source: INSEE, Enedis, INSEE calculations



## ► 4. Monthly electricity foreign trade balance

SA-WDA data in volume, base 100 in 2018



Last point: November 2022.

How to read it: in October 2022, there would appear to be a deficit in the electricity trade balance, at a value of -16, which corresponds to a drop of 116% compared to its 2018 average; imports would thus appear to be greater than exports. In November 2022, there would seem to be a surplus in the electricity trade balance, at a value of 27, which corresponds to a drop of 73% compared to its 2018 average; imports would thus appear to be less than exports.

Source: RTE, INSEE calculations

### Notes

- 1 *Economic outlook* March 2021, "Can electricity consumption by businesses help improve forecasts of activity, especially in a period of crisis?"
- 2 The correlation considered here is calculated in each branch between monthly variations in the industrial production index and in electricity consumption (SA-WDA) by companies connected directly to RTE, between January 2018 and September 2022.
- 3 All the changes mentioned are adjusted for seasonal variations and working days, including those presented later on household consumption.
- 4 This estimate is produced by weighting the decline in electricity consumption in the different branches according to their weight in industrial production.
- 5 [https://db.nomics.world/ENEDIS/ELECTRICITY\\_BALANCE/Profiled\\_residential\\_consumption.FRA.PROFILED\\_RESIDENTIAL\\_CONSUMPTION.ALL.ALL.D](https://db.nomics.world/ENEDIS/ELECTRICITY_BALANCE/Profiled_residential_consumption.FRA.PROFILED_RESIDENTIAL_CONSUMPTION.ALL.ALL.D)
- 6 After adjustment for seasonal variations and working days.
- 7 Estimate based on data covering the first 25 days of the month.
- 8 Based on temperatures observed over the period 2016-2019.
- 9 RTE publishes on a daily basis the balance of electricity-trading schedules between Metropolitan France excluding Corsica and the six countries with which it is intercon-nected: Germany, Belgium, Spain, Italy, the United Kingdom and Switzerland (<https://www.rte-france.com/eco2mix/les-echanges-commerciaux-aux-frontieres>). These data trace the balances of imports and exports instantly, for a quarter of an hour and a given trading partner. By aggregating these balances into a monthly frequency, the electricity trade balance can be estimated in real time. ●

# Foreign trade

In Q3 2022, foreign trade weighed heavily on GDP growth (-0.5 points). Imports accelerated significantly (+3.5% after +1.6% in Q2), driven by manufactured products and to a lesser extent by purchases by French tourists abroad. Exports (+2.0% after +0.9%) are still less vigorous than imports, despite an upswing in exports of manufactured products.

In Q4 2022, imports are expected to slip back (-0.3%), affected by a decline in domestic demand. Production difficulties in the manufacture of coke and refined petroleum products sector are likely to lead to more imports of refined petroleum products, but these would replace imports of crude oil as an input for this sector. Electricity imports are likely to fall back, in line with the decline in the demand for electricity by households and companies and despite a climate where electricity production is reduced (► **Focus** on monitoring electricity consumption). Meanwhile, exports are expected to be mainly driven by one-off movements (naval and aeronautical deliveries), offsetting the reduction in exports of refined petroleum products. Apart from these movements, exports look set to be sluggish, in line with the slowdown in world demand for French products. All in all, exports are expected to increase by 1.0% in Q4 2022, with foreign trade contributing 0.4 points to GDP change.

In Q1 2023, imports are expected to continue their decline (-0.4%), before rebounding in Q2 (+0.8%), in line with the upturn in domestic demand. As difficulties in the manufacture of coke and refined petroleum products sector come to an end, this should lead to reverse movements from those in the previous quarter (upswing in imports of crude oil and drop in imports of refined petroleum products). The upturn in electricity production should result in a decline in imports of electricity once again. Meanwhile exports are expected to decline at the beginning of the year (-0.4% in Q1), despite the recovery in exports of refined petroleum products, due to a downturn in world demand for French products and fewer aeronautical and naval deliveries. Exports are then likely to rebound in Q2 (+1.0% forecast), driven by new aeronautical and naval deliveries. Foreign trade is expected to make a marginal contribution to GDP growth in Q1, then +0.1 points in Q2. ●

### ► 1. France's foreign trade

variation in %, volumes of previous year's chained prices, contributions in points

	Quarterly variations								Annual variations				
	2021				2022				2023		2021	2021	2023 (ovhg)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
<b>Exports</b>													
Total	-0.2	2.6	2.0	3.1	2.0	0.9	2.0	1.0	-0.4	1.0	8.6	8.1	2.4
Manufactured products (66%*)	-2.2	3.0	-2.6	2.5	2.8	0.0	2.8	1.4	-0.6	1.1	7.0	6.0	2.7
<b>Imports</b>													
Total	1.5	2.1	0.9	4.5	1.4	1.6	3.5	-0.3	-0.4	0.8	7.8	8.9	2.0
Manufactured products (70%*)	1.1	1.0	-1.5	5.4	0.3	0.7	3.2	0.6	-1.4	0.9	7.4	6.1	1.4
<b>Contribution of foreign trade to GDP</b>	<b>-0.5</b>	<b>0.1</b>	<b>0.3</b>	<b>-0.5</b>	<b>0.1</b>	<b>-0.2</b>	<b>-0.5</b>	<b>0.4</b>	<b>0.0</b>	<b>0.1</b>	<b>0.1</b>	<b>-0.4</b>	<b>0.0</b>

■ Forecast

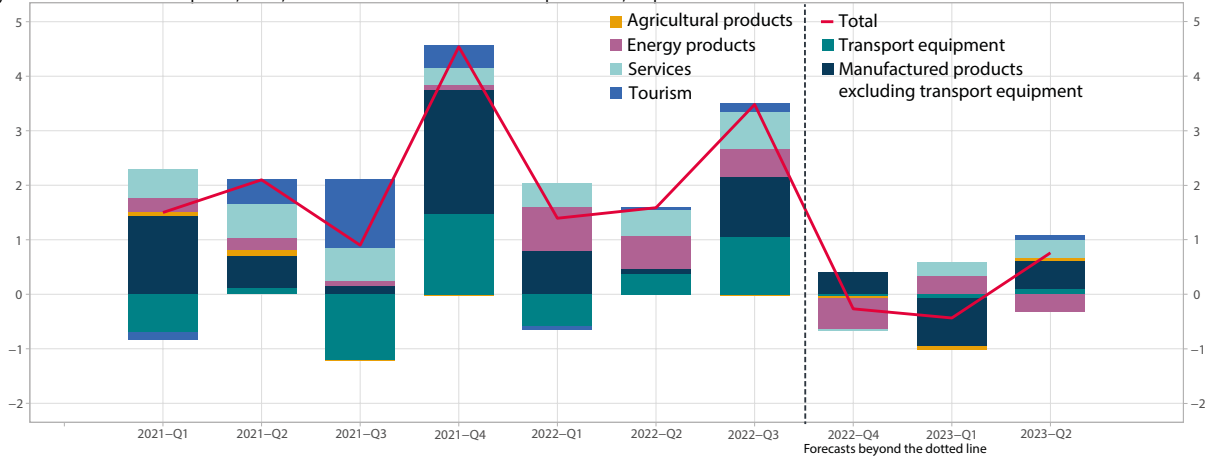
\*Share of exports (or imports) of manufactured products in total exports (or imports), in 2021.

How to read it: French exports would grow by 1.0% in Q4 2022. For the year 2022 as a whole, exports are expected to grow by 8.1% compared to 2021.

Source: INSEE

## ► 2. Imports are likely grow at a moderate pace over the forecasting period

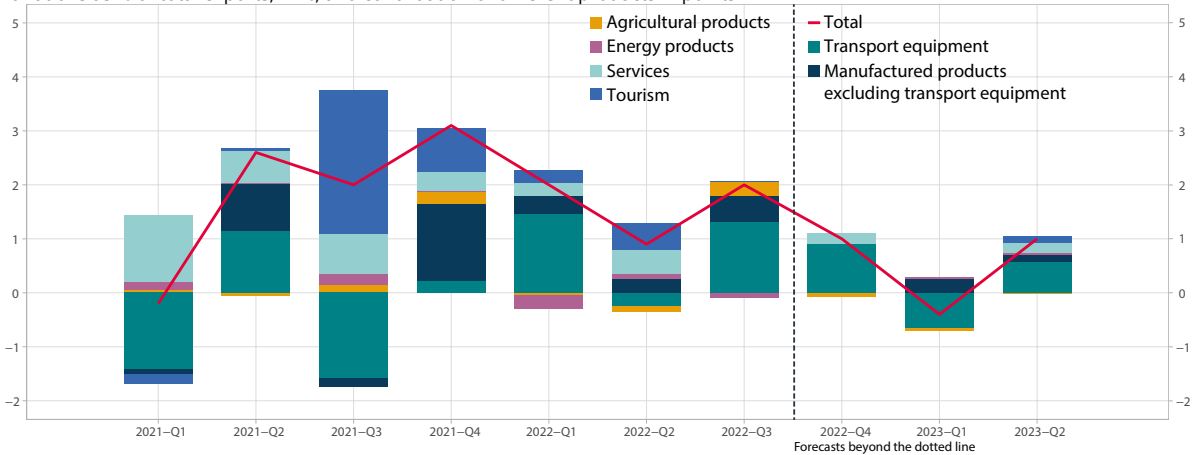
quarterly variations of total imports, in %, and contribution of different products, in points



How to read it: French imports increased by 3.5% in Q3 2022, with imports of services contributing 0.7 percentage points.  
Source: INSEE

## ► 3. Exports look set to move mainly at the pace of aeronautical and naval deliveries

quarterly variations as % of total exports, in %, and contribution of different products in points



How to read it: French exports increased by 2.0% in Q3 2022, with exports of manufactured products excluding transport equipment contributing 0.5 percentage points.  
Source: INSEE

## Employment

In Q3 2022, payroll employment increased overall at the same pace as in the first two quarters of the year: +0.4%. This is a fairly dynamic pace, although only half that of the 2021 quarterly average (► **Figure 1**). At the end of September, payroll employment exceeded its level at the end of 2019 by 931,000 (or +3.6%). It was then above its pre-crisis level in all the major sectors of activity, whether in building construction, the tertiary sector or now in industry (► **Figure 2**). Sandwich contracts, and especially apprenticeship contracts, have made a considerable contribution to this buoyancy in payroll employment since the pre-crisis period, increasing it by about a third (► **Focus** on recent changes in productivity in the Eurozone – Box). At the same time, self-employment also continued to increase significantly, driven by microenterprise creations, and by the end of 2022 is expected to exceed its end of 2019 level by 250,000.

From Q4 2022, payroll employment looks set to slow in all sectors, in the wake of economic activity. However, the increase in sandwich contracts is expected to remain strong. Payroll employment should thus increase by 0.1% over the quarter, then continue at the same pace in Q1 2023, before stabilising. Meanwhile, the momentum in microenterprise creations is expected to run out of steam. All in all, total employment is expected to increase by almost 50,000 in H1 2023, after +186,000 in H2 2022 and +236,000 in H1 2022. By mid-2023, the total number of jobs created since the period before the health crisis should reach around 1.3 million (i.e. +4.4%). ●

### ► 1. Change in payroll employment

in thousand, SA, at the end of the period

	2020				2021				2022				2023		Evolution over 1 year			Evolution since end of 2019		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	2020	2021	2022	End of Dec. 2021	End of Dec. 2022	End of June 2023
<b>Payroll employment</b>	-535	-152	493	-24	167	300	251	141	96	90	103	33	27	12	-217	859	322	642	964	1 003
	-2.1 %	-0.6 %	2.0 %	-0.1 %	0.7 %	1.2 %	1.0 %	0.5 %	0.4 %	0.3 %	0.4 %	0.1 %	0.1 %	0.0 %	-0.8 %	3.4 %	1.2 %	2.5 %	3.7 %	3.9 %
Agriculture	-9	-3	1	15	-3	6	4	0	4	-6	-3	-1	-1	-1	4	8	-6	12	6	4
Industry	-14	-20	-9	-7	10	7	13	9	3	9	16	4	3	2	-50	38	33	-12	21	26
Construction	-7	9	22	15	21	9	13	7	3	2	3	1	1	1	40	49	10	89	98	101
Commercial tertiary sector	-488	-58	341	-79	118	255	192	133	73	76	100	25	19	6	-284	698	275	413	688	714
Tertiary non-trading	-18	-80	138	33	22	24	29	-7	12	8	-13	4	4	4	74	67	11	140	151	159
<b>Self-employment</b>	10	10	10	10	28	28	28	28	25	25	25	25	5	5	42	110	100	152	252	262
<b>All</b>	-525	-141	503	-13	194	328	279	169	121	115	128	58	32	17	-175	969	422	794	1 216	1 265
	-1.8 %	-0.5 %	1.8 %	0.0 %	0.7 %	1.1 %	1.0 %	0.6 %	0.4 %	0.4 %	0.4 %	0.2 %	0.1 %	0.1 %	-0.6 %	3.4 %	1.4 %	2.8 %	4.2 %	4.4 %

■ Forecast

How to read it: in Q3 2022, payroll employment increased by 0.4%, or 103,000 net new jobs.

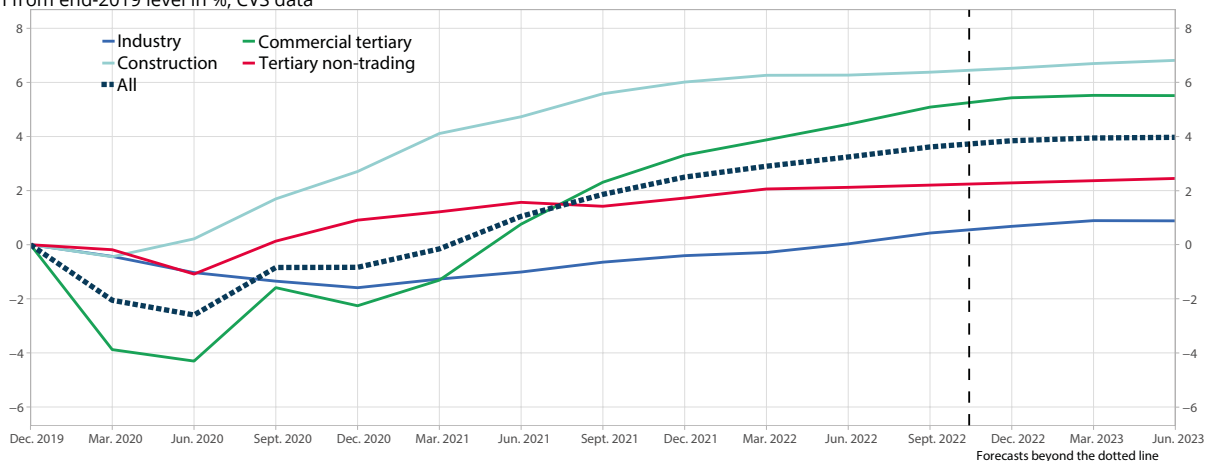
Note: in this table, temporary workers are counted in the commercial tertiary sector.

Scope: France (excluding Mayotte)

Source: INSEE

### ► 2. Payroll employment compared to the end of 2019

deviation from end-2019 level in %, CVS data



Scope: France (excluding Mayotte)

Note: in this graph, temporary workers are counted in the commercial tertiary sector.

How to read it: at the end of September 2022, payroll employment is 3.6% higher than its level at the end of 2019.

Source: INSEE

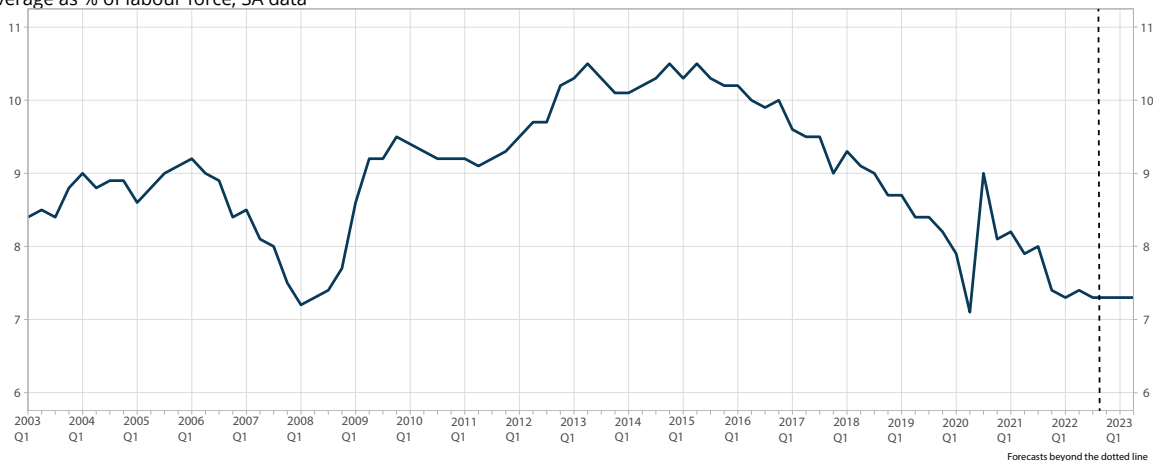
# Unemployment

In Q3 2022, the unemployment rate according to the ILO definition remained virtually stable compared to the previous quarter: -0.1 points, to 7.3% of the labour force (► **Figure 1**). Since Q4 2021, it has fluctuated between 7.3% and 7.4%. This relative stability, despite the momentum of the employment figures (+122,000 in Q3 2022 as a quarterly average, after +263,000 in H1 2022), is the result of sustained growth in the labour force too (+105,000 in Q3 2022, after +281,000 in H1). Both the employment rate (68.3%) and the labour force participation rate (73.7%) of 15-64-year-olds rose in Q3 2022 to their highest levels since INSEE has been measuring them (1975). The dynamism of sandwich contracts has contributed to recent increases in these rates but apart from these contracts, both the employment rate and the labour force participation rate are also at their highest level since 1975.

In Q4 2022, the labour force is expected to continue to increase sharply, before slowing markedly in H1 2023. Given the slowdown also expected in employment, the unemployment rate looks set to remain around 7.3% of the labour force until mid-2023 (► **Figure 2**). ●

## ► 1. Unemployment rate (ILO definition)

quarterly average as % of labour force, SA data



Scope: France (excluding Mayotte), persons aged 15 or over living in ordinary housing.

Source: INSEE, Labour Force Survey

## 2. Change in employment, unemployment and the active population

variation in quarterly average in thousands, SA data

	2020				2021				2022				2023		Cumulative change from Q1 2020 to Q2 2023
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
<b>Employment (1)</b>	-16	-706	405	203	91	261	303	224	145	118	122	93	45	25	1 313
<i>reminder: employment at the end of the period</i>	-525	-141	503	-13	194	328	279	169	121	115	128	58	32	17	1 265
<b>Unemployment (2)</b>	-94	-289	629	-296	39	-54	37	-183	-14	32	-17	0	-18	3	-225
<b>Active population = (1) + (2)</b>	-110	-995	1034	-94	130	207	340	41	131	150	105	93	27	28	1087
<i>Trend labour force (a)</i>	3	5	7	9	8	7	6	6	7	8	9	11	9	8	103
<i>"Pre-crisis" cyclical bending effect (b)</i>	-2	-71	40	20	9	26	30	22	14	12	12	9	4	2	127
<i>Effect of work-linked training on youth activity (c)</i>	0	-1	14	25	31	35	37	26	16	27	36	23	14	17	300
<i>Residue (d)</i>	-112	-929	973	-148	82	139	266	-13	94	104	47	50	0	0	553
<b>Variation in unemployment rate</b>	-0.3	-0.8	1.9	-0.9	0.1	-0.3	0.1	-0.6	-0.1	0.1	-0.1	0.0	0.0	0.0	-0.9
Unemployment rate	7.9	7.1	9.0	8.1	8.2	7.9	8.0	7.4	7.3	7.4	7.3	7.3	7.3	7.3	

■ Forecast

How to read it: in Q3 2022, employment increased by 122,000 on average, unemployment decreased by 17,000 and the active population increased by 105,000. The unemployment decreased by 0.1 points, reaching 7.3%.

Note: Employment corresponds here to total employment (payroll employment including sandwich contracts + self-employment), measured as a quarterly average

(a) Trend based on adjusted 2022 active population projections.

(b) This flexibility effect represents the fact that new workers enter the labour market when the employment situation improves.

(c) Effect based on sandwich contract numbers from DARES, calculations by INSEE.

(d) In 2020 and 2021, the residue covers the specific effect of the health crisis on activity behaviour.

Scope: FRANCE (excluding Mayotte), persons aged 15 or over

Source: INSEE, Labour Force Survey, Quarterly employment estimates

## Consumer prices

The inflationary tensions that began in 2021, primarily over energy, intensified in 2022 due to significant supply constraints, and extended to all other consumption items, especially food, *via* the rise in production prices. After falling in August and again in September, year-on-year variations in consumer prices rose again in October 2022 (6.2% year-on-year). In particular, the prices of petroleum products increased significantly in October, in the context of fuel shortages. The decrease in the “reduction at the pump” in mid-November is expected to cause these prices to rise again by the end of the year. The year-on-year variation in consumer prices is then expected to be 6.6% at the end of 2022, after 6.2% in November, mainly because of energy. All in all, consumer prices look set to rise by an average of 5.3% as an annual variation between 2021 and 2022, an unprecedented rise since the mid-1980s.

At the start of 2023, inflation is expected to continue to rise, reaching 7% year-on-year in January and February, before falling back gradually to around +5.5% in June. The rise in inflation in the first months of the year will probably be driven mainly by energy: end of the reduction at the pump in January (+0.1 inflation points), 15% increase in regulated gas prices in January (+0.2 points) then electricity in February (+0.4 points). In addition, in March the expected increase in the price of tobacco by €50 cents is likely to raise inflation by 0.1 points. Food prices too are expected to remain dynamic, bringing food inflation to almost 13% year-on-year in January. In fact, inflationary tensions on these products are likely to persist due to the low level of inventory reported in the business tendency surveys and the droughts in summer 2022. Agricultural and agri-food production prices also remain high and are likely to rise further, due to the rise in energy prices in these sectors (► **Focus** on the situation for businesses facing energy price hikes), and despite the recent drop in the price of some commodities.

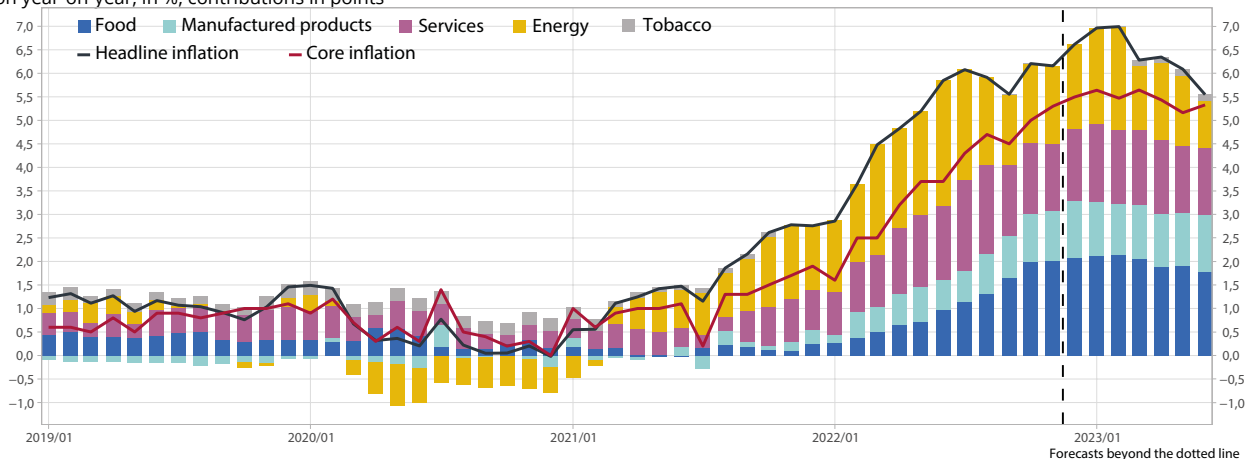
From March 2023, and assuming that the price of a barrel of Brent is €86 over the forecasting period, there is likely to be a decline in inflation as a result of a strong “base effect”: prices would continue to increase month by month but less briskly than a year ago (► **Figure 3**). Energy inflation and food inflation in particular would be expected to decline significantly.

Regarding manufactured products, inflation should remain stable overall at between 4.5% and 5% year-on-year, with the impact of the increase in production prices offset by a base effect moving downwards against the year-on-year figures for prices. Finally, the prices of services also look set to be relatively vigorous (with year-on-year variations almost always above 3%), driven by increases in the price of energy and other inputs, as well as by the successive increases in the minimum wage throughout 2022, in January 2023 and then probably again in the spring. However, year-on-year changes in the price of services could decrease slightly by June 2023, due to the strong momentum of the price of services a year earlier.

It is likely that in H1 2023 core inflation will be largely driven by the rise in the prices of manufactured products, and will fluctuate around 5.5% at the start of the year then fall back slightly to around 5.3% in mid-year. ●

### ► 1. Headline inflation and contributions by item

inflation year-on-year, in %, contributions in points



How to read it: in November, headline inflation was 6.2%. Food contributed 2 points, with energy contributing 1.6 points, manufactured products 1.1 points and services 1.4 points. Core inflation was 5.3% in November.

Source: INSEE

## ► 2. Consumer prices

change in %, contributions in points

CPI groups* (2022 weightings)	Oct. 2022		Nov. 2022		Dec. 2022		Jan. 2023		Mar. 2023		June 2023		Annual averages	
	yoy	cyoy	yoy	cyoy	yoy	cyoy	yoy	cyoy	yoy	cyoy	yoy	cyoy	2021	2022
<b>Food (16.5%)</b>	<b>12.0</b>	<b>2.0</b>	<b>12.1</b>	<b>2.0</b>	<b>12.5</b>	<b>2.1</b>	<b>12.9</b>	<b>2.1</b>	<b>12.6</b>	<b>2.0</b>	<b>10.9</b>	<b>1.8</b>	<b>0.6</b>	<b>6.8</b>
including: fresh food (2.5%)	17.3	0.4	12.7	0.3	12.9	0.3	13.4	0.3	11.6	0.3	14.7	0.4	1.9	8.0
excluding: fresh food (14.0%)	11.1	1.6	12.0	1.7	12.5	1.7	12.8	1.8	12.8	1.8	10.2	1.4	0.4	6.6
<b>Tabacco (2.2%)</b>	<b>0.3</b>	<b>0.0</b>	<b>0.3</b>	<b>0.0</b>	<b>0.3</b>	<b>0.0</b>	<b>0.4</b>	<b>0.0</b>	<b>5.8</b>	<b>0.1</b>	<b>6.8</b>	<b>0.1</b>	<b>5.5</b>	<b>0.1</b>
<b>Manufactured products (24.5%)</b>	<b>4.2</b>	<b>1.0</b>	<b>4.4</b>	<b>1.1</b>	<b>5.0</b>	<b>1.2</b>	<b>4.7</b>	<b>1.1</b>	<b>4.7</b>	<b>1.1</b>	<b>5.0</b>	<b>1.2</b>	<b>0.3</b>	<b>3.0</b>
including : clothing and footwear (3.4%)	2.8	0.1	2.8	0.1	3.2	0.1	4.3	0.1	6.1	0.2	8.8	0.3	0.1	2.7
medical products (3.9%)	-0.6	0.0	-0.7	0.0	-0.9	0.0	-1.0	0.0	-1.6	-0.1	-1.6	-0.1	-1.2	-1.2
other manufactured products (17.1%)	5.6	1.0	5.9	1.0	6.7	1.1	6.2	1.1	5.9	1.0	5.8	1.0	0.7	4.1
<b>Energy (8.9%)</b>	<b>19.1</b>	<b>1.7</b>	<b>18.4</b>	<b>1.6</b>	<b>20.3</b>	<b>1.8</b>	<b>23.1</b>	<b>2.0</b>	<b>14.9</b>	<b>1.4</b>	<b>10.9</b>	<b>1.0</b>	<b>10.5</b>	<b>23.6</b>
including : oil products (4.3%)	19.9	0.9	17.9	0.8	21.5	0.9	21.6	0.9	-1.6	-0.1	-6.1	-0.4	13.5	29.6
<b>Services (48.1%)</b>	<b>3.1</b>	<b>1.5</b>	<b>3.0</b>	<b>1.4</b>	<b>3.2</b>	<b>1.5</b>	<b>3.4</b>	<b>1.7</b>	<b>3.3</b>	<b>1.6</b>	<b>3.0</b>	<b>1.4</b>	<b>1.2</b>	<b>3.0</b>
including : rent-water (8.0%)	2.4	0.2	2.4	0.2	2.7	0.2	2.6	0.2	2.8	0.2	3.3	0.3	1.1	2.0
health services (7.0%)	0.5	0.0	0.1	0.0	0.4	0.0	0.7	0.0	1.0	0.1	0.5	0.0	-0.5	-0.1
transport (2.0%)	10.5	0.2	9.1	0.2	12.2	0.2	20.4	0.4	17.3	0.3	8.2	0.2	3.8	10.7
communications (2.0%)	-1.3	0.0	-1.4	0.0	-1.7	0.0	-1.3	0.0	-1.7	0.0	-0.8	0.0	2.9	0.6
other services (28.8%)	3.9	1.1	3.8	1.1	3.8	1.1	3.6	1.1	3.5	1.0	3.4	1.0	1.2	3.7
<b>All (100%)</b>	<b>6.2</b>	<b>6.2</b>	<b>6.2</b>	<b>6.2</b>	<b>6.6</b>	<b>6.6</b>	<b>7.0</b>	<b>7.0</b>	<b>6.3</b>	<b>6.3</b>	<b>5.5</b>	<b>5.5</b>	<b>1.6</b>	<b>5.3</b>
All excluding energy (91.1%)	5.0	4.5	5.0	4.5	5.3	4.8	5.4	4.9	5.5	4.9	5.0	4.6	0.9	3.6
All excluding tobacco (97.8%)	6.3	6.2	6.3	6.2	6.8	6.6	7.1	7.0	6.3	6.2	5.5	5.4	1.6	5.4
<b>Core inflation** (59.2%)</b>	<b>5.0</b>	<b>3.0</b>	<b>5.3</b>	<b>3.1</b>	<b>5.5</b>	<b>3.3</b>	<b>5.6</b>	<b>3.4</b>	<b>5.6</b>	<b>3.3</b>	<b>5.3</b>	<b>3.1</b>	<b>1.1</b>	<b>3.9</b>

■ Forecast

yoy: year-on-year; cyoy: contribution to the year-on-year value of the overall index

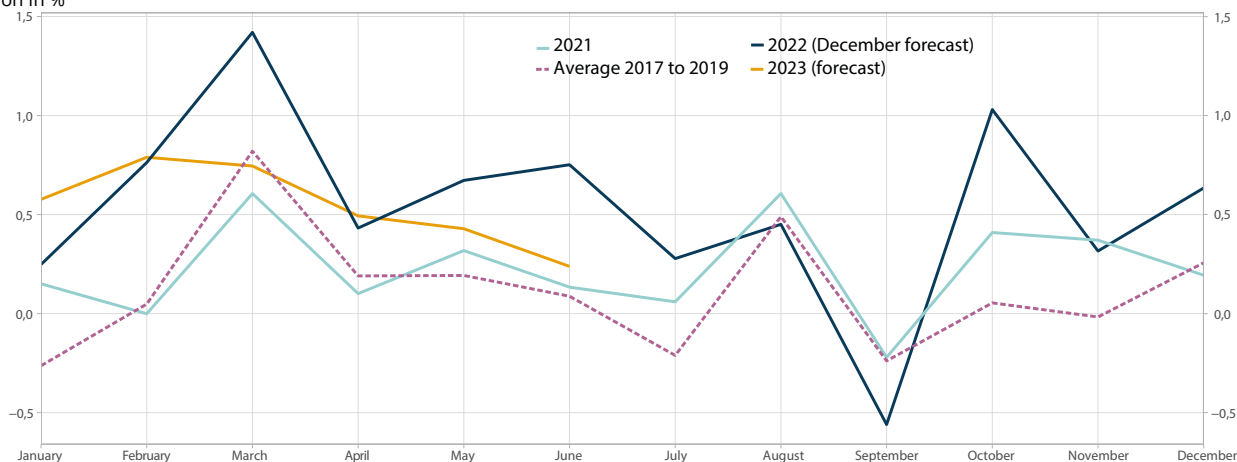
\* Consumer price index (CPI)

\*\* Index excluding public tariffs and products with volatile prices, corrected for tax measures

Source: INSEE

## ► 3. Comparisons of monthly variations in headline inflation in 2023, 2022, 2021 and the 2017-2019 average

evolution in %



How to read it: the consumer price index fell by 0.6% compared to the previous month. In 2021 and on average from 2017 to 2019, this decline was 0.2%.

Source: INSEE

## Wages

In Q3 2022, the average wage per capita (SMPT) in the non-agricultural market branches continued to rise steadily (+0.9% after +1.0% in the previous quarter, ► [Figure 1](#)), in a context of high inflation which favoured wage renegotiations and led to an automatic revision of the minimum wage (SMIC) in August (+2.01%). Since 1<sup>st</sup> July, the SMPT has also been driven by the introduction of the value sharing bonus (PPV), which replaced the extraordinary purchasing power bonus mechanism (PEPA). This allows employers to pay out, under certain conditions and between July 2022 and December 2023, up to 3,000 euros in bonuses (6,000 euros in the event of a collective incentive or profit-sharing agreement), all tax-exempt and exempt from social contributions. In Q4, the SMPT is likely to accelerate significantly (+1.7%) with the continuing rise in prices and the ramping up of the PPV.

On average across the whole of 2022, the SMPT is expected to increase by 5.6% in nominal terms and by 0.3% in real terms, given the dynamism of prices. However, 2.2 points of this rise is likely to be due to the automatic decline in the use of short-time working compared to the level in 2021 when it was still high, and when the allowances paid were not considered as wages. Apart from this automatic effect, real SMPT is expected to decline in 2022 (-1.9%), and likewise the real basic monthly wage (SMB<sup>1</sup>). Like the acceleration of inflation since the 1980s, the scale of this decline looks set to be unprecedented since these indicators came into being, both for the real SMPT (if we exclude the automatic drop associated with short-term working during the lockdowns in 2020) and for the real SMB.

In H1 2023, the buoyancy of nominal wages is expected to continue: +1.2% forecast in Q1 then +1.1% in Q2 for the SMPT in the non-agricultural market branches. It is likely that this momentum will be boosted when the increase in consumer prices is taken into account in wage negotiations at the beginning of the year and when the minimum wage rises once again (automatic increase of +1.8% in January and a possible further increase of at least 2% at some point in the spring). However, the rise in the SMPT is expected to only partially offset the rise in prices, with the result that in H1 2023, the real SMPT is likely to fall once again. In Q2 2023, this decline is expected to reach -2.5% year-on-year (► [Figure 2](#)). As usual in the *Economic Outlook*, these forecasts for the purchasing power of wages are produced using household consumption as a deflator in a framework consistent with the quarterly national accounts. This differs from the consumer price index, a reference tool for measuring inflation (CPI; ► [Box](#) in the *Household Income* sheet). If the CPI were used as a deflator, the drop in the purchasing power of wages over one year would be less by mid-2023.

In general government, the nominal SMPT is expected to increase by 4.1% on average in 2022, after +2.2% in 2021, driven mainly by the review of category C personnel wages and of the index point on 1<sup>st</sup> July (+3.5%, which would then contribute at least 2 points to the increase in general government SMPT). However, as in the private sector, the purchasing power of the SMPT in general government is expected to slip back in 2022 (-1.1% forecast as an annual average). At the beginning of 2023, the general government SMPT is likely to continue to weaken in real terms: the annual growth overhang is expected to be -3.3% by mid-year. ●

<sup>1</sup> The SMB corresponds to the core component of the SMPT, alongside the short-term component which was particularly affected by the health crisis.

### ► 1. Variation in the average wage per capita (SMPT) and the basic monthly wage (SMB)

changes in %, seasonally adjusted data

	Quarterly growth rates										Average annual change				
	2021				2022				2023		2019	2020	2021	2022	2023 (ovhg)
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2					
Average wage per capita (SMPT) in non-agricultural market branches	0.0	-0.1	4.8	0.7	1.1	1.0	0.9	1.7	1.2	1.1	2.3	-4.4	5.6	5.6	4.0
Basic monthly wage (SMB)	0.3	0.3	0.5	0.7	0.8	1.1	1.1	1.2	1.3	1.1	1.7	1.5	1.5	3.3	3.9
SMPT in general government											1.4	2.6	2.2	4.1	2.9
Real SMPT* in the non-agricultural market branches	-0.6	-0.5	4.1	-0.1	-0.2	-1.0	-0.8	-0.6	-1.2	0.0	1.5	-5.3	3.9	0.3	-2.2
Real SMB*	-0.4	0.0	-0.2	-0.1	-0.5	-0.9	-0.6	-1.0	-1.1	0.0	0.9	0.6	-0.1	-1.9	-2.3
Real SMPT* in general government											0.5	1.7	0.6	-1.1	-3.3
Real SMPT** in non-agricultural market branches	-0.6	-0.4	4.0	-0.3	-0.4	-0.9	-0.5	0.2	-0.7	-0.1	1.2	-4.9	3.8	0.3	-1.0
Real SMB**	-0.3	0.0	-0.4	-0.3	-0.7	-0.8	-0.3	-0.3	-0.6	-0.1	0.6	1.0	-0.1	-1.9	-1.2
Real SMPT** in general government											0.2	2.1	0.6	-1.1	-2.1

■ Forecast

\* in the sense of the household consumption price (quarterly national accounts).

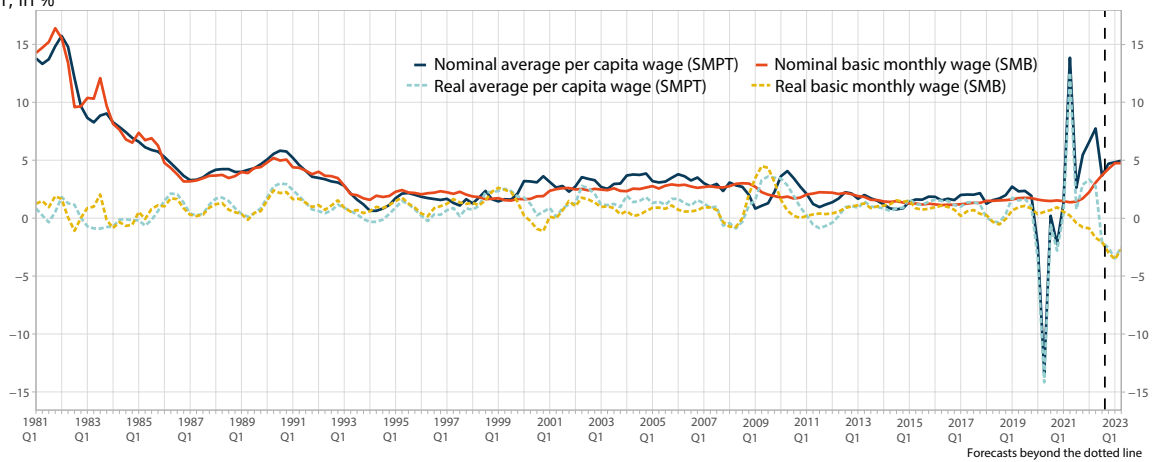
\*\* in the sense of the CPI - household consumption price index.

How to read it: in Q4 2022, the basic monthly wage (SMB) would grow by 1.2% compared to the previous quarter.

Source: DARES, INSEE



## ► 2. Nominal and real changes in average wage per capita (SMPT) and basic monthly wage (SMB) year-on-year, in %



\* in the household consumption price sense (quarterly national accounts)  
 Scope: non-agricultural market sector.  
 How to read it: in Q4 2022, year-on-year growth in nominal SMPT would be 4.7%  
 Source: INSEE

# Household income

In Q3 2022, household gross disposable income (GDI) accelerated (+2.6% after +1.1% in Q2), driven by the buoyancy of earned income (increase in the minimum wage (SMIC) in August, review of the index point value for civil service personnel, introduction of PPV, the value sharing bonus) but also by the increase in social benefits (one-off back-to-school bonus, increase in several benefits). Thus, despite some particularly dynamic household consumer prices –boosted further by the rise in consumer prices in financial services (► **Box**)– purchasing power per consumption unit bounced back (+0.8% after -1.0%).

In Q4 2022, it is likely that household GDI will continue to be driven by earned income, but also as a result of the increase in supplementary retirement pensions and support measures, in particular the abolition of the television and radio licence fee, the continuing reduction in housing tax and the exceptional energy cheque. As a result, purchasing power is expected to improve at the end of the year, at a similar pace to Q3. Across the whole of 2022 and given its decline in H1, purchasing power overall is likely to be virtually stable (-0.1%) and is expected to drop by about 0.6% per consumption unit, penalised by the strong acceleration in prices.

In H1 2023, household GDI is likely to slow. Earned income is certainly expected to be less dynamic, due mainly to the slowdown in employment. Meanwhile, social benefits should continue to increase at the beginning of the year, sustained by a review of some of these benefits (especially basic pensions) and the payment of the fuel allowance, but they may then fall back in Q2 as a reaction to this payment. As a result of the momentum in consumer prices, especially in Q1, purchasing power per consumption unit is set to slip back (-1.2% in Q1 then -0.5% in Q2).

For 2023, the mid-year overhang for change in purchasing power (i.e. the annual change forecast if purchasing power in H2 remained frozen at the level forecast for Q2) is expected to be negative (-0.6%, i.e. -0.9% per consumption unit). However, this mid-year overhang does not anticipate variation in purchasing power over the whole of 2023 as, by definition, it does not include possible shifts in GDI and consumer prices in H2. ●

### ► 1. Components of household gross disposable income

variations in %

	2021				Quarterly changes				2023		Annual changes			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	2020	2021	2022	2023 (ovhg)
<b>Gross disposable income (100%)</b>	-0.4	0.5	1.6	2.2	-0.4	1.1	2.6	3.1	1.3	0.7	1.1	4.0	5.2	5.8
including:														
Earned income (72%)	0.5	0.7	4.2	1.4	1.4	1.3	1.9	1.5	1.0	0.9	-3.8	7.2	7.2	4.2
Gross wages and salaries (64%)	0.6	0.8	5.0	1.6	1.5	1.4	1.8	1.7	1.1	1.0	-3.9	7.4	7.9	4.4
GOS of sole proprietors* (8%)	-0.1	-0.1	-2.2	-0.1	1.1	0.4	2.1	0.3	0.4	0.5	-2.9	6.0	1.3	2.2
Social benefits in cash and other transferts (35%)	0.0	0.1	-2.8	2.7	-1.6	0.1	2.9	5.9	1.8	-1.0	9.2	-1.1	1.4	4.1
GOS of "pure" households (14%)	-0.2	0.5	1.0	1.4	-0.3	1.7	4.0	1.0	3.0	2.3	0.8	2.2	4.9	8.0
Property income (6%)	1.6	0.5	1.9	3.4	3.3	3.5	4.0	3.8	4.0	4.1	-7.8	6.9	13.1	13.3
Social contributions and taxes (-27%)	3.2	0.3	2.1	0.6	3.8	1.0	1.9	-2.4	2.1	0.6	-3.5	4.6	6.5	1.8
<b>Household consumer prices</b>	<b>0.7</b>	<b>0.3</b>	<b>0.7</b>	<b>0.8</b>	<b>1.3</b>	<b>2.0</b>	<b>1.7</b>	<b>2.3</b>	<b>2.4</b>	<b>1.1</b>	<b>0.9</b>	<b>1.6</b>	<b>5.3</b>	<b>6.4**</b>
<b>Purchasing power of gross disposable income</b>	<b>-1.1</b>	<b>0.2</b>	<b>0.9</b>	<b>1.4</b>	<b>-1.6</b>	<b>-0.9</b>	<b>0.9</b>	<b>0.8</b>	<b>-1.1</b>	<b>-0.3</b>	<b>0.2</b>	<b>2.3</b>	<b>-0.1</b>	<b>-0.6</b>
<b>Purchasing power per consumption unit</b>	<b>-1.2</b>	<b>0.1</b>	<b>0.8</b>	<b>1.3</b>	<b>-1.8</b>	<b>-1.0</b>	<b>0.8</b>	<b>0.7</b>	<b>-1.2</b>	<b>-0.5</b>	<b>-0.3</b>	<b>1.9</b>	<b>-0.6</b>	<b>-0.9</b>

■ Forecast

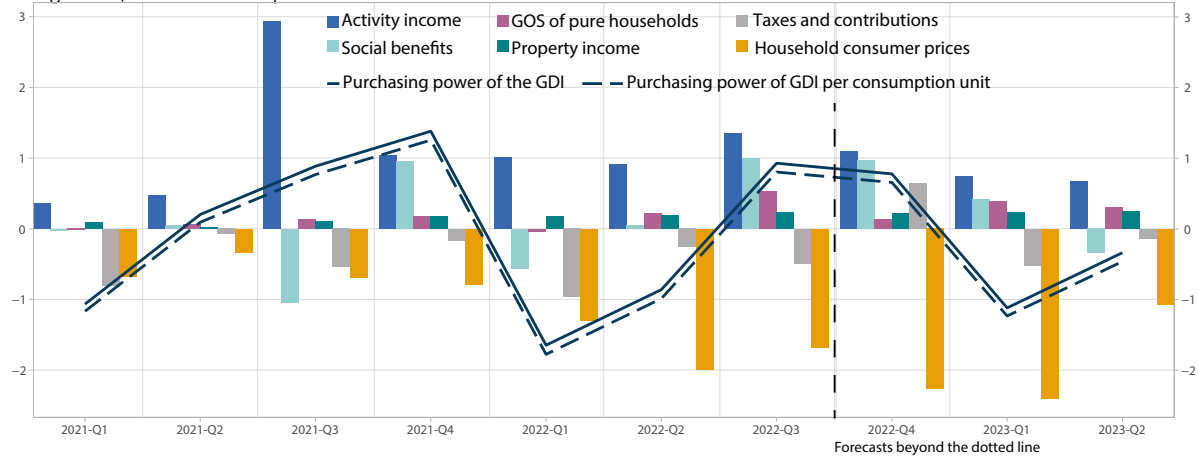
\* the gross operating surplus (GOS) of sole proprietors is the balance of the operating account of sole proprietorships. This is mixed income as it remunerates work carried out by the owner of the sole proprietorship, and possibly members of their family, but it also contains profit made as a sole proprietor.

\*\* the 2023 mid-year overhang for household consumer prices differs from the CPI overhang because of the accounting effect of the rise in interbank rates (► **Box**). How to read it: after an increase of 2.6% in the third quarter of 2022, household gross disposable income would continue to rise in the fourth quarter (+3.1%). Note: figures in brackets give the structure for 2019.

Source: INSEE

## ► 2. Quarterly variation in purchasing power of household gross disposable income (GDI) and its main contributions

quarterly changes in %, contributions in points

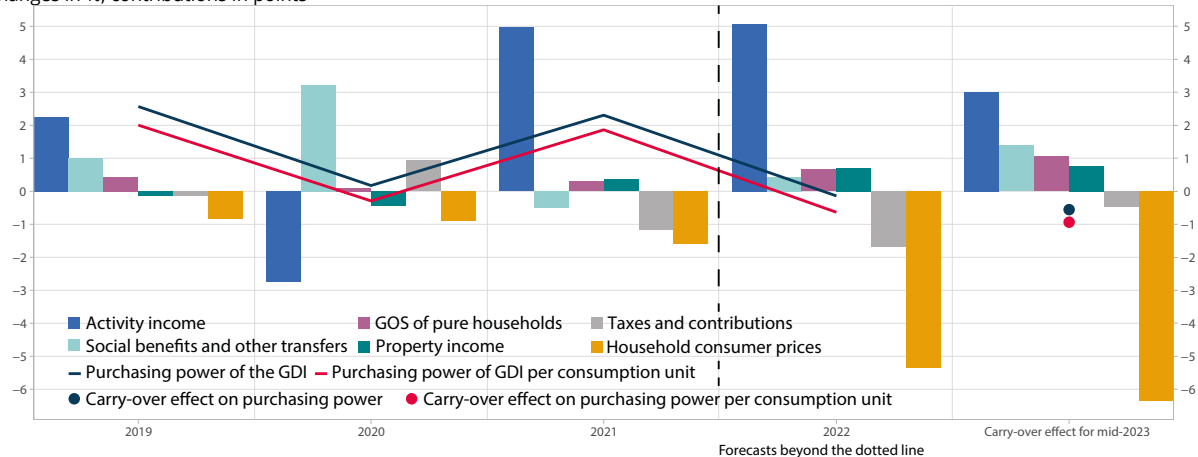


How to read it: the purchasing power of household GDI per consumption unit would increase by 0.8% in Q4 2022. The main contribution to this development would be that of household consumption prices, which would amount to -2.3 points.

Source: INSEE

## ► 3. Annual variation in purchasing power of household gross disposable income (GDI) and its main contributions

annual changes in %, contributions in points

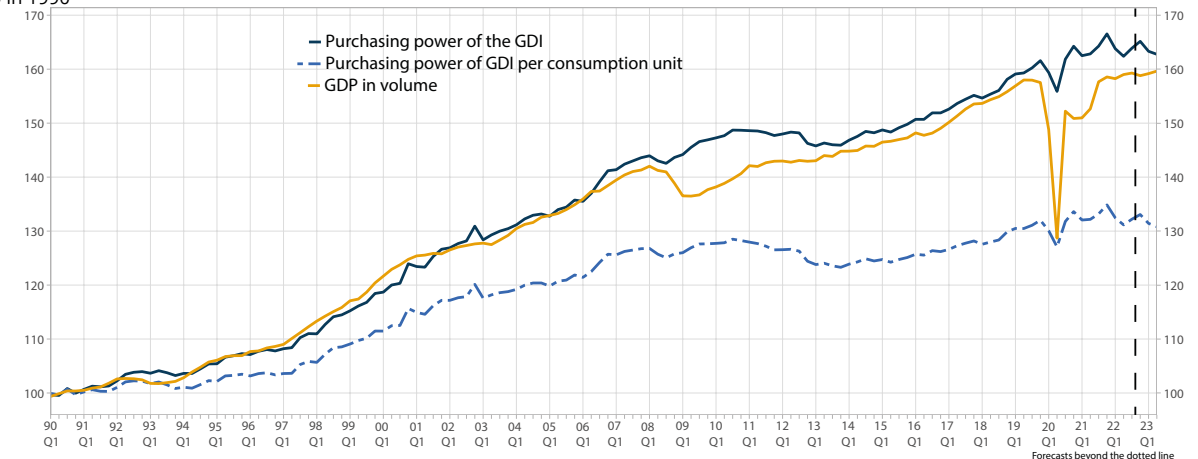


How to read it: the purchasing power of household GDI per consumption unit would decrease by 0.6% in 2022. The main contribution to this development would be that of household consumption prices, which would amount to -5.3 points.

Source: INSEE

## ► 4. Change in purchasing power of household gross disposable income (GDI) and of GDP since 1990

base 100 in 1990



Source: INSEE

### Accounting effect of the rise in interbank rates on household income and consumer prices

In national accounting, interest received and paid by households is recorded as if deposits and loans were paid based on the interbank refinancing rate. In practice, however, this rate is different from the effective rates that households encounter –which are generally higher for loans and lower for deposits, although in recent years the refinancing rate for deposits has been less than the effective rates. In fact, the difference between the interbank refinancing rate and the effective rates observed by households represents the margins operated by financial institutions on the deposits or loans they grant, called Financial Intermediation Service Indirectly Measured (FISIM) in the national accounts. It can therefore be seen as the cost paid by households to access financial intermediation services. This cost is therefore added to household consumption for their deposits and their consumer credit, and to intermediate consumption for owner households for their mortgages.<sup>1</sup> These adjustments and those made to interest received and paid ultimately cancel each other out in household savings.

The ECB raised its base interest rates in July 2022 (+50 base points), then again in September (+75 points) and in October (+75 points), thereby significantly increasing interbank refinancing rates. In the context of a rapid and sharp rise in the interbank refinancing rate, the effective rates observed by households do not change as quickly: the apparent rate on loans depends mainly on previous loans, whereas the rates on deposits are partly regulated, with some being fixed (e.g. the longstanding PEL savings account) or calculated according to rules involving delayed changes in interbank rates (e.g. Livret A). These different movements have an impact on household disposable income and also on consumer prices.

Given the recording rules, the rise in the interbank refinancing rate is reflected in accounting terms in household disposable income, by a contemporaneous and significant rise in interest paid and received. However, the sluggishness of apparent rates strongly modifies bank intermediation margins, and hence the price of financial services:

- for consumer credit loans, the intermediation margin is reduced, with the interbank rate catching up with or even exceeding credit rates, which contributes to reducing household consumer prices in financial services;
- for household deposits, on the other hand, the intermediation margin increases, with the refinancing rate again becoming higher than the rates for rewarding savings, which contributes to increasing household consumer prices in financial services. As households' deposits are greater than their consumer credit loans, this effect dominates the previous one and overall, household consumer prices in financial services increase;
- for household mortgages, the margin is reduced, but this is not reflected in accounting terms in household consumer prices. The costs associated with home ownership fall, which supports owner households' gross operating surplus and offsets the increase in interest paid for this purpose calculated with the interbank rate.

Ultimately, given the scale of deposits held by households compared to their consumer loans, the rise in interbank rates translates into an increase in household disposable income and, on the other hand, by an increase in the price of financial services consumed by households. Opposite movements were able to take place during the financial crisis of 2008, when the ECB severely reduced its base interest rates.

.../...

<sup>1</sup> In fact these are intermediate consumptions of these households' production of housing services.

In addition, the rise in the price of financial services, following the increase in interbank rates, resulted in household consumer prices that were more dynamic, in terms of national accounting, than the consumer price index (CPI). The momentum of household consumer prices in terms of the national accounts is generally similar to that of the CPI (adjusted for seasonal variations). Differences may appear, however, when there are strong movements in specific prices: thus in H1 2022, the rise in energy and food prices resulted in a more pronounced buoyancy in the CPI than in household consumer prices, due to the lower weight given to energy and food in household consumption in terms of national accounting (which includes imputed rents, for example, which are not present in the CPI). Meanwhile, FISIM prices are included in household consumer prices within the meaning of national accounting, but not in the CPI basket of goods: an increase in these prices due to the rise in interbank rates therefore drives the dynamics of household consumer prices, but without being reflected in the CPI. Thus in Q3 2022, household consumer prices within the meaning of national accounting increased more quickly than the CPI (Figure). The same is expected in Q4 2022 and in H1 2023. ●

## ► Consumer price index (SA) and household consumer prices (quarterly accounts)

quarterly changes in %

	2021				2022				2023		2021	2022	2023 ovhg
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q3	Q4			
Consumer price index (SA)	0.7	0.5	0.7	0.8	1.7	2.1	1.2	1.5	1.9	1.2	1.6	5.3	5.1
Household consumption prices (quarterly accounts)	0.7	0.3	0.7	0.8	1.3	2.0	1.7	2.3	2.4	1.1	1.6	5.3	6.4

Source: INSEE

# Household consumption and investment

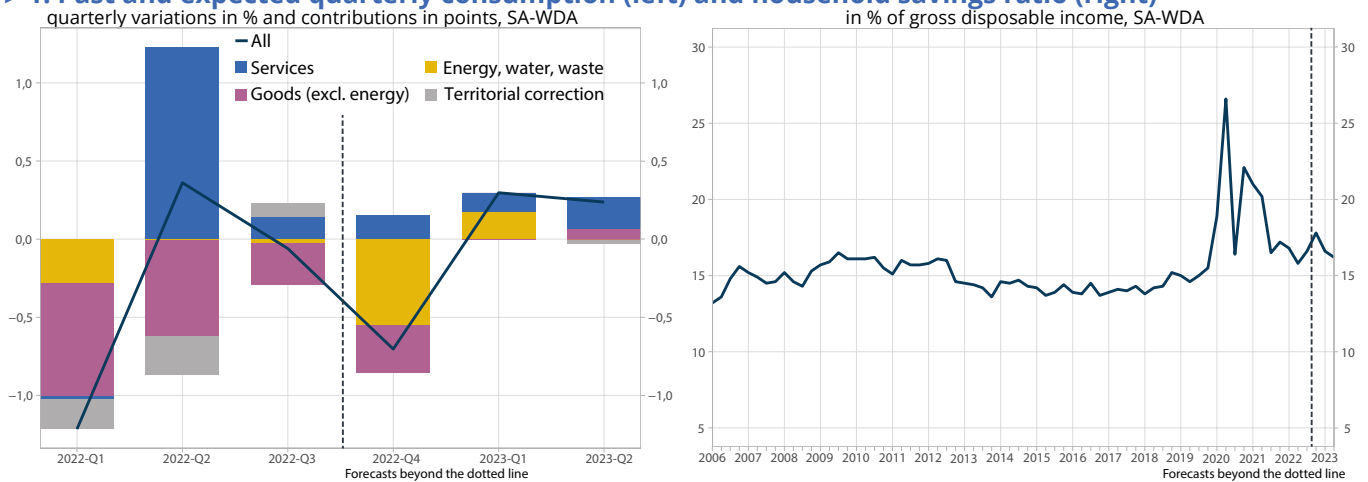
In Q3 2022, household consumption remained virtually stable (-0.1%) compared to the previous quarter, with spending on goods falling for the third consecutive quarter, and the recovery in services weakening. Regarding goods, purchases of transport equipment rebounded –after five quarters of decline– and the same for fuel (driven by a very dynamic September), but inflation continued to affect purchases of food products, down substantially since Q1. On the services side, the strong catch-up effects measured in Q2 lessened in transport services and accommodation-catering. The household savings ratio increased in Q3, due to this stability in consumption and an increase in purchasing power in this quarter.

In Q4 2022, household consumption is expected to fall back considerably (-0.7%). Energy consumption (electricity and gas) is likely to decline significantly, due to the mild weather in October-November and changes in behaviour as a result of price hikes, and more generally because of uncertainties linked to the energy context (► **Focus** on electricity consumption). It is likely that spending on food products will continue to decline, in a context of high inflation. Bank card transactions indicate a decrease in the consumption of accommodation-catering services in October, with no clear rise in November, suggesting a downturn in this spending across the quarter. Consumption of coke and refined petroleum products is likely to be down, due to the substantial decline in purchases of heating oil and despite stability in fuel consumption, affected by stocking then destocking phenomena linked with the period of strikes in the refineries (► **Focus** on supply chain difficulties in petrol stations). In this context where consumption is expected to be in decline, the savings ratio is likely to increase compared to the previous quarter, also driven by rising purchasing power.

In H1 2023, household consumption is likely to be a little vigorous (+0.4% forecast in Q1 then +0.2% in Q2). Concerning goods, consumption is expected to pick up in Q1. Assuming temperatures in line with seasonal norms, gas and electricity consumption look set to rebound, despite the increase in regulated tariffs scheduled for early 2023, but are unlikely to offset the sharp drop expected in Q4 2022. Moderation behaviour will probably continue to temper energy consumption. Food purchases are expected to see a slight rebound effect on average over the half-year, after four quarters of decline. In services, household consumption is likely to follow trend changes, although tempered by stable spending in accommodation-catering in Q1. The savings ratio is expected to fall back in H1 2023, in line with a declining purchasing power. However, it is likely to remain above its pre-health crisis level.

Finally, household investment, which declined in Q3 2022, is likely to continue to fall back in Q4 and also in H1 2023. After fairly substantial growth in 2021, the production of individual housing slowed in H1 2022, slipped back in Q3 and is likely to continue to decline at the end of the year. This downturn is expected to intensify in H1 2023, contributing to the decline in household investment. Investment in services ran out of steam in Q3 in line with a less dynamic real estate market, and looks set to continue to decline over the forecasting period. ●

## ► 1. Past and expected quarterly consumption (left) and household savings ratio (right)



How to read it: in Q4 2022, household consumption is expected to decrease by 0.7% compared to the previous quarter. The household savings ratio is expected to rise by 17.8% of gross disposable income.

Source: INSEE

## ► 2. Estimated and projected quarterly household consumption

quarterly and annual variations, in %, SA-WDA

Products	weight*	2021				2022				2023		2021	2022	2023 ovhg
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
<b>Agricultural products</b>	3 %	0.2	-3.9	-1.0	2.5	-2.1	-0.6	-1.7	-1.8	0.3	0.5	-2.6	-3.4	-1.7
<b>Manufactured products</b>	40 %	2.2	-3.5	3.9	-0.3	-1.7	-1.5	-0.6	-0.7	0.2	-0.1	4.4	-2.5	-1.1
Food products	15 %	0.5	-2.5	0.5	0.3	-1.4	-2.6	-1.7	-1.6	-0.2	0.3	-0.5	-4.7	-2.7
Coke and refined petroleum	4 %	10.2	-2.1	10.4	0.2	-2.9	-2.2	1.1	-0.7	-0.2	-0.4	14.1	0.2	-1.0
Capital goods	3 %	1.3	-3.6	-0.6	-2.6	0.1	-0.5	1.1	-1.1	0.1	0.0	6.9	-3.1	-0.2
Transport equipment	6 %	1.2	-2.1	-1.1	-0.1	-2.0	-2.9	1.0	0.4	0.0	0.0	5.4	-4.7	0.0
Other industrial products	12 %	3.3	-5.9	10.2	-0.8	-2.0	0.4	-0.8	0.1	0.2	0.2	7.6	0.6	0.1
<b>Energy, water, waste</b>	5 %	-1.4	5.1	-4.2	2.0	-5.4	-0.1	-0.4	-11.4	4.0	0.0	4.2	-7.8	-5.4
<b>Construction</b>	2 %	-2.6	7.9	0.2	-0.5	-3.2	-3.2	-3.2	-1.2	-0.8	-0.6	13.8	-5.9	-4.6
<b>Trade**</b>	1 %	3.2	1.2	0.6	1.1	-1.2	-1.0	-1.4	0.0	-0.3	-0.3	10.5	-1.2	-1.5
<b>Market services excluding trade</b>	46 %	-1.5	5.1	11.5	1.2	0.2	2.9	0.4	0.3	0.3	0.4	5.7	10.4	1.7
Transport	4 %	7.1	6.6	39.8	7.6	3.4	6.2	0.4	-0.3	0.0	0.5	16.3	34.7	1.8
Accommodation and food	8 %	-21.5	44.3	59.5	-1.0	-2.4	13.0	0.1	-0.6	0.0	0.5	15.3	38.8	2.9
Information-communication	3 %	-0.4	1.6	2.2	0.8	0.2	-0.7	1.7	0.7	0.2	0.2	2.5	2.8	1.6
Financial services	6 %	1.1	0.7	0.8	0.3	0.2	0.3	0.3	0.6	0.5	0.4	3.0	1.5	1.4
Real estate services	19 %	0.8	0.5	0.2	0.6	0.3	0.4	0.2	0.4	0.4	0.4	1.5	1.4	1.1
Business services	2 %	0.3	4.1	7.0	1.6	1.0	0.5	0.0	0.8	0.6	0.4	11.2	7.3	1.7
Household services	4 %	-1.1	3.8	24.9	6.0	0.9	2.5	1.0	0.6	0.0	0.5	14.2	20.8	2.0
<b>Non-market services</b>	5 %	2.6	0.6	1.3	2.3	-0.1	-0.6	0.4	0.9	0.4	0.4	11.8	2.3	1.5
<b>Territorial correction</b>	-1 %	-3.9	-57.8	412.7	23.4	18.1	19.5	-6.3	0.0	0.0	2.0	16.6	123.5	2.5
Imports of tourism services		-4.5	15.7	38.4	9.4	-0.5	1.8	3.9	0.0	0.0	2.0	17.7	30.9	3.9
Exports of tourism services		-4.4	1.0	69.6	13.0	4.6	7.3	0.4	0.0	0.0	2.0	17.5	51.3	3.4
<b>Total</b>	<b>100 %</b>	<b>0.4</b>	<b>1.2</b>	<b>5.6</b>	<b>0.5</b>	<b>-1.2</b>	<b>0.4</b>	<b>-0.1</b>	<b>-0.7</b>	<b>0.4</b>	<b>0.2</b>	<b>5.2</b>	<b>2.2</b>	<b>0.0</b>

\* weight in household final consumption expenditure in current euros in Q4 2019.

\*\* this item corresponds to sale and repair of motor vehicles and motorbikes. Expenditure in retail trade excluding motor vehicles and motorbikes is allocated to the corresponding products.

■ Forecast

How to read it: In Q4 2022, household consumption of energy, water and waste would decrease by 11.4% compared to the previous quarter.

Source: INSEE

# French economic outlook

## ► 3. Household consumption, investment and savings ratio

quarterly changes, in % (unless otherwise stated), SA-WDA

	2021				2022				2023		2021*	2022*	2023* ovhg
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
<b>Consumption:</b>													
quarterly changes	0.4	1.2	5.6	0.5	-1.2	0.4	-0.1	-0.7	0.4	0.2	5.2	2.2	0.0
difference to Q4 2019	-5.9	-4.8	0.5	1.0	-0.2	0.1	0.1	-0.6	-0.3	-0.1	-	-	-
<b>Savings ratio:</b>													
as % of gross disposable income	21.0	20.2	16.5	17.2	16.8	15.8	16.6	17.8	16.6	16.2	18.7	16.8	16.3
difference in points to Q4 2019	5.5	4.7	1.0	1.7	1.3	0.3	1.1	2.3	1.1	0.7	-	-	-
<b>Investment:</b>													
quarterly changes	0.3	4.0	1.2	-0.6	0.1	0.0	-0.7	-0.5	-0.9	-1.1	17.0	0.7	-2.4
difference to Q4 2019	-1.6	2.4	3.6	2.9	3.0	3.0	2.3	1.8	0.9	-0.2	-	-	-

■ Forecast

\* for the last three columns: annual variations in household consumption and investment, average annual savings ratio level.

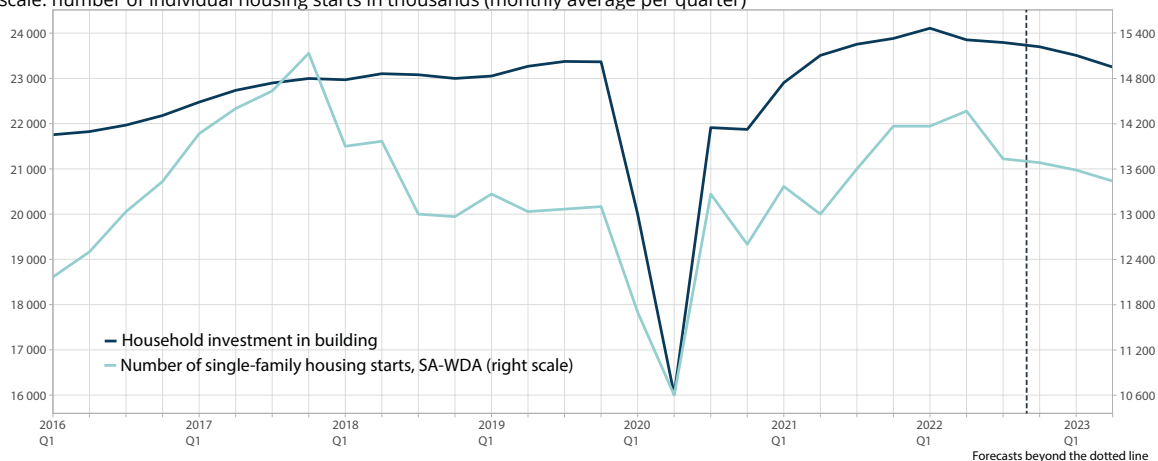
How to read it: in Q4 2022, household consumption is expected to decline by 0.7% compared to the previous quarter.

Source: INSEE

## ► 4. Household investment in building construction and authorised housing starts

left-hand scale: household investment in billions of euros (volumes chained to previous year's prices)

right-hand scale: number of individual housing starts in thousands (monthly average per quarter)



How to read it: in Q4 2022, household investment in construction is expected to reach 23,700 billion euros, in volumes chained to the previous year's prices.

The average number of individual dwellings started per month is expected to reach 13,700 thousands in Q4 2022.

Note: for single-family housing, data correspond to real date, i.e. the date of the housing start, which was sometimes several months before the information was passed on. Real date figures can be subject to several successive revisions before they gradually stabilise.

Source: INSEE, SDES



## Supply chain difficulties in service stations have been accompanied by fuel storage behaviour by households

The month of October was troubled by strikes in French refineries, resulting in a drop in production with service stations running out of fuel. The proportion of service stations out of stock of at least one fuel<sup>1</sup> reached its maximum on Monday 10 October, with 35% of petrol service stations affected. In this context, analysis of CB bank card transactions indicates storage behaviour on the part of households: purchases of fuel certainly increased significantly during the first half of October, when shortages were at their height, then subsequently fell dramatically as a backlash. This storage behaviour could be seen not only in those regions that were most affected by shortages but also in those that were least affected. All in all, fuel purchases, as measured by CB bank card transactions, would appear to have increased overall in October, compared to September.

### In October, production of coke and refined petroleum decreased and the number of service stations that ran out of fuel increased, in a context of strikes in the refineries

Between the end of September and the start of November, social movements led to closures of French refineries. These closures led in turn to a drop in production in the coke and refined petroleum branch in September (-7%) and a further decline in October (-46% compared to September, ► **Figure 1**). The proportion of petrol service stations that had run out of at least one type of fuel started to increase in late September (► **Figure 2**), reaching a maximum on Monday 10 October (35% of stations affected, with widely differing situations in different areas), and it remained high throughout the rest of that week, before declining gradually until the beginning of November.

### Spending on fuel reached very high levels in the first half of the month, then fell back from mid-October

On a national scale, in the first half of October, the daily listing of fuel purchases, as measured by CB bank card transactions, showed significant increases, especially at the time of the greatest shortages and just before

(► **Figure 2**). All in all, in the first half of October, the level of spending on fuel using CB bank cards was almost 25% higher, on average, than the equivalent period in 2019, while in September, it was a little over 3% above its 2019 level. This additional spending observed at the very time when stock shortages were at their maximum can be interpreted as storage behaviour on the part of households, as a precaution to protect their fuel supply.

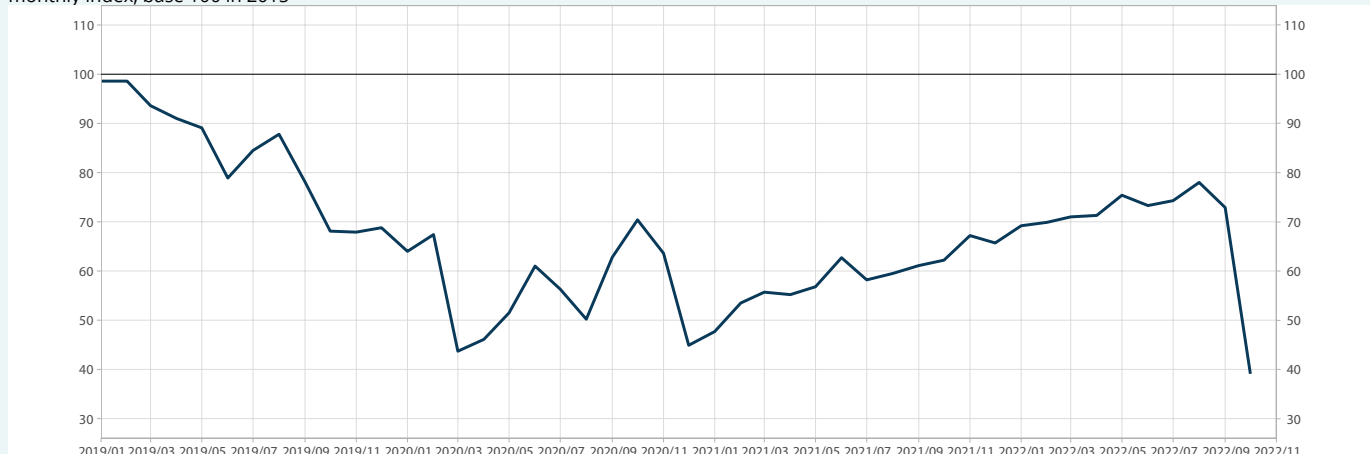
From the third week of October, the share of service stations that had run out of fuel was still close to the average level noted in the first week (18% of service stations had run out of stock in the first and third weeks of October) but fuel purchases by households declined substantially, as a reaction to their storage behaviour of previous weeks. These purchases were at a much lower level even than in September (-5% on average over the second half of October compared to the equivalent period in 2019, against a little over +3% in September).

### Stock shortages were unevenly distributed across the country

Stock shortages at service stations affected all regions of Metropolitan France (excluding Corsica). However, some areas were much less affected during the period (► **Figure 3**): Bretagne and Nouvelle-Aquitaine stand

### ► 1. Production index for the coke and refined petroleum branch

monthly index, base 100 in 2015



Last point: October 2022, SA-WDA data.

How to read it: in October, the industrial production index for the coke and refined petroleum branch stood at 39.1.

Source: INSEE

# French economic outlook

out from other regions as the share of service stations in these regions that ran out of fuel was just over 8% in October, against 20% on average in the other regions. Conversely, the Auvergne-Rhône-Alpes region was most affected on average across the month (nearly 23% of petrol stations out of stock in October).

## Storage behaviour by households was seen both in the regions most affected by shortages and in those less affected

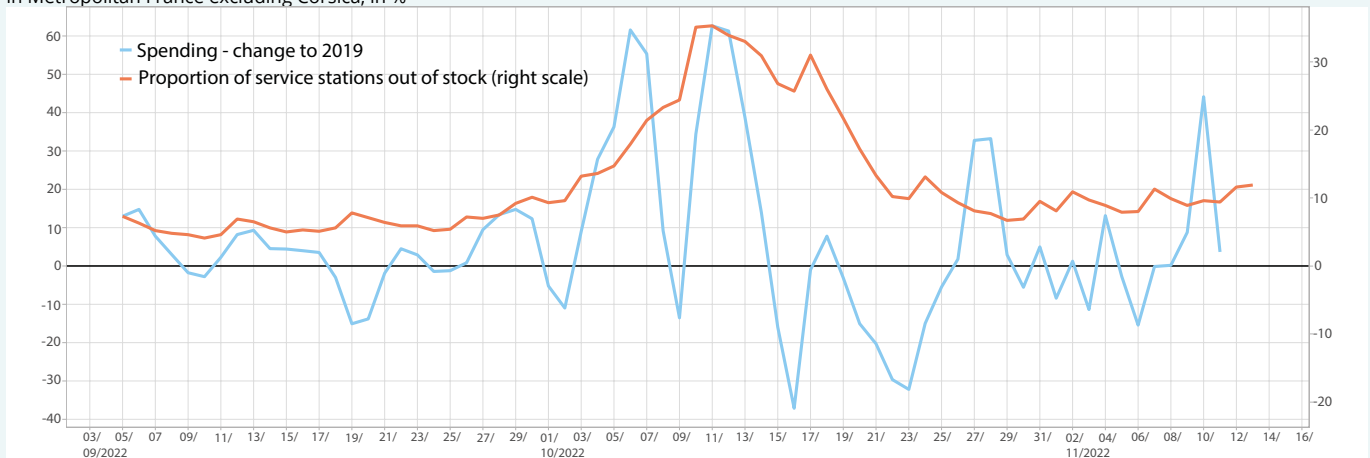
In Auvergne-Rhône-Alpes, in the first week of October, fuel purchases by CB bank card were almost 55% above the level for the equivalent day in 2019, just a few days before the proportion of service stations out of stock in this region reached its maximum (over 40% of service stations affected on 11 October, ► **Figure 4**). Fuel purchases by CB bank card also soared in Bretagne, at around the same time and on the same scale, then again

the following week to an even greater extent, although less than half as many service stations were then affected by shortages in this region. This similarity in changes in fuel purchases in regions that were affected differently by stock shortages suggests some anticipatory behaviour on the part of households: they may have wanted to protect themselves ahead of time from the risk of shortage, even if it subsequently turned out that deliveries were able to continue in their region.

## Due to the sharp increases observed at the beginning of October, purchases of fuel by CB bank card increased over the month<sup>2</sup>, while leisure-related transactions decreased

As the increase in fuel purchases by CB bank card in October was greater than the reaction observed in the later part of the month, bank card transactions adjusted for price changes suggest an increase in consumption

► **2. Real daily amounts of CB bank card transactions and proportion of service stations out of stock** real daily amounts compared to that of a similar day in 2019, in %; proportion of stations out of stock of at least one fuel (excluding LPG and superethanol) in Metropolitan France excluding Corsica, in %



Last point: 11 November 2022.

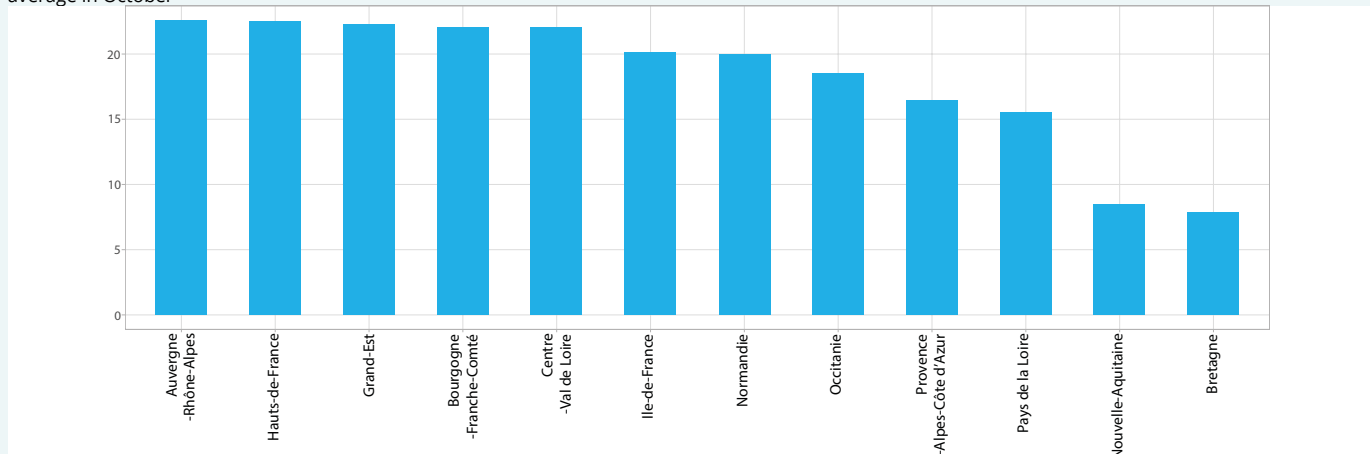
How to read it: on Thursday 6 October 2022, CB bank card fuel purchases were almost 62% higher than their level on a similar day in 2019, Thursday 3 October, the proportion of service stations with at least one fuel out of stock in Metropolitan France excluding Corsica was 18%.

Note: spending by CB bank card is adjusted for weekly price changes, as collected on this [website](https://www.prix-carburants.gouv.fr).

Source: CB bank cards and website data <https://www.prix-carburants.gouv.fr>; INSEE calculations

## ► 3. Proportion of service stations out of stock on average for October, by region

share of service stations out of stock of at least one fuel (excluding LPG and superethanol) by region in Metropolitan France excluding Corsica, in %, on average in October



How to read it: in Auvergne-Rhône-Alpes, on average, almost 23% of service stations were out of stock of at least one fuel in October.

Source: website data <https://www.prix-carburants.gouv.fr>; INSEE calculations

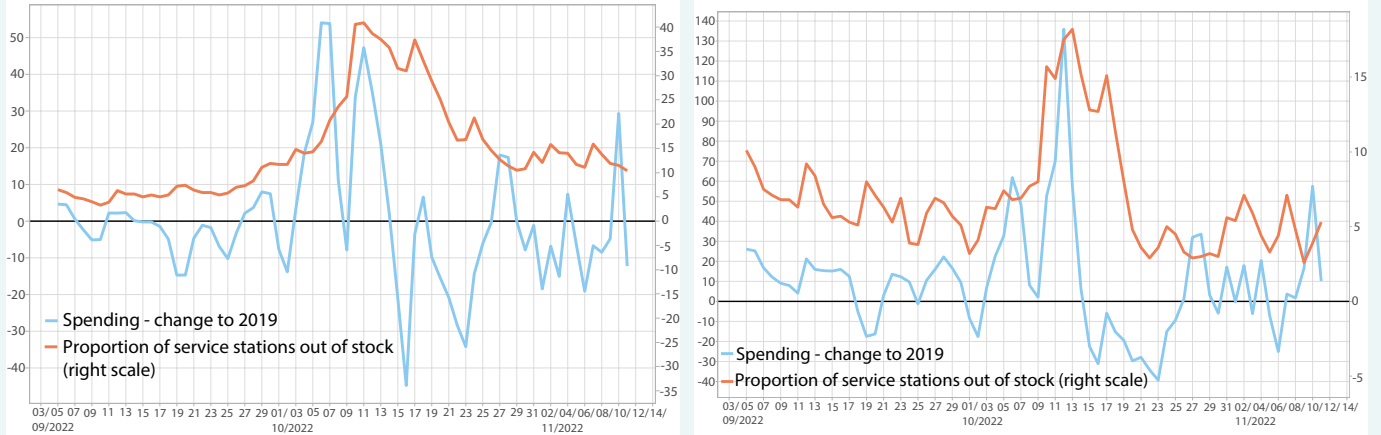
compared to September (► **Figure 5**), which was already slightly up on August. Conversely, the amounts of CB bank card transactions spent on leisure outings, excluding cinema (theatres, museums, etc.), adjusted for price changes, decreased in October, continuing the decline already observed the previous month. Spending

by CB bank card on accommodation has been in decline since its high point in May and spending on catering was on a downward trend in September and October. Spending on leisure outings (excluding cinemas) and catering, however, picked up a little in November. ●

Émilie Cupillard

## ► 4. Real daily amounts of CB bank card transactions and proportion of service stations out of stock, in Auvergne-Rhône-Alpes (l.) and Bretagne (r.)

real daily amounts compared to an equivalent day in 2019, in %; share of service stations out of stock of at least one fuel (excluding LPG and superethanol), in %



Last point: 11 November 2022.

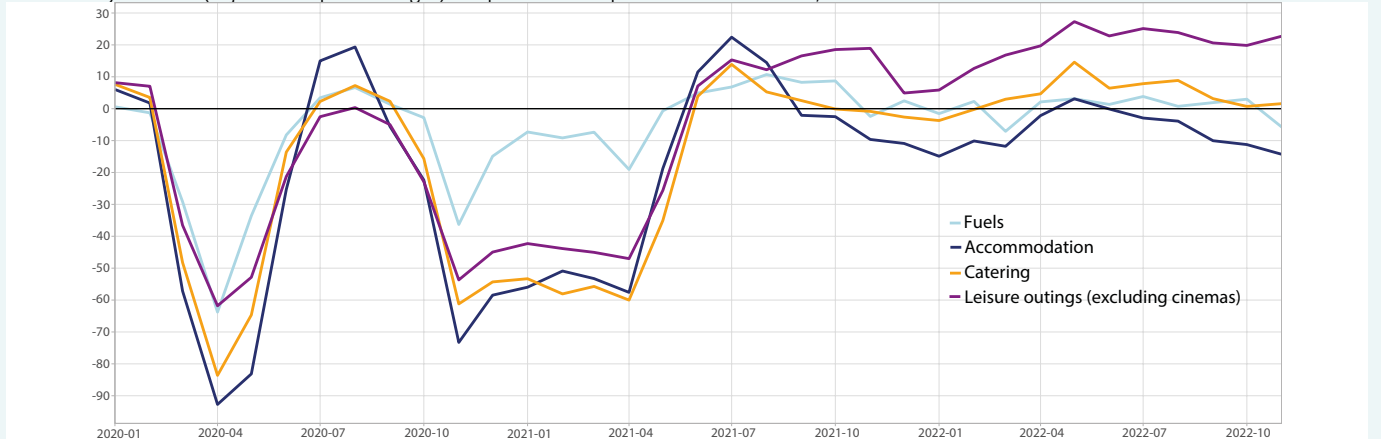
How to read it: on Thursday 6 October 2022, in Auvergne-Rhône-Alpes, CB bank card fuel purchases were 54% higher than on the equivalent day in 2019, Thursday 3 October. The proportion of service stations with at least one fuel out of stock in Auvergne-Rhône-Alpes was 16%.

Note: spending by CB bank card is adjusted for weekly price changes, as collected on this [website](#).

Source: CB bank cards and website data <https://www.prix-carburants.gouv.fr>; INSEE calculations

## ► 5. Real monthly amounts of CB bank card transactions, for various points of sale

real monthly amounts (adjusted for price changes) compared to an equivalent month in 2019, in %



Last point: November 2022 (1-27 November).

How to read it: in October 2022, CB bank card transaction amounts (adjusted for price changes) in catering services were 0.7% higher than in October 2019.

Source: CB bank cards, INSEE calculations

### Notes

- 1 Service stations out of stock of at least one fuel are those that closed or that remained open but announced that they had run out of at least one type of fuel – diesel or petrol (unleaded 98, unleaded 95, unleaded 95 E10).
- 2 The trends described here correspond to what can be deduced from studying CB bank card transactions. They may therefore not correspond to the trends in consumption of goods published monthly by INSEE. In fact, with regard to household fuel consumption, the monthly data published regularly by INSEE are based on quantities delivered to petrol distribution circuits. These data are more exhaustive with a more stable scope over time than bank card transaction data. As a general rule, petrol service station deliveries are sufficiently frequent so that measuring quantities delivered coincides with quantities consumed. On the other hand, in the event of irregularities in fuel deliveries or consumer behaviour and wide infra-monthly variations, as was the case in October, the dynamics of quantities consumed may differ from those of quantities delivered. Thus, for the item "heating oil and fuel", monthly data on household consumption of goods show a strong momentum in September and a decline in October: these changes may suggest that tanks were filled to capacity in September (storage phenomenon at the service stations) followed by a lack of supply in October, whereas CB bank card transactions showed very large actual purchases of fuel in the first two weeks of October, with transactions up overall across the whole of October compared to September. ●

# Enterprises' earnings

The margin rate of non-financial corporations (NFC) has picked up slightly since the start of 2022 after a sharp decline in 2021, reaching 31.8% of value added in Q3 after 31.2% in Q1. This increase is mainly the result of a decline in real wages, partly offset by the deterioration in the ratio of the price of value added to consumer prices.

In Q4 2022, the margin rate of NFCs looks set to fall back once again, to reach 31.1% of value added. This decline in the margin rate is likely to be linked mainly to the drop in productivity, the result of the expected contraction in activity combined with an expected rise in employment. The price of value added compared to consumer prices is likely to continue its decline –with prices of intermediate consumptions, especially energy inputs, expected to continue to rise more quickly than production prices– but it is likely that this shift will be offset by the further decline forecast in real wages.

As an average across 2022, the margin rate is thus expected to rise to 31.4% of value added, a sharp decline compared to its 2021 level (34.2%), when notably it was supported by recovery plan measures and the Solidarity Fund, but nevertheless close to its 2018 average<sup>1</sup> (31.5%). However, maintaining the margin rate at the aggregated level masks substantial sectoral variations (► **Focus** on recent changes in margin rates): the profitability of the energy and transport services branches is expected to increase significantly; conversely, the margin rate is likely to decline in industry excluding energy and, to a lesser extent, in services (excluding transport).

In H1 2023, the margin rate of NFCs looks set to rebound, in the wake of the expected rebound in activity, and should settle slightly above 32%. The improvement in corporate profitability should be due mainly to the downturn in real wages, but also to a further drop in early 2023 in taxes on production (reduction in corporate value added contributions). ●

<sup>1</sup> 2018 can be considered as a suitable reference year for margin rate. From 2019 to 2021, margin rate experienced some upheavals due to the simultaneous accounting, in 2019, of the Competitiveness and Employment Tax Credit (CICE) and the reduction in social contributions, then subsequently during the health crisis.

### ► 1. Decomposition of margin rate of non-financial corporations (NFC)

margin rate in %, variation and contributions in points

	2021				2022				2023		2019	2020	2021	2022	2023 ovhg
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2					
Margin rate	36.4	36.0	32.5	32.0	31.2	31.5	31.8	31.1	32.0	32.2	33.4	31.8	34.2	31.4	32.2
Variation in margin rate*	2.0	-0.3	-3.6	-0.5	-0.8	0.4	0.3	-0.6	0.8	0.2	1.9	-1.6	2.4	-2.8	0.8
Contributions to variation in margin rate:															
productivity gains	-0.3	0.2	1.0	-0.4	-0.3	0.0	-0.1	-0.4	-0.1	0.1	0.8	-5.4	2.4	-0.2	-0.3
real cost of labour per capita	0.2	0.4	-2.4	0.2	-0.3	0.7	1.0	0.4	0.8	0.0	0.9	3.3	-2.5	-0.1	1.8
ratio of price of value added to consumer prices	0.0	0.1	0.0	-0.2	0.0	-0.2	-0.6	-0.5	-0.5	-0.1	0.7	0.7	0.5	-0.7	-1.3
other factors (including subsidies and taxes on production)	2.0	-1.1	-2.2	-0.1	-0.2	-0.2	0.0	-0.1	0.6	0.2	-0.4	-0.3	2.0	-1.8	0.6

■ Forecast

\* The variation shown here is a difference calculated before rounding.

Note: the margin rate (*MR*) measures the share of value added that remunerates the capital.

This variation can be broken down additionally into:

- changes in productivity (*Y/L*), where *Y* is value added and *L* is employment, and in the ratio of the price of value added to consumer prices, or terms of trade (*P<sub>va</sub>/P<sub>c</sub>*), which have a positive effect;
- changes in the real cost of labour (*W/P<sub>c</sub>*, where *W* represents the cost of labour per capita), which have a negative effect on the margin rate;
- other factors: these are mainly taxes on production net of subsidies, including the Solidarity Fund.

This breakdown can be synthesised in the equation:

$$TM = \frac{GOS}{VA} \approx 1 - \frac{WL}{Y P_{va}} + other\ factors = 1 - \frac{L}{Y} \frac{W}{P_c} \frac{P_c}{P_{va}} + other\ factors$$

Source: INSEE

## ► 2. Margin rate of non-financial corporations (NFC) in % of value added



Source: INSEE

## Corporate investment

Investment by non-financial enterprises (NFE) accelerated sharply in Q3 2022 (+3.1% after +0.9%, ► **Figure 1**), 8.0% above its pre-health crisis level (► **Figure 2**). Investment in manufactured products rebounded strongly (+4.9% after +0.4%) sustained mainly by investment in transport equipment. Automobile production has risen again since the spring, and the supply chain difficulties experienced by the sector have eased a little, allowing a relative catch-up in deliveries. Conversely, investment in construction fell back for the second consecutive quarter (-0.6% after -1.1%). Lastly, investment in services gained more momentum (+3.7%) and exceeded its pre-health crisis level by 18.5%. This increase was mainly driven by investment in information and communication services.

In Q4 2022, NFE investment is expected to come to a standstill (+0.1%), in line with the decline forecast in activity. Investment in manufactured products is likely to decline, after the major rebound in Q3, while investment in services should remain buoyant. At the same time, investment in construction is expected to pick up very slightly, with more building starts on non-residential buildings. As an annual average, NFE investment is likely to increase by 3.2% overall in 2022, after its sharp rise of 11.4% in 2021.

In H1 2023, investment is likely to be fairly sluggish (+0.1% in Q1 and +0.4% in Q2), in line with the very moderate improvement in activity and in a context of energy price rises for businesses and a tightening of monetary policy. Investment in services looks set to retain its momentum while investment in manufactured products is expected to continue to decline. Investment in construction also looks likely to fall back, with a slowdown in housing starts. In this very uncertain climate, the mid-year growth overhang in NFE investment is expected to be 2.2%. ●

### ► 1. Investment by non-financial enterprises (NFE)

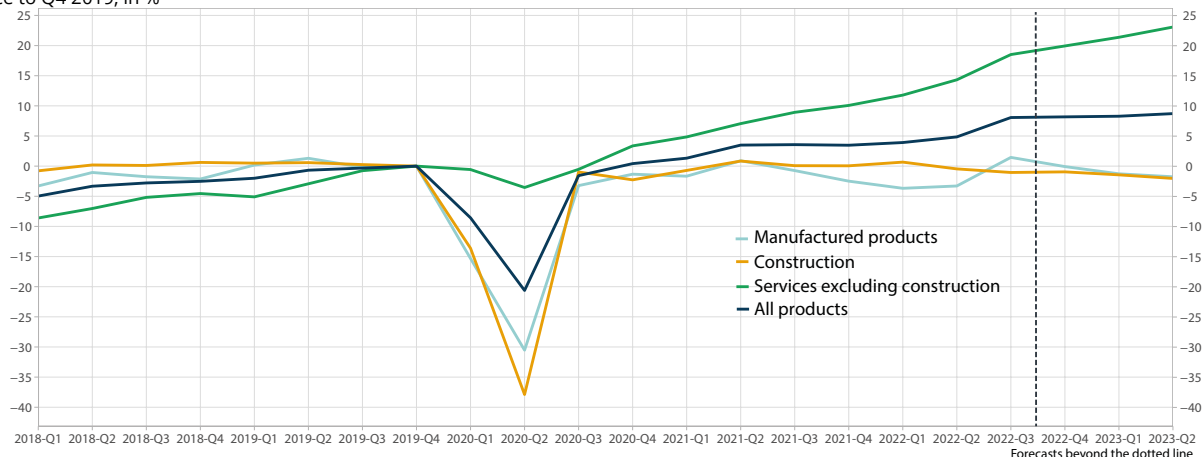
of previous year's chained prices, seasonally and working day adjusted, in %

	Quarterly changes								Annual changes				
	2021				2022				2023		2021	2022	2023 ovhg
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
Manufactured product (32%)	-0.3	2.6	-1.6	-1.8	-1.2	0.4	4.9	-1.5	-1.2	-0.5	13.3	-0.4	-0.2
Construction (23%)	1.6	1.6	-0.8	0.0	0.6	-1.1	-0.6	0.1	-0.5	-0.6	15.9	-0.5	-1.4
Services (45%)	1.4	2.1	1.7	1.1	1.6	2.3	3.7	1.2	1.2	1.4	8.1	7.8	5.6
<b>All (100%)</b>	<b>0.9</b>	<b>2.1</b>	<b>0.1</b>	<b>-0.1</b>	<b>0.4</b>	<b>0.9</b>	<b>3.1</b>	<b>0.1</b>	<b>0.1</b>	<b>0.4</b>	<b>11.4</b>	<b>3.2</b>	<b>2.2</b>

■ Forecast  
Source: INSEE

### ► 2. Investment of non-financial enterprises by product

difference to Q4 2019, in %



How to read it: in Q4 2022, investment by NFE should be 19.9% higher than its Q4 2019 level..

Source: INSEE

# International economic outlook



## International synthesis

In the face of multiple constraints, the global economy has been experiencing a slowdown for the last several quarters (► [Figure 1](#) for western economies). In Q3, economic activity lost momentum in the main European economies, except, unexpectedly, in Germany, and it even contracted in the United Kingdom against a backdrop of strikes and a sharp rise in inflation. In China and the United States, on the other hand, activity rebounded, as a result of the reopening of the Chinese economy after the spring lockdowns and major fluctuations in US foreign trade. However, this rebound masks a more general dynamic of economic slowdown. As a result, world trade, and in particular world demand for French products, was at a standstill compared to the beginning of the year, penalised mainly by the slowdown in imports by the advanced economies (► [Figure 2](#)).

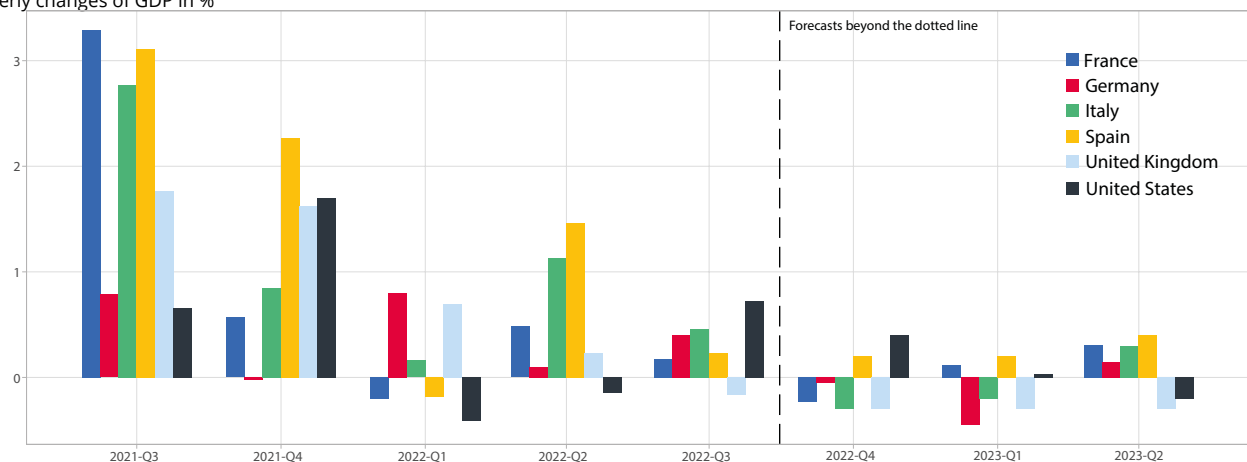
Since the summer, the price of energy and other commodities has fallen back a little, and the euro-dollar exchange rate is no longer spiralling downwards (► [Figure 2](#)). Western economies are still facing high levels of inflation, however, although with contrasting dynamics between countries in recent months (► [Figure 3](#)). Europe in particular appears to be especially exposed to the consequences of the war in Ukraine, notably with regards to gas and electricity prices. In the United States and Spain, headline inflation has been falling back year-on-year since the summer, because of the decline in energy inflation. Across the Atlantic, headline inflation and core inflation are now relatively close, the latter being driven mainly by the dynamism of wages. In contrast, in France, Germany, Italy and the United Kingdom, headline inflation continues to rise, still driven partly by increased energy price rises, but also by increased food prices.

Despite significant fiscal support, high inflation levels are expected to limit household purchasing power. As a result, private consumption is likely to remain sluggish over the next few months. In addition, the rising cost of credit, affected by the increase in the base interest rates of the central banks, is likely to hamper both household and corporate investment over the next few quarters. Consequently, the real estate market appears to be particularly vulnerable to rising rates in several countries (Canada, Australia, Netherlands), and is showing the first signs of a turnaround in the United States, whereas in China, the real estate sector is still going through major difficulties. In Europe, the energy price rises, to which could be added potential problems with energy supply chains in the event of a cold winter, are likely to affect industrial production during the winter.

Production difficulties and the lack of momentum in domestic demand in the main economies are thus likely to limit world economic activity around the turn of the year (► [Figure 4](#)): it is expected to stagnate in Q4, then fall back in early 2023 in many of the western economies, with the notable exception of Spain, which has the advantage of being less exposed to energy constraints than the other main European countries and probably has a greater post-Covid catch-up potential. ●

### ► 1. Western economies slowed significantly in 2022

quarterly changes of GDP in %



How to read it: in Q3 2022, US GDP grew by 0.7%.

Source: INSEE, Destatis, Istat, INE, ONS, BEA



## ► 2. The slowdown in the advanced economies hampers world trade

levels, quarterly variations in % (annual variations in % for the last three columns)

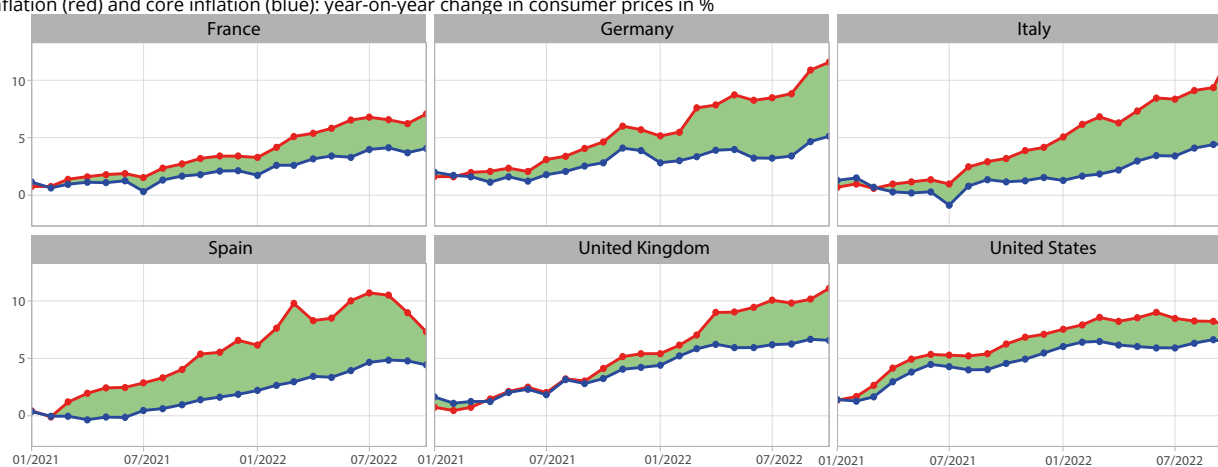
	2021				2022				2023		2021	2022	2023 ovhg
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2			
Euro-dollar exchange rate	1.20	1.21	1.18	1.14	1.12	1.06	1.01	1.02	1.05	1.05	1.18	1.05	
Barrel of Brent (in dollars)	61.0	68.9	73.5	79.5	100.8	113.6	100.6	91.6	90.0	90.0	70.9	101.6	
Barrel of Brent (in euros)	50.7	57.1	62.3	69.6	89.8	106.7	99.9	89.9	85.7	85.7	59.9	97.0	
World trade (variations)	1.7	2.1	1.5	3.0	1.9	0.5	0.9	0.2	-0.1	0.1	10.3	6.3	0.7
Imports by advanced economies	0.0	2.4	1.8	2.9	2.8	1.1	1.0	0.2	-0.2	0.1	9.3	8.1	0.7
Imports by emerging economies	6.3	1.2	0.7	3.1	-0.8	-1.4	0.6	0.4	0.2	0.2	12.9	1.4	0.6
World demand for French products (variations)	0.5	2.5	2.0	2.7	2.2	0.6	0.8	0.4	-0.1	0.3	9.9	6.9	1.0

■ Forecast

Source : Statistiques équilibrées du commerce (OCDE), CHELEM – Commerce international (CEPII), INSEE calculations

## ► 3. In the United States and Spain, headline inflation has been falling for several months

total inflation (red) and core inflation (blue): year-on-year change in consumer prices in %



Las point: October 2022.

How to read it: in October 2022 in the United States, inflation stood at 7.7% year-on-year, while inflation excluding energy and food was 6.3%.

Note: here, core inflation represents inflation excluding energy and food. For the Eurozone countries, inflation is calculated as the year-on-year variation in the Harmonised Index of Consumer Prices (HICP). This is the case too for the United Kingdom, with the HICP reconstructed from the CPI published by the UK ONS. For the United States, inflation is calculated as the year-on-year variation in the CPI provided by the BLS.

Source : Eurostat, ONS, BLS, INSEE Calculations

## ► 4. Past and forecast GDP growth in the main western economies

in %

	2021				2022				2023		2020	2021	2022	mid-2023 ovhg
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2				
France	0.1	1.1	3.3	0.6	-0.2	0.5	0.2	-0.2	0.1	0.3	-7.9	6.8	2.5	0.4
Germany	-1.5	1.9	0.8	0.0	0.8	0.1	0.4	-0.1	-0.4	0.2	-4.1	2.6	1.9	-0.2
Italy	0.3	2.5	2.8	0.9	0.1	1.1	0.5	-0.3	-0.2	0.3	-9.1	6.7	3.8	0.3
Spain	-0.2	1.4	3.1	2.3	-0.2	1.5	0.2	0.2	0.2	0.4	-11.3	5.5	4.7	1.1
United Kingdom	-1.2	6.5	1.8	1.6	0.7	0.2	-0.2	-0.3	-0.3	-0.3	-11.0	7.5	4.4	-0.8
United States	1.5	1.7	0.7	1.7	-0.4	-0.1	0.6	0.4	0.0	-0.2	-2.8	5.9	2.0	0.5

■ Forecast

Source : INSEE, Destatis, Istat, INE, ONS, BEA

# Energy and commodities

Global commodity prices fell overall in H2, in a climate where growth prospects were less favourable. On the European markets, prices fell back after reaching historically high levels, but the uncertainties associated with the war in Ukraine remain significant.

In Q3, the price of oil (Brent) stood at \$100.6 per barrel (after \$113.6 in Q2), but still well above its average level in 2019 (+56.4%). In euros, the price per barrel in Q3 2022 was 73.9% above its 2019 level, taking into account the depreciation of the euro against the dollar over that period. After fluctuating between \$85 and \$100 since the start of Q4 (► [Figure 1](#)), the price fell back to below \$80 at the beginning of December, in line with concerns over world demand and despite the entry into force of new Russian oil sanctions.

Meanwhile, after soaring in the summer (€204.9/MWh on average in Q3), the price of gas on the European market (TTF) has fallen back significantly since September (► [Figure 2](#)) –given that autumn was particularly mild and gas inventory in the European countries is virtually full (► [Figure 3](#)). It remains above €100/MWh, however. The market for futures contracts remains tense at the onset of the winter period with prospects for the reconstitution of European inventory already looking to winter 2023-2024.

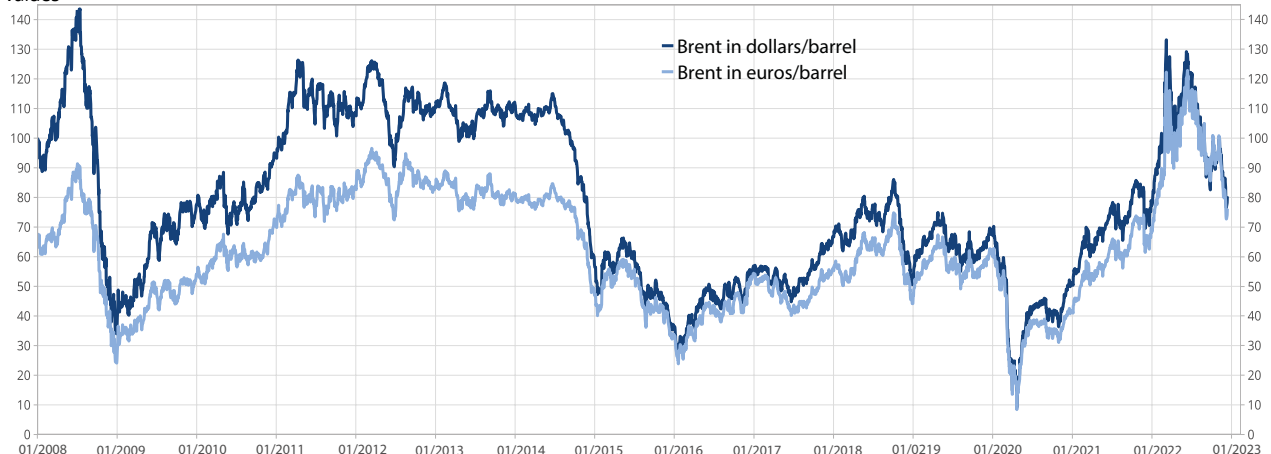
The price of coal, of which Russia is one of the world's main exporters, also increased very significantly on the European market in the summer, reaching €357 per tonne in Q3 (6.5 times its 2019 average). Although the price has fallen since the start of Q4, its level is still almost four times higher than in the pre-health crisis period. Finally, after dropping below €70 per tonne at the close of the summer, the price of carbon dioxide (CO<sub>2</sub>) on the European Union Emissions Trading System rebounded at the end of October –supported mainly by the switch to nuclear electricity production and the EU's target for reductions in greenhouse gas emissions– and it is now once again around €80 per tonne.

At the same time, prices of industrial commodities (excluding energy) fell back after a peak following the invasion of Ukraine and linked to the downturn in prospects for world growth. In October, prices of imported agro-industrial and mineral commodities stood at 18.2% and 25.7% respectively below their March level (► [Figure 4](#)). The decline is less marked in the price of imported food commodities, buoyed up mainly by high production costs, a particularly dry summer and the fragile nature of the Black Sea Grain Initiative on Ukrainian cereal exports (► [Figure 5](#)). Despite a relative easing of the prices of energy and of other commodities, production prices in western economies are still at particularly high levels. In France, prices of agricultural and industrial products in October were above their 2019 average, at 35.3% and 35.4% respectively (+20.8%, however, for industrial products excluding energy).

Over the forecasting period (mid-2023), the assumption is that oil prices will remain constant, fixed at \$90 per barrel (i.e. €85.7 assuming a euro-dollar exchange rate of 1.05 dollars for 1 euro). Despite the slowdown in the global economy, tensions surrounding supply are expected to remain predominant. The cut in OPEC production targets by 2 million barrels per day from November, and the entry into force at the end of 2022 of the European Union embargo on Russian petroleum products are likely to keep the markets under pressure. ●

### ► 1. Price of oil (Brent) in dollars and euros

daily values



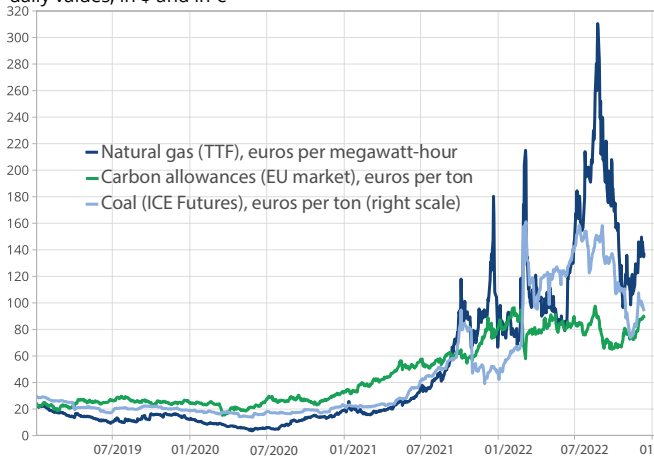
Last point: 13 December 2022.

How to read it: on 13 December 2022, the price of a barrel of Brent was \$80.3.

Source: Commodity Research Bureau

## ► 2. Prices of natural gas, coal and tonnes of CO<sub>2</sub>

daily values, in \$ and in €



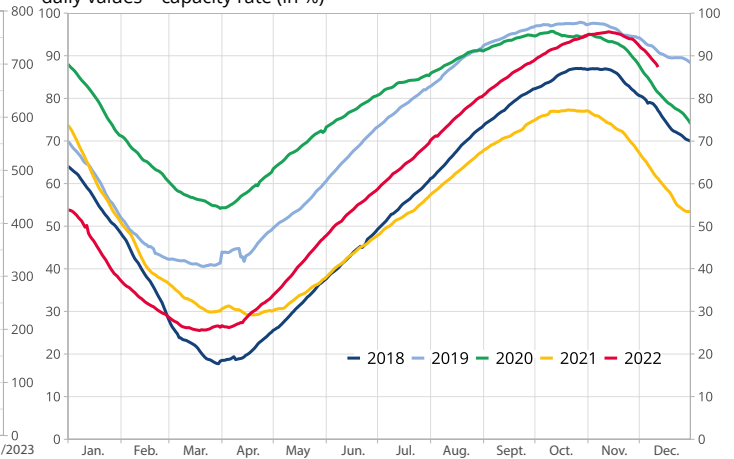
Last point: 13 December 2022.

How to read it: on 13 December 2022, the value of natural gas futures contracts at the next expiry date in the Netherlands (TTF) is €137.6 per megawatt-hour.

Source: ICE Futures Europe

## ► 3. Natural gas inventory in the European Union

daily values – capacity rate (in %)



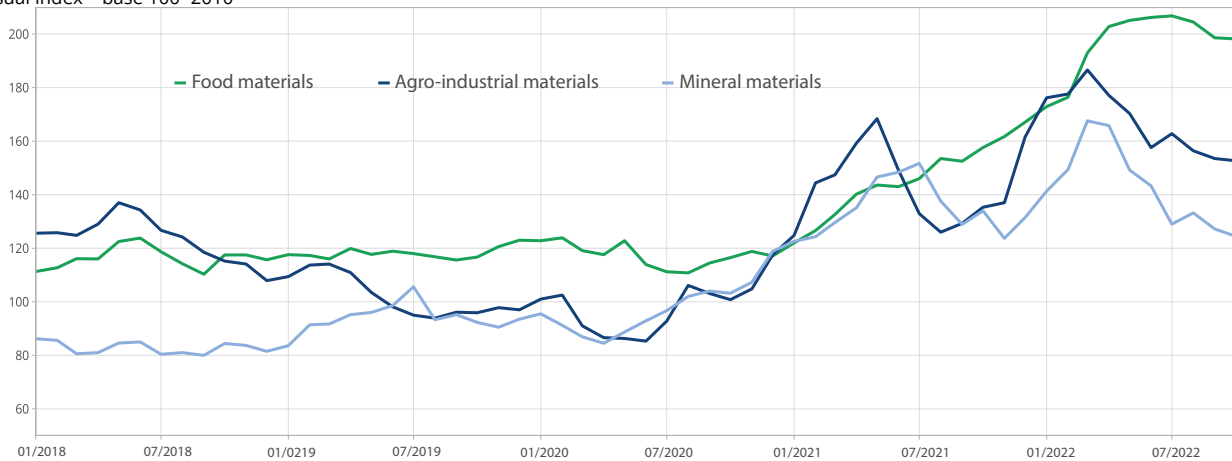
Last point: 12 December 2022.

How to read it: on 12 December 2022, natural gas inventory in the European Union countries stood at 87.3% of total inventory capacity.

Source: Gas Infrastructure Europe - AGSI+

## ► 4. Price indices for imported commodities in France

mensual index – base 100=2010



Last point: October 2022.

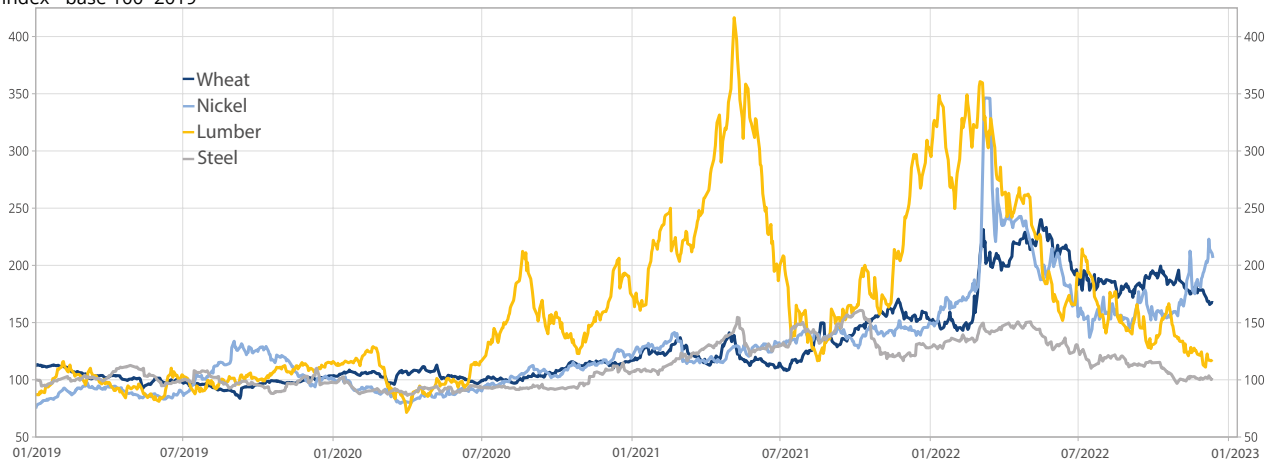
How to read it: in October 2022, the price index in euros for foodstuffs reached 198.2.

Note: indices measure price variations in euros.

Source: INSEE

## ► 5. Prices of wheat, nickel, lumber and steel

daily index - base 100=2019



Last point: 13 December 2022.

How to read it: on 13 December 2022, the wheat price index in euros – expressed as base 100 in 2019 – stood at 167.3.

Note: indices measure price variations in euros.

Source: Euronext Paris, London Metal Exchange, Chicago Mercantile Exchange, Shanghai Futures Exchange

# International economic outlook

## Eurozone

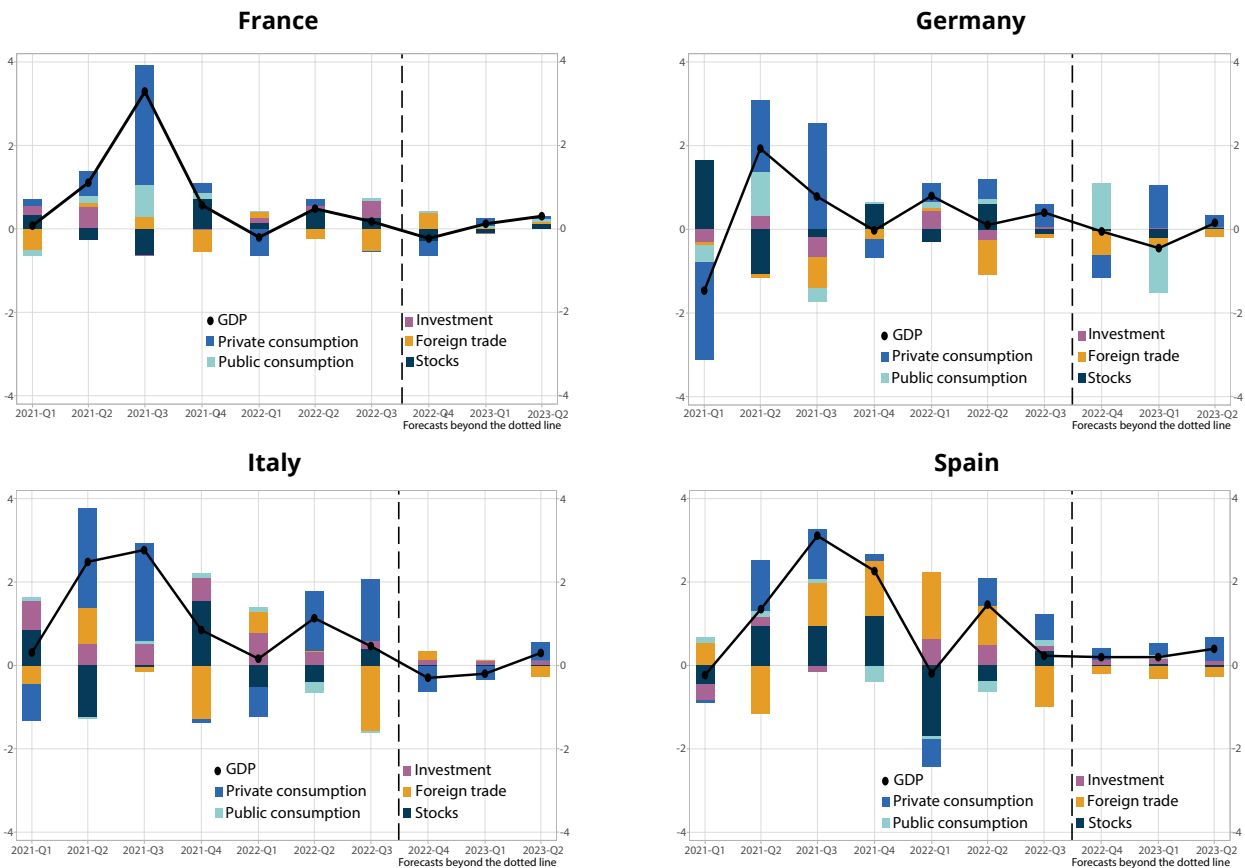
### In Q3 2022, economic activity in the Eurozone was generally sustained by domestic demand, but slowed down nonetheless

In Q3 2022, post-health crisis catch-up effects in the Eurozone lessened and activity slowed sharply (+0.3%, after +0.8% in Q2 2022), while inflation continued to rise. This economic slowdown affected Spain (+0.2% after +1.5%), Italy (+0.5% after +1.1%) and France (+0.2% after +0.5%), after a relatively vigorous Q2, coming as it did after the start to the year was affected both by the Omicron wave and the outbreak of war in Ukraine (► **Figure 1**). In Germany, on the other hand, activity accelerated this summer (+0.4% after +0.1%). Within these four economies, domestic demand was the main contributor to the increase in activity in Q3, while foreign trade affected GDP growth.

Despite the high level of inflation (► **Box 1**), in most countries household consumption had the benefit of support measures to help with purchasing power (tariff shields, fuel discounts, increases in social minima, etc.). Residual catch-up effects may also have had a positive impact. Thus, consumption was dynamic in Italy (+2.5% in Q3), Spain (+1.1%) and Germany (+1.0%). At the end of Q3, consumption returned to its pre-crisis level in Germany and Italy but remained 5% below in Spain. In France, where household consumption has exceeded its pre-crisis level over several quarters, it remained almost stable in Q3 and the increase in domestic demand was therefore mainly the result of investment (+1.7%, of which +3.1% for corporate investment). In Germany, Spain and Italy, investment also contributed to the increase in activity but to a much lesser extent (+0.2%, +0.6% and +0.8% respectively), with investment in equipment being dynamic, but investment in construction in decline.

### ► 1. Quarterly variations in GDP and contributions of demand items

quarterly variations in % and contributions in points



How to read it: in France, on Q3 2022, GDP improved compared to Q2 2022 (+0.2%), and investment contributed around +0.4 points to this increase. Source: INSEE, Destatis, Istat, INE, INSEE calculations

Exports accelerated in France and Germany, driven by exports of goods. In Italy and Spain, however, they slowed after an especially buoyant Q2 thanks to tourism. However, imports were more dynamic than exports in all four economies. In Spain, Italy and France, they were sustained in particular by spending by residents abroad.

### Support measures partly mitigate the effects of higher prices on households

Since the end of the summer, the four main Eurozone countries have continued to face high levels of inflation, although recent developments are varied: sharp fall in Spain since August in the wake of gas prices, strong rise in Italy in October, driven by electricity prices (► **Box 1**). The provisional estimate for inflation in November reveals a degree of stability in the consumer price index year-on-year, except in Spain where it continues to decline. This year-on-year stability does not mean that prices are expected to be stable: consumer prices are set to continue to rise in Q4 in France, Germany and even Italy, despite a further reduction in prices at the pump from December (lower fuel tax). In Spain, however, year-on-year variations in the price index, like the level of the index itself, could decrease after the peak reached this summer.

Changes are also expected in household income but these will vary from country to country, according to the scale and the nature of aid provided by the authorities. In Germany, wages are expected to increase substantially, driven by a rise of around 14% in the minimum wage on 1<sup>st</sup> October which is likely to affect over 7 million employees, and by several wage negotiations that have resulted in major wage increases.

In Spain, the labour market is expected to continue in the right direction, with notably a sizeable increase in permanent employment: the numbers registered with social security who have an open-ended employment contract increased by 20% year-on-year in September 2022 while the number of temporary contracts fell back by almost 40% over the same period. In Italy, household income is expected to be supported, as in previous quarters, by the payment of a new form of aid in December (150 euros per person for around 22 million employees and retired people on low incomes). In France, income looks set to be supported in Q4 by measures that include reductions in tax contributions (housing tax relief, television and radio licence fee).

Given these factors, household purchasing power in Q4 2022 is expected to demonstrate contrasting developments according to country. It is expected to be preserved in Germany, given the income support and despite the rise in prices. In Spain, it is likely to be dynamic, driven by the good performance of the labour market and declining prices. In France, it should continue to take advantage of support measures. In Italy, however, it looks set to fall back, penalised by the sharp acceleration in prices.

### Industrial output is still expected to be hampered by high energy prices

Regarding businesses, industrial activity appears disappointing since the summer, since the PMIs are below their threshold level of 50 in the four main Eurozone countries (► **Figure 2 left-hand side**).

In fact, energy-intensive branches are particularly vulnerable to issues involving both energy supply chain risks (especially gas) and price increases for electricity and gas. In September, output in these branches in the four main Eurozone countries appeared to be well below its level at the end of 2021 (► **Box 2**). It has fallen particularly sharply in Germany since the beginning of the year (► **Figure 3**) in the chemical industry, paper and cardboard, and the non-metallic mineral products industry (which importantly includes the glass industry). In the metallurgical industry, output has declined particularly in Spain and Italy. In France, downturns in production in these branches appear to be a little less pronounced.

Conversely, the slight easing in supply chains (► **Figure 2 right-hand side**) means that production could be supported in certain branches. This is particularly the case for the German automobile industry, where production remains well below its pre-health crisis level and which could still benefit from a strong catch-up effect.

# International economic outlook

## In the last quarter of 2022, activity is likely to be depressed in the main Eurozone economies and remain in a deteriorated state at the start of 2023

In Q4 2022, activity is expected to fall back not only in Italy, but also in Germany and France. In Germany, support for purchasing power and the public authorities taking on part of household gas bills (aid payment of over €300 on average per household) should enable both public and private consumption to hold out. German production capacity, however, is expected to be penalised by the rise in energy prices and the weakness of world trade, which is likely to lead to a decline in exports. In Italy, a decline in activity is the likely result of a decline in domestic demand, with the downturn in purchasing power leading to a sharp drop in household consumption. Spain is likely to be the only one of the main Eurozone countries where activity is expected to improve at the end of the year, with the expected drop in prices encouraging household consumption. Investment is likely to slow in all four countries, against a backdrop of monetary tightening and higher energy prices.

In H1 2023, year-on-year consumer prices could fall back, due to strong base effects and also to specific measures aimed at containing the rise in energy prices. This will be the case in Germany in particular, where a tariff shield will be put in place from January 2023 to protect both households and businesses, with a price cap on electricity until April 2024, as well as on 80% of households' gas consumption (70% for businesses). Nevertheless, prices are still likely to increase overall, especially those of non-energy goods and services.

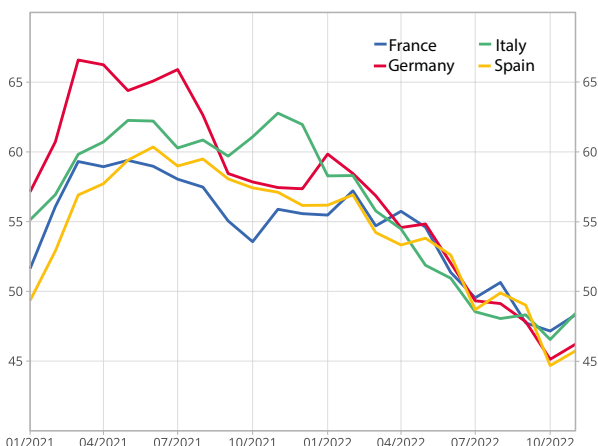
In this context, activity is expected to decline once again in Germany and Italy in early 2023. These trends are likely to reflect primarily those of domestic demand. They are also likely to reflect the production difficulties that businesses are experiencing, especially in industry, where companies are affected by the increased cost of their energy inputs. In Spain, however, which is less exposed to these constraints and has more potential to catch-up in consumption than its neighbours, activity should continue to improve, if modestly.

In Q2, the end of winter should ease energy constraints somewhat, at least for households, resulting in a slight upturn in domestic demand and hence in activity. ●

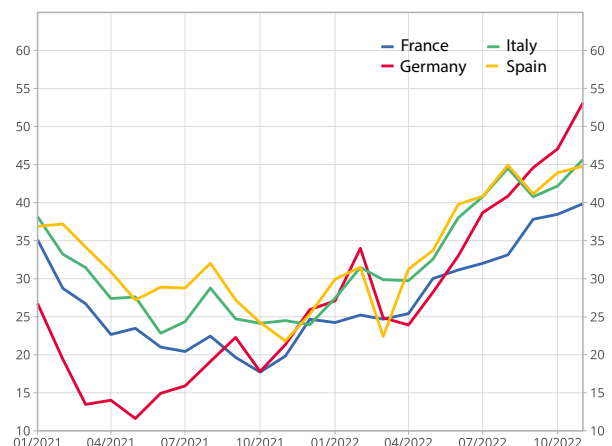
## ► 2. PMIs in the manufacturing industry and PMIs of input delivery times in the manufacturing industry

PMI indices (in levels)

### Manufacturing industry



### Delivery time



Last point: November 2022.

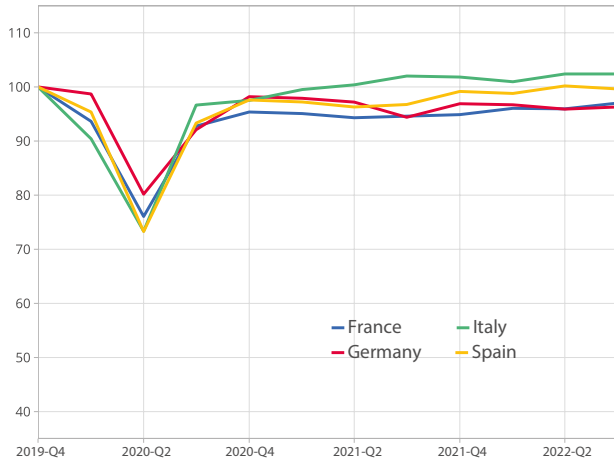
How to read it: in Germany in November, the PMI of input delivery times in the manufacturing industry was 53, above the expansion threshold of 50, indicating a reduction in input delivery times.

Source: Purchasing Manager's Index, IHS Markit

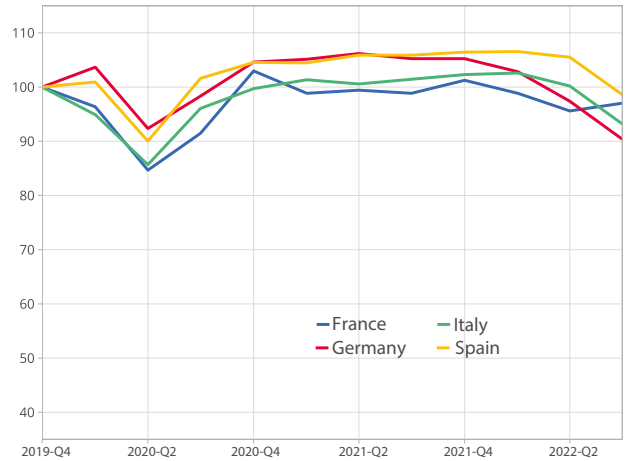
## ► 3. Output in the manufacturing industry and in some energy-intensive industrial branches

industrial production indices as a quarterly average, difference from Q4 2019 level (SA-WDA)

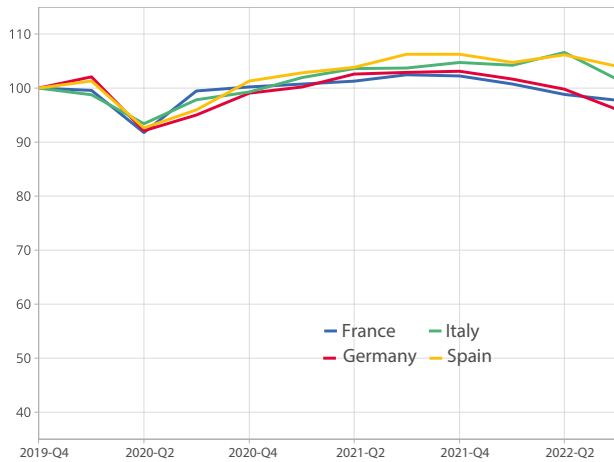
### Manufacturing industry



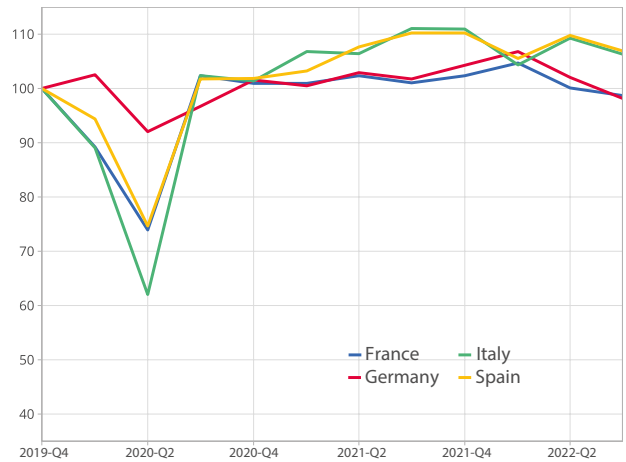
### Chemical industry



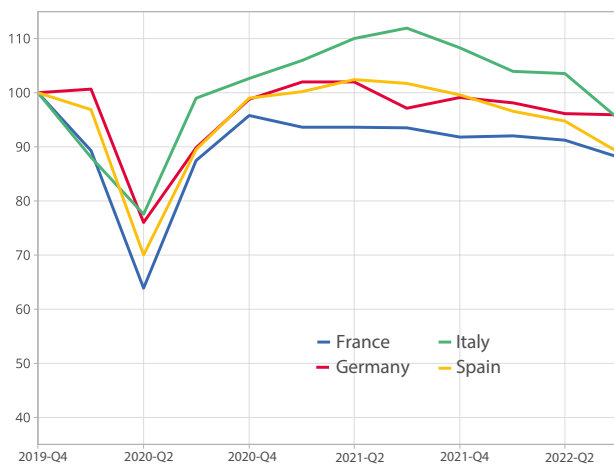
### Paper and board industry



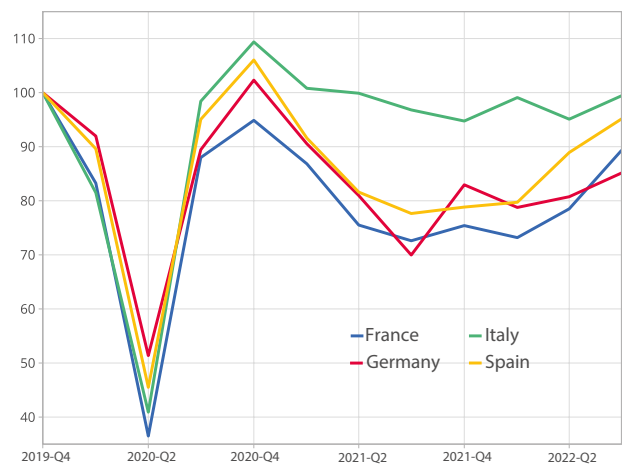
### Manufacture of other non-metallic mineral products



### Metallurgy industry



### Automobile industry



Last point: Q3 2022.

How to read it: in Italy, in Q3 2022, Output in the manufacturing industry was 2.4% above its Q4 2019 level.

Source: INSEE, Destatis, Istat, INE, INSEE calculations

## Box 1: Inflation in the main Eurozone economies

Inflation in the main European economies remains at levels that are not only high but also contrasted between countries (► **Figure 1**). To support household purchasing power, the authorities have put different measures in place, the aim being either to limit price rises, or to support incomes. The diversity of the measures taken, the differences between the energy pricing methods and between the average consumer shopping baskets, account for most of the variations in inflation between the four countries considered here (Germany, France, Italy, Spain).

Although energy inflation was at very high levels in the four main Eurozone countries in July (between +29% year-on-year in France and +43% year-on-year in Italy), since then it has followed some very diverging trajectories (► **Figure 2**). In France, it decreased significantly (+20% year-on-year in October) affected by the drop in oil prices during the summer and the increase in the reduction at the pump in September, despite the rise in fuel prices in October in the context of strikes in the refineries. In Spain, the downturn was even more pronounced, with energy inflation reaching over 8% year-on-year in October: the drop in oil prices contributed to this but even more significant was the price of electricity. The contribution of gas also fell, in line with the reduction in VAT on gas from 21% to 5.5%.

In Germany, energy inflation increased in September, with the end of the reduction at the pump, while gas and electricity prices increased gradually, as contract tariff clauses were renewed. In Italy, after decreasing during the summer following fuel prices, energy inflation surged in October (+71% year-on-year), with the review of regulated electricity tariffs and, to a lesser extent, gas tariffs.

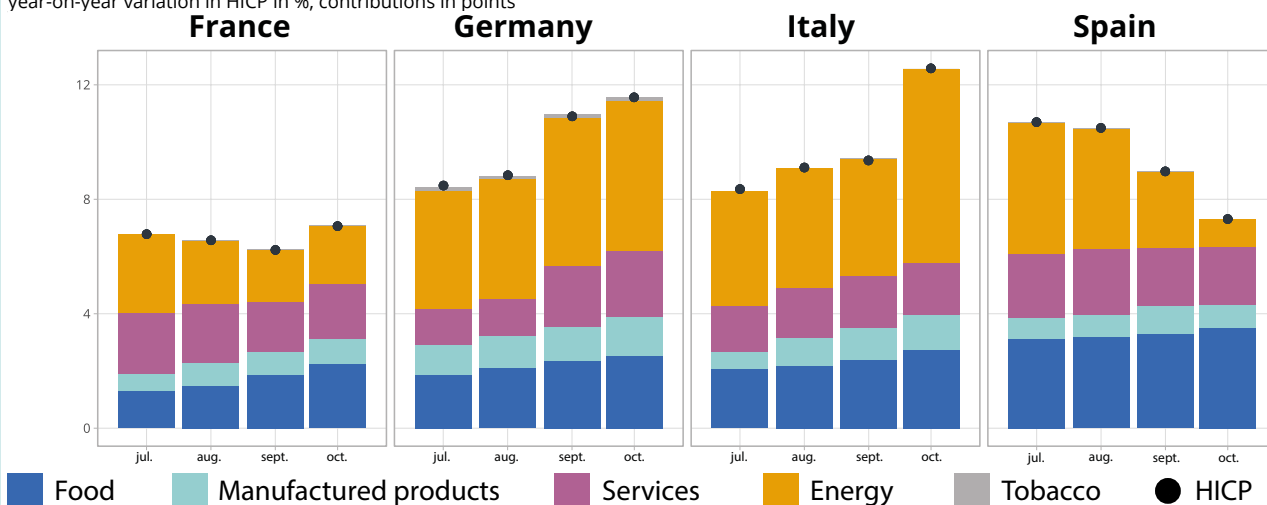
Nevertheless, the prices of energy products are no longer necessarily the main driver of inflation. Price rises are spreading to more and more products, and since this autumn, food products have made the largest contribution to headline inflation in France and Spain (► **Figure 3**). The contribution of manufactured goods has also increased while that of services is stable overall, except in Germany in September with the end of the regional transport ticket at €9 per month, which was introduced during the summer.

In November, according to initial estimates from national institutes, the year-on-year variation in the HICP looks set to stabilise in France, Germany and Italy, and is expected to fall back further in Spain (► **Figure 3**). In these four countries, the stability of price rises over a year is due mainly to base effects: prices, especially energy prices, rose sharply in November 2021. Prices therefore continue to increase in a dynamic way at the end of this year and core inflation (excluding energy and food) would appear to have increased everywhere in November, except in Germany. ●

.../...

### ► 1. Breakdown of year-on-year variation in the HICP in European countries

year-on-year variation in HICP in %, contributions in points

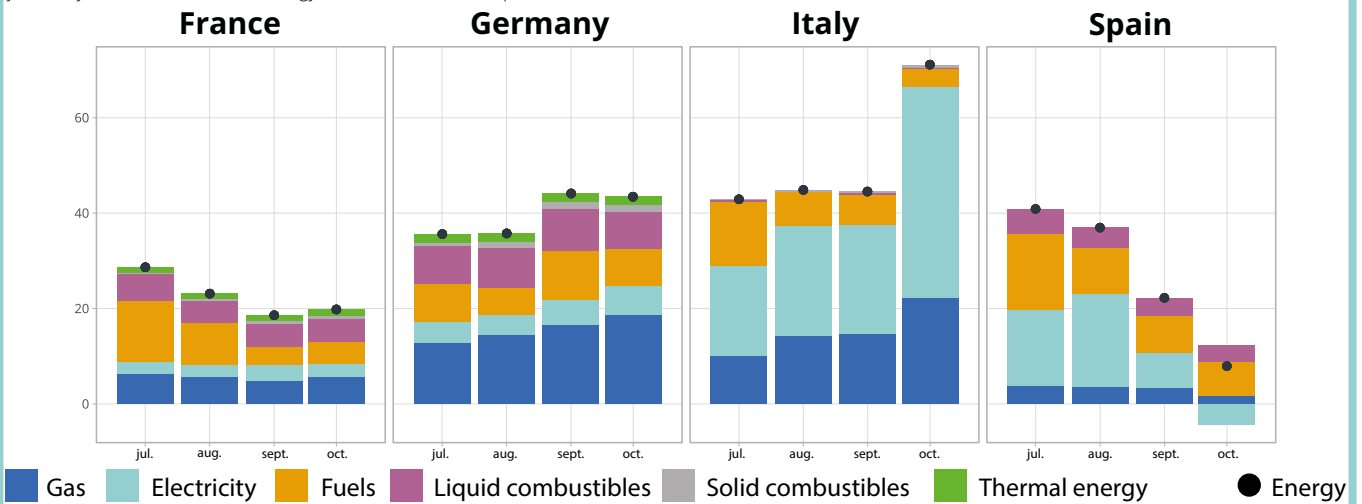


How to read it: in France, in October 2022, the harmonised consumer price index rose by 7.1% year-on-year, with a 2.2 point contribution from food.  
Source: INSEE, Destatis, Istat, INE, INSEE calculations



## ► 2. Breakdown of year-on-year variation in the HICP Energy sub-sector in European countries

year-on-year variation in HICP Energy in %, contributions in points



How to read it: in France, in October 2022, HICP Energy increased by 19.8% year-on-year, with gas contributing 5.6 points.

Source: INSEE, Destatis, Istat, INE, INSEE calculations

## ► 3. Price changes in different aggregates and some of their components and their contributions to total HICP in the four main Eurozone economies in October 2022

harmonised inflation year-on-year, in %, contributions in points

October 2022	France		Germany		Italy		Spain	
	yoy (in %)	Contribution (in points)	yoy (in %)	Contribution (in points)	yoy (in %)	Contribution (in points)	yoy (in %)	Contribution (in points)
<b>Food</b>	<b>12.0</b>	<b>2.2</b>	<b>17.3</b>	<b>2.5</b>	<b>13.2</b>	<b>2.7</b>	<b>15.1</b>	<b>3.5</b>
of which fresh food	17.3	0.5	15.2	0.3	14.0	0.6	0.0	0.0
of which non-fresh food	10.4	1.0	16.7	1.4	13.0	1.2	15.1	1.5
<b>Tobacco</b>	<b>0.3</b>	<b>0.0</b>	<b>4.6</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>0.6</b>	<b>0.0</b>
<b>Manufactured good</b>	<b>5.5</b>	<b>0.9</b>	<b>7.4</b>	<b>1.3</b>	<b>5.3</b>	<b>1.2</b>	<b>4.6</b>	<b>0.8</b>
of which vehicle sales	6.5	0.2	9.0	0.4	7.2	0.3	9.8	0.3
<b>energy</b>	<b>19.8</b>	<b>2.1</b>	<b>43.5</b>	<b>5.3</b>	<b>71.1</b>	<b>6.8</b>	<b>7.9</b>	<b>1.0</b>
of which gas	31.7	0.6	78.0	2.2	90.7	2.1	13.3	0.2
of which electricity	8.8	0.3	26.0	0.8	199.0	4.2	-15.4	-0.4
of which fuels	11.4	0.5	22.0	0.9	7.6	0.4	14.0	0.8
<b>Services</b>	<b>3.6</b>	<b>1.9</b>	<b>4.4</b>	<b>2.3</b>	<b>4.1</b>	<b>1.8</b>	<b>4.4</b>	<b>2.0</b>
of which housing	2.1	0.2	3.3	0.6	2.0	0.1	2.5	0.2
of which transport	11.5	0.2	5.2	0.1	17.0	0.3	-11.6	-0.2
of which recreation and culture	4.0	0.3	6.4	0.6	2.7	0.2	4.1	0.2
of which communications	-1.6	0.0	-0.2	0.0	-2.4	-0.1	-1.9	-0.1
of which hotels and restaurants	5.0	0.4	8.8	0.3	7.5	0.8	8.8	1.3
<b>HICP total (in %)</b>	<b>7.1</b>		<b>11.6</b>		<b>12.6</b>		<b>7.3</b>	
<b>HICP flash November 2022 (in %)</b>	<b>7.1</b>		<b>11.3</b>		<b>12.5</b>		<b>6.6</b>	

How to read it: in France, in October 2022, food inflation was 12.0% year-on-year and the contribution of food to harmonised inflation was 2.2 points.

Source: INSEE, Destatis, Istat, INE, INSEE calculations

## Box 2: Energy intensity and industrial production in the four main Eurozone economies

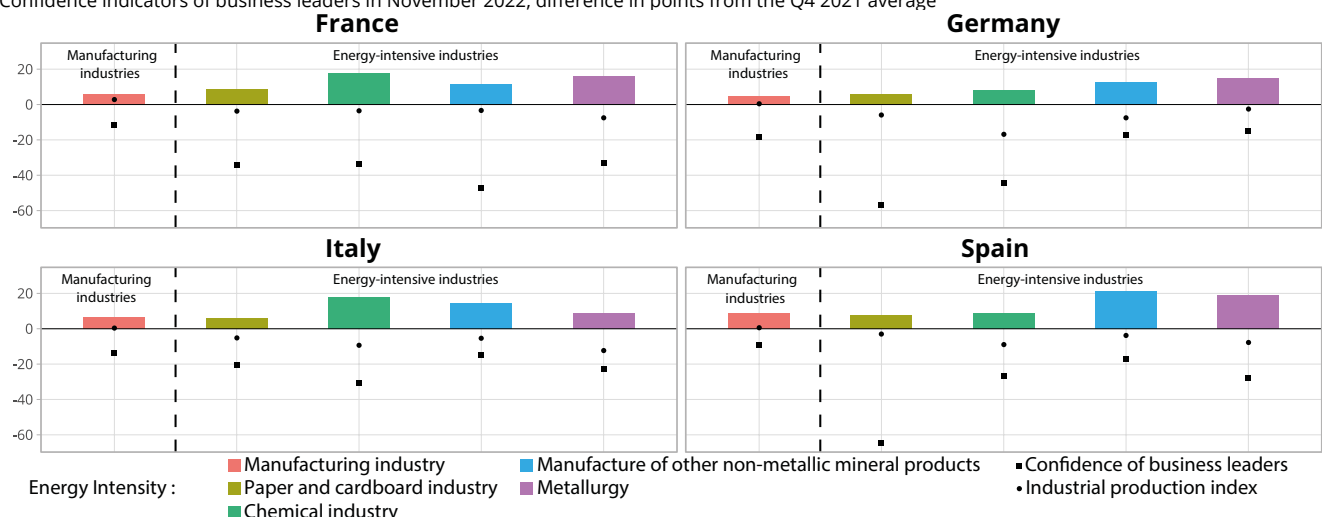
In 2018,<sup>1</sup> intermediate energy consumptions<sup>2</sup> represented about 4% of the production value of all French, German, Italian and Spanish branches of activity. However, there are some significant disparities between branches. Thus, on average, industry consumes more energy inputs than services. Even within industry, the energy branches (coke and refined petroleum, electricity and gas production, etc.) are much more energy intensive<sup>3</sup> than the other manufacturing branches. Nevertheless, these last include some that do consume particularly high levels of energy, such as metallurgy, the manufacture of non-metallic mineral products (which importantly includes the glass industry), the chemicals industry or the primary wood industry.

At the end of 2022, the economic situation in these energy-intensive branches (excluding energy-producing branches) appeared to have deteriorated further than that of the manufacturing industry overall (► **Figure 1**). In September, production in these branches in the four countries followed here was therefore down compared to Q4 2021. Conversely, manufacturing production as a whole was at a higher level than in the last quarter of 2021 in France, Italy and Spain, while in Germany, production had fallen back slightly (-0.2%). In October, the confidence of business leaders in industry<sup>4</sup> was more pessimistic than in autumn 2021, and this mood was more pronounced in the four branches identified as major energy consumers.

Nevertheless, energy intensity does not seem to be the only factor accounting for variations in production: within each country, the loss of production or confidence is not necessarily proportional to the energy intensity of the branches. First of all, the chosen point of reference, in this case the last quarter of 2021, may have a role to play: a branch in which the situation was still in decline or had already deteriorated at the end of 2021 may report a smaller decline in production in autumn 2022. A smaller loss of production or of confidence in a branch can also be explained by a greater ability on the part of the branch to pass on the price increases of these energy inputs to the price of the finished products. In addition, measures that the authorities put in place to support businesses may benefit some branches more than others. Finally, some branches may find it easier than others to substitute a costly or scarce energy for another in their production processes, thus reducing their exposure to energy price rises and securing production. ●

### ► 1. In energy-intensive branches, both the confidence of business leaders in industry and production deteriorated in 2022

Energy intensity in 2018 (share as % of intermediate energy consumptions compared to production)  
Industrial production indices (IPI) in September 2022, as a % difference from the Q4 2021 average  
Confidence indicators of business leaders in November 2022, difference in points from the Q4 2021 average



Note: the manufacturing industry includes coke production and refining.

How to read it: in France, in 2018, intermediate consumptions in the manufacturing industry in France represented about 6% of production. In September 2022, production in this branch was 3.4% above its level at the end of 2021. The confidence of business leaders in November was 11.7 points below its level at the end of 2021.

Source: INSEE, Destatis, Istat, INE, DG ECFIN, INSEE calculations

1 Detailed data for intermediate consumptions are taken from input-output tables (TES) of the different countries (2018 version).

2 Intermediate consumptions of products from the extractive industries, coke and refined petroleum production and production and distribution of electricity, gas and air conditioning.

3 The energy intensity of a branch is the ratio of its intermediate energy consumptions to its output.

4 The confidence indicator, published by DG-ECFIN, corresponds to the average of the balances of opinion on the level of orders and on expected production and the opposite of the balance on inventories of finished products.

## Recent changes in labour productivity in the four main Eurozone economies: breakdown per branch of activity

After fluctuating sharply during the health crisis, hourly productivity in Q4 2022 remains well below its 2019 level in France and Spain, while exceeding it in Germany and Italy. Although a one-off sectoral composition effect had an upward bearing on hourly productivity in 2020 and 2021, the productivity differentials in 2022 in relation to pre-crisis levels mainly reflect an intra-branch effect, i.e. the changes in productivity in the branches of activity themselves.

In France, the loss of hourly productivity in the main branches of activity appears to be greater than amongst its neighbours. This applies to industry in particular, and more specifically to the energy-water-waste branch (probably linked to the difficulties currently affecting electricity production), in addition to the manufacture of transport equipment, where output in automobile manufacturing has deteriorated more significantly than the volume of hours worked in France, Germany and Italy. However, for the manufacture of other transport equipment (aeronautical construction, in particular), this differential appears to be greater in France than in the other three countries. In addition, in France, the rapid development of work-linked training in all branches since the end of 2020 automatically explains a significant proportion of the decline in productivity.

### In France, contrary to the situation in Italy and Germany, productivity is struggling to return to its pre-health-crisis level

In Q3 2022, productivity per capita in France, corresponding to the ratio of the value added of the economy to the number of people in employment,<sup>1</sup> was well below its pre-health-crisis level (-3.8% compared to the average level in 2019, ► **Figure 1** on the left). This drop in productivity, reflecting the fact that employment has grown faster than activity, can apparently be explained by several factors (sharp rise in apprenticeships, increase in the number of people on sick leave, workforce retention by certain enterprises in anticipation of a normalisation of activity and in a context of labour market tensions, or even a reduction in concealed work in favour of declared jobs, etc.). In

particular, the sharp rise in apprenticeships is likely to have made a significant contribution (at least 50%) to the decline in France's productivity (► **Box**). In Germany, the apprenticeship system, which was much more highly developed than in France during the pre-crisis period, has generally remained stable since then.

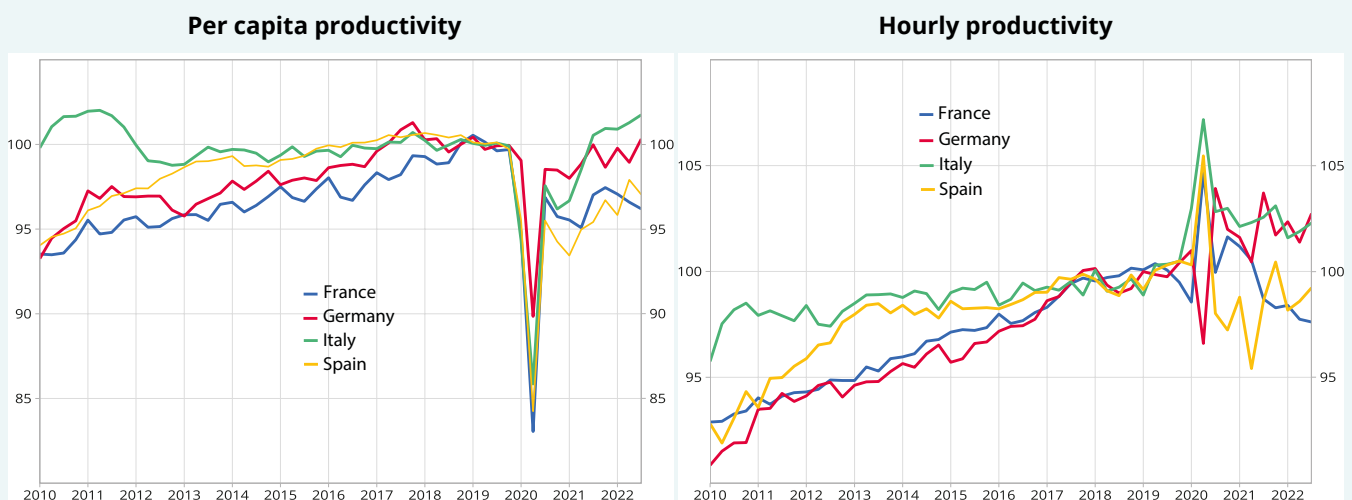
In this respect, it may be useful to compare France's productivity dynamics with the main Eurozone economies in an attempt to identify its specificities.

Amongst the other major Eurozone economies, Spain also recorded a significant decline in per capita productivity (-3.0% in Q3 2022 compared to the 2019 average). In contrast, by mid-2021, productivity in Germany and Italy had returned to levels close to those seen before the health crisis.

<sup>1</sup> The definition of employment used is that adopted by the national accounts and corresponds to the average employment over the quarter. It also corresponds to total employment, i.e. including employees and the self-employed.

### ► 1. Per capita and hourly labour productivity in the four largest Eurozone economies

base 100 = 2019



Last point: Q3 2022

Scope: All branches of activity, payroll employment and self-employment.

How to read it: per capita labour productivity was more than 3.8% below its 2019 level. Hourly labour productivity was 2.4% below its 2019 level.

Source: INSEE, Destatis, Istat, INE, national accounts, INSEE calculations

# French economic outlook

Beforehand, productivity had fluctuated sharply during the health crisis: the decline in activity at the time of the lockdown periods was accompanied by much smaller reductions in employment due to introduction of the short-time working schemes, which kept people in employment with reduced working hours and led to an automatic decline in per capita productivity. In order to ignore variations in per capita productivity resulting from short-time working schemes and from other factors influencing working time (absence due to sick leave, changes in the amount of working time), the hourly productivity indicator – corresponding to the ratio of the value added of the economy to the number of hours actually worked – shall be used for the rest of this analysis (► **Figure 1** on the right).

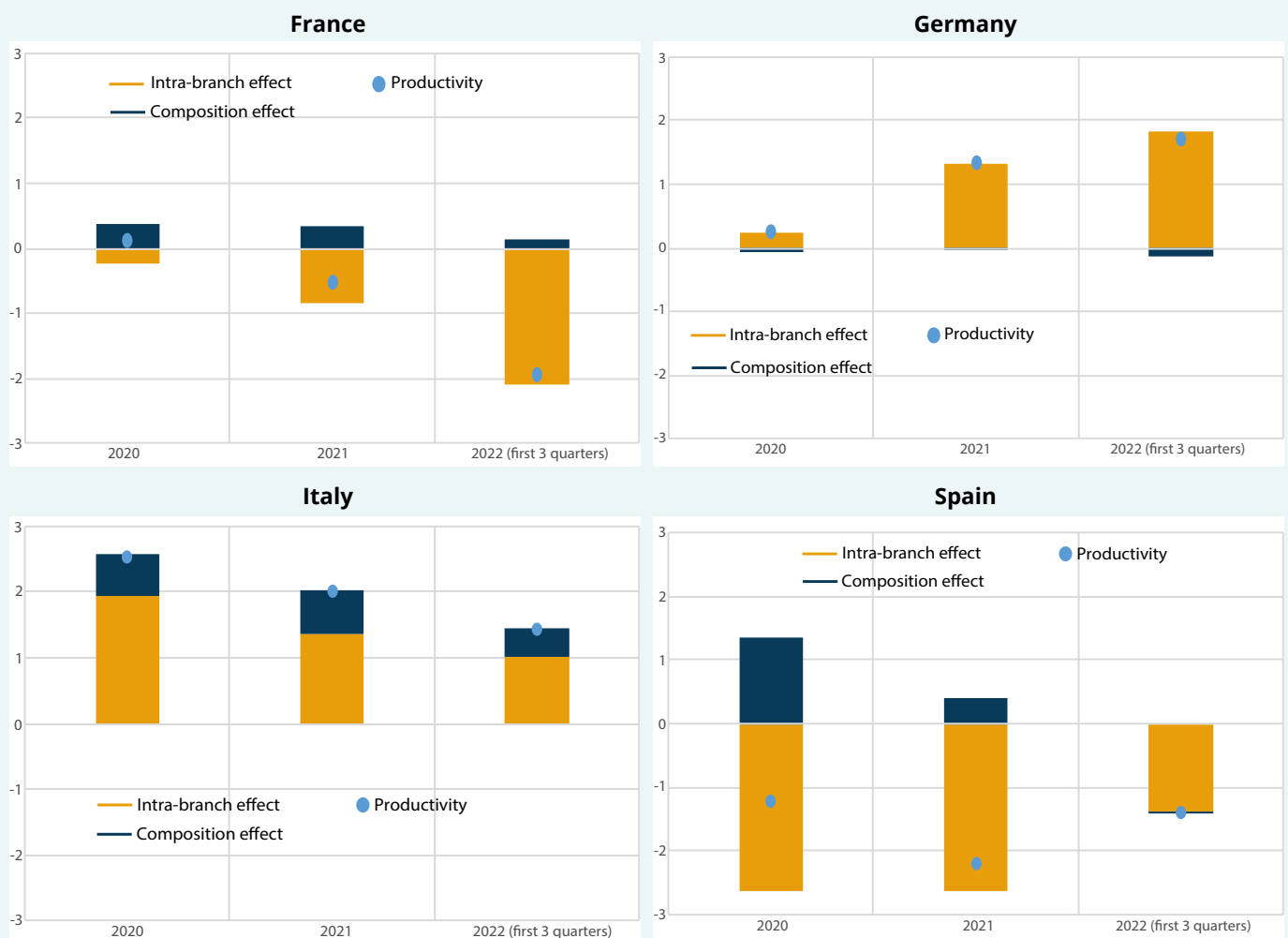
During the health crisis, hourly productivity did not decline and even occasionally increased in different countries, which mainly reflected sectoral composition

effects, as the branches most affected by the restrictions on activity (particularly accommodation and food services), with a relatively lower-than-average level of productivity, contributed much less to overall production (► **Garcia and Loublrier, 2021**). In 2020 and 2021, this composition effect had a strong upward bearing on hourly productivity, in France but also in Italy and Spain (► **Figure 2**). In Germany, this composition effect was almost non-existent, possibly due to less stringent restrictions on activity or a different breakdown by branch. By 2022, the composition effect had significantly weakened in France, Spain and Italy, and the loss of productivity in these countries was mainly due to an intra-branch effect.

With the disappearance of health restrictions, and the resumption of activity in the least productive branches, the composition effect has diminished. In Q3 2022, hourly productivity exceeded its pre-health-crisis levels

## ► 2. Difference in hourly productivity compared to the 2019 average (all industries excluding real estate services)

difference from the 2019 average and contributions to this difference, in points



Note: the data for 2022 concerns the first three quarters of the year only. Real estate services are excluded from the scope of the analysis here because they are also likely to significantly increase the composition effect measured in the various countries in 2022. Composition effects are calculated using the ten-item branch classification.

How to read it: in France, in 2020, productivity was 0.1% above its 2019 level, with a 0.4 point composition-effect contribution and a -0.2 point intra-branch-effect contribution.

Source: INSEE, Destatis, Istat, INE, national accounts, INSEE calculations

in Germany and Italy. In Spain, where activity has not yet regained its end-2019 level, hourly productivity in Q3 2022 remained 0.8% below its 2019 level. Finally, in France, hourly productivity in Q3 2022 stood at more than 2.4% below its 2019 level.

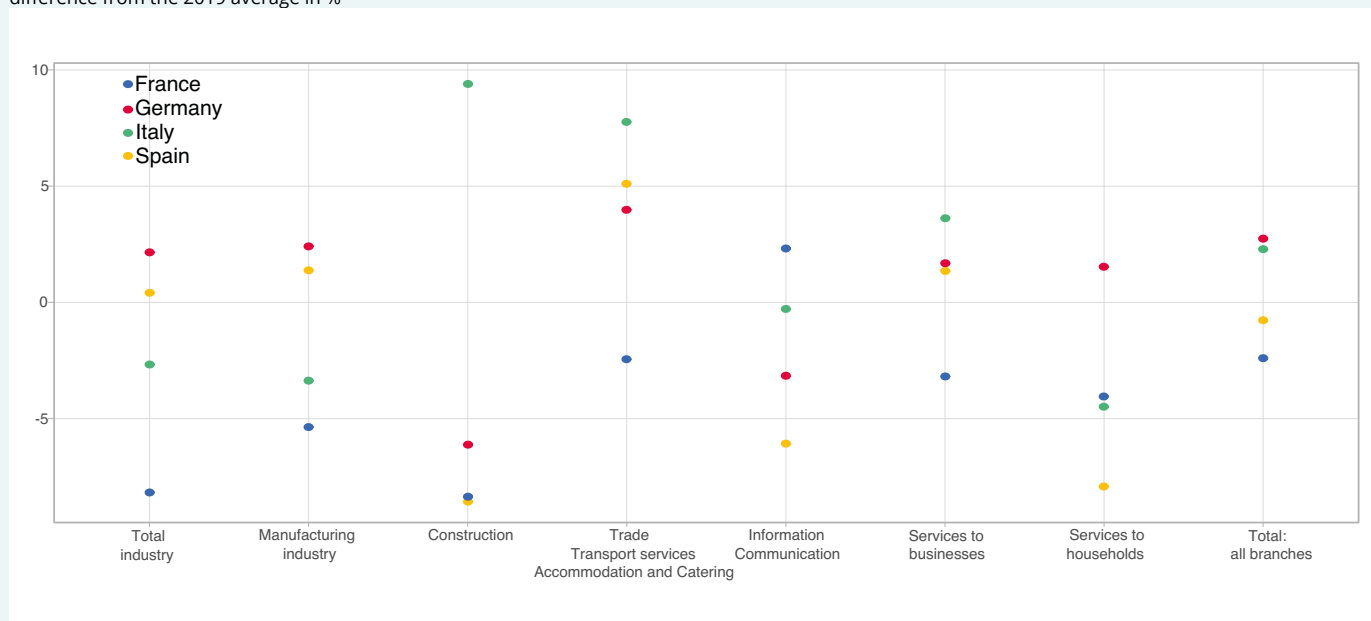
## In France, industry has a notable impact on hourly productivity

Analysis of the changes in value added and hours worked per branch suggests that the deterioration in productivity has been more widespread in France than in neighbouring economies (► [Figure 3](#)), which is probably partly due to the dynamic growth in apprenticeships. In Q3 2022, industrial branches in France recorded a greater loss of hourly productivity than service activities, relative to the average for 2019. In industry, which accounts for around 10% of all hours worked, productivity has dropped by 8.2% since 2019. This decline is the result of a sharp deterioration in value added (-9.6% between 2019 and Q3 2022), while in comparison, there has only been a slight drop in the number of hours worked (-1.6%, ► [Figure 4](#)).

Excluding industry, hourly productivity fell sharply in construction in France between 2019 and Q3 2022 (-8.4%). In Spain, where this branch has been struggling since the 2008 economic crisis, the decline is of a similar magnitude. In Germany, productivity in the same sector also fell sharply, but to a lesser extent (-6.1%), while in Italy it rose sharply (+9.4%): the buoyancy of Italian construction is undoubtedly explained by the public infrastructure projects launched as part of the post-COVID stimulus plan.

### ► 3. Hourly productivity per branch in Q2 2022, in the four main Eurozone economies, relative to the average for 2019

difference from the 2019 average in %



How to read it: in France, productivity fell back by 8.2% in industry between 2019 and Q3 2022.

Source: INSEE, Destatis, Istat, INE, national accounts, INSEE calculations

## In France and in industry, productivity has deteriorated particularly strongly in the production of energy and transport equipment

Two branches of activity in particular have contributed to the decline in hourly productivity in French industry: energy, water, waste, and the manufacture of transport equipment (► [Figure 5](#)). In these two branches, value added remained well below its pre-health-crisis level in Q2 2022, while the volume of hours worked declined to a much lesser extent (transport equipment) or hardly at all (energy, water, waste).

The value-added data available via the Eurostat website does not enable the performance of a more detailed comparative analysis between countries than at the level of manufacturing industry. One way to remedy this shortcoming, albeit approximate, is to consider, within each industrial branch, the output of that branch (as estimated by the industrial production indicators (IPI)) relative to the number of hours worked, as both of these figures are available at a relatively disaggregated level for each of the countries monitored, but only up to Q2 2022 for employment. The resulting indicator differs from hourly productivity, of course, since production is not identified with value added. However, for France and for the transport equipment and energy, water and waste branches, the picture painted by the ratio of industrial production to hours worked is qualitatively similar to that of hourly productivity, which may also enable it to be considered at more detailed levels of disaggregation.

Within the energy, water and waste branch, industrial production in the energy sector in France has declined

# French economic outlook

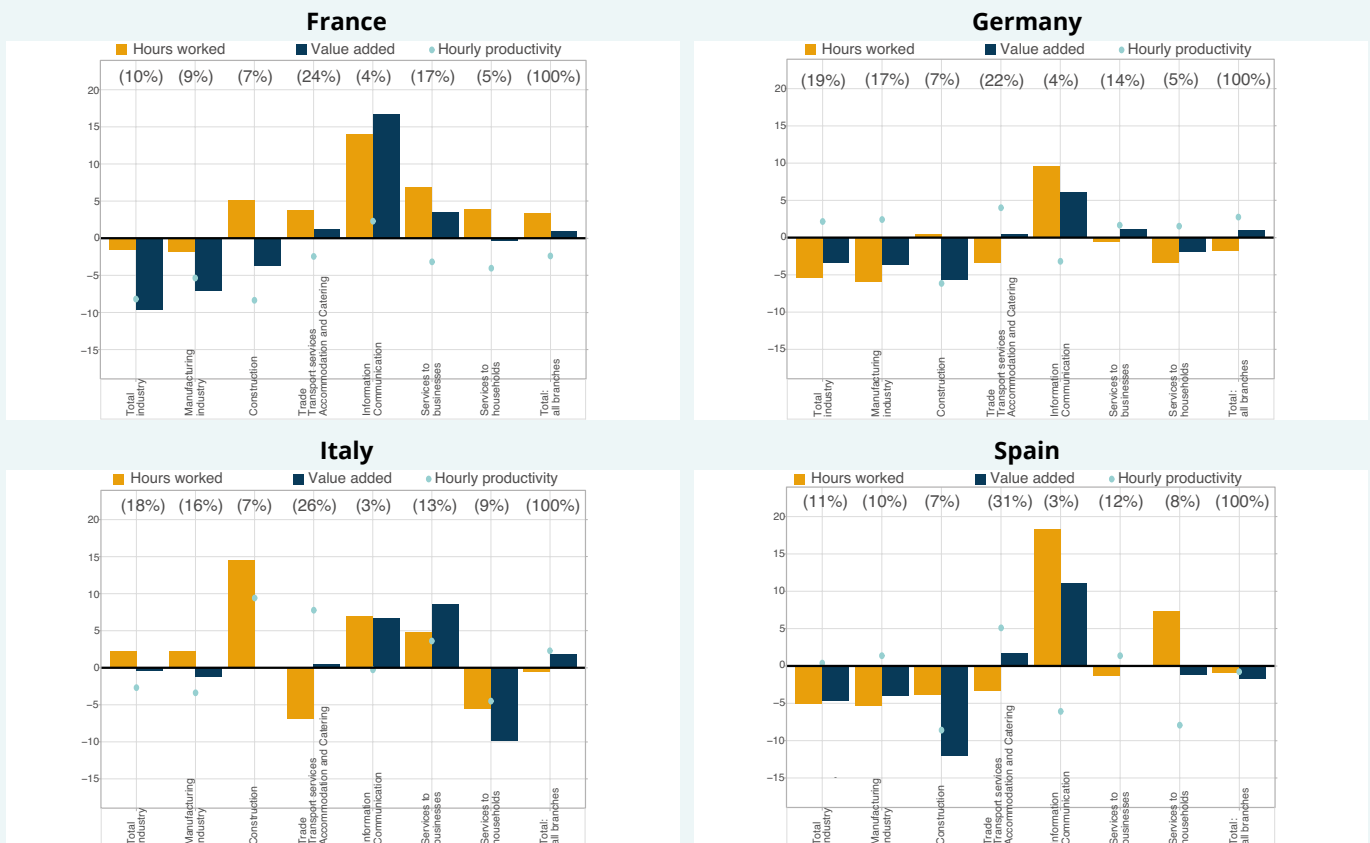
sharply (-10.2% in Q2 2022 compared to the average for 2019), while the hours worked have remained virtually unchanged (► **Figure 6**). This also applies to Germany, although to a lesser extent. In contrast, energy production has not declined at all in Spain and only very slightly in Italy. In France, the difference between production and hours worked probably reflects the difficulties affecting electricity production, in a sector in which there is relatively little opportunity to adjust the volume of work to fluctuations in activity. In Germany, however, it may relate to the difficulties in gas distribution in the context of geopolitical tensions in Eastern Europe.

In France, for the manufacture of transport equipment, the drop in hourly productivity calculated in this way concerns both the automobile industry and the other transport equipment industries (particularly aeronautical). In the automotive industry, productivity has also dipped markedly in Germany and Italy, but less sharply than in France. In all three countries, this decline may reflect workforce retention behaviours, as the sector has been experiencing severe supply-chain difficulties since 2020. However, for the manufacture of other transport equipment, the decline in hourly productivity seems specific to France and Spain. ●

*Yves Jauneau, Robin Navarro, Mathilde Niay, Meryam Zaiem*

## ► 4. Changes in hourly productivity, hours worked and value added between 2019 and Q3 2022, in the four main Eurozone economies

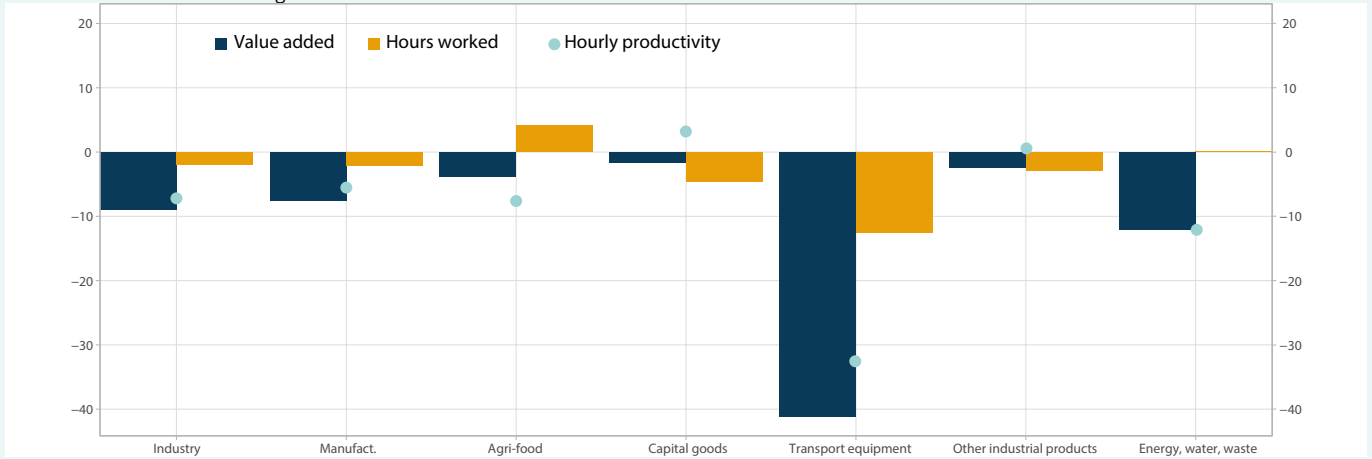
Difference relative to the 2019 average as a % (the share of hourly employment for the branch in total hourly employment is shown in brackets under the branch name)



How to read it: in France, productivity fell back by 8.2% in industry between 2019 and Q3 2022. Over the same period and in the same branch, employment in hours edged down by 1.6% and value added dropped by 9.6%. In Q3 2022, industry accounted for 10% of the total hours worked in the French economy. Source: INSEE, Destatis, Istat, INE, national accounts, INSEE calculations

## ► 5. Hourly productivity, hours worked and value added in France in Q2 2022, in industrial branches

difference from the 2019 average in %

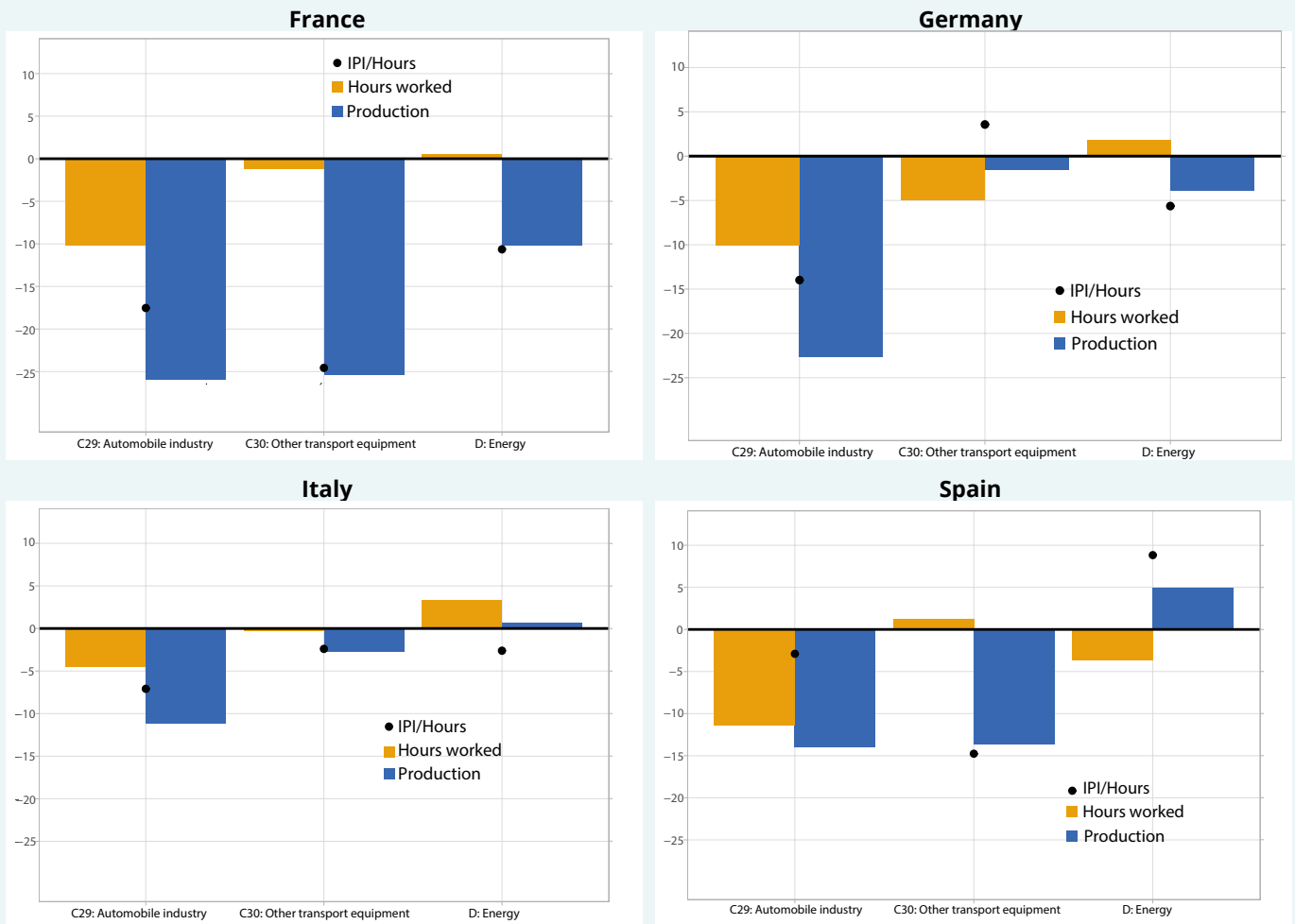


How to read it: in France, productivity fell back by 7.2% in industry between 2019 and Q2 2022. Over the same period and in the same branch, hours worked slipped back by 1.9% and value added dropped by 8.9%.

Source: INSEE, INSEE calculations

## ► 6. Changes in the ratio of the industrial production index to hours worked in selected branches between 2019 and Q2 2022

difference from the 2019 average in %



How to read it: in France, production in the automotive industry declined by 25.9% percent between 2019 and Q2 2022. Employment slipped back by 10.2%.

Source: INSEE, Destatis, Istat, INE, national accounts, INSEE calculations

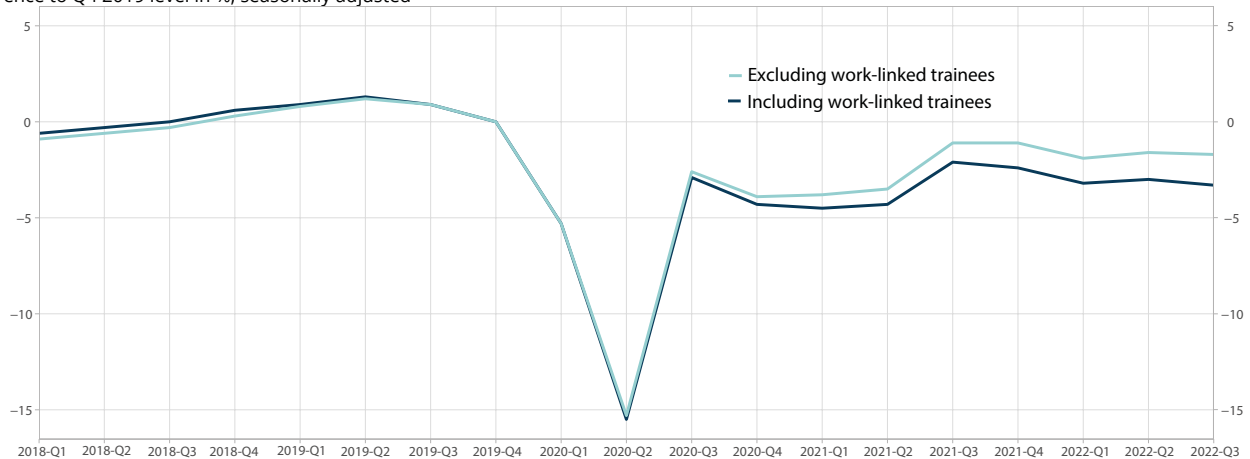
## The rise in the number of work-linked training programmes in France explains a significant proportion of the recent loss of per capita productivity

Work-linked training contracts – especially apprenticeships – made a significant contribution to payroll employment dynamics between the pre-crisis period (end 2019) and Q3 2022, with approximately one in three salaried jobs created during this period being in the form of a work-linked training contract. The momentum of this work-linked training pushed down the average level of per capita productivity (value added relative to the number of jobs). Indeed, people on work-linked training contracts spend a proportion of their time in education, even though their legal working time is that of a full-time employee, which means that they are counted as full-time employees in the national accounts. Therefore, they can logically be considered to contribute proportionally less to their company's production than other employees. Moreover, young employees on work-linked training schemes, who by definition have acquired very little experience in their company, are probably less productive than other employees with the same initial qualifications.

Quantifying the contribution of work-linked trainees to the loss of per capita productivity since the end 2019 would require an estimate of the value added created by work-linked trainees alone (or symmetrically, the value added created by non-work-linked trainees). Given the difficulty of producing such an estimate, a polar assumption postulates that the productivity, and therefore the value added, of work-linked trainees is zero. This assumption, which has the merit of simplicity, naturally underestimates the productivity of work-linked trainees and therefore overestimates the latter's contribution to the loss of productivity observed since the end of 2019.

According to this assumption, per capita productivity excluding work-linked trainees in Q3 2022 would stand at 1.7 points below its end-20019 level, i.e. half the decline in productivity recorded when work-linked trainees are included (3.3 points). This would imply that the dynamic growth of work-linked training reduced productivity growth by no more than 1.6 points in the non-agricultural market sector between end 2019 and Q3 2022. ●

### ► 1. Per capita productivity in the non-agricultural market sector, as a difference relative to end 2019 difference to Q4 2019 level in %, seasonally adjusted



Note: here, productivity is measured as the ratio of the value added of the non-agricultural market sector to payroll employment in the same sector (including or excluding work-linked trainees).

How to read it: in Q1 2018, the productivity of the non-agricultural market sector including work-linked trainees is 0.6 percentage points lower than in Q4 2019.

Source : INSEE, National Accounts and Dares, Apprenticeship Information System, INSEE calculations

### Bibliography

Léa Garcia, Alexis Loublie (2021) "During the health crisis, per capita productivity and hourly labour productivity fluctuated considerably", Focus, *Economic outlook* of 14 December 2021. ●



# United Kingdom

In Q3 2022, activity in the UK declined (-0.2%, after +0.2% in Q2, ► **Figure 1**), in a context of very high inflation, especially in energy, and with strikes in several sectors of the economy. Household consumption slipped back (-0.5%) as did corporate investment (-0.5%), reflecting supply chain difficulties, which remain significant, as well as the intensification of monetary tightening by the Bank of England. In addition, some strong movements have affected foreign trade: the net decline in imports (-3.2%) was accompanied by a sharp increase in exports (+8.0%), in line with variations in flows of non-monetary gold, which were very volatile. This phenomenon automatically generates major destocking (contribution of -3.9 points to GDP change, offsetting to a large extent the foreign trade contribution of +3.2 points).

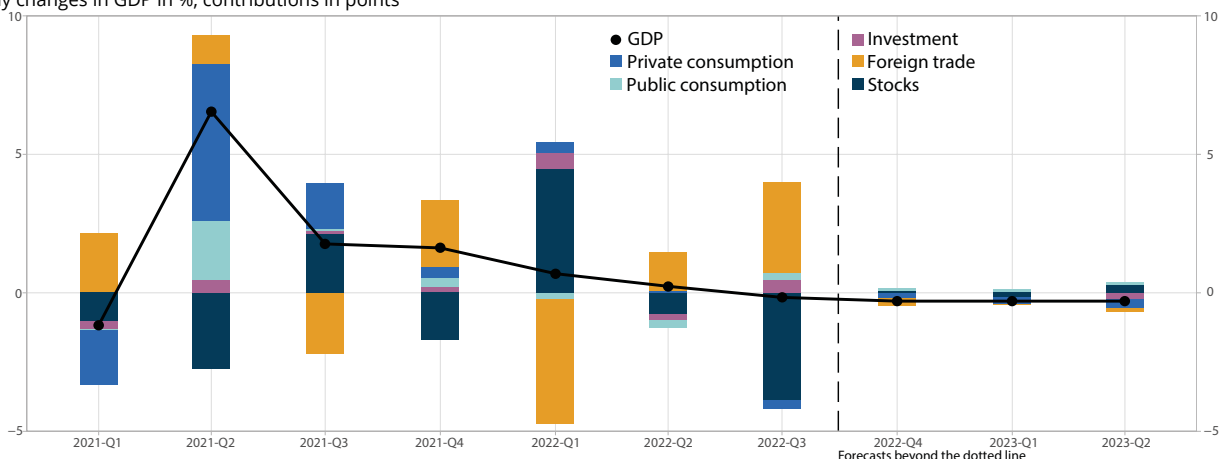
At the start of Q4, inflation was still very high in the United Kingdom: in October, the increase in the electricity and gas price cap (admittedly limited to +45% –against 80% originally planned– in accordance with the measures put in place by the authorities) took inflation to a new high (+11.1% year-on-year, ► **Figure 2**), while core inflation (excluding energy and food) remained stable (+6.5% year-on-year).

This rise in inflation is expected to lead to a further decline in household purchasing power in the last quarter of 2022, in line with a faster rise in consumer prices than in wages (+6% in September year-on-year) and this is despite a job market that remains tense. Over the last few quarters, the United Kingdom has been faced with a labour shortage: the unemployment rate reached its lowest level since 1975 (3.6% in Q3), in part because the labour force participation rate has been in decline since the health crisis (78.4% in Q3). Given this context, the confidence of UK households reached an all-time low in October, especially as the United Kingdom is also going through a political and financial crisis of confidence.

At year’s end, activity is expected to contract further (-0.3%) with this decline carrying on into H1 2023. This contraction is likely to result from that in domestic demand. Household consumption looks set to continue to slip back, in line with a purchasing power in constant decline. Continuing monetary tightening is likely to weigh on household investment via the rise in mortgage rates. Corporate investment is also expected to be affected by these increases in rates, despite support provided through the Super-deduction programme (tax reduction on amounts invested) until next March. ●

## ► 1. Beyond the statistical fluctuations in foreign trade, an economy in recession

quarterly changes in GDP in %, contributions in points

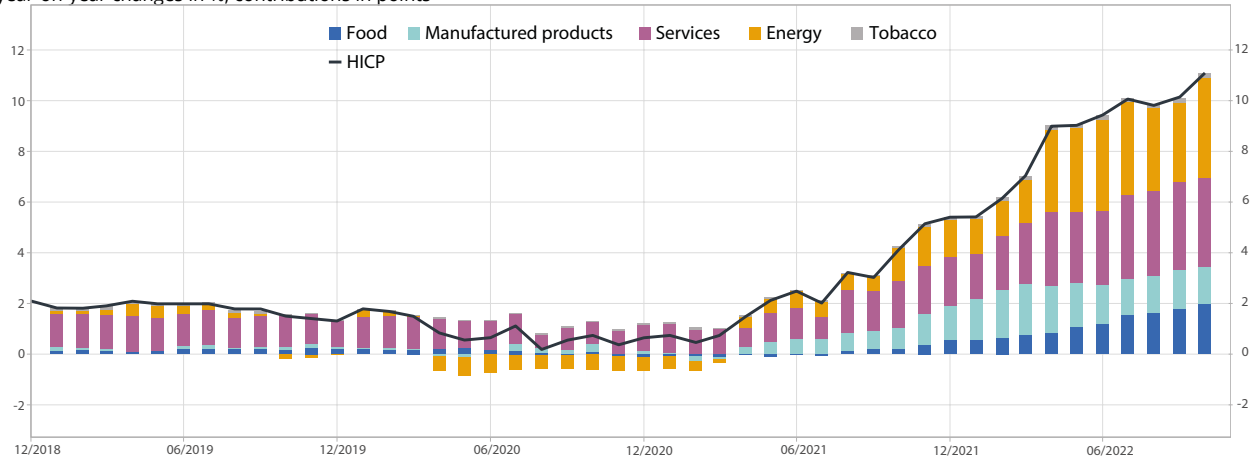


How to read it: in Q2 2022, GDP increased by 0.2%. Foreign trade contributed 1.4 points to this growth.

Source: ONS, INSEE calculations

## ► 2. Energy inflation increased in October with the raising of the electricity and gas price cap

HICP year-on-year changes in %, contributions in points



Last point: October 2022.

How to read it: in October 2022, consumer prices increased by 11.1% year-on-year.

Source: ONS, INSEE calculations

# United States

Over the last few quarters, activity in the United States has been moving at an irregular pace, characterised by movements in foreign trade and the gradual slowdown in household consumption after the post-pandemic upswing. After a deceptive H1 2022, when the drop in GDP could be primarily explained by the decline in exports in Q1 and by strong variations in inventories in Q2 (► [Figure 1](#)), GDP rebounded in Q3 (+0.7%), driven once again by foreign trade.

Exports did indeed increase substantially (+3.6% in Q3), sustained by petroleum products (► [Figure 2 left-hand side](#)), especially those destined for Europe, substituting for Russian products. Imports, on the other hand, fell back (-1.9%), especially imports of consumer goods (► [Figure 2 right-hand side](#)). Since the beginning of 2022, consumption of goods by US households has slipped back, while consumption of services has increased (+0.7% in Q3), but at a more moderate pace than in Q2 (+1.1%).

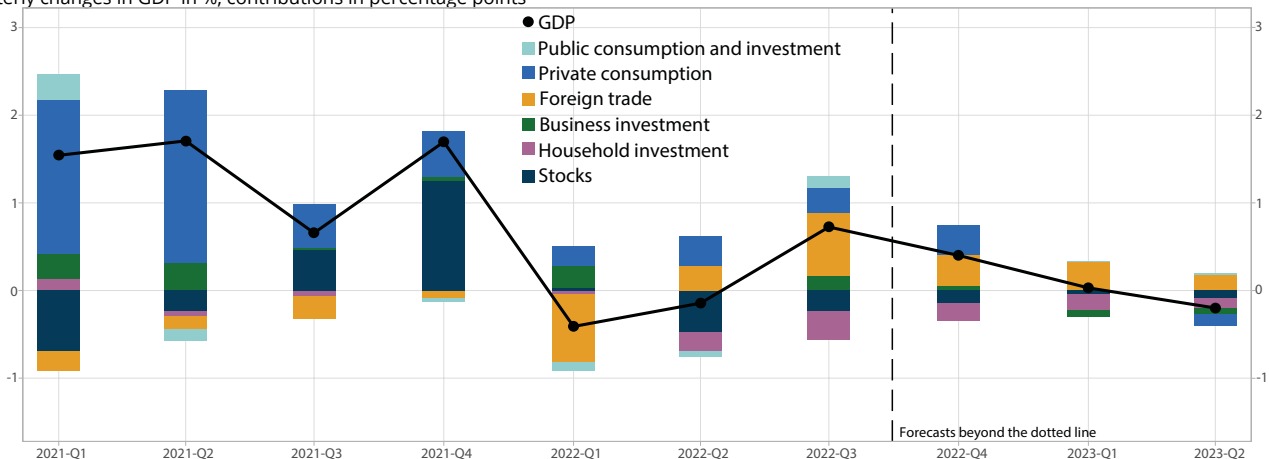
Domestic demand has also been affected because household investment was down sharply (-7.5% in Q3 after -4.8%). As a result of the rise in base interest rates decided by the Federal Reserve, borrowing rates have increased sharply since the beginning of the year (► [Figure 3 left-hand side](#)), limiting households' access to credit. The real estate market expanded considerably after the pandemic, but has been particularly affected by the tightening of monetary policy (► [Figure 3 right-hand side](#)).

In addition, inflation is still reaching high levels in the United States, although it has been falling for a few months (+7.1% year-on-year in November, against +9.1% in June). However, the rise in prices now concerns all consumer items: core inflation (+6.0% year-on-year in November) is now much higher for services (+6.8%) than for goods (+3.7%) (at the start of the year, on the contrary, it was 7 points below). This increase in the price of services is partly due to wage growth in a labour market that remains brisk: the wage component in the labour cost index increased by 5.1% year-on-year in Q3.

Given this context, household consumption is expected to slow towards the end of the year then fall back in H1 2023, affected by inflation that is admittedly declining year-on-year but at levels that nevertheless remain high. The tightening of access to credit could also affect household consumption, via consumer credit, but above all it is likely to continue to hamper residential investment considerably, and corporate investment to a lesser extent. Meanwhile, exports are expected to lose some of their momentum, with imports continuing their decline. As a result, the US GDP looks set to slow in Q4, bringing annual growth in 2022 to 2.0%, before weakening slightly in H1 2023. ●

## ► 1. Foreign trade drove GDP growth in Q3 2022

quarterly changes in GDP in %, contributions in percentage points



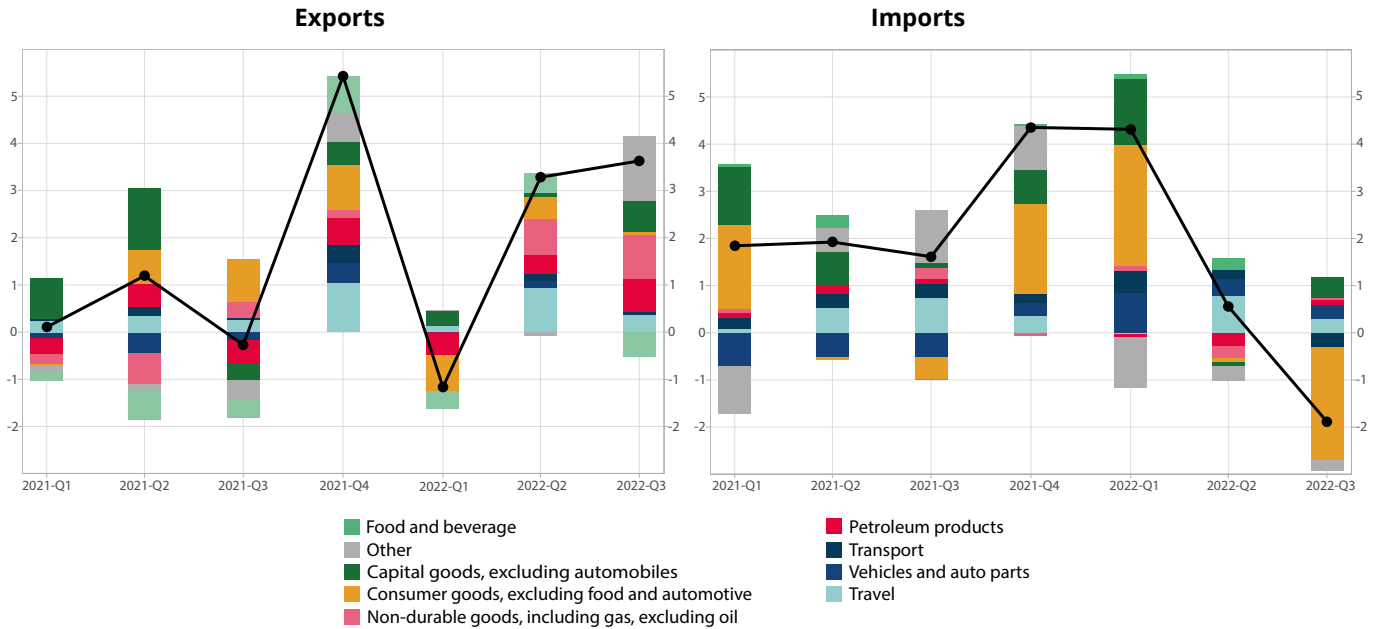
How to read it: in Q3 2022, GDP increased by 0.7% and private consumption contributed +0.3 points to this shift.

Source: Bureau of Economic Analysis

# International economic outlook

## ► 2. The rise in exports in Q3 2022 is partly due to exports of energy products to Europe, while the drop in imports mainly concerns consumer goods

quarterly changes in imports and exports in %, contributions in percentage points

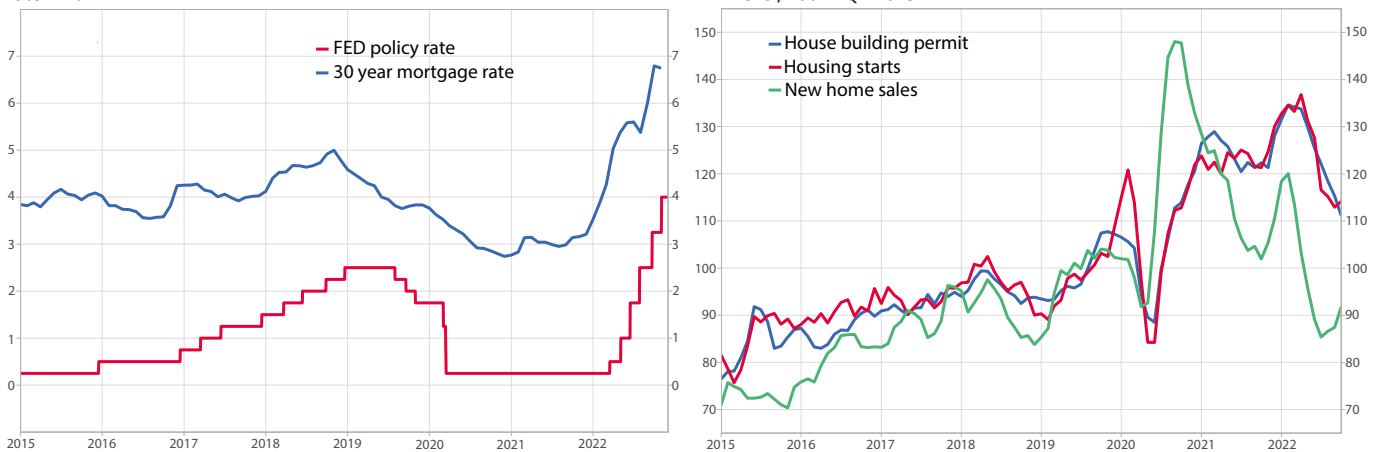


How to read it: in Q3 2022, exports increased by 3.6% and the contribution of petroleum products to this change is +0.7 points.

Source: Bureau of Economic Analysis

## ► 3. The increase in rates has caused a turnaround in the US real estate market

rate in %



Last point : 2 December 2022 for the Fed's base interest rate, November 2022 for the mortgage rate, October 2022 for real estate indicators.

How to read it: in October 2022, the number of new building permits was 11% above its 2019 average.

Source: Fed, Freddie Mac, Census Bureau

# China

In China, economic activity remains strongly correlated to the progress of the epidemic and the resulting lockdowns. After the decline in Q2 (-2.7%) marked by strict lockdowns, especially in Shanghai, GDP rebounded strongly in Q3 (+3.9%), boosted by the reopening of the economy. However, its year-on-year growth (+3.9% in Q3 compared to Q3 2021) remains lower than what it was in Q1 (+4.8%). Activity was stimulated by the rapid recovery in industrial production (+4.3% in Q3 after -3.2%, ► [Figure 1](#)), especially automobile production (+37.3%).

Regarding domestic demand, household consumption was penalised for longer than production in the spring, and the rebound in retail sales in Q3 (+6.8%) masks sluggish progress month by month (► [Figure 1](#)) due to the temporary lockdowns imposed in several regions.

In addition, the real estate sector remains in difficulty: real estate transactions fell back once again in Q3 (-2.6%), as did housing starts (-6.1%), which are now at a lower level than in the 2020 lockdown (► [Figure 2](#)). Central government is trying to revive this sector by supporting the policy banks, responsible for funding infrastructure projects (public investment up by 10.6% year-on-year in the first nine months of the year, against +2.0% for private investment). Monetary easing measures have also been adopted, in the form of rate reductions in August and December, especially for mortgages and for modernising equipment for SMEs. However, possible monetary support is limited by the depreciation of the yuan (-10.9% against the dollar between January and November) due to the outflow of capital caused by the rise in rates on western markets (-15% of Chinese bonds held by foreign investors since the beginning of the year).

Unlike western countries, the Chinese economy has so far been spared inflationary tensions: the consumer price index slowed again in November (+1.6% year-on-year after +2.1%), due to food inflation (+3.7% after +7.0% due to a base effect in 2021). Inflation excluding food and energy rose slightly (+0.6% year-on-year in November, the same as in September and October). Producer prices meanwhile were in decline in November (-1.3% year-on-year, as in October), affected by the fall in prices in the manufacturing industries (-3.2%) and extractive industries (-3.9%).

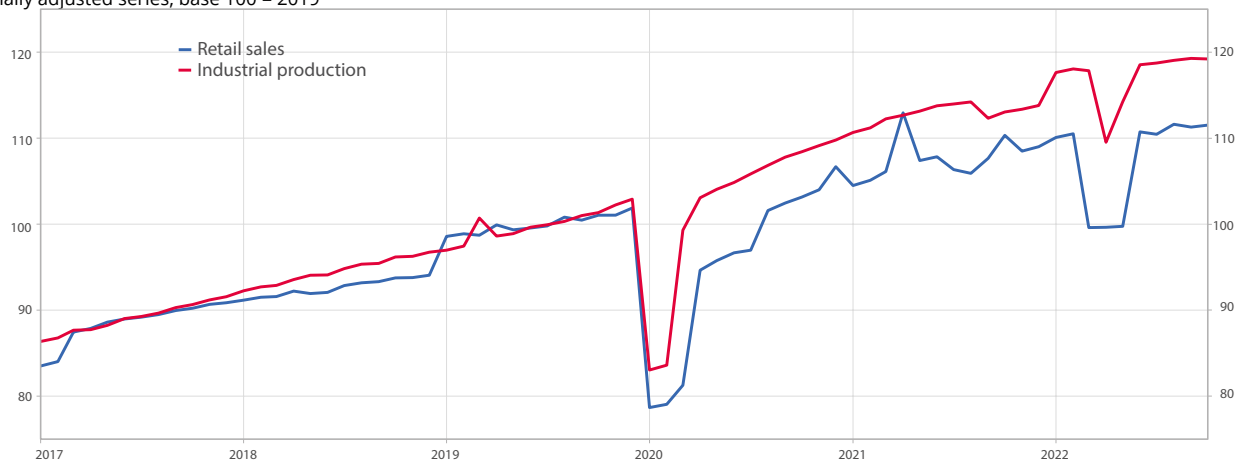
In foreign trade, imports are fairly sluggish and have not returned to their level at the start of the year (► [Figure 3](#)), despite a significant increase in imports of oil from Russia (+16.1% year-on-year in October) and liquefied natural gas (+52.3%). Exports, the driving force behind the end of lockdowns in 2020, have also seemed fairly sluggish since the start of 2021, suffering both from production problems caused by the lockdowns and the distinct slowdown in world demand for Chinese products (+0.3% in Q3, against +2.2% and +1.6% in Q1 and Q2). They fell sharply in November (► [Figure 3](#)). The slowdown in the global economy and the ongoing reorientation of western consumption towards services is likely to affect exports in the coming quarters, especially as new sanctions have been imposed by the United States on Chinese imports of US semi-conductors and high-tech products, threatening electronics production chains.

In Q4, it is likely that the Chinese economy will still be affected by sporadic lockdowns across the country and by difficulties in the real estate sector, and it is therefore expected to slow down. In 2023, the gradual easing of health constraints and public spending on infrastructure should allow for a moderate rebound in economic activity. ●

# International economic outlook

## 1. Health restrictions affected retail sales more than industrial production

seasonally adjusted series, base 100 = 2019



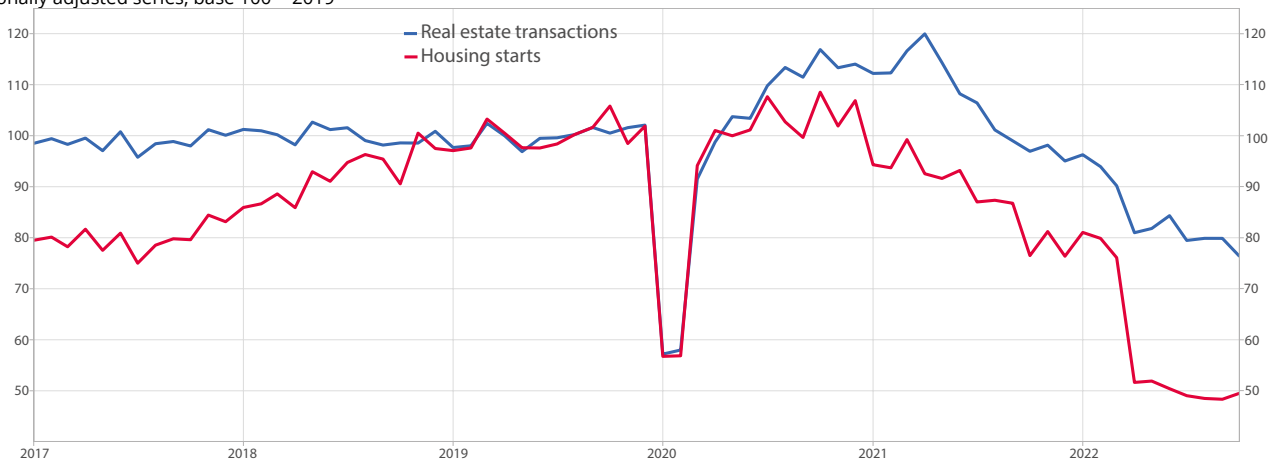
Last point: October 2022.

How to read it: in October 2022, the industrial production index was 19% above its 2019 average.

Source: NBSC, INSEE calculations

## 2. The real estate market has not rebounded after the spring 2022 lockdowns

seasonally adjusted series, base 100 = 2019



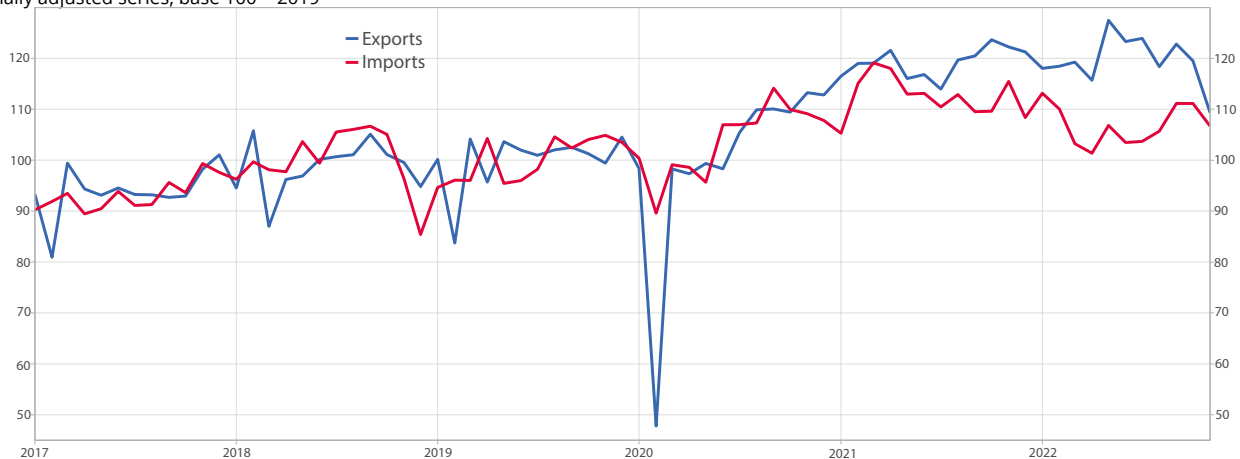
Last point: October 2022.

How to read it: in October 2022, the number of housing starts was 50% below its 2019 average.

Source: NBSC, INSEE calculations

## 3. The international context weighs heavily on Chinese exports

seasonally adjusted series, base 100 = 2019



Last point: November 2022.

Note: the Chinese customs series were seasonally adjusted by INSEE using the X-13ARIMA-SEATS method, taking the Chinese New Year into account, then deflated by a Chinese export price index provided by the CPB extended to its level for September 2022.

How to read it: in November 2022, imports were 7% above their 2019 average.

Source: General Administration of Customs of China, Central Planbureau (CPB), INSEE calculations