

3

RISING GLOBAL INFLATION

1 Introduction

Since early 2021 inflation has trended upwards globally and has recently reached rates not seen for several decades. In the euro area, the harmonised index of consumer prices (HICP) grew slightly above 6% in year-on-year terms in 2022 Q1, an unprecedented figure in the history of the monetary union (see Chart 3.1). In the case of the Spanish economy, it stood at 7.9%, its highest level in 35 years. Since end-2021, underlying inflation (the rate of change of the HICP, excluding energy and food) has comfortably exceeded 2% in the euro area, with Spain also surpassing this level in early 2022.¹ Inflationary pressures are also proving very acute in the rest of the main economies, especially in the United States (among the advanced economies), where inflation reached 8% in 2022 Q1, and in Eastern Europe and Latin America (among the emerging market economies).

This strong rise in inflation, following decades during which price growth trended downwards, is due to various factors. As documented in Section 2, inflation moderated significantly in the developed economies over recent decades, a pattern which the economic literature has associated with various processes of structural change, such as population ageing, globalisation and technological change.² However, these price dynamics changed in early 2021, once the most stringent restrictions relating to the COVID-19 health crisis had been lifted. In particular, Section 3 shows that the current inflationary pressures are primarily due to the increase in commodities prices and the fact that demand in the major world economies (underpinned by highly expansionary monetary and fiscal policies), has recovered more strongly from the impact of the pandemic than supply (affected, among other factors, by bottlenecks in global value chains). More recently, some geopolitical tensions (particularly those deriving from the Russian invasion of Ukraine in late February) are contributing to a further rise in commodities prices, particularly energy and food prices.

The potential materialisation of indirect and second-round effects might prolong the current inflationary episode. As detailed in Section 4, these effects could arise if the increases observed in energy costs are ultimately significantly passed through to the prices of other goods and services in the economy, or as a result of possible wage increases (to offset workers' loss of purchasing power),

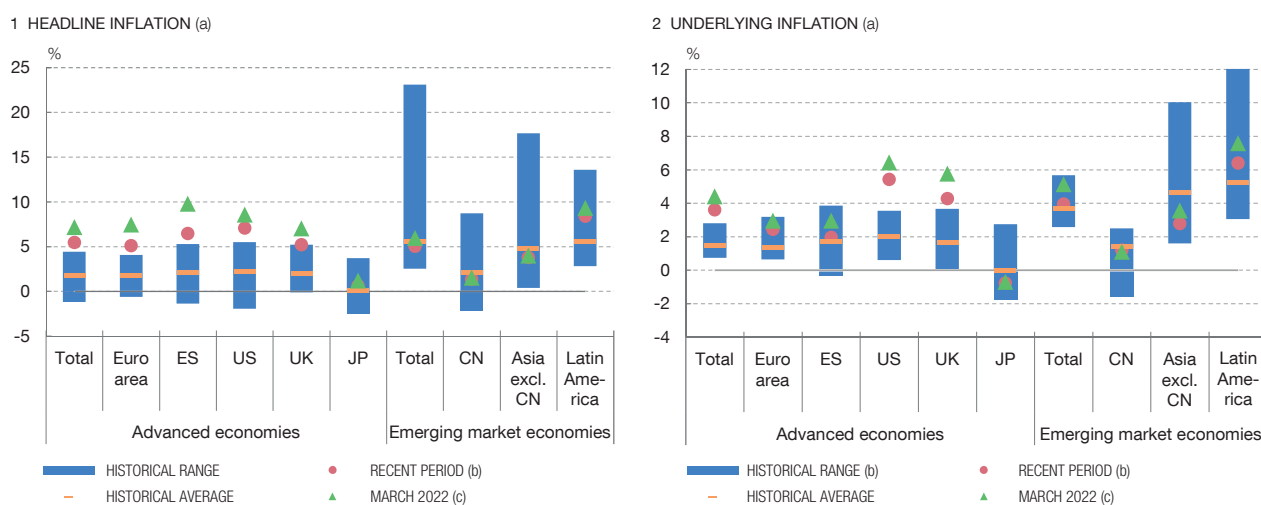
1 These dynamics have continued to date in Q2. Thus, according to the latest information available, relating to April, headline inflation stood at 7.5% in the euro area and at 8.3% in Spain, while the year-on-year growth rate of the underlying price index was 3.5% in the euro area (HICP excluding energy and food) and 3.4% in the Spanish economy.

2 See [Banco de España](#) (2019).

Chart 3.1

THE GLOBAL RISE IN INFLATION

The rise in inflation is proving to be more pronounced and persistent worldwide than expected, reaching extraordinary levels in numerous economies.



SOURCE: National statistics.

a ES: Spain; US: United States; UK: United Kingdom; JP: Japan; CN: China.

b The historical averages and ranges cover the period 1999-2019, except for the emerging market economies, China and Asia excluding China aggregates, owing to the lack of data. The recent period refers to the inflation rate average from September 2021 to March 2022 (February 2022 for the emerging market economies and Asia excluding China aggregates).

c February 2022 for the advanced economies, emerging market economies, Japan and Asia excluding China aggregates.



generating new upward pressures on firms' costs and on the prices of their products. There is much uncertainty about the severity with which these effects might materialise in the future and, although they have not done so to a large extent so far, the persistence of inflationary pressures makes it more likely for them to arise in the future. Aside from this, various more structural aspects might also influence future price developments, including most notably dynamics relating to the relocation or deglobalisation of economic activity, demographic trends and the green transition.

Economic policies have responded to rising prices in several dimensions (see Section 4.2). Fiscal policies in many countries are seeking to mitigate the adverse effects deriving from the sharp rise in prices (especially energy prices) in the short term for households and firms. With a more medium-term perspective, several initiatives have been proposed at European scale to reduce reliance on energy. For their part, central banks have made headway in the process of normalising monetary policy in response to the current high-inflation setting. For instance, the European Central Bank (ECB) discontinued net asset purchases under its pandemic emergency purchase programme (PEPP)³ – introduced shortly after the outbreak of

3 Pandemic emergency purchase program (PEPP).

the pandemic – in March 2022 and announced in April that net asset purchases under its asset purchase programme (APP)⁴ – in force since mid-2014 – will end in 2022 Q3.

The current bout of strong inflationary pressures seems to have already had a considerable adverse impact on economic activity. This is shown in Section 5, where, beyond the impact of this episode on the main macroeconomic variables, special attention is paid to how it appears to be affecting different types of households and firms unevenly. The main conclusions of this chapter can be found in Section 6.

2 Determinants of inflation in the pre-pandemic period

Except in the most recent period, inflation has trended downward in the developed economies over the last decades. As shown in Chart 3.2, inflation moderated across-the-board in the main advanced countries following the two oil crises in the 1970s. In addition, inflation volatility and dispersion also declined significantly.

In the period elapsed between the global financial crisis and the start of the COVID-19 pandemic, inflation was even persistently below many central banks' inflation targets. Indeed, in the period 2009-2019, the growth rate of prices in the advanced economies decreased on average to around 1.5%. This decline was especially pronounced in the euro area where, although activity recovered with some vigour between 2013 and 2019, inflation rates stood, on average, at 1% during that period.

The economic literature has tried to explain this downward trajectory of inflation through a combination of cyclical and structural factors. For example, according to several studies,⁵ low inflation in the euro area in the period 2013-2019 was largely due to conjunctural factors. These include the high cyclical slack generated after the sovereign debt crisis and various concurrent positive supply shocks, such as downside fluctuations in energy prices or the competitiveness adjustments that took place in some euro area countries. The persistence of this low-inflation episode led to some deanchoring of the medium-term inflation expectations, also contributing to prolonging the episode. All of this against a background in which fiscal policy had little room for manoeuvre and monetary policy was operating in an environment of interest rates close to their effective lower bound.

As regards structural determinants, it has been argued that some dynamics (such as globalisation, the development of new technologies and population ageing) may have contributed to the low-inflation environment.⁶ In particular,

4 Asset purchase program (APP).

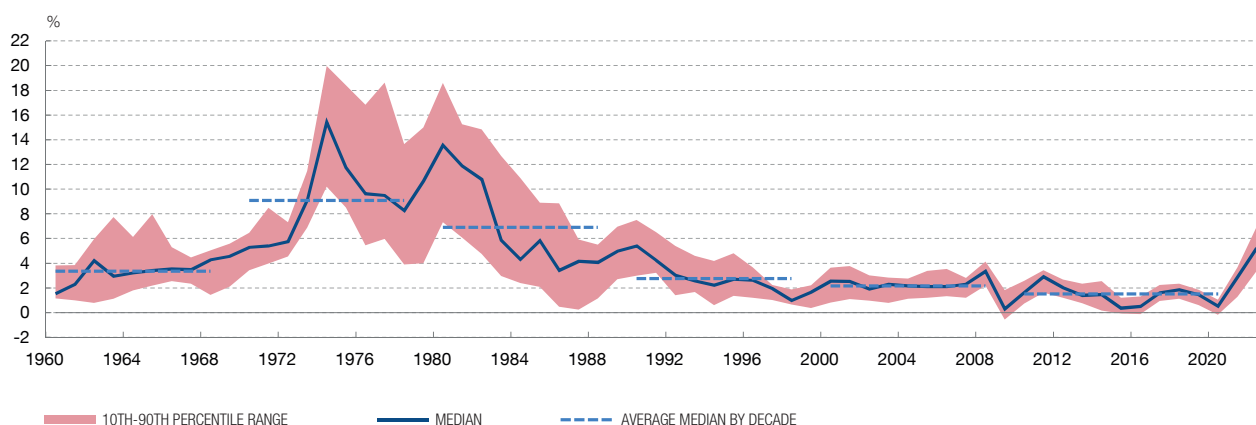
5 See, for instance, Banco de España (2019), Koester et al. (2021) and the references therein.

6 Other structural factors also analysed in the economic literature include the higher independence and credibility of central banks in the advanced and emerging market economies, and the adoption by most of them of monetary policy regimes with explicit inflation targets.

Chart 3.2

INFLATION DEVELOPMENTS WITH A LONG-TERM PERSPECTIVE (a)

Inflation rates have declined significantly in recent decades in the main advanced economies.



SOURCES: International Financial Statistics (IMF) and Consensus Economics.

a Annual inflation rates in the period 1960-2022 (IMF April 2022 WEO projections) in nine advanced economies: Australia, Canada, France, Germany, Italy, Japan, Spain, the United Kingdom and the United States.



the trade and financial opening-up of world economic activity in recent decades (which peaked in the 1990s), the development of global value chains and the internationalisation of services, together with the full integration of China and other emerging countries in international trade, may have exerted downward pressure on price growth.⁷ This effect would have arisen through both direct channels (owing to the import of goods at a lower cost) and indirect channels, owing to the impact of globalisation on market structure (which would have increased competition and the supply of labour, and reduced employees' bargaining power in the advanced countries).

The digitalisation process and population ageing may also have generated a negative effect on inflation.⁸ The digitalisation process prompted a reduction in the prices of assets and technological services, an increase in e-commerce, a higher level of competition in the markets and an increase in productivity. In addition, the population ageing process may have negatively affected the growth rate of prices through several channels: by fostering saving, by inducing a greater social preference for low inflation rates (insofar as the elderly, who usually have higher levels of financial

⁷ The growing interconnectedness of world economic activity may also have increased the global transmission of shocks and the synchronisation of inflation rates globally. Indeed, various empirical studies show that advanced countries' inflation rates show a high level of synchronisation, as a result of the growing impact of global shocks on national inflation rates (see *Forbes*, Gagnon and Collins (2021)). Other factors that appear to have contributed to this greater synchronicity are the similarities between advanced countries' monetary policy strategies and the existence of a common component in the financial cycles.

⁸ In a broad sense, the digitalisation process refers both to the adoption of new information and communication technologies (ICT) and digital data processing and analysis, and to the automation of production processes.

wealth, are more sensitive to inflation hikes) and by causing a decline in the natural interest rate (thus limiting the capacity of monetary policy to boost activity and inflation when interest rates are close to their effective lower bound).⁹

However, the empirical evidence available on the role of these structural factors is not conclusive. Thus, for example, several studies find that even though globalisation has had a downside impact on the inflation rate, it has been minor.^{10,11} Also, the evidence relating to the effects of digitalisation¹² and population ageing¹³ on long-term inflation is scarcely conclusive. In any event, these three factors have concurred, making it difficult to distinguish the implications of each of them.

3 Characterisation of the current inflationary episode

The global inflation rate¹⁴ rose significantly in 2021 and accelerated further in early 2022. Thus, after standing at 4% on average during the period 2009-2019 and 3.2% in 2020, it rose to 4.4% on average in 2021 and to 7% in 2022 Q1.

This section characterises these recent price dynamics. The main global factors explaining the current inflationary episode are described first (see Section 3.1). Second, the more idiosyncratic aspects that make the impact of this episode differ significantly across the biggest world economies are set out (see Section 3.2). Third, it is noted that, although the increase in energy prices is a key factor in the recent surge in inflation rates in the advanced economies, in recent months the price increase has extended to the rest of goods and services and has been reflected in agents' medium and long-term inflation expectations (see Section 3.3).

3.1 Global factors

The global nature of the current inflationary episode is mainly linked to the dynamics generated by the COVID-19 pandemic in economic activity. In particular, the outbreak of the pandemic, the closure of economies, the contraction

9 See [Fiorentini et al.\(2018\)](#).

10 See [ECB \(2021a\)](#).

11 See [Forbes \(2019\)](#), [Bianchi and Civelli \(2015\)](#) and [Attinasi and Balatti \(2021\)](#).

12 This is largely due to the difficulty of quantifying the indirect effects of digitalisation on inflation, which operate through changes in the structure of the goods and factor markets, with effects that may be offset reciprocally. As regards the direct effects, those deriving from the reduction in the prices of ICT goods and the increase in e-commerce have not only been proved to be negative, but also minor or short-term. See [ECB \(2021b\)](#), [Csonto, Huang and Tovar \(2019\)](#) and [Anderton et al. \(2020\)](#).

13 See [Lis, Nickel and Papetti \(2020\)](#) and [Bobeica et al. \(2017\)](#) for an analysis of the euro area, and [Juselius and Takáts \(2018\)](#) for a historical analysis in a broad group of advanced economies.

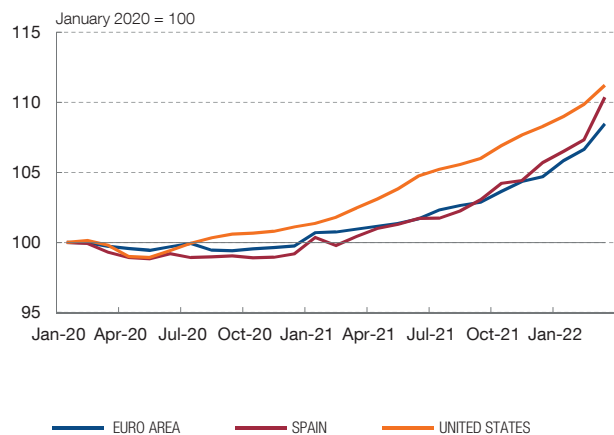
14 Calculation performed with the following economies: euro area, United States, Canada, Denmark, Japan, Norway, Sweden, United Kingdom, China, Brazil, Mexico, Chile, Colombia, Peru, Czech Republic, Hungary, Poland, Russia, Turkey, India, Indonesia, Korea, Taiwan and Thailand.

Chart 3.3

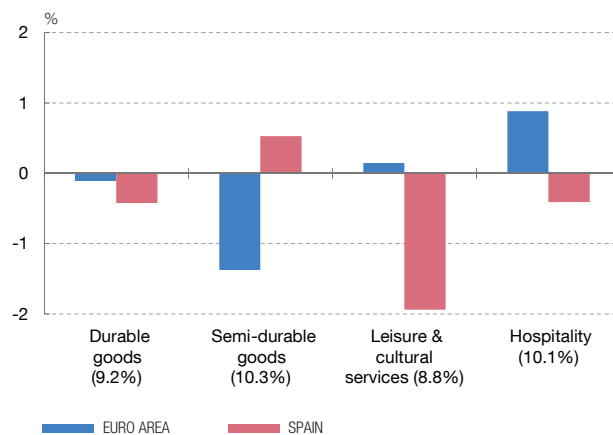
THE PANDEMIC AS A GLOBAL DETERMINANT IN CONSUMER PRICE DYNAMICS FOR CERTAIN GOODS AND SERVICES

The prices of numerous goods and services decreased over the course of 2020 as a result of the closure of economies, the induced recession and indirect tax cuts.

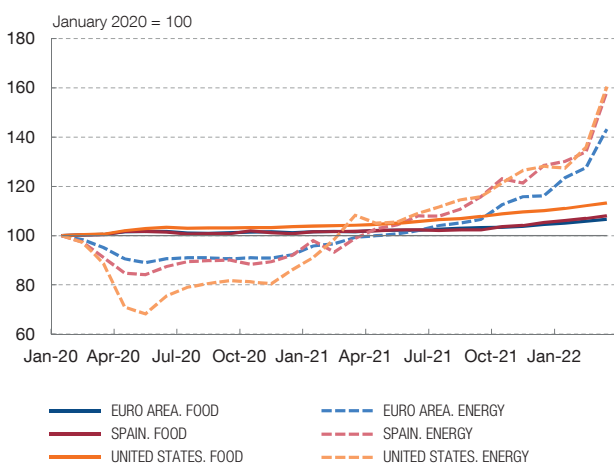
1 CONSUMER PRICES. LEVEL (a)



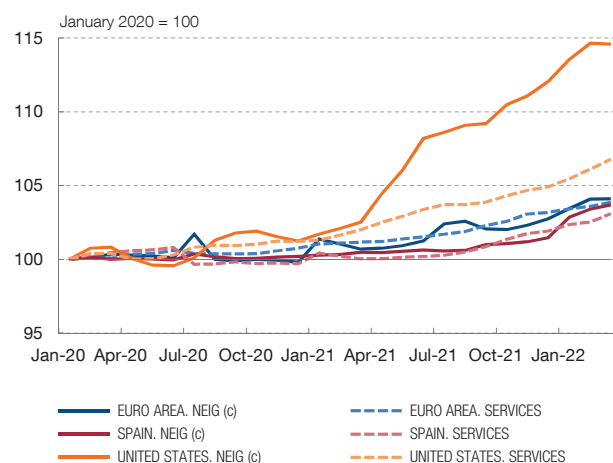
2 THE PANDEMIC AND CHANGES IN 2020 IN THE PRICE OF SOME OF THE MOST SEVERELY AFFECTED GOODS AND SERVICES (b)



3 FOOD AND ENERGY PRICES. LEVEL (a)



4 NON-ENERGY INDUSTRIAL GOODS AND SERVICES PRICES. LEVEL (a)



SOURCES: Eurostat, Banco de España and national statistics.

- a Seasonally-adjusted series, except for food and energy prices relating to Spain.
- b Year-on-year change at December 2020. The weight of each heading in the HICP is indicated within brackets.
- c Non-energy industrial goods.



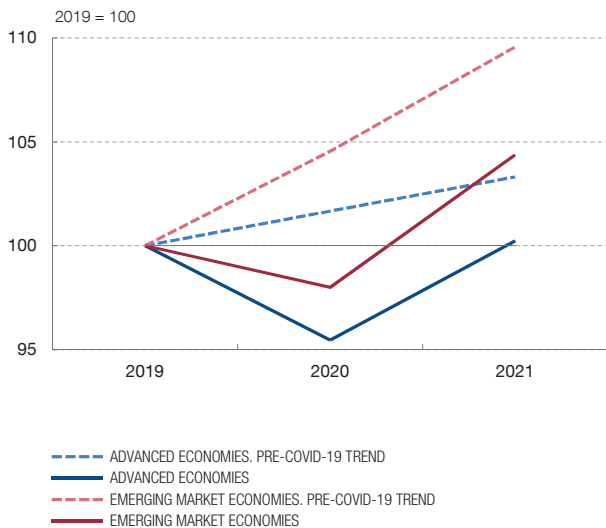
of activity and the indirect tax cuts approved generated reductions in the prices of numerous goods and services over the course of 2020. Compared with the United States and the euro area, this decline was particularly sharp in Spain, where significant falls were recorded in the prices of some of the expenditure items most affected by the pandemic (such as leisure and cultural services, and accommodation and food services) and in energy prices (see Chart 3.3). In contrast, food prices increased globally owing to, among other aspects, the recomposition of demand and various supply chain disruptions.

Chart 3.4

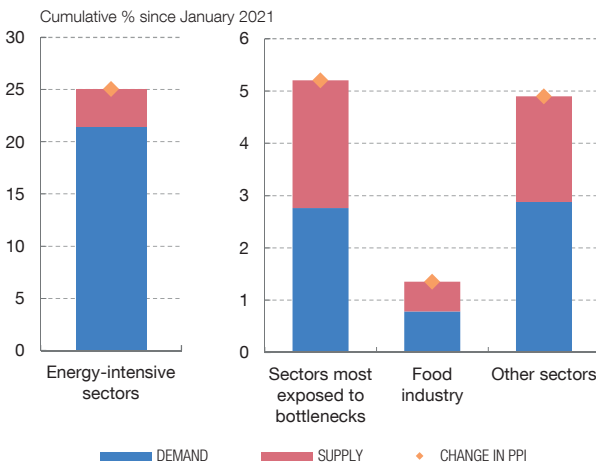
MISMATCHES BETWEEN SUPPLY AND DEMAND

The swift recovery of demand on a global scale played a key role in the surge in prices from spring 2021, while on the supply side restrictions of a different kind prevented a sufficient response. Inflationary pressures materialised rapidly in the international commodities markets.

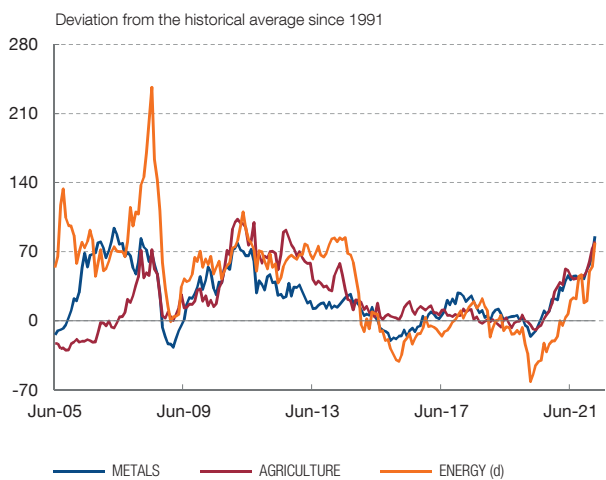
1 GDP PATH VIS-À-VIS ITS PROJECTED TREND BEFORE THE PANDEMIC (a)



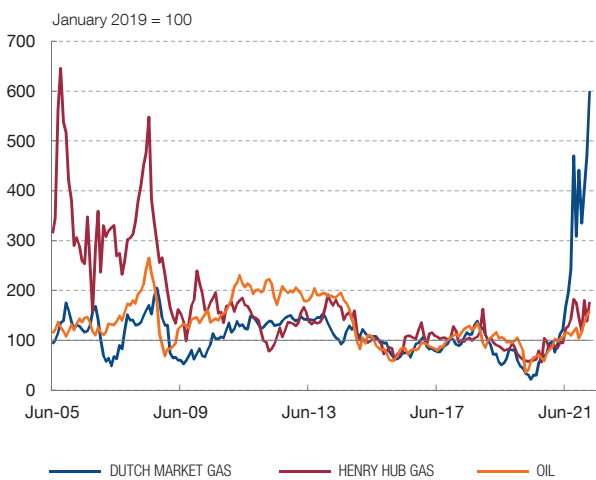
2 SUPPLY AND DEMAND FACTORS IN PRODUCER PRICE (PPI) DEVELOPMENTS IN EURO AREA MANUFACTURING (b)



3 COMMODITIES PRICES (c)



4 GAS AND OIL PRICES (c)



SOURCES: Bloomberg, Eurostat, Refinitiv and Banco de España.

- a The pre-COVID-19 trend includes the IMF's October 2019 WEO forecasts. The current trend is based on the April 2022 WEO.
- b Own estimates based on a monthly SVAR model in log differences of manufacturing production and prices (PPI). PPI growth is depicted without constant.
- c Expressed in real terms using the GDP deflator for the United States, except for the Dutch market gas price, which uses the GDP deflator for the euro area.
- d This index includes six commodities: Brent oil, WTI oil, natural gas, gas oil, fuel oil and gasoline.



Once the worst of the pandemic had been overcome, as the economies reopened, prices began to recover. The swift recovery of demand contributed to the surge in prices from spring 2021 (see Chart 3.4.1), particularly against a backdrop in which, as detailed later on, supply was limited by restrictions of a different kind. By way of illustration, Chart 3.4.2 shows that, in the case of industrial goods in the euro area, both supply and demand factors have contributed positively to rising prices since early 2021.

Inflationary pressures materialised rapidly in the international commodities markets. In contrast to the rebound in demand, various factors have limited the response of the supply of commodities, particularly energy ones. Conjunctural factors include the reduction of gas supply for geopolitical reasons and the lack of maintenance of certain energy infrastructures during the lockdown periods. Noteworthy among the factors of a more structural nature are the gradual reduction in investment in fossil fuel extraction (a consequence of the promotion of decarbonisation policies in recent years), especially in the case of oil and gas. As a result, once the worst of the pandemic had passed, there was a notable fall in European oil and natural gas inventories, and a strong upturn in their prices (see Chart 3.4.3). These tensions have also affected industrial metals and agricultural commodities (see Chart 3.4.4), the latter aspect having contributed to consumer food prices remaining on a robust upward path (see Chart 3.3.3). All of these dynamics have been extraordinarily exacerbated by the Russian invasion of Ukraine, given that these two countries are among the main global suppliers of both energy (oil and natural gas) and non-energy (nickel and wheat) commodities.

The recovery of supply has also been delayed by the emergence of bottlenecks. Aside from the mismatches that have been taking place in the commodities markets in recent quarters (since the start of the recovery from the health crisis) and in a setting where the measures adopted to contain the pandemic were being lifted only gradually (which continued to influence both the production of goods and demand for services), the strength of the recovery of demand and its reorientation towards manufacturing have led to an overload of global supply chains. In this connection, the high fragmentation of production globally has contributed to firms facing a growing problem of input supply and, in certain economies, labour shortages (see Charts 3.5.1, 3.5.2 and 3.5.3). These supply problems have been especially acute in industries such as semiconductors, plastics, wood and industrial metals. These mismatches have been compounded by major disruptions in goods transport. Specifically, the main means of freight transport, shipping, has experienced a significant tightening since early 2021. As illustrated by the synthetic indicators shown in Chart 3.5.4, this has prompted a sharp rise in its cost.¹⁵

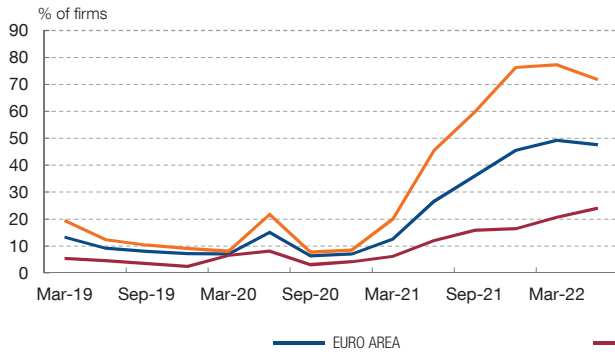
¹⁵ Among other factors, the health situation and the lack of hauliers disrupted the loading and unloading of containers at ports. Several temporary events, such as the blocking of the Suez Canal in March 2021 and the closure of some ports in China, also added pressure to freight transport.

Chart 3.5

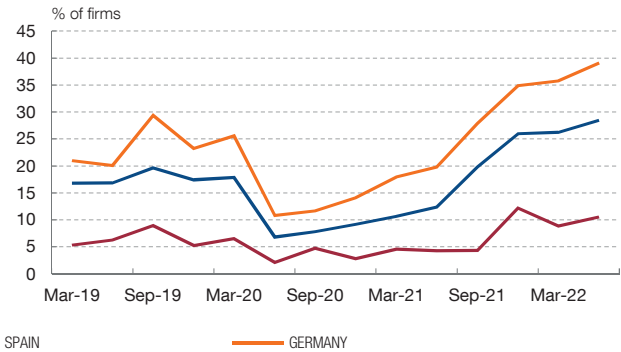
THE IMPORTANCE OF BOTTLENECKS IN THE RISE IN INFLATION

Supply was weighed down by the impact of bottlenecks, which resulted in increased shipping costs, congestion at ports and delays in delivery times, and have also contributed substantially to the increase in prices in the most exposed sectors.

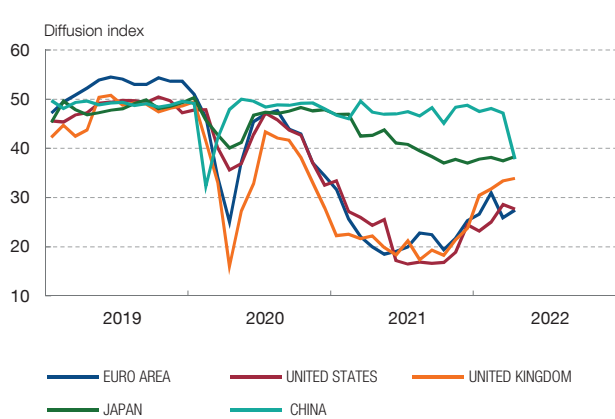
1 MATERIAL AND/OR EQUIPMENT SHORTAGES IN INDUSTRY AND CONSTRUCTION (a)



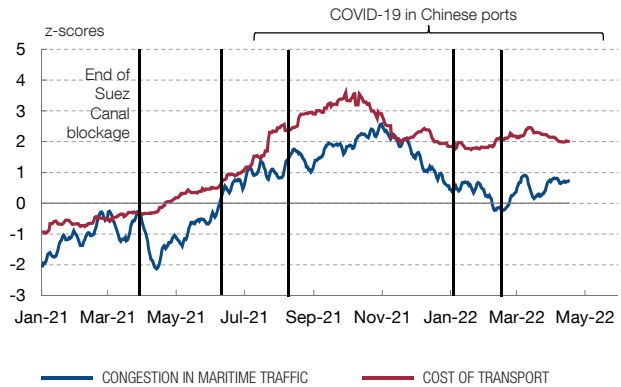
2 LABOUR SHORTAGES IN INDUSTRY, CONSTRUCTION AND SERVICES (a)



3 SUPPLIERS' DELIVERY TIMES IN MANUFACTURING (b)



4 COMPOSITE INDICATORS OF MARITIME TRANSPORT (c)



SOURCES: European Commission, Eurostat, IHS Markit, Refinitiv and Banco de España.

- a Aggregate index based on the sectoral indices of the European Commission's survey using an average weighted by the share of each sector in terms of value added. Seasonally adjusted data are used.
- b Purchasing Managers' Indices (PMIs).
- c An increase denotes more congestion or a higher price. Prepared on the basis of an analysis of the main components using indicators of container traffic in the Suez Canal and wait times in the ports of five regions in the United States, Northern Europe and China, since January 2020. For cost, the Baltic Dry Index, Harpex Index and Freightos indices prices for container traffic between Asia and the United States and between Asia and Europe are used. The indicator is expressed in standardised units, i.e. the number of standard deviations where the value lies above or below the sample mean.



At end-2021, the bottlenecks appeared to be dissipating very gradually, but several recent factors may be contributing to exacerbating them. Indeed, the conflict in Ukraine is once again affecting global supply chains and intensifying some of these bottlenecks. Also, the worsening of the course of the pandemic recently observed in China and the severity of the containment measures adopted by the Chinese authorities are influencing both maritime transport and manufacturing production.

In quantitative terms, rising commodity prices appear to be the main factor behind the increase in prices. It is difficult to identify the contribution of the different factors analysed to the rise in consumer prices, but it may be proxied using a structural econometric model. To this end, a distinction is drawn between demand shocks (including those affecting demand for commodities) and supply shocks. In the latter case, those related to the increase in production costs owing to the rise in commodities prices are distinguished from those associated with bottlenecks. Within this analysis framework, the Banco de España's estimates¹⁶ suggest that the increase in commodities prices¹⁷ was the main driver of the recent rebound in inflation in both the United States and the euro area and, especially, in the Spanish economy (see Chart 3.6). In any event, the robust recovery of demand also appears to have played a quantitatively significant role in these inflation dynamics, principally in the United States.¹⁸ The impact of bottlenecks on inflation seems to have been particularly pronounced in the euro area. The following section provides some elements that help understand the cross-country heterogeneity.

3.2 Idiosyncratic factors

The current inflationary episode is having an uneven impact on the world's main economies, as a result of the asymmetric impact of the various global factors that have driven it and of various idiosyncratic elements. The latter notably include aspects related to the composition of the consumption basket, productive specialisation, positioning in global and regional production chains, labour market slack, the anchoring of inflation expectations and exchange rate fluctuations.

The strength of the recovery in demand has been uneven across the advanced economies. It has been particularly vigorous in the United States, which has resulted in more intense and earlier underlying inflationary pressures there (see Chart 3.1.2). Indeed, underpinned by extensive fiscal policy packages¹⁹ and bigger wage increases, private consumption in the United States exceeded its pre-health crisis level much earlier than in the euro area and at end-2021 it stood more than 4%

16 A structural vector autoregressive (SVAR) econometric model estimated with monthly data is used which includes, in this order, the price of oil, a bottleneck indicator, and generic supply and demand shocks reflected in the manufacturing activity and calculated as in [Alonso, Kataryniuk and Martínez-Martín \(2021\)](#). The bottleneck indicator is constructed by adapting the work of [Benigno et al. \(2022\)](#) for the euro area and captures the increase in transport prices and delivery times once the effect of demand is discounted.

17 For this analysis the price of oil was used as a representative measure of commodities prices. The evidence suggests that oil prices, unlike other commodities, are determined internationally, which makes identification in this context easier, and are closely related to the other commodities' prices. See, for instance, [Mohammadi \(2011\)](#) and [Chaudhuri \(2001\)](#).

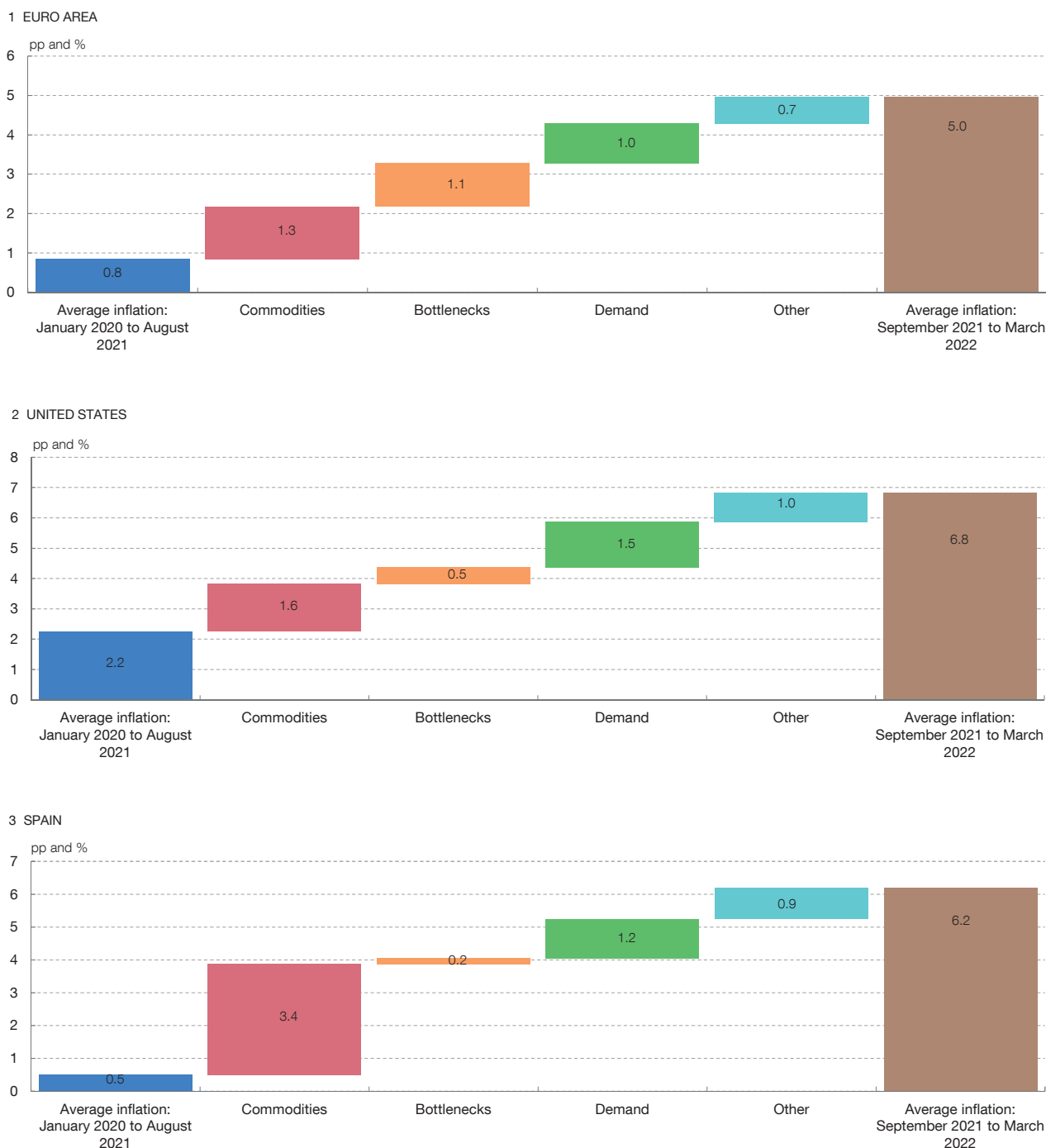
18 It is even possible that the identification strategy chosen in this analysis may to some extent underestimate the effect of internal demand on prices in the United States, since it has a greater relative impact on international prices (see [Bobeica and Jarocinski \(2019\)](#)).

19 See [Borralló, Buesa and Párraga \(2021\)](#) and [Jordà et al. \(2022\)](#).

Chart 3.6

DETERMINANTS OF THE INCREASE IN INFLATION IN THE RECENT PERIOD (a), ACCORDING TO AN ECONOMETRIC MODEL

The contribution of different factors to the recent increase in prices in Spain, the euro area and the United States is illustrated using a monthly vector autoregressive model. The model assumes that oil prices and any other supply-side shock, such as bottlenecks, can immediately affect demand, but not vice versa.



SOURCES: IHS Markit, Kiel Institute for the World Economy, Refinitiv, Eurostat and Banco de España.

a Estimates for the euro area, United States and Spain using a structural vector autoregressive model based on the Cholesky method, which includes the price of oil, a bottleneck indicator for each area, supply and demand-side shocks in manufacturing and headline CPI.



above that reference. By contrast, in the same period euro area private consumption remained around 3% below its end-2019 level, albeit with notable cross-country heterogeneity. Thus, while in Germany, Italy and the Netherlands consumption was 2%-6% higher than its pre-pandemic level at end-2021, in Spain it was still 7.9% below that level.

Bottlenecks are having a greater impact in Europe and the United States.

The global supply chain disruptions observed since mid-2021 have hit the United States, the United Kingdom and the euro area harder, as reflected by the PMI suppliers' delivery times (see Chart 3.5.3). Germany has been the most vulnerable euro area country, given: (i) its higher degree of integration and centrality in value chains; (ii) the high share of manufacturing – particularly the automotive industry – in its economy; and (iii) its heavy reliance on imports of commodities and inputs in its production processes.²⁰ In this regard, since summer 2021 more than 50% of German industrial firms have reported the shortage of material and/or equipment as a factor limiting production. This percentage is far higher than that of other European economies, such as the Spanish one, where less than 25% have done so (see Chart 3.5.1).

Higher energy prices are having a more acute impact on inflation in the advanced economies and, especially, in the euro area (see Chart 3.7.1).

The greater contribution of the energy component to recent euro area inflation is largely a result of this component accounting for a higher relative share of the consumption basket in the euro area (10.9% of the total versus, for example, 7% in the case of the United States). Alongside this factor are the depreciation of the euro throughout 2021 and the war in Ukraine, which, given the euro area's heavy reliance on foreign energy, also contributed to a greater increase in the price of the energy component in the consumption basket. Furthermore, the price of electricity in Europe has been particularly affected by the increase in the price of gas and, to a lesser degree, of the greenhouse gas emission allowances under the EU Emissions Trading System (ETS).

Within the euro area, energy is making a particularly significant contribution to the upsurge in inflation in Spain given the larger contribution of the electricity component (see Chart 3.7.2). First, this is due to energy and, in particular, electricity accounting for a higher relative share of Spanish households' consumption basket. Specifically, Spanish households earmark 11.7% of their budget for energy (4% for electricity), while on average euro area households earmark 10.9% (3% for the electricity bill). The different relative share explains 25% of electricity's greater contribution to inflation in Spain than in the euro area during the current episode.²¹

20 See [Kataryniuk, del Río and Sánchez Carretero \(2021\)](#).

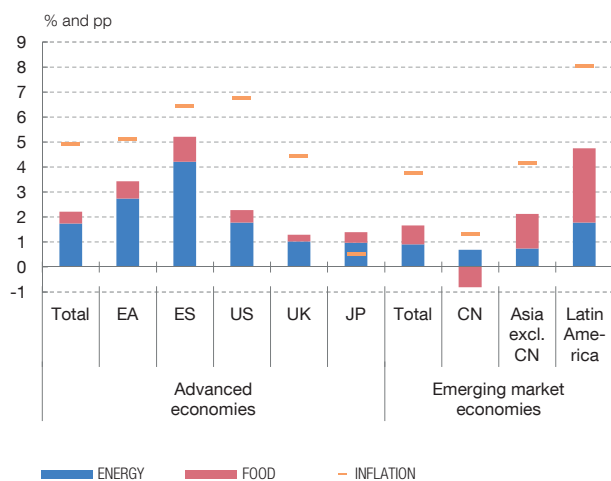
21 Specifically, the contribution of electricity to the year-on-year growth of the HICP during the current episode has amounted to 2.2 pp in Spain versus 0.7 pp in the euro area. The different share of spending on electricity explains 0.4 pp of the larger contribution in Spain, while price setting differences lie behind 1.2 pp (see Chart 3.7.2).

Chart 3.7

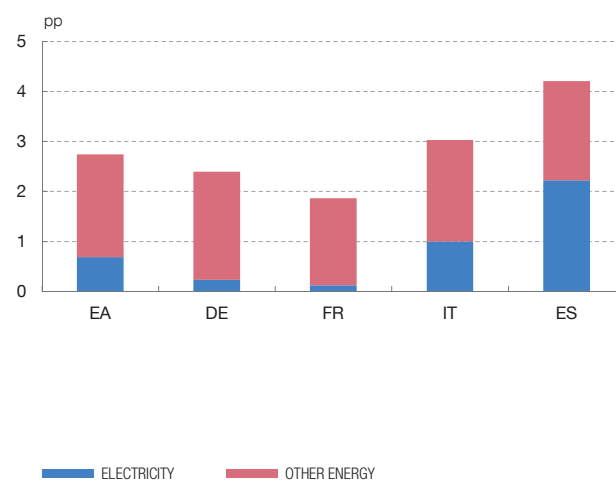
THE CONTRIBUTION OF THE ENERGY AND FOOD COMPONENTS TO INFLATION

Higher energy prices are having a greater impact on inflation in advanced economies, hitting the euro area and Spain particularly hard. Higher food prices are having a greater impact in some emerging market economies.

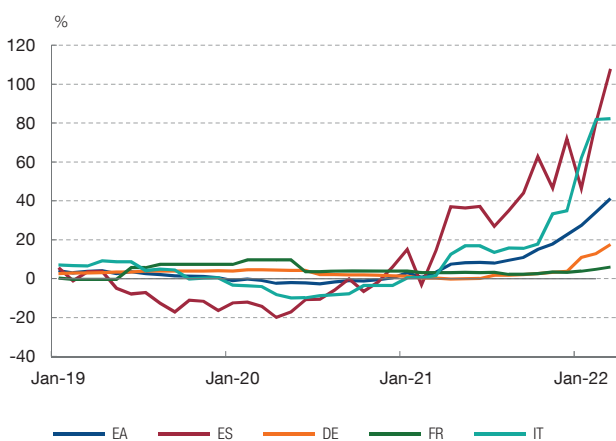
1 ENERGY AND FOOD. CONTRIBUTION TO INFLATION DURING THE MOST RECENT PERIOD (a)



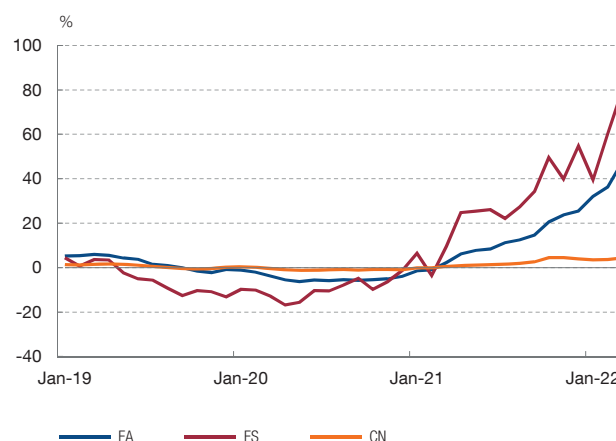
2 ELECTRICITY AND OTHER ENERGY. CONTRIBUTION TO INFLATION DURING THE MOST RECENT PERIOD (a)



3 RATES OF CHANGE OF THE ELECTRICITY COMPONENT IN THE HICP



4 RATES OF CHANGE OF THE HOUSEHOLD ENERGY COMPONENT IN THE HICP (b)



SOURCES: Eurostat, Banco de España and national statistics.

a Average inflation rate for the period September 2021-February 2022.

b In the case of the aggregate of the euro area and Spain, household energy is deemed to be COICOP subclass CP045, which includes final consumption expenditure of households on electricity, gas and other fuels (e.g. heating oil). In the case of China, given the impossibility of using a class that only includes electricity and other fuels, the subclass "Final consumption expenditure of households on water, gas, electricity and other fuels" is used. In any event, it should be noted that water is expected to account for a marginal share of this subclass.



Second, regulatory and price-setting mechanisms are another factor behind the notable unevenness across euro area countries in the pass-through to retail prices of the higher electricity price on wholesale markets. For instance, in Spain around 40% of households opt for a dynamic pricing system, which is characterised by the high frequency of price revision. This would partly explain why wholesale market shocks feed through to retail prices quicker and more forcefully in Spain and the greater

volatility of the electricity component of inflation (see Chart 3.7.3).²² By contrast, in countries such as France and Germany, the regulations and predominant contract types in the retail market mean that prices are revised less often.²³ Outside the euro area, it should be noted that stricter controls over some components of energy prices have meant that in some countries, such as China, the energy component's contribution to inflation has been kept well in check in recent quarters²⁴ (see Chart 3.7.4).

The sectoral specialisation and consumption patterns have also determined the impact of the current inflationary episode. Generally, a higher share of the most energy-intensive industries, the manufacture of food products and the sectors most vulnerable to bottlenecks²⁵ in the economy's sectoral structure and in household consumption has entailed greater inflationary pressures (see Chart 3.8.1). The share of contact-intensive services has also played its part. As mentioned above, the prices of these services fell relatively sharply in 2020, during the most severe stage of the health crisis, which has given rise to significant base effects in the latest inflation rates. For instance, in Spain and Italy, where these services account for a higher relative share of the economy than in the euro area overall, their contribution to the latest inflation rates is larger than that observed in other countries, such as Germany and France (see Chart 3.8.2). Meanwhile, emerging market economies – above all in Latin America – are proving particularly vulnerable to the rise in food prices, given the larger share of these products in their consumption basket and the escalating prices of some agricultural commodities in 2021 and as a result of Russia's invasion of Ukraine.

3.3 The spread of inflationary pressures

While energy and food continue to explain most of the current inflation rates, in recent quarters the rise in prices has gradually spread to other consumer items. In March 2022 the most volatile components of consumer prices – energy and food – remained the main factors behind the high inflation rates (see Chart 3.9.1). In particular, in the euro area and in Spain, these items explained 73% and 80%, respectively, of the year-on-year price growth. However, underlying inflation has also gradually accelerated in recent quarters (see Chart 3.9.2). While this process has been particularly intense in the United States (where underlying inflation stood at 6.5% in March), it has also recently reached all-time highs of close to 3% in both the euro area and Spain – a record for the former and the highest value observed in

22 See Pacce, Sánchez and Suárez-Varela (2021).

23 In Italy, new legislation – in force since 2021 – entitles all consumers who have smart electricity meters to enter into dynamic pricing contracts. This system, which more closely resembles the Spanish one, could have contributed to increasing the volatility of the electricity component of inflation in Italy in recent months.

24 In the case of China, regulations mainly focus on containing some components of household energy consumption (electricity, gas and heating fuel).

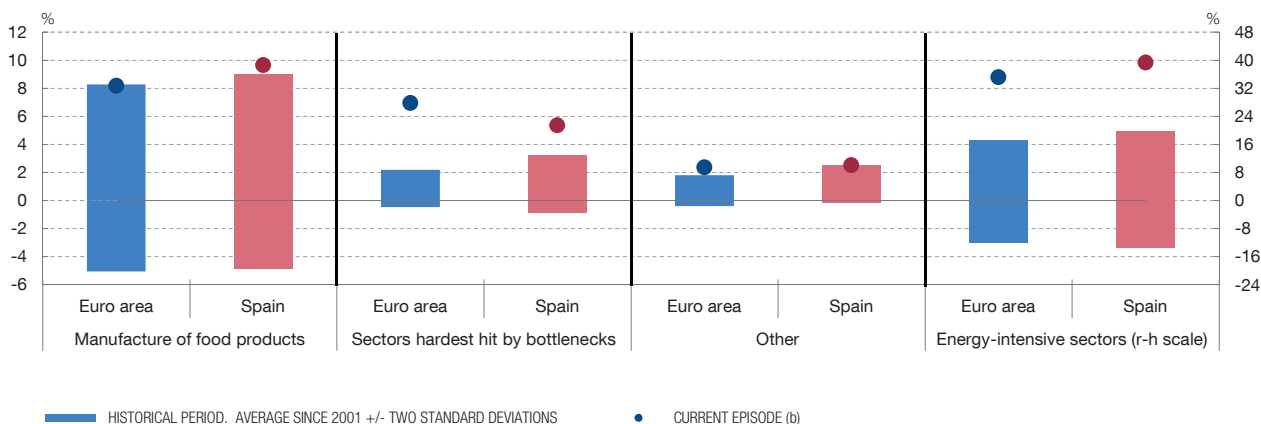
25 According to surveys, these are the sectors that have faced more severe input supply shortages or that are more reliant on the transportation sector for their production processes.

Chart 3.8

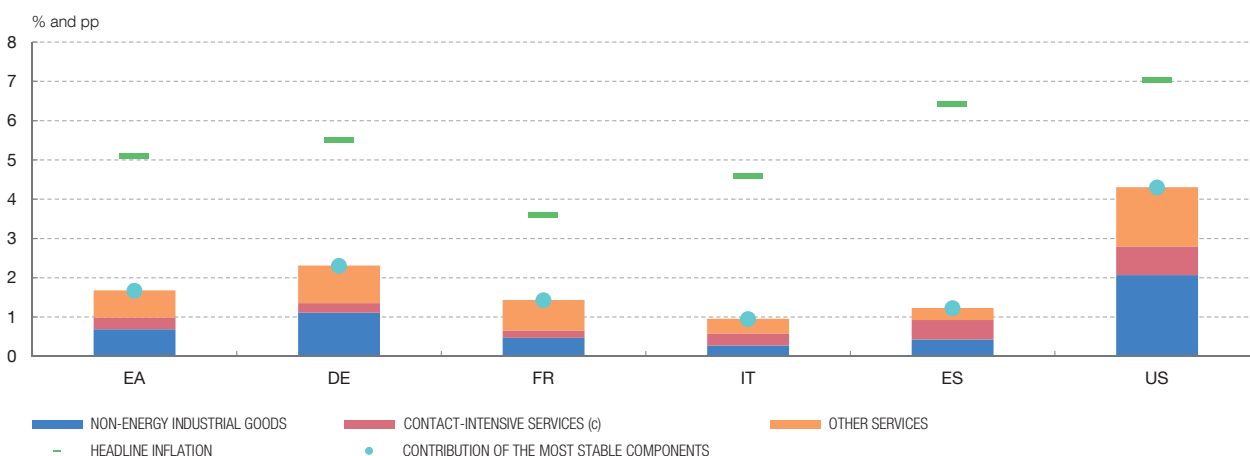
THE IMPORTANCE OF THE SECTORAL SPECIALISATION AND CONSUMPTION PATTERNS

The sectoral specialisation and consumption patterns of each economy have also affected the impact of the current inflationary episode worldwide.

1 PRODUCTION PRICES BY EURO AREA MANUFACTURING SECTOR (a)
YEAR-ON-YEAR RATES OF CHANGE



2 AVERAGE INFLATION DURING THE MOST RECENT PERIOD (b)
CONTRIBUTION OF THE MOST STABLE COMPONENTS



SOURCES: ECB, Eurostat, Banco de España and national statistics.

- a A sector is deemed to be among the hardest hit by the bottlenecks if in October 2021 more than 40% of its firms reported shortages of supplies or equipment in the euro area according to the European Commission’s survey, or if its production process is heavily reliant on the transportation sector. Energy-intensive sectors include the manufacture of refined petroleum products, the manufacture of chemicals, the manufacture of non-metallic mineral products and the manufacture of basic metals. The classification of the sectors is the same in Spain.
- b Average for the period September 2021-March 2022.
- c Contact-intensive services include recreation and culture, hospitality and, in the case of euro area countries, package holidays.



the latter since July 2006. Other measures of inflation, which attempt to proxy the latent and more stable pressures on prices, also show a clear upward trend that appears to have accelerated in recent months (see Chart 3.9.3 for the euro area).

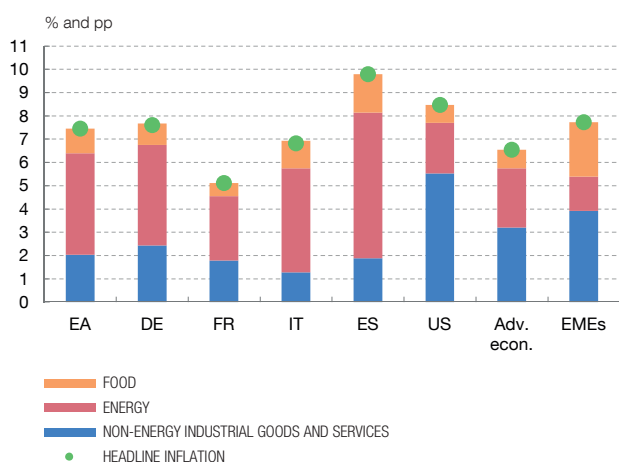
The percentage of goods and services recording inflation rates above 2% has increased significantly since last summer. Specifically, the proportion of the

Chart 3.9

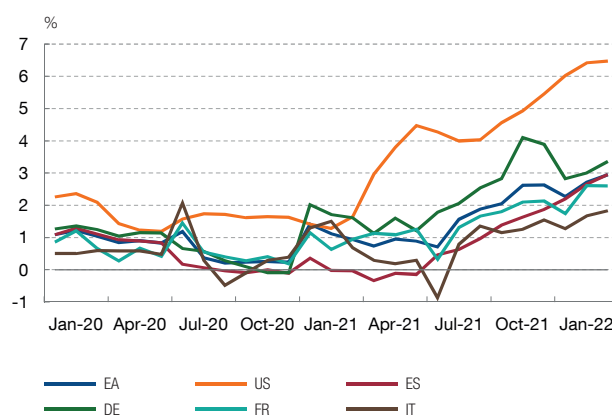
INFLATIONARY PRESSURES ARE PARTICULARLY WIDESPREAD ACROSS COMPONENTS

Unlike in other previous inflationary episodes, inflationary pressures have gradually spread to several components of the consumption basket.

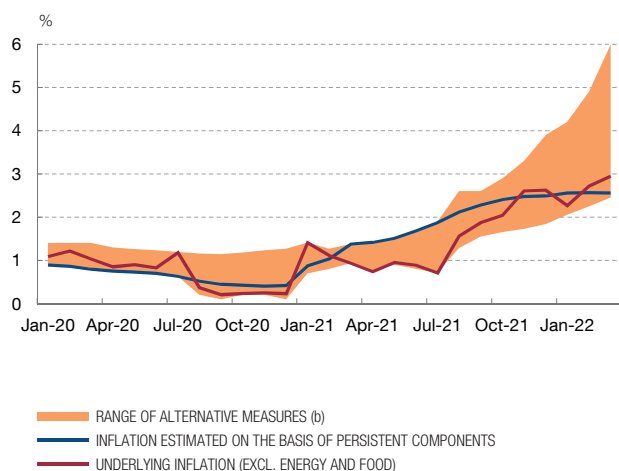
1 INFLATION RATE IN MARCH 2022 AND CONTRIBUTION OF COMPONENTS (a)



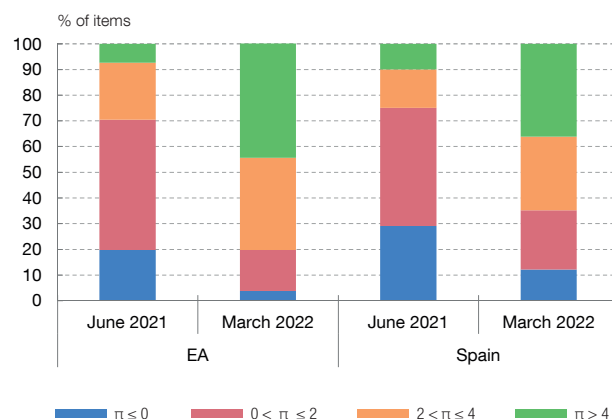
2 HEADLINE INFLATION EXCL. ENERGY AND FOOD



3 EURO AREA. MOST STABLE ALTERNATIVE MEASURES OF LATENT INFLATIONARY PRESSURES



4 DISTRIBUTION OF THE HICP ITEMS BY RATE OF CHANGE OF THEIR INFLATION RATE



SOURCES: ECB, Eurostat and Banco de España.

a February 2022 for emerging market economies.

b The range of indicators includes: underlying inflation (headline inflation excl. energy and food), inflation estimated on the basis of the persistent components of inflation obtained using regime change models (see Leiva-León, Le Bihan and Pacce (2022)), underlying inflation excluding tourism and clothing, the 10% and 30% trimmed means (taking into account the HICP item breakdown), the persistent and common component of inflation and supercore inflation.



items²⁶ in euro area households' typical consumption basket with inflation rates of over 2% has risen from somewhat less than 30% in June 2021 to 80% in March 2022 (see Chart 3.9.4). In the same period this percentage has increased from 25% to 65% in the Spanish economy.

26 A breakdown with 88 headings matching the three-digit Classification of Individual Consumption by Purpose (COICOP) developed by the United Nations Statistics Division is used.

While inflation rates have been affected by base effects, the price level of some goods and services has risen significantly since the onset of the pandemic. In 2021 inflation rates were pushed upwards by the base effects associated with the moderation of, and even the fall in, the prices of some goods and services in 2020 (see Chart 3.10.1).²⁷ In quantitative terms, these effects played a more important role in the increase in inflation in the euro area than in the United States last year. In Spain, these base effects – related above all to the anomalous behaviour of tourism services prices in summer 2020 – lay behind more than 50% of the rise in underlying inflation in 2021.²⁸ Nevertheless, ignoring these technical and relatively mechanical aspects (which since early 2022 are now less relevant to explaining the behaviour of inflation rates), the price levels of some goods and services have increased significantly since the onset of the pandemic. Between before the pandemic broke out and March 2022 – i.e. in a period of over two years – in the Spanish economy the overall level of consumer prices rose by around 10%, compared with 8% in the case of the euro area and 11% in that of the United States (see Chart 3.3.1). These developments have been highly influenced by energy and food, whose prices have risen by 58% and 8%, respectively, in Spain in the same period (see Chart 3.3.3). By contrast, the prices of non-energy industrial goods and of services have grown at lower cumulative rates of 3.7% and 3.1%, respectively (see Chart 3.3.4).

Inflation volatility is also proving to be relatively high. In both the euro area and the United States, inflation was more volatile in 2021 than during the recovery phase following the European sovereign debt crisis (see Chart 3.10.2).²⁹ Inflation's higher volatility – which seems to partly be the result of the greater severity of the current shocks to the economy – poses a further challenge in agents' decision-making, as it complicates the task of assessing which aspects of the price dynamics are relatively persistent and which are more transitory (see Section 4).

Medium and long-term inflation expectations have also risen. There are different ways of quantifying changes in inflation expectations. First, the surveys conducted with professional forecasters or consumers themselves. In the case of the euro area, these surveys show that economic agents have been revising upwards the price growth rate expected in coming years (see Chart 3.10.3). In particular, the five-year inflation expectations of the professional forecasters surveyed by the ECB have risen from 1.66% in early 2020 to 2.05% at the beginning of April 2022. For their part, in the United States the professional forecasters who respond to the Federal Reserve Bank of Philadelphia's survey have revised upwards their future inflation expectations more substantially and, in their latest estimation, they expect it to stand at around 3% on

27 The base effect in a given month is calculated as the difference between the month-on-month change in prices in the same month of the previous year and the average for this month-on-month change over the last five years.

28 The contribution of the base effects to inflation in 2021 was somewhat larger in Germany, partly as a result of the temporary VAT rate cut adopted in Germany in 2020 H2.

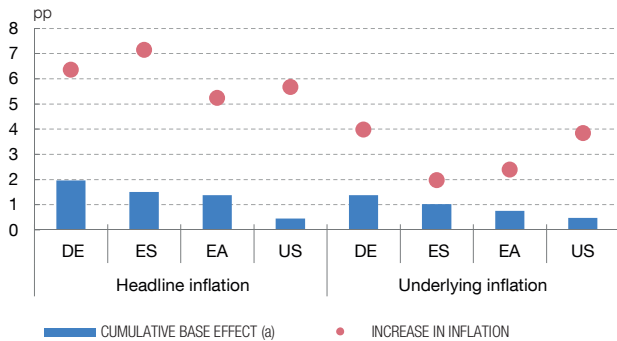
29 The statistical breakdown of inflation uses an unobserved components model with stochastic volatility. For further details on the model and its application to 12 euro area countries, see [Correa-López, Pacce and Schlepper \(2019\)](#).

Chart 3.10

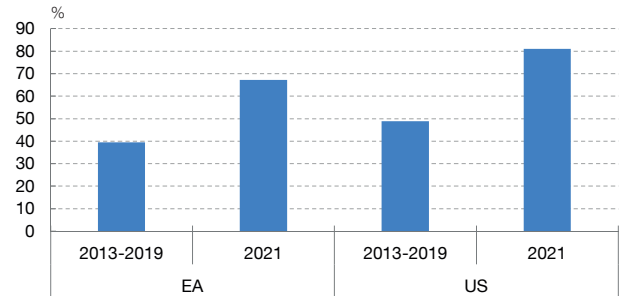
THE INCREASE IN LONG-TERM INFLATION EXPECTATIONS IN THE EURO AREA AND THE UNITED STATES

Base effects, initially, and higher inflation volatility are affecting the inflationary episode. Against this backdrop, and given the other developments, medium and long-term inflation expectations have risen in recent quarters.

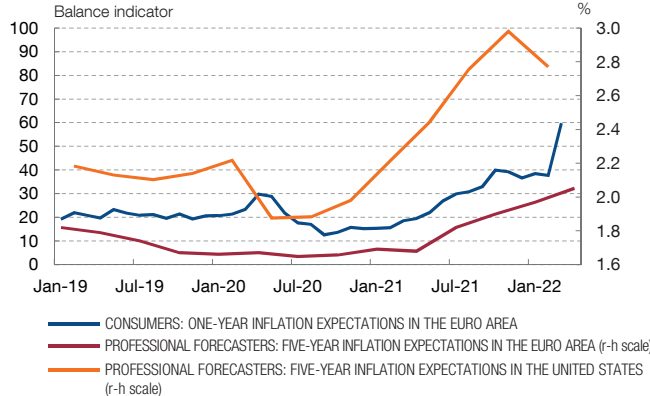
1 INCREASE IN INFLATION AND CUMULATIVE CONTRIBUTION OF MONTHLY BASE EFFECTS BETWEEN JANUARY AND DECEMBER 2021



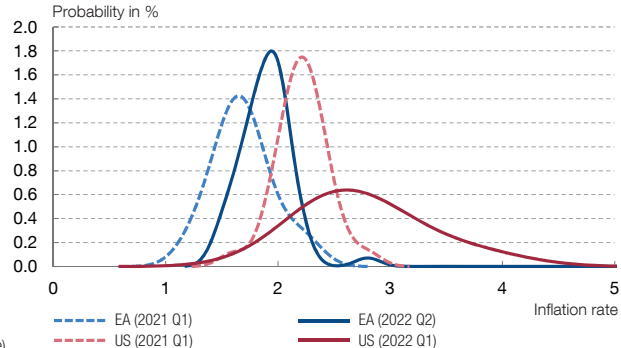
2 VOLATILITY OF UNDERLYING INFLATION RELATIVE TO HEADLINE INFLATION (b)



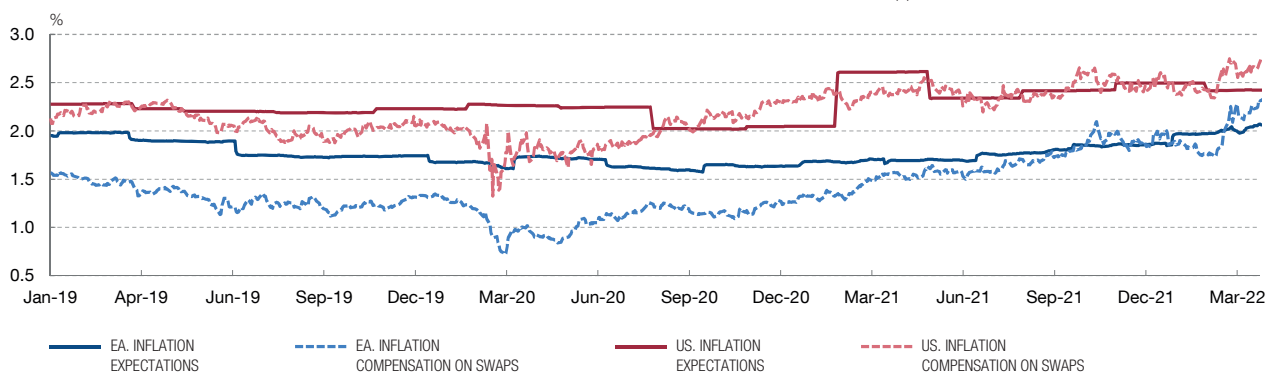
3 INFLATION EXPECTATIONS, CONSUMERS AND PROFESSIONAL FORECASTERS (c)



4 PROFESSIONAL FORECASTERS' FIVE-YEAR INFLATION EXPECTATIONS. PROBABILITY DISTRIBUTION



5 FIVE-YEAR ON FIVE-YEAR FORWARD INFLATION EXPECTATIONS DERIVED FROM THE INFLATION SWAPS MARKET (d)



SOURCES: ECB, European Commission, Federal Reserve Bank of Philadelphia and Banco de España.

- a The base effect in a given month is calculated as the difference between the month-on-month change in prices in the same month of the previous year and the average for this month-on-month change over the last five years.
- b Inflation volatility is calculated in a model that breaks inflation down into a temporary but persistent component, a trend component and a residual component. The latter is modelled using a stochastic volatility process and proxies the magnitude of the inflation shocks in the periods analysed. For more details, see Correa-López, Pacce and Schlepper (2019).
- c The consumer expectations index (l-h scale) reflects the net balance of qualitative positive and negative responses regarding price developments for the next twelve months to the European Commission's monthly survey. The professional forecasters' expectations (r-h scale) are calculated as the average five-year inflation forecasts made by the forecasters surveyed quarterly by the ECB and the Federal Reserve Bank of Philadelphia. Latest data available: euro area (April 2022) and United States (February 2022).
- d Five-year on five-year forward inflation compensation, daily data to 20 April 2022, Bloomberg. The compensation for inflation priced into inflation swaps is, for each horizon, broken down into the sum of the inflation expectations and the risk premium by term, using a model that estimates the term structure of inflation using daily data on inflation swaps at several time horizons (for the euro area or for the United States), monthly HICP data for the euro area (CPI for the United States) and quarterly data on one, two and five-year inflation expectations from the Survey of Professional Forecasters conducted by the ECB (Federal Reserve Bank of Philadelphia in the United States). See Gimeno and Ortega (2022).



average in five years. In addition, both in the United States and in the euro area, the distribution of the professional forecasters' expectations has gradually shifted to higher inflation levels, with the dispersion widening significantly in the United States (see Chart 3.10.4). Second, agents' inflation expectations can also be deduced from different financial products traded on international capital markets. In this case it is important to consider the risk premium priced into these products.³⁰ In this regard, financial market-implied medium-term inflation expectations have risen, both for the euro area and for the United States (see Chart 3.10.5). These expectations remain anchored to the ECB's medium-term inflation target of 2% (for more details on the implications of these dynamics for monetary policy, see Section 4.2.4).

4 Potential determinants of the persistence of the inflationary episode

After the persistent upward surprises to price dynamics over the course of 2021, the war in Ukraine has triggered a further upward revision to the short-term inflation forecasts. In 2021 analysts were surprised by the intensity of the inflationary episode and had to revise upwards their price growth rate forecast on several occasions. For instance, at end-2020, analysts expected that, on average, inflation would stand at 2.0% in the United States, 0.9% in the euro area and 0.6% in Spain in 2021. These rates were far removed from those that were ultimately observed (4.7%, 2.6% and 3.0%, respectively). More recently, Russia's invasion of Ukraine has triggered a fresh sharp upward revision to analysts' short-term inflation projections, above all as a result of the stronger pressures expected on commodity prices and of a possible exacerbation of global production chain bottlenecks (see Chart 3.11.1).

Despite stronger inflationary pressures in the short term, analysts continue to expect that inflation rates will ease in the medium term. A sharp drop in inflation is expected worldwide in 2023 (see Chart 3.11.1). This decline will be particularly steep in the euro area and, especially, in the Spanish economy. These forecasts are consistent with developments in energy commodity futures prices (see Chart 3.11.2) and with the expectation that the current supply-demand imbalances will gradually dissipate in the coming months (see Chart 3.11.3).

In any event, these forecasts are subject to considerable uncertainty. Undoubtedly, price dynamics in coming quarters will hinge decisively on the magnitude and the persistence of the disruptions that the war in Ukraine may entail for economic activity, commodity prices and global production chain bottlenecks overall. However, other factors may also significantly determine the persistence of the current inflationary episode. Particularly prominent among these factors are the indirect and second-round

³⁰ The compensation for inflation priced into inflation swaps is, for each horizon, the sum of the inflation expectations and the risk premium by term (see Gimeno and Ortega (2022)).

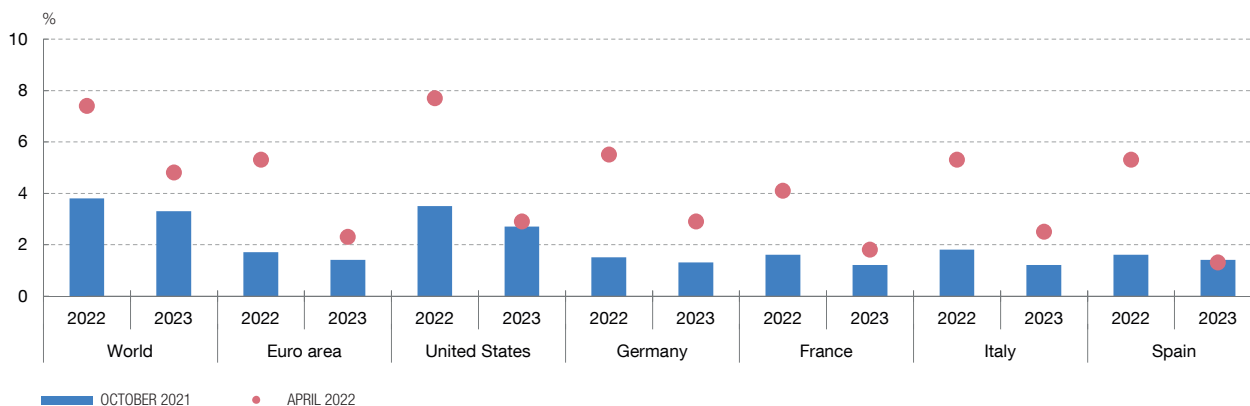
Chart 3.11

REVISION OF SHORT-TERM INFLATION PROJECTIONS

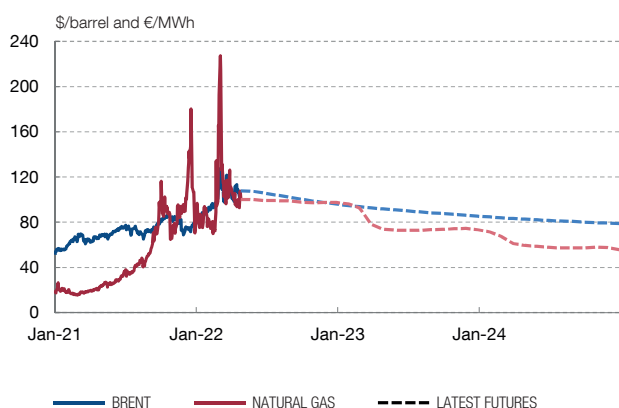
Despite the significant upward revision to short-term inflation projections due to the war in Ukraine, analysts expect the current strong inflationary pressures to dissipate in the medium term, in step with the moderation of energy price futures and the impact of the bottlenecks.

1 INFLATION PROJECTIONS

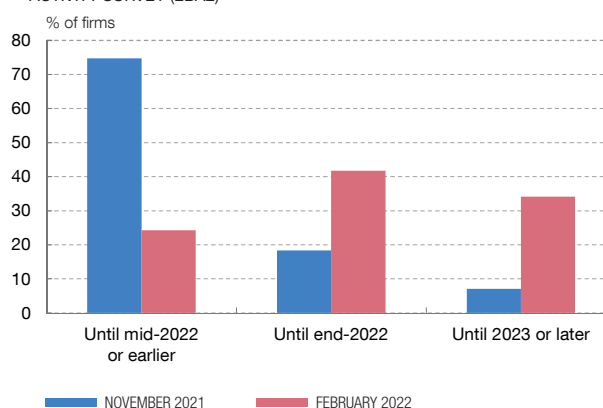
IMF *World Economic Outlook* projections



2 OIL AND GAS PRICES. SPOT AND FUTURES



3 SPAIN. EXPECTED DURATION OF THE SUPPLY ISSUES ACCORDING TO THE BANCO DE ESPAÑA BUSINESS ACTIVITY SURVEY (EBAE)



SOURCES: Bloomberg, IMF (*World Economic Outlook*), Eurostat, Refinitiv and Banco de España.



effects on inflation that may stem from the latest price increases (see Section 4.1), the economic policy response and the agreements between social partners against a very complex geopolitical and macro-financial backdrop (see Section 4.2) and developments in some relatively structural aspects (see Section 4.3).

4.1 Indirect and second-round effects on inflation

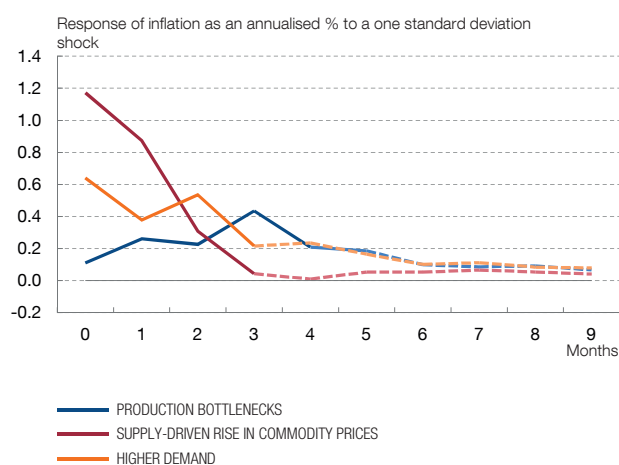
The rises that have already been observed in the prices of many goods and services could trigger further inflationary pressures in the future via indirect effects. By way of illustration, a transitory increase in oil prices may affect the inflation of consumer prices through two channels. First, a direct effect would arise

Chart 3.12

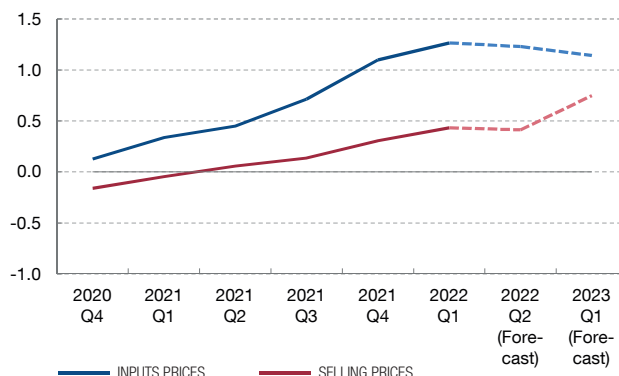
THE PERSISTENCE OF THE RISE IN INFLATION

The shocks that are affecting the economy have inertia, which has a bearing on the persistence of their impact on inflation.

1 RESPONSE OF INFLATION TO DIFFERENT SHOCKS (a)



2 PRICES IN SPAIN ACCORDING TO THE BANCO DE ESPAÑA BUSINESS ACTIVITY SURVEY (EBAE) (b)
Observed data and forecasts from the latest survey



SOURCE: Banco de España.

- a The chart depicts the response of euro area inflation to an oil price (red), bottleneck (blue) and demand (orange) shock identified in a structural vector autoregressive model, as detailed in Chart 3.6. The dotted lines denote responses that are not statistically significant.
- b Index constructed by assigning the following values to firms' qualitative responses: significant increase = 2; slight increase = 1; unchanged = 0; slight decrease = -1; significant decrease = -2.



insofar as the shock to oil prices is passed through to the related products of this input consumed by households, such as heating and vehicle fuels. This pass-through is typically very quick.³¹ Second, an indirect effect would be triggered insofar as crude and its related products are used as an input in different production processes. In this regard, higher costs for the productive sectors that use these inputs may lead to an increase in the final price of their products. These indirect effects typically materialise more slowly than the direct effects, and how forcefully they are passed through depends on the magnitude of the initial shock and its duration. The longer the shock, the likelier it is that significant indirect effects materialise.

Some indirect effects associated with the current inflationary episode have not yet fully materialised. Available empirical estimates show that, in the event of a temporary rise in commodity prices, aggregate demand or the severity of production bottlenecks, the response of consumer price inflation persists somewhat and extends over several months (see Chart 3.12.1). In a similar vein, several surveys suggest that, in the coming months business owners will pass on to their customers a portion of the higher prices that they have already borne on many of their inputs in recent quarters (see Chart 3.12.2 for the case of Spain).

31 See Álvarez, Sánchez and Urtasun (2017).

How long the price dynamics persist will also depend on the intensity of the potential second-round effects. The economic literature defines second-round effects as those stemming from changes in agents' expectation formation processes. These effects could emerge if, as a result of an increase in inflation rates, employees were to demand higher wages, which, in turn, would raise firms' labour costs and generate fresh upward pressures on prices. On the latest evidence, significant second-round effects are not materialising. Indeed, the latest data on wage settlements in Spain and the euro area point to employees bearing a considerable loss of purchasing power in recent quarters (see Chart 3.13.1). This limited pass-through of prices to wages would partly be the result of the scant prevalence of indexation clauses. In particular, in 2021, the percentage of private-sector employees covered by these types of clauses in the euro area and in the Spanish economy was the lowest in recent decades (see Chart 3.13.2).

The longer persistence of the inflationary shock makes it more likely that second-round effects will materialise. In this regard, in 2021 H2, the percentage of collective agreements signed in Spain which provided for wage increases of over 3% grew appreciably (see Chart 3.13.3). In early 2022, a greater prevalence of indexation clauses – which update minimum wage rates if past inflation exceeds a certain level – was observed in sectoral collective agreements. This represents a risk of the current inflationary pressures spreading (see Chart 3.13.4).³²

These second-round effects would be likelier to emerge and more acute were the medium-term inflation expectations to become de-anchored. An episode of persistently high inflation could trigger an upward revision of agents' expectations for the future price growth rate. This process would induce further inflationary pressures in the short term – for example, through greater wage demands – and would therefore prolong the episode. In some instances, this revision of the medium-term inflation expectations could even place them above the central bank's inflation target. This would be a case of agents' expectations becoming “misaligned” or “de-anchored”.

The sensitivity of future inflation expectations to current inflation is crucial to assessing the risk of agents' expectations becoming de-anchored and the persistence of a transitory inflationary shock. The greater this sensitivity, the greater the likelihood of second-round effects between prices and wages emerging (see Chart 3.13.6), of inflation expectations becoming de-anchored and of the cost of the current inflationary episode in terms of employment and GDP increasing (see Chart 3.13.7). However, while the sensitivity of long-term inflation expectations to current inflation decreased significantly in the euro area between 2005 and 2021, it

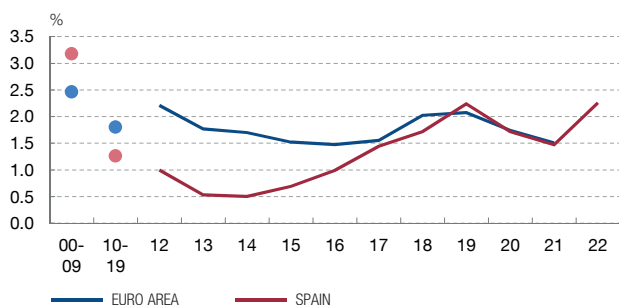
³² Indeed, recent Banco de España research indicates that in a year of high inflation such as 1993, around 40% of employees covered by a collective agreement containing an indexation clause saw their wages grow as a result of the increase in the minimum wage rate (see Adamopoulou, Díez-Catalán and Villanueva (2022)).

Chart 3.13

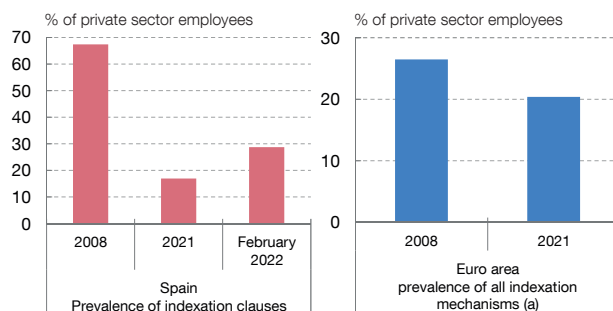
THE WAGE RESPONSE

The wage response will depend on wage indexation and revisions to inflation expectations, mechanisms that have become less prevalent and less sensitive to current inflation, respectively, in recent years. In any event, the increase in inflation may affect the wage distribution through collective bargaining.

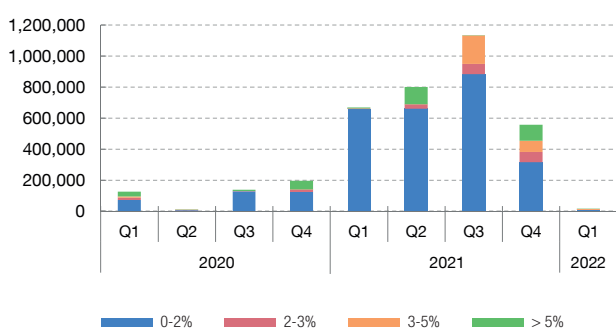
1 NEGOTIATED WAGE RATES. Y-O-Y CHANGE



2 PREVALENCE OF WAGE INDEXATION IN SPAIN AND THE EURO AREA



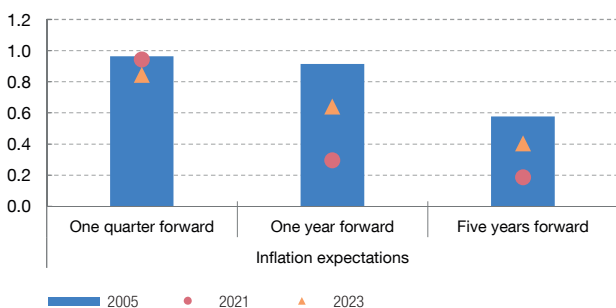
3 SPAIN. NUMBER OF EMPLOYEES COVERED BY COLLECTIVE AGREEMENTS SIGNED IN EACH QUARTER. BY NEGOTIATED WAGE INCREASE FOR 2022



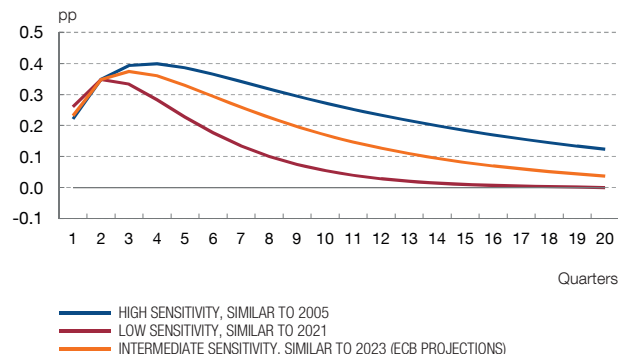
4 SPAIN. WAGE ELASTICITY TO A PERCENTAGE INCREMENT IN NEGOTIATED WAGE RATES (b)



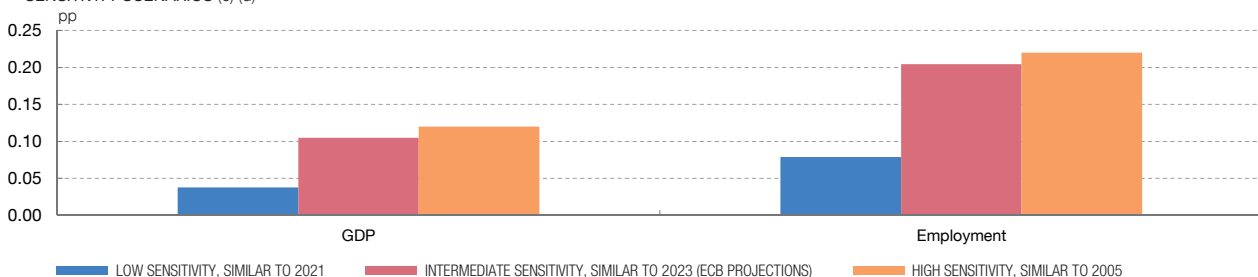
5 EURO AREA. SENSITIVITY OF INFLATION EXPECTATIONS TO RECENT INFLATION (c)



6 EURO AREA. WAGE RESPONSE TO AN INCREASE IN INFLATION UNDER DIFFERENT INFLATION EXPECTATION SENSITIVITY SCENARIOS (c) (d)



7 EURO AREA. CUMULATIVE LOSS OF EMPLOYMENT AND GDP AFTER ONE YEAR DUE TO AN INCREASE IN INFLATION UNDER DIFFERENT INFLATION EXPECTATION SENSITIVITY SCENARIOS (c) (d)



SOURCES: Eurostat, ECB and Banco de España.

- a For a detailed description of the euro area data, see Koester and Grapow (2021).
- b See Adamopoulou, Díez-Catalán and Villanueva (2022).
- c The calculations for 2023 are based on the ECB Staff Macroeconomic Projection Exercise of March 2022.
- d Calculated using the model developed by Aguilar and Vázquez (2021).



is likely to increase again should the current inflationary episode persist (see Chart 3.13.5).³³

4.2 The economic policy response and the role of an incomes agreement

The current inflationary episode amounts to an adverse shock to the terms of trade of Spain and the main euro area countries, which are net importers of energy and other commodities. Indeed, in recent quarters import prices for energy and many other commodities have risen far faster than the prices of the goods and services that Spain and the euro area export. For these economies, this has meant reduced international purchasing power (see Chart 3.14.1) and, consequently, a relative impoverishment that diminishes household disposable income and corporate earnings.

Against this background, it is vital that significant indirect and second-round effects be avoided. As Chart 3.13.7 shows, an adverse shock to terms of trade has a greater impact on GDP and employment when such effects materialise. Were these to spread throughout the euro area, a more aggressive normalisation of the ECB's monetary policy would be required to ensure fulfilment of its price stability mandate. To reduce the likelihood of this scenario, an economy-wide incomes agreement (see Section 4.2.1) would be desirable; one that results in a fair distribution of the inevitable income losses that sharp commodity price inflation entails for commodity-importing countries (both energy and non-energy commodities). Domestic, European and monetary policies (see Sections 4.2.2, 4.2.3 and 4.2.4, respectively) would also have a crucial role to play in response to this shock.

4.2.1 An incomes agreement

An incomes agreement between social partners would help avoid a spiral of price and cost increases which would only exacerbate the harmful effects of the current shock.³⁴ Under such an arrangement, firms and employees would agree to share the inevitable loss of income in the national economy that higher commodity import prices entail. In particular, in the present circumstances, employees will not be able to maintain their purchasing power in the short term and nor will firms be able to maintain their profit margins. Were employees to bear the full brunt of the adjustment, firms would likewise end up adversely affected through a sharp drop in demand. Conversely, if the full burden of the adjustment were placed on firms, many of them would be forced to close and many others would experience significant losses in competitiveness, affecting their future investment capacity. All of this would ultimately undermine job creation and the general public's well-being.

³³ See Banco de España (2019) and Aguilar (2020).

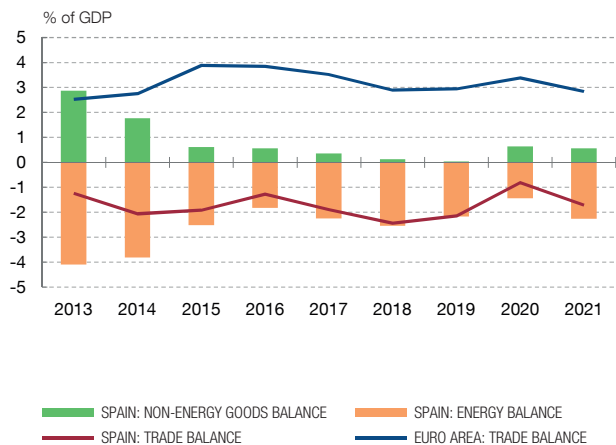
³⁴ See Hernández de Cos (2022).

Chart 3.14

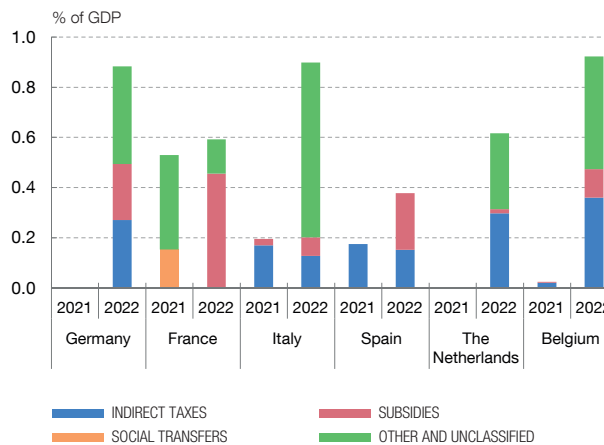
THE ECONOMIC POLICY RESPONSE

The terms of foreign trade for net energy-importing economies, such as the euro area and Spain, have deteriorated. Countries have begun to adopt fiscal measures to mitigate the economic effects, while the monetary policy stance has been adjusted to keep the medium-term inflation outlook anchored to the target.

1 THE TRADE BALANCE IN SPAIN AND THE EURO AREA

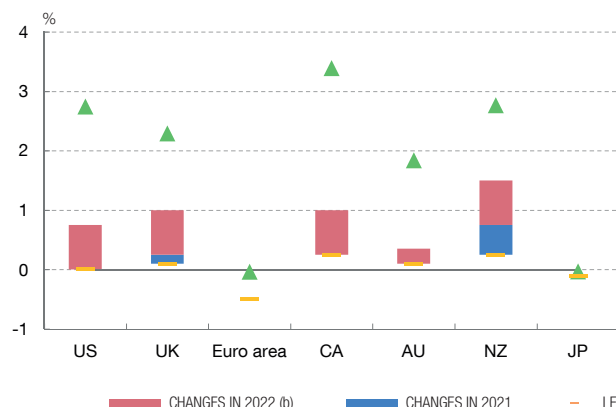


2 FISCAL POLICY MEASURES TO COMPENSATE FOR ENERGY PRICE RISES (a)

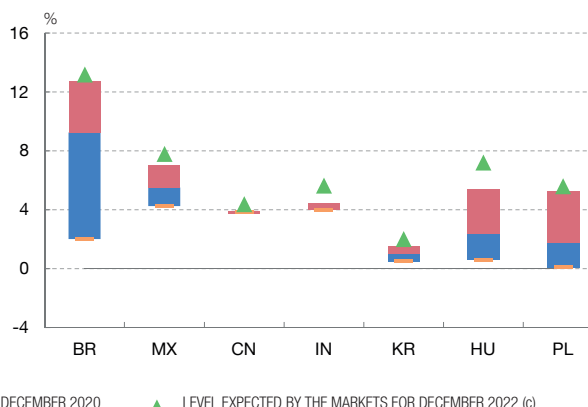


3 POLICY INTEREST RATES

3.1 ADVANCED ECONOMIES



3.2 EMERGING MARKET ECONOMIES



SOURCES: INE, national central banks and Banco de España.

- a Measures approved or announced to mid-March 2022. Unclassified measures are those for which a breakdown is not available and also include losses stemming from price caps for State-owned electric utilities.
- b Includes changes to policy rates adopted before 13 May 2022.
- c Based on futures for the interbank overnight rate, interest rate swaps and the OIS rate for the euro area, in April 2022.



The asymmetric impact of the current shocks on workers, firms and sectors must be considered when determining the specific features of the incomes agreement. Given that asymmetry, the necessary coordination at national level must be combined with mechanisms to adapt the agreement to the existing productivity and activity-related differences across firms and sectors. Equally, where the standard of living of certain segments of households is hit particularly hard by rising energy costs, the incomes agreement should naturally seek to mitigate their straitened circumstances. In short, these considerations suggest that

a potential incomes agreement should avoid overly sweeping measures that might prove too rigid for certain groups of agents.

It would also be desirable to avoid arrangements that automatically link wages to past inflation or indexation clauses. The aim is precisely to reduce the risk of triggering a wage-price feedback loop. Admittedly, workers with collective agreements registered up to March of this year that provide for any form of indexation clause linking the final wage increases agreed in 2022 to developments in inflation are in the minority. Nonetheless, the figure (30%) is notably higher than it was at the end of 2021 (17%). More concerning still is the fact that this figure rises to 50% for agreements entering into force in 2023, although the number of such agreements remains low.

The incomes agreement should include multi-year commitments relating both to wage increases and to job protection. In a context as uncertain as the current one, such commitments would afford households and firms considerable certainty for their spending and investment decisions. Within this multi-year horizon, the nominal benchmarks for wage bargaining should exclude components associated with energy products and should be based on the projected trend in underlying inflation. These recommendations would apply both to the benchmarks used for setting wage increases and, if agreed, to possible wage guarantee clauses. These types of practices have been used in the past by social partners and have proved to be useful in sustaining employment and reducing unemployment, boosting Spanish firms' competitiveness and fostering economic growth.

These wage guidelines should be accompanied by explicit profit margin moderation commitments. This is the only way to ensure that the wage moderation is effectively passed through to business competitiveness, while limiting the pass-through of rising energy input costs to other goods and services. Some sort of mechanism should be devised to ensure that this moderation of margins is verifiable.

4.2.2 Domestic fiscal policies

The fiscal policy response is key to mitigating the effects of the current adverse shock on the hardest-hit households and firms, while simultaneously preventing its persistence over the medium term. With this dual aim, the fiscal policy response should focus on temporary compensation measures targeting the most vulnerable households and firms. Likewise, averting any feedback into the current inflationary process is a further reason to avoid an across-the-board fiscal impulse and the widespread use of automatic indexation clauses in expenditure items.

In recent months, the authorities of various countries have responded in this direction (see Chart 3.14.2). In Europe, several countries have reduced electricity charges and taxes, and have launched transfer programmes focused on the most

vulnerable households.³⁵ In some cases, these measures have included electricity price freezes or subsidies to electricity companies to compensate for the increase in their costs. Likewise, some recent interventions have aimed to compensate households and hauliers for rising fuel prices, whether through direct subsidies for fuel purchases (France), tax cuts (Italy) or subsidies for the use of public transport (Germany).

In Spain, several measures were approved over the course of 2021 to reduce the electricity tax burden and to protect the most vulnerable consumers.³⁶ For example, the period during which electricity supply cannot be disconnected was extended and social rebates on electricity bills were increased. In addition, it was established that a portion of the unbudgeted tax revenue from the ETS and the tax revenue from windfall remuneration of non-CO₂-emitting power plants in the wholesale market would be earmarked to cover electricity system charges.

More recently, the National Plan to respond to the economic and social consequences of the war in Ukraine was approved.³⁷ Among other measures, the plan includes direct grants to firms in the hardest-hit sectors, such as electricity/gas-intensive industry, transportation, agriculture and fishing. Also included are a temporary general rebate on fuel purchases, incentives for using renewable energy, a new €10 billion State guarantee facility and specific measures to protect the most vulnerable workers and groups. In addition, at the European Council meeting held on 24-25 March, the Member States were called on to apply emergency temporary measures to contain electricity prices. The Iberian exception – in terms of the Iberian Peninsula’s interconnection with the rest of the EU being less than 3% – was also acknowledged at that meeting. This has recently enabled Spain and Portugal to reach an agreement with the European Commission for a temporary (12-month) mechanism to cap the price of gas and lower that of electricity.³⁸

4.2.3 European policies

The recent surge in commodity prices and the war in Ukraine warrant coordinated European action. As discussed in Chapter 2 of this report, the invasion of Ukraine and the severe sanctions imposed on Russia by the international community will have highly uneven effects on European economies depending on the exposure of their exports and imports. In addition, despite the common elements in the design of the European electricity market, there is considerable disparity across the European economies in both their energy mix and the geographical source of their imported oil and gas. In these

35 The initial measures were introduced in 2021 Q4 and were expected to remain in force until 2022 Q1. However, persistent inflation has resulted in these measures being extended and others introduced, most of which will run until end-2022.

36 See [Royal Decree-Law 12/2021](#) of 24 June 2021, [Royal Decree-Law 17/2021](#) of 14 September 2021, [Royal Decree-Law 23/2021](#) of 26 October 2021 and [Royal Decree-Law 29/2021](#) of 21 December 2021 (all available in Spanish only).

37 See [Royal Decree-Law 6/2022](#) of 29 March 2022 (available in Spanish only).

38 Not enough is known about this mechanism at the cut-off date for this report to accurately assess its implications on multiple fronts.

circumstances, the optimal response should combine, first, various domestic measures to mitigate the short-term adverse economic effects of these shocks on the most vulnerable groups and, second, European policies with a medium-term outlook to increase the EU's strategic autonomy in key sectors and accelerate the energy transition. Further, against a background of reduced budgetary space at the national level, the pooling of budgetary resources to jointly fund the increase in public expenditure prompted by this new exogenous shock would be the most effective means of fending off a persistent deterioration in the economic outlook, while simultaneously eliminating a new potential source of financial fragmentation in Europe.

To coordinate European actions in the energy arena and to reduce reliance on Russia, the European Commission has proposed its REPowerEU plan, which aims to cut European demand for Russian gas by 60% by the end of 2022.

There are two main pillars to this initiative.³⁹ First, diversifying gas supplies by increasing imports from non-Russian suppliers, in particular liquefied natural gas. To this end, in addition to expanding capacity in the sector, the use of existing capacity (which is concentrated in certain countries such as Spain) must be maximised by investing in cross-border interconnections to eliminate the current bottlenecks.⁴⁰ Second, the plan aims to reduce the EU's reliance on fossil fuels more swiftly by accelerating the roll-out of renewables and boosting energy efficiency. In addition, the plan envisages temporarily easing the State aid framework for the business sector and establishing certain limits on retail electricity prices.

4.2.4 Monetary policy

In response to the current strong inflationary pressures, the central banks of developed economies have moved towards monetary policy normalisation (see Chart 3.14.3). For example, at its March meeting the US Federal Reserve began a cycle of interest rate hikes (raising the target range for its policy interest rate by 25 bp followed by a further increase of 50 bp in May, putting the range at 0.75%-1.0%), signalled further rises over the rest of the year and announced that it would begin reducing its holdings of Treasury securities, agency debt and mortgage-backed securities. For its part, since December 2021 the Bank of England has raised its policy interest rates by 90 bp to 1%. In the same vein, the central banks of Canada and New Zealand, which had gradually tapered their asset purchase programmes over the last few months, also recently raised their key policy rates. As for the main emerging market economies, in the early stages of 2022 all continued the cycle of monetary policy tightening that they began in 2021, save for those in Asia.

³⁹ See [European Commission \(2022\)](#).

⁴⁰ In addition to gas market interconnection, electricity interconnection must also be boosted. Spain and Cyprus were the only countries to fall short of the electricity interconnection target of 10% set for 2020. See [European Commission \(2017\)](#). Various studies have demonstrated the benefits of a more interconnected system in terms of stability and lower prices, in particular for Spain; see [Deane, Ó Ciaráin and Ó Gallachóir \(2017\)](#) and [Abadie and Chamorro \(2021\)](#).

Since late 2021, the ECB has taken various measures consistent with the gradual normalisation of its monetary policy stance. For instance, at its meeting in December 2021 the Governing Council announced that it would discontinue net asset purchases under the pandemic emergency purchase programme (PEPP) in March 2022, as well as the end in June of the special conditions applicable to the third series of targeted longer-term refinancing operations (TLTRO III). In addition, the Governing Council announced in April that it expected to end net purchases under the APP in the third quarter of this year, after shortening their duration at the March Governing Council meeting. It also indicated that the raising of key ECB interest rates would take place some time after the end of the net purchases under the APP.

In a particularly uncertain context, the ECB has emphasised that its monetary policy decisions will be based on developments in economic indicators. One key determinant of the ECB's response is the medium-term orientation in the formulation of its price stability objective, which is the key guidance for correctly anchoring economic agents' expectations.

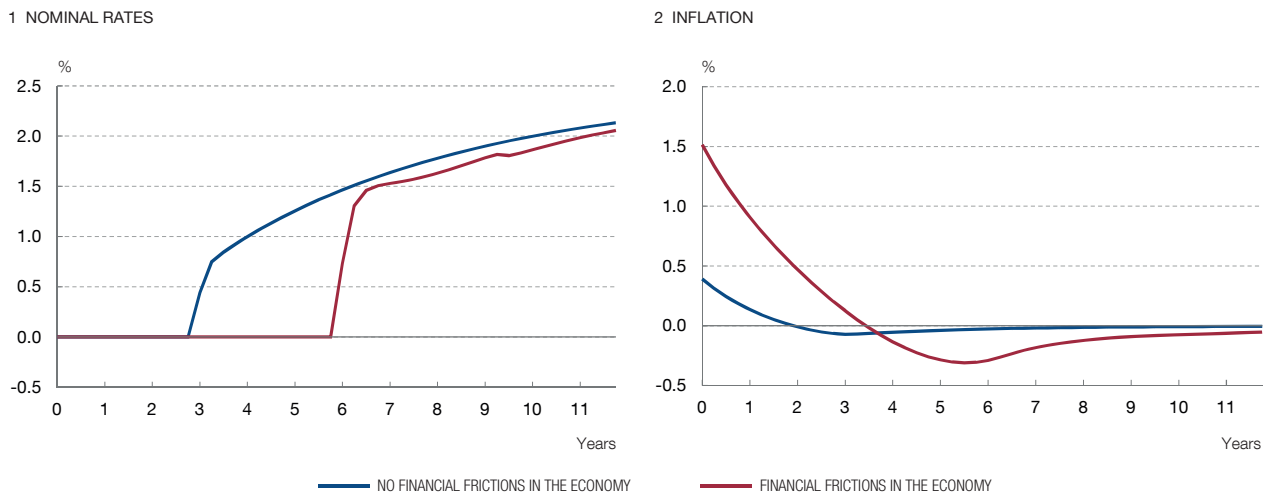
The ECB has also reiterated that, in the current setting, its monetary policy response will be gradual and will retain all the optionality and flexibility that its various instruments allow. In particular, at its April meeting the ECB Governing Council explicitly stated that it would keep its options open and maintain flexibility in the conduct of monetary policy, taking whatever action was needed to fulfil its price stability mandate and to contribute to safeguarding financial stability. The pandemic has shown that, under stressed conditions, flexibility in the design and conduct of asset purchases has helped to counter the impaired transmission of monetary policy and made the ECB's efforts to achieve its goal more effective. Within its mandate, the ECB has indicated that, under stressed conditions, flexibility would remain an element of monetary policy whenever threats to monetary policy transmission jeopardise the attainment of price stability. In this regard, the ECB announced that reinvestment under the PEPP, the horizon of which extends to end-2024, would be adjusted flexibly across time, jurisdictions and asset classes, to contend with any pandemic-related fragmentation that might impair the transmission of monetary policy. The normalisation will also be gradual, provided that medium-term inflation expectations remain anchored around the 2% target, as they are at present, although there are preliminary signs, which will have to be monitored carefully, of those indicators being revised to above-target levels (see Chart 3.10). The latest economic literature likewise stresses the benefits of a gradual monetary policy response to a supply-side shock (see Chart 3.15).⁴¹

41 For instance, some authors (see [Caballero and Simsek, 2022](#), and [Guerrieri et al. \(2021\)](#)) emphasise that, in times of sectoral reallocation, monetary policy should respond gradually to sporadic upturns in inflation prompted by the ensuing changes in relative prices. Meanwhile, other authors (see, among others, [González et al. \(2021\)](#)) have highlighted the effects of a premature tightening of monetary policy on the build-up of physical capital and, therefore, on the potential growth of economies. As Chart 3.15 illustrates, when various financial frictions that may give rise to a misallocation of productive capital are taken into account, a relatively patient monetary policy response to a supply-side shock is preferable.

Chart 3.15

THE OPTIMAL MONETARY POLICY RESPONSE TO A SUPPLY-SIDE SHOCK UNDER A THEORETICAL MODEL (a)

When interest rates are constrained by an effective lower bound, the optimal response to an adverse supply-side shock is to delay monetary policy normalisation, particularly when financial frictions affecting heterogeneous firms are considered.



SOURCE: Banco de España, using the model devised by González et al. (2021).

a The chart shows the optimal monetary policy response and inflation developments in the event of an adverse supply-side shock in an economy where the natural interest rate stands temporarily below the effective lower bound of interest rates.



In step with the communication of this process of monetary policy normalisation, market expectations of ECB policy rate hikes have been brought forward since December. The prospect of a normalisation of the monetary policy stance has also been reflected in an upturn in long-term interest rates in the euro area. Specifically, the 10-year OIS rate, which proxies the euro area risk-free interest rate, has risen by about 170 bp since the beginning of the year.

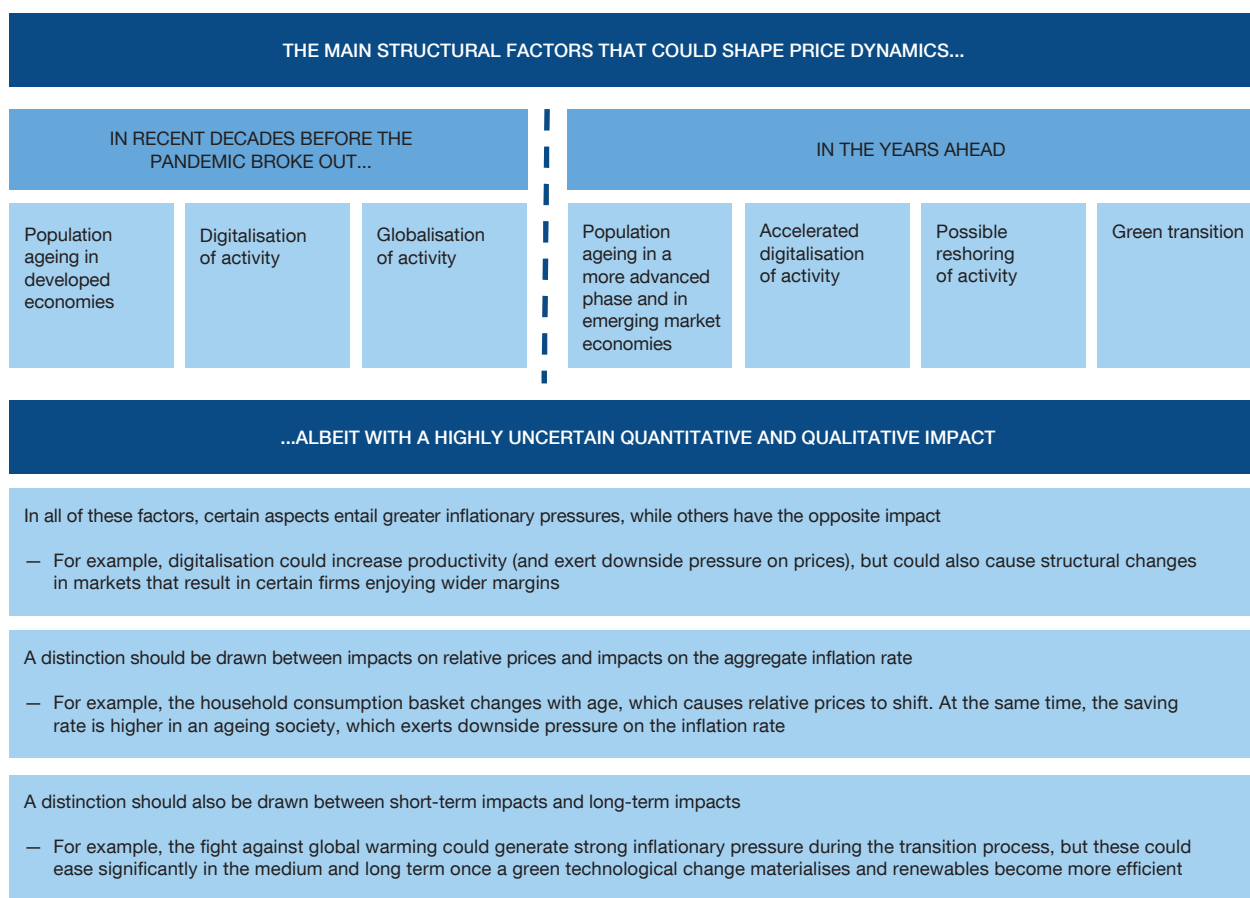
4.3 Other structural aspects

Various structural factors could shape price dynamics in the years ahead, although the sign and scale of that influence is difficult to predict. Prominent among these are how the COVID-19 pandemic may have changed the globalisation and digitalisation of economic activity, the latest geopolitical events, recent developments in demographic trends and the green transition (see Figure 3.1).⁴² In some cases, these developments could affect future inflation very differently to other similar structural changes in recent decades (see Section 2). In any event,

⁴² Another recent significant development for inflation relates to the new monetary policy frameworks that have emerged in the last few years, as some of the world's foremost central banks have revised their monetary policy strategy.

Figure 3.1

INFLATION: STRUCTURAL DETERMINANTS BEFORE AND AFTER THE PANDEMIC



SOURCE: Banco de España.

there is extraordinary uncertainty as to the intensity and even the direction of the potential implications of these recent developments for relative prices and for future inflation.

The COVID-19 pandemic and the geostrategic tensions could play a part in reshaping globalisation, which could increase inflationary pressures going forward. Even before the outbreak of the health crisis, a certain tendency towards the regionalisation of trade flows and value chains was already evident. The pandemic and the latest geopolitical tensions could accelerate reshoring initiatives and reinforce industrial policies that aim to incentivise the local production of certain strategic goods, all of which are likely to drive up prices.

The pandemic has also provided very significant momentum to the digitalisation and automation of economies. As discussed in Section 2, the advances in digitalisation during recent decades may have driven productivity gains and lowered

the relative prices of technological goods and services and of goods and services sold online. All of these factors appear to have exerted downside pressure on inflation. However, the links between digitalisation and price dynamics are ambiguous, since they largely depend on how the digitalisation process affects the structure and level of competition in the markets. Some recent evidence⁴³ shows that, partly as a result of the digitalisation process (which in some cases fosters an industrial structure characterised by high entry costs and a greater concentration and polarisation of activity), the margins and pricing power of certain firms have increased considerably in recent years, more so in the United States than in Europe. An acceleration of that digitalisation process could compound these dynamics⁴⁴ and heighten future inflationary pressures. Conversely, however, some recent papers⁴⁵ have found that this market configuration might also lead to lower price responsiveness to changes in the costs of factors of production or to global and monetary policy shocks.

The effects on inflation of population ageing are also difficult to anticipate.

The aggregate level of saving tends to increase as societies age since individuals need to build up sufficient funds for their retirement. Accordingly, this process can induce downside pressure on prices. However, the price implications of population ageing may become more ambiguous as these demographic dynamics progress and older generations (which in principle no longer save and also have a very different spending profile from younger generations) make up a larger share of the population. Some papers associate older generations accounting for a larger share of the population with higher inflation.⁴⁶ They also indicate that the ageing process in emerging economies will reduce the supply of relatively cheap labour from these countries. This is likely to increase workers' wage bargaining power, even in advanced countries, which could give rise to additional inflationary pressures in the medium and long term.⁴⁷

One structural factor that is becoming increasingly important is the energy transition. As discussed in Chapter 4 of this report, the introduction of green taxes and carbon pricing systems (a cornerstone of the current climate change mitigation policies) could significantly affect relative prices and the level of inflation.⁴⁸ These measures could also have a considerable impact on the volatility⁴⁹ and persistence

43 See De Loecker, Eeckhout and Unger (2020) for the United States and Kouvavas et al. (2021) for the euro area. Calligaris, Criscuolo and Marcolin (2018) find that mark-ups in OECD countries are higher in digitally-intensive sectors and that the mark-up differentials between digitally-intensive and less-digitally-intensive sectors have increased significantly over time.

44 Digitalisation also has important implications for the labour market, since it affects the wages of skilled and unskilled workers differently (see European Central Bank, 2021b).

45 See, for example, Kouvavas et al. (2021) and Bobeica, Ciccarelli and Vansteenkiste (2021).

46 See Aksoy et al. (2019) and Juselius and Takáts (2018).

47 See Goodhart and Pradhan (2020).

48 See, for example, Moessner (2022) and McKibbin, Konradt and Weder di Mauro (2021).

49 See Santabábara and Suárez-Varela (2022).

of inflation. Likewise, the gradual reduction in investment in fossil fuel exploration and extraction (given its diminished appeal in terms of medium-term profitability) adversely affects energy supply and producers' responsiveness to shocks. This could strain price dynamics, at a time when, in the near term, investment in renewables is yet to reach a sufficient scale of production.⁵⁰ However, over the medium and long term, these effects could be offset by potential technological developments and by renewables becoming more energy efficient.

5 The uneven impact of the surge in inflation

The price surge over the last few quarters has already had an appreciable impact on economic activity, which would increase if this episode proves to be more intense and persistent. Indeed, as analysed in depth in the Banco de España's [December 2021](#) and [March 2022 Quarterly Report on the Spanish Economy](#), the inflationary pressures observed would have had a significant adverse impact on both the Spanish economy's growth rate in 2021 and its outlook for 2022-2024. Most of this effect appears to have stemmed from the deterioration of consumption and investment dynamics, in response to the loss of real income. Beyond these aggregate effects, the impact of the current inflationary episode on the different types of households and firms appears to be very heterogeneous. This aspect is analysed in the rest of this section.

5.1 Households

Aggregate inflation metrics are constructed on the basis of an average household's consumption pattern. Therefore, they do not provide a fully accurate indication of price changes for certain types of households. The standard metrics for quantifying consumer price inflation, such as the CPI or the HICP, are constructed as a weighted average of the changes in the prices of a number of goods and services, which are selected and weighted so as to approximate the consumption basket of a representative household. This methodology is the most appropriate for calculating the inflation borne by the economy's households overall. However, since consumption patterns may differ significantly depending on the type of household, these aggregate measures could underestimate or overestimate the true rate of price change for certain specific households.⁵¹ Incorporating these considerations into the analysis is particularly relevant in the current setting, in which prices are rising relatively unevenly across the different goods and services.

⁵⁰ See [Alonso and Suárez-Varela \(2021\)](#) and [International Energy Agency \(2021\)](#).

⁵¹ [Izquierdo, Ley and Ruiz-Castillo \(2003\)](#) analyses the differences between the CPI and a price index in which households are weighted equally, regardless of their share in aggregate consumption.

The Household Budget Survey allows different inflation rates to be constructed for different types of households according to their family structure, age, education and income.^{52,53} This exercise begins by documenting the notable differences between the consumption patterns of the different types of households. Thus, for instance, Chart 3.16.1 shows that spending on staple goods (particularly food, electricity, gas and other fuels) as a share of the total consumption basket is considerably higher for households with a lower income level or where the reference person is older or has a lower educational attainment level. Specifically, in the period 2006-2020, the share of expenditure on these goods accounted for 24% of consumption in the bottom quartile of the income distribution. This percentage falls to 17% in the top quartile.

In the period 2006-2020 a negative relationship is seen between the inflation borne by households and their level of income. As can be seen in Chart 3.16.2 (columns 1 to 3), over this period households with lower income levels were affected to a greater extent by the price increases. In particular, between 2006 and 2020, the average annual inflation rate for households in the bottom quartile of the income distribution stood at 1.6%, almost 2 percentage points (pp) higher than for those in the top quartile. When this difference is accumulated over the 15 years analysed, and assuming that the households remain in the same income bracket throughout this period, the inflation gap increases to more than 2.75 pp.

The share of spending on staple goods lies behind many of the differences in the inflation rates that households with different income levels faced between 2006 and 2020. Specifically, over this period food, electricity, gas and other fuels jointly accounted for 58% of the inflation experienced by lower-income households. This percentage falls to 34% in the case of higher-income households.

In recent months the inflation rate for lower-income households (bottom quartile) is estimated to be 1.2 pp higher than for higher-income households (top quartile).⁵⁴ As shown by Chart 3.16.2 (columns 4 to 6), between April 2021 and March 2022 the price of the consumption basket of lower and higher-income households rose by 5.6% and 4.3%, respectively. In absolute terms, this would have meant an additional average annual expenditure of €618 and €1,329, respectively.⁵⁵ For both groups, higher electricity prices appear to be the largest driver behind this increase in spending (€286 and €446, respectively). Households

52 See Basso and Pidkuyko (2022).

53 This rate is calculated by weighting the price growth of individual goods according to the share of total expenditure that each household spends on the relevant item. See Attanasio (1998) for a detailed description of the methodology.

54 This exercise is based on an extrapolation to the reference period of the latest available consumption data (for 2020) in the Household Budget Survey. It uses the average of the annual percentage changes in inflation between April 2021 and March 2022.

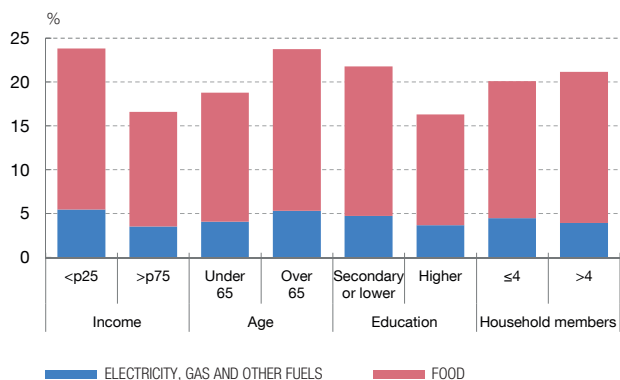
55 These contributions may differ from the figures published by the National Statistics Institute (INE), as they are the result of a simulation exercise disaggregated by household, drawing on household expenditure in the Household Budget Survey.

Chart 3.16

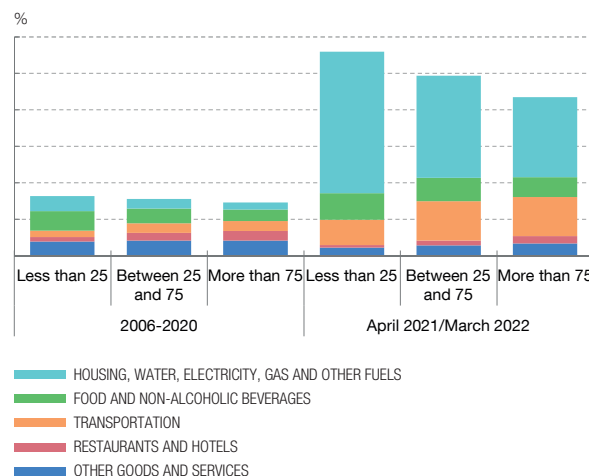
INFLATION RATES FOR DIFFERENT INDIVIDUAL CHARACTERISTICS AND EFFECT OF THE TAX MEASURES (a)

The increase in staple goods prices in the period 2006-2021 contributed to inflation hitting lower-income households (which spend a larger share of their expenditure on such goods) the hardest. Tax measures on electricity have partially offset the rise in electricity prices.

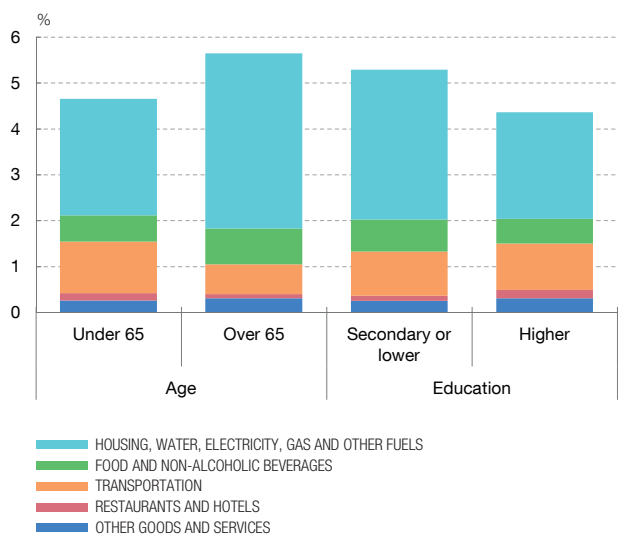
1 SHARE OF EXPENDITURE ON FOOD AND ELECTRICITY, GAS AND OTHER FUELS (2006-2020)



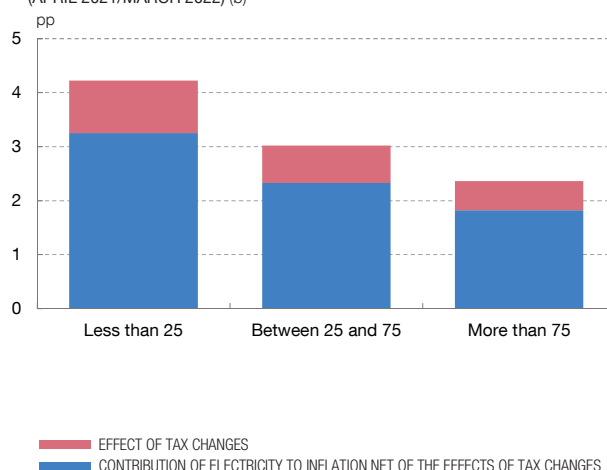
2 HOUSEHOLD-SPECIFIC INFLATION BY INCOME PERCENTILE



3 HOUSEHOLD-SPECIFIC INFLATION BY EDUCATIONAL ATTAINMENT LEVEL AND AGE (APRIL 2021/MARCH 2022)



4 CONTRIBUTION OF RECENT CHANGES IN ELECTRICITY TAXES TO HOUSEHOLD-SPECIFIC INFLATION BY INCOME PERCENTILE (APRIL 2021/MARCH 2022) (b)



SOURCES: Household Budget Survey, INE and Banco de España.

a See Basso and Pidkuyko (2022).

b The tax changes considered are the reduction of VAT on electricity from 21% to 10% (Royal Decree-Law 12/2021) and the reduction in the excise duty on electricity from 5.1% to 0.5% (Royal Decree-Law 17/2021).



where the reference person was older than 65 faced inflation 1 pp higher than the rest. This gap is mainly due to the higher inflation experienced by the lower-income households within this group (see Chart 3.16.3). Further, as compared with the other groups, inflation was 0.9 pp higher for households with secondary education or less.

Some of the measures approved in recent months would have an impact on the distributional effects of inflation. In particular, Banco de España estimates suggest that the indirect tax cuts approved in 2021⁵⁶ reduced average inflation for lower-income households between April 2021 and March 2022 by 1 pp, a sharper reduction than that experienced by households in the top quartile of the income distribution (0.5 pp) (see Chart 3.16.4). Conversely, according to preliminary estimates of the impact of the recently approved fuel discount (€0.20 per litre of fuel for the period from 1 April to 30 June 2022),⁵⁷ the inflation borne by lower-income households over this period could be reduced by 0.35 pp, a smaller reduction than that experienced by higher-income households (0.61 pp).⁵⁸

The upturn in prices could also affect households differently depending on their net financial position. Conceptually, inflation imposes a tax on cash holdings and bank deposits, while it reduces the real value of debts. Thus, a sharp rebound in prices could lead to some redistribution of wealth among households with different types of financial assets and liabilities. This is the so-called “Fisher channel” of monetary policy.⁵⁹

Empirical evidence confirms the quantitative relevance of this “Fisherian” channel. The findings of a recent paper⁶⁰ suggest that middle-aged people (aged 36 to 45) with high labour income, who have a net debtor position on average,⁶¹ have benefited from the rise in inflation. In particular, their ability to save would have increased by 3% of their annual labour income owing mainly to the lower real value of their debts (see Table 3.1). By contrast, the over-65s, who tend to have a net creditor position, would have been comparatively more adversely affected. It should be borne in mind that, in this exercise, the channel for updating income with inflation has been considered equally across all groups. The adverse effects on the over-65s could therefore be partially mitigated by the automatic indexation of pensions.

56 See [Royal Decree-Law 12/2021](#) of 24 June 2021 and [Royal Decree-Law 17/2021](#) of 14 September 2021 (both available in Spanish only), approving, respectively, the reduction in VAT on electricity from 21% to 10% and the reduction in the excise duty on electricity from 5.1% to 0.5%. The estimates presented in Chart 3.16.4 only assess the impact of these two measures. Given the information available at the cut-off date for this report, it is not possible to assess with sufficient accuracy the distributional effects of the other measures approved by the Government in recent months.

57 See [Royal Decree-Law 6/2022](#) of 29 March 2022 (available in Spanish only).

58 Given the mobility restrictions in place for much of 2020, these estimates consider the share of household spending on diesel fuel and petrol observed in 2019. Additionally, these calculations are based on the assumption that the measure recently approved will entail a reduction of around 11% in diesel and petrol prices compared to their pre-regulation price.

59 See [Doepke and Schneider](#) (2006) and [Nuño and Thomas](#) (2022).

60 This paper draws on individual data from more than four million customers of one of the largest Spanish commercial banks and analyses the impact of the increase in inflation in 2021 on individuals' ability to save. To this end, it takes into account both consumption disparities and the Fisher channel (see [Cardoso et al. \(2022\)](#)).

61 See [Cardoso et al. \(2022\)](#). Customer account balances show that the average net position of customers aged between 36 and 45 above the 75th percentile of the income distribution is -€36,000. The average net position of customers over 65 years of age is around €40,000.

Table 3.1

MEDIAN EFFECT OF UNEXPECTED INFLATION ON SAVING CAPACITY THROUGH NET NOMINAL POSITIONS AND CONSUMER SPENDING (a)

Age	Percentile of the labour income distribution				
	p10 - p25	p25 - p50	p50 - p75	p75 - p90	> p90
< 36	0.06	0.04	-0.06	-0.45	-0.30
36-45	0.37	0.62	1.58	3.43	3.17
46-55	0.05	0.11	-0.04	-0.12	-0.18
56-65	-1.04	-1.24	-1.94	-2.44	-2.70
> 65	-5.15	-5.38	-5.47	-4.90	-4.70

SOURCE: Cardoso et al. (2022).

a The table presents the effect of the year-on-year inflation of December 2021 (calculated using the aggregate composition of spending in the sample) on the saving capacity of 4.2 million bank customers with directly credited salaries, by age group (rows) and percentile of the conditional distribution of labour income in the database (columns). The total effect is the sum of: (1) the effect through net nominal positions (NNPs) and (2) the effect through consumer spending. The values in each cell are the median of the distribution of effects for the corresponding age-income group, calculated as a percentage of the annual labour income of each customer.

In any event, the effect of inflation on households' well-being depends not only on the composition of their expenditure and financial portfolios, but also on their ability to react to the increase in relative prices by adjusting their consumption and saving patterns. Some households may be able to reduce their spending on goods with higher price increases or adjust the composition of their investment portfolios with the aim of reducing their exposure to inflation. Moreover, the distribution of the effects of inflation on well-being may also depend on the ability of household members to adjust their labour supply. A more detailed analysis is required in the future to understand how this adaptability varies according to each household's demographic and economic situation.

5.2 Firms

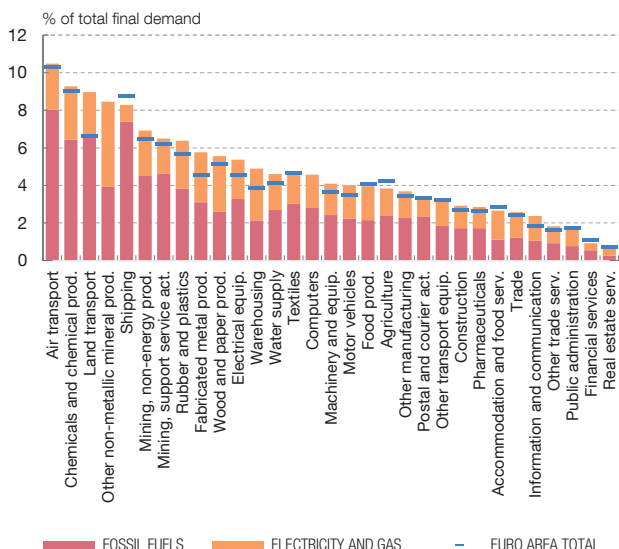
The impact of the inflationary episode is very uneven across the different sectors and mainly depends on how intensely energy inputs are used in their production processes. As noted above, the most significant price increase in the current inflationary episode has been in energy inputs. In this respect, although energy is an input common to all of the economy's production processes, its weight differs widely from sector to sector (see Chart 3.17.1). Thus, for example, manufacturing and transport are particularly energy-intensive, while its relative importance in real estate services, pharmaceuticals and even public administration is very low. Chart 3.17.1 also illustrates that, in general terms, energy has a higher weight in Spanish sectors' production processes than the euro area average. This is especially the case in the land transport sector.

Chart 3.17

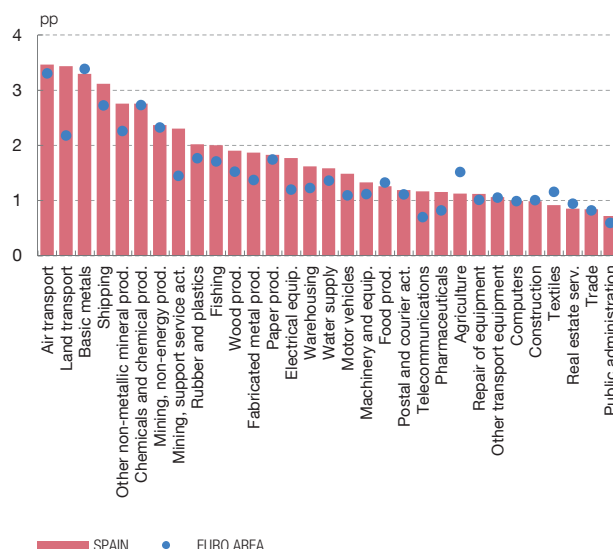
THE RISE IN INFLATION IS HAVING HETEROGENEOUS EFFECTS ON FIRMS

The impact of the current inflationary episode is very heterogeneous across sectors and mainly depends on the intensity with which each sector of activity uses energy inputs in its production processes.

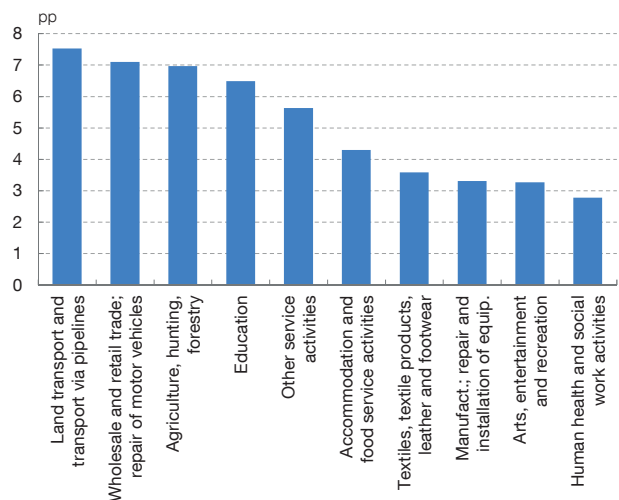
1 VALUE ADDED BY THE ENERGY SECTOR TO FINAL DEMAND. SPAIN AND EURO AREA



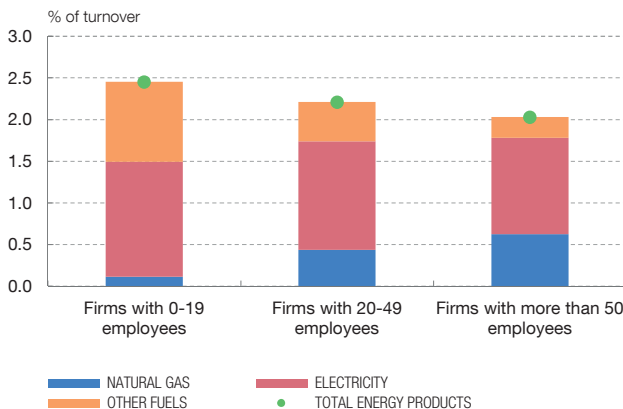
2 INCREASE IN SECTORAL COSTS FOLLOWING A 22% RISE IN ENERGY PRICES. SECTORS WITH THE HIGHEST INCREASE (a) (b)



3 INCREASE IN THE SHARE IN EMPLOYMENT OF FIRMS WITH NEGATIVE PROFITABILITY IN 2022 FOLLOWING A 22% INCREASE IN ENERGY PRICES. SECTORS WITH THE HIGHEST INCREASE (a) (c)



4 PURCHASES OF ENERGY PRODUCTS BY FIRM SIZE (d)



SOURCES: OECD and Banco de España.

- a The 22% increase considered in the cost of energy is the increase in energy prices observed between the Banco de España projections published on 5 April 2022 and those published on 17 December 2021.
- b See Izquierdo et al. (2022).
- c Simulation using individual data. Profitability is defined as (ordinary net profit + financial costs) / assets net of non-interest-bearing liabilities.
- d For sectors B-E of the NACE classification.



The impact of higher energy prices on firms' costs is magnified by sectoral linkages. The linkages between one sector and the rest of the economy amplify the effects on firms of the rise in energy prices beyond the aforementioned direct impacts. This mechanism is particularly relevant in sectors such as transport, which has a high direct exposure to changes in fuel prices and plays a key role in production chains. Any increase in its costs is therefore passed on very significantly to the rest of the economy. Chart 3.17.2 illustrates the expected cost increase for the different economic sectors in 2022, through direct and indirect channels,⁶² if energy costs were to increase by 22% over this year (i.e. the increase in energy prices observed between the Banco de España projections published on 5 April 2022⁶³ and those published on 17 December 2021).⁶⁴ According to these simulations, the most affected sectors in the Spanish economy would be air transport, land transport, basic metals and shipping, while in the euro area the most affected sectors would be basic metals, air transport and chemical products.

The increase in production costs is expected to lead to a deterioration of some firms' economic and financial situation. This deterioration could happen whether firms pass on their higher costs to their customers (causing their sales to suffer) or not (thus narrowing their margins). In both scenarios, corporate earnings will decline and, as a result, some firms could become financially vulnerable. The simulations carried out show that a 22% increase in energy costs would translate into a moderate increase in the share of financially vulnerable firms in Spain, albeit with a high sectoral heterogeneity.⁶⁵ For example, in 2022 the share in employment of firms with negative profitability would rise by more than 3 pp. However, this increase would stand at more than 6 pp in several sectors of activity (see Chart 3.17.3).⁶⁶ The sectoral heterogeneity would be linked to both sectoral differences in the degree to which firms' costs increase (a reflection of their production structure) and asymmetries in the initial economic and financial situation (in particular, the number of firms that were close to the thresholds determining vulnerable status in each sector before the shock).

Within each sector, smaller firms are relatively more reliant on energy inputs, making them more vulnerable to the current inflationary pressures. Indeed, according to the INE's "[Estadística Estructural de Empresas](#)" (Structural

62 The scale of these indirect effects can be estimated using a sectoral production network model that properly represents, in a stylised framework, customer-supplier relationships between the different sectors in each economy, and between such sectors and those in other economies from around the world (see Izquierdo et al. (2022)).

63 See "[Macroeconomic projections for the Spanish economy \(2022-2024\)](#)".

64 See "[Macroeconomic projections for the Spanish economy \(2021-2024\): the Banco de España's contribution to the Eurosystem's December 2021 joint forecasting exercise](#)".

65 See Blanco et al. (2022).

66 These simulations take into account both the increase in the cost of energy and non-energy inputs and the increase in wages prompted by higher energy prices. The effects on corporate earnings include those associated both with higher purchase and selling prices and with lower quantities, as result of the fall in demand stemming from higher selling prices.

Business Statistics), in 2019 the cost of energy products as a percentage of sales was comparatively higher for smaller firms (see Chart 3.17.4). Moreover, these firms made the highest relative use of oil-related products in their production processes.⁶⁷

6 Conclusions

The global inflation rate rose significantly in 2021 and accelerated further in early 2022, partly because of the war in Ukraine. Overall, this sharp rise in prices is the result of a marked increase in commodity prices, a strong recovery in demand following the pandemic-related slump, and an insufficient supply response due to various geopolitical issues and certain bottlenecks in global value chains.

Although it is a global phenomenon, the effects of this inflationary episode and the factors behind it have been very uneven across countries. Specifically, the inflationary impact of higher energy prices has been especially marked in the euro area, in particular in the Spanish economy. This is partly due to the energy component making up a larger share of Spanish households' consumption basket and to Spanish firms' productive structure.

Analysts' consensus suggests that inflationary pressures will gradually ease over the coming quarters, as production bottlenecks clear and energy price growth slows. In any event, there is considerable uncertainty surrounding these forecasts and the possibility that the current inflationary episode may be more persistent cannot be ruled out, particularly should significant indirect and second-round effects on inflation arise. This would entail a significant loss of employment and competitiveness for the Spanish economy. To avoid this, it would be desirable to reach an incomes agreement whereby the costs of this episode for the Spanish economy are shared out in a balanced way across society as a whole.

Some Spanish households and firms have been hit hard by the sharp price hikes of recent quarters. The impact on the different types of households and firms appears to be very heterogeneous. Lower-income households would have experienced a significantly higher inflation rate in recent months. Similarly, some of the most-energy-intensive sectors (such as transport) and types of firms (such as small enterprises) would have endured a higher cost increase and greater deterioration in their economic and financial situation. It would therefore be desirable for public policies (particularly fiscal policy) to take into account these asymmetric impacts and, in a highly targeted and temporary manner, try to mitigate the adverse effects on the most vulnerable groups. The need to avert any feedback into the current inflationary process and the limited budgetary scope, given the high

67 See Matea and Muñoz (2022).

government deficit and debt, are further reason to avoid an across-the-board fiscal impulse and the widespread use of automatic indexation clauses in expenditure items.

Central banks must continue the process of normalising their monetary policy and avoid a de-anchoring of inflation expectations from their target over the medium term. The ECB, like other central banks, has already begun this normalisation process. In the current extraordinarily uncertain setting, and provided that euro area medium-term inflation expectations remain anchored around its 2% target, the ECB has emphasised that its monetary policy response will depend on the performance of economic indicators, in addition to being gradual and maintaining all the optionality and flexibility provided by its various instruments. In particular, the ECB Governing Council has insisted that it will take whatever action is needed to fulfil its mandate to pursue price stability and to safeguard financial stability.

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