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RISING FOOD COMMODITY PRICES AND THEIR PASS-THROUGH TO EURO AREA CONSUMER PRICES

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ABSTRACT

The global rise in food commodity prices is passing through strongly to the consumer prices that households pay for these products. Further, the current episode has seen a more widespread increase in food items than other historical periods of stress in these markets. The results of an econometric model reveal that a temporary increase of 10% in the rate of change of food commodity prices leads to a rise in euro area headline inflation (HICP) of around 0.3 percentage points after 12 months.

Keywords: food prices, inflation, euro area.

JEL classification: C32, C53, E31, Q17, Q18.

RISING FOOD COMMODITY PRICES AND THEIR PASS-THROUGH TO EURO AREA CONSUMER PRICES

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The marked global increase in food prices

The global upsurge in food commodity prices since early 2021 (see Chart 1.1) is passing through to consumer prices in the euro area and Spain, and is behind much of the increase in headline inflation observed in recent months.[1] The uneven impact of rising food commodity prices across countries is largely determined by the weight of food in the consumption basket. In the euro area as a whole this percentage stands at 17%, with food contributing 0.9 percentage points (pp) to the increase in the harmonised index of consumer prices (HICP), on average, in the last three quarters.[2] In Spain, meanwhile, this percentage amounts to 22% and the average contribution was 1.4 pp. According to the most recent data (for June 2022), the contribution of food to headline inflation in Spain was 2.9 pp, compared to 1.7 pp in the euro area (see Chart 1.2).

A sharper and more widespread increase than in other episodes of stress

An in-depth analysis shows that prices are increasing very sharply in the euro area across all food groups. Of the HICP food categories, 93% recorded extremely high rates in historical terms[3] in June 2022, compared with 27% and 54%, respectively, at the peak of the two previous episodes of food commodity price rises (2001-2002 and 2007-2008) (see Chart 1.3). In June, the price of fats and oils in the euro area rose by 29% year-on-year, the prices of cereals and coffee by 11%, and those of dairy and eggs and meat by around 12%. In Spain, fats and oils increased by 37% year-on-year, while cereals, coffee, dairy and eggs, and meat did so by around 16%, 11%, 16% and 10%, respectively. As a result of these dynamics, in the euro area fats and oils, cereals, and dairy and eggs are now 34%, 12% and 13% more expensive than in January 2021, respectively. Prices in Spain have risen more sharply in the same period, up by 56% in fats and oils, 17% in cereals, 16% in dairy and eggs and 10% in meat (see Chart 1.4).

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1 See Chapter 3 of the Banco de España *Annual Report* 2021 for a more in-depth analysis of the rising trend in headline inflation worldwide.

2 Average contribution of food to inflation in the period from September 2021 to May 2022.

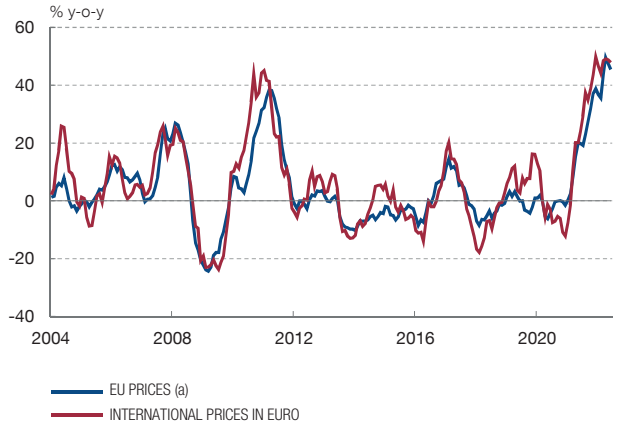
3 Rates in the top 5% of their historical distribution. For the overall food HICP, the threshold considered is a 5.5% price increase.

Chart 1

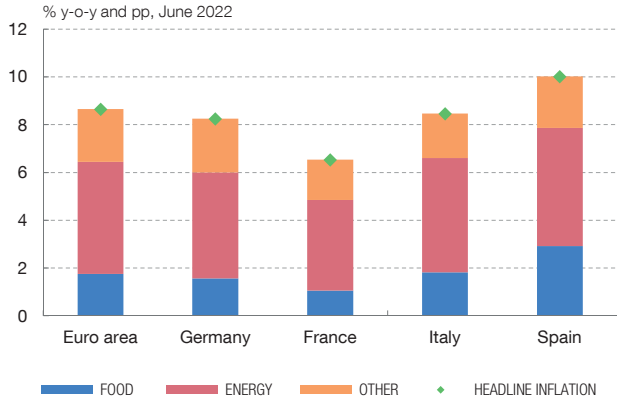
HISTORICAL AND RECENT FOOD PRICE DEVELOPMENTS

The global rise in food commodity prices is having a direct impact on the consumer prices that households pay. The current episode is seeing a more widespread increase in food items than other historical periods.

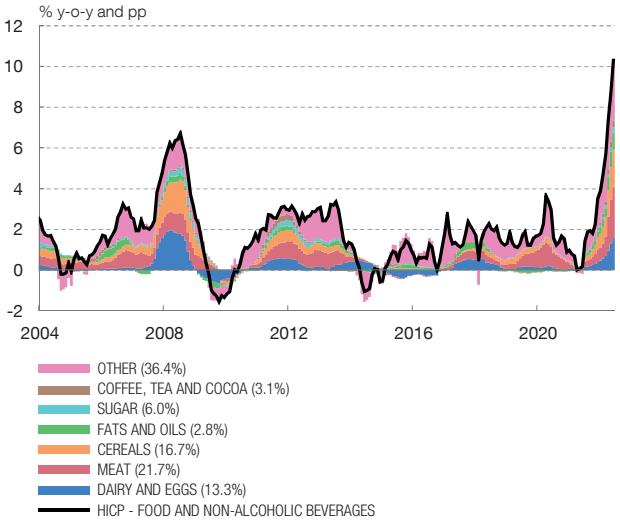
1 FOOD COMMODITY PRICES



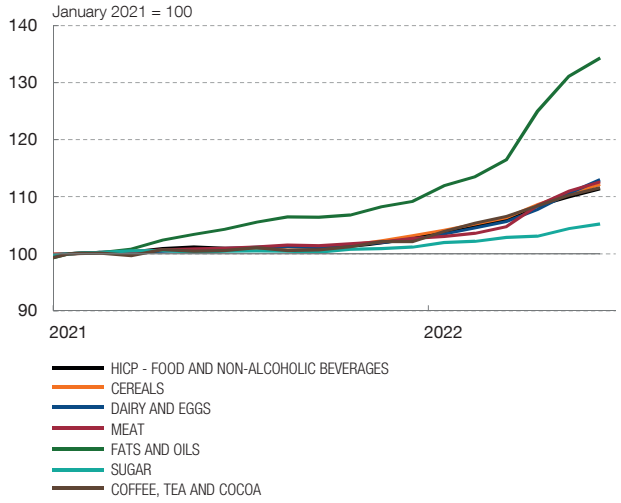
2 HEADLINE HICP. CONTRIBUTION OF FOOD AND OTHER ITEMS



3 EURO AREA. FOOD HICP. CONTRIBUTIONS (b)



4 EURO AREA. HICP. PRICE LEVEL BY FOOD GROUP



SOURCES: DG-Agri Eurostat, FAO and own calculations.

a The European Union aggregate is calculated as the weighted sum, according to their relative weight in the HICP, of the price of cereals (25%), dairy and eggs (21%), fats and oils (5%), meat (35%), sugar (9%) and coffee (5%). These weights are adjusted so that they add up to 1, as not all food components are included in the HICP. EU prices are used for cereals, fats and oils, dairy and eggs, and meat. For coffee and sugar, the international price is used.

b The weight of each component in the food HICP for 2022 is shown in brackets.

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The buffering role of the European framework

In the European Union (EU), the common agricultural policy (CAP) cushions the transmission of shocks in global food commodity markets to EU food commodity prices. The CAP is a support system for farmers, implemented via a wide range of instruments affecting prices and the production of agricultural commodities in the EU, such as direct grants, price support mechanisms and minimum guaranteed

prices. These are complemented by tariffs and quotas on imports of agricultural products into the EU.[4] Chart 2.1 shows that reference prices in the EU have historically moved in more moderate ranges than in the rest of the world. This is particularly clear in the case of dairy and eggs or sugar. Chart 2.2 shows international and EU price changes for the same commodity and how year-on-year changes in Europe tend to be smaller than in international markets.[5]

The pass-through of food commodity prices to HICP

Quantifying the impact of food commodity price rises on the prices borne by consumers is a complex task, since it depends on how these rises are transmitted along the production value chain and on the distribution of the goods and services that make up the consumption basket. The impact is often quantified using econometric models that allow the intensity and duration of the pass-through to be analysed. In the case of the EU, as mentioned above, the analysis requires using EU food commodity prices, which include the impact of the CAP.

Chart 2.3 presents the results of an analysis based on econometric vector auto-regressive models (VAR), following Ferrucci et al. (2012),[6] for the case of the euro area. As recommended in the reference literature, first, a disaggregate approach is adopted,[7] i.e. estimating models for various representative groups of food products – in this case cereals, dairy and eggs, fats and oils, meat, sugar and coffee. The variables included in the models are the rate of change of the food commodity's price in the EU[8] and of the corresponding components of the producer price index and the HICP. Second, the effect on headline HICP is obtained by aggregating the results for all of the food groups, weighting each by its share in the consumption basket.[9] The models are estimated for the period January 1997 to February 2022.

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4 See European Commission, The common agricultural policy at a glance. The main aim of the CAP is to ensure a stable supply of affordable food for EU citizens. It does this by supporting farmers and working to improve agricultural productivity. The CAP also seeks to ensure that EU farmers make a reasonable living, as well as to maintain rural areas and landscapes across the EU, help tackle climate change and promote the sustainable management of natural resources, and keep the rural economy alive. A reform of the CAP was approved in 2021 to achieve a more equitable distribution of funds with specific support for small farms, to prioritise green farming and to provide results-oriented funding, while increasing Member States' flexibility to adapt the measures to local conditions.

5 Points on the 45-degree line represent identical price changes in the EU and the rest of the world. Regression lines with a slope of less than one indicate a smaller rate of change for European prices than for international prices.

6 See G. Ferrucci, R. Jiménez-Rodríguez and L. Onorante (2012). "Food Price Pass-Through in the Euro Area: Non-Linearities and the Role of the Common Agricultural Policy", *International Journal of Central Banking,* 8, pp. 179-218. Our quantitative results are consistent with those presented in that paper.

7 See A. N. Rezitisa and M. Tsionas (2019). "Modelling asymmetric price transmission in the European food market", *Economic Modelling,* 76, pp. 216-230.

8 Except in the case of sugar, for which international prices are used in the econometric analysis, given that the time series for EU prices does not start until 2006, and coffee, for which there are no EU price data.

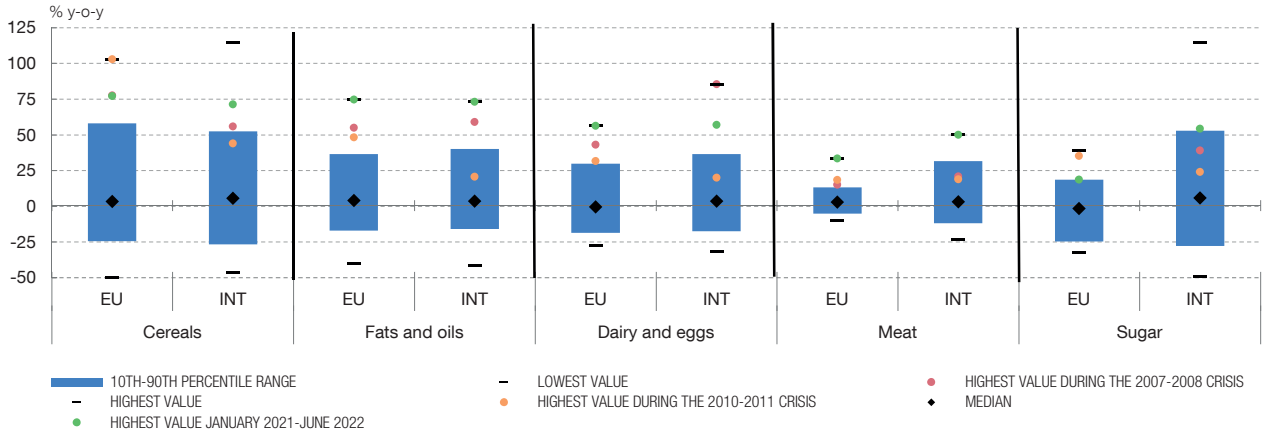
9 The results are scaled by the weight of the food group in the HICP basket. This implicitly assumes that products not explicitly modelled behave in line with the aggregate of the six groups analysed, which account for 70% of the food consumption basket.

Chart 2

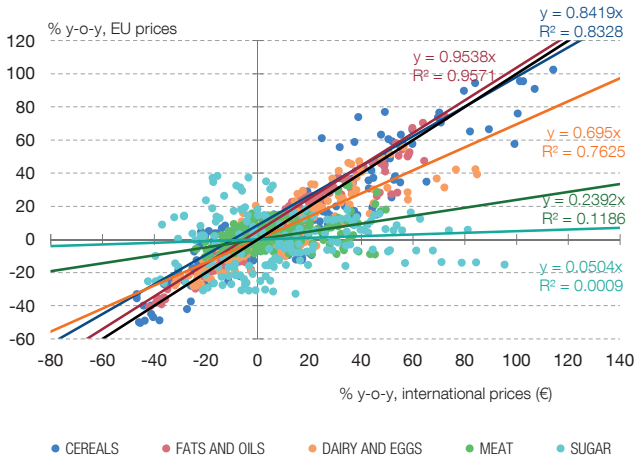
RELATIONSHIP BETWEEN INTERNATIONAL AND EUROPEAN FOOD COMMODITY PRICES AND THEIR EFFECT ON CONSUMER PRICES

The relationship between food commodity prices and consumer prices is influenced by the EU's CAP, which acts as a buffer against sharp price swings for many foodstuffs. That is why European prices tend to be less volatile than international prices. The results of an econometric model reveal that a 10 pp increase in food commodity prices leads to an increase in headline inflation of around 0.3 pp after 12 months.

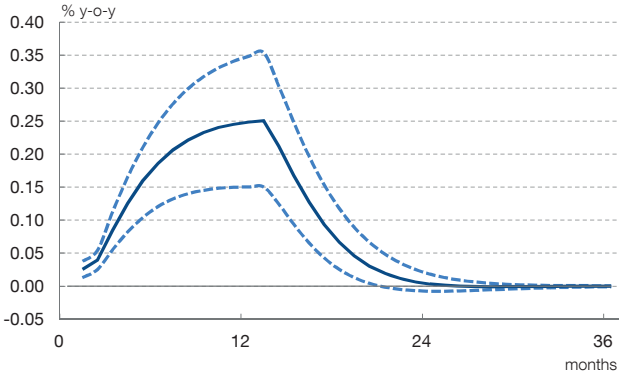
1 CHANGE IN EU AND INTERNATIONAL FOOD PRICES (a)



2 EU AND INTERNATIONAL AGRICULTURAL COMMODITY PRICES (a)



3 IMPACT ON EURO AREA INFLATION OF A TEMPORARY 10 PP INCREASE IN THE RATE OF CHANGE OF AGRICULTURAL COMMODITY PRICES IN THE EU (b)



SOURCES: DG-Agri Eurostat, FAO and own calculations.

a The period considered is 1997-2022, except for fats and oils (2003-2022) and sugar (2006-2022). EU and INT refer to European and international food commodity prices, respectively.

b The chart shows the aggregate impact on year-on-year inflation of a 10 pp increase in agricultural commodity prices for a range of foodstuffs (cereals, meat, dairy and eggs, fats and oils, sugar and coffee). Internal EU prices are used, except for sugar (as the sample starts in 2006) and coffee, where international prices are used. The estimation period is from January 1997 to February 2022. The dotted lines represent the upper and lower bound of the 95% confidence band, which is calculated by weighting each food group's confidence bands and taking into account the covariances between them.

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According to the results obtained, if, for example, the rate of change of food commodity prices were to temporarily increase by 10%[10] in a given month, the year-on-year headline inflation rate in the euro area would increase by about 0.3 pp over the following 12 months. As Chart 2.3 shows, this increase would be gradual, testimony to the fact that producers throughout the value chain and retailers initially absorb the rise in commodity prices, and then progressively pass it through to the final consumer.[11] To provide an idea of how the exogenous shocks to the prices of the six commodity groups analysed are affecting the food component of the HICP during this episode of food market tightening, we simulate how this component would have performed in the absence of unforeseen increases in food commodity prices since January 2021. In this counterfactual exercise, the HICP food inflation aggregate would have risen by 6.6 pp between January 2021 and May 2022, less than the actual figure of 9.9%. Meanwhile, assuming there are no further shocks over the rest of this year, either to commodity prices for the six food groups or to their producer and consumer prices, the inertia of the shocks that have already taken place up to May would lead to an additional increase of 5 pp in the euro area food HICP growth rate in 2022 H2.

The estimates discussed in the previous paragraph refer to aggregate effects. However, it is worth noting that the pass-through of food commodity price shocks to consumer prices is somewhat uneven across the food products. For example, the pass-through is faster for meat and fats and oils. Conversely, cereals present a slower pass-through, possibly because they take longer to process, distribute and sell. In addition, the results presented should be taken as a lower bound for the impact on inflation, given that the literature finds evidence of non-linear effects, with the pass-through being larger in periods of commodity price acceleration and smaller in spells of commodity price deceleration.[12]

Future food price developments are highly uncertain

There is much uncertainty over food price developments going forward. The projections available, both from institutions such as the World Bank[13] (see Chart 3.1) and from food commodity futures markets (see Chart 3.2), point to something of a downward trend in the years ahead. However, the persistence of the conflict prompted by Russia's invasion of Ukraine will continue to exert upward pressure on these prices, both directly and indirectly. First, both countries are major producers

10 The shock is assumed to be temporary for illustrative purposes. For these commodities, episodes of price acceleration and deceleration tend to be lengthy. For instance, during the last spell of tightening in food markets (June 2007 to June 2008) the rates of change stood, on average, 14 pp above the historical average of the time series (2004-2022) for 13 consecutive months. In the current episode, prices have, on average, been 33 pp higher than that historical average throughout the period April 2021-June 2022.

11 The same exercise for Spain yields similar qualitative findings as for the euro area.

12 See, for example, Ferrucci et al. (2012) and Rezitisa and Tsionas (2019), and the references cited therein.

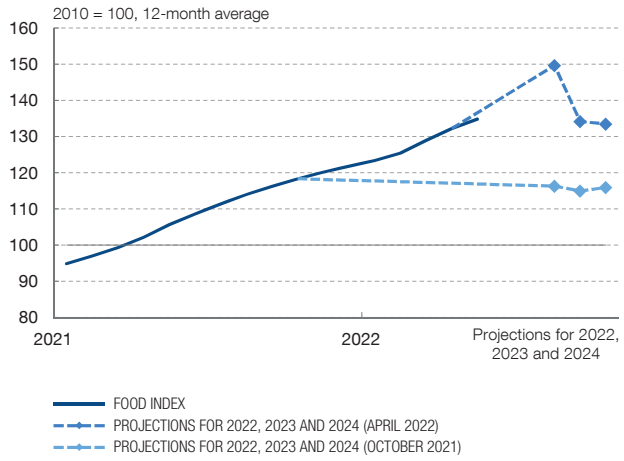
13 See World Bank (2022), Commodity Market Outlook, April.

Chart 3

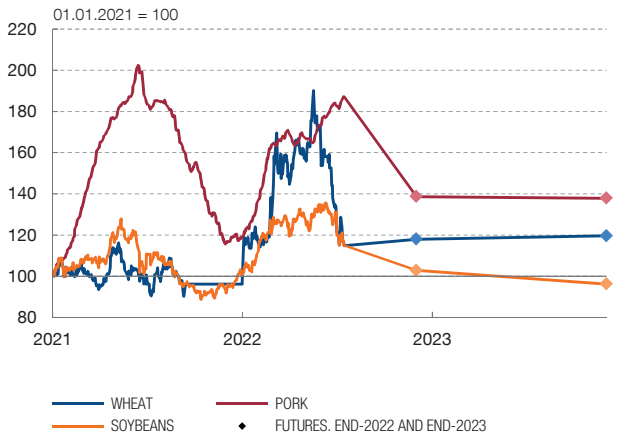
FOOD PRICE PROJECTIONS

In April, the World Bank expected food prices to rise by nearly 23% in 2022, to subsequently moderate over the following years. In addition, it expected commodity prices, including food prices, to remain well above the most recent five-year average. It likewise indicated that, in the event of a prolonged war with additional sanctions on Russia, prices could be even higher and more volatile than it projected in April.

1 FOOD INDEX AND PROJECTIONS FOR 2023 AND 2024 (a)



2 FOOD. SPOT AND FUTURES PRICES (b)



SOURCES: World Bank and Refinitiv.

a The World Bank food price index incudes wheat, maize, rice, barley, sugar, coconut oil, soybean oil, groundnut oil, palm oil, copra, soybeans, soybean meal, oranges, bananas, beef and chicken. The projections refer to the period average.
b Wheat and soybean futures are traded on the Chicago Board of Trade and pork futures on the Chicago Mercantile Exchange. Price at 15 July 2022.

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of food commodities, such as cereals, and their productive and export capacity is significantly limited. Second, the conflict is affecting the prices of energy and fertilisers, two crucial agricultural inputs. Moreover, rising prices and disruptions to supplies from Russia and Ukraine, together with certain adverse climate developments, are leading some countries to ban or restrict exports of certain food commodities,[14] thus tightening global food supply chains further, with the potential to generate additional, highly persistent increases in international prices.[15]

3.8.2022.

14 See M. E. Pangestu and A. van Trotsenburg (2002). "Trade restrictions are inflaming the worst food crisis in a decade", *Voices - Perspectives on development,* 6 July, World Bank.

15 See, among others, recent articles in *The Economist* on The coming food catastrophe and An emerging global food crisis, and the references cited therein.