

Box 4

AGRICULTURAL COMMODITIES AND EURO AREA HICP FOOD PRICES

Food items represent around 20% of the euro area expenditure basket, and food prices have accounted, together with energy prices, for a large part of the overall volatility in headline HICP inflation since mid-2007. Understanding their dynamics, therefore, has a clear relevance for monetary policy. This box describes recent developments in HICP food prices and analyses the transmission of commodity price shocks through the food supply chain in the euro area.

Food prices have experienced large swings in the euro area in recent years both at the producer and consumer levels (see Chart A). Annual HICP food inflation rose sharply in the course of 2007

Unprocessed and processed food components of the euro area HICP and their main sub-components

(annual percentage changes)

	HICP weights (%) 2010	2007	2008	2009	2009 Nov.	2009 Dec.	2009 Jan.	2010 Feb.	2010 Mar.	2010 Apr.
Food	19.2	2.8	5.1	0.7	-0.1	-0.2	-0.1	-0.1	0.3	0.7
Unprocessed food	7.3	3.0	3.5	0.2	-1.3	-1.6	-1.3	-1.2	-0.1	0.7
Meat	3.6	2.7	3.9	1.4	-0.2	-0.4	-0.7	-0.6	-0.6	-0.2
Fish	1.1	2.8	2.9	-0.6	-0.4	-0.6	-0.6	-0.6	1.0	1.3
Fruit	1.1	3.4	6.2	-1.8	-2.9	-1.7	-2.1	-3.3	-3.1	-1.3
Vegetables	1.5	3.3	1.0	-0.3	-2.9	-4.8	-2.5	-1.3	2.4	4.0
Processed food excluding tobacco	9.5	0.5	1.6	2.3	-0.7	-0.7	-0.8	-0.8	-0.7	-0.7
Bread and cereals	2.6	3.5	8.6	1.3	-0.5	-0.6	-0.7	-0.5	-0.5	-0.5
Milk, cheese and eggs	2.2	3.4	10.6	-2.8	-3.3	-2.9	-2.8	-2.6	-2.5	-2.4
Oil and fats	0.5	-1.7	6.4	-4.0	-3.5	-2.6	-2.0	-2.3	-1.9	-1.3
Sugar, jam, honey, chocolate and confectionery	1.0	1.1	4.4	1.6	0.0	-0.3	-0.3	-0.3	-0.2	-0.3
Food products not elsewhere classified	0.5	0.7	4.1	2.1	0.6	0.3	-0.2	0.2	-0.2	-0.5
Tobacco	2.4	4.5	3.2	4.7	6.0	6.6	6.5	6.3	5.9	6.2

Sources: Eurostat and ECB calculations.

Note: The processed food aggregate also includes mineral waters, soft drinks, fruit and vegetable juices, spirits, wine and beer, which are not reported in this table.

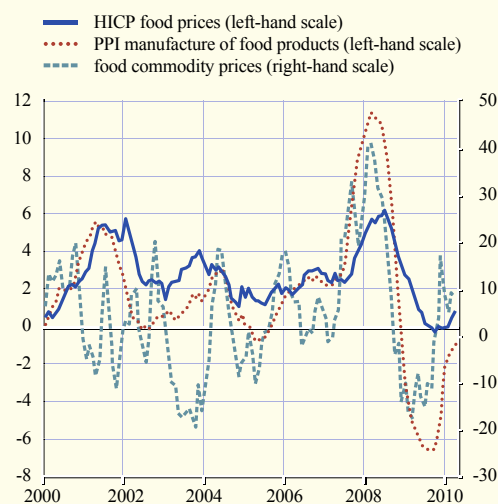
and 2008, peaking at 6.1% in July 2008. Thereafter, it eased steadily reaching a historical low (on the basis of data available from January 1991) of -0.4% in October 2009, before recovering to 0.7% in April 2010. This compares with an average annual growth rate of this component of 2.4% between January 1998 and March 2010. Most of the rise and fall in HICP food prices between 2007 and 2009 was accounted for by movements in the components with a higher content of commodity inputs – such as meat, bread and cereals, milk, cheese and eggs, and oil and fats. However, the pick-up in HICP food prices in more recent months has owed mainly to seasonal fish and vegetable prices, the latter likely reflecting the impact of the cold weather on fresh food items (see the table above).

The food supply chain

The wide swing observed in HICP food prices since mid-2007 has been attributed, to a large extent, to the sharp fluctuations in food commodity prices in international markets and their eventual pass-through to consumer prices in the euro area. Indeed, food commodity prices rose sharply in international markets between early 2006 and mid-2008, before falling back in the wake of the global financial crisis. The steady increases in international prices implied that EU internal market prices also started to rise. Furthermore, non-food commodity prices increased sharply in international markets between 2007 and mid-2008 and then fell abruptly.

Chart A International food commodity prices, PPI and HICP food prices in the euro area

(annual percentage changes)



Source: Eurostat.

These movements may have affected HICP food prices indirectly via changes in other input costs. For example, rising energy prices may have raised processing, transportation and packaging costs. Margins at various stages of the food production chain may have also adjusted to the business cycle conditions.

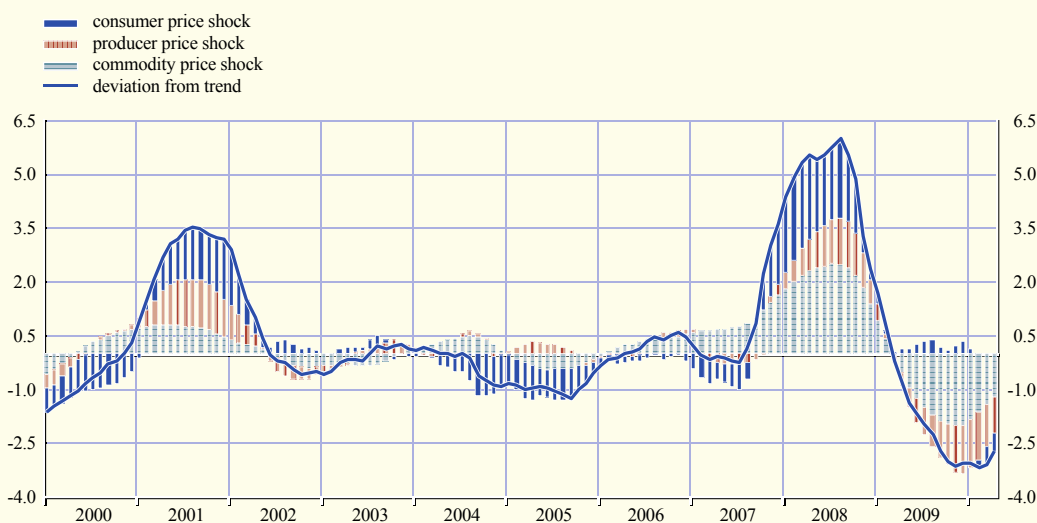
A simple empirical analysis can be used to determine the extent to which shocks in food commodity prices are transmitted through the food supply chain and how changes in input costs at various stages of the production process affect food price developments at the retail level.¹ A stylised representation of the food supply chain is used, relating food commodity prices to producer and consumer prices of food products. The analysis focuses on selected food items representing around 50% of the HICP food basket: seasonal items, such as fruit and vegetables, items with low commodity content, such as soft drinks, and items whose prices are heavily dependent on indirect taxes, such as tobacco and alcoholic beverages, are excluded from this analysis. Furthermore, instead of using international prices of food commodities, a database of farm-gate and internal market prices collected in the European Union has been employed.

The solid line in Chart B shows the deviation from trend of the selected HICP food prices. The bars illustrate how much of the deviation can be attributed to shocks at different stages of the food supply chain: the commodity price shock, the producer price shock (defined as a shock that causes movements in producer prices on top of the transmission of the commodity price shock,

1 Formally, the decomposition is based on a vector auto-regression, using the innovation accounting technique proposed by C.A. Sims, "Macroeconomics and reality", *Econometrica*, No. 48, pp. 1-48, 1980. The decomposition is based on a "pricing chain approach", whereby commodity prices affect producer prices contemporaneously and these affect consumer prices contemporaneously, but the opposite takes time. See G. Ferrucci, R. Jiménez-Rodríguez and L. Onorante, "Food price pass-through in the euro area: the role of asymmetries and non-linearities", *ECB Working Paper Series*, No. 1168, April 2010.

Chart B Deviation from trend of HICP food prices and shock contributions

(annual percentage changes and percentage point contributions)



Source: G. Ferrucci, R. Jiménez-Rodríguez and L. Onorante, "Food price pass-through in the euro area: the role of asymmetries and non-linearities", *ECB Working Paper Series*, No 1168, April 2010.
Notes: Historical decomposition of the deviation from trend of selected HICP food items, using C.A. Sims' innovation accounting methodology, 1980.

for example through changes in profit margins and other input costs at the producer level) and the consumer price shock (similarly defined as a shock that causes movements in consumer prices on top of the transmission of the commodity and producer price shocks, for example through changes in profit margins and other input costs at the retail level). According to this analysis, the increase in food commodity prices in global markets in 2006 exerted upward pressure on retail food prices in the euro area, as shown by the positive contribution from the commodity price shock during that period. This shock explained almost entirely the mild acceleration in retail food prices during the course of the year. Upward pressure in commodity prices continued unabated in 2007. However, it appears that in this year, rising commodity prices were not immediately passed on to the consumers, but were absorbed by other components of the final price, as indicated by the negative contributions from the producer and consumer price shocks. By contrast, by the end of 2007, and increasingly so until the end of the summer of 2008, shocks at the level of food processing and distribution added further upward pressures to the HICP food prices and the commodity price shock was, according to this model, responsible for around a half of the total deviation from trend of the selected HICP food price items. Obviously, a few caveats need to be highlighted in this analysis, notably the fact that the estimates are based on a partial approach and may be sensitive to the particular order of the exogenous shocks along the food supply chain. Still, it is worth noting that around half of the deviation from trend of HICP food prices during the 2007-08 period does not appear to be related purely to commodity price shocks.

Indeed, the co-movements of the different elements that affect consumer prices along the food supply chain have often given rise to concerns about the lack of competition in the food sector. In this respect, the findings from the analysis summarised in Chart B are consistent with the conclusions of a market monitoring exercise conducted by the European Commission in the wake of the food price shock to analyse the functioning of the food supply chain in Europe.² The exercise involved stakeholders in the food industry and National Competition Authorities, with the mandate, inter alia, to understand the competitive structure of the European food supply chain and to identify potential competition-related concerns. The exercise indicated that in many cases, competition-related concerns are justified. The lack of market transparency, inequalities in bargaining power and anti-competitive practices have led to market distortions with negative effects on the competitiveness of the food supply chain as a whole. Similarly, price rigidities have negatively affected the adjustment capacity and innovativeness of all the industries along the supply chain. While there are significant differences across countries, in several countries enhancing competition in this important market segment will be paramount in ensuring that inflationary pressures due to market inefficiency and second-round effects remain contained in the future.

² See the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions entitled "A better functioning food supply chain in Europe", at http://ec.europa.eu/economy_finance/publications/publication16061_en.pdf, October 2009.