

## 5. PRICES

Inflation, as measured by the average annual rate of change of the Harmonised Index of Consumer Prices (HICP) increased by 2.7 per cent in 2008, after increasing by 2.4 per cent in 2007 (Table 5.1). The average rate of change of the HICP in the euro area also increased, from 2.1 per cent in 2007 to 3.3 per cent in 2008. Therefore, the inflation differential between Portugal and the euro area decreased from 0.3 percentage points (p.p.) in 2007 to -0.6 p.p. in 2008, which is a minimum since the beginning of the euro area (Chart 5.1). All main aggregates, except processed food and services, contributed to this marked decrease in the inflation differential.

The acceleration in prices in 2008 happened in a context in which wage developments remained relatively stable *vis-à-vis* 2007 and prices of imports increased from 1.5 to 5.3 per cent. The evolution of the annual average of import prices is a result of both the fall in prices of imported consumer and equipment goods and the deceleration of prices of imported intermediate goods, together with the acceleration of prices of imported energy goods, in line with oil price evolution in world markets (Table 5.2 and Supplementary Table A.5.1). In turn, the decrease in prices of imported consumer goods, results from an acceleration in prices of imported food (in particular, excluding tobacco), in line with the evolution of international prices of agricultural commodities, and the fall in prices of imported non-food consumer goods.<sup>1</sup>

Import price dynamics, besides influencing consumer price evolution, determined the increase in the rate of change of global demand deflator, since there was a decrease in the internal price component contribution, following the deceleration of Gross Domestic Product (GDP) deflator in 2008 (Table 5.3). This GDP deflator deceleration happened in the context of wage growth, at a rate relatively close to the one of 2007 (and close to the euro area evolution in 2008), and acceleration of unit labour costs (Table

**Table 5.1**

HICP - MAIN CLASSES AND AGGREGATES									
Rate of change, per cent									
	Weights	2002	2003	2004	2005	2006	2007	2008	
	2007								
Total	100.0	3.7	3.3	2.5	2.1	3.0	2.4	2.7	
Total excluding energy	90.8	3.9	3.1	2.3	1.4	2.5	2.3	2.2	
Total excluding unprocessed food and energy	79.4	4.5	3.3	2.6	1.7	2.4	2.2	2.5	
Goods	62.3	2.4	2.4	1.6	1.9	3.2	2.2	2.4	
Food	21.9	1.9	2.6	1.4	0.1	3.6	2.8	4.2	
Unprocessed	11.3	0.2	2.1	0.0	-0.5	3.2	3.0	0.6	
Processed	10.6	3.8	3.1	2.8	0.8	4.1	2.6	8.1	
Industrial	40.4	2.7	2.4	1.8	2.8	3.0	1.9	1.4	
Non-energy	31.1	3.1	1.8	0.8	1.0	1.5	1.4	-0.2	
Energy	9.2	1.2	4.9	5.4	10.0	8.1	3.5	6.6	
Services	37.7	5.9	4.6	3.9	2.5	2.7	2.8	3.1	
Memo:									
CPI <sup>(a)</sup>	-	3.6	3.3	2.4	2.3	3.1	2.5	2.6	
Euro area HICP	-	2.2	2.1	2.1	2.2	2.2	2.1	3.3	

Sources: Eurostat, INE and Banco de Portugal.

Note: (a) Up to December of 2002, rates of change were calculated using the CPI base of 1997. From January of 2003, rates of change were calculated using the CPI base of 2002.

(1) For a more detailed discussion on the evolution of processed food prices, see "Box 5.1 Developments in processed food prices throughout 2007", Banco de Portugal, *Annual Report 2007*.

Chart 5.1

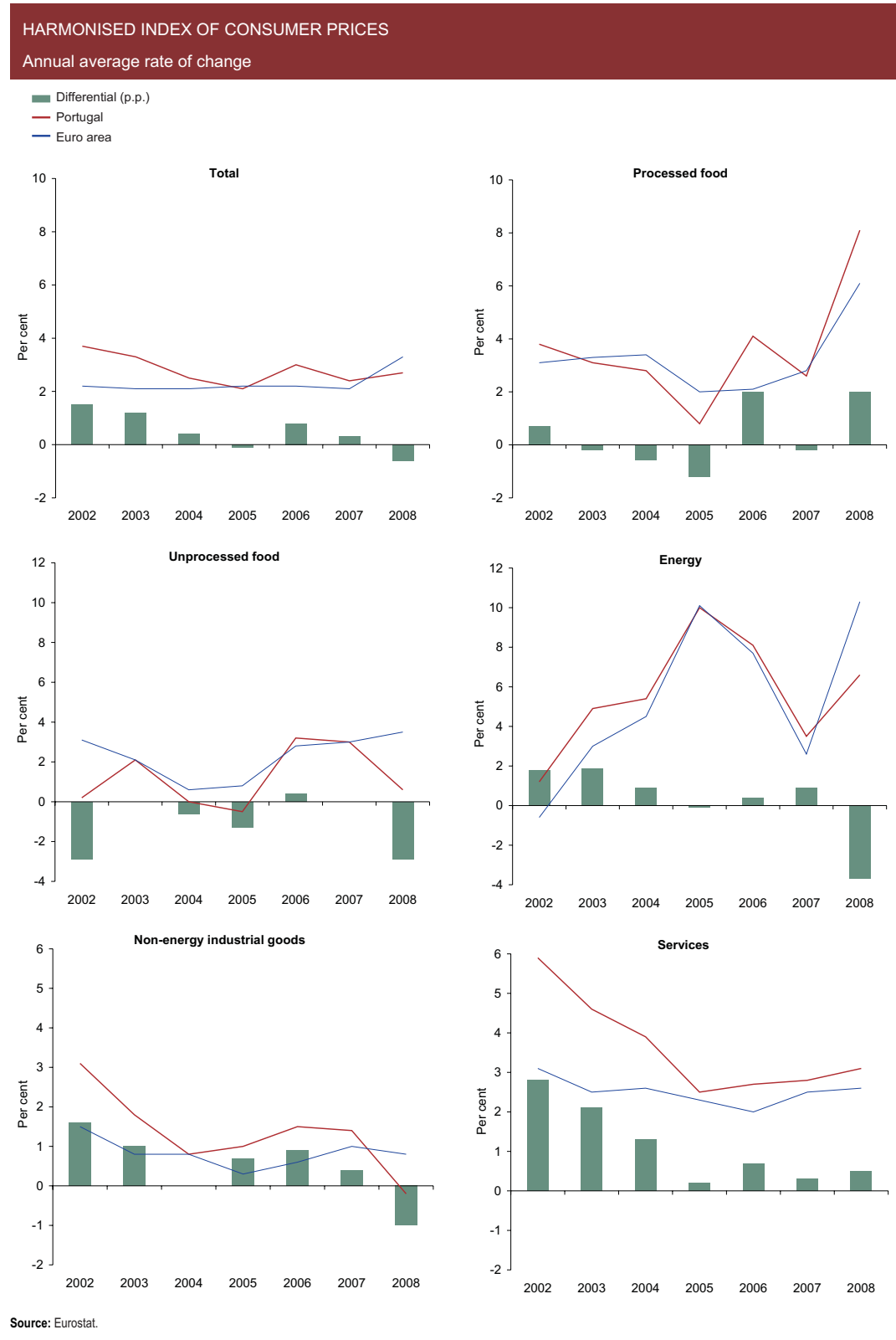


Table 5.2

PORTUGAL - MAIN INTERNATIONAL PRICE INDICATORS							
Rate of change, per cent							
	2002	2003	2004	2005	2006	2007	2008
Goods import prices <sup>(a)</sup>							
Total	-2.4	-2.2	2.2	3.1	4.1	1.1	5.1
Total excluding fuel	-1.8	-2.9	0.8	-0.6	1.4	1.2	0.6
Consumer goods	-0.6	-2.9	-1.6	-2.7	0.9	-0.1	-0.3
International commodity prices							
Oil prices (Brent Blend), EUR	-4.9	-5.0	21.4	45.0	19.0	0.4	26.6
Non-energy commodity prices, EUR	-0.9	-4.5	10.8	9.4	24.8	9.2	4.4
<i>Memo:</i>							
Nominal effective exchange rate index for Portugal <sup>(b)</sup>	0.6	2.6	0.6	-0.2	0.2	0.8	1.2

Sources: Eurostat, HWWI, INE, Thomson Reuters and Banco de Portugal.

Notes: (a) Calculations from Banco de Portugal based on information provided by INE. The classification in broad economic categories seen in this table is different from that used by INE, given that light passenger vehicles are included in consumer goods rather than capital goods. (b) A positive change corresponds to an index appreciation. For a detailed methodology description see Gouveia, A. C. and Coimbra, C. (2004), "New effective exchange rate index for the Portuguese economy", Banco de Portugal, *Economic Bulletin*-December.

Table 5.3

INFLATION BREAKDOWN							
Rates of change, per cent (except when otherwise indicated)							
	2002	2003	2004	2005	2006	2007	2008
Global demand deflator <sup>(a)</sup>	2.4	1.9	2.4	2.7	3.1	2.6	2.8
Contribution to change (p.p.):							
Domestic component	3.1	2.3	0.8	1.4	1.3	1.5	0.9
External component	-0.8	-0.5	1.6	1.4	1.8	1.2	2.0
GDP deflator	3.9	3.2	2.4	2.5	2.8	3.1	1.8
Imports deflator	-1.7	-1.7	2.3	3.2	3.9	1.5	5.3
<i>Memo:</i>							
Total HICP	3.7	3.3	2.5	2.1	3.0	2.4	2.7

Sources: INE and Banco de Portugal.

Notes: The breakdown was made based on a similar methodology to the one used by ECB (2003), "Inflation differentials in the euro area", September. Due to rounding effects, the sum of all contributions may differ slightly from the variation rate. (a) Global demand refers to the sum of GDP plus imports.

5.4). Therefore, there may have been a narrowing of profit margins in 2008. According to estimates from Banco de Portugal, and based on information from the INE's Labour Force Survey, the acceleration of unit labour costs reflected an atypical decrease in productivity in 2008 (see "Chapter 3 Supply", of this Report). There was also in the euro area a growth in the unit labour costs higher than that of 2007, associated both to a deceleration in productivity and to an acceleration of total compensation per employee. Similarly to the previous year, the growth in unit labour costs in Portugal and the euro area was virtually identical (Chart 5.2).

Inflation developments in annual average terms concealed a marked intra-annual evolution, as well as a notable heterogeneity between the various sub-aggregates (Chart 5.3). In particular, one can single out two periods in the evolution of prices during the course of 2008: a period of accelerating prices, from the end of 2007 up to September of 2008; and a period of sharp deceleration in the last quarter of 2008 and early 2009. These intra-annual developments reflected the evolution of the prices of energy and processed food, which, in turn, were associated with the evolution of the prices of energy and agri-

Table 5.4

WAGES AND PRODUCTIVITY IN PORTUGAL AND IN THE EURO AREA							
Annual average rate of change, per cent							
	2002	2003	2004	2005	2006	2007	2008
Portugal <sup>(a)</sup>							
Total economy							
Compensation per employee	3.0	2.8	2.4	3.9	2.7	3.4	3.0
Productivity	0.3	0.3	1.7	1.2	1.3	1.8	-0.4
Unit labour costs	2.7	2.5	0.7	2.7	1.4	1.6	3.4
Euro area							
Total economy							
Compensation per employee	2.6	2.3	2.1	1.9	2.2	2.5	3.2
Productivity	0.2	0.4	1.1	0.8	1.4	0.8	-0.1
Unit labour costs	2.4	1.9	1.0	1.1	0.8	1.7	3.3

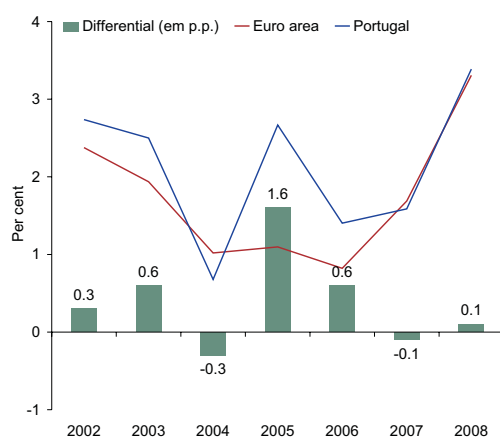
Sources: ECB, INE and Banco de Portugal.

Note: (a) Compensation per employee excludes general government social contributions.

Chart 5.2

## UNIT LABOUR COSTS IN PORTUGAL AND THE EURO AREA

Rates of change and differential

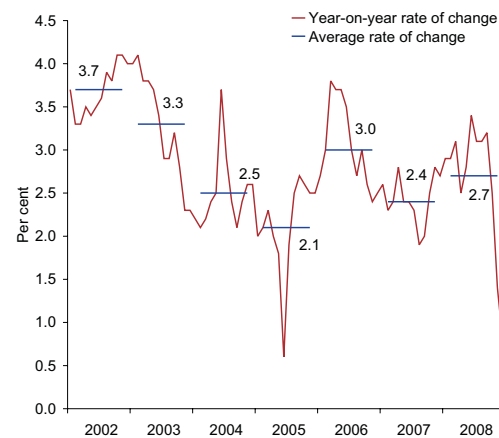


Sources: ECB, INE and Banco de Portugal.

Chart 5.3

## HARMONISED INDEX OF CONSUMER PRICES

Year-on-year and average rates of change



Source: Eurostat.

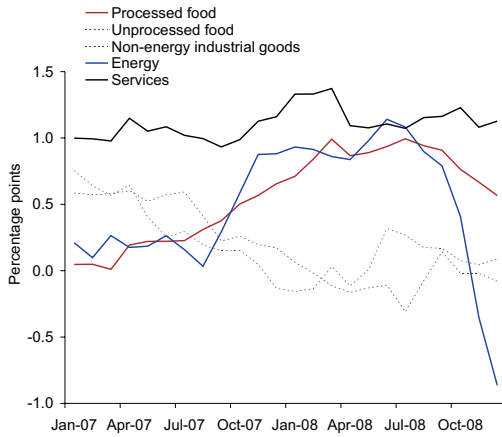
cultural commodities in the world market (see “Chapter 1 *International Environment*”, of this Report). (Chart 5.4, 5.5 and 5.6).<sup>2</sup>

The disturbances in prices of specific goods or services can spill over to the prices of other goods or services through (direct or indirect) transmission mechanisms, which vary from market to market, also depending on their cause and structure. This way, the acceleration in the prices of processed food and energy may have, in turn, influenced the evolution of other prices. In particular, the changes in the prices of transport services appear to have been preceded by changes in the prices of fuel and lubricants, and the evolution of the prices of processed food seems to have influenced, with some lag, the

(2) There were also disturbances regarding relative prices of other products, which generated temporary episodes of some volatility in the monthly year-on-year price change. In particular, note the deceleration in April 2008, largely associated with the base effect of a strong price increase in hospital services in the same month of the previous year.

Chart 5.4

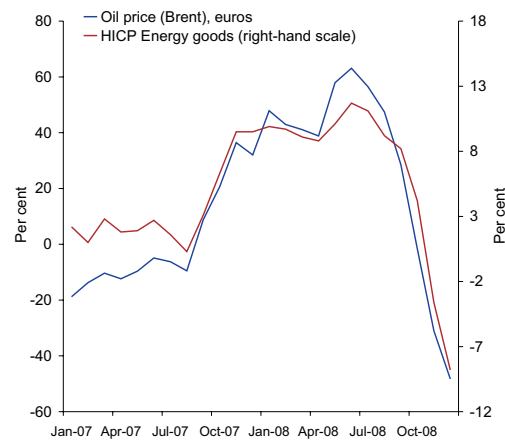
EVOLUTION OF CONTRIBUTIONS FOR THE YEAR-ON-YEAR RATE OF CHANGE OF TOTAL HICP



Source: Eurostat.

Chart 5.5

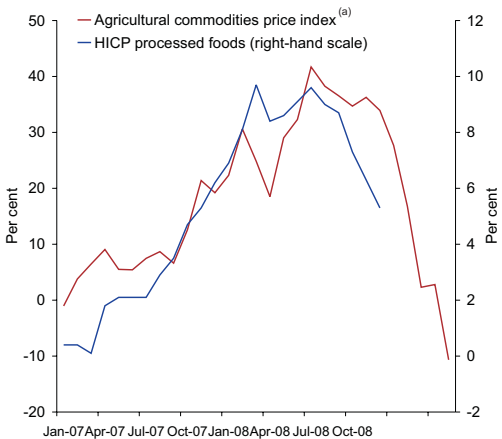
ENERGY PRICES  
Year-on-year rate of change



Sources: Eurostat and Thomson Reuters.

Chart 5.6

PRICES OF FOOD  
Year-on-year rates of change



Sources: Eurostat and HWWI.  
Note: (a) Series lagged five periods.

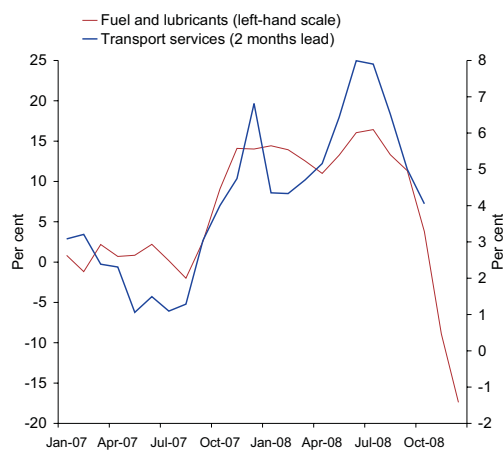
prices of restaurants and cafés (Chart 5.7 and 5.8).<sup>3</sup> The lags which may occur in such a transmission depend on the nature, magnitude and persistence of the initial price disruptions, as well as on the structure of the markets in question. For example, in spite of the fact that the prices of food began to decelerate in August of 2008, the same evolution was only perceptible in the prices of restaurants and cafés from November onwards. This intra-annual evolution led to the acceleration in the prices of res-

(3) The prices of other energy products are usually related with the price of oil. However, in Portugal, this connection was not visible in the case of electricity and gas. In the first case, the increase in electricity price in 2008 was inferior to the previous year's. Regarding gas, since July 2008, natural gas tariffs for final customers have been set by the Energy Services Regulatory Authority (ERSE). This had a significant impact on the evolution of prices of gas to consumers (year-on-year rate of change of 2.5 per cent in the last quarter of 2008, after 4.3 per cent in the third quarter and 10.4 per cent in the second quarter).

Chart 5.7

## EVOLUTION OF FUEL AND LUBRICANTS PRICES AND OF TRANSPORT SERVICES PRICES

Year-on-year rate of change

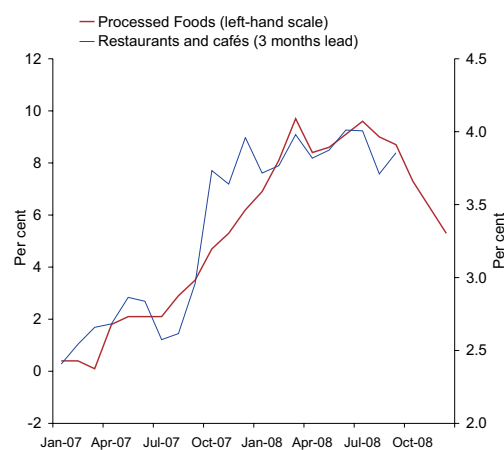


Source: Eurostat.

Chart 5.8

## EVOLUTION OF PROCESSED FOODS PRICES AND OF RESTAURANTS AND CAFÉS PRICES

Year-on-year rate of change



Source: Eurostat.

restaurants and cafés in annual average terms (from 2.6 per cent in 2007 to 3.8 per cent in 2008) which, to a large extent, contributed to the slight acceleration of the prices of services in 2008 as a whole. In the case of the prices of transport services, changes in energy prices seem to have passed through more quickly.

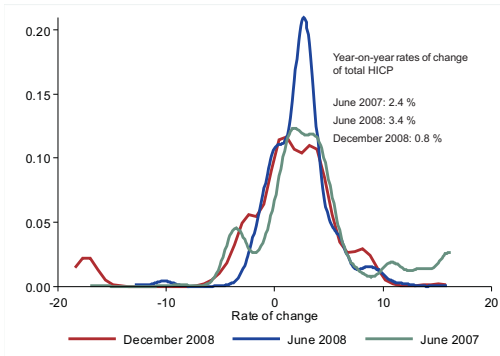
Late 2008 and early 2009 witnessed a particularly sharp deceleration in prices. During this period there was a progressive increase in the weight of HICP components with negative rates of change (Chart 5.9). This evolution reflected, particularly, a continued deceleration in the prices of energy (with negative year-on-year rates of change between November 2008 and February 2009) and processed food. The deceleration in the prices of these goods, which had registered very high rates of change at the end of 2007 and beginning of 2008, spilled over into other prices, such as the above-mentioned prices of transport services, and restaurants and cafés.

The existence of heterogeneity is a characteristic intrinsic to the distribution of rates of change of the prices of HICP components. Most recently, in addition to increased dispersion, there has also been a greater occurrence of large price decreases, as opposed to large price increases, and this led to a change in the sign of the skewness of the distribution of the rates of change, which became negative (Chart 5.10). It should also be noted that the components with year-on-year rates of change greater than zero continued to have a significantly bigger weight than the ones registering drops in prices (Chart 5.9).

The evolution of inflation in Portugal has been relatively stable in annual average terms, remaining within an interval of change not wider than 1.0 p.p., over the last five years. One of the factors that contributed to this stability has been the participation in the euro area, and in particular the anchoring of inflation expectations to values close to the average in the euro area (Chart 5.11). However, in this period there were inflation differentials between the euro area and Portugal, which may have been due to differences in the sources of price disruptions, market structures and transmission channels. In such a framework, the total inflation differential (with inflation measured by the HICP) between the euro area and Portugal has been decreasing more or less continuously since July of 2007, being negative from September of the same year onwards (Chart 5.12).

Chart 5.9

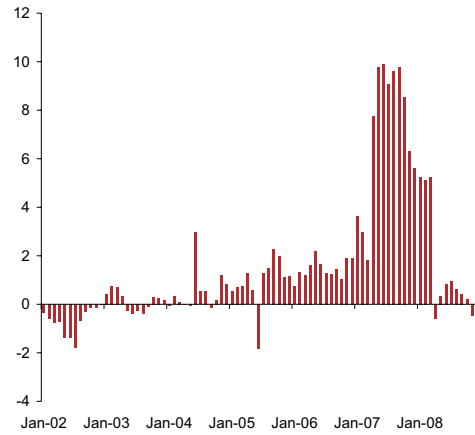
EMPIRICAL DISTRIBUTION OF YEAR-ON-YEAR RATES OF CHANGE FOR TOTAL HICP COMPONENTS



Sources: Eurostat and Banco de Portugal calculations.  
 Note: Empirical distribution obtained through non-parametric methods, namely a gaussian kernel weighting the various components (a total of 88 components) according to their respective weight in the total basket.

Chart 5.10

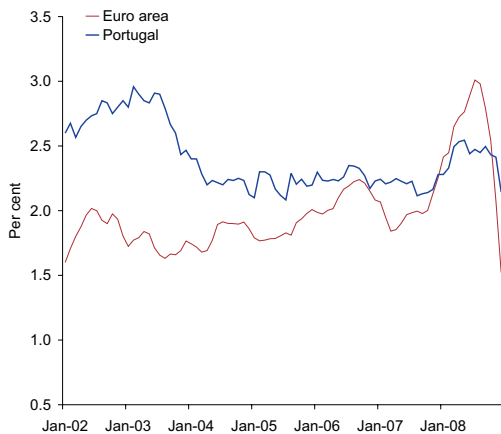
SKEWNESS OF THE DISTRIBUTION OF YEAR-ON-YEAR RATES OF CHANGE OF HICP COMPONENTS



Sources: Eurostat and Banco de Portugal calculations.  
 Note: The skewness measure used is calculated as  $m_3/m_2^{3/2}$ , where  $m_k$  is the centered moment of order  $k$ . The signal in this measure indicates the skewness signal.

Chart 5.11

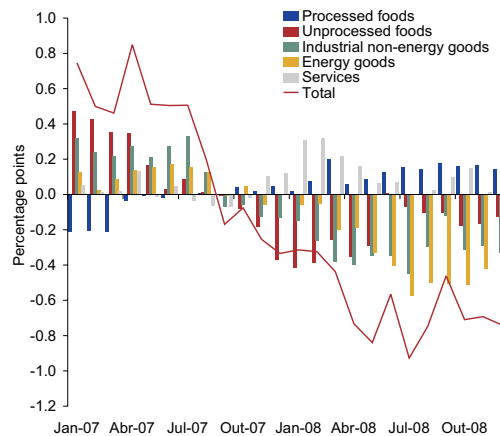
INFLATION EXPECTATIONS: PORTUGAL AND EURO AREA  
 Expectations over a 12 month horizon



Sources: Consensus Forecasts and Banco de Portugal calculations.

Chart 5.12

BREAKDOWN OF THE DIFFERENTIAL BETWEEN THE YEAR-ON-YEAR RATE OF CHANGE OF TOTAL HICP, IN PORTUGAL AND THE EURO AREA



Source: Eurostat.

This total differential evolution reflected mainly the components of non-processed food and of both energy and non-energy industrial goods. In particular, the existence of a negative differential *vis-à-vis* the euro area in the case of non-energy industrial goods reflected the decrease in the prices of this aggregate in Portugal, which, being in line with the deceleration of the prices of imports of non-energy goods, in the context of an accumulated appreciation of the euro, was also significantly influenced by the drop in prices of motor vehicles.<sup>4</sup> Additionally, the standard rate of VAT in Portugal was also reduced by 1 p.p. in July of 2008, although there is some uncertainty regarding the actual extent of the pass-through of this reduction to final consumer prices.<sup>5</sup>

There was, in turn, a positive differential in terms of the change of prices between Portugal and the euro area in the services component, during the course of 2008, for which contributed the acceleration of restaurant and cafés prices in Portugal. The year-on-year rate of change of prices of the “Processed foods excluding tobacco” aggregate registered positive differentials between the euro area and Portugal throughout 2008.<sup>6</sup> The existence of a negative inflation differential in 2008 *vis-à-vis* the euro area does not seem to have been globally conditioned by the administered prices component, as the negative inflation differential in the case of goods with administered prices (i.e. electricity, gas and pharmaceutical products) was offset by the positive differential in the case of services with administered prices (particularly, refuse and sewerage collection services and actual housing rentals).

(4) For further insights into the fiscal changes associated with the evolution of motor vehicles prices, see “Section 4.1 *Demand*”, of this Report.

(5) See Banco de Portugal, *Economic Bulletin-Summer 2008*.

(6) In the case of tobacco, the inflation differential *vis-à-vis* the euro area is also positive. However, more recently, its contribution to the total inflation differential has remained relatively stable at around 0.1 p.p.