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A European Food Prices Monitoring Tool

A first design

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1. Introduction

This is the first presentation of a monitoring tool on food prices. It is being released to accompany the Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions '[A better functioning food supply chain in Europe](#)'.

This monitoring tool gives information on price developments for food products through the stages of the supply chain, and also provides some data on price levels for certain food products. The tool will be updated regularly and Eurostat will examine ways of developing it further in order to cover a greater number of food products and chains, starting from the summer of 2010.

This paper gives in sections 2 and 3 a short introduction to the food supply chain in general and to the design of the monitoring tool so far. In section 4 the detailed supply chains that were selected for this prototype are introduced and section 5 explains some limitations of the price data used and the tool. In section 6 the available data on price levels is provided. Eurostat has started the development of such data and first experimental data were published earlier in 2009. The results for food products that were collected in that data set are also presented in this paper.

The monitoring tool itself can be accessed at the following links:

- [Price indices](#) (link updated 02.12.2009)
- [Annual rates of price change](#) (link updated 02.12.2009)

2. The food supply chain

Food products purchased by consumers generally only reach those consumers after a production process involving the agricultural, food industry, transport and distribution sectors. The whole process of production and trade from the agricultural commodities to the consumer products is referred to here as the supply chain.

There may be many actors in the chain: farmers, traders, food industry enterprises, retailers, etc. Each player combines a number of inputs, processes them into a number of outputs that are sold to other actors in the chain. In each step of the supply chain the products may change. The prices paid for the outputs in each step reflect the values of the inputs, including the payment for labour and other production factors in each step, and the profit margins made by the player.

The supply chain may be relatively short and simple for some food products or more complex for others and may also differ across countries. One and the same consumer product in a single country can be produced through alternative production processes. Prices of each input in the supply chain may change over time. These changed prices for inputs may be passed through to the next player in the chain and change the prices of intermediate products or they may affect the profit margin of the players involved. Changes in the production process may influence production costs, prices and/or profit margins.

3. A prototype for a food prices monitoring tool

For the purpose of monitoring food prices, there is a need to analyse the price developments along the supply chains. How do output prices in each step of the supply chain relate to the costs of the inputs in the production process? How are price changes in inputs in the supply chain passed through to next players in the supply chain?

Eurostat has developed a prototype for a simple monitoring tool where the prices for some types of food products along the supply chain can be compared. The primary aim of this tool is to bring together the available data on price developments through the supply chain, by comparing price developments for agricultural commodities, those in the relevant food industry and the price development of selected consumer goods. To give a comprehensive description of all supply chains for all products throughout Europe is an impossible task to perform. Instead a summary of some parts of the full chain for a selection of products is given.

Eurostat has defined together with experts in the Commission a number of supply chains to be monitored. The tool gives information on price developments for different parts of the selected supply chains. For each supply chain and per country up to a maximum of five series are presented:

- The harmonized index of consumer prices (HICP) for the product group in the selected chain according to COICOP (classification of individual consumption by purpose).
- The producer price index (PPI) for a maximum of two NACE classes related to the selected chain (NACE: Statistical Classification of Economic Activities in the European Community).
- The agricultural commodity prices index (ACP) for a maximum of two commodities related to the selected chain.

For most of the chains only one NACE-class and one agricultural commodity were considered relevant for inclusion.

4. The selected supply chains

A first set of 17 supply chains was selected for this prototype. They are described in table 1. Three levels of detail can be distinguished in the present prototype of the monitoring tool.

- The aggregate level of the total food consumption by consumers, the group 01.1 in the COICOP-classification. The price index is compared with price developments in the food industry as a whole and with that of total agricultural production.
- The level of eight 4-digit COICOP classes 01.1.1 to 01.1.8. The price index is compared with price developments in the most relevant part of the food industry and agricultural products.
- Eight more detailed subclasses below COICOP 4-digit levels.

Most of the statistics shown in this prototype of the monitoring tool were already being published by Eurostat. However, for some products, additional and more detailed consumer price indices were provided by National Statistical Institutes for use in this tool.

Table 1: Product chains and the related statistics

	Product supply chain	COICOP	NACE Rev.2	Agricultural Commodity
1	Food	011 - Food	C10 Manufacture of food products	140000 - Agricultural goods
2	Bread and Cereals	0111 - Bread & Cereals	C106 Manufacture of grain mill products, starches and starch products C107 Manufacture of bakery and farinaceous products	010000 - Cereals (including seeds)
3	Meat	0112 - Meat	C101 Processing and preserving of meat and production of meat products	110000 - Animals
4	Fish	0113 - Fish and seafood	C102 Processing and preserving of fish, crustaceans and molluscs	
5	Dairy	0114 - Milk, cheese and eggs	C1051 - Operation of dairies and cheese making	120000 - Animals products
6	Oils and fats	0115 - Oils and fats	C104 - Manufacture of vegetable and animal oils and fats	021000 - Oil seeds and oleaginous fruits (including seeds) 121100 - Cows' milk
7	Fruits	0116 - Fruits	C103 - Processing and preserving of fruits and vegetables	060000 - Fruits
8	Vegetables	0117 - Vegetables	C103 - Processing and preserving of fruits and vegetables	040000 - Vegetables and horticultural products 050000 - Potatoes (including seeds)
9	Sugar	0118 - Sugar, jam, honey, chocolate and confectionary	C1081 - Manufacture of sugar C1082 - Manufacture of cocoa, chocolate and sugar confectionary	024000 - Sugar beet
10	Milk	01141 - Milk *	C1051 - Operation of dairies and cheese making	121000 - Milk
11	Cheese	01144 - Cheese *	C1051 - Operation of dairies and cheese making	121000 - Milk
12	Eggs	01146 - Eggs *	-----	122000 - Eggs
13	Pork	01122 - Pork *	C101 - Processing and preserving of meat and production of meat products	112000 - Pigs
14	Beef	011211 - Beef *	C101 - Processing and preserving of meat and production of meat products	111000 - Cattle
15	Chickens	01124 - Poultry *	C101 - Processing and preserving of meat and production of meat products	115100 - Chickens
16	Vegetables	01174 - Potatoe *	-----	051000 - Potatoes for consumption
17	Fruit	011613 - Apple *	-----	061100 - Dessert apples
	<i>Sources:</i>	<i>HICP</i> <i>* as provided by National statistical offices</i>	<i>PPI index</i>	<i>Agricultural Prices Index</i>

5. Limitations of this monitoring tool

The tool that is presented here concentrates on the comparison of the agricultural product prices through the supply chain. It should, however, be acknowledged that for many products the value added to the final product from labour, energy and transport may be higher than the cost of the basic level agricultural inputs.

In practice a single food supply chain may involve several enterprises in the food industry making a particular step in the production process, and also trading companies, wholesalers, and so on. All these separate steps can not be identified in the PPI. Some of the steps in production may be performed by enterprises which are not classified as food industry, but as other industries such as transport or wholesale. Therefore the PPI results can only be considered a summary view of the intermediate steps between the production of the agricultural commodity and the final purchase by the consumer.

An important thing to bear in mind is that food products that are sold to consumers after a short and uncomplicated production process may react more directly to changes in commodity prices than food products that have undergone a lengthy and costly production process, where the basic agricultural commodity forms but a small part of the total cost. Moreover, the tool aims to compare different price indices as measured in European Member States. For many products international trade may also play an important role.

Data are generally available only at a highly aggregated level. Half of the supply chains of the monitoring tool contain data for consumer products at 4-digit level of COICOP. This means that broad categories of food products were taken together, like "meat", or "bread and cereals". The indices for the producer prices in the food industry and agricultural commodity prices were chosen at a comparable high level of aggregation. Other supply chains are at a more detailed level, for which Eurostat collected consumer price indices for more detailed product groups. Since there are no harmonized definitions of these detailed consumer products, there may be small differences between the products covered across countries.

Not only can final products be produced using different sets of inputs; also agricultural commodities can be used to produce different kinds of output. The cattle that enter the supply chain in the beginning will end up both in steaks and in minced beef, with different qualities and different prices. Also if we compare the price of eggs as they come from the farm with the price for eggs in the supermarket we must acknowledge that only "Class A" eggs may end in the supermarket where other eggs will enter different parts of the food sector, probably at different prices.

It was not possible to provide data for all three statistics for all supply chains for all Member States. Some could not provide with detailed HICP data beyond the level that is usually provided in the HICP publications.

Producer price indices are not available for all NACE-classes and all Member States. Depending on the size of a country and the importance of national producers in a certain NACE-class in the European markets PPI data need not be provided to Eurostat.

Agricultural commodity prices (series 2005=100) are not yet available for all Member States and therefore not for European totals. For years up to 2008 Eurostat has commodity price indices available of an older series (2000=100). For easier comparison and with view to the future it was decided only to take up the available 2005=100 data. These data are to be completed in the future.

6. Data on price levels

When examining the food supply chain both price indices and price levels can give information on the functioning of the markets.

Price indices give valuable and useful information on price developments over time. Comparing the developments of prices in various stages of the supply chain give indications on how actors react on changes in their inputs prices. Index numbers however give no direct comparison of price levels of one product at different stages of production, what could give additional information on how consumer prices are built up.

Price level data may be easier to interpret but are most useful if they concern a very homogeneous product or when a small and homogeneous part of the market product is described. For example, it may be useful to compile the average price for cucumbers or for cauliflower, but an average price for vegetables can not be calculated with some good interpretation. Price level data are not available at the level of total EU or euro area, but only at a country level.

Price levels for agricultural commodities

Price level information is available at Eurostat for a number of agricultural commodities.

Agricultural commodity prices are part of the regular production program of Eurostat. They are available in the public database and under main tables under:

- Agriculture, forestry and fisheries
- Agriculture
- Agricultural prices and price indices

Price levels for consumer food products

Concerning consumer prices, results from a first pilot investigation were published in early 2009. These experimental results of indicative price levels are compiled from prices collected in the HICP production in June 2008. This pilot investigation was not focussed on food prices only, but they contained indicative price level information for 25 food products for a number of countries.

The publication was an experiment on the basis of the samples of prices gathered by the National Statistical Institutes of the Member States for the monthly Harmonised Index of Consumer Prices (HICP) statistics.

It should be kept in mind that:

- The general product description allows for differences between the product descriptions used in the individual Member States.
- Product descriptions used in the individual countries may allow for a smaller or larger variability of products within the samples. In some cases the national product descriptions used exceeded some qualifications as given in the general product descriptions. This was indicated by footnotes in the Eurostat document or the product was deleted from the table depending on whether the deviation from the general product description was expected to have significant impact on the price level.
- Products, even when physically comparable may have very different market positions across countries national markets.
- The number of countries for which the prices of products according to the general product descriptions were available for publication varies across products (from 21 as a maximum to 8 as a minimum).

The full research paper explaining the methods used and limitation to these data is found on the [Eurostat website](#). The published nominal price data on food products is summarized in table 2.

Table 2: Indicative price levels for a number of consumer food products, June 2008, in euro

	Price per:	Belgium	Bulgaria	Czech Republic	Denmark	Germany	Estonia	Ireland	Greece	Spain	France	Italy	Cyprus	Latvia	Lithuania	Luxembourg	Hungary
Long-grain rice	1000 g		1.32	1.32			1.23		2.46	1.23		2.06	1.90	1.59	1.30	3.26	1.07
Wheat flour	1000 g		0.63	0.56	0.92			1.04	1.31	0.85			1.13	0.71	0.70	1.01	0.57
Loaf of white bread	1000 g		0.74	0.92	4.69			1.77	2.08	2.84			1.91	1.66	1.39	3.28	1.03
Spaghetti	1000 g			1.33		2.47	2.07	2.48	1.82				1.90	2.05	1.87	2.97	2.51
Minced beef	1000 g		2.86	3.17	8.58							8.99		3.57	3.26	8.37	6.78
Pork, cutlet ("escalope")	1000 g			4.57					5.40			8.06		5.33	4.39	7.46	5.15
Whole chicken	1000 g		2.41	2.51			3.04	4.37	3.63	3.00		4.11	3.47	2.86	2.48	5.18	2.97
Sausage	1000 g			4.86	8.73			5.93	6.95				6.60			9.89	3.59
Tinned pink tuna	1000 g			5.17												10.15	
Fresh milk, unskimmed	1 litre		0.78	0.82	1.09		0.81	1.12	1.31	0.94			1.22	0.84	0.79	1.26	0.90
Natural yoghurt	1000g/m		1.01	1.71										1.62		3.52	
Chicken eggs	10 eggs		1.00	1.13	3.34				2.11	1.31			2.01	1.32	1.25	3.32	1.21
Butter	250 g		1.04	1.14	1.91			1.30				1.99	1.97	1.59	1.35	1.70	2.14
Olive oil	1 litre			11.32					5.71	3.41			5.03		6.74	8.90	10.42
Apples	1000 g		1.36	1.59	2.38		1.56		1.92	1.85		1.93		1.58	1.78	2.85	1.56
Carrots	1000 g		0.70	1.00	1.34		0.88	1.37	1.02	1.04		1.17	1.17	1.05	0.83	1.40	0.81
Potatoes	1000 g		0.42	0.68	1.12		0.44	1.56	0.61	0.90		0.94	0.69	0.54	0.90	1.33	0.64
White sugar	1000 g		0.87	0.84	1.31		0.96	1.04	0.84	0.92			1.04	1.07	0.93	0.96	0.87
Jam	1000 g		2.60	3.91				4.12		3.02					3.28	3.76	2.94
Milk chocolate	1000 g		6.85	7.53												9.84	8.87
Ice cream	1000 g		1.94	6.76	3.09		2.50					6.59			2.25	4.51	3.96
Tomato ketchup	1000 g		1.37	1.64			1.96		3.68					1.24	1.69	4.40	
Coffee	1000 g		6.08	9.03	8.34					6.29		9.18	8.50	9.13	8.17	9.09	8.51
Black tea	25 bags			1.77			1.39	0.86	2.09				1.23	1.21	1.09	1.79	1.47
Mineral water	1 litre		0.22	0.34		0.57			0.32					0.47	0.43	0.65	0.30
Orange juice	1 litre		1.16	1.10	1.72		1.13	1.75	1.39	0.85		0.70		1.07	1.20	1.35	1.41

	Price per:	Malta	Netherlands	Austria	Poland	Portugal	Romania	Slovenia	Slovakia	Finland	Sweden	United Kingdom	Turkey	Iceland	Norway	Switzerland
Long-grain rice	1000 g	2.17		2.01	1.96	1.00	1.49		1.29	2.11			2.84	2.14		
Wheat flour	1000 g	0.90		1.02	0.63	0.79	0.65	0.91	0.50	0.61		0.85	0.84	0.73		
Loaf of white bread	1000 g	1.29		4.90	1.08	2.17	0.98	1.94	1.23	3.28		1.75	1.13	3.49		
Spaghetti	1000 g	1.48		2.44		1.30	2.45		2.03	2.13		1.82	1.05	1.93		
Minced beef	1000 g	5.38			3.09		3.42			8.52		6.96	8.02	8.91		12.40
Pork, cutlet ("escalope")	1000 g	3.22		8.89	3.72	5.74	5.81		4.95	12.41				11.02		19.92
Whole chicken	1000 g	2.33		4.28	1.87	2.66	2.43	3.28	2.53			3.64	2.00	5.37		
Sausage	1000 g	2.94			4.13		3.64		3.00			4.72	6.73			
Tinned pink tuna	1000 g	4.71		7.84	6.62	8.78			6.27	8.50		6.28				
Fresh milk, unskimmed	1 litre	0.72		1.01	0.84	0.80	1.32	0.79	0.72	0.93		0.91	0.89	0.74		1.00
Natural yoghurt	1000g/m	1.64		1.73	2.02	3.04							1.50			
Chicken eggs	10 eggs	1.02		3.39	1.19	1.24	0.97	1.64	1.14	1.94		3.03	0.86	2.38		4.09
Butter	250 g	1.64		1.52	1.35	1.67	1.74		1.72	1.54		1.40	1.88	0.94		2.63
Olive oil	1 litre	7.29		7.97	11.47	4.74							5.56	7.66		
Apples	1000 g	1.46		1.85	1.39	1.39	1.30	1.64	1.60	2.19		1.93	0.97	1.61		
Carrots	1000 g	1.05		1.28	0.91	0.74	0.73	1.27	1.01	1.71		1.01	0.78	1.57		
Potatoes	1000 g	0.39		1.10	0.62	0.65	0.47	0.63	0.57	0.74			0.49	1.15		1.57
White sugar	1000 g	0.77		1.08	0.78	0.97	0.87	0.81	0.93	1.05		1.08	1.23	1.02		1.21
Jam	1000 g	2.47		4.76	3.58	5.97	3.38		4.04				3.68	2.74		
Milk chocolate	1000 g	16.29		7.89	9.43		6.73	8.59	8.39	8.75			9.98	11.23		9.42
Ice cream	1000 g	3.02		5.76	2.60	3.35	4.49		1.46	1.50			5.17	2.59		
Tomato ketchup	1000 g	3.52			2.73	4.93	2.43		2.77	2.90		2.38	2.18	2.26		
Coffee	1000 g	19.78			6.96	8.87	10.40		7.91	5.61		11.38	28.31	6.36		
Black tea	25 bags	0.69		1.99	1.64	1.39			0.72				0.21	1.17		
Mineral water	1 litre	0.27		0.34	0.40	1.56	0.34	0.38	0.34	1.09			0.78	0.77		0.49
Orange juice	1 litre			1.26	1.27	2.01	1.55		1.28	1.01		2.18	0.84	1.75		