Price movements and the definitive changeover to the euro

Germaine BRUDIEU
Marie-Christine ERNOULT
Thierry LACROIX
Division Prix à la Consommation

Philippe GALLOT
Sylvain HECK
Fabien TOUTLEMONDE
Division Synthèse Conjoncturelle

The prospect of the changeover to the euro as legal tender has been giving rise to fears of inflation among French households. It will be shown here that their subjective perception of inflation is specifically influenced by the prices of certain types of products that have moved particularly sharply in recent months, and for which the changeover to the euro has taken place earliest: foodstuffs, manufactured goods other than clothing and durables. Even so, this in no way signifies that these fears are grounded. These price increases affect only a small part of the housewife's basket of purchases and can be explained by factors other than the changeover to the euro. In fact, the overall impact of the changeover to the euro on prices depends to a great extent on the way in which the so-called «psychological» price schedules in euros will be drawn up. If one accepts that all agents combine to round prices systematically up or down, the impact on inflation would be +1% or -1.1%. These two assumptions represent extremes. Besides, in certain cases, the changeover to the euro will accompany the habitual price-tag revisions, or only anticipate them by a few weeks. The final result is therefore likely to be closer to the middle of the range.

Inflation and changeover to the euro: consumer fears

In the run-up to the changeover to the euro, a «platform» of 10 additional questions was introduced into the monthly consumer confidence survey. Most of these questions attempt to measure over time the rate at which the changeover to the single currency is affecting French people's daily life: use of payment methods denominated in euros, attention given to the practice of dual pricing, etc. Nevertheless, some questions deal more specifically with subjective perceptions related to the changeover.

One of these additional questions relates to expectations of inflation. The replies bring out clearly that the fears of price rises connected to the changeover to the single currency have increased as the date of the changeover has drawn nearer. In June 1999, 38% of French households questioned considered that the introduction of the euro would lead to price increases, compared with 44% who thought it would have no effect. In November 2001, 72% of households expected an inflationary impact and only 21% thought prices would remain stable.

Two regular questions also relate to households' views on inflation. One of these concerns the recent past, the other the future prospects. Taken over the long term, the balance of opinion relating to the future prospects is sometimes difficult to interpret, since its variations, which can be quite marked, do not always reflect subsequent actual price movements. In fact, the peaks sometimes recorded seem often to constitute an «over-reaction» on the part of households, either to the announcement of economic policy decisions or to the incidence of clearly-identified external shocks. For example, in the recent past, the most pronounced peaks coincided with the Gulf War in the autumn of 1990, the sharp rise in taxes on petroleum products and tobacco in the spring of 1993 and the rise in the VAT rate in the Summer of 1995.

When it comes to the assessment of recent price movements, the replies provide a closer long-period match with turning points in inflation. Even so, the match remains less than perfect. One explanation could be that **households, when asked to give their assessment of the overall evolution in prices, tend to focus on certain products only**. In fact, when one looks at the detail of price movements for par-

Do you think that the introduction of the euro will have an impact on price levels ?

(in %)

	june 1999	dec. 1999	june 2000	dec. 2000	june 2001	sept. 2001	nov. 2001
No, there will be no impact on prices	44	47	43	38	28	16	21
You think there is a risk that prices will rise	38	40	40	47	60	78	72
You think that prices will fall	5	3	2	1	2	0	1
Don't know	13	10	15	14	10	6	6
Total	100	100	100	100	100	100	100

Source : Insee households confidence survey.

ticular sub-items, a simple calculation of correlation coefficients brings out two points:

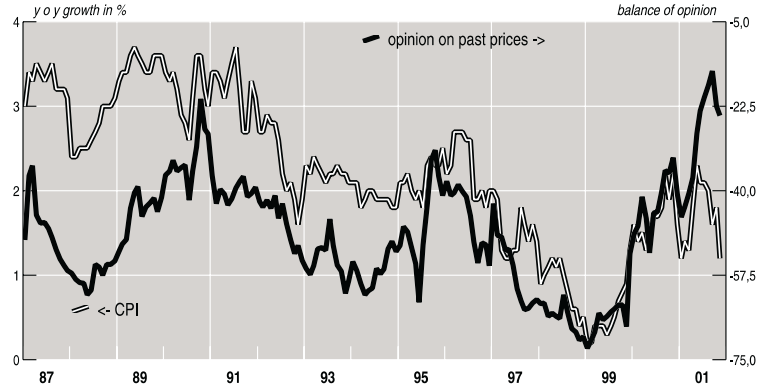
- Evolutions in prices for food, manufactures and energy are particularly closely correlated with households' responses regarding past prices.
- At a more refined level, **the balance of opinion being examined seems more specifically related to four groupings in the price index: food ex seasonal food, other manufactures and, to a small extent, energy and other services**[(1)].

Instantaneous regression of the balance of opinion regarding recent price movements on the various components of the consumer price index (CPI) arrives at similar results. The balance of opinion seems to be significantly and jointly linked to the four groupings listed earlier (*see equation*).

The system of «psychological» weighting suggested by the result of the equation seems to be remote from the weightings actually used for the construction of the CPI (those that actually correspond to the «housewife's basket», based on the product structure of French households' consumption). In particular, the evolution in the prices of foodstuffs seems to be distinctly overweighted and that of services underweighted. This suggests that **households' opinions regarding prices seem to depend more on the prices of products bought most frequently.**

Since Q2 2001, household opinion has been moving unfavourably, just when overall inflation was declining significantly. The calculation we have just carried out suggests that at least part of this apparent anomaly stems from the fact that households are psychologically more inclined to be attentive to changes in certain prices. This is true, notably, for prices of food ex seasonal food, a grouping where price rises in 2001 were faster than for the overall index. Even so, the match remains relatively imper-

HOUSEHOLDS CONFIDENCE SURVEY AND INFLATION



HOUSEHOLDS CONFIDENCE SURVEY AND INFLATION

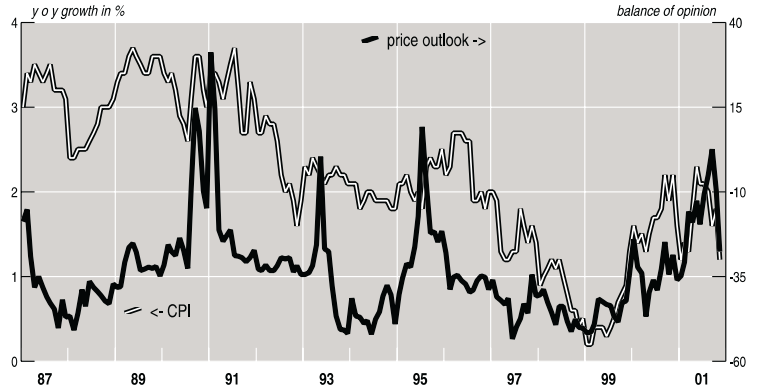


TABLE 1 : CORRELATION COEFFICIENTS BETWEEN Y-O-Y PRICE CHANGES AND BALANCE OF OPINION

CPI weighting (in %)		Opinion on past prices	Housewives' price outlook
17.4	**FOOD**	**0.55**	**0.29**
2.2	Fresh	0.20	0.04
1.2	Seasonal food produce	0.63	0.39
1.9	**TOBACCO**	**-0.03**	**-0.09**
30.5	**MANUFACTURES**	**0.51**	**0.46**
5.1	Clothing and footwear	0.31	0.26
21.5	Other manufactures	0.56	0.46
8.1	**ENERGY**	**0.33**	**0.21**
42.1	**SERVICES**	**0.22**	**0.22**
7.4	Housing, water and sewerage collection	0.07	0.11
4.9	Health services	-0.25	-0.08
4.8	Transports and communications	0.15	0.21
25.0	Other services	0.40	0.30
100.0	**OVERALL**	**0.58**	**0.44**

Estimation period : january 1987-september 2001.

(1) grouping «other manufactures» contains cars, furniture, household equipment, personal hygiene products, sporting and leisure goods and stationery. The grouping «other services», for its part, contains cleaning and repair services, services connected with housing, cultural and recreational services, vehicle-related services, hairdressing, insurance, parking and motorway tolls, financial and funeral services, social welfare services and hotels and catering.

fect, probably because the exercise could only be carried out for highly aggregated macroeconomic data and because it was not possible to apply a more refined analysis.

The «sensitive basket»: monitoring focused on mass consumption goods to which households are particularly attentive

As part of the macroeconomic monitoring accompanying the changeover to the euro, INSEE has included monitoring of a «sensitive basket» of products, extracted from the normal sample used for the calculation of the CPI. The idea of using such a basket is twofold: to identify both the mass consumption goods that are frequently purchased, for which consumers are liable to be more sensitive to possible price movements at the time of the changeover to the euro, and products for which the impact of the changeover could lead to substantial price changes (low-priced goods, goods with rounded prices, with psychological prices, delivered by vending machines). The function of this sensitive basket is not to replace that of the price index, which alone makes it possible to measure the monthly evolution of overall inflation, but rather to concentrate attention on a small number of products liable to have a greater influence on households' price expectations.

As regards foodstuffs, the two series (overall index and sensitive basket) show substantially the same tendency. This indicates that the recent brisk movements in the prices for this grouping in the sensitive basket reflects, on the basis of a few carefully selected products, a phenomenon that has been more general over the recent past, namely the acceleration in the prices of foodstuffs ex seasonal food.

In the case of manufactures, there is a gap between the two series. This phenomenon is concentrated on the other manufactures grouping. In fact, it is the exclusion from the sensitive basket of durable goods, whose price movements are very limited (cars and especially audio-visual and PC equipment) that largely explains the difference.

Finally, the year-on-year movements in the price index for the sensitive basket and the CPI as regards other services were fairly similar from the beginning of 1999 until Q2 2000, and again since the end of last year, so that the major turning points in the «other services» grouping seem to be satisfactorily captured by the prices of the services picked out for inclusion in the sensitive basket.

All in all, the analysis of the evolutions in the index for the sensitive basket brings out notable price accelerations for two sectors in the recent past: on the one hand, food ex seasonal food, in the form of mass consumption goods sold in supermarkets or specialist stores (bakers, butchers); on the other hand, several varieties in the «other manufactures» grouping. It would seem that the more marked acceleration between May and September 2001 in the prices of the other manufactures in the sensitive basket is explained by the over-representation of personal hygiene and cleaning products and by the absence of durable goods from this basket.

The analysis based on the sensitive basket therefore gives a better understanding of households' recent fears. This is because the groupings in which there were the largest price increases in the sensitive basket in recent months include precisely those that seem to have the greatest influence on that subjective perception of inflation: foodstuffs ex seasonal food and other manufactures. However, there is nothing at this stage to show that this concentration of price accelerations emerging from the analysis of the

ÉQUATION

$$OPP = 4.05 \times FexSF + 2.90 \times O\_MANUF + 0.71 \times ENERGY + 0.58 \times O\_SERV - 63.19$$
(7.75) (3.53) (5.64) (197) (–52.76)

OPP: Opinion on Past Prices (balance of opinions in %)

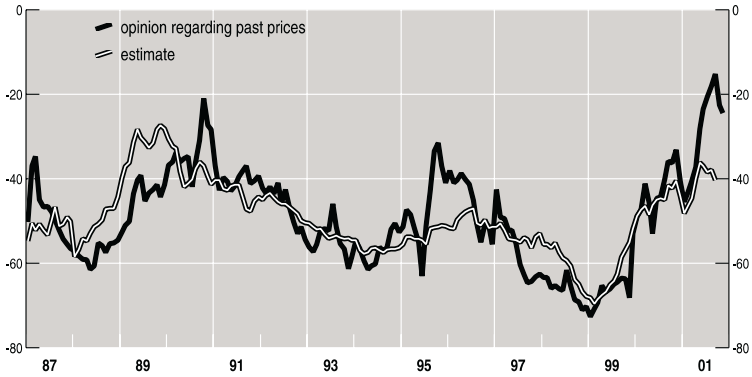
FexSF: Food ex Seasonal Food

O_MANUF: Other ManufacturesO_SERV: Other Services

FexSF, O_MANUF, ENERGY and O_SERV are expressed as year-on-year price changes.

The figures in brackets beneath each coefficient give the Student's t statistic.
The assumption of stationarity of the explanatory variables used is not rejected by the KPSS test.
The only variable failing to pass is the balance of opinion relating to recent prices. It is nevertheless regarded as stationary in this calculation, given that, by definition, any balance of opinion is bounded.

ESTIMATION OF HOUSEHOLDS BALANCE OF OPINION



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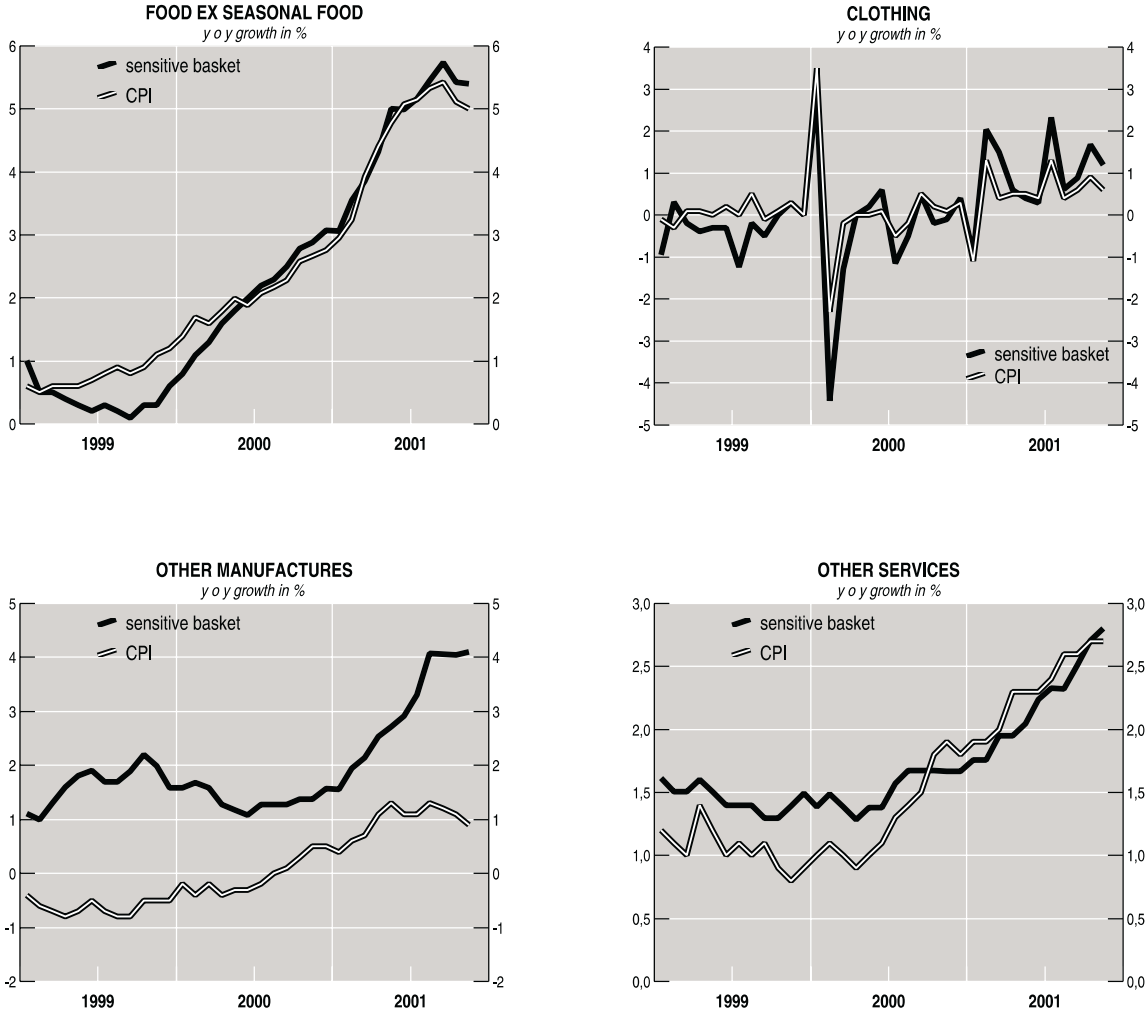


sensitive basket, is linked to the changeover to the single currency. **What one needs to know is whether the items whose prices have accelerated are among those for which the changeover to the euro has taken place at an earlier stage**.

Measuring the build-up of the changeover to the euro in the sensitive basket

The sensitive basket constitutes a flexible and sensitive instrument from which it is possible to work directly on price records. In order to attempt to identify the influence of the changeover to the euro on pricing practices and inflation, a certain number of indicators have been introduced. A first group concerns the price schedules used, while the remainder relate to the rate at which price tags are updated.

A first indicator records, month by month, the percentage of series whose prices in francs are not in round figures (in other words, those that do not end in 0 or 5 centimes). Although this is not systematically true, **a price in francs that is not in round figures can indicate that the pricing is carried out directly in euros** and then converted for the purpose of the price display in francs. In fact, observation of the percentage of series involved suggests a steady build-up of the changeover to the euro in two sectors in particular: food ex seasonal food (seasonal food is excluded from the sensitive basket) and manufactures other than clothing and durables [(2)]. For these two items, the proportion of price records not in round figures in francs rose from practically 0% to almost more than 40% between January and November 2001. In the case of food ex seasonal food, these were mainly packaged products (chocolate-filled «after-school» biscuits, canned beans, orange juice). Among manufactures ex clothing and durables it applied particularly to certain cleaning and personal care and hygiene products (kitchen paper, razor blades, detergents, disposable nappies, soap, shampoo).

(2)It should be recalled that the «manufactures» grouping in the sensitive basket includes no durable goods, given that such purchases are by definition very infrequent.

On the other hand, clothing, energy and services seem for the present to be little affected by this phenomenon.

A second interesting indicator is provided by the percentage of series whose price in francs is stable to dual conversion (conversion into euros, followed by conversion into francs). **Prices set in euros before being converted for posting in francs are necessarily in this situation**, whereas a price that is initially set in francs has, a priori, only a 15% chance of being stable to dual conversion [(3)]. Here again, it is food ex seasonal food and manufactures ex clothing and durables that have seen a considerable increase in this percentage in the recent past, providing a further indirect indication that the products in these groupings have been the first to be affected by the changeover to the euro.

As is the case for prices in francs, a majority of prices in euros will probably be in round figures, after a transition period. Taking into account the scale difference between the two currencies, but also the fact that round prices are also psychological prices, the notion of "round" figures in euros has been enlarged as compared to the one in francs. Round figures in euros end in 0,5 or 9 cents.

Unlike the two preceding indicators, no notable tendency in the proportion of series whose price is round in euros was recorded in H1 2001. In Q4, a faint tendency in this direction could be seen in clothing and services, with the percentage of series carrying round prices increasing slightly.

(3) To be more precise, the probability of stability to dual conversion for a randomly-selected price in francs in a uniform distribution is 1 / 6.55957 ≈ 15.25%. Possible distortion occurs at the time of the changeover from francs to the euro, since rounding to eurocents is less precise than rounding to franc centimes. For example, a price of 100.00 francs, after rounding, comes to 15.24 euros, which is equivalent to 99.97 francs. This is therefore a price that is not stable to dual conversion. On the other hand, a price of 106.00 francs is equivalent to 16.16 euros and 16.16 euros is equivalent to 106.00 francs, meaning that it is a price that is stable to dual conversion.

TABLE 2 : PROPORTION OF SERIES WITH PRICES NOT IN ROUND FRANCS

(in %)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Food	1.3	2.7	5.8	8.6	10.1	11.9	13.5	17.5	22.6	32.6	43.2
Clothing	1.0	0.7	0.3	0.3	0.3	0.4	1.1	1.9	4.3	5.5	7.5
Other manufactures ex. durables	2.1	3.0	5.5	8.3	8.9	10.1	11.2	15.7	22.1	31.5	41.4
Energy	55.5	55.3	56.1	56.6	56.1	56.0	55.1	56.3	56.7	56.7	54.4
Services	12.6	12.3	12.4	12.5	12.5	12.4	12.5	12.9	14.0	16.2	18.2
Total	12.8	13.2	14.5	15.7	16.2	16.8	17.4	19.4	22.3	27.1	31.9

TABLE 3 : STABILITY TO DUAL CONVERSION (F → € → F)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Food	17.3	18.2	20.9	23.7	25.4	27.5	29.4	33.3	38.2	48.5	59.0
Clothing	15.6	15.5	14.5	15.5	16.3	16.7	16.8	18.3	23.0	25.3	27.7
Other manufactures	13.6	14.8	17.8	20.1	21.5	22.5	24.3	28.3	35.3	44.3	54.6
Energy	17.0	16.8	17.3	17.1	14.3	14.9	17.9	18.5	19.3	26.1	36.4
Services	14.7	14.7	14.3	14.4	14.5	14.5	14.5	14.4	15.1	17.4	19.6
Total	15.9	16.2	17.2	18.4	18.8	19.7	20.8	22.7	25.6	31.7	38.2

TABLE 4 : PROPORTION OF SERIES WHOSE PRICES ARE ROUND IN EUROS

(in %)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.
Food	31.7	31.5	31.7	32.1	31.9	32.1	31.7	31.2	32,1	33,2	33,4
Clothing	26.1	26.7	26.7	27.0	26.4	26.2	25.6	26.2	29,9	30,3	30,6
Other manufactures ex. durables	33.6	33.9	33.0	33.9	34.8	34.8	34.4	34.6	35,2	35,6	36,2
Energy	32.1	27.2	29.6	27.0	33.6	34.3	31.2	33.2	32,9	33,0	28,4
Services	26.9	27.8	28.2	28.5	28.6	28.9	29.1	29.7	31,1	33,3	35,3
Total	29.6	29.2	29.7	29.7	30.6	30.8	30.2	30.7	31,8	33,1	33,2

How to read the table :
"Round" prices in francs end in 0 or 5 centimes. "Round" prices in euros end in 0,5 or 9 cents. For table 3, if prices were randomly set in a uniform distribution, the proportion of prices stable to dual conversion would be about 15%. For table 4, if prices were randomly set in a uniform distribution, the proportion of prices round in euros would be 30%.

The intersection of the various indicators confirms the general diagnosis. Series whose prices shift to «non-round» prices in francs do so to prices set in euros, being stable to dual conversion. **However, the new prices in euros correspond only marginally to round prices. This result suggests either that retailers are for the moment giving priority to the calculation of prices in euros, without worrying about the possible psychological virtues of the prices obtained as a result, or that in the changeover priority is being given to products that are not particularly concerned by round price schedules.**

However, the tone has tended to change in the most recent months, with a somewhat more appreciable rise in the proportion of products whose prices are psychological in euros among those whose prices are stable to dual conversion. This is particularly the case for clothing and services. In these sectors, «psychological» pricing plays a fundamental role, to which we shall be returning later.

The changeover from the franc to the euro in many cases leads to a change in the level of prices (and the price tag). **In this case, a particular evolution in the statistics relating to changes in price tags from one month to another could be another way of making it possible to apprehend the changeover**. Following the elimination of seasonal effects from this phenomenon [(4)], three indicators have been calculated, as percentages of the number of price records: unchanged, move to a higher price tag, move to a lower price tag.

The proportion of records with stable prices seems to have been headed very slightly downward in the recent past in all sectors, indicating an increased rate of updating of price tags, which is a priori consistent with a gradual changeover to pricing in euros. However, this tendency is difficult to capture, because of the distortion introduced by the change in price tags brought about by the cut in VAT decided in April 2000. Food ex seasonal food stand out. The proportion of price-tag changes increased more markedly in 2001 for this grouping, because of an increase in the proportion of upward price changes. It should be recalled, however, that the acceleration in the prices for this grouping results partly from clearly-identified exogenous factors that have nothing to do with the changeover to the euro (impact of animal health crises on the price of meat, prospect of the introduction of the 35-hour working week for the small traders).

This still leaves the possibility that the slight increase in price-tag changes seen recently at overall level could also stem in part from the changeover to the euro, notably in two particular ways:

- the setting of prices directly in euros instead of francs, which has an impact of a few centimes at most;

- early implementation of certain price rises that would in any case have occurred a few months later, in order to respect the stabilisation agreement concluded between producers and distributors for the period running from 1 November 2001 to 31 March 2002. In this case, the price changes would not lead to a genuine acceleration in prices, inasmuch as the impact on the pattern of prices over time would be transitory only, consisting of this simple shift in time.

TABLE 5 : SUMMARY OF CERTAIN INTERSECTIONS

	% of series...			
	... with «non-round» in F.	...whose prices are stable to dual conversion among these «non-round» in F.	... whose prices are «round» in euros among the «non-round» in F.	... whose prices are «round» in euros among the series stables to dual conversion
January	12.8	19.2	31.4	26.1
February	13.2	21.2	30.1	25.2
March	14.5	27.5	32.3	26.2
April	15.7	31.7	32.1	27.6
May	16.2	32.0	35.4	28.5
June	16.8	35.4	36.7	29.4
July	17.4	40.0	33.8	29.6
August	19.4	45.6	35.0	31.0
Sept.	22.3	51.9	35.9	33.2
Oct.	27.1	62.9	37.9	37.1
Nov.	31.9	71.6	37.6	37.0

To sum up, in view of the analysis carried out on the sensitive basket, t**he shift in prices from a franc to a euro basis seems so far to have been carried out at rates differing widely from one sector to another. It has affected mainly mass distribution products, essentially food ex seasonal food and manufactures ex clothing and durables**. And it is precisely these groupings that are, on the one hand, among those on which households concentrate in order to assess the evolution of past prices and, on the other, those whose prices have tended to accelerate in recent months. This combination of phenomena would seem to explain the build-up of inflationary fears linked to the changeover to the euro.

Conversely, clothing, durable goods and services are sectors for which the shift to pricing in euros seems to have been slower (although apparently gathering pace

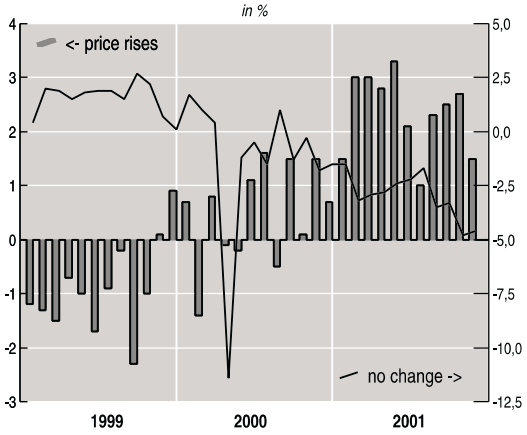
(4)The updating of price tags is a highly seasonal phenomenon, especially in the clothing sector.
(5)The analysis of the distribution of prices shown here was carried out for all the price records for the index in the months of April 2001, with the exclusion of seasonal food. It therefore does not cover the tariff schedules, which are not collected through price records on the ground. In total, it covers 61.7% of the overall price index weighting.

INDICATOR OF UPDATING OF PRICE TAGS

8

TOTAL

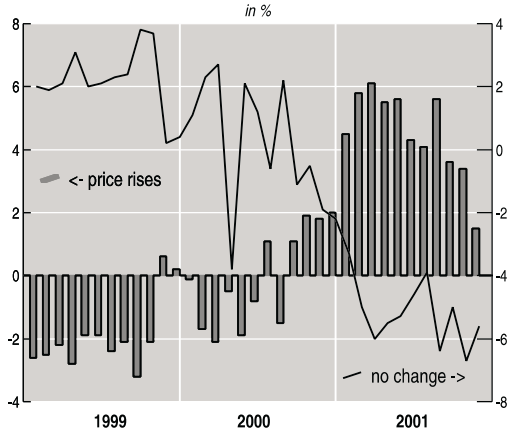
in %



9

FOODSTUFFS EX FRESH PRODUCE

in %



Methodological note:
*t*hese indicators are computed not only on the sensitive basket, but on the whole CPI prices excluding seasonal food and tariff schedules. They represent the percentage of records as compared to the average on the last four years. For example, there is 71% of no change records in April 2000 as opposed to a reference mean in April of 82.2%, so that the indicator "no change" equals –11.4%

somewhat in this final quarter) and where a slower acceleration in prices has been recorded. At this stage, it becomes interesting to try to calibrate the impact of the changeover to the euro on the pricing of these items so as to be able to appreciate the global influence, positive or negative, that the changeover to the euro might have in the short term on the rate of increase in the CPI.

Simulation of rounding effects: the importance of psychological price schedules

The setting of prices is done according to psychological criteria for certain products. For example, the price of a product will be set to 990 francs rather than 1000 francs ; besides, prices often end in 0, 5 or 9. Analysis of the distributions of prices in each of the main CPI groupings [(5)] suggests a need to make a distinction between items where psychological prices occupy a predominant place and the rest. It happens that this distinction coincides with the sectoral dividing line that emerges from the previous section: clothing, durable goods and services, on the one hand; food ex seasonal food and manufactures ex clothing and durables, on the other.

In the case of food ex seasonal food, the distribution appears to be relatively continuous for levels below 20 francs. A psychological effect seems to emerge for higher prices. However the frequency peaks observed (29, 39, 49 francs etc.) remain limited in scale (less than 0.7% of the distribution). In fact, it is rather at the centimes level that the search for a psychological effect becomes relevant.

The setting of psychological prices is more widespread in services. Unlike foodstuffs, this mainly concerns the last digit in francs and only to a small extent the centimes, as seems logical for a grouping where the average price is higher. For levels between 10 and 100 francs, half the prices in francs end in 0, 5 or 9. For levels between 100 and 300 francs, in more than six cases out of ten, prices in francs end in 0, 5 or 9.

In the case of manufactures, psychological prices play an important role only for clothing and durable goods. In clothing, for levels between 10 and 100 francs, 81% of prices end in 9, 0 or 5 (63% for those ending in 9). In durable goods, psychological prices are also particularly frequent: for levels between 1000 and 6000 francs, as many as 92% of the prices in francs end in 90, 99 or 95 (including 85% for those ending in 90). In other manufactures, on the other hand, psychological prices occupy a less central position, even though for price levels between 100 and 6000 francs, certain recurrent price endings are to be found (73% for prices in francs ending in 0, 9 or 5).

Since September, a certain shift from pricing in francs to pricing in euros has admittedly emerged in clothing and services. However this still seems to be marginal. The changeover to the euro took place earliest in sectors where psychological pricing is less widespread: food ex seasonal food and manufactures ex clothing and durables.

In order to calibrate the potential impact of the changeover to the euro, it is therefore necessary to carry out two exercises, making it possible to capture the twin aspects

of the phenomenon. **The first exercise consists of re-calculating, on the basis of all the price records, the level of the index after simulating various assumed conversions and roundings of prices from francs to euros**: the official rule - i.e. rounding to the nearest eurocentime - but also alternative «biased» practices - systematic rounding up or down, or to the tenth of a euro rather than a eurocentime. **A second exercise, in order to take into account the existence of psychological prices, consists of simulating the impact of the shift to various types of price schedules involving what are taken to be psychological prices in euros.**

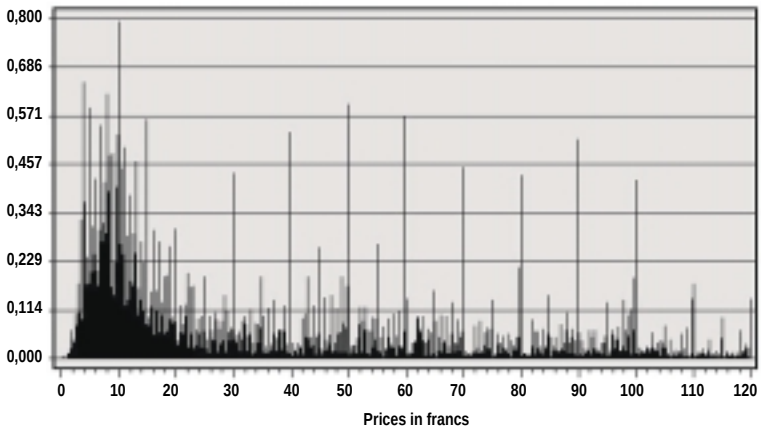
For technical reasons, these two rounding simulation exercises are carried out for all products whose prices are the subject of direct recording on the whole of the French territory with the exclusion of seasonal food. These cover 61.75% of the total weighting of the price index. The products not covered can be grouped into three categories:

- products with regulated prices (tobacco, rents, garbage disposal, electricity, gas, rail transport, postal services, healthcare, TV licences, child carers, etc.) to which the official rounding rule will be applied at the time of the changeover to the euro (or has already taken place in some cases);

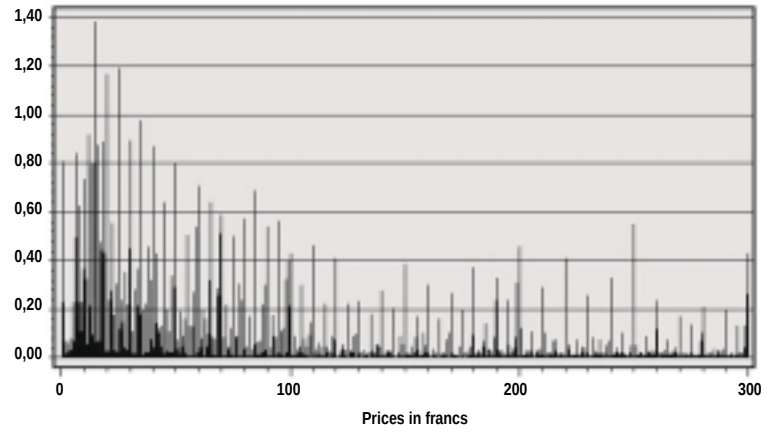
- products with complex pricing (cars, air transport, telecommunications, health insurance, financial services, etc.) whose prices will probably only make a very small impact as a result of the changeover to the euro. The diversity of the products on offer, the wide range of pricing systems and the undertaking made by some operators in these sectors, which are often highly competitive, point to a certain overall neutrality regarding inflation resulting from the changeover to the euro;

- other products (seasonal food, products whose prices are recorded in the French Overseas Departments, domestic staff, etc.) will probably find their prices affected by the changeover to the euro but they account for less than a fifth of the grouping excluded from our analysis.

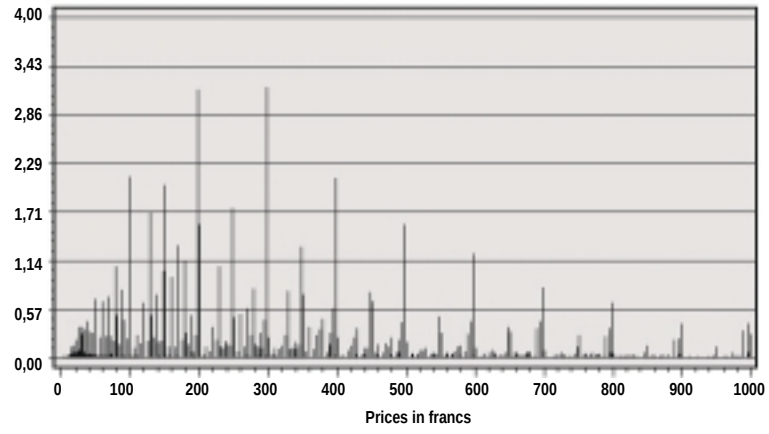
DISTRIBUTION OF PRICES FOR FOOD EX SEASONAL FOOD (IN %)



DISTRIBUTION OF PRICES FOR SERVICES (IN %)



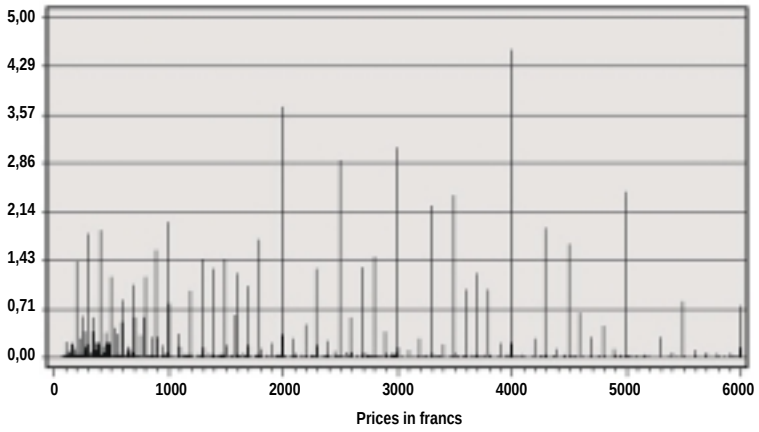
DISTRIBUTION OF PRICES FOR CLOTHING (IN %)



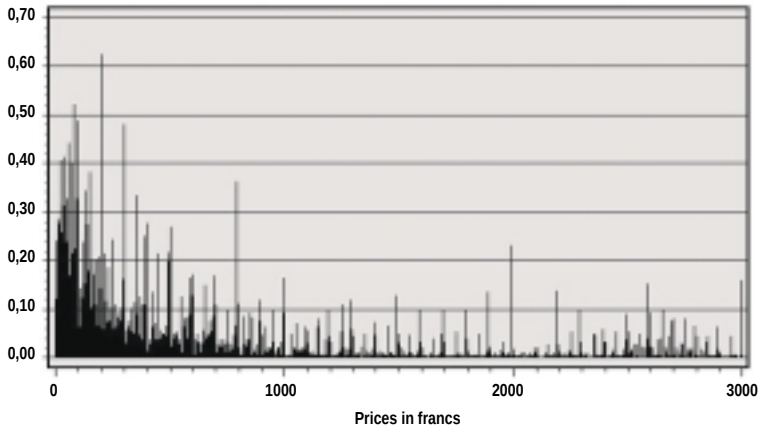
All in all, the effects of rounding on the products not included in the simulation exercise are likely to be small and have been ignored here. For the sake of easier comprehension, the potential impact calculated will be provided both for the basket which is the subject of the simulation, and for the entire coverage of the CPI, using the assumptions set out earlier.

In the first exercise, six systematic rounding practices were defined: to the nearest higher eurocentime, to the nearest lower eurocentime, to the nearest eurocentime (the official rule), to the nearest higher tenth of a euro, to the nearest lower tenth of a euro and finally to the nearest tenth of a euro. Rounding to the nearest eurocentime, and even to the nearest tenth of a euro, has a virtually neutral impact on the overall index. The impact in absolute value on inflation of a systematic practice of rounding to the nearest higher or lower eurocentime does not exceed 0.14% for the set of prices considered here (in other words, roughly 0.1% for total inflation). In the case of foodstuffs ex alcohol and tobacco, where the impact is potentially greater because average price levels are lower than in other sectors, the potential price rise remains limited to 0.2%. The potential effect of systematic rounding to the higher or lower tenth of a euro is naturally greater, being of the order of 1.3% for the set of prices being considered (0.8% for total inflation), up or down.

DISTRIBUTION OF PRICES FOR DURABLES (IN %)



DISTRIBUTION OF PRICES FOR OTHER MANUFACTURES (IN %)



However, the rounding assumptions just described may seem simplistic and hence implausible, particularly for items for which psychological pricing is widespread. A second exercise was therefore carried out, aiming to take into account also the future existence of psychological price schedules in euros. The precise definition of these schedules for

TABLE 6 : SUMMARY OF DISTRIBUTION OF PSYCHOLOGICAL PRICES

Price range (in francs)	Food ex fresh produce				Clothing				Durables				Other manufactures				Services			
	0-20		20-100		10-100		100-1000		100-1000		1000-6000		1-100		100-6000		10-100		100-300	
Two last figures in francs	**7**	*9%*	**59**	*3%*	**99**	*16%*	**99**	*23%*	**99**	*32%*	**90**	*85%*	**7**	*7%*	**90**	*10%*	**15**	*4%*	**0**	*7%*
	8	*18%*	**99**	*6%*	**79**	*25%*	**49**	*36%*	**90**	*56%*	**99**	*89%*	**6**	*12%*	**99**	*18%*	**25**	*7%*	**50**	*11%*
	9	*26%*	**49**	*9%*	**89**	*33%*	**29**	*44%*	**49**	*66%*	**95**	*92%*	**5**	*16%*	**50**	*24%*	**20**	*10%*	**20**	*15%*
Last figure in francs	**4**	*12%*	**9**	*22%*	**9**	*63%*	**9**	*67%*	**9**	*58%*	**0**	*90%*	**9**	*18%*	**0**	*33%*	**0**	*20%*	**0**	*33%*
	8	*24%*	**4**	*34%*	**5**	*75%*	**0**	*81%*	**0**	*87%*	**9**	*95%*	**5**	*31%*	**9**	*58%*	**5**	*39%*	**5**	*50%*
	7	*36%*	**2**	*44%*	**0**	*82%*	**5**	*96%*	**5**	*93%*	**5**	*99%*	**7**	*42%*	**5**	*73%*	**9**	*50%*	**9**	*61%*
Centimes	**95**	*14%*	**90**	*29%*	**0**	*55%*	**0**	*86%*	**0**	*96%*	**0**	*99%*	**0**	*27%*	**0**	*75%*	**0**	*81%*	**0**	*65%*
	90	*25%*	**0**	*43%*	**90**	*74%*	**90**	*92%*	**90**	*97%*	**97**	*99%*	**90**	*37%*	**95**	*78%*	**50**	*87%*	**90**	*67%*
	50	*33%*	**80**	*53%*	**95**	*89%*	**95**	*98%*	**20**	*97%*	**98**	*99%*	**50**	*46%*	**90**	*81%*	**90**	*89%*	**50**	*68%*
Last figure in centimes	**0**	*51%*	**0**	*75%*	**0**	*82%*	**0**	*94%*	**0**	*98%*	**0**	*99%*	**0**	*63%*	**0**	*82%*	**0**	*95%*	**0**	*74%*
	5	*91%*	**5**	*90%*	**5**	*98%*	**5**	*100%*	**5**	*99%*	**8**	*99%*	**5**	*84%*	**5**	*87%*	**5**	*96%*	**5**	*79%*
	2	*92%*	**3**	*92%*	**8**	*99%*	**6**	*100%*	**2**	*99%*	**7**	*99%*	**9**	*88%*	**8**	*89%*	**1**	*97%*	**8**	*82%*

How to read the table :
In the durable goods sector, for levels between 1 000 and 6 000 francs, 85% of prices end in 90 ; 89% end in 90 or 99 and 92% end in 90, 99 or 95.

SIMULATIONS OF ROUNDING TO THE PSYCHOLOGICAL PRICE SCHEDULES

Being by definition still unknown, the psychological price schedules in euros were determined by reference to what can now be found in francs. For example, the so -called "broad" psychological price schedule in euros for durable goods in the price range from 100 to 1000 euros was determined on the basis of what can currently be observed for durable goods whose prices fall in the range between 100 and 6000 francs. For these, it turned out (*cf. Table 6*) that 66% of the prices end in 49, 90 or 99. This same hypothesis was then adopted for the prices in euros.

In the case of durable goods whose prices converted into euros fall in the range 10-100 euros, having no corresponding reference in francs (very few durable goods are sold at prices between 10 and 100 francs), it was decided, for lack of anything better, to apply the same "broad" price schedule as the one worked out in the case of clothing. Similarly, in the case of clothing products whose converted price falls in the range 1-10 euros, the "broad" price schedule worked out for foodstuffs was applied by analogy.

The simulation of the rounding to the "broad" psychological price was carried out in three stages.

- First stage: all price records were converted into euros and rounded to the nearest psychological price in the "fine" schedule (it is known that the overall impact is neutral, *see third column of table 7*).
- Second stage: for each grouping and each price range, account was taken of the expected frequency of a rounding of the price to the "broad" psychological schedule (this frequency corresponding to that observed in francs). For example, given that 66% of the prices of durable goods in the range 100-1000 euros are expected to end in 49, 90 or 99, their prices were modified only two times in three.
- Third stage: once the frequency has been taken into account, for prices which have to be rounded in the direction of the "broad" psychological schedule, the price variation resulting from this operation was calculated. If the variation exceeded 20%, up or down, the choice was made, for the sake of realism, to round the price to a different psychological price, what might be called the "refined broad" price, applying, not the initial "broad" price schedule, but the schedule corresponding to the next lower price range. In the event that the price already fell in this bottom range, the "fine" psychological schedule was applied.

For example, in the exercise consisting of rounding to the next higher "broad" psychological price, let us suppose that the conversion is applied to a bookcase priced at 699 francs. Conversion into euros gives 106.56 euros, rounded initially to 107 euros, the nearest "fine" psychological price. In the second stage only 66% of these prices are rounded to the "broad" psychological price (this being the frequency for durable goods in the price range 100-1000 euros). A number between 0 and 1 was then drawn at random and if this number was below 0.66 the rounding was carried out (if not, nothing was done). In this case, the price rounded to the "broad" psychological price becomes 149 euros, corresponding to an increase of 39.25%. This was judged to be unrealistic because it exceeds 20%. One therefore then rounded the price to the "broad refined" psychological price corresponding to the rounding practice applied for the lower price range of 10-100 euros for durable goods. This meant that the price was rounded to 109 euros (giving a total price increase of 2.3%, since the initial converted price is 106.56 euros). ■

EFFECT OF ROUNDING TO PSYCHOLOGICAL PRICES

(in %)

Type of rounding	"Fine schedule" assumption			"Broad schedule" assumption		
Sector	Upper psy	Lower psy	Nearest psy	Upper psy	Lower psy	Nearest psy
Food	1.08	-1.05	-0.03	1.05	-1.07	-0.13
Alcohol - tobacco	0.50	-0.48	-0.01	1.31	-1.38	-0.02
Clothing - footwear	1.17	-1.06	0.00	2.78	-2.96	-0.36
Housing and utilities	0.49	-0.54	0.01	0.99	-1.02	0.00
Furniture and household equipment, daily maintenance	0.41	-0.40	-0.01	1.54	-1.36	-0.09
Transport	0.76	-0.78	0.01	0.92	-1.48	-0.51
Leisure and culture	0.73	-0.70	-0.03	1.86	-1.82	-0.05
Hotels and catering	1.71	-1.75	-0.03	3.38	-3.80	-0.17
Other goods and services	0.65	-0.69	0.01	1.31	-1.34	0.09
Total ex tariff schedules and seasonal food	**0.90**	**-0.90**	**-0.01**	**1.62**	**-1.78**	**-0.17**
Total	**0.56**	**-0.56**	**-0.01**	**1.00**	**-1.10**	**-0.11**

TABLE 7 : EFFECTS OF ROUNDING ON THE PRICES

Sector	Average price in francs	weight (in %)	Type of rounding (en %)					
			Higher euro centime	Higher tenth of euro	Lower euro centime	Lower tenth of euro	Nearest euro centime	Nearest tenth of euro
Food	12.3	13.1	0.20	2.48	-0.27	-2.42	0.00	0.00
Alcohol and Tobacco	27.6	1.8	0.08	1.14	-0.12	-1.07	0.00	-0.02
Clothing and footwear	133.8	5.2	0.03	0.27	-0.03	-0.28	0.00	-0.01
Housing - water - gas electricity	330.9	3.8	0.01	0.10	-0.01	-0.10	0.00	0.00
Furniture household equipment and daily maintenance	61.8	5.1	0.05	0.52	-0.06	-0.52	0.00	0.01
Transport	14.8	10.6	0.17	1.94	-0.23	-2.14	0.01	0.19
Leisure and culture	38.1	6.5	0.10	0.83	-0.08	-0.91	0.00	0.01
Hotels and catering	35.0	7.6	0.09	1.02	-0.11	-1.02	-0.01	-0.05
Other goods and services	37.6	6.9	0.10	0.82	-0.07	-0.95	-0.01	0.35
Total ex special tariffs and fresh produce	24.2	61.8	0.11	1.27	-0.14	-1.32	0.00	0.07
Total	n.d.	100.0	0.07	0.79	-0.09	-0.82	0.00	0.04

the purposes of the exercise is naturally open to discussion, since the details of the actual psychological prices in euros are still unknown. The choice was therefore made on the basis of observation of the distribution of prices in francs.

Moreover, since psychological price schedules vary from one sector to another and, within a given sector, from one price range to another, the schedules in euros were defined for intersections of sectors and price ranges.
For each intersection, two schedules were chosen (*see Table 8*), one «fine» and one «broad». This choice relies on the assumption that the practice of retailors will adopt a two stage process. Rounding to a psychological price in the "fine" schedule involves only small variations and could therefore take place rapidly after the introduction of the euro. Psychological prices in the "broad" schedule would be the subject of introduction at a second stage by retailers.

The "fine" schedule is based on the fact that, most of the time, prices end in 0, 5 or 9 centimes and that, for higher price levels, the prices are often whole numbers. The "broad" schedule is based on the fact that within the prices in the "fine" schedule, some appear still more frequently (low prices ending in 50 or 90 centimes, whole numbers ending in 49, 90 or 99 francs for the higher price levels).

TABLE 8 : HYPOTHETICAL PSYCHOLOGICAL PRICE SCHEDULES IN EUROS

Sector	Ranges	Fine	Broad
Food ex fresh produce	0-1	c1=0 ou 5	--
	1-10	c1=0 ou 5	c2=50, 90 ou 95
	10-100	c1=0 ou 5	c2=50, 90 ou 95
Clothing	1-10	c1=0 ou 5	c2=50, 90 ou 95
	10-100	c2=0, 90 ou 95	d3=9, 9,90 ou 9,95
Durables	10-100	c2=0, 90 ou 95	d3=9, 9,90 ou 9,95
	100-1000	c2=0	e2=49, 90 ou 99
Other manufactures	1-10	c1=0, 5 ou 9	c2=0, 50, 80, 90, 95 ou 99
	10-100	c1=0 ou 5	c2=0, 50, 90 ou 95
	100-1000	c2=0	e1=0, 5 ou 9
Services	1-10	c1=0	c2=0 ou 50
	10-100	c2=0	e1=0 ou 5
	100-1000	c2=0	e1=0 ou 5

How to read the table :
c1 represents the final figure in euro centime, c2 the eurocentimes, e1 the final figure in euros, e2 the final two figures in euros and d3 the final three figures, centimes included.
For example the psychological prices used in the "fine" assumption for the intersection of the clothing sector and the 1 - 10 price range are those whose final figure in centimes is 0 or 5.

In the case of the "fine" schedule, systematic rounding to the higher psychological price or the lower psychological price gives rise to a variation of ±0.9% for the coverage considered here (giving ±0.6% for total inflation). The impact of rounding to the nearest psychological price is completely neutral. Based on the latter simulation ("fine" schedule and rounding to the nearest psychological price), simulations based on a broader schedule were carried out in the following manner.

Observation of price records in francs, while it made it possible to bring out the existence of psychological price schedules, also showed that the practice was not systematic. The frequency varies in particular very widely from item to item. The frequencies of use of psychological prices relative to intersections of sector and price range were therefore taken into account [(6)]. Moreover, again in the interests of realism, when the practice of rounding to a "broad" psychological price led to a price variation exceeding 20%, it was decided to round the price to a more «refined», and hence more credible, psychological price (for more details on the method used, *see box*).

In the final analysis, systematic rounding to the higher and lower psychological price of the broad schedule led respectively to a rise of 1.0% and a fall of 1.1% for total

CHANGEOVER TO THE EURO: LARGE-SCALE DISTRIBUTION TAKING THE LEAD

The changeover to the euro is not taking place at the same pace in the different types of retailing. While at an advanced stage in the case of large-scale retailing, it is still uneven for the smaller stores. This conclusion is the same for both the practice of dual pricing and the method of price-setting, but the disparities between the distribution circuits are not on the same scale for all the indicators.

According to the monitoring carried out by DGCCRF[1] at the end of October, dual pricing was general in hypermarkets and supermarkets. It was a little less widespread in the other sectors (75.8% of the prices observed), especially in services, although there was a tendency for this leeway to be made up. Generally speaking, the conversion rules were being properly respected (in 98.3% of cases). Here too, the service sector has lagged somewhat behind, although still with percentages above 90%. In addition, failure to respect the rounding rules seemed to be more connected with an attempt to set prices in round figures in the two currencies than any deliberate attempt to infringe the rules — rounding errors are in fact more frequently in favour of the consumer than at his expense.

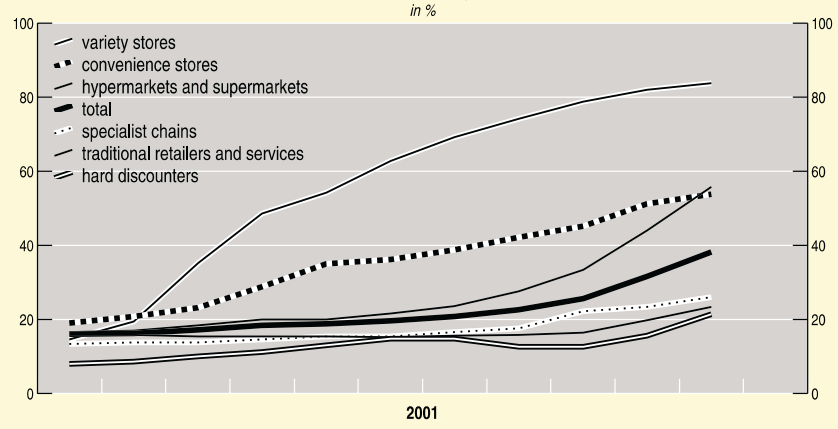
INSEE's "sensitive basket" makes it possible to monitor, for the 20,300 products whose prices are recorded monthly in traditional sales outlets[2], the changeover from francs to euros in the pricing adopted in the various distribution circuits. The indicator adopted here is the proportion of prices that are stable to dual conversion (F ÷ i ÷ F), which is a good indicator of the proportion of prices in euros.

The variety stores were the first to launch the changeover, starting in March 2001, with 35% of prices stable to dual conversion as against 17% for all types of retailing. In November, with the indicator standing at 84%, this form of retailing was well in advance of the others. It should be remembered, however, that only 3% of the price records for the sensitive basket, especially the food items, are observed in the variety stores and that there is probably a "brand effect" since most of the sales outlets of this type belong to the same group.

As regards the hypermarkets and supermarkets, progress has occurred later. There were a few signs of changeover recorded up to July (the proportion of prices stable to dual conversion rose from only 16% to 22% in

PROPORTION OF PRICES SET IN EUROS, BY TYPE OF SALES OUTLET

in %



(1)Direction Générale de la concurrence, de la consommation et de la repression des fraudes, the department responsible to the Finance Minister for consumer affairs and trading standards.
(2)By opposition to the prices, most often based on special tariff schedules, whose observation is carried out centrally (electricity, healthcare, taxis, rail transport, postal services, etc.).
(3)The number of observations actually carried out for this form of retailing in the sensitive basket is nevertheless limited (2%).

inflation. It was in the case of hotels and catering that the impact seemed potentially largest, followed by clothing and footwear, a sector where the practice of setting psychological price schedules is virtually systematic, and then by leisure and cultural goods, which include certain «electronic» durable goods that are also concerned in psychological pricing.

The orders of magnitude for the individual items shown here must in all cases be considered as lower and upper bounds, neither of which is at all likely to be reached in practice. It is in fact most unlikely, given the state of competition, that all economic agents would co-ordinate their rounding actions in the same direction. It can also be noted that the impact of systematic rounding to the nearest "broad" psychological price is not entirely negligible, being slightly negative for overall inflation (- 0.1%) [7]. ■

(6) It should again be stressed that the exercise carried out here is based on a bold assumption. For lack of being able to observe for the present the choice and frequency of application of psychological price schedules in euros, these have been defined on the basis of what is currently found for the distribution of prices in francs of the products in question.
(7) This means that the «broad» conversion to the nearest psychological figure in francs in fact leads to price falls. For example, 199 francs makes almost 29.95 euros, but 29.95 euros is equivalent in reality to only 196.46 francs.

CHANGEOVER TO THE EURO: LARGE-SCALE DISTRIBUTION TAKING THE LEAD (CONTINUATION)

seven months for the hypermarkets and from 17% to 26% for the supermarkets), but the changeover then accelerated as the months passed to reach 55% and 57%, respectively, in November. The movement began with food products and mass consumption manufactures in August, followed by clothing in September. The convenience stores, concerned almost exclusively with food products, began the process in April. In November, more than half the prices recorded in this type of retailing were stable to dual conversion.

Traditional retailing and services, for their part, showed no significant movement before October (20% of prices were stable to dual conversion in that month). Here again, the progress since October has been due mainly to filling stations belonging to the oil majors, which triggered off the conversion of the pumps to euros, at a time when the movement had still not begun in the hypermarkets.

Finally, the hard-discounters bring up the rear, with only 21% of prices stable to dual conversion in November(3).

The contrast between large-scale distribution and smaller stores is particularly marked for food products and manufactures ex clothing and energy. It is less distinct in the other sectors: clothing, where the specialist chains occupy an intermediate position between hypermarkets and traditional stores; and energy, where, as has been seen, the situation is the reverse. The objection could nevertheless be raised that the classification used for these two sectors does not make it possible to distinguish the sales outlets belonging to distribution networks from those that are independent, the former probably being less autonomous in their price-setting policy.

All in all, it is indeed the more concentrated (large-scale) forms of retailing, followed by the non-independent traders (chains, networks) that seem to be furthest ahead in the changeover to the euro, even though in November 2001 the franc seemed still to be in majority use as regards the setting of price tags (4). The small independent traders and the sales outlets for services, for their part, have concentrated until now mainly on dual pricing, with the price schedules themselves still mainly in francs. ■

(4) The proportion of prices stable to dual pricing nevertheless exceeded 50% in the variety stores, the convenience stores and, for food and manufactures ex clothing and energy, in the hypermarkets and supermarkets.

Conclusion

The main point emerging from the analysis set out in this article is that the items for which the changeover to the euro has taken place earliest (food ex seasonal food and manufactures ex clothing and durables) belong both to those groups of product whose prices households are particularly attentive to and those whose prices have tended to be more dynamic in the recent past. This probably explains why households fear that the changeover to the euro is liable to push inflation up. Nevertheless, these fears need to be allayed, since these price rises are sufficiently occasional in nature not to have led to a genuine slippage in the overall index. On the contrary, against a background of falling oil prices and a deteriorating economic situation, the outlook for French inflation is downward.

Moreover, the coincidence in timing between the changeover to the euro and the rise in prices of certain products does not prove that the changeover itself is inflationary, since there can be other economic reasons explaining the slight acceleration in underlying inflation in recent months (for example, second-round effects linked to the rise in oil prices and the depreciation in the euro that took place last year). In these circumstances, the changeover to the euro would merely be the occasion to proceed to adjustments that were in any case in the pipeline. Certain price rises have for this reason simply been brought forward a few months, but the inflationary impact is in reality negligible, being very temporary and due to a simple shift in the timetable for updating of price tags.

Finally, it turns out that many sectors are still very little involved in the changeover to the single currency. These include, first of all, those where psychological pricing is widespread (clothing, durables, services). For these, the impact of the changeover could well be more substantial, but the calibration exercises show that the final result cannot be predicted at this stage, since it depends very closely on future rounding practices. Even if one were to assume that all agents combine to apply systematic rounding up or down, the impact on inflation would be +1% or -1.1%. Since these are extreme cases, the final result is likely to be closer to the middle of the range. The introduction of new price schedules will probably be spread over time, sometimes in stages, in other cases only when product ranges are renewed. This means that definitive conclusions regarding the changeover to the euro and its effects on prices cannot be drawn up until some time has passed. ■