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Contents

The euro, five years later : what has happened to prices ?

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Introduction

Now that the euro notes and coins have been in circulation for over five years, it seems a good time to analyse any effect which the euro has had on prices. Even today, the introduction of the euro[1] is often linked to price rises, whereas in reality inflation measured by the harmonised index of consumer prices (HICP) has remained moderate since the changeover, especially in view of the fact that crude oil prices have risen very steeply in the past few years, something which has nothing to do with the euro. Surveys have shown that the fear of price rises was already present even before the introduction of the euro. In November 2001, 70 p.c. of consumers in the euro area were afraid of being adversely affected by the changeover. In Belgium, the figure was 64 p.c. After the changeover in 2002, over 80 p.c. of consumers in the euro area did in fact feel that they had been adversely affected by the switch, or that prices had often been rounded up. The changeover generated a similar impression among Belgian consumers. Even today, more than five years after the introduction of the euro notes and coins, that feeling is still very persistent. At the end of 2006, the great majority of the population, both in the euro area as a whole and in Belgium, were still convinced that the euro had undeniably driven up prices. This subject recently became highly topical once again, particularly when Slovenia joined the euro area on 1 January 2007.

The changeover to the euro therefore seems to have severed the link between measured inflation and perceived inflation. This article intends to examine this issue in depth, looking at both the euro area and Belgium. Where more data are available for Belgium, the analysis is confined to the Belgian economy.

The article is arranged as follows. First, it analyses the movement in prices over the five years following the changeover to the euro. Certain microeconomic aspects of the price adjustments are also examined, namely the trend in the frequency of the price changes, the switch to new attractive prices in euro and the impact of the changeover on the diversity of prices in the economy. These points are important because they show just how fundamental are the implications of the euro changeover. The second section analyses the trend in inflation perceptions as indicated by the European Commission's consumer survey, and shows that the switch to the euro actually severed the link between measured inflation and perceived inflation. It also considers a number of factors which may have contributed to the breaking of that link. The final section presents the conclusions.

(1) In this article, the introduction of the euro and the changeover refer to the introduction of the euro notes and coins on 1 January 2002.

1. What has happened to prices ?

1.1 Inflation has remained low but the dispersion of relative price movements has increased

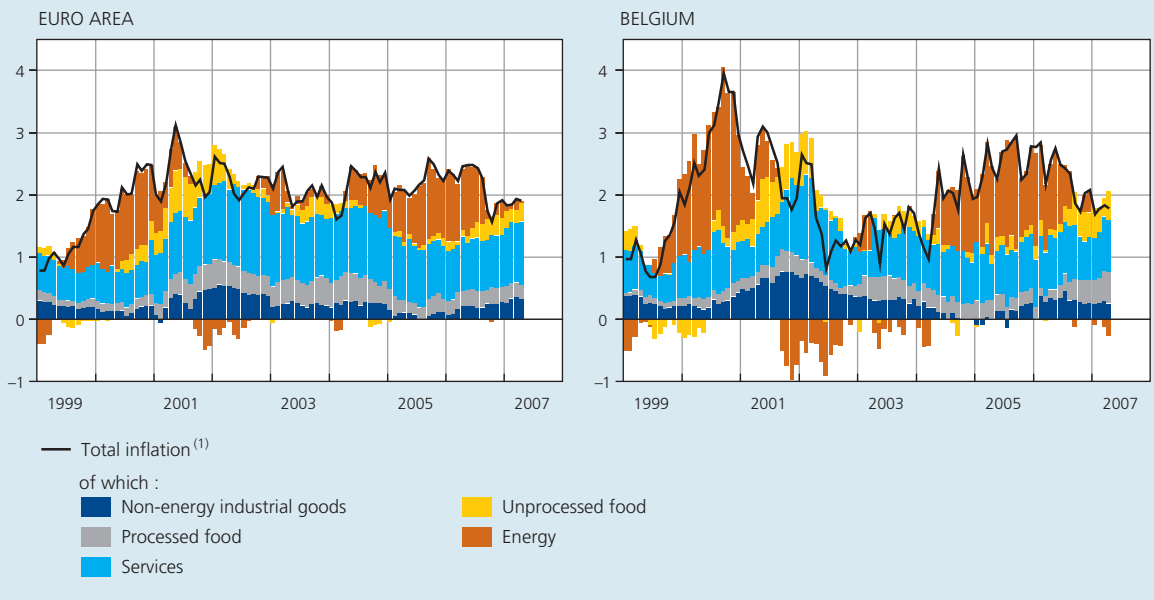
In the five years following the introduction of the euro, i.e. the period from 2002 to 2006, euro area inflation averaged 2.2 p.c. Although this is relatively low in historical terms, inflation slightly exceeded the 2 p.c. threshold characterising the definition of price stability in the euro area. This is due primarily to the fact that the energy component, propelled by crude oil prices, made a substantial positive contribution to inflation, especially in the period 2004-2006. The underlying trend in inflation, which excludes the prices of energy and unprocessed food, slowed during the period, falling from 2.5 p.c. in 2002 to 1.5 p.c. in 2006, mainly as a result of moderate wage growth and the euro's appreciation. Nevertheless, the initial impact of these factors was masked to some extent, because underlying inflation was pushed up by a series of administrative price changes, which were particularly marked in 2004. In 2007, this last factor again exerted considerable upward pressure following the increase in VAT in Germany.

In Belgium, inflation followed much the same pattern as in the euro area over the same period, although the average rate was slightly lower at 2 p.c. compared to 2.2 p.c. in the euro area. Yet there are two major differences. First, inflation in Belgium is more sensitive to crude oil price changes, both up and down, owing to the greater weight of petroleum products in the Belgian consumption basket, and the lower level of excise duty on those products. Second, primarily administrative price changes essentially exerted downward pressure, as a result of the abolition of the radio and television licence fee in Flanders (2002) and Brussels (2003), and its reduction in Wallonia (2003), and the liberalisation of the network industries.

During the five years following the introduction of the euro, inflation remained low and was only a little higher than in the preceding five years – averaging from 1.6 p.c. to 2.2 p.c. in the euro area –, but in contrast there was a substantial increase in the dispersion of relative price movements. The standard deviation of price changes for the various products, which is a measure of dispersion, in fact increased from 2.5 to 3.1 between the two periods in the euro area. In Belgium, the increase was actually even more marked, as the standard deviation went up from 2 to 5.1. The interval of two times two standard deviations

CHART 1 INFLATION

(contribution of the various components, percentage points, unless otherwise stated)

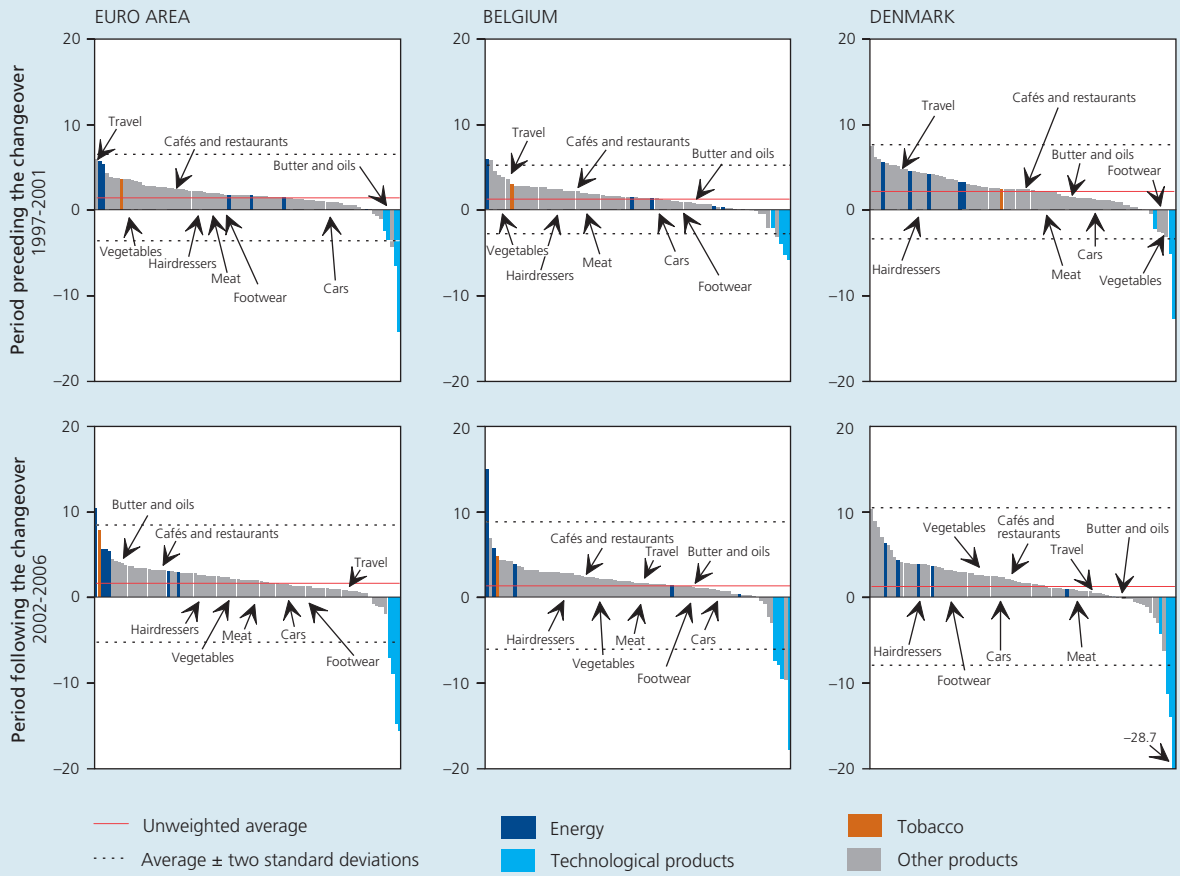


Sources : EC, ECB, NBB.

(1) Percentage changes of the HICP compared to the corresponding month of the previous year.

CHART 2 DISPERSION OF RELATIVE PRICE MOVEMENTS

(annual percentage changes)



Sources: EC, NBB.

around the average – also known as the 95 p.c. confidence interval, since it contains 95 p.c. of observations in the case of a normal distribution – therefore also increases significantly. Both the number of products for which the price has risen sharply and the number for which the price has fallen sharply displayed an upward trend in the past five years compared to the period 1997-2001. That phenomenon is evident for both the euro area and Belgium, but also for countries outside the euro area such as Denmark. It can therefore be classed as a structural phenomenon which has nothing to do with the euro but can be attributed partly to the progressive globalisation, whose impact on inflation primarily takes the form of changes in relative prices: higher prices for commodities (particularly crude oil) and lower prices for manufactured goods. Over the past five years, there have indeed been more energy products among the goods recording substantial price increases, while ever larger price reductions are apparent for a growing number of high technology products. Apart from the impact of cheaper imports from the emerging economies, this situation also reflects the rising productivity in those sectors and the fact that the prices of these products are being measured increasingly accurately, i.e. with adjustments for quality improvements. These findings may have an influence on inflation perceptions if consumers are more selective in dealing with information on price reductions than in the case of information on price rises, or if their perceptions tend to be based more on the observed movement in prices at sales outlets, i.e. before adjustment for quality changes (cf. also section 2 of this article).

1.2 Inflation in 2002 : impact of the euro changeover was limited, but concentrated in certain sectors

An acceleration in inflation from 2.0 p.c. in December 2001 to 2.6 p.c. in January 2002 is apparent in both the euro area and Belgium. However, it is largely attributable to a smaller negative contribution by the energy component – that contribution had become negative following the fall in oil prices after 11 September 2001 – and a rapid acceleration in the rate of price increases for unprocessed food, especially fruit and vegetables, as a result of adverse weather conditions. The acceleration in inflation caused by these factors cannot reasonably be attributed to the euro changeover.

Nonetheless, that does not prevent numerous studies from concluding that the euro changeover did in fact drive inflation up in 2002. But all those studies also point out that this influence was relatively limited, since it was confined to a certain number of sectors. The European statistical institute (Eurostat, 2003) thus established that the inflationary effect had been concentrated in the service sector, whereas the impact on the general price level in 2002 was most likely between 0.12 and 0.29 percentage point. The national central banks of the Eurosystem conducted similar exercises and generally arrived at comparable orders of magnitude. For Belgium, the impact of the euro changeover on inflation in 2002 was estimated at around 0.2 percentage point ; it was similarly concentrated in the service sector (Cornille, 2003). Even in the countries where the estimated impact was greatest – e.g. the Netherlands, where it was assessed at 0.6 percentage point (Folkertsma, 2002) – it is still limited overall in relation to the increase in perceived inflation following the euro changeover (cf. section 2).

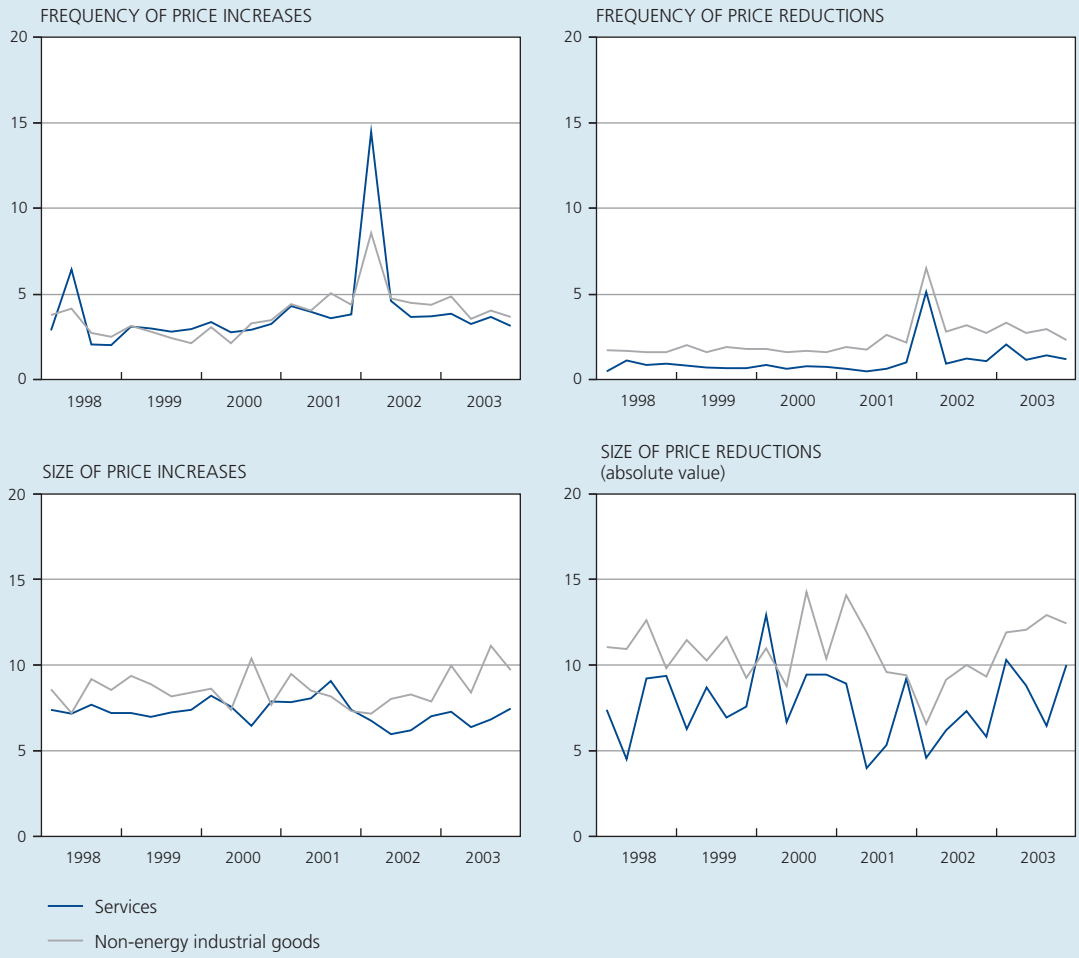
The factors often cited in the literature to explain the price rises linked to the euro changeover are as follows : the lack of price transparency and competition in certain sectors (Dziuda and Mastrobuoni, 2006), the complexity of the conversion rates (Ehrmann, 2006) and the existence of price adjustment costs – also called menu costs, by analogy with the cost of amending restaurant menus – which, at the time of the euro changeover, led to a concentration of price changes which would otherwise have been spread over a longer period (Gaiotti and Lippi, 2004 ; Hobijn, Ravenna and Tambalotti, 2006 and Angeloni, Aucremanne and Ciccarelli, 2006).

Thus, on the basis of a representative sample of 50 products included in the HICP for various euro area countries (Austria, Belgium, Italy and Germany), which cover 60 p.c. of the euro area, Angeloni, Aucremanne and Ciccarelli (2006) established that the frequency of price changes – reflecting the proportion of prices changed during a given month – generally presents a fairly flat profile. Conversely, it was observed that, precisely during the euro changeover period – and especially in the first quarter of 2002 – the number of both increases and reductions in prices was considerably greater, albeit for a short period. The increase in price changes was accompanied by a slight fall in their average size as measured by the average percentage change of the prices actually adjusted during the month considered[(1)]. That is compatible with the existence of fixed costs associated with price changes, implying that prices are only adjusted when the benefits outweigh the costs involved. Price changes will therefore be relatively infrequent, but their size will be relatively large. The obligation to convert all prices to the new currency unit following the euro changeover implies the temporary disappearance of the price adjustment costs associated with genuine price changes (i.e. changes extending beyond straightforward conversion). It is therefore logical to see a short-lived increase in the number of price changes and a reduction in their size.

The number of price changes observed for non-energy industrial goods displayed a relatively symmetrical pattern in that the increase in the number of price increases more or less equalled the increase in the number of price reductions. However, the situation is different in the case of services, where the sudden though short-lived increase in the frequency of price changes at the time of the switch to the euro is not only far more marked than in the case of non-energy industrial goods, but is also highly asymmetrical in that especially the price increases were far more numerous than usual. That is consistent with the studies of the euro's impact on prices, which universally showed that the impact was concentrated mainly in the service sector. That is also the sector generating the most complaints about unjustified price increases, originating both from the general public and from the media. But even in the case of services, it must be said that this was a temporary phenomenon ; following the euro changeover, price adjustment rapidly returned to normal.

(1) It should be pointed out that these price changes between December 2001 and January 2002 were duly calculated as all changes in excess of normal rounding off (to the second decimal place or euro cent), associated with a simple conversion of national currencies into euro. The increase in the number of price changes and the reduction in their size are therefore not the artificial result of normal rounding off.

CHART 3 FREQUENCY AND SIZE OF PRICE CHANGES (1)
(percentages)



Source: Angeloni, Aucremanne and Ciccarelli (2006).
(1) Weighted average for the following countries: Austria, Belgium, Italy and Germany, which together represent almost 60 p.c. of the euro area.

1.3 A structural change in pricing practices

Although the analyses presented above suggest that the changeover had only a minor impact on inflation in 2002, that certainly does not mean that there has been no major structural change in pricing practices.

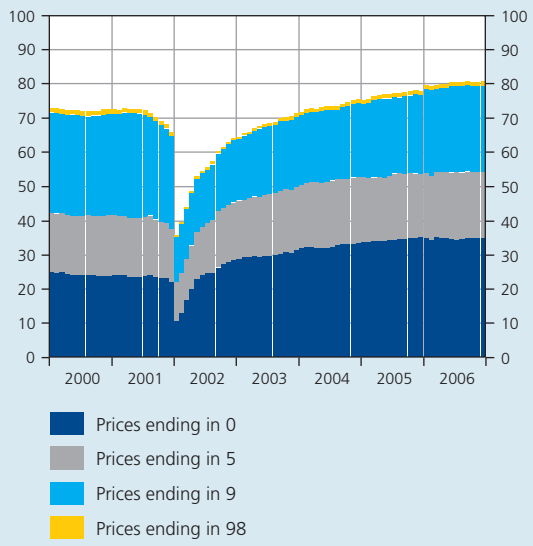
The modification of pricing practices following the introduction of the euro can be illustrated by the change in the proportion of prices ending in 0, 5, 9 and 98. There is empirical evidence, not only in Belgium but also in Europe and elsewhere, that these figures are used more often than others in the final position, to create what are called "attractive prices" (1). Since the final figure changes once prices are converted to euro, it is logical to expect prices to be progressively adjusted so that 0, 5 or 9 is again in the last position. Consequently, the change in the proportion of attractive prices offers a measure of the degree to which prices have been adapted to their new scale. Since these data are not available for the other euro area countries, the analysis is confined in this case to Belgium.

In view of the change in the proportion of attractive prices in Belgian francs within a representative sample of prices charged in the economy – namely over 100,000 monthly price readings underlying the price index and covering

(1) Two reasons are normally given for the very widespread use of these figures. First, round figures which are easy to add up and make it easy to give change where required are said to make transactions simpler. This generally refers to prices ending in 0 or 5. The second reason often mentioned concerns the psychology of the customers who, taking no notice of the final figure(s), are said to give the sellers an indirect incentive to maximise their profit by using prices ending in 9 or 99. In practice, prices ending in 98 are also considered to be psychological prices. Overall, prices ending in 0, 5 or 9 – to which must be added prices ending in 98 – are generally referred to as attractive prices.

CHART 4 PROPORTION OF ATTRACTIVE PRICES IN BELGIUM [1]

(percentages)



Source : NBB.

(1) Prices comprising three or four decimals are excluded from the analysis, as are prices comprising one or two decimals in Belgian francs, because they are considered to be little affected by the use of attractive prices.

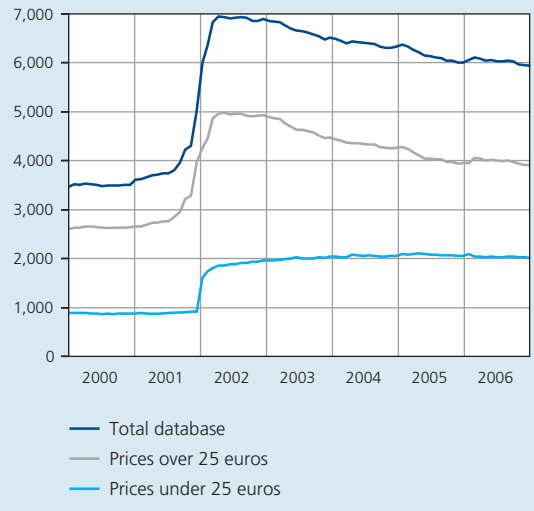
about 70 p.c. of the basket of products included in the index – it seems likely, as already pointed out in the past, that the adjustment to the euro had already begun in mid 2001. However, the percentage of prices adjusted as a result of that was relatively small, since in January 2002 the proportion of attractive prices in euro was only 36 p.c., compared to 73 p.c. of prices in Belgian francs in the year 2000.

Price adjustment continued after the introduction of the euro. Initially, during the first five months of 2002, the adjustment process was rapid (the share of attractive prices increasing by an average of 4 percentage points per month), but subsequently slowed down. In February 2004, i.e. twenty-four months after the introduction of the euro, the proportion of attractive prices was twice as high as in January 2002, thus reaching 73 p.c., or a level similar to that prevailing in 2000 in Belgian francs. Twenty-nine months later, in June 2006, the proportion of attractive prices totalled 81 p.c., a level which remained unchanged for the rest of 2006. The services and processed food components account for most of the difference compared to the situation in Belgian francs for the total proportion of attractive prices. These are also the two components where price adjustments were the most rapid. Although this more or less stable level is higher than that prevailing in Belgian francs, it seems that the adjustment to attractive prices has now practically come to a halt. Nevertheless, the full adjustment process will have taken almost five years.

Furthermore, the prices with the biggest increase in share are those ending in 0, which represent over one-third of all euro prices. In euro, some of these correspond to prices without any decimals, which are often used for "high" prices. Prices ending in 5 are also more common, but to a lesser extent. Conversely, the proportion of prices ending in 9, like those ending in 98, is still below that seen for prices in Belgian francs. The growing number of prices ending in 0 is due mainly to non-energy industrial goods, at the expense of prices ending in 9. The increased prevalence of prices ending in 0 and 5 – over half of the prices recorded, compared to around 42 p.c. before the introduction of the euro – may also be connected with the issue of the use of 1 and 2 cent coins, although that does not explain the causality. It is probable that, while prices end in 0 or 5 to avoid their use, it is also the case that some people consider the 1 and 2 cent coins to be useless because the majority of prices end in 0 or 5.

Another illustration of the change in the structures of prices charged following the introduction of the euro is the difference in the degree of use of the range of available prices. In this connection, we look at the change in the number of prices used in Belgium, on the basis of the number of different prices in the database analysed, regardless of the products to which they correspond. The

CHART 5 NUMBER OF PRICES USED IN BELGIUM [1]



Source : NBB.

(1) Prices comprising three or four decimals are excluded from the analysis, as are prices comprising one or two decimals in Belgian francs.

number of different prices rose from around 3,500 in 2000 to just under 7,000 from 2002, which means that almost twice as many different prices were recorded in the databank from 2002. That indicates that a considerable change took place in the price structure, a change to which consumers have had to become gradually accustomed. However, the increase in the number of different prices is less than the rise in the number of possible prices, which was multiplied by around 2.5 at the time of the switch to the euro(1). One can therefore deduce that the degree of use of the range of available prices is less in euros than it was in Belgian francs.

That is particularly apparent in the case of prices under 25 euros. Their number increased from just under 1,000 in 2000 to just over 2,000 in 2002, or again roughly double. In Belgian francs, almost all prices between 1 and 1,000 francs were used, whereas around 500 potential prices in euros are not used; there are in fact 2,500 prices between 0.01 and 25.00 euros. The same analysis, but confined to attractive prices below 25 euros, indicates that 100 p.c. of possible attractive prices in Belgian francs were used, compared to only 80 p.c. of available attractive prices in euros. However, the latter are more numerous and therefore more diverse than was the norm before 2002.

The number of different prices also presents a striking picture: from July 2001 there was a gradual increase, followed in January 2002 by a strong surge, which clearly illustrates the regime shift represented by the switch to the euro, and similarly the scale of the potential effort which consumers have to make to adjust to this new system. While the number of different prices is relatively stable in the case of prices under 25 euros, it starts to diminish slowly after the final quarter of 2002 in the case of prices over 25 euros. This suggests that the adjustment continued throughout the period, but the stabilisation seen in 2006 nevertheless indicates that the very great majority of prices were gradually adapted to the new range of prices in euros.

Changes in the price structure following the introduction of the euro were also seen in other euro area countries; however, data on attractive prices are rarely available. In Germany (Hoffmann and Kurz-Kim, 2006), the euro changeover reduced the number of prices potentially available. Nonetheless, the number of different prices increased, but to a lesser extent than in Belgium so that the proportion of attractive prices declined. Moreover, these adjustments to the new price ranges were more rapid in Germany than in Belgium. In Austria (Glatzer and Rumler, 2007), the situation is more like that in Belgium in regard to the speed of price adjustments. Conversely, the proportion of attractive prices in mid 2006 is more or less the same as that seen in the years preceding the introduction of the euro. Moreover, there does not appear to be any divergence between the various types of attractive prices, the percentage of each remaining relatively stable.

Summarising this section, it is apparent that the generally limited impact of the introduction of the euro on inflation in 2002 was concentrated in certain sectors. Since then, inflation has remained low but there has been greater dispersion in the movement in relative prices, both in the euro area countries and in countries outside. At microeconomic level, the process of price adjustment, which seems relatively slow, gave rise to a new attractive price structure and an increase in the number of prices used in the economy. The problems experienced by consumers in getting used to the euro are probably linked to such structural changes. These observations taken together also suggest that the process of adjusting prices to the euro is correctly reflected in the data used to measure inflation, so that the HICP is an accurate measure of inflation even if consumers may see things differently.

2. What has happened to perceived inflation?

This section of the article analyses the movement in perceived inflation and investigates whether the euro changeover severed the link between inflation and perceived inflation. Perceived inflation is subjective, by definition, and reflects how consumers themselves perceive or observe the movement in prices. Perceived inflation will therefore not depend solely on the actual inflation picture, but also on the degree to which consumers are sensitive to price movements. That sensitivity may vary, both between individuals and over time. Perceived inflation cannot be observed directly and is therefore difficult to measure.

2.1 Perceived inflation according to the European Commission consumer survey

The survey conducted by the European Commission (EC), which questions around 23,000 consumers in the euro area every month – including about 1,600 in Belgium – contains a question which aims to ascertain the consumer's opinion on how prices have moved in the past year. The actual question is: "*How do you think that consumer prices have developed over the last 12 months? They have A(1) risen a lot, A(2), risen moderately, A(3),*

(1) Since there are 40 possible prices in Belgian francs between 1 and 40, compared to 100 in euros between 0.01 and 1.00 euro.

CHART 6 INFLATION AND PERCEIVED INFLATION [1]

(percentage changes compared to the corresponding month of the previous year)

Sources: EC, NBB.

(1) Standardised balance of opinions obtained from the EC survey, with HICP inflation as the benchmark.

risen slightly, A(4), stayed about the same, A(5), fallen, A(6) don't know". For each country *i* in period *t*, a balance of opinions B_{it} is calculated as the difference between a weighted average of the percentage of persons who responded that prices have increased in the past twelve months and a weighted average of the percentage of persons who responded that prices have stayed the same or fallen. The weightings of the various possible responses are the same for all countries. The options "risen a lot" and "fallen" are accorded twice the weighting of the options "risen moderately" and "stayed the same". The possible responses "risen slightly" and "don't know" are not explicitly included in the balance of opinions, which is calculated as follows:

$$B_{it} = A_{it}(1) + 0{,}5A_{it}(2) - 0{,}5A_{it}(4) - A_{it}(5) \quad (1)$$

The balance of opinions, which may vary between –100 and 100, provides a qualitative indication of the direction in which consumers consider that inflation has moved in the preceding year. However, that qualitative indicator can be converted by a relatively simple standardisation procedure into a quantitative indicator of perceived inflation (Aucremanne, Collin and Stragier, 2007). That indicator is therefore accorded the same average value and the same scale as HICP inflation:

$$\pi^{P}_{it} = \frac{(B_{it} - \overline{B}_i)}{S_{B_i}} S_{\pi_i} + \overline{\pi}_i \quad (2)$$

π^{P}_{it} corresponds to perceived inflation quantified for country i in period t. $\overline{\pi}_i$ and S_{π_i} are respectively the average and the standard deviation of HICP inflation, while $\overline{B}_i$ and S_{B_i} are the corresponding statistics for the balance of opinions for country i. These averages and standard deviations are calculated over a reference period for which there is considered to be a stable relationship between measured and perceived inflation. In the present case, that is the period between January 1996 and December 2001 which is regarded as neutral and which predates the changeover. The averages and standard deviations are specific to each country, as the general public's sensitivity to inflation may vary from one country to another(1). The data conversion formula thus explicitly takes account of differences in inflation sensitivity.

2.2 Impact of the euro changeover on perceived inflation(2)

If the calibrated measure of perceived inflation is shown in chart form alongside HICP inflation for the various euro area countries, it is apparent that the two more or less coincide during the reference period. Since the euro changeover in January 2002, however, these two series clearly diverge. While HICP inflation in the euro area continued to hover around 2 p.c. between 2002 and 2006, perceived inflation increased very sharply during 2002. It later subsided, though without reverting to a level corresponding to the relation between both variables prevailing during the reference period. On the basis of the quantitative indicator of perceived inflation defined earlier, the perception gap in the euro area peaked at over 2.5 percentage points at the beginning of 2003. Perceived inflation subsequently declined steadily, becoming stable from the second quarter of 2004, although it was still around 0.8 percentage point above the level which the HICP inflation figure for that period would have implied during the reference period.

While the link between inflation and perceived inflation was broken in 2002 in all the euro area countries, there are nevertheless significant mutual variations. In broad terms, three scenarios can be identified. The perception gap was totally eliminated in Germany and the Netherlands by the end of the period under review. It has recently narrowed significantly in Ireland, Italy and Portugal, while in Austria, Belgium, Finland, France, Greece and Spain it has remained substantial so far. In a number of countries, including Belgium, the perception gap has even widened of late, because perceived inflation did not mirror the fall in inflation recorded in the autumn of 2006.

If the same chart analysis is conducted for Denmark, Sweden and the United Kingdom, which are not members of the euro area, we find a close correlation between inflation and perceived inflation, both before and after January 2002. This clearly indicates that it was indeed the introduction of the euro which caused the break in inflation perception in the euro area. In that regard, it is interesting that, after the introduction of the euro in Slovenia on 1 January 2007, perceived inflation also began to diverge from HICP inflation (see box 1).

(1) Increased sensitivity in a particular country may be reflected in an average value for the balance of opinions which is high relative to average inflation (in that country, inflation perception is greater on average) and/or a standard deviation for the balance of opinions which is high relative to that for inflation (a change in inflation of a given magnitude leads to a more pronounced change in inflation perception).

(2) Standardised balance of opinion from the EC survey, with HICP inflation as the benchmark.

Box 1 – Inflation and perceived inflation following the introduction of the euro in Slovenia

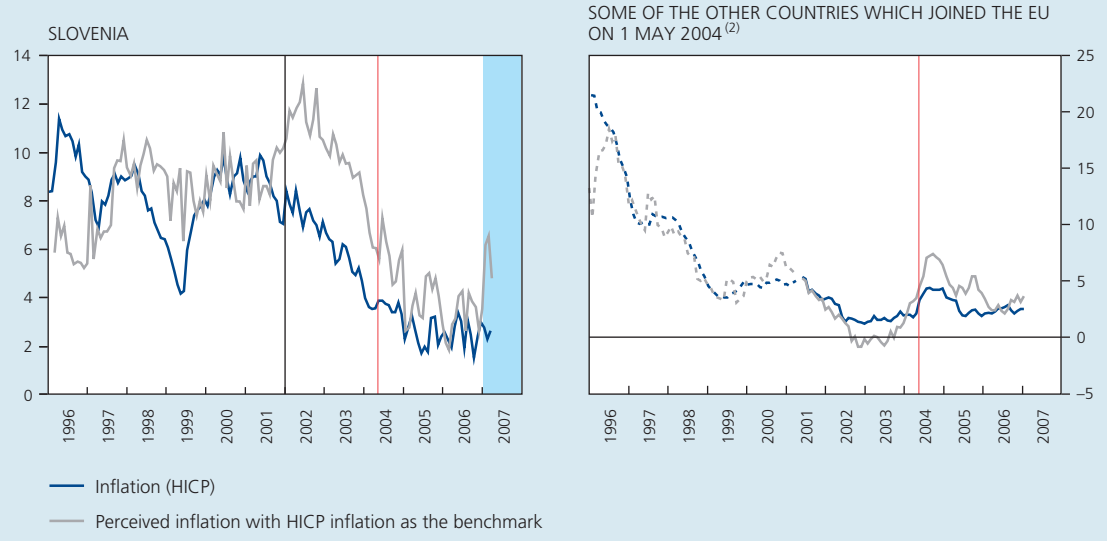
On 11 July 2006, the Council of the European Union (EU) accepted Slovenia's application to become the thirteenth member country of the euro area from 1 January 2007. Slovenia was thus the first new Member State to change to the euro, which became legal tender there on 1 January 2007, replacing the Slovenian tolar.

When the euro was introduced in Slovenia, several lessons were drawn from the experience of introducing the euro on 1 January 2002. Thus, well before the euro changeover, an intensive publicity campaign was launched, during which a non-technical information leaflet was distributed to the population. In addition, dual pricing was made compulsory from May 2006, and price monitoring teams were set up to check that the price conversion was applied correctly. Finally, it was decided that the period in which the euro and the tolar were both legal tender should be limited to two weeks.

According to a recent European Commission report (2007), the introduction of the euro in Slovenia can be classed as successful, partly thanks to the measures taken but also because the euro notes and coins were already in widespread use in the Slovenian economy before the launch. The price increases associated with the euro were moderate, and were concentrated in a few sectors. According to Eurostat calculations, the introduction of the euro had an impact of no more than 0.3 percentage point on inflation, and according to the Slovenian Institute of Analysis and Macroeconomic Development (IMAD), that impact came to 0.24 percentage point (IMAD, 2007). These estimates are very similar to the 2002 findings in the euro area.

INFLATION AND PERCEIVED INFLATION[1] IN SLOVENIA AND IN A NUMBER OF OTHER NEW MEMBER STATES[2]

(percentage changes compared to the corresponding month of the previous year)



Sources : EC, NBB.

(1) Standardised balance of opinions obtained from the EC survey, with HICP inflation as the benchmark.

(2) Owing to the limited availability of data, only Estonia, Hungary and the Czech Republic were included in the analysis (indicated by a dotted line in the chart) for the period between January 1996 and May 2001. From May 2001 the analysis was supplemented by data for Cyprus, Latvia, Lithuania, Poland and Slovakia. However, for Malta the data available are insufficient, even after May 2001, to be included in the analysis.

Despite the detailed publicity campaign which preceded the introduction of the euro in Slovenia, the Slovenians were also very much afraid that prices would rise. An EC survey indicates that at the end of 2006, two-thirds of the Slovenian population feared that the introduction of the euro would lead to unfair pricing and cheating; that percentage was comparable to that recorded in the euro area countries. In Slovenia, too, the switch to the euro led to a break between inflation and perceived inflation.

Slovenia differs from the other countries which joined the EU on 1 May 2004 in that a perception gap had already appeared there when the euro was introduced in the euro area countries; that gap gradually diminished, but suddenly reappeared in January 2007 when the euro was actually introduced in Slovenia. One factor which may have encouraged this phenomenon was that the Slovenian economy had already been largely converted to the euro before the official launch in 2007.

Immediately after their accession, most of the countries which joined the EU in May 2004 experienced a short-lived surge in inflation, due essentially to indirect taxes and other administrative price changes. In addition, integration into the EU's common agricultural policy and the abolition of the remaining trade barriers triggered a substantial increase in food prices. This caused consumers in the majority of those countries to consider that the price increases were greater than those indicated by the official inflation figures. In other words, joining the EU created a perception gap, but it was less persistent than that seen in the euro area countries after the introduction of the single currency.

Nonetheless, the chart comparing actual inflation and perceived inflation is often called into question since a comparison is being made between two different concepts, namely perceived inflation, which is qualitative, and a quantitative inflation rate (cf. in particular Brachinger, 2006). However, the approach presented here – as described above – is based on explicit quantification of the EC balance of opinions. Moreover, the econometric approach used by Aucremanne, Collin and Stragier (2007), presented in box 2, confirms that inflation and the quantification of perceived inflation were very closely linked during the reference period, both in the panel of euro area countries and in the control panel comprising Denmark, the United Kingdom and Sweden. While this relation was preserved in the control panel, it displayed a statistically significant break in the panel of euro area countries as soon as the data relating to the period after the euro changeover were taken into account in the analysis. These results therefore fully confirm the observations described earlier, which are based purely on a chart analysis and clearly indicate a break in the link between inflation and perceived inflation in the euro area after the changeover.

Box 2 – Econometric testing of the emergence of a perception gap following the introduction of the euro

Numerous studies have analysed how the introduction of the euro influenced consumers' perception of inflation by showing charts comparing the EC balances of opinions and HICP inflation. The majority of these studies are confined to a single euro area country. Conversely, Aucremanne, Collin and Stragier (2007) conduct an econometric test for all euro area countries to ascertain whether the introduction of the euro caused a break in the link between inflation and perceived inflation. The test used, which is based on the standardised balances of opinions mentioned above, can be broadly divided into two phases.

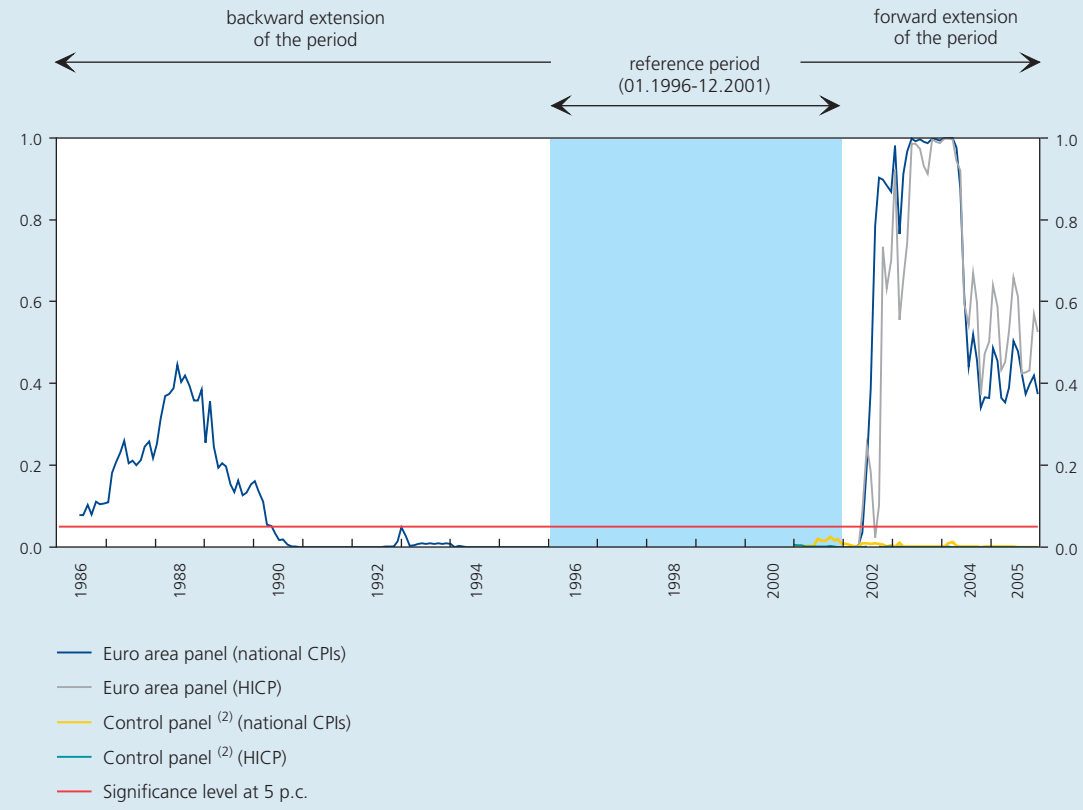
Before studying the existence of a break in the link between inflation and perceived inflation, it is vital to check whether the quantified measure of perceived inflation tracks HICP inflation during the reference period. For that purpose, it is sufficient to examine whether the difference between the two – known as the "perception gap" – is stationary around a zero average value. In other words, if the standardised balances of opinions are to be actually valid as a quantified measure of perceived inflation, they must not deviate systematically in either direction from measured inflation during the reference period, and any differences must be fairly short-lived.

Finally, to examine whether the switch to the euro caused a break, that same stationarity test is repeated for periods to which one month is progressively added. The test period initially extending from January 1996 to December 2001 is thus increased recursively until eventually it covers the period from January 1996 to December 2005. Here it should be pointed out that the conversion of the balances of opinions is based solely on the data relating to the reference period, including for the longer horizons. It is therefore assumed that the general public's inflation sensitivity has remained unchanged, so that any differences in sensitivity will ultimately be reflected in deviations of perceived inflation from its pattern during the reference period. If those deviations are substantial, the perception gap will no longer be a stationary variable and a break will occur in the link between inflation and perceived inflation. The sooner the break occurs after January 2002, the greater the probability that it is actually due to the euro changeover (1). To highlight any role played by the changeover, exactly the same analysis is conducted for Denmark, the United Kingdom and Sweden. These countries form a control panel : in principle, no break is expected.

(1) However, it should be noted that this method cannot be expected to detect immediately a break caused by the changeover in January 2002. Instead, it will probably need a minimum number of data (like other statistical methods) before it can distinguish between a temporary gap and a structural break.

FORMAL TEST FOR THE EMERGENCE OF A BREAK BETWEEN INFLATION AND PERCEIVED INFLATION

(probability of a break (1))



Sources : EC, NBB.

(1) The existence of a break results from non-rejection of the null hypothesis whereby the gap between inflation and inflation perception is non-stationary. The null hypothesis is not rejected if the probability is over 5 p.c.

(2) The control panel consists of Denmark, Sweden and the United Kingdom.

Such stationarity tests can be conducted both for the euro area as a whole and for each country individually. However, in practice only eleven countries have been analysed, as the time series for Luxembourg is too short to be taken into account. The availability of data on the other countries is also fairly limited[1], so that problems of statistical significance might arise. If the samples are small, stationarity tests tend to give a false indication that the series is not stationary. That is why stationarity was also tested for a panel of euro area countries, instead of only for each country individually. That approach makes more efficient use of the available data, alleviating the problems of statistical significance. However, it does have one drawback: the resulting conclusions apply only to the whole of the panel considered, and not necessarily to each of the constituent countries.

What can we learn from the formal stationarity tests? As expected, it was difficult to show that the perception gap was stationary for the individual countries, even for the reference period. It was only for Belgium, Germany, the Netherlands and Portugal that the perception gap could be regarded as a stationary variable during the reference period. However, the panel analysis results undeniably tend towards stationarity, but if the test period is gradually extended (forward) it very soon becomes apparent that the perception gap is no longer a stationary variable. That is true of the gap between perception and HICP inflation for the euro area panel as soon as data relating to the period beginning in May 2002 are taken into account. That result does not really depend on the use of the HICP as the measure of inflation. The same conclusions can be drawn if this exercise is repeated using the national CPIs as the measure of inflation. In the case of the control panel, similar tests show that, whatever the underlying data (HICP or national CPIs), the perception gap is a stationary variable during the reference period and remains so if data extending beyond 2002 are progressively taken into account.

In order to measure the accuracy of the method used, the same test was conducted by progressively extending the test period into the past. Thus, beginning with the reference period, the period examined will ultimately extend from June 1986 to December 2001. The robustness test on the method used could only be conducted for the national CPIs, since the HICP did not exist until recently. In principle, the perception gap is expected in that case to remain a stationary variable. If that is not so, that implies that the link between real and perceived inflation has also been unstable in the past (and that it is therefore intrinsically unstable), so that no definite conclusions can be drawn from the instability which followed the changeover. This exercise shows that, for the euro area panel, the perception gap is stationary until data from before February 1990 are taken into account, i.e. after almost six years of observations have been added to the reference period. Instability is also evident on going even farther back into the past, albeit less marked than after 2002. The addition of pre-1987 data causes the probability of a break to fall again. This exercise therefore demonstrates that the instability seen in the period 1986-1995 (i.e. almost ten years) is less than that recorded over the period 2002-2005 (four years), which provides formal confirmation that the perception gap after the euro changeover is unusually large and persistent.

These findings are exactly what one might expect from a break in the link between real and perceived inflation following the switch to the euro. They are also validated by alternative quantification methods of the EC consumer survey results. These findings therefore support the conclusions drawn earlier on the basis of straightforward chart analysis, but are based on an econometric approach and are therefore less subject to criticism.

(1) This analysis measures inflation according to the HICP. As the inflation rates calculated on the basis of that index are available only from 1996 onwards, the analysis is confined to the period since 1996.

2.3 Attempts to explain the perception gap

It is therefore beyond dispute that the changeover contributed to the emergence of a persistent perception gap in the euro area. However, it is worth examining why this had such a significant impact on inflation perceptions, and whether other factors may have played a role.

Difficulties due to the new reference scale

A first key factor is undeniably the difficulties that consumers experience in getting used to the new reference scale. The analysis of the price adjustment process at microeconomic level shows that it had substantial implications (for example, it led to a large increase in the number

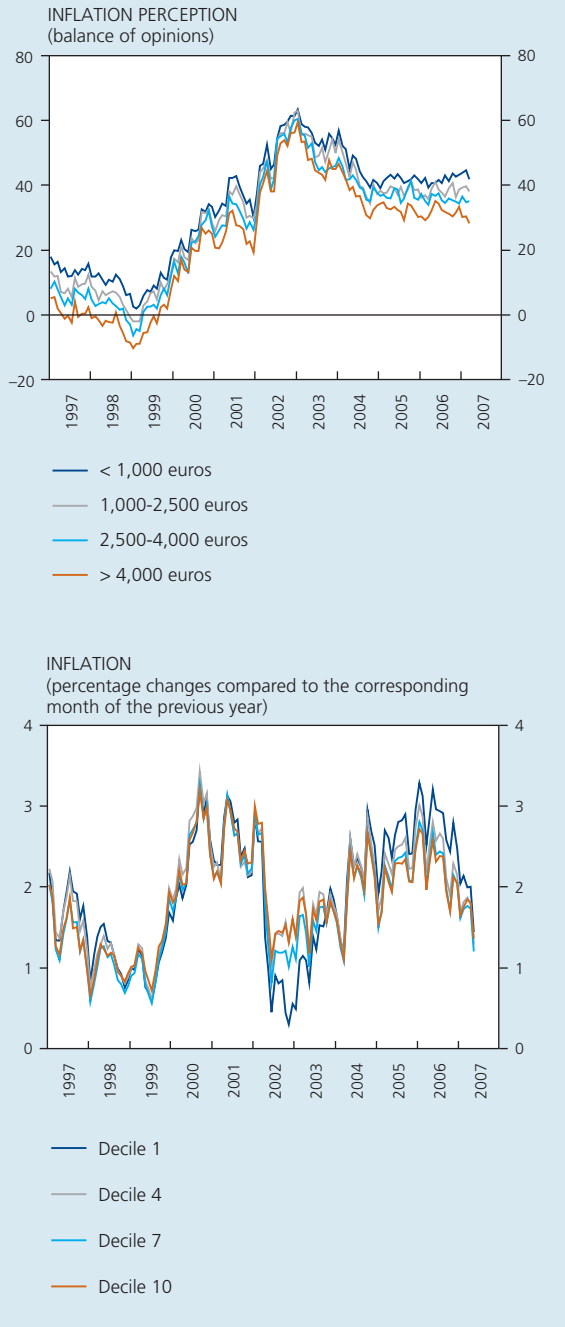
of different prices in the economy) and that it was a long drawn-out process. It is therefore not surprising that the adjustment process is also slow and difficult for consumers. For instance, surveys indicate that almost half the population has trouble getting used to the euro. That proportion did not start to decline until 2005, and then only very slowly. In addition, many people still convert prices into their old national currency. They are therefore actually comparing current prices with pre-2002 prices, and in so doing they cumulate the inflation and get the impression that inflation is very high. This automatically leads to persistence in the perception gap (cf. in particular Dziuda and Mastrubuoni, 2006 and Stix, 2006). European Commission surveys show that, in 2006, over half of consumers were still converting prices of more expensive purchases into their old national currency, and one-third were also doing so in the case of minor purchases. Moreover, they often use a simplified conversion rate, which may represent an additional source of error (Ehrmann, 2006). Until such time as the new reference scale is firmly entrenched, inflation perceptions may still be influenced by the introduction of the euro.

Role of socio-economic characteristics

It is therefore possible that the inflation perceptions of the population groups for whom the adjustment process is slowest may be more significantly affected than those of other groups. That could apply to the elderly, but also to women and people in low-income groups, since they are generally more sensitive to inflation, probably because they are more vulnerable to it or because they are confronted by it more often. The question whether the break in the link between inflation and perceived inflation is more marked among certain consumer categories can be answered by analysing the inflation perceptions obtained from the EC consumer survey according to the consumers' socio-economic characteristics. It is evident that there are in fact differences in inflation perceptions. Persons with a higher standard of education, higher incomes and a corresponding occupation (self-employed or clerical and office employees), working full time, belonging to the younger age groups and of the male gender have a lower inflation perception, on average, than those in lower income groups, less skilled, manual workers, persons working part time, the unemployed, the elderly and women.

However, it is apparent that these differences of perception tend to be permanent, and that they were only influenced to a small extent by the introduction of the euro in January 2002, even if, in the case of Belgium – in contrast to the other euro area countries – the difference between the perceptions of the lowest and highest income groups widened somewhat after the changeover to the euro.

CHART 7 INFLATION AND INFLATION PERCEPTION FOR DIFFERENT INCOME GROUPS IN BELGIUM



Sources : EC ; FPS Economy, SMEs, Self-employed and Energy ; NBB.

The EC consumer survey data therefore indicate that, in 2002, the inflation perception of all groups increased to a similar extent, subsequently declining slowly but only partially. A more formal analysis based on stationarity tests also confirms the existence of a relatively uniform break in perception (Aucremanne, Collin and Stragier, 2007).

The differences in inflation perception might perhaps come about because each group has its own specific spending pattern which may, in principle, be subject to price movements that deviate up or down from overall inflation. It is a well-known fact that the consumption structure varies considerably according to income. Expenditure on food, housing and health care represents a high proportion of the budget of less well-off households. Conversely, prosperous households spend relatively more on clothing, transport and leisure. However, there is no official indicator of inflation specific to the various classes of consumers in Belgium.

Nonetheless, since the household budget surveys used to structure the weightings of the consumer price index (CPI) distinguish between consumers according to their income group, it is possible to calculate CPIs specific to each of those groups. As an approximation, series were calculated by modifying the weightings used for the CPI (index with base 1996 and new index with base 2004) in line with the differences observed in the 2004 household budget survey between households in general and the various classes of households. The calculations were performed at a fairly detailed level for 115 products or product groups. Since there is no price survey specific to each income group, it was necessary to assume that the various groups are confronted by the same price movements for each individual product.

This exercise shows that, although there are slight differences in inflation rates between the various income groups, the variations are fairly minor overall. No significant systematic difference was found between the various groups : inflation is thus not systematically higher for low incomes than for high incomes. The conclusions obtained in regard to non-significant differences between income groups are also confirmed by Bodart and Hindrikx (2006). It is therefore not possible to see this factor as a valid explanation for the systematic divergence in inflation perceptions. Moreover, during the period following the introduction of the euro in January 2002, the inflation rate facing low income groups tended to be lower than overall inflation, because at that time the downward effect of the declining oil prices had a greater impact on this population group for whom heating oil has a particularly high weighting. This factor also accounts for the positive divergence for this population group in 2005 and 2006. The movements in the prices of a basket of goods and services specific to low income consumers therefore cannot explain why they tended to be acutely aware of inflation in Belgium at the time of the euro changeover.

(1) See the corresponding websites : http ://www.insee.fr and http ://www.destatis.de.

Naturally, the results presented here are only an approximation of the real indices per income group. One of the limitations is that, in using weightings which are fixed in time (except for the switch to the new index in 2006), no account is taken of the possibility of substituting one product for another, e.g. if the price becomes too high. More accurate calculation of these indices, offering all the statistical guarantees, is well beyond the scope of this article, and if it proved to be appropriate it should preferably be conducted by CPI experts at the NSI. Some countries have taken such calculations to a fairly advanced stage, with the aim of demonstrating that the overall consumer price index is entirely credible, even though the inflation which affects one particular household may deviate to a greater or lesser extent from that overall index, according to the particular structure of the household's expenditure. Thus, the INSEE in France and the German statistical institute offer on their respective websites a personal inflation calculator based on the specific characteristics of the budget of each household (to be entered) for twelve product categories[1].

A priori expectation that prices would rise

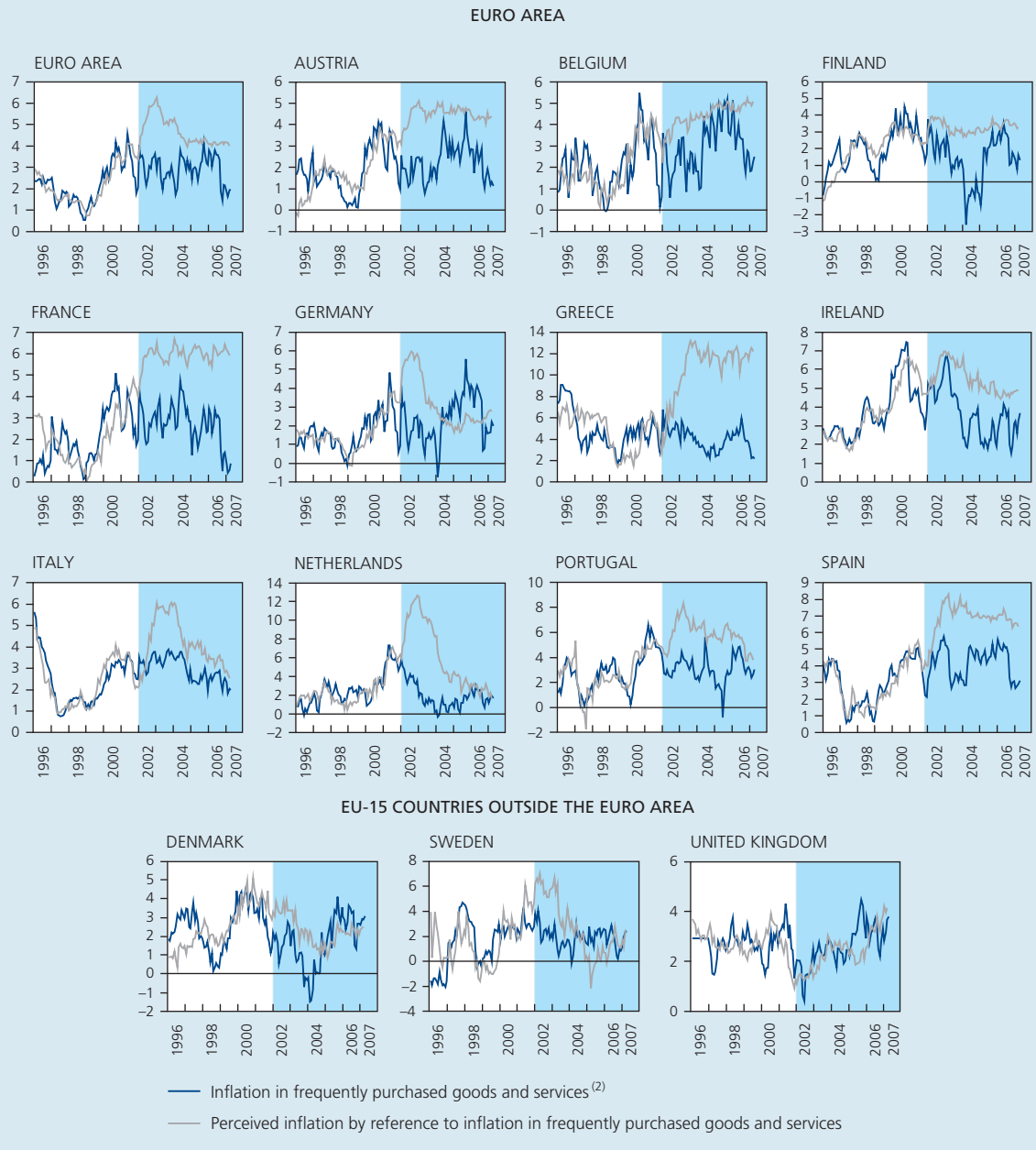
Another possible reason for the perception gap is that, before the introduction of the euro, many people believed that prices would increase sharply, and they apparently tend to consider that this expectation was borne out. This theory is hard to verify, but an experiment along those lines was conducted in Germany (Traut-Mattausch et al, 2004). People were given different menus with prices in euros and in marks. They showed a systematic tendency to think that the euro prices were higher than they really were. Even where the menu prices had been converted correctly, they had the impression that the euro prices were higher.

Movement in the prices of frequently purchased goods and services

Some people also claim that the perception gap may be due to the fact that inflation perceptions are based mainly on daily purchases, and that price increases are noticed more than price reductions. This theory was formalised by Brachinger (2005 and 2006). In principle, this factor is totally unconnected with the euro changeover, and may also cause a perception gap at other times. However, this factor can be assumed to have played a specific role at the time of the euro changeover, as numerous increases in the prices of frequently purchased goods and services were recorded at that period. They were not necessarily due to the changeover : for example, food prices rose sharply as a result of bad weather. However, as already stated, the switch to the euro caused an unusual concentration

CHART 8 INFLATION AND INFLATION PERCEPTIONS [1] BASED ON FREQUENTLY PURCHASED GOODS AND SERVICES

(percentage changes compared to the corresponding month of the previous year)



Sources: EC, ECB, NBB.

(1) Standardised balance of opinions obtained from the EC survey, with inflation in frequently purchased goods and services as the benchmark.

(2) Food, beverages, transport services, fuel, postal services, hotels, cafés and hairdressers.

of price rises in the first quarter of 2002. Furthermore, those price rises concerned goods and services frequently purchased on their own and paid for in cash, so that they were particularly noticeable.

To examine this question in more detail, an index of frequently purchased goods and services was calculated on the basis of a study previously conducted by the ECB (2003). It comprises the HICP components which can be considered to be frequently purchased: food, beverages, transport services, fuel, postal services, hotels, cafés and hairdressers. They represent around 40 p.c. of the total

basket of goods used to calculate the HICP. On the basis of that index, the balances of opinions were converted in a manner similar to that described earlier.

When this measure of perceived inflation is compared with the inflation data for this smaller basket of goods and services, most of the previous conclusions remain valid. While they are relatively close together for the period prior to January 2002, these two series diverge very widely in the various euro area member countries after the introduction of the euro. One more, perceived inflation in the euro area increases until the beginning of 2003, then gradually declines and becomes stable at the beginning of 2004 at a level well above the inflation figure for frequently purchased goods and services, although below the level prevailing immediately after the switch to the euro. Owing in particular to the steep rise in energy prices, which also explains why inflation for frequently purchased goods and services is much more volatile than overall inflation, the gap was practically eliminated at the end of 2005 and during much of 2006. Since perceived inflation did not mirror the decline in energy prices, the gap widenes again to reach a level close to that recorded immediately after the switch to the euro. Differences between euro area countries are also apparent here, and are comparable to those which had been seen previously for the link between overall inflation and perceived inflation. The stationarity tests similarly confirm that, when this index of frequently purchased goods and services is used as the reference, a break occurs in the link between inflation and perceived inflation after the switch to the euro. They also demonstrate that it was difficult, even for the reference period, to find a close link between perceived inflation and this alternative measure of inflation (Aucremanne, Collin and Stragier, 2007).

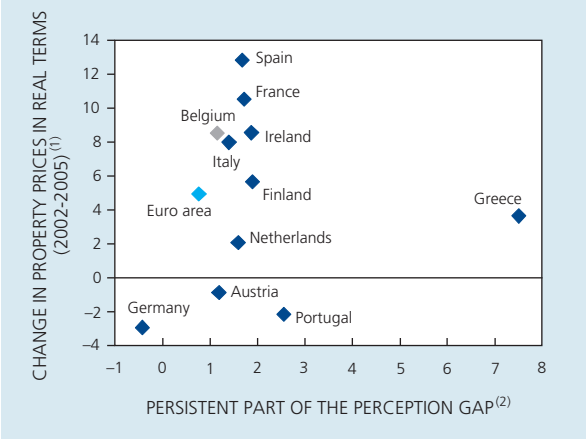
This evidence suggests that the special attention which consumers pay to frequently purchased goods and services played only a minimal role in the emergence and persistence of a perception gap in the euro area. However, it must be said that this is only one part of Brachinger's theory, and that the asymmetric weighting associated with price increases and reductions respectively was disregarded here. That factor may be of some importance since, as already stated, the dispersion of relative price changes increased in the period 2002-2006. Owing to our empirical strategy, we were also unable to check whether the euro changeover itself encouraged consumers to pay more attention to frequently purchased goods and services. That could be so if the consumers' difficulties in getting used to the new currency encouraged them to concentrate more than in the past on those purchases in order to collect and process information on prices.

Specific character of inflation measured by the HICP

It is therefore apparent that the broad coverage of the HICP (the products monitored concern the whole consumption basket, and not just frequently purchased goods and services, and they reflect the consumption habits of the population as a whole, and not necessarily those of specific groups) is not the real reason why perceived inflation diverged after the euro changeover. However, that does not exclude the possibility that other aspects specific to the HICP may have played a role. Moreover, it could be that the HICP is not sufficiently familiar as a measure of inflation for the general public, or that it does not inspire sufficient confidence, possibly because the HICP was introduced recently and is therefore not yet sufficiently firmly anchored, and because the national statistical institutes still tend to centre their announcements on the national consumer price index, considering the HICP as a secondary indicator. The latter is clearly the case in Belgium. Finally, the measure of perceived inflation used in this article is based on a question relating to the movement in consumer prices formulated in general terms, without explicit reference to any particular index or to the HICP.

It is therefore worth repeating the analysis by substituting the national CPI for the HICP as the reference index. However, that analysis leads to the same conclusions as those presented above. Thus, box 2 clearly indicates that the link between national CPI inflation and perceived inflation is broken shortly after the introduction of the euro, just as in the case of HICP inflation.

CHART 9 INFLUENCE OF THE NON-INCLUSION OF COSTS OF OWNER OCCUPIED HOUSING IN THE HICP



Sources: EC, ECB, NBB.

(1) No property prices are available for Portugal for 2005; for that country, the figure shown is an average up to 2004.

(2) Average perception gap in 2005.

One peculiarity of the HICP is that it does not include the costs of owner occupied housing, despite the fact that house purchase is by far the largest financial transaction for any household, and has a major impact on purchasing power. Furthermore, property prices in the majority of euro area countries have risen much faster than HICP inflation, and the property price boom has received very widespread media coverage. It is therefore possible that this phenomenon may have had some influence on consumers' inflation perceptions. Moreover, the average consumer is perhaps unaware that these costs are not included in the HICP figures.

To assess the impact of the non-inclusion of the costs of owner occupied housing, a direct comparison between the size of the perception gap and the movement in property prices in real terms was made for all euro area countries. Comparison over the period 2002-2005 between the average perception gap and the movement in house prices revealed no evident link between the two. Since the average perception gap for that period is greatly influenced by the direct effect of the switch to the euro, it seemed worth checking whether it was possible to draw a parallel between the more persistent part of the perception gap (approached via the average perception gap in 2005) and the property market developments. If Greece is disregarded, a small positive link is apparent: thus, strong price movements in the property sector tend to be accompanied by a fairly large perception gap in 2005. All the same, the correlation is rather weak. Even without Greece, it is only 30 p.c. and does not differ significantly from zero.

However, this does not imply that there is no justification for including owner occupied housing costs. That would extend the HICP's coverage and would improve its comparability between countries. Experts are currently examining the inclusion of owner occupied housing costs, but it has not yet been decided whether the HICP will incorporate these costs in the future. Moreover, there is no consensus so far on the methodology to be used if these costs are taken into account.

Another methodological aspect sometimes put forward to explain the perception gap is the fact that the HICP is adjusted for quality changes. As a result, the inflation figure is somewhat lower than it would be on the basis of the prices recorded at sales outlets. However, adjustments for quality changes are nothing new, and were already used in the HICP before 2002. It is therefore rather unlikely that they are the reason for the divergence between perceived and actual inflation. The Belgian case provides some indication of the potential impact. Thus, both in 2004 and 2005 inflation calculated according to the national CPI, which at that time was not adjusted for quality, was 0.2 percentage point above HICP inflation. These differences are not negligible, but they are nonetheless relatively minor in relation to the total size of the perception gap recorded after 2002.

Overall, the specific characteristics of inflation measured by the HICP do not appear to have played a significant role in the emergence of the perception gap in the euro area. The fact that the accuracy and credibility of the HICP per se are not in doubt is reassuring from the point of view of monetary policy, taking account of the HICP's central role in the strategy.

Finally, it is sometimes also suggested that the inflation concept used by survey participants might be broader than just the movement in prices. For example, it is possible that the rise in perceived inflation since 2002 in fact reflects the rather pessimistic view of people's disposable income, their personal financial situation or the economic situation in general, rather than the actual price movements (Del Giovane, Lippi and Sabbatini, 2005, and ECB, 2007).

Conclusion

The analysis clearly demonstrated that the euro changeover in January 2002 led to a severing of the link between inflation and perceived inflation throughout the euro area. Nevertheless, inflation itself remained relatively low during that period, certainly in view of the fact that it was undeniably driven upwards by the sharp rise in crude oil prices and the increases in direct taxes and administered prices. The direct impact of the euro changeover on inflation in 2002 was also small, but was concentrated in certain less competitive sectors and was therefore fairly visible. The changeover's role in the development of the persistent perception gap cannot be denied. In Denmark, Sweden and the United Kingdom, which are outside the euro area, inflation perceptions corresponded very closely to inflation both before and after January 2002.

However, when it comes to finding more specific explanatory factors, it is difficult to identify their exact contributions. The statement that consumers tend to form their perceptions on the basis of the movement in prices of frequently purchased items is not sufficient to explain a persistent perception gap. The socioeconomic characteristics of consumers did not play a dominant role either, while the influence of more psychological factors, such as the problems which consumers experience in incorporating the euro into their reference framework, is difficult to assess.

The specific character of the HICP inflation measure does not appear to have played a significant role in the emergence of the perception gap in the euro area. A similar gap arises if the national CPIs are used as the reference instead of the HICP. The non-inclusion in the HICP of the costs of owner occupied housing was not a key factor either. The fact that the accuracy and credibility of the HICP per se are not at stake is reassuring from the point of view of monetary policy, considering the HICP's central role in the strategy.

Despite its size and persistence, the perception gap seems to have had few if any macroeconomic consequences, in terms of either wage costs or consumption. One effect of the common monetary policy has been to ensure that inflation expectations are firmly anchored at a level compatible with price stability.

The perception gap is therefore essentially a challenge for communication aimed at the general public. The bodies responsible for measuring inflation, namely the national statistical institutes and Eurostat, have a primary role here. The same applies, of course, to the central banks of the Eurosystem. Finally, it should be pointed out that the current experience in the euro area is not fundamentally different from what happened in the United Kingdom following the decimalisation of the pound sterling in 1971. There are indications that on that occasion, too, prices were perceived to have risen considerably, whereas the effect on actual inflation was minimal (cf. Moore, 1973).

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Recent commodity price developments: causes and effects

P. Butzen
W. Melyn
H. Zimmer

Introduction

The movement in commodity prices is of considerable importance for the world economy. The recent price rises, particularly the rise in oil prices, thus triggered fears of substantial adverse effects for the importing countries, owing to the use of these products as factors of production and as consumption goods. Moreover, for many developing countries, commodity exports make a considerable contribution to GDP and to public finances. Finally, the soaring prices of raw materials have exacerbated the problem of global imbalances.

The first section of this article gives a brief historical account of the movement in nominal and real prices of commodities. The second section examines the factors behind the recent rise in the prices of raw materials. The next section examines the economic implications of that price rise. A number of empirical studies have been conducted to measure the influence in various regions of the recent steep increase in oil prices. This article focuses primarily on the effects of the oil shock for the oil-importing countries. Finally, the last two sections present the short- and long-term outlook for commodity prices and the economic policy implications.

1. Commodity price developments

Various bodies calculate a commodity price index which they publish at regular intervals (HWWI, IMF, CRB, Goldman Sachs, etc.). These indices differ from one another in the commodities selected and in their weighting. For the purposes of this article, we use the HWWI commodity price index, which is the most relevant index for the advanced countries[(1)].

During the first half of the 1990s, commodity prices were relatively stable overall. During the second half of the decade and up to 2002, the global commodity price index recorded a small increase on average, the rising energy prices being offset by falling prices of other commodities. However, this overall picture conceals the widespread decline in commodity prices in 1998, in the context of the Asia crisis, and the sudden increase in oil prices which accompanied the global economic revival in the period 1999-2000, causing a surge in the global index.

From 2003 until 2006, commodity prices increased significantly year by year, with a few exceptions, notably foodstuffs. Thus, over this period, the global commodity index increased by around 24 p.c. per annum. Prices of energy raw materials rose by 26 p.c., driven mainly by the movement in oil prices[(2)], while industrial raw materials prices increased by 22 p.c. as a result of the higher cost of metals. Food prices rose by only 7.7 p.c. over the period considered. During the first six months

(1) The weight of the various commodities in the global index is based on their relative importance in the total commodity imports of the OECD countries (excluding trade within the EU). It was recently updated to take account of the increased significance of crude oil in imports. Energy raw materials represent roughly 67 p.c. of the global index (63 p.c. for oil alone), whereas the share of industrial raw materials is around 23 p.c. and that of food products 10 p.c. The HWWI institute excludes natural gas from the index because there is no available series of world prices of natural gas.

(2) Natural gas prices have moved broadly in line with the prices of petroleum products on the main markets. Thus, between 2003 and 2006 they increased by an average of 33.7 p.c. per annum in Europe and 24.3 p.c. in the United States. Those movements are due to the opportunities for substitution between natural gas and petroleum products, and the fact that natural gas prices are mostly indexed contractually to petroleum product prices.

TABLE 1 COMMODITY PRICES

(annual percentage change in US dollar, unless otherwise stated)

	1990-1995	1996-2002	2003-2006	2003	2004	2005	2006	From January to June 2007	*p.m. Weight in the global index*
Total	**0.8**	**1.3**	**23.5**	**14.3**	**30.4**	**28.4**	**21.1**	**3.1**	***100.0***
Food	2.6	–4.6	7.7	8.3	11.7	0.0	10.9	17.9	*9.9*
Industrial raw materials	1.4	–5.2	22.3	17.3	24.8	14.5	32.6	23.2	*22.6*
of which :									
Agricultural raw materials	3.5	–6.6	11.2	21.8	9.7	1.3	11.8	22.9	*10.1*
Non-ferrous metals	–0.3	–4.8	31.1	12.0	36.8	16.0	59.8	28.0	*9.1*
Ferrous metals	1.5	–1.4	27.7	18.0	38.6	38.2	16.1	13.2	*3.4*
Energy raw materials	0.5	7.0	26.3	14.4	35.3	36.5	19.1	–3.8	*67.4*
of which :									
Crude oil (Brent)	0.4	9.0	27.1	15.2	30.8	42.3	20.1	–4.5	*62.7*

Source : HWWI.

of 2007, commodity prices increased by an average of 3.1 p.c. compared to the corresponding period of 2006. The sustained strong rise in the prices of non-fuel commodities was partly offset by a fall in prices of energy raw materials.

Therefore, taking account of the weight of the various commodities in the global index, it is evident that energy raw materials, and particularly oil, made the largest contribution to the rise in that index in recent years. However, in 2006 and in the first six months of 2007, industrial raw material prices shared in the rise in the global index to a greater extent than in previous years, owing to the strong increase in prices of non-ferrous metals.

In the light of these developments and the relative importance of the various commodities in advanced country imports, the analysis which follows concentrates on the causes and effects of the recent rise in oil and metal prices.

Over the period 2003-2006, the price of a barrel of Brent increased by an average of around 27 p.c. each year[(1)]. The price per barrel stood at 66 dollars in 2006, compared to only 25 dollars in 2002. In a historical perspective, the recent oil price rise in nominal terms has not exceeded the scale of the oil shocks of the 1970s. Between 1972 and 1974, i.e. in the space of just two years, the price of a barrel of Brent rose by 258 p.c. By comparison, oil prices climbed by 164 p.c. between 2002 and 2006, a rise equivalent to that seen between 1978 and 1980 at the time of the second oil shock. However, the price increase recorded over the period 2002-2006 was more gradual. Oil price levels are well above those attained in the 1970s, and at the beginning of August 2006, in a context of Middle East tension, the price of a barrel of Brent reached a record high of almost 80 dollars. Subsequently, the Brent price fell sharply and, as a monthly average, remained below the 60 dollar mark until February 2007, except for a brief surge in December 2006. In June 2007, the price per barrel once again exceeded 70 dollars. The tense situation on the oil market consequently generated great price volatility.

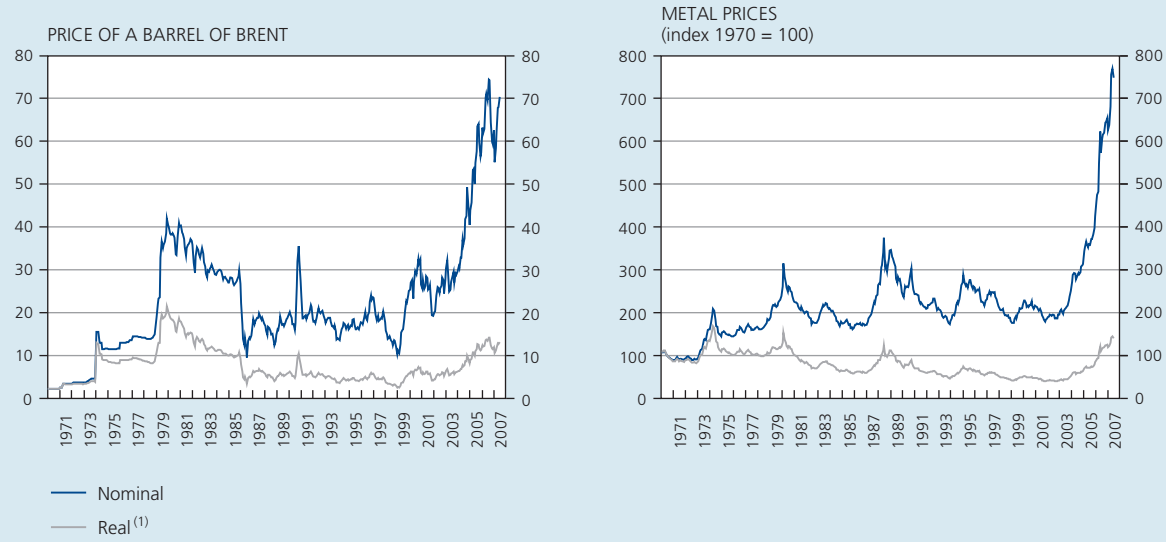
In real terms, by 2005 oil prices had exceeded the level reached in 1974, though were still below the levels seen in the early 1980s. The price per barrel would have to go beyond the 90 dollar mark to be comparable in real terms to the 1980 level.

During the second half of the 1990s, prices of all metals declined on average (except for the price of iron ore). The trend was reversed from 2003, when the rise in metal prices became widespread. As a result, prices of the majority of metals reached historical peaks. The global index of metal prices rose by around 30 p.c. per annum on average over the period 2003-2006. The movement in

(1) The Brent price is generally used as a benchmark worldwide, though the volume traded is well below the figure for Saudi Arabian, for example. According to the International Petroleum Exchange, the Brent price is used to fix the price of two-thirds of world oil sales.

CHART 1 NOMINAL AND REAL PRICES OF BRENT AND METALS

(monthly averages, US dollar)



Sources : BLS, IMF, Thomson Financial Datastream.
(1) Deflated by the United States' CPI.

the index was influenced mainly by the soaring prices of aluminium and copper, which have the highest weight in the index. In 2006, the aluminium price rose by an annual average of 35 p.c., while the price of copper went up by more than 80 p.c. Nonetheless, certain other metals such as zinc posted record price increases and thus contributed, although to a lesser extent, to the rise in the index. The price rise was maintained over the first six months of 2007, and even gathered pace for a number of metals such as tin, lead and nickel.

Deflated by the United States' consumer price index, metal prices declined by an average of 1.5 p.c. per annum over the period 1971-2002. That downward trend is usually attributed to major productivity gains in the metallurgy sector relative to other sectors of the economy, but also to the development of certain synthetic substitutes. Prices started to rise in 2003.

2. Factors behind the recent rise in commodity prices

It is essential to comprehend the causes of the recent rise in commodity prices, since the nature of the "shock" may influence both the persistence of the high price level or the rise in prices of raw materials, and its impact on the economy.

2.1 The oil shocks in a historical perspective

In recent years, attention has focused mainly on oil price movements, owing to lasting memories of the disastrous effects of the oil shocks of the 1970s.

The recent oil price rise therefore needs to be placed in perspective with the shocks recorded in the past few decades. Up to 1973, oil was a cheap commodity, facilitating the economic expansion of the United States and European countries. The Yom Kippur war in 1973 triggered the first oil shock : the OPEC embargo on western countries which supported Israel caused the price to quadruple in the space of a few months. The Iranian revolution in 1979, and the start of the Iran-Iraq war in September 1980, caused the second oil shock following the substantial reduction in exports from those countries. The escalating oil price had two effects : on the supply side, it opened up the market to oil from sources which had become economically viable, mainly Mexico, Alaska and the North Sea ; on the demand side, it caused sharper cuts in consumption via economy measures and diversification.

Following the increase in OPEC output in 1985, oil prices were relatively stable until the late 1990s, with only a few episodes of high volatility : one in 1990 and 1991 as a result of Iraq's invasion of Kuwait, another in 1998 following the

financial crisis in the south-east Asian countries, which led to a steep price fall, and finally a "mini" oil shock in 1999 and 2000, when the price of crude tripled between February 1999 and October 2000, owing to a revival in global demand for oil combined with a decline in output.

While the first two oil shocks were caused by a break in oil production, there is a broad consensus attributing the steady rise in crude prices from 2002 – sometimes called the "third oil shock" – primarily to demand-side factors: not only the purely cyclical upswing in global growth, but also and more particularly the quickening integration of a substantial proportion of the world's population into the economy and world trade. The explosion in demand for oil in the emerging economies, and especially in China, is not due only to the economic growth seen in those countries but also to an economic structure centred very much on industry – often less efficient in its use of energy than the OECD countries as a whole – and the increase in private use of motor vehicles. The strong growth of world trade may also have contributed to the substantial oil consumption, owing to the accompanying increase in demand for air and sea transport.

These economic factors are supplemented by a combination of geopolitical and technical factors. Centres of tension in the oil-producing countries, mainly in the Middle East, were a major contributor to the rapid rise in crude oil prices. Other producers – Venezuela, Chad, Russia and Nigeria – are also in an "uncomfortable" political situation, and market operators keep an anxious watch on developments in those countries. In that context, having regard to the fears of supply disruption, precautionary demand and speculative demand have most certainly increased. In recent years, supply disruption caused by wars or weather conditions have further exacerbated the tension on the oil market.

2.2 Geographical trend in demand for commodities

The emerging economies, and particularly China, occupy an increasingly important position in world oil consumption. Although global demand for oil is still dominated by the advanced countries, headed by the United States, its expansion has been far more rapid in the emerging countries, except for the region of the former Soviet Union which suffered an economic collapse for much of the 1990s.

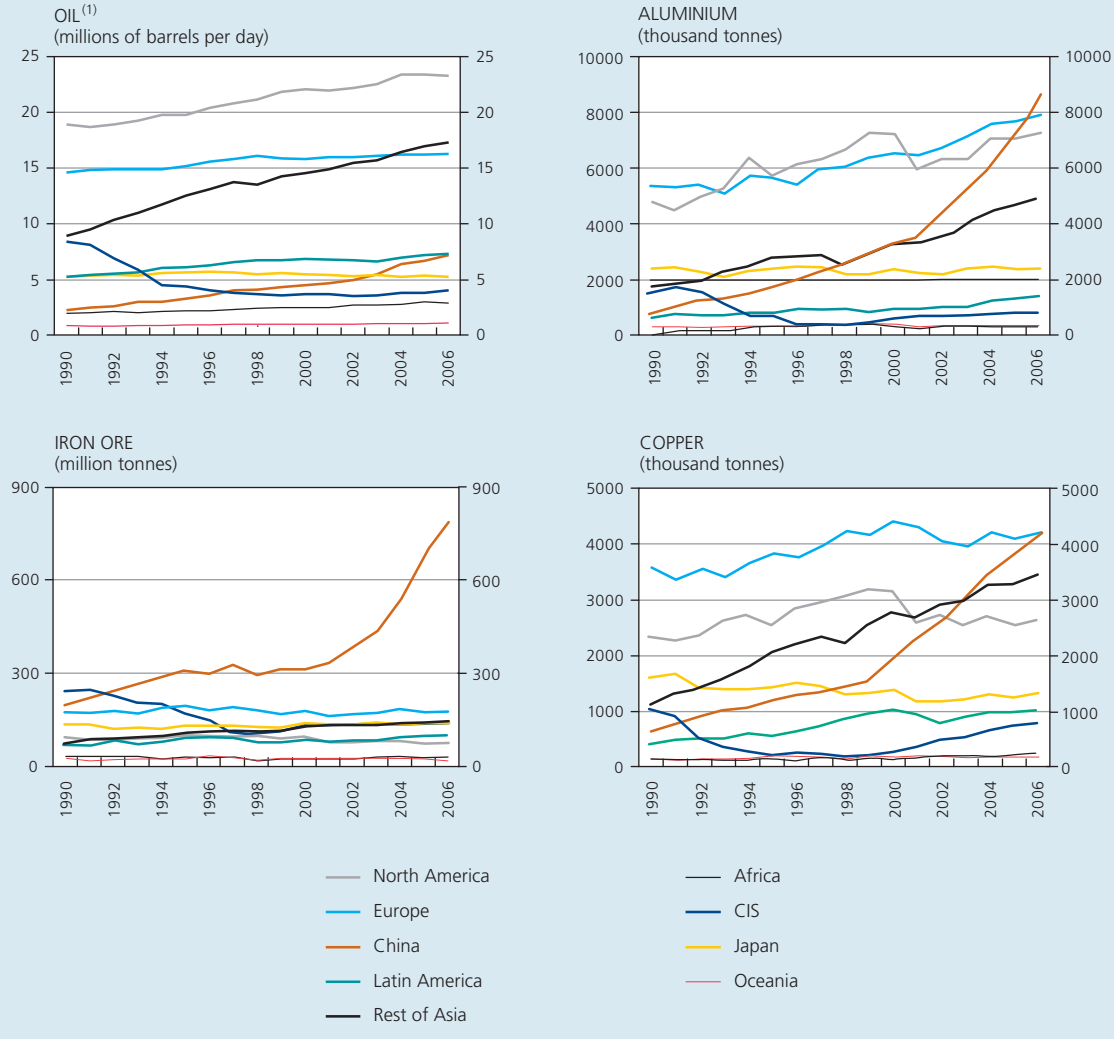
Global demand for oil expanded at an annual average rate of 1.4 p.c. between 1992 and 2001. Demand was most dynamic in Asia, essentially in China, where it was sustained by exceptional economic growth, averaging over 10 p.c. per annum. The expansion of global consumption of oil gathered pace in 2003, and especially in 2004 when it reached its highest growth rate since 1977, namely 4 p.c. Except for Japan, all economic regions increased their demand for oil, particularly the United States (+4 p.c. in 2004, or 900,000 barrels per day) and China (+16 p.c., or 900,000 barrels per day). This demand peak was unexpected: in January 2004, the International Energy Agency (IEA) had predicted an increase in demand of only 1.6 p.c. for 2004. In the case of China, there were some temporary factors causing the demand surge, namely electricity supply disruption which encouraged the use of new, more reliable diesel-operated electricity generators, and the expansion of oil stocks in 2004. Together, China and the United States thus accounted for 56 p.c. of the 2004 increase in demand. In 2005 and 2006, demand for oil increased at a more moderate pace of around 1 p.c. In 2006, the OECD countries actually reduced their demand for oil. This contraction was due in particular to the high level of stocks in the advanced economies, the economic slowdown in the United States and the mild winter. However, structural factors could also have played a role, e.g. the substitution of oil by natural gas.

Despite China's vigorous demand in recent years, that country's oil consumption is still relatively modest. In that regard, it should be pointed out that China is still extremely dependent on coal[1] for its energy. It is in fact the world's biggest producer and consumer of coal.

These tendencies are also evident on other basic product markets. On the metal markets, the main global consumers are Europe (in the broad sense), the United States and emerging Asia, especially China. Over the period 1993-2002, annual growth of world metal consumption averaged between 1.3 and 4.4 p.c., depending on the metal. In the period 2002-2005, the rise in the consumption of the majority of metals accelerated. The steepest increases were recorded for tin, aluminium and steel, with consumption for these three metals rising on average by around 8 p.c. The strong expansion of Chinese consumption, especially since the early years of this century, is evident for all basic metals. Since 2005, the level of Chinese consumption has caught up with the European level for various metals, including aluminium, copper and steel. The scale of the Chinese iron and steel industry requires a corresponding quantity of iron ore. China is already the largest iron ore consumer and producer – as well as being the leading importer of that commodity – and has become the world's biggest steel producer. Although it has also become the leading consumer of aluminium, China continues to export this commodity; this is part of the reason

(1) In 2004, coal accounted for almost 62 p.c. of China's total primary energy consumption, while oil represented only 19 p.c.

CHART 2 REGIONAL DEMAND FOR OIL AND METALS



Sources : IEA, World Bank.
(1) The regional breakdown differs from that used for metals.

why the rise in aluminium prices has been more modest compared to the price of copper, which is in very short supply in China. The World Bank (2006b) considers that, in a few years' time, China will far outstrip Europe and will become the biggest consumer of all industrial metals.

Historical trends suggest that metal consumption increases in parallel with incomes, during the period of industrialisation and development of the domestic infrastructure. Beyond a certain income threshold, growth generally tends more towards the service sector, so that metal consumption begins to stagnate. So far, China seems to have followed the tendencies seen in Japan in its initial development phase, except for certain metals where per capita consumption in China is higher for a comparable income level. One of the reasons is that the Chinese industrial sector represents a much larger proportion of GDP than would generally be expected in a country at that stage of development. According to the IMF (2006b), that situation is due both to historical reasons (the formerly centralised economies had a high level of industrialisation) and to the relocation of manufacturing production from the advanced economies and other emerging Asian economies to China.

The said structural changes on the demand side could have a more lasting impact on prices, depending on whether Asian growth is sustained by a process of economic catching up, rather than by the international business cycle.

2.3 Characteristics of oil and metal supplies

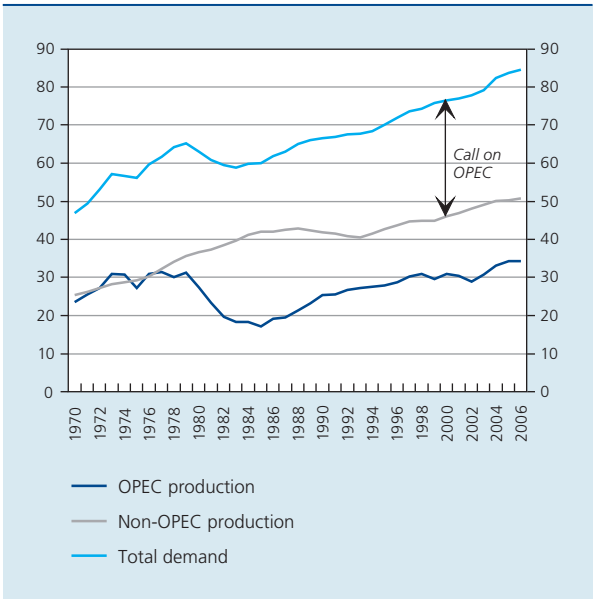
The strong growth of demand does not on its own account for the soaring oil prices: in 2005 and 2006, the expansion of oil consumption was weaker, but prices have never been as high (in nominal terms). On the supply side, the main oil market player is OPEC [1] – which currently supplies 41 p.c. of the world's oil and owns 70 p.c. of the proven oil reserves. OPEC's power became apparent primarily in the early 1980s [2]. After that, in the face of competition from oil-producing countries that are not members of OPEC and which took immediate advantage of its actions to develop their own production, it became increasingly difficult for the cartel to apply its quota policy effectively. So, production-cutting agreements are occasionally extended beyond OPEC's boundaries to include major non-member producers such as Russia, Mexico, Kazakhstan, Oman and Norway. At the end of 2006, OPEC decided to cut back its production on two occasions, the last cut having been implemented in February 2007 [3], exerting upward pressure on oil prices.

The historically high growth of demand for oil recorded in 2004 highlighted a situation of tension on the oil market. In that year, the expansion of output outside OPEC was curbed by climatic factors (particularly in the United States), but also by a structural decline in output in the United Kingdom and Norway, so that it was insufficient to cope with the consumption boom. Consequently, the OPEC countries adopted an accommodating attitude towards this surge in demand, by producing at more or less full capacity until the end of 2004. The level of output by non-OPEC countries hardly changed in the following year [4] and the "call on OPEC" – i.e. the OPEC supply supplementing that of other countries to cope with demand – prolonged the cartel's high rate of output. The unused production capacity thus dropped to an all-time low, increasing the sensitivity of prices to any event affecting or threatening oil supplies.

The shortage of excess production capacity partly reflects the lack of investment during the 1990s, following the low level of real oil prices, on average, over the period 1985-2000. The easing of oil market tension is basically dependent on the supply in an industry featuring very long investment cycles (five to ten years). However, both international and national oil companies seem to be adopting a cautious approach towards new investment. In the case of the international oil companies, there are several factors restraining the expansion of investment [5]:

CHART 3 TOTAL OIL DEMAND AND SUPPLY

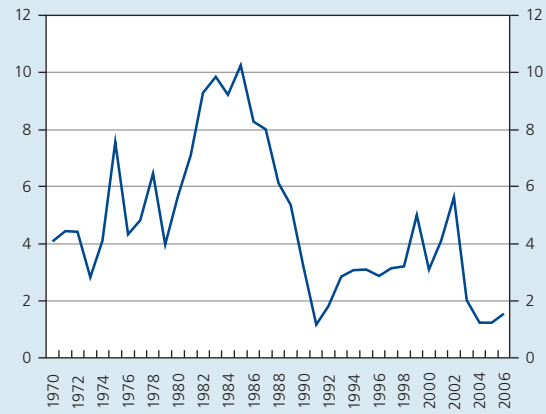
(millions of barrels per day)



Sources: EIA, IEA.

CHART 4 OPEC'S UNUSED PRODUCTION CAPACITY

(millions of barrels per day)



Source: IMF.

(1) Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela. In 2007, Angola became the twelfth member of OPEC.

(2) When the price of oil remained high even when demand was falling or stagnating owing to the global economic recession and supply was rising sharply with the large-scale development of oil reserves outside OPEC. Throughout this period, OPEC delayed the decline in oil prices significantly by introducing production quotas.

(3) OPEC decided to reduce its production from November 2006 with 1.2 million of barrels per day and from February 2007 to reduce it further with 0.5 million of barrels per day.

(4) Owing to the decline in production in Russia – particularly in the Yukos oilfields – and in the United States as a result of the damage caused by Hurricane Katrina in August 2005.

(5) IMF (2005c), IMF (2006b).

– limited access to the reserves of oil-rich countries associated with regulatory changes which cast doubt on the investment return, and a tendency to nationalise resources in some countries. In particular, three Latin American countries – Bolivia, Ecuador and Venezuela – have made fundamental changes to the tax rules on the oil and gas sector, in order to increase their control over the resources. Elsewhere, too, in response to high commodity prices, the oil- and gas-exporting countries have tended to guarantee the State a larger share of the profits made by oil companies operating on their territory. The process has taken different forms, including greater State participation and higher export taxes in Russia and Argentina, bigger royalties in Kazakhstan, and an increase in tax on the oil companies' revenue in the United Kingdom and Denmark ;
– in the OECD countries where the international oil companies hold a dominant position, it has become difficult and expensive to extend the productive life of the existing oil fields which are in decline ;
– following job cuts in the 1990s, the lack of skilled workers is necessitating relatively high expenditure on training in the short term ;
– a great volatility of oil prices hampers investment decisions.

However, some major national oil companies, capable of financing projects themselves and having maintained their level of expertise during the decline of the 1990s, have developed ambitious plans for expanding production capacity at all levels in the supply chain (1). On the other hand, the real investment of the majority of other national oil companies has not really recovered since the decline of the 1990s, especially as investment in many oil-producing countries was limited by restrictions imposed by the government of those countries, notably via their budget plans.

The level of demand for oil combined with the erosion of the excess capacity also revealed structural imbalances in the oil sector, leading to greater price differentials between light and heavy types of crude. Although OPEC adopted an accommodating attitude towards demand, most of the additional production of OPEC is of the heavier type, whereas world demand is increasingly shifting towards the light types (for transport) (2). The shortage of light oil was aggravated by a structural imbalance in the refining sector. Not only is total refining capacity scarcely higher than the level of the 1980s, at 83 million barrels per day in 2005, and utilisation rates, which have gradually increased since 2002, are still over 90 p.c., but furthermore, the bulk of the refining capacity consists of simple distillation processes which cannot be used to process heavy crude (containing a lot of sulphur). Nonetheless, the refineries can be adapted to deal with this type of crude, though the conversion process is expensive and it may take them several years to reach the operational stage.

The problem of under-investment also concerns the metal sector. For over thirty years, the mining industry has been able to produce increasing quantities of metals at gradually diminishing real cost. Real metal prices have thus experienced a long period of decline, mainly as a result of the technological progress made in the extraction and processing of metals. However, the buoyancy of demand for metals, particularly Chinese demand, took the industry by surprise and led to a reduction in stock levels, especially as the previous price falls had prompted a lack of investment in the metal sector in the late 1990s and the early years of this century, and the closure of uneconomic excess capacity. Since then, the sector's substantial income has supported investment spending, which has already increased significantly. However, the rising cost of inputs – including energy – and the scarcity of equipment and skilled labour have tended to delay some investment projects.

2.4 Financial investors and dynamism of the commodity markets

In recent years, basic products seem to have become an attractive financial investment. The commodity futures markets have become much deeper over the years, and the presence of financial investors on those markets has rapidly increased. Thus, participation in the New York Mercantile Exchange (NYMEX) – measured by the number of contracts recorded by the US Commodity Futures Trading Commission – has quadrupled since 1995. The total number of futures contracts on the oil markets came to almost 2 million in 2006, and the proportion of non-commercial contracts increased from 9 p.c. in 1995 to 16 p.c. in 2006 (IMF, 2006b). As pointed out by Domanski and Heath (2007), the markets in basic products are now increasingly similar to financial markets in terms of participant motivation and strategies. On the basis of an empirical analysis comparing the periods 1998-2001 and 2002-2006, the authors conclude that short-term factors reflecting yield considerations have generally become more important over the years.

(1) SAUDI ARAMCO in Saudi Arabia, ADNOC in the United Arab Emirates, KPC in Kuwait.

(2) Brent and West Texas Intermediate (WTI) are light oils which are easier to refine. Heavy oil is more expensive to refine because it needs additional processing (called deep conversion) to produce ordinary products such as petrol.

The increase in the number of futures contracts for commodities and the heightened price volatility led some analysts to claim that speculators had become more capable of influencing prices. The IMF (2006b) tried to measure the influence of speculation on the pricing of commodities by conducting an econometric analysis of the direction of the causality between spot and forward price fluctuations and changes in speculative positions for a sample of products including not only crude oil but also copper, sugar, coffee and cotton. That analysis shows that the general direction of the causality is from spot and forward prices to speculation, and not the other way round. Domanski and Heath (2007) mention preliminary signs pointing to a positive link between the amount of the risk premium and long-term non-commercial positions on the oil market. The authors stress that it seems difficult to reconcile the increases in futures prices up to mid 2006 with the economic fundamentals. It thus appears that the role of speculation requires more research.

3. Economic impact of oil price fluctuations

The movement in commodity prices has a substantial influence on the operation of the economy. Most of the studies which examine the economic effects of the recent price increase concentrate their analysis on oil. In so doing, they are following a tradition established in the wake of the oil crisis of the 1970s. Although the advanced countries have since become less dependent on oil, that approach highlights the crucial role that this commodity still plays in the operation of the economy.

3.1 Theoretical framework

There is a lasting and complex link between oil price movements and the economy. At global level, the influence is reciprocal, since the world economic situation also determines the price of this commodity. The economic importance of oil is due to the fact that the amount spent on this fuel uses up a substantial part of the consumption budget, and oil is generally an essential factor in the production process. The theoretical analysis which follows looks at the consequences of an increase in the oil price for the oil-importing countries.

3.1.1 Effects on inflation

All other things being equal, an oil price increase causes an almost immediate rise in inflation. This "direct effect" is due to an increase in the energy component of the consumer price index. That increase is then generally extended (at least partially) to other index components when firms put up the prices which they charge for goods and services to reflect the increase in their production costs which is itself due to the higher oil prices ("indirect effect").

Finally, there may be a second round effect when workers try to extract wage increases to compensate, at least in part, for the loss of purchasing power which they have suffered. If the firms once again adjust their selling prices accordingly, that may trigger a wage-price spiral which not only augments the upward inflationary pressure of an oil shock but also makes that pressure more persistent, potentially causing households and businesses to adjust their inflation expectations.

3.1.2 Effects on the real economy

All other things being equal, an increase in the oil price generally causes economic growth to slow down. The effects of such a price increase on the real economy are felt only gradually, in contrast to the effects on inflation.

The increase in the oil price results in a transfer of income from the oil-importing to the oil-exporting countries[(1)], which depresses domestic demand in the importing countries. Confidence and wealth effects may depress domestic demand further. That effect is reinforced by the fact that exports to other oil-importing countries are most likely also to be influenced negatively. True, part of the higher oil bill can be "recouped" if the oil-exporting countries devote part of their additional income to the purchase of goods and services from the oil-importing countries. The financial markets provide another channel for recycling the "petrodollars" to the oil-importing countries, and possibly exerting a moderating effect on interest rates.

3.2 Empirical studies

In recent years, many econometric studies have assessed the dynamics and the scale of the economic effects of oil price shocks. The results of these studies diverge, one reason being the wide variety of models used and underlying assumptions.

(1) Attention should also be drawn to the implications of the rising oil prices for the global imbalances. In recent years, these have been exacerbated by the persistent deterioration in the US current account deficit and the marked increase in the surpluses of the oil-exporting countries. Those surpluses actually exceeded the surpluses of the emerging Asian countries. These developments could mean that the global imbalances persist for a longer period.

A recent assessment by the IMF (2007) states that a doubling of oil prices pushes up global inflation by 1.5 percentage points and depresses global GDP by 1.4 percentage points. A European Commission simulation (2005) of a permanent 50 p.c. increase in oil prices shows that the impact on inflation in the euro area comes to 0.5 percentage point in the first two years. The effect of the higher prices on real GDP growth is most marked during the first year, namely minus 0.6 percentage point, and diminishes to minus 0.3 and minus 0.2 percentage point during the ensuing two years. A National Bank of Belgium estimate (2006) of the effect on the Belgian economy of a doubling of the oil price concluded that the upward pressure on inflation comes to 0.4, 1.1 and 1.2 percentage points respectively during the three years covered by the simulation. The downward pressure on economic growth comes to minus 0.1, minus 0.5 and minus 0.7 percentage points over the same period.

Additional conclusions can be drawn from the results of various studies[1]. For instance, the effect of oil shocks is asymmetric. In fact, increases in oil prices have a greater impact on economic growth (and to a lesser extent on inflation) than price reductions. This finding may be due to downward wage and price rigidities. In addition, allocation effects on the labour market and uncertainty on the financial markets following oil price fluctuations also play a role. Another obvious conclusion is that the impact of the higher oil prices is more pronounced in the emerging countries than in the advanced countries. This is because oil is more important to the emerging countries, particularly in view of the greater role of manufacturing industry and the generally less modern stock of machinery.

3.3 The moderate economic impact of the current oil shock

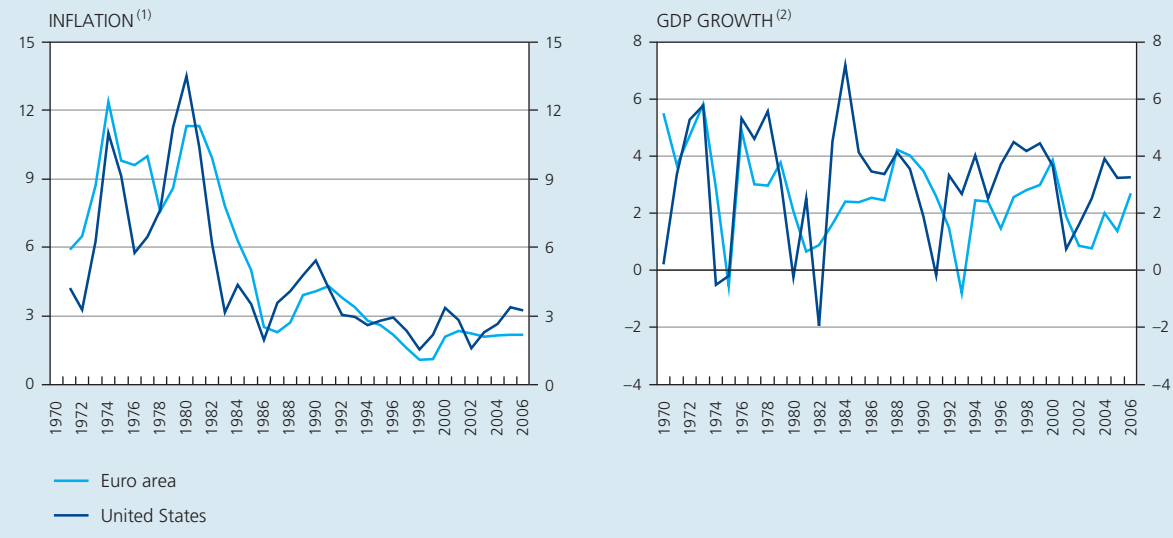
In recent years, economic growth and inflation in the main oil-importing countries have been relatively resistant to the steep rise in energy prices. In the United States and the euro area, although it has edged slowly upwards since the late 1990s, inflation has remained at a historically low level so that, contrary to what happened at the time of the previous oil shocks, there has been no serious increase. Moreover, unlike what was seen at the time of the two earlier shocks, economic growth has actually strengthened in the two regions over the past few years.

There are various factors which may explain the moderate effect of the commodity price increases on overall inflation in the euro area[2].

(1) ECB (2004), IEA (2004), IMF (2005c), OECD (2004), Rogoff (2006).
(2) See for example Boeckx (2006).

CHART 5 INFLATION AND ECONOMIC ACTIVITY IN THE EURO AREA AND IN THE UNITED STATES

(percentage changes compared to the previous year)



Sources : EC, ECB, Fagan et al (2005), OECD.
(1) Measured by the consumer price index.
(2) In volume.

The monetary policy framework has changed since the 1970s, both in the euro area and elsewhere. Since the 1980s, the central banks of the advanced countries have in fact set price stability as their principal objective, and they have built up strong credibility enabling them to anchor inflation expectations more securely.

In addition, between 2003 and 2006 most of the euro area countries had a negative output gap. Consequently, demand components added no inflationary pressure at all.

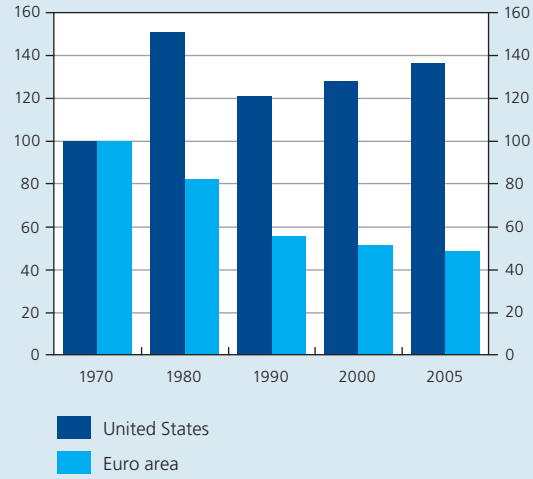
Attention should also be drawn to a number of structural changes in the euro area. For instance, dependence on oil, expressed as the percentage of GDP represented by net oil imports, has halved in the past decade. That measure is influenced by energy-intensity – the efficiency of energy use – and the proportion of energy needs met by imported oil. There are considerable differences between countries regarding the level and the evolution of oil dependence. In the United States, net oil imports are now actually higher in relation to GDP than they were in 1970. Since the energy intensity of the US economy has declined significantly during that period, the main reason lies in lower national oil production: in 1970, the US imported just over 20 p.c. of its oil requirements, but in 2005 that figure was about 70 p.c. Other structural changes which account for the limited effect of the higher prices of commodities on overall inflation in the euro area include greater budgetary discipline and positive productivity shocks, whether or not due to globalisation.

The advent of the global economy has in fact also had a moderating influence on inflation. First, the transmission of the rise in commodity prices to the later phases in the production process was restrained by the stronger competition accompanying globalisation, so that firms find it more difficult to increase their selling prices when commodities become more expensive. Also, the threat of the relocation of production to low-wage countries tended to moderate the workers' wage claims. Finally, with the increasing trade with low-wage countries, imports of finished and intermediate products became cheaper. On the basis of this last effect and the rise in commodity prices, the OECD (2006) calculated the net impact of globalisation on the change in consumer prices. In the majority of the advanced countries, globalisation has caused inflation to fall – albeit slightly – in the past five years.

In regard to economic growth, a number of factors have similarly helped to limit the adverse repercussions of the rising commodity prices. First, the global economy has prospered in recent years, and that has been reflected in particularly high growth rates. Moreover, the scale

CHART 6 SHARE OF NET IMPORTS OF OIL IN GDP

(metric tonnes in relation to real GDP, on the basis of purchasing power parities, index 1970 = 100)



Sources: IEA, OECD.

of the oil shock was less in real terms than that of the previous oil shocks. The decline in energy intensity and oil dependence has also played a role, as has the pursuit of an accommodating monetary policy and the accompanying low level of interest rates. Finally, the recycling of the "petrodollars" via imports has sustained economic growth in the euro area and elsewhere: imports from the blocs of oil-exporting countries, such as OPEC or the CIS, have shown a marked rise in recent years, as those countries have spent (part of) their additional oil revenues. According to the EC (2006), the recycling of oil revenues via imports has been more beneficial to the euro area than in the 1970s.

4. Outlook for commodity prices

In view of the significant impact of commodity prices on the economy, forecasts for those prices constitute vital information for the preparation of economic projections and for planning and formulating macroeconomic policy.

4.1 In the short and medium term

Projections over this time span are generally based on commodity prices quoted on futures markets. However, the use of these prices to predict price movements is open to criticism, both for methodological reasons and because

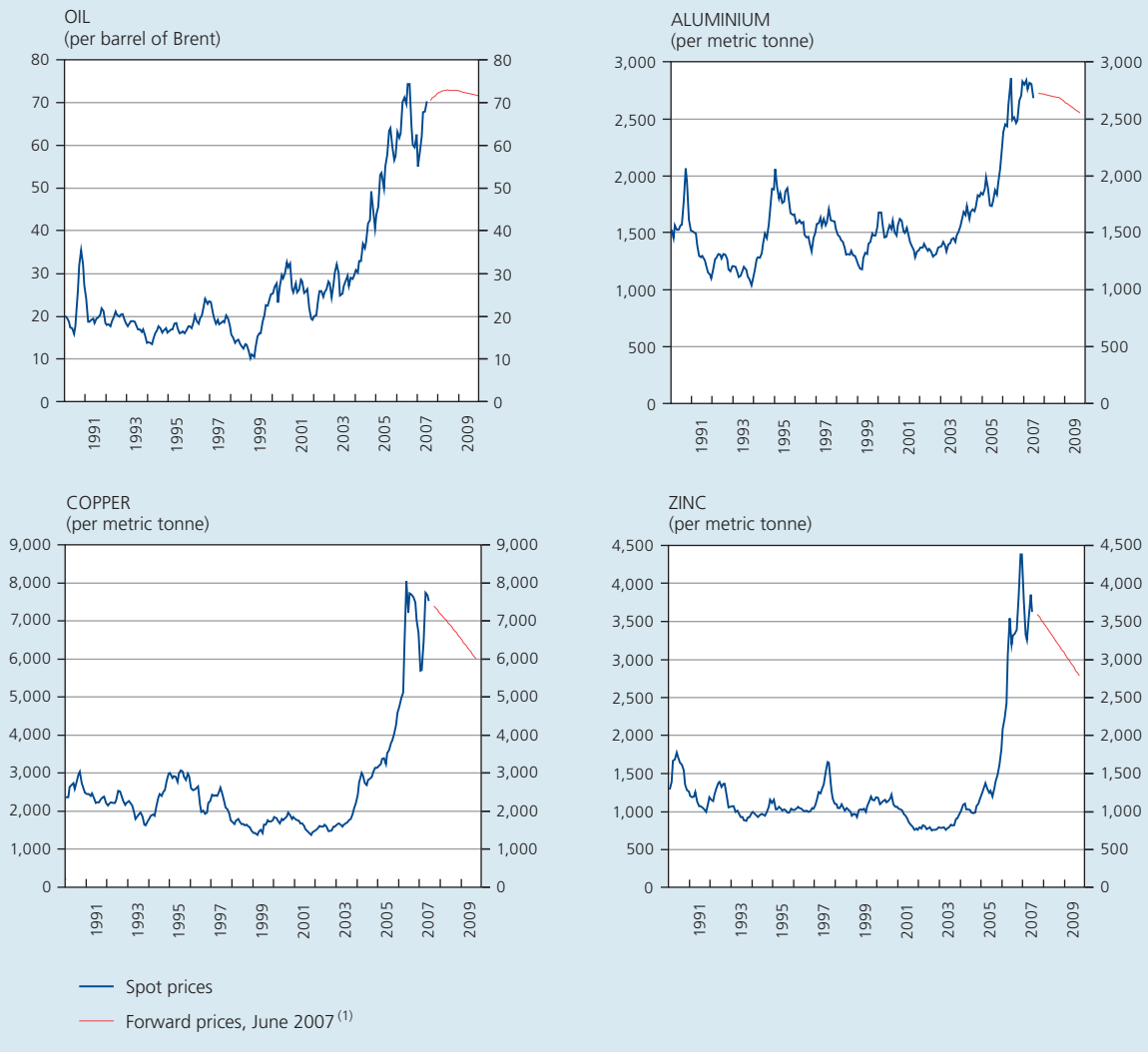
of their limited predictive capability[1]. The prices quoted recently on the futures markets seem to indicate that market operators consider the current, historically high, oil price level to be a permanent fixture. In June 2007, the financial markets expected the oil price to continue rising slowly until mid 2008 and then to subside somewhat.

The recent projections produced by international organisations also expect the high oil prices to persist in the years ahead. Thus, the IMF (2007) predicts that, on an annual basis, the average price of oil will fall by 5.5 p.c. in 2007 and increase by 6.6 p.c. in 2008. Moreover, in the opinion of that organisation, the risk factors applicable to oil prices are still on the upside. The latest detailed projections by the IEA (*World Energy Outlook, 2006*) indicate a slight fall in oil prices during the period 2007-2009 owing to the combined effects of expanding supply and a slackening growth rate of the demand. However, at the same time the IEA draws attention to the persistence of geopolitical risks and the supply disruptions which could push prices up. The IEA warns in a later publication (IEA, 2007) for an increasing scarcity on the oil market after 2010. According to that organisation, oil prices will remain subject to upward pressure in the coming years.

(1) Domanski and Heath (2007), IMF (2006b), OECD (2007).

CHART 7 SPOT AND FORWARD PRICES OF CRUDE OIL AND SOME MAJOR METALS

(monthly averages, US dollar)



Sources : ICE, IMF, LME, Thomson Financial Datastream.
(1) Futures contracts traded on the ICE (oil) and the LME (metals).

Prices quoted on the futures markets in some important metals (aluminium, copper and zinc) indicate that the outlook for these metal prices over the next two years differs somewhat from that for oil. Prices of these metals are expected to fall fairly sharply in the years ahead. That pattern is in line with past movements in metal prices. In the medium term, metal prices in fact move in parallel with the production costs of marginal producers, namely those who are the least efficient. However, in periods of booming economic activity, and hence an acute market shortage, market prices may be well in excess of those costs, but later subside fairly rapidly to their equilibrium level, since additional production capacity can be mobilised quite quickly. In view of the current gap between the market price and the equilibrium price, prices can therefore be expected to fall. Various international organisations (including the IMF and the World Bank) agree with that point of view. According to those organisations, the contraction of demand caused by the price rises seen in recent years and the expansion of supply resulting from increased investment are likely to play a key role in the expected reduction in prices.

4.2 In the long term

According to the IEA's reference scenario in the *World Energy Outlook 2006*, demand for oil will increase by 1.3 p.c. per annum during the period 2005-2030, compared to 1.1 p.c. per annum during the period 1981-2004. The rise is expected to be most marked in the non-OECD countries, with annual growth predicted at 2.3 p.c. The substantial wealth creation and the accompanying sharp rise in car ownership expected in those countries are the main factors. In the advanced countries, the expansion of demand is expected to be only 0.6 p.c. per annum during the period 2005-2030. The continuing decline in energy intensity and the measures taken to combat the greenhouse effect should curb the growth of consumption in those countries. As a result, the consumption of non-OECD countries is expected to exceed that of the OECD countries by the end of the projection period.

The oil supply is determined by the level of remaining oil resources and the degree to which those are extracted and marketed.

The estimates of oil resources still available are surrounded by uncertainty owing to differences in methods of calculation, political interests and the fact that a number of regions have not yet been examined for the presence of oil.

These remaining oil resources are an important factor influencing future production potential and prices. However, it is difficult to estimate precisely the level of future production since, apart from the uncertainty over remaining oil resources, it is also necessary to take account

Oil resources

The IEA definitions distinguish between conventional and non-conventional oil[1]. Conventional oil is defined as the oil which can be produced from underground reservoirs by means of traditional wells. It comprises several categories[2]. The first consists of the proven reserves. These comprise the oil which has been discovered and is expected to be economically viable to extract. At the end of 2004, the IEA has estimated those reserves at 1,106 billion barrels, which would last for about another 40 years at the current rate of production. Second, there is the expected increase in reserves resulting from technological progress, which boosts the recovery rate in existing oil fields, or from new information on these fields. These reserves are estimated at 308 billion barrels. The third category comprises resources which have not yet been discovered. These are estimated at 883 billion barrels. The conventional oil resources thus total 2,297 billion barrels.

Non-conventional oil is technically far more difficult to produce, so that the production costs are much higher than for conventional oil, and the economic viability of its extraction is more dubious. In addition, the adverse environmental impact of producing non-conventional oil is greater. These resources are estimated at around 7,000 billion barrels. Non-conventional oil comprises : extra-heavy oil, oil shale, natural bitumen and tar sands.

(1) The conventional oil resources also include natural gas liquids.
(2) The IEA's World Energy Outlook for 2004 and that for 2005 were used as the source for the figures on conventional oil resources.

of factors influencing investment and development conditions in the countries where the deposits are located. Thus, a recent American study[1] estimates that around 85 p.c. of the world's proven oil reserves are located in countries where the investment risks are considerable or where foreign investment is prohibited.

Estimates of future oil supplies vary widely depending on the organisations which produce them. A number of observers, including the IEA, predict further increases in production in line with demand up to the end of the projection period in 2030. Conversely, other analysts expect production to peak before that date and decline subsequently. That view conforms to the "production peak" theory introduced in the 1950s by the American geologist M.K. Hubbert and applied to United States oil production. Since then, that theory has also been applied to other countries or regions, and in recent years it has also been used to predict the global production peak. Estimates of the timing of that peak vary widely, and fall roughly between 2005 and 2040. In the IEA's projection, the market shares of the OPEC countries increase from 41 p.c. in 2005 to 48 p.c. in 2030[2].

According to the IEA's reference scenario oil prices in real terms should decline gradually up to 2012, and then increase, owing to the combined effect of rising marginal production costs in non-OPEC countries and the expanding market share of the OPEC countries in total output[3]. Nevertheless, oil prices are expected to remain below the level reached in 2006. However, the OPEC countries have nothing to gain from excessively high prices, since in that case, global demand would contract, it would become more attractive to use alternative energy sources and it would become profitable to exploit hitherto undeveloped oil deposits, situated mainly outside the cartel. It must be stressed that this prediction is based on a continuous increase in oil production over the projection period. If the rise in oil output is slower, or if production peaks during that period, that will exert additional upward pressure on prices. On the basis of these findings and other projections, it can be said that there is a fairly broad consensus that oil prices will remain high over the next few decades in comparison with the pre-2002 period.

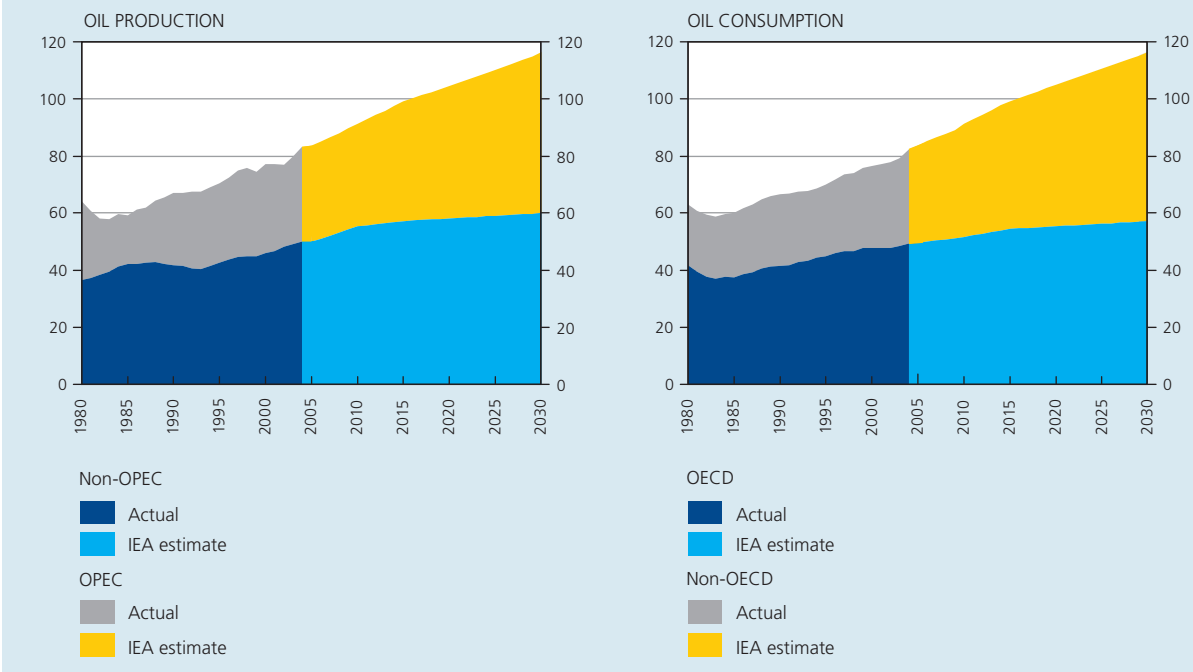
(1) United States Government Accountability Office (2007).

(2) This increase in the "call on OPEC" is due largely to the assumptions underlying the projection and is subject to criticism (cf. in particular Boussena, Pauwels, Locatelli and Swartenbroekx, 2006).

(3) The latest EIA projection relating to the international energy market, dated May 2007, indicates a relatively similar movement in oil prices for the reference scenario.

CHART 8 GLOBAL OIL PRODUCTION AND CONSUMPTION

(millions of barrels per day)



Sources : EIA, IEA.

It is important to point out that this price scenario may prompt a number of structural adjustments on the oil market and on the energy markets. On the supply side, high prices may encourage investment in exploration, production, transport and refining of oil, and enhance the attractions of alternative energy sources. On the demand side, high prices may lead to greater energy efficiency. Such developments are likely to exert downward pressure on prices.

In the case of metal prices, the long-term projections should take account of a number of characteristics typical of this market, different from those of oil. First, the supply of these commodities is virtually inexhaustible, and a number of metals can be recycled. Next, the market structure is competitive. Also, investments are quicker to result in increased production. These factors limit the risk of structurally high metal prices, even in cases where a substantial increase in demand is expected. However, it is currently hard to predict whether the above-mentioned historical downward trend in metal prices, namely the decline of 1.5 p.c. per annum in real terms over the period 1971-2002, will continue in the future. According to the World Bank (2006b), it is possible that the structural increase in certain production costs in the metal sector, particularly the energy costs, may halt this downward trend and cause prices to remain above the low levels reached in the later 1990s.

5. Economic policy implications

High and volatile oil prices have an adverse effect on the economy. Moreover, the use of oil as the main source of energy is contributing to global warming. Governments therefore clearly have a role to play in the energy debate.

The experiences of the 1970s, however, have shown that an excessively accommodating monetary policy, which tries to attenuate the consequences of higher energy costs, does not produce the expected result : quite the contrary. Even in the case of an oil shock, it is essential for the monetary authorities to adhere to their objective of medium-term price stability, otherwise the unavoidable temporary increase in inflation will become fixed in the inflation expectations of the economic agents, leading to higher wage demands which will in turn drive up inflation. The economy would thus become trapped in a price-wage spiral.

Price regulation, aimed at compensating for the higher oil prices by fiscal measures, e.g. by reducing the taxes on petroleum products, is not advisable either, since it has the disadvantage of disrupting the pricing mechanism and thus delaying the adjustment of demand, for example via energy saving measures. In addition, if their budgetary cost is high, fiscal measures to compensate for prices may also increase the vulnerability of the budget position and augment the effect of high oil prices at macroeconomic level, when these measures ultimately prove to be unsustainable and have to be cancelled.

On the other hand, governments may consider a number of structural measures designed to limit the risks associated with serious production disruption and to guarantee a stable energy supply.

First, action may be taken to expand and improve the information available on the oil markets. It has repeatedly been found that the information currently available is often incomplete, inaccurate and supplied too late. In recent years, progress has been made in this direction, as a result of the JODI project, initiated jointly by seven international organisations [1].

Next, strategic reserves should be maintained at an adequate level. In that regard, the IEA recommends a level of reserves corresponding to 90 days' net imports. Governments can also eliminate any barriers to investment, and try to conclude long-term contracts with oil suppliers.

Finally, the oil-consuming countries can continue looking for ways of making energy consumption more efficient, and diversifying their sources of supply in order to reduce their dependence on oil and gas. In this connection, the problem of the lack of alternatives to oil-based fuels for motor vehicles is of vital importance. There are also ways of continuing to reduce energy intensity in industry and in households. A period of high oil prices may be a good time to take such measures.

A number of initiatives have recently been taken in Europe to define a coordinated energy policy. Thus, the March 2007 European Council presented a draft Energy Policy for Europe (EPE), integrated with a climate policy [2]. It was based on recommendations by the European Commission (2007) published at the beginning of this year in the *Strategic Energy Review*. The main points of the energy policy are : security of energy supplies ; maintenance of the competitiveness of the European economy, notably by investing in energy efficiency (the aim is to achieve a 20 p.c. improvement by 2020), renewable energy (the aim is to increase the share of such energy to 20 p.c. by 2020)

(1) APEC, Eurostat, IEA, IEFS, OLADE, OPEC, UNSD.
(2) Council of the European Union (2007).

and new technologies; encouraging respect for the environment and combating global warming (reducing CO_2 emissions to 20 p.c. below their 1990 levels by 2020).

As a first concrete step in the creation of the EPE and in anticipation of further action, the European Council adopted a global energy plan for the period 2007-2009. The progress and results of the energy action plan will undergo annual assessment by the European Council. The Commission was asked to update the *Strategic Energy Review* by the beginning of 2009. That update will be used as the basis for a new energy action plan to take effect in 2010.

Conclusion

The commodity markets have become the focus of close attention on account of the steep rise in prices, particularly since 2003. In nominal terms, the prices of oil and most metals have reached historically high levels, and in real terms they have reached their highest levels since the early eighties.

The recent increase is due mainly to a substantial expansion in demand for commodities. That reflects the vigour of global economic growth in recent years, and particularly the increasing integration of a substantial proportion of the world's population in the global economy and international trade.

The rising price of oil is due partly to a series of developments on the supply side. The historically strong growth of demand for oil recorded in 2004 in combination with a deceleration in the growth of non-OPEC countries production thus put a strain on the oil market. In response, the OPEC countries adopted an accommodating attitude by producing at almost maximum capacity until the end of 2004. The following years, OPEC production remained at a high level. The excess production capacity dropped to a very low level, so that oil prices were influenced by every change which had a negative impact on the oil supply, such as the regular recurrence of geopolitical tensions.

The figures for economic growth and inflation show that the oil-importing countries have stood up well to the increasing oil price in recent years. The change in the monetary policy system compared to the 1970s, a number of structural changes taking place in the advanced economies, the beneficial effects of globalisation and the favourable economic climate are the main contributory factors.

Looking to the immediate future, on the basis of the forward prices quoted, market operators consider that the high oil prices currently prevailing are structural. In the long term, according to the latest IEA forecasts, demand for oil is expected to increase between 2005 and 2030 by an average of 1.3 p.c. per annum, with a similar increase in production, stepping up the "call on OPEC". The IEA is thus in the optimists' camp, as many analysts actually expect production to peak before 2030. The IEA – in common with the majority of other observers – expects oil prices to remain at a high level over the next few decades. There are some factors which may temper the trend in prices. Thus, high prices could depress demand for oil (efforts to improve energy efficiency, search for alternative sources of energy) and make it profitable to exploit oil fields hitherto undeveloped. Metal price forecasts predict moderation of the current high level, mainly because of the flexibility of supply, as the production capacity can be increased quite rapidly.

Owing to the major economic impact of high and volatile oil prices and growing concern over the environmental consequences of energy consumption, governments have a key role to play in the energy debate. In recent years, there have been a number of European initiatives aimed at creating a common European energy and climate policy. For instance, in March 2007, the European Council adopted an Energy Policy for Europe (EPE), which was put into practice in the form of an energy action plan for the period 2007-2009.

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The Single Euro Payments Area : SEPA

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J. Vermeulen

Introduction

In the course of the entire process of economic integration which began in Europe half a century ago, several steps have been taken with the aim of unifying the various national financial markets and creating a genuinely integrated market. Undeniably the most dramatic stage was the advent of the euro on 1 January 1999 and the launch of the euro notes and coins three years later. At the same time, Target – the real time gross settlement system for large payments in euro – was established in 1999, creating a vital instrument for the implementation of the single monetary policy.

Today, all consumers can easily effect [cash] payments anywhere in the euro area, using the same unit of account. However, in the case of small cashless payments (retail payments), each country still has its own specific features (infrastructures, instruments and regulations) so that cross-border payments are more complex than domestic payments, and economic transactions between countries are more complex than those within national borders.

As part of the Lisbon Agenda, which aims to boost the competitiveness of the European economy, the SEPA (Single Euro Payments Area) project represents a major new step forward. It is intended to enable the economic players to effect cashless payments throughout Europe via a harmonised set of instruments, so that there is no longer any difference between a national payment and a cross-border payment. Thus, the establishment of SEPA will create an innovative, efficient and competitive retail payments market, giving the euro its true dimension as a single currency and permitting full use to be made of the opportunities offered by the single market, since the payment systems work by "oiling the wheels" of the single market.

In the coming years, the traditional Belgian instruments – credit transfers, direct debits and card payments – will be replaced by European payment instruments. This revolutionary development requires the implementation of a complex process of harmonisation aimed at abolishing all the legal, technical and practical obstacles, and entailing the commitment of all the players concerned, ranging from the financial sector to the consumer and including businesses and public authorities.

In this article we describe the various phases in the creation of the single euro payments area, the European context in which it is taking place and the Belgian approach to the migration to the new payment instruments.

1. The concept of the Single Euro Payments Area (SEPA)

1.1 SEPA : definition and objectives

SEPA is "an area in which consumers, companies and other economic actors will be able to make and receive payments in euro, whether within or between national boundaries, under the same basic conditions, rights and obligations, regardless of their location" [1].

(1) Towards a Single Euro Payments Area, the ECB's 4th SEPA progress report, February 2006.

Starting from a fragmented framework in which each country has developed a national payments system with its own characteristics (legal framework, consumer protection, payment practices, infrastructure, charging policy, etc.), SEPA aims to foster European integration via a competitive and innovative retail payments market in the euro area, capable of providing better services, more efficient products and less expensive payment solutions.

Once SEPA is in place, the advantages will be as follows:
- everyone will have the use of a set of common European payment instruments which will operate in the same legal framework and according to the same technical and operational standards. A Belgian consumer will thus pay his water bill for his home in Belgium in the same way as he pays for his holiday apartment on the Spanish coast, via the new European direct debit system. Similarly, a company will be able to pay its expatriate employees via one and the same bank regardless of the SEPA country in which it is based;
- competition between payment system suppliers will develop at all levels, which should, in principle augment their efficiency and lead to more advantageous pricing;
- firms operating at European level will be able to achieve substantial economies of scale by rationalising their payments: they will be able to handle all their payments via a single European centre for the entire group;
- SEPA will also help to eliminate some major obstacles to the free movement of products and services in the single market.

1.2 The SEPA area

The document "SEPA Countries and SEPA Transactions" (EPC [1] – 27 February 2007) identifies the countries which make up SEPA, namely:
- the thirteen countries which have adopted the euro;
- the fourteen other European Union (EU) countries;
- the three other countries in the European Economic Area (Iceland, Liechtenstein and Norway);
- Switzerland: even though EU legislation has not been transposed into Swiss law, the Swiss banks can join in the SEPA project by taking the necessary measures (Resolution EPC 040/06).

A number of territories are considered to form part of the EU (under Article 299 of the Treaty of Rome). They are the French overseas departments (Martinique, Guadeloupe, Guyana and Réunion), Gibraltar (United Kingdom), the Azores and Madeira (Portugal), the Canary Islands (Spain) and the Åland islands (Finland).

Five of these territories have their own ISO country code. Altogether, therefore, thirty-six ISO country codes are possible in SEPA.

A transaction is only regarded as a SEPA transaction if it takes place between two banks with a Bank Identifier Code (BIC) comprising one of these thirty-six ISO country codes.

1.3 The European actors in SEPA

1.3.1 The Council and the European Parliament

Ever since the early 1990s, the European Commission has been examining the question of cross-border payments in the EU, in the light of the high charges, lengthy execution times and lack of transparency associated with this type of transaction. It therefore set the tone with Regulation 2560/2001 [2] which obliged banks to cease differentiating at European level between charges for cross-border payments and charges for national payments.

SEPA aims to improve the operation of the single market and meet the targets defined by the Lisbon Agenda. The existing legal frameworks relating to payments are largely based on national regulations, causing fragmentation of the single market.

For some years now, the European Commission has been working on a draft European Payment Services Directive – PSD [3]. Adopted by the European Parliament on 24 April 2007, the PSD is to be transposed by no later than November 2009 into the law of each country making up the SEPA area. The European authorities thus wish to establish a single European legal framework, an essential prerequisite for implementing SEPA.

The directive is based on three main pillars:
- first, to permit stronger competition on the national markets, it regulates the right to provide payment services for the public by harmonising the market access conditions applicable to payment service providers other than credit institutions. A stumbling block which held up the directive for a long time was market access for payments institutions, new players offering payment services, and the status to be accorded to them;
- in order to strengthen consumer protection, the directive aims to improve transparency and to guarantee efficient payment systems. New information obligations

(1) EPC is the abbreviation for the European Payments Council, see 1.3.3.

(2) Regulation (EC) No 2560/2001 of the European Parliament and of the Council of 19 December 2001 on cross-border payments in euro.

(3) Directive of the European Parliament and of the Council on payment services in the internal market and amending Directives 97/7/EC, 2000/12/EC and 2002/65/EC.

will be imposed on payment service providers[1]: for instance, the payer will have to receive information on the charges payable, if any, on the payment transaction, and on their breakdown, the debit value date or the date of receipt of the payment instruction. The payee will have to be informed of all the charges applied to the payment transaction and their breakdown, and the credit value date;
– definition of the rights and duties of all the parties involved, be they consumers or payment service providers.

Finally, the scope of this directive is not confined to the new payment instruments defined by the SEPA project, and the directive will therefore apply in the same way to existing national payment instruments, both those for euro payments and those in any other national currency.

1.3.2 The European Central Bank and the Eurosystem

The European Central Bank (ECB) and the Eurosystem play a key role in the implementation of the SEPA project. The tasks of the Eurosystem include promoting the smooth operation of payment systems while ensuring their efficiency and security. In that context the Eurosystem therefore has to be an important player in the process, fulfilling the role of a catalyst.

The Eurosystem took the introduction of the euro as an opportunity for highlighting the need for a European payments area. It was invited to participate in the meetings of the EPC (European Payments Council) and most of the working groups as an observer, in order to put its own point of view on the strategy of the banks. That role also enables it to express the expectations of all the economic actors. It keeps a close eye on the progress of the work of defining the components of the future single payments area at European level.

The Eurosystem formulates recommendations for a retail payments system meeting the needs of a unified market, encourages governments to adopt the SEPA products as soon as possible in order to act as a driving force in putting SEPA in place, and collaborates in publicity measures at both European and national level, via the national central banks.

Having presented its vision of an international retail payments system in September 1999, the ECB published a number of progress reports[2] in September 2000, June 2003, December 2004 and February 2006 on progress towards the establishment of SEPA. The fifth version of that report is currently in preparation.

The national central banks of the euro area are closely involved in the preparation of European policy within the Eurosystem. At national level, each of them provides active support for the country's financial community, and assists its migration in order to foster the successful local implementation of the SEPA objectives.

1.3.3 The European Payments Council

The European banking community understood the signal sent out by the authorities, and in June 2002 it decided to set up a new pan-European body, the European Payments Council (EPC), with representatives from banks and associations of financial institutions from the thirty-one SEPA countries.

Via the EPC, which is based in Brussels, the European banking sector unequivocally affirmed its intention to create a single payments area by 2010, and to do so primarily by a process of self-regulation (interbank agreements concluded at European level).

The EPC is an international non-profit organisation governed by the Belgian legislation on international non-profit organisations (law of 2 May 2002). It currently comprises 67 members and encompasses the banks and European credit sector associations, namely the European Banking Federation (EBF), the European Savings Banks Group (ESBG) and the European Association of Cooperative Banks (EACB).

The EPC Plenary[3], comprising representatives of all types of European banks, takes decisions on strategic questions prepared by a number of working groups dealing with key topics relating to the establishment of SEPA.

1.4 The SEPA components

Apart from the legal framework mentioned earlier, the project is based on a number of components intended to permit the eventual establishment of a totally automated chain for processing all euro payment transactions in accordance with SEPA.

Definition of the standards is an essential prerequisite for establishing an efficient payments system: the existence of common standards is the only means of achieving the automation of the entire payment processing chain. In

(1) Articles 36 and 37 of the Directive on payment services in the internal market.
(2) Towards a single euro payments area – Objectives and deadlines – Progress report.
(3) The current governance structure dates from 2004. The Plenary is the EPC decision-making body. It is assisted by the Coordination Committee.

SEPA, interoperability can therefore only be ensured if all the actors adopt common standards so that payments can be automated.

The EPC thus defined an interoperability framework for card payment systems (SEPA Cards Framework) and drew up practical rules (Rulebooks) for the new payment instruments (credit transfer and direct debit), namely the SEPA Credit Transfer (SCT) and the SEPA Direct Debit (SDD)[1]. The EPC defined these schemes, the rules applicable to the processing of payment orders, and the data necessary for their exchange. The aim is to establish end-to-end automation of the processing of payment instructions in order to execute them more speedily while also reducing the costs. All the schemes and the Rulebooks will be implemented on the basis of technical standardisation of the data exchange (XML language – ISO 20022 international standards).

In an initial phase which is currently nearing completion, the EPC concentrated on defining the basic components necessary for the creation of a genuinely unified market. Subsequently, the work will probably focus on the creation of added value services (AOS – additional optional services) permitting the progressive automation of the processing of payment transactions, e.g. via the dematerialisation of certain stages in the process. Thus, electronic invoicing (e-invoicing), the electronic reconciliation of invoices (e-reconciliation) and the European electronic direct debit mandate (e-mandate) are subjects to be addressed in more detail.

1.4.1 Payment instruments

The EPC is using three main categories of instruments to provide payment solutions for future SEPA users: the European credit transfer, the European direct debit and the card payment.

These instruments have been developed to meet the everyday needs of European users by providing them with payment instruments which are both simple and economical. For more specific payment transactions, the market players will be able to develop additional optional services, based in particular on the specifications relating to the European credit transfer and the European direct debit. These "enhanced services" must not under any circumstances hamper the smooth operation of the basic service, restrict competition or cause renewed fragmentation of the market.

During the design phase of the various SEPA payment instruments, the EPC adopted two different but complementary approaches:

- a strategy for replacing the European credit transfer and the European direct debit by offering totally new instruments: it soon became apparent that it was unrealistic to try to harmonise the various different but similar existing payment instruments, in view of their great diversity. The EPC therefore opted for the definition of new instruments developed from the start for cross-border use. This resulted in two Rulebooks describing the schemes (rules, practices and standards) ensuring interoperability for the processing of SEPA payment transactions at interbank level;
- a strategy for adapting card payments. Since this type of payment is far more complex than the other two means of payment adopted, the EPC considered it preferable to adapt the existing schemes in line with a new series of technical and commercial processes and standards. For cards, the EPC produced a reference framework (Framework) setting out the main principles which card systems must satisfy in order to eliminate the technical, legal and commercial barriers impeding the interoperability of card transactions.

The "Rulebooks" define the standards to be respected for interbank exchanges, but the EPC also issues recommendations for relations between banks and their customers (*bank to customer B2C* and *customer to bank C2B*).

1.4.1.1 The European credit transfer

The credit transfer is a payment order issued by a debtor to his bank instructing the bank to transfer funds to the payee's bank.

The new European credit transfer operates according to basic principles similar to those of the current Belgian credit transfer, the work of the EPC having focused mainly on greater standardisation in order to automate the interbank payments (UNIFI (ISO 20022) XML).

The main innovations introduced by the EPC are:
- reachability throughout the SEPA area: it must be possible to arrange a payment in favour of any payee;
- compulsory use of the BIC[2] and the IBAN[3], as is already normal practice for cross-border transfers;
- extended message information.

(1) The European credit transfer and the European direct debit are the terms adopted by the Belgian financial community to designate the two new payment instruments, the *SEPA Credit Transfer* and the *SEPA Direct Debit*. Their names may vary from one country to another: thus, in France, the preferred term is *prélèvement* (take out) rather than direct debit. In the rest of this text we shall use only the terms adopted in Belgium.

(2) BIC (Bank Identifier Code) – this code permits identification of the financial institution operating an account.

(3) The IBAN (International Bank Account Number) is an account number with a uniform, international structure. It is made up of the code for the country in which the account is held, a two-number check digit and the national account number (the traditional account number).

The EPC will probably adapt the content of its "Rulebook" to the more stringent requirements defined by the PSD when it becomes officially applicable, particularly as regards the time allowed for executing a payment [1].

1.4.1.2 The European direct debit

The direct debit is a transfer initiated by the creditor via his bank under an agreement concluded between the creditor and the debtor by means of a mandate.

For this instrument, too, the EPC has defined a set of common rules and procedures and specified a common service level, and processing times to be respected. Here, too, the use of the UNIFI standards (ISO 20022) XML is intended to standardise the messages exchanged.

The EPC opted for a European direct debit system based on the CMF model (Creditor Mandate Flow – the mandate is administered by the creditor), different from the current Belgian system which is based on the DMF model (Debtor Mandate Flow – the mandate is administered by the debtor's bank) [2].

The main characteristics of the European direct debit are :

- reachability throughout the SEPA area : a European direct debit can be effected in favour of any payee ;
- the mandate can be issued in paper form or electronically ;
- compulsory use of the BIC and the IBAN ;
- as well as the recurring direct debit, there is now the option of a one-off direct debit (which did not previously exist in Belgium) ;
- the debtor can ask his bank [3] to reverse a debit which has already been effected :
  - within eight weeks ;
  - within 13 months if the mandate was invalid or had expired ;
- The EPC is currently working on the preparation of a special European instrument for direct debits between businesses (B2B).

Meanwhile, these specifications are no longer entirely in line with the requirements of the European authorities. As in the case of the European credit transfer, the EPC will have to adapt the content of the "Rulebook" according to the obligations defined in the PSD, particularly as regards the deadlines for requesting reversal.

1.4.1.3 The SEPA card payment

In the case of card payments, the EPC has been far less radical : it has confined itself to defining the SEPA Card Framework (SCF), setting out the general principles which issuers, holders, card systems and operators must satisfy.

The main characteristics of a SEPA card payment are :

- every card [4] issued by a credit institution must be capable of being used on any terminal throughout the SEPA area ;
- competition is possible between payment card processing service providers : the opening up of the entire SEPA market will make the market competitive and reduce the costs to users ;
- technical interoperability based on the use of chip cards meeting the EMV standard [5].

1.4.2 The infrastructures

The SEPA clearing and settlement framework [6] is intended to guarantee access for all banks in the SEPA area ("reachability"). One of the basic principles is the clear segregation (unbundling) of roles and responsibilities between the payment instruments and the infrastructures (the whole set of procedures and systems used by financial intermediaries to clear and settle payment orders).

The infrastructures will play a key role in the success of SEPA by permitting efficient and secure transfers between debtors and creditors via the financial intermediaries. They will have to be capable of managing the migration of a critical mass of retail transactions to the new European payment instruments.

At present, the infrastructures are fragmented at European level : each country has developed its own (in some cases multiple) clearing systems, which may or may not be automated (ACH – Automated Clearing House) to meet national requirements. This has led to the coexistence of dozens of different infrastructures operating primarily at national level, generally with their own specific standards.

(1) The PSD sets a deadline of three working days. That will be cut to one day from 1 January 2010. For a payment between a Belgian payer and a Belgian payee, the deadline is still fixed by the Poty law at one working day.

(2) The current Belgian system of direct debits (DOM 80) is based on the DMF model : the debtor sends the mandate to his bank or to his creditor, but it is the debtor's bank that keeps the mandate and pays the creditor's request for payment after checking the mandate. The SEPA Direct Debit is based on the CMF model in which the creditor keeps the mandate and requests payment on that basis from the debtor's bank. The main difference between the two systems therefore concerns the party keeping and administering the mandate.

(3) The bank is then obliged to make the refund ; the validity of the request has to be examined in the context of the debtor/creditor relationship.

(4) This concerns both credit cards and debit cards. However, special cards are excluded, e.g. cards issued by private companies, fuel cards, "Proton" type electronic purses, etc.

(5) EMV (Europay, MasterCard, Visa) is an international standard for chip cards. The abandonment of magnetic strips in favour of chips is justified by the ever-increasing security requirements. Interoperability was also at the centre of the development of the EMV card, which offers other functions in addition to cash withdrawals and payments.

(6) Framework for the evolution of the clearing and settlement of payments in Sepa, EPC, January 2007.

It is these national systems that exchange the very great majority of payments, which are predominantly domestic. The diversity of systems also engenders wide variations in service levels, not only between different countries but also between national and cross-border payments.

The clearing of cross-border transactions is currently based mainly on two types of solutions: multilateral systems or bilateral mechanisms in the form of correspondent banking. The future will decide whether these two types of solutions continue to operate in parallel, or whether one will come to dominate on the European payments market.

The SEPA project sets ambitious goals for infrastructures: they will have to ensure the interoperability required for the project to work, while respecting the constraints set by the SEPA framework for infrastructures and the PSD; in particular, it will be necessary to make major reductions not only in costs but also in the time taken to process international transactions in the SEPA area.

Interoperability will probably lead to consolidation of the payment infrastructures at European level, certainly in the case of multilateral systems, via one or more central structures managing all national and cross-border transactions (a central PE-ACH – Pan-European ACH).

So far, the EBA (Euro Banking Association) has developed STEP2, the first pan-European automated clearing house, which can clear both domestic and cross-border retail payments in euro. This is the first infrastructure to satisfy the criteria for a PE-ACH as defined by the EPC. However, up to now the volumes handled have been fairly marginal, and few national transactions are transferred to this European system. Other companies (Equens/Netherlands, STET/France, Voca/Britain, etc.) have announced that, in the future, they intend to offer a solution for clearing transactions in SEPA.

Another route is that followed by the EACHA (European Automated Clearing House Association) which links together the national clearing houses. This association is examining the possibility of interconnecting the national infrastructures within a vast payment exchange system.

By the end of 2010, all infrastructures will have to be capable of handling the critical mass of euro payments in the SEPA format, while ensuring that, until that time, the current payment operations exist alongside the SEPA instruments. Another challenge is to increase transparency in regard to the services offered and the rates charged by the infrastructure providers.

1.5 The European timetable for SEPA [1]

The preparations for SEPA are divided into a number of phases, most of them determined by the EPC. In 2002, the EPC proposed a timetable for SEPA, and so far that has been the guideline for the project. We can now present the progress of the SEPA project in the form of this diagram.

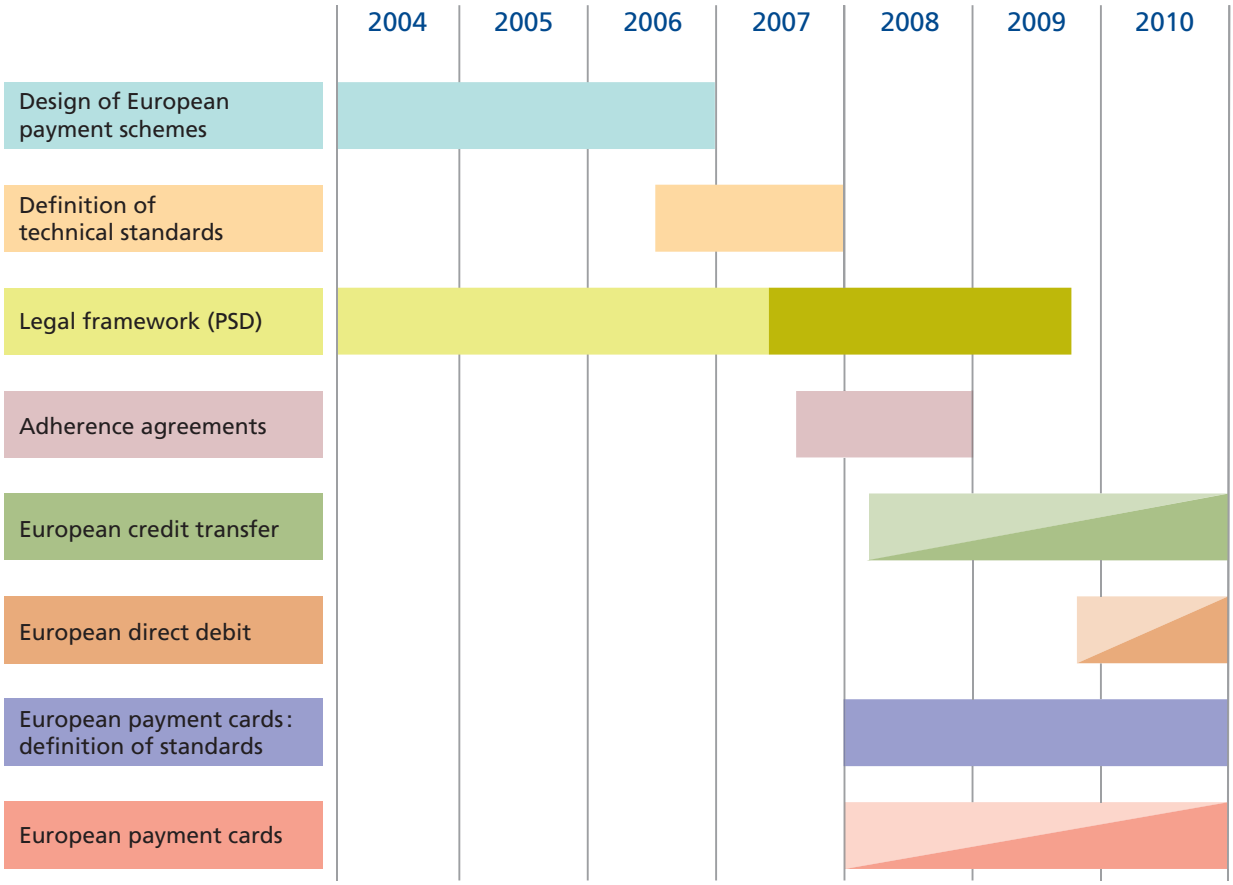
During an initial design phase (2004-2006), the EPC defined the general standards which lay down the rules and the main characteristics of the new payment instruments, also referred to as payment schemes. Between mid 2006 and the end of 2007, more detailed standards were derived from these general standards, defining the interpretation of the general standards and the concrete data formats in precise instructions for implementation and IT development.

At the same time, the European Commission, the European Parliament and the Council were working on a new directive.

The next stage in the transition to SEPA will begin in September 2007. From then on, all banks are expected to undertake to use the new European payment schemes for their customers' payment transactions. For that purpose, each bank is expected to sign an "adherence agreement" with the EPC. These are statements of intent in line with the self-regulatory character of the EPC, without any legally binding measures. It is hoped that the maximum number of banks will sign these adherence agreements on a voluntary basis, so that the new payment instruments can be launched on time, namely on 28 January 2008. On that date, the banks are to offer their customers the European credit transfer as a new payment instrument. The old national credit transfers will, of course, continue to be processed. The aim is to discourage the use of national credit transfers gradually between now and the end of 2010. No specific plan for abandoning them has yet been drawn up in most countries, which suggests that they will not actually be dropped until after 2010.

In principle, the scenario for abandoning national direct debits should be much shorter, since the launch of the European direct debit is scheduled for 1 November 2009, the date on which the European directive is to be finally transposed into national law, even though the initial EPC project still sets the deadline at 2010. However, there are still as yet no plans for abandoning national direct debits. It is therefore even more likely than in the case of European credit transfers that they will not actually disappear in the majority of countries until after 2010.

(1) The actual plan for Belgium is explained in section 2.2.



In the case of card payments, the EPC hopes to be a ble to establish standards by the end of 2010. Each country has its own card payment infrastructure, accompanied by specific protocols and technical solutions, and harmonising them at European level will be a lengthy process. From 2011 onwards, the banks will issue SEPA cards only.

In contrast to the introduction of the euro notes and coins, where there was a compulsory schedule for the various phases, the establishment of SEPA is a process being managed mainly by the market. With the support of the ECB and the European authorities, the EPC has defined the general framework. The market (banks, businesses and public authorities) are now expected to commit themselves to making the necessary changes to establish SEPA. The Belgian example, described below, shows the form which that process may take in practice.

2. SEPA in Belgium

Although SEPA is a project involving 31 countries in a unified payments area, each of those countries is to organise its own migration to SEPA starting from its own national situation, typified by its own payment practices, instruments and specific infrastructures.

2.1 The Belgian implementation arrangements

SEPA is not just a banking project, but concerns all the economic actors. While the banks are the ones most involved in the preparations, sooner or later the other participants in economic life, namely companies, public authorities and consumers, will be confronted by the switch to the new European payment instruments. This is therefore a project which affects the community as a whole, and will require a commitment by all the parties concerned.

In order to ensure that the migration to this new environment is organised efficiently, a dual structure has been set up in Belgium :

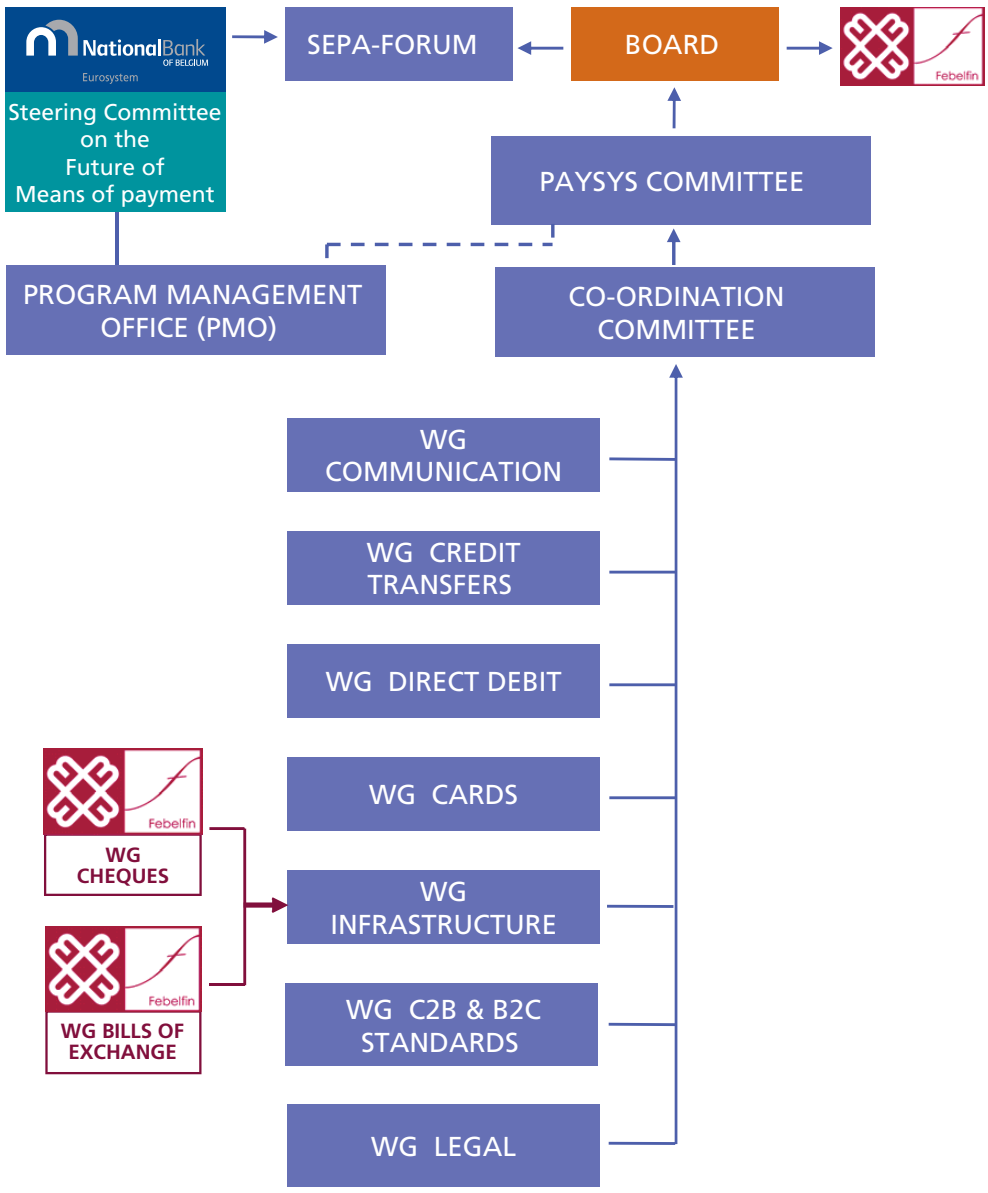
- an interbank structure, called the SEPA Forum, which deals with all aspects relating to the banking world ;
- a broad community consultation structure which also involves the non-bank players via the creation of a third working group called "Implementation of SEPA in the community", which comes under the "Steering Committee on the future of means of payment".

2.1.1 The SEPA Forum

The SEPA Forum was set up in 2005 as a platform for consultation between the Belgian banking sector, the Post Office and the National Bank of Belgium. It is a consultative body without any legal form. Its organisational structure is based on that of the EPC and comprises a number of levels:

- at the lowest level, various working groups and task forces are examining the impact in Belgium of decisions taken by the EPC. All the financial institutions are represented in these working groups;
- on the basis of the findings of these working groups, the Co-ordination Committee (Cocom) coordinates the work, prepares proposals and monitors the overall cohesion;
- The Payment Systems Committee (Paysys) is a consultative body existing at the level of the Belgian financial community, which defines the policy and the strategy for all questions relating to payment systems in Belgium. This body submits proposals to the SEPA Forum which has to pronounce its opinion on them;
- at the highest level, the Governor of the Bank chairs the SEPA Forum and, with the top management of the banks, he endorses the proposals issued by the specific working groups. The banking sector then undertakes to implement those decisions.

Belgium is represented in the various European working groups active at EPC level by the chairmen of the corresponding Belgian working groups. They defend the Belgian viewpoint in the discussions and ensure consistency and direct communication between the Belgian and European levels.



2.1.2 The social dialogue

The migration to the SEPA environment affects the whole community since, ultimately, all the economic actors will use the new payment instruments. It is therefore clearly essential to involve all the parties in the implementation of SEPA in Belgium. The aim is to introduce SEPA in the optimum way in order to make it a genuine success for the Belgian economy as a whole. Consultation of all the parties concerned is therefore an essential pre-condition for the successful implementation of SEPA.

In 2004, a "Steering Committee on the future of means of payment" was set up in order to consider the future of means of payment jointly with the parties involved. It was therefore logical for a special working group, dealing with aspects relating to the implementation of SEPA in Belgium, to be set up under the Steering Committee.

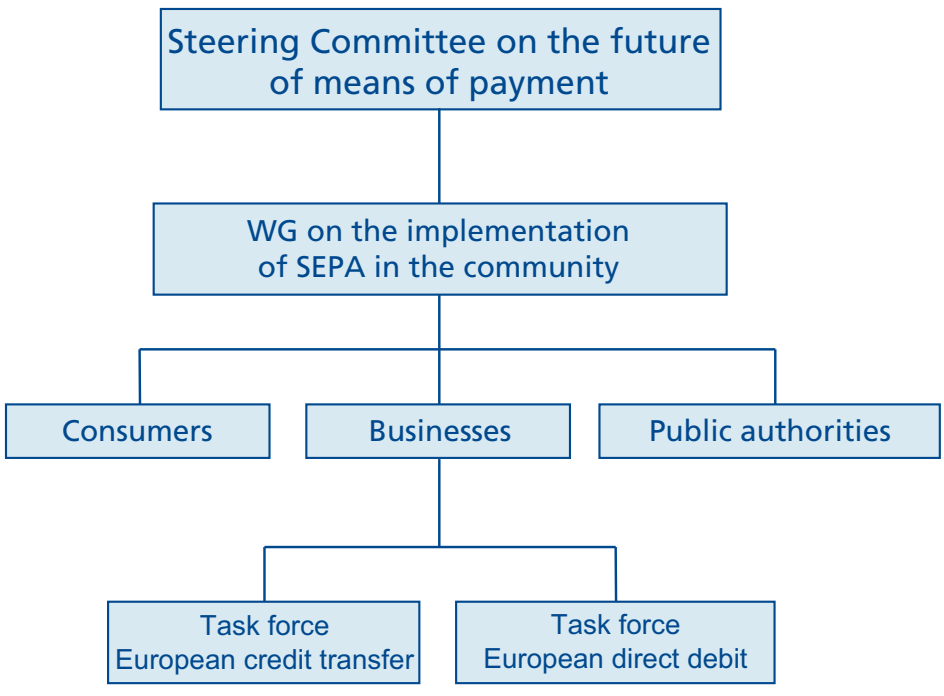
The Steering Committee comprises representatives of the banks, public authorities, the Post Office, consumers, corporates, small firms and the self-employed. The NBB chairs the committee, and provides administrative and organisational support. Three sub working groups have been set up to consider the specific questions concerning consumers, businesses and public authorities.

Initially, the aim is to raise the awareness of the economic actors, to exchange information on the progress of the SEPA project in Belgian society and to identify the points requiring special consideration. At a later stage, a concrete plan for migration to SEPA will have to be drawn up for each of the main sectors.

In the sub-group on public authorities, the federal authorities – wishing to present themselves as early adopters – have set up their own Steering Committee. That move is also entirely in line with the recommendations of the European authorities[(1)]: the adoption of the new payment instruments by the public authorities will speed up the attainment of the critical mass of payments necessary for the SEPA project, and will set an example for the other actors.

In the subgroup on businesses, two task forces have also been set up to coordinate the migration and the transition, one for the European credit transfer and the other for European direct debit, the ultimate aim being to avoid disruption for consumers. The latter task force comprises the main Belgian issuers of direct debits. The banks are also largely dealing with the preparations concerning enterprises. Suppliers of banking solutions such as Isabel (computerised interfaces between enterprises and banks) are in the process of developing software dedicated to SEPA transactions.

(1) In the view of the European authorities, the national public authorities which originate or receive large volumes of payments (wages, taxes, etc.) should act as a driving force and set an example in the introduction of the new payment instruments, by committing themselves to the SEPA project as soon as possible.



2.2 The Belgian migration plan

The Belgian financial community has already defined the main aspects of its migration, despite the continuing uncertainty at both European and Belgian level. The Belgian banking sector has stated that it fully endorses the SEPA objectives and wishes to commit itself to introducing the new payment instruments, abandoning the national means of payment. The non-SEPA payment products, mainly the bill of exchange and the cheque, cannot be abolished in the immediate future, primarily for legal reasons. Efforts will therefore be made to discourage their use by offering replacement solutions.

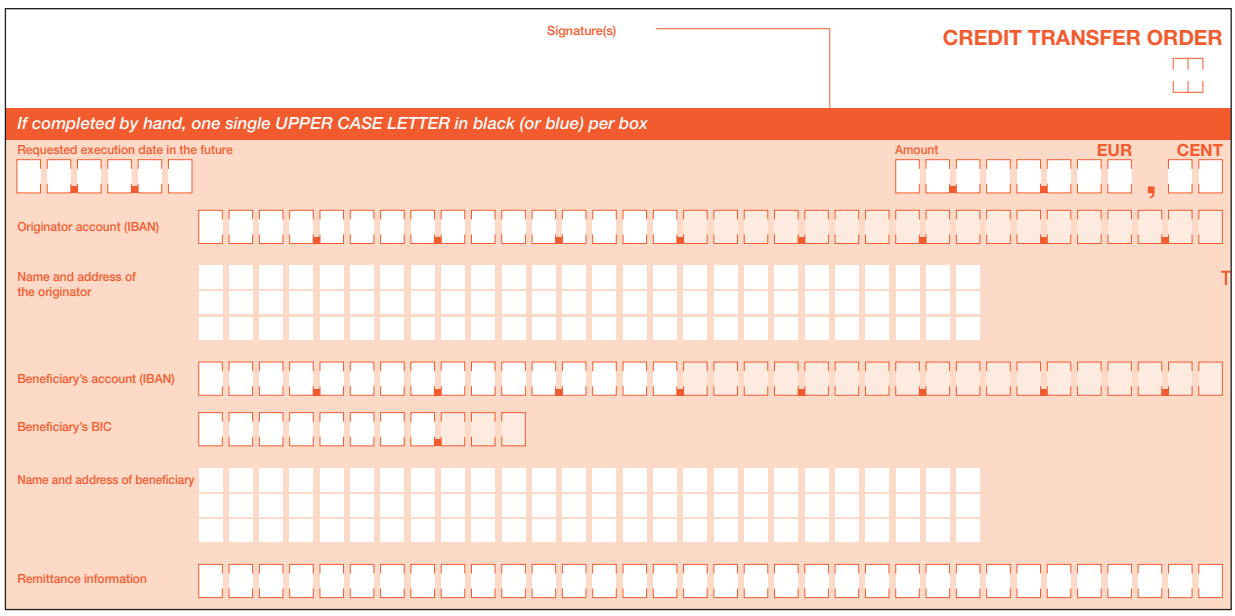
The third version of the Belgian migration plan was published in July 2007. Below we deal with the principal points of that plan.

2.2.1 The European credit transfer

The Belgian financial community opted for an approach involving the minimum changes for users of the European credit transfer in comparison with the Belgian credit transfer. The main adjustments will be as follows:

- in the absence of a common form for the whole of SEPA, a "Belgian" European credit transfer form was developed, enabling the user to switch without any inconvenience to the European credit transfer. Other channels such as self-banking and PC banking will also be adapted. In contrast, phone banking is not going to be adapted;
- compulsory use of the IBAN and the BIC: identification of the basic bank account in SEPA payments will probably be one of the major changes for the user. The IBAN structure adopted, already in use for cross-border credit transfers, will be derived from the BBAN (Belgian Bank Account Number) and will comprise sixteen characters instead of the present 3-7-2 structure[(1)]. In addition, the identification will only be complete if it also comprises the identifier (BIC) of the financial institution. At Belgian level, the financial institutions will also be able to offer their customers automatic derivation of the IBAN and/or the BIC from the BBAN, even in the case of foreign account numbers. Conversion tools are already available for businesses in order to facilitate the conversion of their databases;
- maintenance of structured message code, essential for the reconciliation of invoices for Belgian firms and for which there is not any European standard as yet;
- the execution times currently in force in Belgium for domestic credit transfers, determined by the Poty law, will continue to apply. Although initially the PSD provides for credit transfers to be executed within three days, the Belgian regulations – more advantageous for consumers – will still be binding. In the medium term, the PSD also provides for that time to be reduced to one day. Special attention will have to focus on national SEPA payments which could be channelled via international clearing and settlement infrastructures and for which Belgian execution times will have to be respected.

(1) Thus, following conversion to IBAN, account BBAN 201-0005272-81 will become BE36 2010 0052 7281. A practical conversion guide is available at www.sepabelgium.be/fr/node/62.



The timetable for the introduction of the European credit transfer in Belgium centres on two dates :

– launch of the product on the Belgian market on 28 January 2008 ;
– migration period with gradual switch to the European credit transfer [1] ;
– 31 December 2010 : abandonment of the current Belgian credit transfer form.

2.2.2 The European direct debit

The new European direct debit system is fundamentally different from the current Belgian system. However, the Belgian banks decided to migrate as swiftly as possible to the new common standard and abandon the current system. Maintaining two very different systems in tandem would entail substantial costs, would probably delay the conversion and would make it necessary to adapt a system already destined for abolition to the new rules laid down by the PSD.

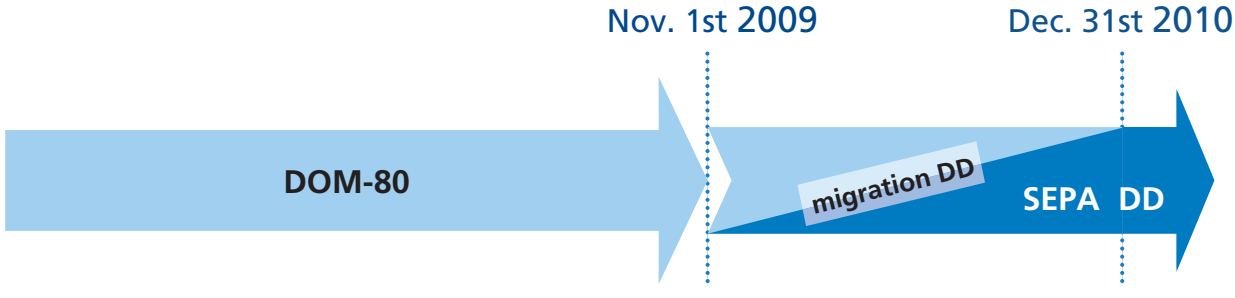
For users, both businesses and individuals, the main changes will concern the following points :

– bank identification via the combination of the IBAN and the BIC in the same way as for the European credit transfer ;
– administration of the mandate : all direct debits are based on the grant of a mandate by the debtor in favour of the creditor. In the case of the European direct debit, the mandate will be retained by the creditor and not by the debtor's bank, as in the case of the Belgian direct debit ;
– the request for repayment by the debtor : subject to compliance with the conditions laid down in Article 52 of the PSD, the debtor has eight weeks in which he can reclaim from his own bank the whole of the amount debited, or even thirteen months if the mandate had expired or was invalid ;
– a new variant of the direct debit will be offered to users via the introduction of a one-off European direct debit which enables the debtor to issue a mandate authorising the creditor to initiate a single debit from his account.

The Belgian financial community has opted for a scenario in which the current Belgian system is replaced by the new European standard. Although direct debits do not have as large a share of the market in Belgium as in other countries, the number of direct debits is considerable, as is the number of mandates currently held by the debtor banks (around 30 million). In order to avoid the need for enterprises to get their customers to sign new mandates when changing their current direct debits to the European direct debit system, the Belgian banks have developed a mandate migration process [2] which will permit their exchange via a central mandate database containing data supplied by the banks currently holding the mandates ; creditors will consult the database via their own banks. This exchange of mandates will be effected by an application developed by the NBB.

(1) The fact that some public authorities intend to use the new European credit transfer form from 2008 will certainly mean that the critical mass can be attained quickly during the migration period.

(2) This process allows the mandates to remain legally valid. The need to inform the parties about their new rights and obligations is under examination.



The Belgian financial community had initially planned to introduce the new type of European direct debit on 1 January 2008, in accordance with the recommendations of the European authorities and keeping to the same timetable as the European credit transfer. At the end of 2006, owing to the delayed adoption of the PSD it was decided to postpone the launch date, because harmonisation of the legal framework throughout the SEPA area is essential for this product. Otherwise it would be impossible for a firm to administer its direct debits with customers in different countries, and thus to deal with varying repayment application times.

The recent adoption of the PSD and its expected transposition into the various national laws by November 2009 at the latest prompted a further postponement of the actual launch date for the European direct debit in Belgium. Thus, the launch date has been set at 1 November 2009, and the period in which the current system and the European direct debit coexist will be kept as short as possible. The probable obligation to apply the PSD to the current direct debit is likely to encourage enterprises to migrate to the new system. The choice of one or more migration scenarios is one of the subjects being discussed with the main users of this means of payment in the task force on the European direct debit.

In any case, the main Belgian corporate users of the product are already making preparations for the migration.

2.2.3 Card payments

Belgium has always had a pioneering role in the field of debit card payments. There is currently only one system in Belgium, namely the Bancontact/Mistercash scheme applied by Belgian banks. Bancontact/Mistercash has been managing the whole card payment processing chain: relations with card issuers, relations with traders, transaction processing, sale and maintenance of payment terminals, etc.

In regard to card payments and the planned process of migration to the SEPA framework, there were four possible scenarios for the Belgian banks:

- convert the present Bancontact/Mistercash scheme into a SEPA-compliant scheme enabling any card to be used on any terminal in the SEPA area: the banks felt that this scenario was unrealistic for a "small" system in view of the size of the SEPA area;
- conclude alliances with other systems to cover the whole of Europe: the banks also considered this option to be unrealistic, since no other system has ever succeeded in concluding such an alliance;
- maintain the national card system and add an international card scheme with co-branding: that is already the case for over 95 p.c. of Bancontact/Mistercash cards which also have the Maestro international function (Mastercard). However, that solution is not in line with the long-term philosophy of the SEPA project since it maintains the fragmentation of the national markets;
- abandon the Belgian system and adopt an international scheme which meets the requirements of the SEPA framework.

The last scenario is the one favoured by the Belgian banks. In the future, Belgian banks will be able to offer other card schemes which conform to SEPA. In the view of the Belgian banks, switching to an international system has another advantage, namely the possibility of incorporating new technical developments, which is not feasible in the case of the Belgian scheme that is reaching the end of its life.

The chosen solution also offers the opportunity to split the card payment processing chain, certainly following the sale of Banksys and Bank Card Company by the Belgian banks. Competition would thus become possible at every stage in the chain: choice of the card scheme which banks offer their customers, choice for traders, choice of the operator for the card processing, etc.

The solution chosen by the Belgian banks means that, on Belgian cards, the Bancontact/Mistercash standard will be replaced by an international standard for domestic Belgian transactions.

The traders' representatives were vigorously opposed to this solution for a number of reasons:

- the Bancontact/Mistercash system has proved to be not only efficient but also secure, relatively cheap, and easy to use. Traders fear that the new system will not achieve the same level of quality as the present system, and that it will be expensive to update the terminals and the software;
- the main objection raised by distributors concerns the charges for payment transactions. The new scale of charges would lead to a substantial increase in the cost per transaction for traders. A key element in the debate is the introduction of an interchange fee. Under the Belgian Bancontact/Mistercash system, Banksys is in direct control of relations between the card holder and the trader via his bank. In contrast, international schemes are based on four-part models with the payment of an interchange fee by the trader's bank (acquirer) to the card holder's bank (issuer), to compensate for the higher costs which the latter incurs (security, guaranteeing the payment to the trader, etc.).

There is nothing certain as yet about these interchange fees, so that the various parties still cannot in any case make the strategic choices which are necessary in the process of migration to SEPA[1].

More generally, there are fears that the predominantly national card payment systems currently used in the different countries may be replaced by one or two international systems owned by Mastercard and/or Visa, reputed to be more expensive. Establishing a duopoly for this type of payment is not, in principle, likely to encourage more competition.

The Eurosystem has drawn the actors' attention to this question[2] and expressed certain fears regarding the SEPA framework for card payments as adopted by the EPC. The Eurosystem has listed a number of general policy principles intended to supplement the framework:

- the existence of consumer choice between the various competing card payment systems, with no predefined priority;
- the existence of a competitive, reliable and cost effective market comprising service providers and infrastructure suppliers;
- the elimination of all technical, contractual and operational barriers forming the basis of the existing national segmentation.

The major sources of concern for the Eurosystem relate to a possible increase in usage costs associated with the replacement of the national systems by international systems (Visa or Mastercard), which generally involve higher interbank fees than the national systems. Nor does it favour co-branding, since – by maintaining the majority of the existing situations and limiting the use of international standards to cross-border transactions only – that does not offer economies of scale or strengthen competition.

The Eurosystem is therefore encouraging the emergence of a European card system based on the second option of the "SEPA framework for cards", namely extension of a national system to all SEPA countries by the conclusion of alliances via agreements between systems which continue to operate independently. That is the Eurosystem's preferred way of boosting competition on the market and making use of the experience of national card systems.

A number of initiatives of this type have apparently been launched. For instance, the Berlin Group, which held its first meeting in October 2004 and comprises 22 of the leading players in the field of card payments, is trying to develop a solution based on national debit card schemes. A more recent initiative by eight major European banks aims to develop[3] an alternative debit card system which will eventually compete with the Mastercard and Visa systems. However, it is too soon to assess the feasibility of these initiatives.

2.2.4 The exchange and clearing infrastructures in Belgium

In June 2006 it was decided that the Belgian centre for exchange and clearing (CEC) would not be converted into a PE-ACH. Ultimately, therefore, the processing of national payment transactions will have to be transferred to a PE-ACH, depending on the offers available on the market. The reason is the same as in the case of the card scheme, namely that the Belgian system is too small to consider developing it at European level.

The Belgian banks did not wish to act as the first mover in the process of migrating payment exchanges to a PE-ACH. At present, there is no pan-European system capable of handling the transactions with the same level of service and at similar cost. Meanwhile, it was therefore decided to establish a provisional scenario by making the CEC SEPA-compliant, i.e. capable of handling the payment transactions effected between Belgian banks via the new SEPA payment instruments. Thus, by the beginning of 2008 when the European credit transfer is expected to be launched on the Belgian market, the Belgian banks will already be able to exchange payments in the new European formats.

For that purpose, the CEC participants and sub-participants have undertaken to:

- continue exchanging their national transactions in the current format via the CEC until the abandonment of the products specific to Belgium (scheduled for the end of 2010);
- use the new SEPA payment instruments as soon as they are launched:
  - for transactions between Belgian banks: exchange via the CEC or a PE-ACH;
  - for cross-border transactions: exchange via a PE-ACH.

Eventually, when the "Belgian" means of payment are replaced by SEPA instruments, the CEC will have to terminate its activities. However, that is not expected before the end of the migration period, namely 2010.

(1) Since the question of charges is a complex one, care should be exercised when comparing the current situation with the one resulting from SEPA. Thus, the obligation imposed by SEPA to "uncouple" the services will ensure greater transparency of pricing and will guarantee competition at the level of each service. In the future, this uncoupling will prevent the internal "cross-subsidising" of certain services, a practice which Banksys was previously able to apply. There also seem to be some signs that this increased competition and transparency have already led to lower prices, particularly at the level of the terminals.

(2) *The Eurosystem's view of a SEPA for cards*, European Central Bank, November 2006.

(3) De Tijd, "Banken werken aan nieuw Europees betaalkaartsysteem", 12 May 2007.

Conclusion

SEPA is unquestionably the missing link which will make it possible to create a genuinely integrated, single payments market. This project aims to replace a set of national systems and standards with European ones, to eliminate all differences between domestic payments and cross-border payments within an area comprising thirty-one countries. SEPA will provide the whole of that community with retail payment instruments which are faster, more efficient, cheaper and more secure than those currently available on the national markets.

SEPA is the result of the efforts of various European actors. The European authorities set up a regulatory framework for all payment services, providing the essential legal basis for SEPA. The ECB and the Eurosystem, which guarantee the smooth operation of the payment systems, advise, assist and encourage all the parties concerned. Finally, the banking community coming together in the EPC is playing a proactive role and – principally via self-regulation – is working on the definition of a harmonised payment environment based on three common payment instruments and on European infrastructures. The ultimate aim is to establish a fully automated chain for processing euro payments, with competition possible at every stage.

Between January 2008 and December 2010, users will gradually have to change their payment practices and switch to the new pan-European instruments. Each country will have to organise this migration according to its own specific situation. Without wishing to act as a pioneer, Belgium is probably one of the countries which has made the most progress in organising that migration. A long tradition of interbank consultation – forming the basis of the current Belgian payments system which is universally acknowledged as efficient – permits the speedy translation of the SEPA standards in accordance with Belgium's particular needs and characteristics, and the definition of a migration plan governing the transition which will end with the disappearance of the current Belgian instruments, replacing them with the new SEPA means of payment. The social dialogue which has been established will mean that all the players concerned can be involved in the migration process : if all the needs and concerns are taken into account, that will facilitate a smooth and harmonious transition.

In the short term, the switch to SEPA will doubtless entail considerable efforts for all the parties concerned, but in the medium and long term it will bring benefits by offering banks, enterprises, public authorities and consumers a retail payments market which is innovative, unified, modern and efficient, enabling the initial objectives to be achieved.

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Belgian corporate finance in a European perspective

V. Baugnet
M.-D. Zachary

Introduction

Analysis of the financing of non-financial corporations on the basis of aggregate data may mask significant disparities, particularly according to the firm's size and its sector of activity. Thus, small firms are generally considered to depend heavily on bank credit and to encounter more problems in raising finance than larger companies. Moreover, the sector of activity in which the firm operates may necessitate a particular type of finance (e.g. very long-term finance in the sectors involving major infrastructure projects; venture capital in the innovative sectors). This article aims to demonstrate the influence of size and sector of activity on the method of financing businesses in Belgium. Taking account of the influence of these factors, the financial situation of Belgian firms is then compared with that of firms in the euro area, the differences being viewed in the context of the respective institutional frameworks. It is in fact probable that certain institutional characteristics, such as the degree of investor protection, transparency and the information available via the markets, the level of competition or the tax system, influence the form of finance chosen by firms.

Overall, this analysis is based mainly on the statistics obtained from the balance sheets and profit and loss accounts of Belgian firms, aggregated by size class and by sector of activity. The BACH (Bank for the Accounts of Companies Harmonised) database managed by the European Commission permits valid comparison between Belgian and euro area firms. Analysis of the results of recent surveys conducted among certain categories of firms in Belgium and in the European Union also provides a more qualitative view of corporate financing conditions.

1. Description of the data and methodological details

1.1 Breakdown by size and by sector

Before compiling and analysing the financial structure indicators, it is useful to break down Belgian firms simultaneously by sector of activity and by size class. That breakdown will probably not be uniform, as some sectors are dominated by the massive presence of firms of a particular size. The financial structure indicators are therefore subject to the combined influence of two factors – size and sector of activity – which the analysis conducted throughout this article will try to separate.

Obtained from the Central Balance Sheet Office, the data relate to the period from 1995 to 2005 and cover firms in the market sectors (excluding agriculture, hunting, fishing, mining, quarrying and financial institutions), or in terms of the NACE codes, sectors D, E, F, G, H, I and K (cf. table 1). In the quantitative analysis, the size of a firm is defined only on the basis of its turnover: firms with a turnover of less than 10 million euro are classed as small; firms with a turnover between 10 and 50 million euro (not inclusive) are classed as medium-sized, and firms with a turnover of 50 million euro or more are classed as large.

Small firms are by far the most numerous (97 p.c. of the total number of firms) and account for 39 p.c. of total employment, while generating 32 p.c. of the value added produced. Despite their small number (less than 1 p.c. of the total number of firms), large firms dominate in terms of employment and value added, with 42 p.c. and 51 p.c.

TABLE 1 BREAKDOWN OF BELGIAN FIRMS[1] BY SIZE CLASS AND BY SECTOR OF ACTIVITY
(percentages of the total)

	Number of firms	Employment	Value added
By size (average 1995-2005)			
Small	97.4	39.3	31.6
Medium-sized	2.0	19.2	17.9
Large	0.6	41.5	50.5
By sector of activity (2005)			
D Manufacturing	9.0	31.0	34.0
E Electricity, gas and water supply	0.1	1.5	4.0
F Construction	11.7	9.9	6.7
G Wholesale and retail trade	30.2	22.0	20.5
H Hotels and restaurants	6.8	3.4	1.8
I Transport, storage and communication	4.7	13.8	13.9
K Real estate, renting and business activities	37.6	18.5	19.1

Source: NBB (Central Balance Sheet Office).
(1) Only firms in the market sectors (excluding agriculture, hunting, fishing, mining, quarrying and financial institutions).

respectively. Medium-sized firms account for 19 p.c. of total employment and generate 18 p.c. of value added.

From the sectoral point of view, taking all size classes together, three sectors dominate the Belgian economic landscape in terms of employment and value added. First comes the manufacturing sector (34 p.c. of value added and 31 p.c. of employment), followed by the wholesale and retail trade sector (21 p.c. of value added and 22 p.c. of employment) and the sector comprising real estate, renting and business activities (19 p.c. of value added and employment). The transport and communication sector represents a significant share (14 p.c.) of value added and employment. Finally, the construction sector employs 10 p.c. of the labour force and accounts for 7 p.c. of the value added produced. The other two sectors, namely energy and hotels and restaurants, are of minor importance, at least from an aggregate point of view.

Small firms are more concentrated in the highly labour-intensive service sectors, such as hotels and restaurants, construction, the sector comprising real estate, renting and business activities, and to a lesser extent trade. This is counterbalanced by a much smaller presence in the highly capitalised sectors such as energy, transport and communication and the manufacturing sector. Large firms present the opposite sectoral specialisation: they are the source of around 70 p.c. of the value added produced in the said highly capitalised sectors, while having a much smaller presence in sectors such as construction and hotels and restaurants. Conversely, large firms dominate in terms of value added in the trade sector, reflecting the importance of mass marketing in Belgium. Finally, the sectoral breakdown of medium-sized firms is in an intermediate position between that of the other two groups of firms.

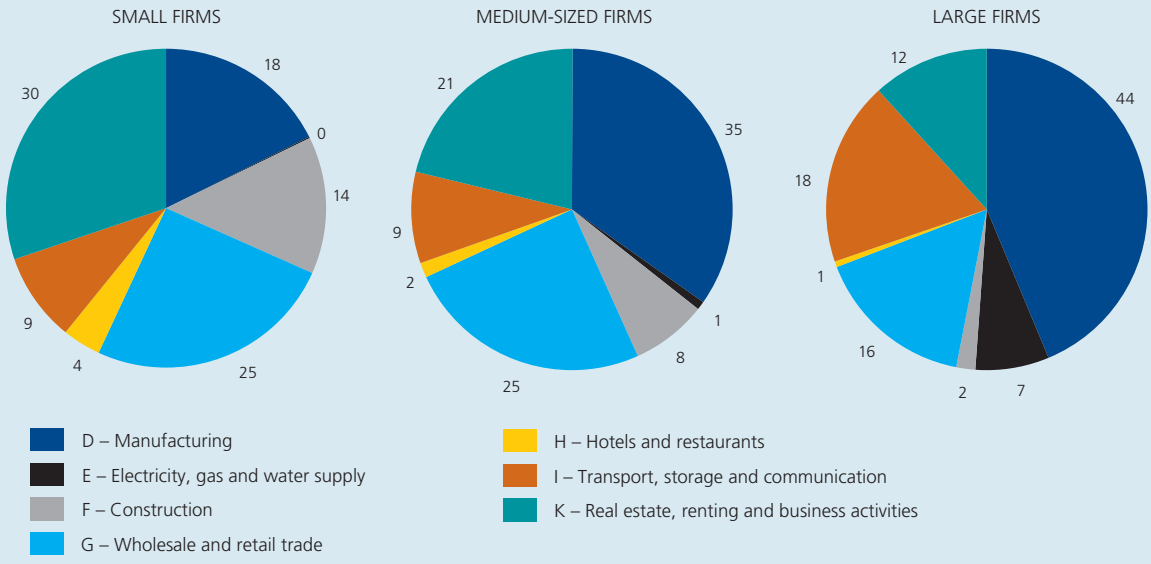
1.2 Method of adjusting the financial indicators

In order to reveal the respective influence of the firm's size and sector of activity on the firm's financial structure, the "gross" data obtained from the Central Balance Sheet Office were adjusted. To reveal the effect of "size", the adjustment consisted in imposing on each size class the same sectoral structure as that observed at aggregate level (taking all size classes together). In analytical terms, that is expressed as:

$$Y(d)_t = \sum_s y(d)_{s,t} \cdot w_{s,t}$$

where $Y(d)$ = aggregate value of the variable at the size class d level
$y(d)_s$ = individual value of the variable at the size class d – sector s level
w_s = weight of each sector in total value added (taking all size classes together)
s = 1,…S sectors
d = 1,…D size classes
t = 1,…T years

CHART 1 SECTORAL BREAKDOWN OF VALUE ADDED BY SIZE CLASS IN BELGIUM (1)
(2005)



Source : NBB (Central Balance Sheet Office).
(1) Only firms in the market sectors (excluding agriculture, hunting, fishing, mining, quarrying and financial institutions).

At the same time, to show the "sector" effect, the adjustment means considering that the class structure within each sector is equivalent to that observed at aggregate level (taking all sectors together), expressed as :

$$Y(s)_t = \sum_d y(s)_{d,t} . w_{d,t}$$

All the indicators were calculated separately for the period from 1995 to 2005, but only the averages for the period are presented in this article, which does not address the cyclical aspects of corporate finance.

Multiple indicators are used to describe the financial structure. First, the debt level is examined as a ratio of equity (debt-to-equity) or total assets (debt-to-assets). While the former ratio illustrates the traditional balance between debt and equity, the latter takes account of the nature of the business activity, whether or not it is capital-intensive, and the corresponding requirements in terms of investment and finance. These two indicators also permit an assessment of the sound and balanced overall financial structure of the business.

The nature of the debt is analysed next, in this case the respective percentages of bank loans, trade credit and other credit in the total debt (1) and the maturity of the debt (short-term versus long-term debt). The financial costs of debt in the form of interest charges are examined in relation to both financial liabilities and cash flow. While the first ratio estimates the average cost of the debt, the second takes account of the financial burden which debt repayment places on the business, in comparison with the available cash flows. The concept of interest charges covers the interest paid on all forms of borrowing, be they granted by credit institutions or by other non-financial corporations (intra-group financing), or interest paid on corporate bonds issued.

Finally, the structure of the firms' liabilities is considered in the context of their asset structure. Combined with examination of their investment policy, this sheds light on the financial position of the firms in relation to the nature of their activities. The simultaneous examination of the two sides of the firms' balance sheets also permits an assessment of their liquidity and solvency.

(1) The data used do not include fixed-income security issues.

2. Size and financial structure

Various points suggest that small firms use different methods of financing from larger firms, or may even be subject to financial constraints.

Problems of information asymmetry are probably more significant in the case of small firms, which often suffer from a degree of information opacity (OECD, 2006). Unlike large firms, they do not issue securities which are systematically quoted on the financial markets, so that they are less likely to be tracked by analysts. There is less publicity surrounding their activities or the contracts which they conclude with their customers or suppliers. Consequently, small firms cannot credibly convey their quality and may have difficulty building a reputation (Berger and Udell, 1998). That is particularly true since a small firm may also be a young firm and/or a firm entering a riskier sector or a less developed or totally new niche (innovation). Since information asymmetry entails costs (screening, contracting, monitoring costs, etc.) for the lender, those costs may limit access to finance for small firms. In addition, if the costs have a fixed component, the average cost declines the larger the borrower, encouraging the banks, for example, to prefer larger customers. Small firms generally have fewer assets available as collateral, to protect creditors against adverse selection or moral hazard problems. Finally, small firms have less bargaining power than larger companies.

2.1 Quantitative analysis

The analysis below compares the financial structure indicators in the three firm size classes (small, medium-sized and large). The gross indicators were adjusted to give the same sectoral breakdown within each size class, corresponding to the sectoral breakdown in the economy as a whole (cf. section 1.2).

There is no apparent linear relationship between the firm's size and its debt level, whatever the indicator used (debt-to-equity, debt-to-assets or debt/cash-flow). On the basis of these three indicators, medium-sized firms display the highest debt levels, but without being significantly different from the other two classes. It is important to mention that the concept of debt calculated on the basis of the balance sheet includes all types of debt, including trade debts, tax liabilities, wages and social contributions due, debts contracted in relation to partners or associate companies, in addition to amounts owed to credit institutions.

Conversely, the debt structure, and especially bank loans as a percentage of the total debt, seems to depend on the firm's size. Small firms are more dependent on bank loans than medium-sized firms, which themselves make more use of bank loans than large firms. Medium-sized firms make greater use of trade debt than their colleagues. This method of financing, which is relatively expensive, may prove useful for managing cash flow. In some cases, suppliers have more information than the banks on the activities of their customers, and/or can use trade credit as an incentive. Finally, the other debts, which include non-trade debts contracted in relation to partners or affiliated companies, are slightly higher in the case of small and large firms. It can be assumed that, in the case of large firms, this concerns intra-group loans which are generally tax efficient, and may be concluded at international level. In the case of small firms, they are more likely to be loans granted by partners or family and friends. The average debt maturity does not vary linearly with the firm's size.

Interest charges expressed as a percentage of total debts are slightly higher for small firms than for the others. In relation to cash flow, these charges also decline the larger the firm.

TABLE 2 FINANCIAL STRUCTURE INDICATORS: INFLUENCE OF THE SIZE[1]

(averages 1995-2005, percentages)

	Debt-to-equity	Bank loans as a percentage of total debt	Cash as a percentage of total assets	Interest charges as a percentage of cash flow
Small	165.0	29.2	6.0	32.7
Medium-sized	175.8	24.3	4.0	29.7
Large	164.5	21.5	1.8	27.3

Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same sectoral breakdown in each size class. All financial indicators, including those not illustrated in the body of the article, are presented in table A in the annex.

The breakdown of the assets into their main categories, namely tangible assets, financial assets and current assets, displays no fundamental difference according to firm size, except for a larger proportion of financial assets in the case of large firms. Nonetheless, it is apparent that the smaller the firm, the larger the proportion of its assets held in cash form, which may be interpreted as a sign that the firm is anticipating financial constraints. In relation to firm size, investment presents a U profile: it is lower in medium-sized firms than in small and large firms.

2.2 Qualitative analysis

The greater use of bank loans by small firms is confirmed by examination of the degree of credit use, namely the ratio of bank credit used to the credit authorised. Broken down by size of firm, the Belgian data show that the degree of credit use varies in inverse proportion to the firm's size. This may be due to the absence or virtual absence of alternative methods of financing for small firms, but could also reflect a negative correlation between the size of the borrower firm and the assessment of the risk. Thus, banks grant credit facilities more readily to medium-sized and large firms, which use a smaller proportion of the credit available than small firms.

The survey results may also enhance the quality of our knowledge of finance specific to SMEs. However, caution is required in attempting to compare the results of different surveys because, apart from methodological differences, such as sampling, the wording of the questions, etc., the timing of the survey may also have a major influence on its findings. This section reviews the investment survey conducted in Belgium and the Eurobarometer survey on SME finance.

Every autumn, the investment survey which the Bank has conducted since 2002 asks Belgian firms about their perception of bank lending conditions. According to this survey, there is no noticeable difference in the overall assessment of bank lending conditions according to the firm's size, either in terms of level or trend. Thus, the three categories of firms (small, medium-sized and large) saw a very similar deterioration in lending conditions in 2006, which suggests that they encountered the same interest rate rise, the main cause of the deterioration.

Nevertheless, the more detailed data seem to indicate, over the observation period as a whole, that small firms are less satisfied in regard to fees and the collateral demanded for access to credit.

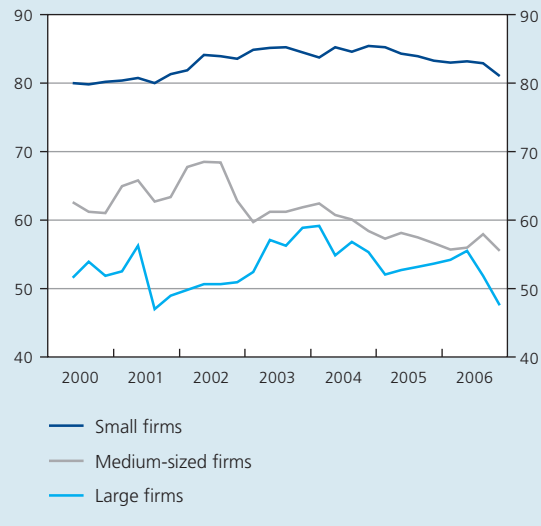
The Eurobarometer survey on SME finance was conducted by telephone in September 2005, among 3,047 SMEs in the European Union (15 countries) employing between 1 and 249 persons. It aimed to assess the problems facing SMEs in gaining access to finance for their business. In Belgium, 202 firms were interviewed.

The survey conducted on a European scale by Eurostat guarantees that the data are representative for each country and permits comparisons between countries. It also presents the results by size of enterprise at European level: micro enterprises (under 10 workers), small enterprises (between 10 and 49 workers) and medium-sized enterprises (between 50 and 249 workers).

One of the questions which this survey addressed concerned barriers to the expansion of the activities of SMEs. The results offer a clearer perspective of the difficulties facing SMEs in financing their business. Although those difficulties are real, it is only in a few cases that they become a genuine problem, and less often in Belgium than in the EU-15. When asked what would best ensure their future development, only 14 p.c. of European SMEs cited a better access to the various sources of finance. In Belgium, only 6 p.c. mentioned that. This criterion ranks third in importance in the EU-15, after social and fiscal regulations more suited to their economic sector,

CHART 2 DEGREE OF USE OF AUTHORISED CREDIT BY SIZE CLASS (1) IN BELGIUM

(outstanding total at end of quarter, percentages)

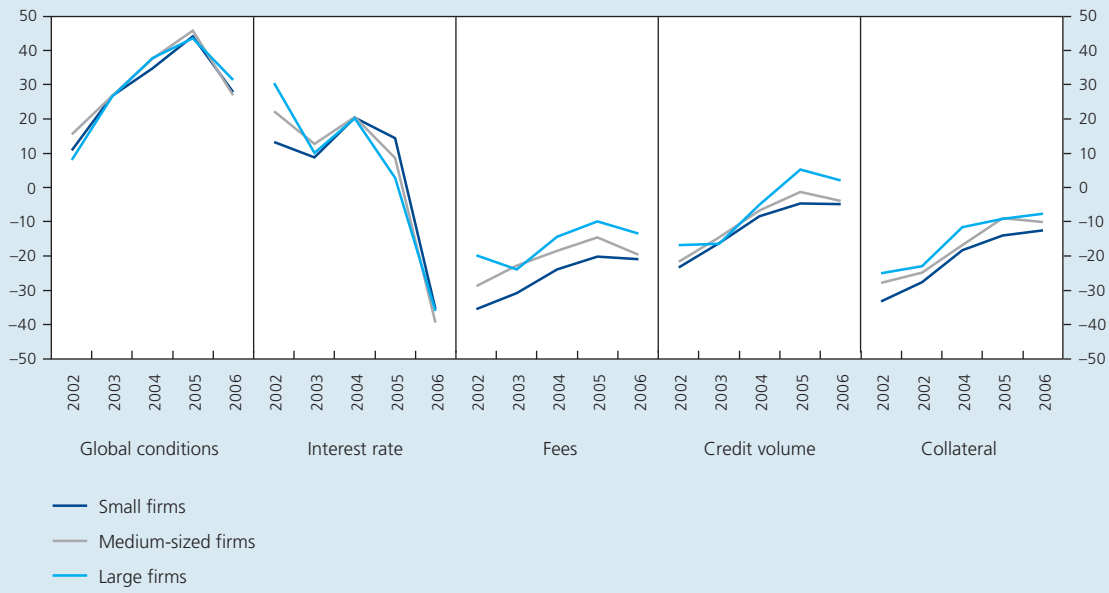


Source: NBB.

(1) Companies which filed their annual accounts in the abbreviated format are classed as small firms. Those which filed full format accounts are classed as large or medium-sized according to whether their turnover in two consecutive years exceeded or did not exceed 37.2 million euros.

CHART 3 INVESTMENT SURVEY : ASSESSMENT OF LENDING CONDITIONS BY SIZE CLASS IN BELGIUM [1]

(balance of positive and negative replies, percentages)



Source : NBB (Investment survey).

(1) Companies employing between 1 and 49 workers are classed as small firms. Those employing between 50 and 249 workers are classed as medium-sized and those with 250 workers or more are classed as large.

and better qualified people available on the market. In Belgium, easier access to means of financing comes fifth in order of importance, well behind social and fiscal regulations (cited by 41 p.c. of SMEs) and the availability of skilled people (18 p.c.).

Another question in the Eurobarometer survey concerned SMEs' perception of access to bank finance which, according to the survey, is the most commonly used method of covering their financing requirements. Sentiment concerning the ease of access to this type of credit appeared to be mixed. Overall, for all SMEs in the EU-15, 46 p.c. of firms regarded access to bank loans as easy, a figure close to that for Belgium (45 p.c.), while 47 p.c. (42 p.c. for Belgium) found it difficult. The analysis of the results recorded wide variations between countries.

Moreover, the larger the firm, the easier the perceived access to bank loans : 59 p.c. of medium-sized firms in the EU-15 considered access easy, against 47 p.c. of small firms and 46 p.c. of micro enterprises.

The business manager's view of the banks' attitude was examined in more detail via five questions concerning the banks' behaviour as regards business loans, the support received from bankers, their understanding of the sector of activity's specifics, the degree to which the credit offered by banks corresponds to the business' needs and finally, the need for the company to obtain a bank loan to develop its activities. According to these criteria, SMEs seem to have a fairly positive attitude towards access to bank loans. On average, in the European Union (EU-15), 51 p.c. of firms interviewed gave replies which were positive overall. That percentage was higher in Belgium, at around 57 p.c.

3. Sector of activity and financial structure

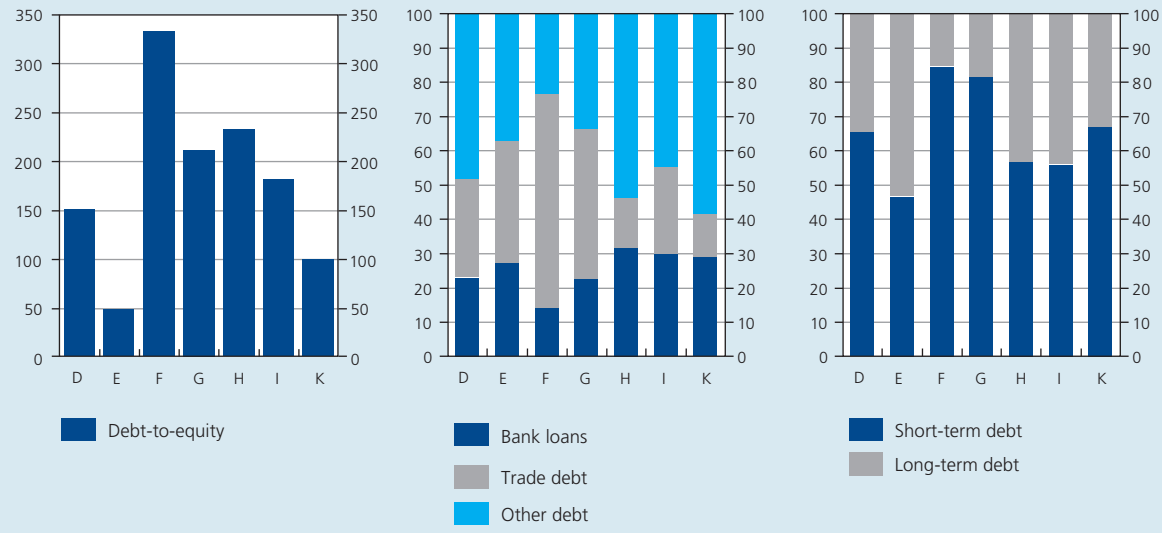
3.1 Quantitative analysis

3.1.1 The financing of traditional sectors

From the point of view of total debt, measured by the debt-to-equity, debt-to-assets or debt/cash flow ratios, the hotels and restaurants sector, the wholesale and retail trade sector and – above all – the construction sector appear to be much heavily indebted than the others. Conversely, the energy sector, the manufacturing sector and the sector comprising real estate, renting and

CHART 4 SCALE, STRUCTURE AND MATURITY OF DEBT OF BELGIAN FIRMS: INFLUENCE OF THE SECTOR OF ACTIVITY(1)

(averages 1995-2005, percentages)



Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same breakdown by size class in each sector. All financial indicators, including those not illustrated in the body of the article, are presented in table B in the annex.

business activities exhibit debt ratios which are generally below average.

The construction and trade sectors, which have very heavy debt levels on the whole, record a larger proportion of trade debt while the proportion of bank loans is smaller than in the other sectors. The hotels and restaurants sector, transport and communication and real estate, renting and business activities are the sectors which record the highest proportion of bank loans in their total debt.

The average maturity of the debt also varies widely between sectors. Thus, the construction and trade sectors mainly use short-term debt: it represents over 80 p.c. of their total debt, compared to an average of 66 p.c. taking all sectors together. Conversely, the energy sector, which has very low debt levels in proportionate terms, has more long-term debt (over 50 p.c. of total debt). The hotels and restaurants sector and the transport and communication sector also have a large proportion of long-term debt.

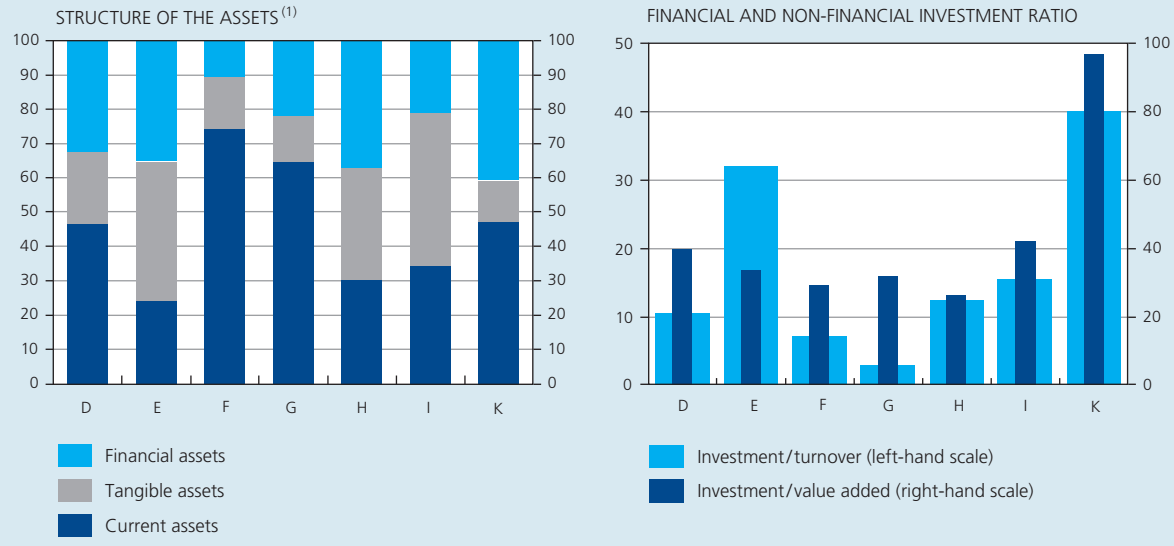
The sectoral differences in terms of debt structure and maturity are reflected on the assets side of the corporate balance sheet. Firms active in construction and trade have far more current assets, and especially cash, in proportion to their total assets: their customers pay in advance for part of the services offered (typical case in construction), or they pay in cash (mass marketing) or very promptly. That gives these sectors cash in advance to meet their regular payments to their suppliers. Since these sectors have one of the lowest investment ratios, they make little use of longer-term bank finance.

On the other hand, the energy sector, the transport and communication sector and to some extent the hotels and restaurants sector have massive tangible fixed assets, in addition to ample financial assets. The first two sectors mentioned traditionally face very large-scale investments (particularly network infrastructure); the hotels and restaurants sector, by its nature, has a huge stock of property. Firms in these sectors therefore naturally prefer a longer term method of financing. That will be facilitated by using the underlying assets as collateral, and by the substantial equity held by firms in these sectors.

The corollary to the matching maturities on either side of the balance sheet, analysed in sectoral terms, is decidedly satisfactory levels of liquidity (firms' ability to mobilise the cash resources needed to meet their short-term liabilities) and solvency (firms' ability to honour all their short- and long-term liabilities). Only the hotels and restaurants sector shows a relatively worrying level of liquidity over the observation period as a whole.

CHART 5 STRUCTURE OF THE ASSETS[1] AND INVESTMENT RATIO OF BELGIAN FIRMS: INFLUENCE OF THE SECTOR OF ACTIVITY[2]

(averages 1995-2005, percentages)



Source : NBB (Central Balance Sheet Office).

(1) Excluding intangible assets and establishment expenses.

(2) Indicators adjusted to give the same breakdown by size class in each sector. All financial indicators, including those not illustrated in the body of the article, are presented in table B in the annex.

3.1.2 Financing innovation

Innovation, like the establishment of a business, is a risky activity in view of the associated high level of uncertainty. The analysis which follows tries to ascertain the extent to which the high level of uncertainty may affect the type of investors, or the form of financing, in the "innovative" sectors.

It can be assumed that the banking sector is more averse to the risk entailed in financing innovation which – apart from the usual problems due to asymmetric information – arises because the firms which devote much of their activity to R&D often also have insufficient collateral (cf. in particular OECD, 2006, and Carpenter and Petersen, 2005).

Venture capital, and more particularly that provided by business angels and venture capitalists, is another possible source of finance for innovative companies. The government also has a major role to play in supporting this market, particularly by supporting SMEs with a strong focus on R&D.

The definition of the innovative sectors analysed in this section is based on the OECD classification, which proposed a method of classifying the industrial sectors and manufactured products of member countries according to their technology intensity (OECD, 1997). This classification work identified the most innovative sectors according to their level of technology. According to this classification, the sectors identified as high-technology or medium-high technology are as follows (the corresponding NACE codes are given in brackets):

- chemicals (24), including pharmacy (244);
- machinery and equipment (29);
- information and communication technologies (30, 32);
- electrical machinery and apparatus (31);
- medical, precision and optical instruments, watches and clocks (33);
- manufacture and assembly of motor vehicles (34);
- manufacture of other transport equipment (35), including aircraft and spacecraft (353).

Together, these subsectors – which all form part of the manufacturing sector – represent the innovative sector in the analysis which follows. Given the very great importance of chemicals in Belgian industry, and their specific characteristics, particularly the very high R&D costs, the

TABLE 3 FINANCIAL STRUCTURE INDICATORS: INFLUENCE OF INNOVATION[1]
(averages 1995-2005, percentages)

	Debt-to-equity	Bank loans as a percentage of total debt	Short-term debt as a percentage of total debt	Interest charges on the total debt
Non-innovative manufacturing	165.3	23.4	64.1	3.6
Innovative manufacturing[2]	175.7	17.0	78.1	3.2
Chemicals	108.0	15.9	63.0	3.4

Source: NBB (Central Balance Sheet Office).
(1) Indicators adjusted to give the same size class breakdown within each sector.
(2) Excluding chemicals.

high degree of globalisation and the massive presence of medium-sized and large firms, this sector was considered separately. The analysis below therefore compares the financial structure characteristics of the non-innovative manufacturing sector with the innovative manufacturing sector and the chemical sector. By analogy with what was done in the previous sub-section, the gross data obtained from the balance sheets were adjusted according to the average breakdown by firm size class for the economy as a whole, in order to neutralise the effects of size on the financial characteristics of the subsectors analysed.

In terms of overall financing structure, viewed according to the debt-to-equity ratio, innovative firms appear to be more indebted than non-innovative firms. Conversely, calculated for the chemical sector alone, the debt ratio seems very much lower than in the other sectors examined. A more detailed analysis of the financial ratios indicates that it is not the absolute debt level that causes this situation: in relation to turnover, debt is lower in the innovative sectors than in the non-innovative sectors, while firms in the chemical sector record an even higher ratio. It is essentially the level of equity capital, very substantial in the chemical sector but significantly lower in the other innovative sectors, that influences the debt-to-equity ratio.

As part of the overall debt, the use of bank loans is lower in the innovative sectors (chemicals and others) than in the rest of the manufacturing sector. That may be a sign that banks are somewhat nervous about the riskier sectors; if that is so, it is apparently associated with a degree of credit rationing rather than the charging of higher rates, as is evident from the average interest charges in relation to the debt, which differ only very slightly according to whether the sector is innovative or not. The very high degree of globalisation in the chemical sector, and particularly in pharmaceuticals, is probably reflected in significant intra-group financial flows, which automatically reduce the proportion of bank loans in the total loans received.

Finally, it is apparent that the innovative sectors, excluding chemicals, receive considerably more short-term loans than the more traditional sectors. This is in line with the theory of staging[1] which says that, when faced with riskier projects, investors (banks or others) stagger the funds granted in order to minimise the risk of losses and to impose some discipline on the managers by maintaining the threat of not renewing the loan.

3.2 Qualitative analysis

This section reviews the various surveys available on the financing of innovative firms, and details their results for Belgium, comparing them with European data if they exist.

The CIS, Community Innovation Survey (European Commission, 2004), is one of the first sources of information here. It supplies data on the barriers to the development of innovation, and is conducted in all the European countries, covering firms with 10 or more employees via a common questionnaire and a survey methodology devised by Eurostat, permitting valid comparisons at European level. The results set out below come from the third Community Innovation Survey (CIS3) and cover the period from 1998 to 2001.

(1) This term is used mainly in the venture capital industry, where investors may promise to continue investing only so long as they obtain a certain return at the end of the first financing round. Staging is regarded as one of the most powerful tools to encourage the manager to improve his performance (Baeyens and Manigart, 2006).

TABLE 4 SOURCES OF FINANCE FOR SMALL BELGIAN HIGH-TECH FIRMS ACCORDING TO THEIR STAGE OF DEVELOPMENT

	Seed	Start-up	Early growth	Development
Number of observations	103	99	85	41
Percentages of cases				
Internal finance				
Personal funds of founders	82	48	28	17
Family and friends funds	35	18	12	7
Retained earnings	0	0	5	7
External debt finance				
Commercial bank loans	8	28	40	36
Government subsidies of all kind	20	33	17	14
Non-financial institutions funds	1	8	9	10
Other	1	2	3	5
External equity finance				
Business angels funds	10	20	17	5
Venture capital funds	13	26	30	21
Other	2	2	3	4

Source: Bozkaya and Van Pottelsberghe, 2004.

The results show that, in general, a greater number of firms developing an innovative activity will report factors hampering that activity than firms with no innovative activity.

Within the European Union, the main factors liable to impede the development of innovation are, in order of importance, the high costs associated with innovation (factor cited by 24 p.c. enterprises questioned), the lack of appropriate finance (19 p.c.), excessive perceived economic risks (17 p.c.) and the lack of skilled personnel (16 p.c.).

In Belgium, whatever the factor cited, the percentage of enterprises mentioning barriers to the development of innovation is lower than in the European Union. The most important factor for enterprises developing an innovative activity is the lack of skilled personnel (factor cited by 11 p.c. of respondents); next come the lack of appropriate finance (10 p.c.), the high costs of innovation (10 p.c.) and insufficiently flexible rules or regulations (8 p.c.).

Thus, the lack of finance is more noticeable to innovative firms than to SMEs in general[(1)]. That could be due to the specific financing needs of innovative SMEs, which probably find it difficult to raise appropriate funding on the market. On this subject, Bozkaya and Van Pottelsberghe (Solvay Business School) conducted a survey in 2003 on the financing of very small high-technology firms in Belgium (Bozkaya and Van Pottelsberghe, 2004). That survey was based on a sample of 103 unlisted firms active in the technology sectors (cf. above). It took place in the last quarter of 2003, covering business start-ups and spin-offs established between 1985 and 2002. Other characteristics of these firms were that they employed fewer than 50 people and had assets of less than 5 million euro. The survey also reveals the difficulties faced by these firms according to their stage of development (seed, start-up, early growth and development).

The results show that many small Belgian high-tech firms encounter difficulties in accessing external sources of funding at the early stages of development (seed and start-up). Internal financing is therefore crucial to launch and begin developing their activity. According to the survey, the entrepreneur's personal resources are the primary source of finance in the seed phase in 82 p.c. of cases; the second most important source of finance at this stage is family and friends (35 p.c.). Next come public subsidies as a source of external finance.

(1) In order to permit rigorous comparison of the two types of firm, the two surveys (Eurobarometer and CIS) would have had to be conducted more or less simultaneously, which is not the case.

During the subsequent development stages, public subsidies and bank loans gain greater importance and become the main sources of finance. According to the survey, they make up the bulk of the external finance during the start-up phase. At the next stage (early growth of the business), bank loans dominate, representing the principal source of funding (40 p.c. of cases).

Although venture capital is not among the funding sources most commonly used by very small high-technology firms, it begins to play a significant role during the start-up phase (Rigo, 2001). Its contribution is always greater than that of business angels, whatever the stage of development of the business. These two types of investors are mainly interested in firms with high growth potential. Furthermore, a recent study (Baeyens and Manigart, 2006) demonstrates that innovative companies prefer to use venture capital to finance intangible assets which have a low value as collateral, while bank loans are more appropriate to tangible investments.

In all, the results indicate a clear pattern in the use of internal and external financing sources, with external sources of funding becoming more important as the firm develops. The survey data suggest that, in general, the owner of an innovative firm uses personal funds to launch his business, and later receives public subsidies or a bank loan (secured against personal assets) in order to expand his activities. Later, once the firm gains a bigger reputation, other types of investors, such as venture capitalists and business angels, become involved.

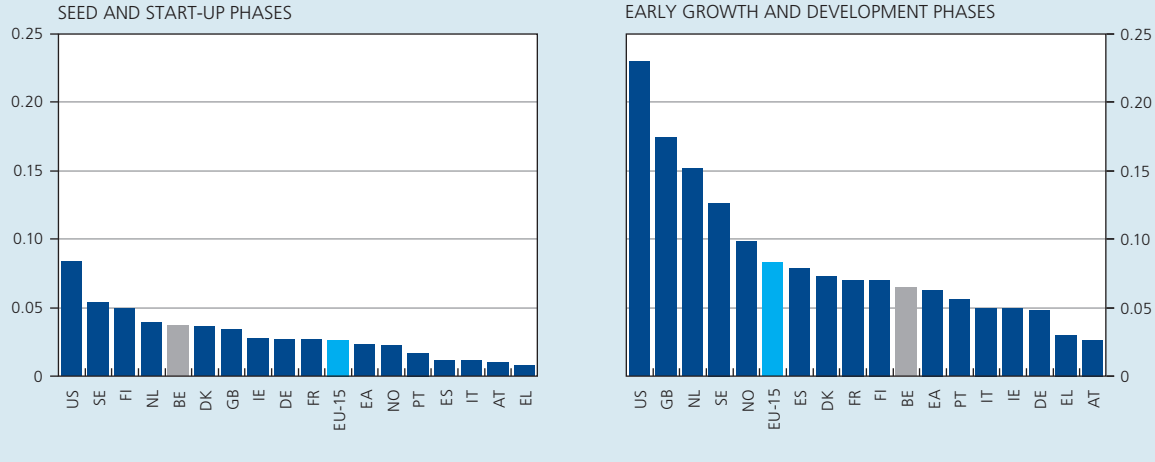
In the case of the latter players, the methods and types of investment are different and often complementary, according to the firm's stage of development; both play an essential role in the creation and growth of technology businesses. However, since they are seeking a higher expected return, venture capital providers often confine themselves to companies with strong growth potential; they may also be reluctant to invest small amounts in SMEs, given the level of fixed costs entailed in screening and monitoring their investments.

The European Venture Capital Association (EVCA) supplies quantitative data on the amounts of venture capital invested in European countries and in the United States. These data permit identification of the development stages of the firms in which the capital is invested. Since this type of investment is closely related to the business cycle, the data cited are averages for the period from 1995 to 2005.

Between 1995 and 2005, the venture capital invested in firms in the seed or start-up phase totalled 0.037 p.c. of GDP in Belgium, against an average of 0.026 in the EU-15. The United States had the highest level of investment, at 0.084 p.c. of GDP. Among the European countries, Sweden invested the most (0.054 p.c. of GDP), followed by Finland (0.049 p.c.) and the Netherlands (0.039 p.c.), while Belgium was in fourth position.

CHART 6 VENTURE CAPITAL INVESTMENTS

(averages 1995-2005, percentages of GDP)



Sources : Eurostat, EVCA.

As mentioned earlier, venture capital investments are more substantial in the early growth and development phases. In the United States, they averaged 0.230 p.c. of GDP over the period 1995-2005, against an average of 0.083 p.c. in the EU-15. Here, Belgium scored lower than the European average, at 0.065 p.c. of GDP. The European countries which perform best in this respect are the United Kingdom (0.174 p.c. of GDP), the Netherlands (0.152 p.c.), Sweden (0.126 p.c.) and Norway (0.098 p.c.).

Compared to the United States, there is a smaller supply of venture capital in the European Union, which could ultimately lead to a smaller proportion of start-ups. That situation could be due partly to the fact that, in Europe, a larger proportion of the available capital is owned by institutions which prefer safe long-term investments, whereas in the United States individuals have more direct control over their investments, are more easily persuaded to rebalance their portfolios, and are less risk averse (CCE, 2001).

There are also evident constraints as regards demand for venture capital. The survey among very small high-technology companies suggests a number of factors which explain why these firms do not use venture capital (Bozkaya and Van Pottelsberghe, 2004). The entrepreneurs consulted consider that the main problems preventing the use of venture capital are that these investors expect a quick exit (61 p.c.) and a high return (59 p.c.). Next come their unwillingness to invest small amounts (58 p.c.) and their lack of interest in investing in the initial stages of a firm's development (55 p.c.).

The authorities are therefore still concerned about the access of innovative Belgian firms to appropriate finance. The very latest information – not taken into account in the analyses mentioned above – indicates that a serious effort has been made in Belgium to improve the fiscal and regulatory environment for venture capital (EVCA, 2006). According to that analysis, Belgium is now in fourth position in terms of the quality of the venture capital environment, after Ireland, France and the United Kingdom, thus outperforming the Netherlands (7th position) and Germany (20th position). Since 2004, reforms have been introduced which have pushed Belgium up three places in this ranking. Nonetheless, there are still a number of weaknesses: small amount of savings contributed on account of pension accrual, lack of transparency in certain financing formulas, etc.

4. Specific Belgian characteristics in a European perspective

4.1 BACH database

This final section compares the financing of Belgian firms with that of firms in the euro area. As was demonstrated in the previous sections, the fact of belonging to a particular size class, and especially a particular sector of activity, influences the financial structure of firms. Therefore, before making any comparison between Belgian firms and those in the euro area, it is necessary to impose the same size/sector structure on firms in the two economies. The remaining differences in financial structure can then be attributed to purely national factors, such as institutional characteristics.

An exercise of this type was conducted jointly by the ECB and the NCBs for the purpose of producing the Structural Issues Report on Corporate Finance in the Euro Area (ECB, 2007). The BACH database, which is managed by the European Commission and contains balance sheet and profit and loss data on a sample of firms for the majority of the euro area countries, was used. Without supplying individual data, BACH offers the advantage of permitting a breakdown by size class and by sector of activity. The data are harmonised since specific accounting items have been defined on a common basis and calculated for each country. Nonetheless, since accounting schemes or valuation methods, for example, may differ from one country to another, the results must be interpreted with caution. Also, the BACH coverage in relation to the actual number of firms differs between countries: in Belgium, the cover ratio is 100 p.c., but most other countries use sampling methods to obtain a sufficiently representative population. That explains why only indicators with relatively broad coverage were selected for the multi-country analysis. The financial indicators for firms in the euro area were constructed on the basis of all the available national data, or all the countries in the euro area minus Greece, Ireland and Luxembourg.

In analytical terms, the adjustment for the structure by size and sector, effected on all the gross data, is expressed as:

$$Y(i)_t = \Sigma_d \Sigma_s \, y(i)_{d,s,t} \, . w(e)_{d,s,t}$$

where $Y(i)$ = aggregate value of the variable at the country i level

$y(i)_{d,s}$ = individual value of the variable at the size d, sector s, country i – level

$w(e)_{d,s}$ = weight of each size class d sector s combination in total value added (at the euro area level)
i = 1,…N countries
e = euro area
s = 1,…S sectors
d = 1,…D size classes
t = 1,…T years

The indicators were calculated for the period from 1999 to 2005 and are presented as averages.

4.2 Quantitative analysis

Belgian firms have a debt-to-equity ratio which is quite considerably below the average for the euro area. More specifically, the ratio between debt and turnover is higher in Belgium than in the euro area, but the ratio between equity issued and turnover is higher still, giving a balanced debt-to-equity ratio which is lower than in the euro area. Belgian firms therefore differ from their European counterparts in making greater use of external finance, and particularly in issuing more equity.

At this point, that finding calls for special comment. Belgium differs from the other euro area countries in that it probably has a larger volume of inter-company financial flows. That is due partly to the fact that, in Belgium, non-financial holding companies are included in the non-financial corporations sector in BACH, whereas they are excluded from that sector in the majority of other countries, and partly to the presence of the coordination centres in Belgium. These are included in the non-financial corporations sector and grant loans to finance their group companies, which may be based either in Belgium or abroad. The coordination centres are generally financed via unlisted share issues, which are also shown on the liabilities side of the non-financial corporations sector. Since the BACH database is compiled on the basis of non-consolidated financial statements, these financial flows taking place within the corporate sector inflate the companies' assets and liabilities in proportion to their turnover.

The other financial indicators are fairly comparable in Belgium and the euro area. The proportion of short-term to long-term debt is around 2/3 – 1/3. Bank loans account for less than 25 p.c. of total debt in both Belgium and the euro area.

4.3 Institutional factors

Apart from the presence of the non-financial holding companies and coordination centres, it is also possible that the greater use of external finance by Belgian firms is due to a particularly favourable institutional context.

In general, the literature concludes that the use of external finance by firms is encouraged by the legal context, the level of transparency and financial information, or the degree of competition on the financial markets. The ability of the legal system to apply the law, and particularly the laws protecting investors (creditors and shareholders), encourages them to supply funds and promotes the development of the financial markets. Consequently, this factor is associated with greater use of external finance in the form of debt or share issues. The transparency of a financial system, and the quantity and quality of the financial information circulated among the public, also exhibit positive links with the use of external finance, since they reduce the problems associated with asymmetric information and agency problems. Finally, the degree of competition in the financial system (and particularly in the banking sector) is generally also associated with greater recourse to external finance (and especially bank loans). According to the traditional view, more competition is accompanied by increased efficiency, so that more funds can be granted at lower cost. Competition also

TABLE 5 FINANCIAL STRUCTURE INDICATORS: IMPACT OF THE COUNTRY OF ORIGIN[1]
(averages 1999-2005, percentages)

	Debt / turnover	External equity / turnover	Debt-to-equity	Short-term debt as a percentage of total debt	Bank loans as a percentage of total debt
Belgium	92.2	61.7	156.6	64.8	22.1
Euro area	76.3	29.6	181.1	63.5	22.3

Source: ECB, 2007.
(1) Indicators adjusted to give the same sectoral and size class breakdown in Belgium and the euro area.

encourages financial intermediaries to innovate, in order to provide their customers with "tailor-made" products. However, there are also some countervailing arguments, whereby greater competition reduces the preferential access of banks to information, thereby increasing the cost of capital and reducing the volume of funds granted. Nevertheless, empirical studies tend to show that the former arguments prevail.

The choice between debt and equity may also be influenced by institutional factors, such as the level of creditor versus shareholder protection. However, the effect is ambiguous from a theoretical point of view. Thus, a high degree of protection for his rights would encourage the creditor to increase its supply of funds, whereas the borrower firm might limit its debt level for fear of losing its discretionary power in the event of financial problems. The same applies at the level of the protection of shareholders' rights, which may make the firm reluctant to open up its capital (fear of losing control) while encouraging shareholders to invest.

The arguments put forward previously regarding the influence of the degree of competition in the banking system over the use of external finance also apply in the case of the debt-to-equity ratio. The lower financing costs associated with a more competitive environment generally give rise to a higher debt-to-equity ratio. Since the interest charges on the debt are tax deductible, the tax system (in this case the corporate tax rate) is a factor which encourages firms to take on debts. However, that factor no longer applies beyond a certain debt threshold. Moreover, the tax charged on income from movable property may offset that effect if the tax on dividends is more favourable than that on interests received.

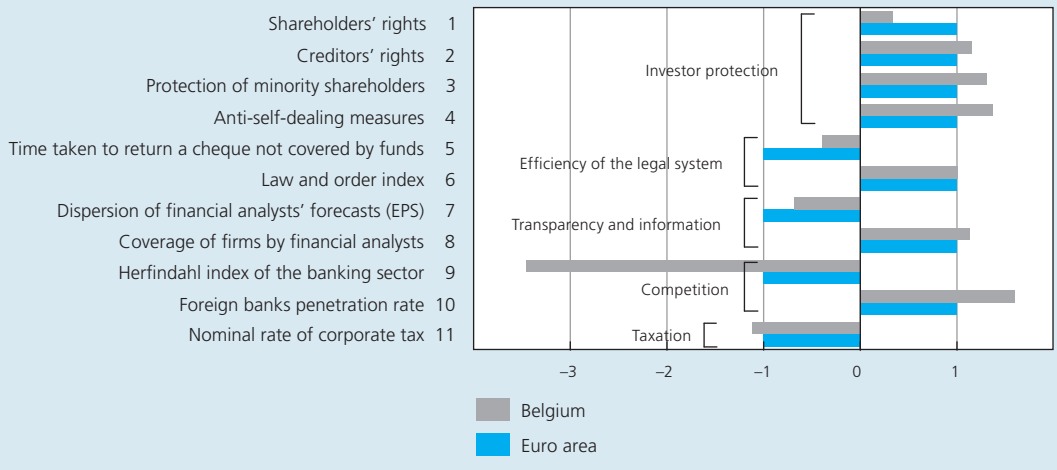
Eleven institutional indicators[1] which may explain Belgium's specific profile in terms of the use of external finance and the debt-to-equity ratio were selected. Wherever possible, the averages over the period from 1999 to 2005 (which corresponds to the period for calculating the financial indicators) were calculated for Belgium and for the euro area; otherwise, the latest available value is quoted. For the sake of clarity, the indicators were standardised to 1 for the euro area, in chart 7.

The indicators relating to the efficiency of the legal system and those concerning transparency and financial information put Belgium ahead of the euro area average. That could be a factor contributing to the abundant use of external finance by Belgian firms.

In terms of investor protection, it is difficult to state exactly how Belgium's position compares with the euro area average, as the various indicators available send out different messages. Moreover, it should be noted that in Belgium the majority of the share issues concern unlisted shares, for which the concept of investor protection is

(1) Most of the institutional indicators come from the Structural Issues Report on Corporate Finance in the Euro Area (ECB, 2007), annex 2 of which offers a detailed description (p. 103-104).

CHART 7 INSTITUTIONAL FACTORS



Sources: ECB and own calculations
Note: For indicators 1 to 4, 6, 8 and 10, a higher absolute value indicates a better performance, while for the other indicators, a higher absolute value means a poorer performance.

probably less significant, especially if these flows of funds take place between affiliated companies. Creditors' rights seem to be a little more extensive in Belgium than in the euro area.

From the competition angle, Belgium is one of the euro area countries with the most concentrated banking sector, as is evident, for instance, from the Herfindahl concentration index. On the other hand, foreign banks have a much higher penetration rate in Belgium than in the euro area, offering a contrasting view of the actual competition applicable to Belgian firms.

Finally, since the nominal rate of corporate tax is very slightly higher than the euro area level, the tax system could be a factor driving up the level of the Belgian debt-to-equity ratio.

Conclusion

When analysing corporate finance, it is necessary to take account of various factors which may cause significant disparities between firms, such as their size and their sector of activity.

Taking account of the size aspect, by neutralising sectoral disparities, there are few differences between the debt levels of small, medium-sized and large firms. Conversely, the debt structure appears to depend on the firm's size: small firms are more dependent on bank loans. That is confirmed by the high degree to which they make use of credit facilities. Nonetheless, surveys indicate that access to finance is not a major constraint for SMEs, be they Belgian or European: they perceive access to finance, and more specifically access to bank finance, as relatively easy.

In contrast, the financial structure of firms differs widely between sectors, and depends to a great extent on the associated intrinsic activity and the scale of the investments. Sectors with high investment ratios, such as the transport and communication sector or the energy sector, mainly use long-term finance. Ample equity capital enables them to maintain a balanced financial situation. Conversely, highly labour-intensive sectors, such as construction or trade, display much higher debt-to-equity ratios; their debts are mainly short term and they make extensive use of trade credit.

A more detailed analysis of the manufacturing sector also reveals differences of financial structure between firms which are classed as innovative and those which are not. In particular, if the chemical industry is excluded, the firms in the innovative sectors make less use of bank loans and record more short-term debt than firms in non-innovative sectors. That may reflect the lenders' desire to limit the risk incurred, particularly by using the threat of non-renewal of the loan to encourage the manager to behave efficiently.

The qualitative surveys appear to indicate that the financial constraint is felt more by innovative firms than by SMEs in general. That expresses a financing need specific to innovative SMEs. At the early stages in their development, they depend almost exclusively on the entrepreneur's personal resources and those of his friends and family, and venture capital only takes over in the later stages.

Finally, as regards the financing structure, a comparison between Belgian firms and their European counterparts, after neutralising the specific effects of size and sector, indicates that the former issue larger amounts of capital. Abundant intra-group financial flows and a favourable institutional context are conducive to that situation.

Annex

TABLE A FINANCIAL STRUCTURE INDICATORS: IMPACT OF SIZE [1]

(percentages, averages 1995-2005)

	Debt-to-equity	Debt-to-assets	Debt / turnover	Debt / cash flow	External equity / turnover
Small	165.0	58.1	147.3	8.2	124.6
Medium-sized	175.8	58.5	85.6	9.8	56.6
Large	164.5	55.2	71.8	9.5	34.4

	Bank loans / total assets	Trade debt / total assets	Other debt / total assets	Current assets / short-term debt	Fixed assets / long-term debt
Small	16.7	16.6	24.7	135.2	263.5
Medium-sized	14.1	22.1	22.3	136.8	288.2
Large	11.7	17.8	25.8	112.8	350.5

	External equity / total assets	(Debt + external equity) / total assets	Short-term debt / debt	Bank loans / debt	Interest charges / debt	Interest charges / cash flow
Small	26.5	84.5	67.0	29.2	3.9	32.7
Medium-sized	22.7	81.2	71.2	24.3	2.9	29.7
Large	22.5	77.8	66.6	21.5	3.2	27.3

	Current assets / total assets	Tangible assets / total assets	Financial fixed assets / total assets	Cash / total assets	Investment / turnover	Investment / value added
Small	51.2	25.1	21.2	6.0	24.8	59.6
Medium-sized	55.9	21.5	19.0	4.0	8.7	28.5
Large	42.2	18.7	35.7	1.8	12.2	45.4

Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same sectoral breakdown in each size class.

TABLE B FINANCIAL STRUCTURE INDICATORS: IMPACT OF SECTOR OF ACTIVITY [1]

(percentages, averages 1995-2005)

	Debt-to-equity	Debt-to-assets	Debt / turnover	Debt / cash flow	External equity / turnover
D	150.9	57.0	58.5	6.7	22.0
E	48.7	30.4	142.6	3.6	136.6
F	332.4	70.7	75.2	14.2	11.7
G	212.1	65.5	31.7	12.8	8.4
H	232.8	57.1	79.9	8.8	41.4
I	181.9	57.3	73.7	8.8	31.5
K	99.5	47.9	282.4	10.2	268.4

	Bank loans / total assets	Trade debt / total assets	Other debt / total assets	Current assets / short-term debt	Fixed assets / long-term debt
D	13.1	16.4	27.6	120.9	272.6
E	8.4	10.7	11.3	167.0	508.1
F	10.0	44.2	16.6	123.0	282.9
G	14.8	28.6	22.1	118.3	316.7
H	18.0	8.4	30.7	100.9	641.2
I	17.0	14.6	25.7	102.2	258.6
K	13.9	6.0	28.1	146.3	353.9

	External equity / total assets	(Debt + external equity) / total assets	Short-term debt / debt	Bank loans / debt	Interest charges / debt	Interest charges / cash flow
D	21.4	78.4	65.0	22.7	3.4	23.0
E	32.5	62.9	47.2	28.2	3.2	11.5
F	11.9	82.6	84.3	14.7	1.7	19.0
G	17.3	82.7	81.4	22.3	3.2	39.9
H	27.0	84.1	61.9	31.1	3.9	36.2
I	23.6	80.8	55.3	29.9	3.4	29.3
K	38.8	86.7	67.0	28.4	3.9	40.6

	Current assets / total assets	Tangible assets / total assets	Financial fixed assets / total assets	Cash / total assets	Investment / turnover	Investment / value added
D	45.3	20.2	31.6	3.6	10.6	40.0
E	21.4	36.1	31.2	1.1	32.0	33.7
F	72.6	15.1	10.4	4.6	7.2	29.3
G	63.0	13.2	21.4	5.1	3.0	31.9
H	29.3	32.0	36.3	4.1	12.5	26.6
I	32.6	42.6	20.0	3.5	15.5	42.3
K	46.3	11.8	40.1	2.0	40.1	96.9

Source: NBB (Central Balance Sheet Office).

(1) Indicators adjusted to give the same size class breakdown in each sector.

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The sustainability of public finances in the context of population ageing

Dries Dury
Luc Van Meensel [1]

Introduction

In the decades ahead, the size and age structure of the European population will change dramatically. The declining birth rate and constant rise in life expectancy are creating an ageing population in Europe, where the post-war baby-boom generation has reached or is approaching the statutory retirement age.

These demographic changes will obviously have a significant impact on society. According to the forecasts, economic growth will slow down following the reduction in the population of working age. In addition, there will be strong upward pressure on public expenditure on pensions, health care and long-term care for the elderly. Population ageing will therefore pose major economic, fiscal and social challenges.

It will thus not be easy to maintain sound public finances in the long term. It is in that context that questions arise regarding the long-term sustainability of public finances. Are public finances currently sufficiently sound to meet these challenges with total confidence? Or are these developments likely to cause a problem of sustainability, with accumulating deficits and a steep rise in the public debt? If so, what adjustments are needed to cope with the budgetary effects of population ageing?

This article aims to explain the challenges inherent in population ageing for public finances, and how the authorities can respond with an appropriate fiscal policy. The first chapter examines the demographic trends. Chapter 2 deals with the consequences of population ageing for public expenditure. Chapter 3 explains what is meant by sustainable public finances and how that concept can be made operational. The sustainability of public finances is a key element in the process of budgetary surveillance organised at European Union level. Chapter 4 describes how that budgetary surveillance is carried out and the European strategy designed to meet the challenges of population ageing. The question of the sustainability of public finances was also a key aspect of the recent opinion issued by the "Public Sector Borrowing Requirement" section of the High Council of Finance. The main points of that opinion are described in chapter 5. A summary of the principal observations concludes this article.

(1) The authors wish to thank Bruno Eugène, Hugues Famerée, Geert Langenus and Kris Van Cauter for their contributions.

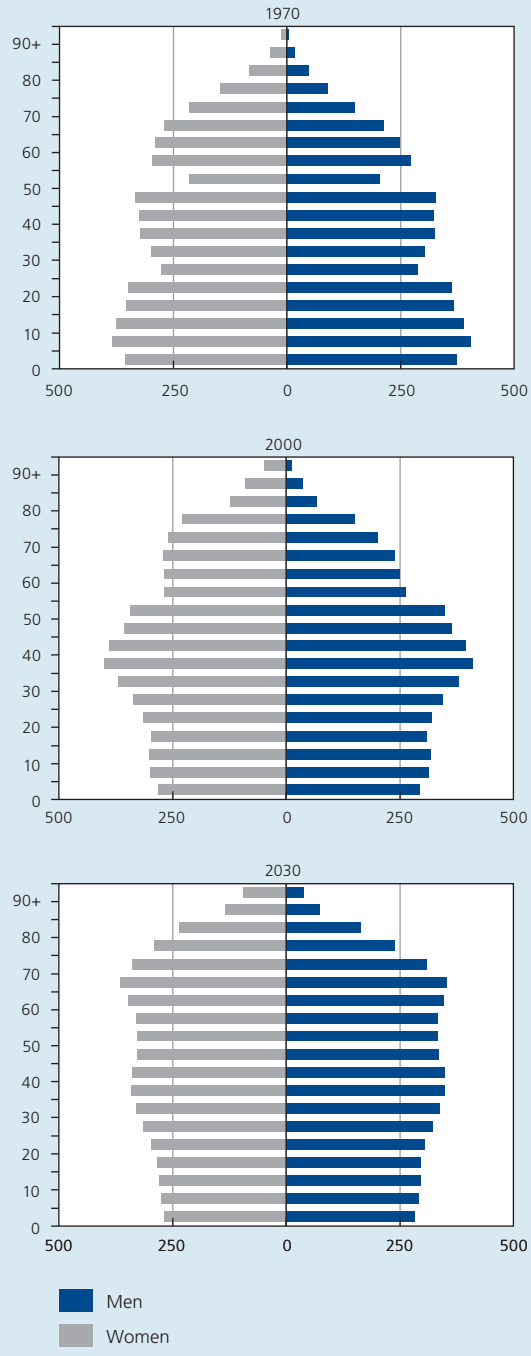
1. Demographic developments

In 2001, the National Statistical Institute (NSI), working jointly with the Federal Planning Bureau and demographic experts, published its latest report on the population outlook for Belgium for the period 2000-2050. The report predicts a slight increase in the Belgian population to almost 11 million people in 2050. However, there will be major changes in the population structure.

Like most other European countries, Belgium has a rapidly ageing population. The Belgian population aged 65 years and over will increase by 1.2 million persons in the period 2000-2050. The effects of ageing will be most apparent in the period 2010-2030, during which the number of persons aged over 65 years is expected to increase by almost 800,000. As a result, this group will account for

CHART 1 BELGIAN POPULATION AGE PYRAMID IN 1970, 2000 AND 2030

(in thousands of persons, per five-year age band)



Sources : EC, NSI.

24 p.c. of the total Belgian population in 2030, and 26 p.c. in 2050, compared to 17 p.c. in 2000. Population ageing is also evident in the age structure of the 65+ category. By the year 2050, the share of those aged over 80 in this group will have almost doubled.

Conversely, the 15 to 64 age group – the potential labour force – is expected to decline by almost 350,000 persons in the first half of the 21st century, cutting their share in the total population from 66 p.c. in 2000 to 58 p.c. in 2050. However, that fall will not begin until 2011, which means that the potential labour force will continue to expand until 2010 – to a level of 7 million people – before declining by almost 550,000 persons over a 40-year period.

These demographic developments are due to the cumulative effects of the declining birth rate in recent decades and the substantial increase in life expectancy at birth. Further significant increases in life expectancy are forecast for the future : for men, it is estimated to increase from 75.1 years in 2000 to 83.9 years in 2050, and for women from 81.6 years in 2000 to 88.9 years in 2050.

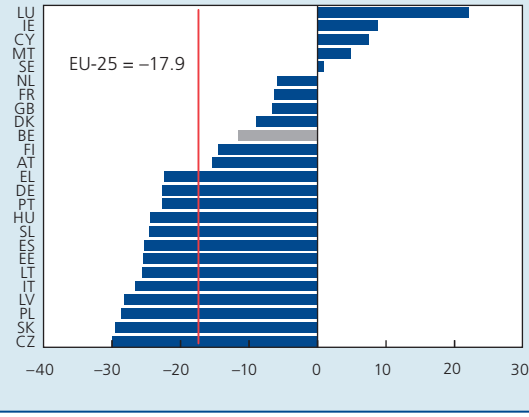
This changing population structure is naturally reflected in the elderly persons' dependency ratio, i.e. the ratio between the population aged 65 or over and the population of working age (15 to 64 years). That ratio will almost double from 26 p.c. in 2000 to 45 p.c. in 2050.

Although the changes in the Belgian population structure are substantial, they cannot be considered exceptional from a European perspective. Over the period 2010-2050, the population of working age will decline by almost 12 p.c. in Belgium, whereas estimates suggest an average decline of just under 18 p.c. in the EU-25 (1). The expansion of the

(1) These figures are based on the Eurostat demographic projections. According to the NSI's population forecasts, the Belgian population of working age (15 to 64 years) will decline by around 8 p.c. over the period 2010-2050.

CHART 2 TREND IN THE POPULATION OF WORKING AGE (15 TO 64 YEARS) IN THE PERIOD 2010-2050

(percentage changes)



Source : EC.

Belgian population aged 65 and over is also not expected to exceed the European average.

These changes in the population of working age have significant implications for an economy's growth potential. Combined with the rise in the European employment rate expected by the European Commission – from 63 p.c. in 2004 to 67 p.c. in 2010 and 70 p.c. in 2020 – this development means that the total working population in the EU-25 will expand by around 20 million persons in the period 2004-2017. However, in the ensuing period up to 2050, employment will fall by around 30 million persons. The European Commission therefore estimates that the annual potential GDP growth by volume in the EU-25 will fall from an average of 2.4 p.c. in the years 2004 to 2010 to just 1.2 p.c. in the period 2031-2050. At first, employment will continue to make a positive contribution to growth, but in the long run, productivity gains will be the only source of growth.

2. Budgetary costs of ageing

This chapter examines the budgetary costs of ageing, which are usually defined as the increase in the percentage of GDP represented by public expenditure related to demographic trends or age. For Belgium, it is the Study Group on Ageing (SGA) that produces estimates on that subject. For the EU, similar projections are produced by the Economic Policy Committee's working group on ageing population (AWG).

2.1 Estimates by the Study Group on Ageing for Belgium

The law of 5 September 2001 [1] set up the Study Group on Ageing under the aegis of the High Council of Finance with the task of examining the budgetary and social costs of ageing. The Study Group produces an annual report presenting a future projection of age-related public expenditure.

According to the latest estimates from the Study Group on Ageing, dating from June 2007, demographic trends would be likely to make age-related public expenditure respectively 4.4 and 6.2 p.c. of GDP higher in 2030 and 2050 than its level in 2006. Assuming that social benefits are adjusted in line with prosperity by 0.5 p.c. per annum, pension costs would increase by 4.5 p.c. of GDP over the period as a whole, thus representing the primary factor behind the expansion. Employees' pensions are expected to rise by 2.8 percentage points, while public sector pensions will increase by 1.7 percentage points. The pensions of self-employed persons are expected to remain more or less unchanged as a percentage of GDP. Health care is

(1) Law of 5 September 2001 guaranteeing a continuous reduction in the public debt and establishing an Ageing Fund.

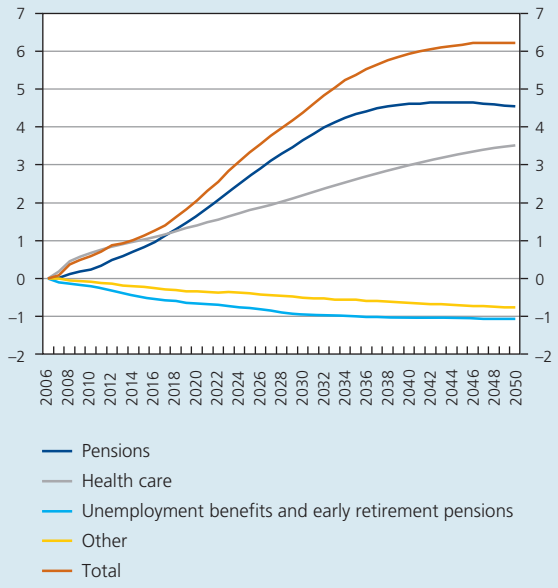
TABLE 1 BUDGETARY COSTS OF AGEING
(percentages of GDP)

	2006	2010	2030	2050	2006-2030	2006-2050
Pensions	8.9	9.1	12.5	13.4	3.6	4.5
Employees	5.0	5.0	7.3	7.7	2.3	2.8
Self-employed	0.7	0.7	0.9	0.8	0.2	0.1
Public sector	3.2	3.4	4.4	4.8	1.2	1.7
Health care	7.0	7.7	9.2	10.5	2.2	3.5
Disability benefits	1.2	1.3	1.1	1.0	–0.1	–0.2
Unemployment benefits	2.1	1.9	1.2	1.1	–0.9	–1.0
Early retirement pensions	0.4	0.4	0.4	0.4	–0.0	–0.0
Family allowances	1.6	1.5	1.3	1.1	–0.4	–0.5
Other	1.6	1.6	1.6	1.6	–0.0	–0.0
Total	**22.9**	**23.5**	**27.3**	**29.1**	**4.4**	**6.2**
p.m. Remuneration of teaching staff	*4.0*	*3.9*	*3.6*	*3.7*	*–0.3*	*–0.3*

Source : SGA.

CHART 3 BUDGETARY COSTS OF AGEING

(change in age-related public expenditure as a percentage of GDP compared to 2006)



Source : SGA.

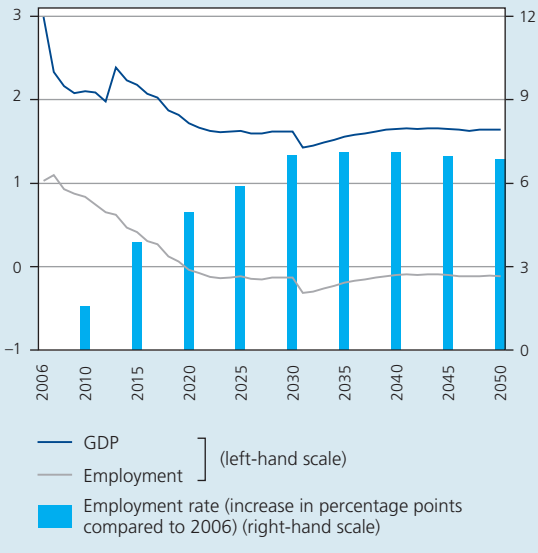
also likely to cause a steep increase in the cost of ageing, amounting to 3.5 percentage points of GDP[1]. In contrast to expenditure on pensions and health care, other social spending is likely to moderate the budgetary costs of ageing. Unemployment benefits are projected to fall by 1 percentage point, while family allowances will be down by 0.5 percentage point. Finally, it should be noted that the Study Group does not expect the budgetary costs of ageing to be affected by any reduction in the remuneration of teaching staff resulting from the downward impact of demographic changes. It mentions that factor merely pro memoria, as it considers it unlikely that there will actually be any reduction in education spending, in view of the growing need for education and training.

However, these estimates are merely a guide since they are highly sensitive to changes concerning the assumptions made. One crucial assumption is that the volume of GDP will increase by an average of 1.8 p.c. per annum in the period 2006-2050, as the Study Group is expecting labour productivity to rise by 1.75 p.c. in the long term, while employment should expand by an annual average of 0.1 p.c. over the same period. That average nevertheless conceals significant variations between sub-periods. For instance, employment is projected to increase by 300,000 persons from 2006 to 2019, before declining by almost 200,000 persons up to 2050.

These employment assumptions are dependent on the continuation of an active employment policy, particularly to increase the employment rate[2] by 7 percentage points between now and 2030 and to reduce the level of structural unemployment. The Study Group's basic scenario assumes an increase in employment bringing the structural unemployment rate down to 8 p.c. by 2030, a significant reduction compared to the 13.9 p.c. unemployment rate recorded in 2006[3]. In an alternative scenario, the Study Group examines the impact of an even steeper increase in employment, causing the unemployment rate to fall to 4 p.c. in 2030 and remain at that level until 2050. At the same time, the number of persons drawing early retirement pensions would be half the figure assumed in the basic scenario. In this alternative scenario, the budgetary costs of ageing would be 1.4 p.c. of GDP lower. In the opposite scenario, in which the structural unemployment rate only declines to

CHART 4 ASSUMPTIONS RELATING TO GDP AND EMPLOYMENT FOR THE PERIOD 2006-2050

(percentage changes compared to the previous year, unless otherwise stated)



Source : SGA.

(1) The projection relating to health care spending takes account not only of the influence of population ageing – via the age-related expenditure profiles – but also of the expected developments in the case of an unchanged demographic structure.

(2) Workers as a percentage of the population of working age (15 to 64 years).

(3) The unemployment concept used in the reports of the Study Group on Ageing is based on administrative data. It includes all persons registered as unemployed and seeking work, and older unemployed persons not seeking work. This concept is different from the harmonised unemployment rate which is based on the "labour force survey" data. That survey uses a stricter definition of unemployment which does not include older unemployed persons not seeking work. The harmonised unemployment rate, which came to 8.2 p.c. in 2006, is therefore considerably lower than the unemployment rate indicated in the Study Group reports.

12 p.c. by 2030 and the numbers drawing early retirement pensions is 50 p.c. higher than in the basic scenario, the budgetary costs of ageing would increase by a further 1.5 p.c. of GDP. The budgetary costs of ageing therefore appear to be particularly sensitive to the employment projections.

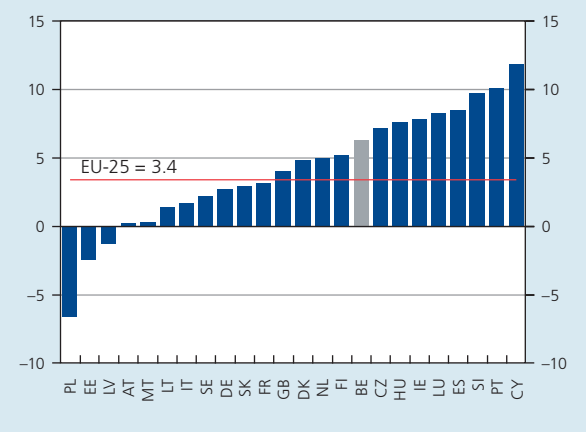
2.2 Estimates produced by the Ageing Working Group for the EU

The budgetary impact of ageing is also estimated at European level. For that purpose, the European Commission and the Member States jointly produce long-term projections in the Economic Policy Committee's Ageing Working Group. The first projections of this technical working group, set up in 1999, date from 2001 and cover only expenditure on pensions and health care. In 2003, these data were supplemented by projections concerning education spending and unemployment benefits. Updated estimates were submitted to the Ecofin Council and published in February 2006 (1).

It is evident from these projections that almost all the EU Member States will face a substantial increase in age-related public expenditure, primarily as a result of higher spending on pensions, but also because of increased expenditure on health care and care for the elderly. The impact of possible savings on education spending and unemployment benefits is likely to be modest overall. The annual age-related public expenditure for the EU-25 as a whole is projected to be 3.4 p.c. of GDP higher in 2050 than in 2004.

CHART 5 EXPECTED CHANGE IN AGE-RELATED PUBLIC EXPENDITURE BETWEEN 2004 AND 2050 (1)

(percentage points of GDP)

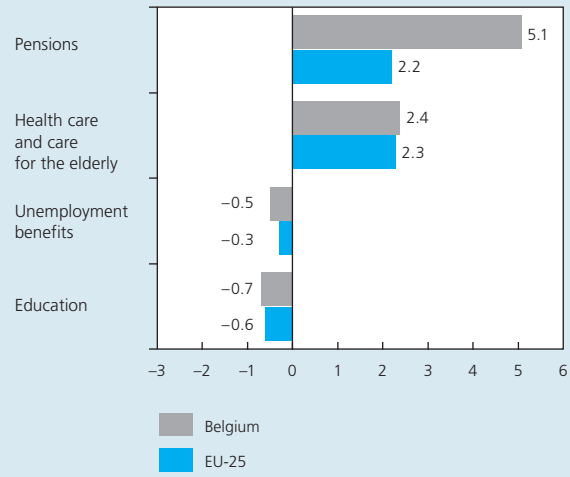


Sources : AWG, EC.

(1) Greece is not included because there are no available estimates for pensions and spending on care for the elderly. In the case of Cyprus, there are no estimates for spending on care for the elderly.

CHART 6 AGE-RELATED PUBLIC EXPENDITURE IN THE EU-25 AND IN BELGIUM

(changes in percentages of GDP during the period 2004-2050)



Sources : AWG, EC.

However, this EU average masks wide variations between Member States : Cyprus, Portugal, Slovenia, Spain, Luxembourg, Ireland, Hungary and the Czech Republic are likely to see age-related public expenditure exceed 2004 levels by more than 7 p.c. of GDP by the year 2050, while Lithuania, Estonia and, above all, Poland should record a decline in such spending over the same period. In Belgium, according to the estimates of the Ageing Working Group, age-related public expenditure is expected to rise by 6.3 p.c. of GDP between 2004 and 2050.

Belgium is thus among the countries where the budgetary costs of ageing are above the average ; that is due almost exclusively to the fact that the expected increase in expenditure on pensions in Belgium is substantially higher than the average for the EU-25. It should be noted that the projections produced by the Economic Policy Committee's Ageing Working Group point to a higher increase than the estimates of the Study Group on Ageing. This discrepancy is due partly to the fact that the two projections are based on slightly different migration assumptions, e.g. as regards the age profile of immigrants (2).

(1) The Ecofin Council asked the Economic Policy Group to produce new projections for age-related public spending by the end of 2009, on the basis of new Eurostat population forecasts.

(2) In its 2006 annual report, the Study Group on Ageing gives a detailed account of the differences between its estimates of the budgetary costs of ageing and those of the Economic Policy Committee's Ageing Working Group.

However, the differences between the EU Member States in terms of the budgetary costs of ageing should be interpreted with due caution, since they are based on the assumption that policy remains unchanged. This implies that some countries will adjust their social benefits wholly or partly in line with prosperity, while other countries make little or no adjustment[1]. In many EU-25 Member States, the benefit ratio, which is the ratio between the average pension benefit and the average wage, will therefore be well below its current level by 2050. Furthermore, Sweden, Estonia, Latvia, Lithuania, Hungary, Poland and Slovakia have recently effected a partial conversion of their public pension schemes into pre-funded schemes outside the public sector, so that public spending will eventually decline.

3. Meaning of the concept of sustainable public finances

In the context of growing awareness of the significant influence that population ageing will have on public finances, the assessment of budgetary situations is increasingly focusing on long-term sustainability.

The idea behind the concept of sustainable public finances is clear: in principle, a sustainable fiscal policy can be continued indefinitely, whereas unsustainable public finances require adjustment sooner or later. In other words, sustainability is a reference to a government's ability to remain solvent both now and in the future, without needing any major adjustments to fiscal policy. The concept of sustainable public finances has multiple facets: apart from avoiding excessive public deficits and an ever-growing debt ratio, it is also essential to maintain the burden of taxation at an acceptable level and not to neglect public spending. The economic literature puts forward various definitions of a sustainable fiscal policy, and various ways of putting these theoretical stipulations into practice[2].

Obviously, the movement in the public debt is a key element in the assessment of the sustainability of public finances. The easiest way of pinpointing any sustainability problems is therefore to produce long-term projections of the budget balance and the public debt ratio, assuming no change of policy and taking account of the impact of population ageing. In most cases, an unchanged policy is defined as a situation in which, leaving aside the expected movement in age-related public spending, the primary balance remains steady.

(1) With a presumed adjustment for wealth of 0.5 p.c., Belgium features among the countries that have social benefits partly adjusted for wealth.

(2) For a summary of the operational definitions used in the economic literature, see Ballassone and Franco (2000), and Langenus (2006).

(3) The intertemporal budget constraint was presented in Blanchard et al. (1990).

To gain a full appreciation of the situation regarding public finances, it is also necessary to have an idea of the size of any adjustment which may be needed to arrive at a sustainable policy. For that purpose, it is usual to calculate a sustainability indicator which records the difference between the current structural primary balance and the primary balance needed to ensure the sustainability of public finances, taking account of the budgetary impact of population ageing and the assumptions concerning interest rates and economic growth. If there is a sustainability deficit, this indicator shows the permanent budgetary adjustment required, which may be achieved, for example, via an increase in the income ratio or a reduction in the expenditure ratio.

However, there are various ways of determining the primary balance required for sustainability, and two different approaches are possible. In the first variant, it is assumed that the government has to achieve a specific target for the debt ratio or the budget balance at a specific date in the future. The second variant is derived from the "intertemporal budget constraint" whereby the current value of the public debt must correspond to the discounted value of all future primary balances over an infinite time horizon[3]. A heavily indebted government will therefore have to achieve sufficiently high primary surpluses in the future. Technical notes on this intertemporal budget constraint may be found in the annex.

Finally, it should be noted that studies on generational accounting introduce an additional criterion. They examine not only the sustainability of public finances, but also the implications concerning the intergenerational fairness of any budget adjustments required.

4. Sustainability of public finances in the European Union

4.1 A key element in budgetary surveillance at European Union level

Agreements have been concluded at EU level to ensure sound public finances. Thus, in connection with the convergence criteria which must be satisfied in order to qualify for membership of the monetary union, the Treaty on European Union specifies reference values for the budget balance and the public debt. In principle, the budget deficit must not be more than 3 p.c. of GDP, and the public debt must not exceed 60 p.c. of GDP unless the debt ratio is declining sufficiently to approach that reference value at a satisfactory pace. These criteria are also the cornerstones of the excessive deficit procedure which, after the creation

of the monetary union, is intended to ensure permanent budget discipline. The stability and growth pact, agreed at the Dublin European Summit in December 1996, clarified and tightened up the budget rules.

These agreements were based on concern to ensure that one country's unsound fiscal policy should not undermine the union's stability, because in a monetary union with a fragmented fiscal policy, derailment of the budget in one or more member countries would have adverse consequences for the entire union, e.g. via an increase in interest rates. Moreover, a lack of budget discipline could significantly impair the effectiveness of monetary policy.

The impending impact of population ageing on the budget has focused more attention on long-term considerations. Thus, the March 2001 European Council called for regular assessment of the sustainability of public finances, partly on account of the likely future demographic changes. Since then, in the course of the assessment of the stability and convergence programmes, the European Commission has conducted sustainability checks based on the data and forecasts supplied in those programmes and on long-term projections produced jointly by the Member States and the European Commission in the Economic Policy Committee's Ageing Working Group. On the basis of the latest projections – dating from February 2006 – the European Commission conducted a detailed assessment of sustainability in the Member States. Its report was published in October 2006.

The importance of sustainable public finances was also strongly emphasised in the reform of the stability and growth pact in March 2005. Thus, budgetary surveillance must include sufficient attention to the public debt and sustainability. In addition, the aim is to strengthen the link between the sustainability analyses and the national medium-term budget targets. Better account is also being taken of pension reforms.

Assessment of the long-term sustainability of public finances is therefore currently an essential aspect of the regular budgetary surveillance organised in the EU.

4.2 Approach adopted by the EU to assess the long-term sustainability of public finances

To assess the sustainability of public finances in the longer term, it is necessary to take account of both the current budget situation and the projections relating to the expected age-related public spending and macroeconomic developments. On the basis of that information, the European Commission calculates two quantitative indicators which play a key role in its assessment of the sustainability of public finances in the EU Member States:

- the S1 indicator measures the size of the permanent adjustment to the primary balance required in order to achieve a debt ratio of 60 p.c. by 2050. In other words, this means that if this fiscal policy adjustment is made now, no further policy adjustments will be needed later on, when population ageing has its greatest impact on the budget;
- the S2 indicator measures the permanent adjustment required – without any further policy adjustments being needed later on – in order to bring the budget balance to a level where the intertemporal budget constraint is respected.

These indicators give a clear idea of the budget imbalances and shed light on the challenge which policy-makers must address in order to achieve a sustainable policy. Total elimination of the difference between the current structural primary balance and the required primary balance as measured by the said sustainability indicators amounts to full pre-financing of the costs of population ageing. If a permanent budget adjustment proves necessary, that could be achieved by cutting the non-age-related public spending or increasing public revenues as a percentage of GDP. However, this could also be done by means of structural measures aimed at limiting age-related public spending.

Nevertheless, the sustainability indicators S1 and S2 must be interpreted with due caution, as they are based on a specific operational definition of the concept of sustainability. Moreover, they constitute a partial approach which does not include the potential effects of fiscal policy on growth or interest rates, for example.

In order to give a general opinion on the sustainability of public finances in the various EU Member States, the European Commission also takes other factors into consideration, such as the current size of the public debt. Countries with a high debt ratio are more sensitive to growth shocks and interest rate fluctuations. They also need to record primary surpluses for a considerable period of time in order to reduce the debt level, and that may prove difficult. Another factor taken into account is the adequacy of pensions. If the average pensions become much smaller than at present in comparison with average incomes, and if inadequate pensions lead to a greater risk of poverty for the elderly, then the government may need to act in order to rectify that situation. Public revenues are also considered, because a high current tax ratio leaves less scope than a lower tax ratio for increasing taxation to finance additional expenditure. In that connection, a check

is also conducted on whether there could be a change in public revenues as a percentage of GDP in the long term, e.g. in a situation where pension funds are built up and the pension contributions are tax exempt, while the benefits will be taxable.

On the basis of the sustainability indicators and these other factors, the European Commission divides the Member States into three categories, according to whether the countries present a high, medium or low sustainability risk.

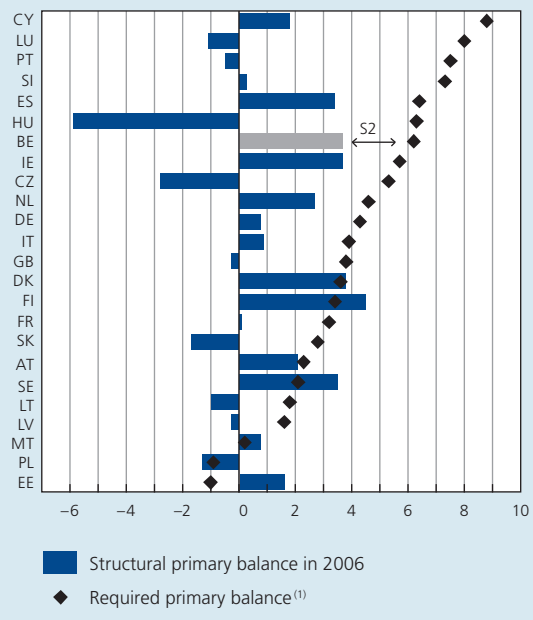
4.3 Assessment of the long-term risks to the sustainability of public finances

4.3.1 Assessment based on the sustainability indicators

On the basis of the structural budget situation recorded in the EU in 2006, the public debt can be expected to fall below 60 p.c. of GDP in the next decade. However, if the fiscal policy remains unchanged, the debt ratio could rise again in the period after 2020. In 2050, the debt ratio in the EU would even reach 160 p.c. of GDP. It is therefore clear that the present fiscal policy must be considered unsustainable and needs to be adjusted. The European Commission has calculated that the sustainability deficit in the EU, which corresponds to the difference between the structural primary balance in 2006 and the primary balance required for sustainability, is about 2 p.c. of GDP according to the S1 indicator and all of 3 p.c. according to the S2 indicator.

CHART 7 REQUIRED PRIMARY BALANCE AND STRUCTURAL PRIMARY BALANCE IN 2006

(percentages of GDP)

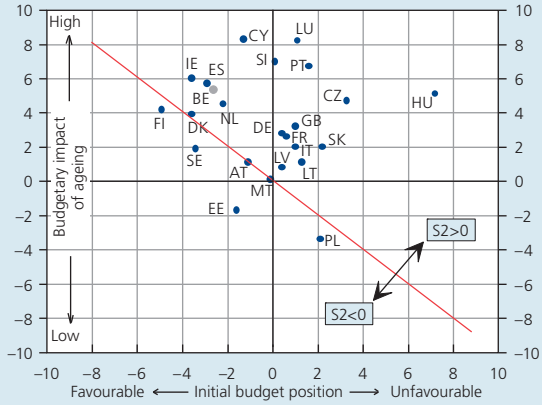


Source : EC.

(1) The European Commission calculates this required primary balance according to the S2 indicator as the average over the five years following the last year of the stability and convergence programmes.

CHART 8 IMPACT OF THE INITIAL BUDGET POSITION AND THE BUDGETARY COSTS OF AGEING ON THE SUSTAINABILITY INDICATOR S2

(percentages of GDP)



Source : EC.

It should be noted that the sustainability risk would decline significantly if the Member States were to achieve the targets which they set themselves in their latest stability and convergence programmes. In that case, according to the S2 indicator, the sustainability deficit in the EU would decline by around 1.5 p.c. of GDP. It is therefore essential to respect those targets.

However, these EU averages mask significant variations between Member States. In only a quarter of the Member States is the current primary balance sufficient to absorb the budgetary cost of ageing while at the same time respecting the intertemporal budget constraint without needing any adjustment to fiscal policy. In three-quarters of the Member States, there are sustainability deficits, which in some cases are actually considerable.

Belgium also still has a significant sustainability deficit, although the situation is somewhat better than the EU average. On the basis of the structural budget situation in 2006, the sustainability indicator would be 1.3 p.c. of GDP according to the S1 indicator, and 2.7 p.c. of GDP according to the S2 indicator. On the basis of the latter indicator, the average primary balance required in Belgium in the period 2011-2015 to respect the intergenerational budget constraint is 6.2 p.c.

of GDP. That is considerably larger than the structural primary balance of 3.7 p.c. of GDP recorded in 2006.

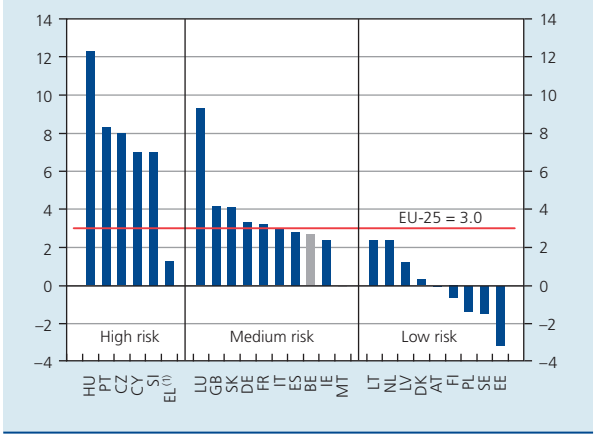
The sustainability indicator S2 can be divided into two components, distinguishing between the effect of the initial budget situation and the long-term effect of ageing on the budget. On the basis of that analysis, it is evident that, even if no account is taken of the budgetary impact of ageing, the current budget situation must be considered unsustainable in about half of the EU Member States. In roughly a quarter of the Member States, the sustainability deficit is purely the result of the expected increase in age-related public spending. That also applies to Belgium. In the remaining quarter of the Member States, there is no sustainability deficit. Poland is in a very special position here, since the expected decline in age-related public spending as a percentage of GDP neutralises the impact of the weak initial budget position.

4.3.2 Overall assessment of the Member States

On the basis of the information from the latest stability and convergence programmes, the European Commission divided the Member States of the EU-25 into three categories. Six Member States are regarded as high risk countries, ten as medium risk and nine as low risk. In general, the level of the sustainability indicator S2 closely reflects the division into risk categories. The European Commission's opinion was confirmed by the Ecofin Council in the course of the assessment of the latest stability and convergence programmes.

CHART 9 SUSTAINABILITY INDICATOR S2 AND THE DIVISION OF THE EU MEMBER STATES INTO RISK CATEGORIES

(percentages of GDP)



Source : EC.

(1) In Greece's case, the sustainability indicator S2 is calculated on the basis of the budgetary cost of ageing excluding pensions and spending on care for the elderly, so that this indicator underestimates the sustainability deficit.

High risk countries

The countries presenting a high risk are Hungary, Portugal, the Czech Republic, Cyprus, Slovenia and Greece. They are characterised by a very steep rise in age-related public spending. With the exception of Slovenia and Cyprus, these countries also have substantial budget deficits, and in Greece's case there is a substantial debt as well. There is therefore an urgent need for those countries to make an effort to consolidate their budgets and take measures to limit the rise in the budgetary cost of ageing.

Medium risk countries

The intermediate group comprises countries with widely varying characteristics. Luxembourg, Spain and Ireland currently have a fairly sound budget position, but population ageing entails high costs so that measures are needed to keep them in check. In the United Kingdom, Germany, France, Italy, Slovakia and Malta, the costs of ageing are not such a serious problem – in many cases because those countries have already reformed their pension systems – but public finances need to be consolidated in the medium term. The situation in Italy merits particular attention : that country needs to ensure that it achieves a sustained reduction in its current very high debt.

Belgium shares a number of characteristics with both subgroups. The government's primary surplus needs to be maintained at a relatively high level in order to continue reducing the debt while also absorbing the sharp rise in age-related spending. The increase in that expenditure is expected to be considerably above the EU average in Belgium. Even if the current large primary surplus is maintained over a long period, that will still not be enough to cover all the costs of ageing in the long term. Measures designed to curb the expected increase in pension expenditure would therefore undoubtedly help to reduce the risks to the sustainability of public finances.

Low risk countries

Lithuania, the Netherlands, Latvia, Denmark, Austria, Finland, Poland, Sweden and Estonia are regarded as countries with a low sustainability risk. They have made the most progress in tackling the challenge of population ageing. The reason is that they have a sound budget position and/or have implemented radical pension reforms, sometimes involving a switch to private pension schemes. However, a low risk does not mean that there is no longer any risk at all to the sustainability of public finances in the long term. In practice, their situation depends on the successful implementation of the reforms, and on the maintenance or in some cases strengthening of their budget position.

4.4 A three-pronged strategy

The above analysis shows that addressing the issue of population ageing must be high on the economic policy agenda. Although the scale of the sustainability risks varies from one country to another, three-quarters of the EU Member States need to make – sometimes major – adjustments to their fiscal policy. At the Stockholm European Council in March 2001, a three-pronged strategy was formulated for that purpose, and put forward as a guiding principle. That strategy entails a rapid reduction in the public debt, an increase in the employment rate and productivity, and the reform of the existing pension systems, health care and long-term care for the elderly.

First, the Member States must achieve and maintain sound budget positions, and a faster reduction in their public debt. That is essential to create the necessary scope in the budget before the effect of ageing has a major impact on their public finances. A low public debt and sound public finances can also be conducive to price stability and lower interest rates, thus creating a favourable climate for high and stable economic growth, which would in turn benefit the sustainability of public finances.

Second, the Member States must increase the labour market participation rate, particularly in the case of women and older workers, and boost labour productivity. In 2006, the employment rate in the EU was 64.3 p.c., compared to 62.1 p.c. in 2000. The 70 p.c. target agreed by the Member States is therefore still a long way off. Measures aimed at substantially increasing the participation rate and cutting the structural unemployment rate could offer great advantages. Successful implementation of such measures and an improvement in productivity would augment potential GDP, and that would also expand the scope in the budget. Education is regarded as a decisive factor here.

Third, the Member States need to consider appropriate reforms in their pension, health care and long-term care systems, in order to ensure financial viability, and at the same time guarantee adequate, accessible provision. The budgetary costs of ageing, estimated on the assumption that policy remains unchanged, therefore should not be regarded as fixed. The recent pension reforms in almost half the EU-15 Member States – the European Commission refers to Germany, France, Austria, Italy, the United Kingdom and Sweden – and in many of the countries which joined the EU recently will, in principle, weaken the budgetary impact of ageing and make a significant contribution towards improving the sustainability of public finances.

5. Budget recommendations of the High Council of Finance

The High Council of Finance is an important advisory body in Belgium. Its "Public Sector Borrowing Requirement" section analyses fiscal policy and makes recommendations on the subject. In the past, the Section's opinions have always formed the basis of the medium-term budget programmes and of the corresponding agreements concluded between the federal government and the governments of the communities and regions.

The long-term sustainability of public finances is a key aspect of these opinions. Indeed, the Section's latest recommendations are based on the conclusions of the Study Group on Ageing in regard to the budgetary impact of demographic trends[1].

This chapter comments on the main points of the March 2007 opinion entitled "Towards sustainable public finances with a neutral intertemporal impact in the context of population ageing".

5.1 Basic principles

The "Public Sector Borrowing Requirement" section was influenced by two important considerations in its choice of budget strategy. First, the budget plan must be sustainable in the sense that the public debt must tend towards a low and stable level in the long term. Second, the budget plan must do everything possible to ensure the intertemporal neutrality of fiscal policy, which implies that the burden of any budget adjustments needed to ensure sustainability must not be transferred to future generations.

5.2 Description of the recommended budget plan

In formulating its opinion the Section endeavoured to comply with the above two criteria simultaneously and as well as possible. It disregarded two extreme scenarios, namely a scenario of full pre-financing and a scenario in which the budget is kept in balance.

A scenario in which the whole budgetary cost of ageing up to 2050 is fully pre-financed from 2010 would demand a substantial budget effort – at least 2 p.c. of GDP – concentrated entirely on the federal parliamentary term 2007-2011. That would cause a break in the continuity

(1) The Section's March 2007 opinion is based on the 2006 report of the Study Group on Ageing. Since then, the Study Group has produced new estimates, published in its 2007 report, in which the budgetary costs of ageing in the period 2006-2050 have been revised upwards by 0.4 p.c. of GDP.

of fiscal policy. The Section also considers that there could then be a risk of insufficient resources being left to continue an active employment policy and support the growth potential, both of which are part of the second pillar of the overall strategy needed in the light of population ageing. In addition, such a scenario would imply the creation of financial assets in the long term, and the Section considers that it would not be easy to arrange the allocation among the various entities of the federal Belgian state.

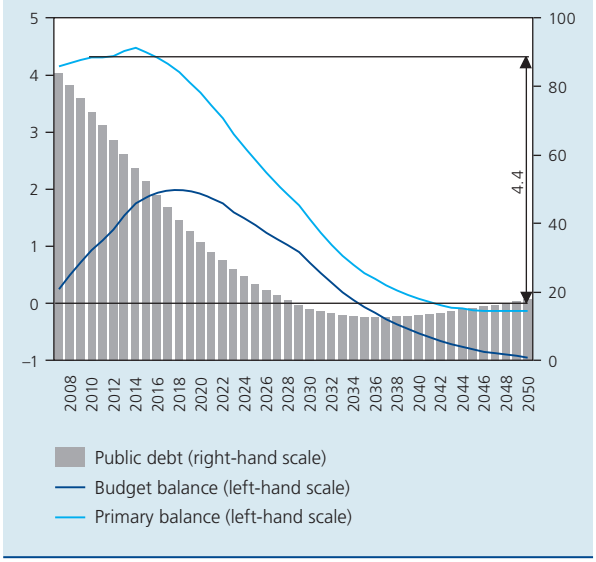
A second, far less ambitious scenario which falls well short of Belgium's current European commitments would be based purely on constant maintenance of a balanced budget. If that budget plan were adopted, the pressure on the budget caused by population ageing would ultimately necessitate either a substantial increase in compulsory contributions or a drastic cut in public expenditure. That would be out of line with the principle of intertemporal neutrality, so that this scenario is not considered desirable.

In view of these findings, the Section decided to opt for a third scenario, consistent with the two crucial principles of sustainability and intertemporal neutrality. In this scenario, which starts from a structural budget surplus of 0.3 p.c. of GDP in 2007, the budget balance would have to improve by 0.2 p.c. of GDP per annum to reach 1.3 p.c. of GDP in 2012. This plan corresponds to the budget targets for the period to 2010 under Belgium's December 2006 stability programme. However, the Section remarks that in the medium term this plan should be regarded as the minimum effort. After 2012, the budget surplus must be further increased to around 2 p.c. of GDP over the period 2017-2019. After 2019, the surplus could be gradually reduced, to attain a balanced budget in 2035 and a deficit of just under 1 p.c. of GDP in 2050.

This would give public finances a dual margin to cope with the budgetary costs of ageing. This dual margin results, on the one hand, from the reduction in interest charges resulting from the contraction of the public debt, and, on the other, from the gradual fall after 2019 in the budget balance from a surplus of around 2 p.c. of GDP to a deficit of nearly 1 p.c. of GDP. It then becomes possible to allow the primary balance to decline by 4.4 p.c. of GDP between 2010 and 2050. Since the increase in age-related public spending in this period is estimated at 5.6 p.c. of GDP[1], in this scenario roughly four-fifths of the budgetary costs of ageing are pre-financed. Consequently, the remaining one-fifth has to be covered by limiting the room for manoeuvre on primary expenditure.

CHART 10 BUDGET PLAN ADVOCATED BY THE HIGH COUNCIL OF FINANCE

(percentages of GDP)



Source : HCF.

5.3 Implications in regard to the room for manœuvre on primary expenditure

The Section's opinion on a budget plan which is sustainable and neutral in its intertemporal impact is based on the technical assumption of an unchanged revenue ratio. Since Belgium has one of the highest tax burdens in comparison with other countries, the Section does not see any possibility of making a further increase in compulsory levies.

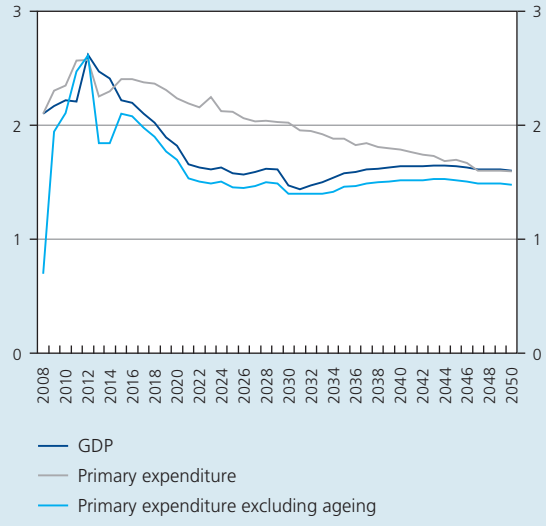
Since the budgetary costs of ageing are only partially pre-financed, an unchanged revenue ratio implies that additional scope has to be created by keeping the growth of non-age-related spending down to a level below the real GDP growth rate. The real growth of that spending would have to be limited to an average of 1.6 p.c. per annum during the period 2007-2050[2]. The gap in relation to the volume growth of GDP would thus be 0.1 to 0.2 p.c. per annum. The real annual increase in age-related social

(1) This figure is taken from the 2007 report of the Study Group on Ageing. The 2006 report of the Study Group, which forms the basis of the opinion of the "Public Sector Borrowing Requirement" section of the High Council of Finance, estimated the budgetary costs of ageing in the period 2010-2050 at 5.5 p.c. of GDP. Since the new projection differs only very slightly from that figure, the assumptions on which that opinion was based can still be regarded as valid.

(2) On the basis of the new data in the July 2007 report of the High Council of Finance, real growth in non-age-related expenditure over the period from 2007 to 2050 would be around 1.5 p.c. a year, according to our own calculations, rather than 1.6 p.c.

CHART 11 MARGINS IN RELATION TO PRIMARY EXPENDITURE[1]

(real percentage changes compared to the previous year)



Source : HCF.

(1) These figures are taken from the March 2007 report of the High Council of Finance. In its July 2007 report, the margins in relation to primary expenditure excluding ageing for the period from 2007 to 2015 have been revised downwards by about 0.6 p.c. per year.

spending over the same period would come to 2.3 p.c., with the real growth of total primary expenditure running at 2 p.c.

Over the period 2010-2050, the expenditure restrictions will result in a reduction in non-age-related primary expenditure of 1 p.c. of GDP, or one quarter of a percentage point per decade, which is sufficient to cover the part of the budgetary cost of ageing which is not pre-financed from 2010.

The Section stresses that the degree of difficulty in order to achieve these objectives should not be underestimated. In this connection, it points out that the recommended budget plan is based on the assumed general government budget surplus of 0.3 p.c. of GDP in 2007. However, the federal budget for 2007 includes a significant amount of non-recurring measures. These non-recurring factors must therefore be eliminated and replaced by structural measures.

The Section also stressed that the distinction between age-related social benefits and other primary expenditure is made primarily for technical reasons, as this is a way of clearly showing the scope in the budget for primary expenditure if the influence of ageing is disregarded. If measures were taken to reduce the revenue ratio, tighter spending restrictions would be needed.

Finally, the Section also examined the implications of its proposed budget plan for the various government entities, noting that in the current institutional context in Belgium, over 90 p.c. of the budgetary cost of ageing is borne by the federal government and social security.

5.4 Assessment against set criteria

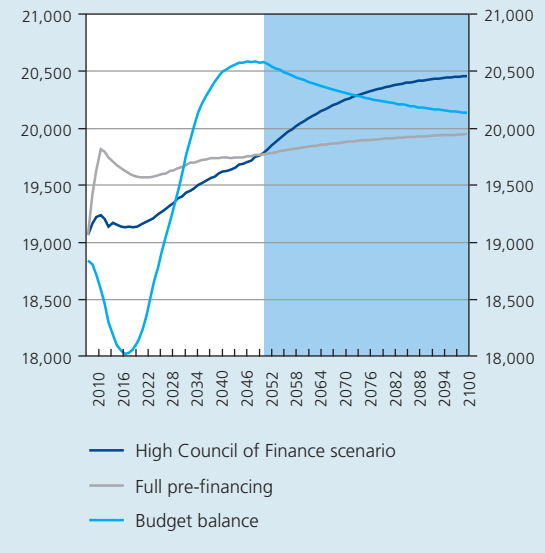
The budget plan recommended by the Section satisfies the criterion of long-term sustainability, provided the non-pre-financed part of the budgetary costs of ageing is covered by additional scope obtainable, for example, by keeping the growth of non-age-related spending sufficiently below GDP growth. On the one hand, this budget plan would cause the government's financing requirement to stabilise at almost 1 p.c. of GDP by 2050. On the other hand, the debt would fall to a low level of around 13 p.c. of GDP in 2035. After that, the debt ratio would edge upwards but would still be only 17 p.c. in 2050, converging towards 25 p.c. in the very long term.

The criterion of intertemporal neutrality also seems to be largely respected, when measured against the stability of the average contribution of each working person to the government's primary balance deflated by nominal wage growth[1]. Overall, the increase in that contribution will be small during the period 2007-2050.

(1) Cf. Langenus (2006) for a more detailed presentation of this indicator of intergenerational fairness.

CHART 12 AVERAGE CONTRIBUTION TO THE PRIMARY BALANCE PER WORKER[1]

(euro, deflated by nominal wage growth)



Sources : HCF, NBB.

(1) For comparability, it is assumed that the debt ratio in the three scenarios will converge towards zero by 2100.

Conclusion

As in the majority of European countries, public finances in Belgium will be confronted by the effects of population ageing. According to the Study Group on Ageing, age-related government expenditure in Belgium will increase by no less than 6.2 percentage points of GDP between 2006 and 2050. It is particularly from 2010 onwards that government spending will feel the impact of ageing.

Ageing is therefore a major challenge both for Belgium and for the EU as a whole. In order to meet that challenge, it is necessary to continue working on a coherent strategy targeting particular fiscal, economic and social aspects of policy. Reducing the public debt, increasing the labour market participation rate and boosting productivity while simultaneously reforming the pension, health and long-term care systems are key elements in that strategy.

Some EU Member States already have sound and sustainable public finances, and many others have reformed their pension schemes and other systems in order to meet the challenge. Those countries can face the future with confidence. However, the great majority still have a long way to go. On the basis of the current budget position and the expected increase in age-related government expenditure, the EU Member States are divided into three groups according to the risk to the sustainability of their public finances in the long term. Belgium is in the group of countries facing a medium risk. Despite the steady debt reduction in preceding years, the debt ratio is still very high and the budgetary costs of ageing are above the EU average. Constant budget discipline is therefore essential to sustain high primary surpluses for quite a long time to come, and to continue steadfastly reducing the burden of the public debt.

On the basis of the projections of the Study Group on Ageing, the "Public Sector Borrowing Requirement" section of the High Council of Finance has devised a budget plan for coping with the budgetary costs of ageing. According to that plan, structural budget surpluses must be gradually built up in the years ahead. This plan is fully in line with the course mapped out in the December 2006 stability programme. The Section rightly points out that these targets should be regarded as a minimum in the medium term, as the favourable progress of public finances could be threatened if the targets are not met. In the event of major discrepancies – e.g. if the government fails to build up budget surpluses in the coming years – there will be insufficient scope to finance the budgetary costs of ageing, and in the long run there is a danger that the public debt snowball effect might recur.

Annex: The intertemporal budget constraint

The debt at the end of a given period (D_t) is the outcome of the sum of the debt at the end of the previous period (D_{t-1}) and of the difference between the interest charges on the outstanding debt ($r_t . D_{t-1}$) and the primary budget balance (PB_t)[1].

$$D_t = D_{t-1} + r_t . D_{t-1} - PB_t$$

This equation can be rewritten by dividing the variables by GDP, nominal GDP growth in year t being expressed as g_t. The lower case letters d and pb respectively represent the public debt and the primary budget balance as percentages of GDP.

$$d_t = \frac{(1 + r_t)}{(1 + g_t)} . d_{t-1} - pb_t$$

The debt ratio in any period is thus determined by three factors, namely the debt ratio in the preceding period, the ratio between the nominal interest rate and the nominal GDP growth rate, and the primary balance as a ratio of GDP.

This finding can be extended to the long term by systematic substitution of the debt ratio up to the final period T, starting from the reference period (t-1 = 0). In order to avoid an excessively complicated notation, the nominal interest rate (r) and the nominal GDP growth rate (g) are assumed to be constant over time. However, the reasoning below is still valid under the more realistic assumption in which these variables change from one period to another.

$$d_0 = \left[\frac{(1 + g)}{(1 + r)}\right] . pb_1 + ... + \left[\frac{1 + g}{1 + r}\right]^T . pb_T + \left[\frac{1 + g}{1 + r}\right]^T . d_T$$

At an infinite time horizon, the equation becomes:

$$d_0 = \sum_{i=1}^{+\infty} \left[\frac{(1 + g)}{(1 + r)}\right]^i . pb_i + \lim_{T \to +\infty} \left[\frac{1 + g}{1 + r}\right]^T . d_T$$

Assuming that this last term, which gives the discounted value of the public debt at an infinite time horizon, tends towards zero[2], the equation becomes:

$$d_0 = \sum_{i=1}^{+\infty} \left[\frac{(1 + g)}{(1 + r)}\right]^i . pb_i$$

This equation, commonly known in the economic literature as the intertemporal budget constraint, shows that the discounted value of the future primary balances corresponds to the current value of the public debt.

(1) This is a simplification of the real movement in the public debt, as interest payments relate to the debt outstanding during the year. The debt pattern is also influenced by what are known as deficit/debt adjustments, e.g. as a result of financial transactions (such as loans, participating interests and privatisations) or the impact of exchange rate fluctuations.

(2) This assumption is based on two conditions:

- first, the debt ratio must converge towards a finite value (or, if the debt ratio is rising, its increase must not exceed the difference between the interest rate and the GDP growth rate). From an economic point of view, however, a situation in which the debt ratio is constantly increasing can be ruled out, since in that situation rational agents would not be prepared to continuing holding public debt securities (in the economic literature, this is called the "No-Ponzi condition");
- second, the difference between the nominal interest rate and the nominal GDP growth rate must be positive. That condition can be considered to be met in the medium and long term, since otherwise – according to economic theory – the result would be a situation of dynamic inefficiency (excess accumulation of capital).

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Summaries of articles

The euro, five years later : what has happened to prices ?

While both the creation of the Economic and Monetary Union in 1999 and the introduction of the euro banknotes and coins in January 2002 actually went remarkably smooth, the introduction of the euro gave rise to a very lively debate regarding its impact on inflation. Indeed, the vast majority of consumers, both in the euro area as a whole and in Belgium, were, and still are, under the impression that the new currency has led to pronounced price increases. This article analyses both the movement of actual prices over the five years following the changeover to the euro and the trend in inflation perceptions as indicated by the European Commission's consumer survey. It also considers a number of factors which may have contributed to the breaking of the link between actual and perceived inflation.

There is clear evidence that the euro cash changeover led to a severing of the link between actual and perceived inflation. However, the direct impact on inflation was small in 2002. But, as it was concentrated in certain less competitive sectors where isolated goods and services are purchased, it was fairly visible. Since then, inflation has remained relatively low, but there has been greater dispersion in the movement of relative prices. At the microeconomic level, the process of price adjustment, which seems relatively slow, gave rise to a new attractive price structure and an increase in the number of prices used in the economy. Such structural changes probably imply that consumers experience difficulties in getting used to the euro. At the same time, these observations also illustrate indirectly that the process of adjusting prices to the euro is correctly reflected in the data used to measure inflation, so that the HICP is an accurate measure of inflation, even if consumers may see things differently.

While the changeover's role in the development of a persistent perception gap cannot be denied, it is very difficult to identify possible explanatory factors more precisely. The statement that consumers tend to form their perceptions on the basis of the movement in prices of frequently purchased items is not sufficient to explain a persistent perception gap. The socioeconomic characteristics of consumers did not play a dominant role either, while the impact of more psychological factors is difficult to assess.

The specific characteristics of the HICP inflation measurement do not appear to have played a significant role in the emergence of the perception gap in the euro area. A similar gap arises when the national CPIs are used as benchmarks instead of the HICP ; the non-inclusion of the costs of owner occupied housing was not a key factor either. The fact that the accuracy and credibility of the HICP per se are not at stake is reassuring from the point of view of monetary policy.

JEL Code : C22, C23, D12, E31.
Key words : euro cash changeover, inflation, perceived inflation.

The financing of Belgian firms in a European perspective

When analysing corporate finance, it is necessary to take account of various factors which may cause significant disparities between firms, such as their size and their sector of activity.

Taking account of the size aspect, by neutralising sectoral disparities, there are few differences between the debt levels of small, medium-sized and large firms. Conversely, the debt structure appears to depend on the firm's size : small firms are more dependent on bank loans. That is confirmed by the high degree to which they make use of credit facilities. Nonetheless, surveys indicate that access to finance is not a major constraint for SMEs, be they Belgian or European : they perceive access to finance, and more specifically access to bank finance, as relatively easy.

In contrast, the financial structure of firms differs widely between sectors, and depends to a great extent on the associated intrinsic activity and the scale of the investments. Sectors with high investment ratios, such as the transport and communication sector or the energy sector, mainly use long-term finance. Ample equity capital enables them to maintain a balanced financial situation. Conversely, highly labour-intensive sectors, such as construction or trade, display much higher debt-to-equity ratios ; their debts are mainly short term and they make extensive use of trade credit.

A more detailed analysis of the manufacturing sector also reveals differences of financial structure between firms which are classed as innovative and those which are not. In particular, if the chemical industry is excluded, the firms in the innovative sectors make less use of bank loans and record more short-term debt than firms in non-innovative sectors. That may reflect the lenders' desire to limit the risk incurred, particularly by using the threat of non-renewal of the loan to encourage the manager to behave efficiently.

The qualitative surveys appear to indicate that the financial constraint is felt more by innovative firms than by SMEs in general. That expresses a financing need specific to innovative SMEs. At the early stages in their development, they depend almost exclusively on the entrepreneur's personal resources and those of his friends and family, and venture capital only takes over in the later stages.

Finally, as regards the financing structure, a comparison between Belgian firms and their European counterparts, after neutralising the specific effects of size and sector, indicates that the former issue larger amounts of capital. Abundant intra-group financial flows and a favourable institutional context are conducive to that situation.

JEL Code : G21, G24, G3.
Key words : bank lending, venture capital, corporate finance.

The Single Euro Payments Area : SEPA

SEPA (Single Euro Payments Area) is a new step in the move towards financial integration in Europe. SEPA will harmonise the use of payment instruments (credit transfers, direct debits and card payments) throughout SEPA (the 27 EU countries plus Iceland, Liechtenstein, Norway and Switzerland). All the economic actors will be able to make cross-border euro payments in the same way as domestic euro payments, with the same obligations and liabilities.

The European Commission has created a harmonised legal framework for payment services and the European Payments Council (EPC), unifying the banking sector, directs the process under a self-regulating regime. The Eurosystem monitors progress and developments in its catalyst role.

For each of the SEPA payment instruments, the EPC has developed standards: "Rulebooks" for the credit transfer and direct debit payment instruments and a more general framework for card payments. Ultimately, the same credit transfer and direct debit payment instruments will be available and accessible to all users. Any SEPA payment cards will be accepted at any terminal in SEPA. Infrastructures will have to be adapted to meet the new payment standards, and consolidation is likely.

SEPA is being created in phases. The design phase is now finished and from January 2008 onwards banks will offer their customers the SEPA Credit Transfer in parallel with the existing national credit transfer. The SEPA Direct Debit will be launched in November 2009. By the end of 2010, the use of the national payment instruments should cease. For cards, banks will need up to the end of 2010 to streamline all standards. From 2011 onwards, only SEPA cards will be issued.

In Belgium, the SEPA project is organised on two different levels: from a banking perspective and on a more general level with all stakeholders in the economy. A migration plan has been published and is regularly updated. Thanks to its long tradition of interbank cooperation, the Belgian banking sector is one of the leading banking communities in the migration to SEPA in Europe.

JEL Code: G10, G20.
Key words: SEPA (Single Euro Payments Area), payment instruments, financial integration, Payment, Services Directive, banking standards, EPC (European Payments Council).

Recent commodity price movements: causes and consequences

In the past few years, constant price increases have attracted much attention to commodity markets. The nominal prices of oil and most metals reached record levels, and their real prices reached the highest level in many years.

The recent price surge was due mainly to a strong increase in demand for commodities. This can be attributed to the strong economic growth of the past few years and to the integration of a substantial part of the world population into the global economy and international trade. The price increase was also partly the result of supply side developments, such as the scarcity of spare production and refining capacity. This made the oil price sensitive to every event that had a negative influence on the oil supply, such as the recurrent geopolitical tensions.

In recent years, economic growth and inflation in the oil-importing countries have been fairly resistant to the sharp increase in commodity prices, largely thanks to the changes in the monetary policy framework in comparison to the seventies, structural changes in the developed countries, the effect of globalisation and the favourable economic environment.

Financial markets expect oil prices to remain at high levels in the short- and medium term. Moreover, according to the International Energy Agency and other observers, high oil prices are also expected to persist in the long term. Metal prices are forecast to ease from their current high levels, mainly as a result of supply side flexibility, as extra capacity can be added quite quickly.

In view of the major economic impact of oil prices and the increasing concern about the effect of energy consumption on climate change, the government has an important role in the energy debate. Over the last couple of years there have been some initiatives to establish a common European energy and climate policy.

JEL Code: F0, Q40, Q41, Q42, Q43, Q48.
Key words: commodity markets, energy, metals, oil, OPEC.

The sustainability of public finances in the context of population ageing

In the decades ahead, the size and age structure of the European population will change dramatically. These demographic changes will obviously have a significant impact on society. Economic growth is expected to slow down following the reduction in the population of working age. In addition, there will be strong upward pressure on public expenditure on pensions, health care and long-term care for the elderly. It is in that context that questions arise regarding the long-term sustainability of public finances.

The article aims to explain the challenges inherent in population ageing for public finances, and how the authorities can respond with an appropriate fiscal policy. After a succinct account of some of the most striking demographic trends, the estimates of the budgetary costs of ageing are presented. Next is explained what is meant by sustainable public finances and how that concept can be made operational. The sustainability of public finances is a key element in the process of budgetary surveillance organised at the European Union level. In Belgium, it is also a key aspect addressed by the "Public Sector Borrowing Requirement" section of the High Council of Finance in its periodic opinions. For coping with the ageing costs, this section recommends that the Belgian public administrations build up significant structural budget surpluses in the years ahead.

JEL Code: H0, H3, H5, H6, J1.
Key words: sustainability, ageing, public finances, budgetary surveillance.

Abstracts of the working papers series

116. Temporal distribution of price changes : staggering in the large and synchronization in the small, by E. Dhyne and J. Konieczny, June 2007.

Temporal distribution of individual price changes is of crucial importance for business cycle theory and for the micro-foundations of price adjustment. While it is routinely assumed that price changes are staggered over time, both theory and evidence are ambiguous. The authors use a large Belgian data set to analyze whether price changes are staggered or synchronized. They find that the more aggregate the data, the closer the distribution to perfect staggering. This result holds for both aggregation across goods and across locations. Their findings provide support for Bhaskar's (2002) model of synchronized adjustment within, and staggered adjustment across, industries.

117. Can excess liquidity signal asset price boom ?, by A. Bruggeman, August 2007.

The paper analyses the relationship between the prevailing liquidity conditions (such as measures of money, credit and interest rates) and developments in asset prices from a monetary analysis perspective. After having identified periods of sustained excess liquidity, the author analyses under which conditions they are more likely to be followed by an asset price boom. The results from a descriptive analysis of the developments in a number of macroeconomic and financial variables suggest that periods of sustained excess liquidity that are accompanied by strong economic activity, low interest rates, high real credit growth and low inflation have a higher likelihood of being followed by an asset price boom. This conclusion is also confirmed by a logit analysis.

118. The performance of credit rating systems in the assessment of collateral used in Eurosystem monetary policy operations, by F. Coppens, F. González and G. Winkler, August 2007.

The aims of the paper are twofold : first, the authors attempt to express the threshold of a single "A" rating as issued by major international rating agencies in terms of annualised probabilities of default. They use data from Standard & Poor's and Moody's publicly available rating histories to construct confidence intervals for the level of probability of default to be associated with the single "A" rating. The focus on the single "A" rating level is not accidental, as this is the credit quality level at which the Eurosystem considers financial assets to be eligible collateral for its monetary policy operations. The second aim is to review various existing validation models for the probability of default which enable the analyst to check the ability of credit assessment systems to forecast future default events.

Within this context, the paper proposes a simple mechanism for the comparison of the performance of major rating agencies and that of other credit assessment systems, such as the internal ratings-based systems of commercial banks under the Basel II regime. This is done to provide a simple validation yardstick to help in the monitoring of the performance of the different credit assessment systems participating in the assessment of eligible collateral underlying Eurosystem monetary policy operations. Contrary to the widely used confidence interval approach, the authors' proposal, based on an interpretation of p-values as frequencies, guarantees a convergence to an ex ante fixed probability of default (PD) value. Given the general characteristics of the problem considered, they consider this simple mechanism to also be applicable in other contexts.

Conventional Signs

–	the datum does not exist or is meaningless
e	estimate by the Bank
n.	not available
p.c.	per cent
p.m.	pro memoria

List of abbreviations

COUNTRIES

BE	Belgium
DE	Germany
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy
LU	Luxembourg
NL	Netherlands
AT	Austria
PT	Portugal
SI	Slovenia
FI	Finland
EA	Euro area
CZ	Czech Republic
DK	Denmark
EE	Estonia
CY	Cyprus
LV	Latvia
LT	Lithuania
HU	Hungaria
MT	Malta
PL	Poland
SK	Slovakia
SE	Sweden
GB	United Kingdom
EU-15	European Union excluding the countries which joined in 2004 and 2007
EU-25	European Union excluding Bulgaria and Romania
NO	Norway
US	United States

OTHERS

ACH	Automated Clearing House
ADNOC	Abu Dhabi National Oil Company
AOS	Additional Optional Services
APEC	Asia-Pacific Economic Cooperation
AWG	Ageing Working Group
B2C	Bank to customer
BACH	Bank for the Accounts of Companies Harmonised
BBAN	Belgian Bank Account Number
BIC	Bank Identifier Code
BLS	Bank of Labor Statistics
C2B	Customer to bank
CCE	Central Council for Economics
CEC	Centre for Exchange and Clearing
CIS	Commonwealth of Independent States
CIS	Community Innovation Survey
CMF	Credit Mandate Flow
Cocom	Co-ordination Committee
CPI	Consumer Prices Index
CRB	Commodity Research Bureau
CT	Credit Transfer
DMF	Debtor Mandate Flow
DOM	Domiciliation
EACB	European Association of Cooperative Banks
EACHA	European Automated Clearing House Association
EBA	Euro Banking Association
EBF	European Banking Federation
EC	European Commission
ECB	European Central Bank
Ecofin	EU Council of Ministers of Economic Affairs and Finance
EIA	Energy Information Administration
EMV	Europay, MasterCard, Visa
EPC	European Payments Council
EPE	Energy Policy for Europe
EPS	Earnings per share
ESBG	European Savings Banks Group
EU	European Union
EVCA	European Venture Capital Association
FPS	Federal Public Service
GDP	Gross Domestic Product
HICP	Harmonised Index of Consumer Prices
HCF	High Council of Finance
HWWA	Hamburgisches Welt-Wirtschafts-Archiv

IAS	International Accounting Standards
IBAN	International Bank Account Number
ICE	International Commodity Exchange
IEA	International Energy Agency
IEFS	International Energy Forum Secretariat
IMAD	Institute of Macroeconomic Analysis (Slovenia)
IMF	International Monetary Fund
INSEE	Institut national de la statistique et des études économiques
Isabel	Interbank Standard Association Belgium
ISO	International Standardization Organisation
JODI	Joint Oil Data Initiative
KPC	Kuweit Petroleum Company
LME	London Metal Exchange
NACE	EC statistical nomenclature of economic activities
NBB	National Bank of Belgium
NCB	National Central Bank
NSI	National Statistical Institute
NYMEX	New York Mercantile Exchange
OECD	Organisation for Economic Cooperation and Development
OLADE	Organización Latinoamericana de Energía
OPEC	Organisation of the Petroleum Exporting Countries
Paysys	Payment Systems Committee
PE-ACH	Pan-European Automated Clearing House
PMO	Program Management Office
PSD	Payment Services Directive
R&D	Research and Development
SAUDI ARAMCO	Saudi Arabian Oil Company
SGA	Study Group on Ageing
SCF	SEPA Card Framework
SCT	SEPA Credit Transfer
SDD	SEPA Direct Debit
SEPA	Single Euro Payments Area
STEP2	Straight-Through Euro Processing 2
SMEs	Small and Medium-sized Entreprises
UNIFI	UNIversal Financial Industry message scheme
UNSD	United Nations Statistics Division
WG	Working Group
WTI	West Texas Intermediate
XML	Extended Mark-up Language

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