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Contents

Globalisation and monetary policy

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Introduction

A great many changes in the economic landscape are ascribed to globalisation. There can be no doubt that progressive globalisation has had a major influence on economic developments worldwide, and will continue to do so, and that it presents some significant challenges for economic policy.

However, globalisation is a complex phenomenon, lacking any clear-cut definition. In the current context, globalisation is defined as accelerating international economic integration, reflected in stronger growth of international trade in goods and services and in increased mobility of capital and labour.

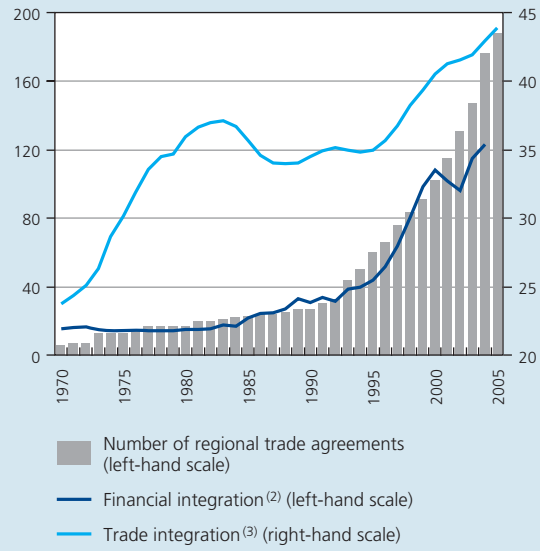
In recent decades, globalisation has speeded up as a result of the integration into the world economy of various large economies such as China, India and the new European Union Member States. There have been several contributory factors here. First, there has been rapid technological development, making it cheaper and quicker to exchange not only goods and services but also information. Also, the deliberate policy of liberalisation and deregulation in various countries has helped to accelerate globalisation. Instances include the gradual abolition of controls on capital movements in many countries and the sharp rise in the number of regional trade agreements since the mid-1990s, augmenting global trade and capital flows.

The openness of the industrialised countries, measured as the sum of their imports and exports, has increased rapidly in the past ten years from 35 p.c. of GDP to almost 45 p.c. of GDP in 2005, having already risen sharply in the 1970s. The progress of financial integration has been even more dramatic. Thus, in 2004 foreign direct investment and portfolio investment represented 124 p.c. of GDP, virtually triple the 1995 figure. There has therefore

(1) The author wishes to thank L. Aucremanne, A. Bruggeman and M. Collin for their contribution to this article.

CHART 1 SOME INDICATORS OF GLOBALISATION IN THE INDUSTRIALISED COUNTRIES (1)

(percentages of GDP, unless otherwise stated)



Sources: IMF, WTO.

(1) The industrialised countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

(2) Foreign direct investment and portfolio investment, sum of the assets and liabilities held abroad, as a percentage of GDP.

(3) Total imports and exports of goods and services as a percentage of GDP.

been a general acceleration in globalisation since the mid-1990s.

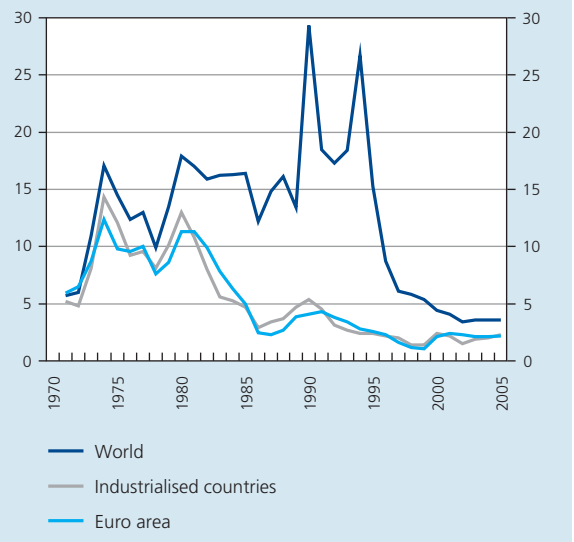
This article will now proceed to examine three potential effects of globalisation which may be important for monetary policy. The first section documents the current low and stable inflation, and explains how globalisation has played a role here. The second section tries to establish whether globalisation is one of the factors contributing to the apparent decline in the sensitivity of inflation to domestic economic activity. The separation of changes in the policy interest rates from long-term interest rate movements forms the subject of the third section. The fourth section investigates the possible implications for monetary policy, while the last section sums up the principal findings.

1. Has globalisation exerted downward pressure on inflation?

Inflation, measured by the consumer price index, has remained low and stable throughout the world since the mid-1990s. Having hovered around 10 p.c. in the industrialised countries during the second half of the 1970s, inflation eased steadily in the 1980s and 1990s, reaching a low of 1.4 p.c. in 1998. Since then, inflation has risen slightly, although the increase has been very small against the background of a 300 p.c.-increase in oil prices. It is not only the level of inflation that has declined: its volatility has also diminished, as a result of the fall in inflation persistence, i.e. the degree to which current inflation depends on its previous values[1]. This has reduced the impact of shocks on inflation, because their effects are not felt for so long. The current low inflation appears to be a global phenomenon, although in the developing countries the decline in inflation occurred later, only starting in 1995.

CHART 2 INFLATION SINCE 1971 (1)

(percentage changes compared to the previous year)



Sources: Fagan, Henry and Mestre (2005), ECB, IMF.
(1) Measured by the consumer price index.

1.1 Causes of low and stable inflation

The improvement in the conduct of monetary policy is undoubtedly a major factor in the evident decline in both the level and the persistence of inflation. The growing importance which the central banks of the industrialised countries have attached to price stability since the 1980s has been reflected in a number of institutional changes, such as the independence of the central bank, the introduction of quantitative inflation targets, and increased transparency. As a result of these changes, the central bank's inflation target – whether explicit or not – became a new, credible nominal anchor. That credibility was boosted further by the actual decline in inflation recorded in the 1980s, so that inflation expectations were more firmly anchored.

Apart from the improved conduct of monetary policy, another factor behind the lower inflation may be positive productivity shocks, whether or not related to globalisation, which have temporarily moderated inflation, and a more disciplined budgetary policy which has limited the inflationary impact of that policy. Some economists also emphasise the role played by globalisation and greater international competition.

Firstly, Rogoff (2003) argues that globalisation influences the level of the equilibrium inflation rate, because it reduces or even eliminates the inflation bias. That bias corresponds to the higher than optimum inflation level resulting from a central bank trying to bring the level of activity and employment closer to the perfect competition level by creating unexpected inflation. However, economic agents anticipate this central bank behaviour by adjusting their inflation expectations, so that the eventual result is an unchanged level of activity and employment, with higher inflation (Barro and Gordon, 1983). Since globalisation is leading to lower mark-ups on the product and labour markets, the central bank will be less inclined to stimulate the economy, so that the inflation bias will decline. In addition, the real effects of monetary policy are

(1) For a discussion of inflation persistence in the euro area, cf. Dhyne (2005).

more limited in a more competitive economy with more flexible wages and prices, and that should also reduce the tendency of central banks to conduct an expansive monetary policy. If globalisation has caused a temporary decline in inflation as well, that will have strengthened the credibility of monetary policy, making it easier to conduct that policy. Since globalisation has accelerated rapidly since the mid-1990s, that may explain the downward trend in inflation, especially in the developing countries. In the industrialised countries, however, inflation had already fallen to a low level during the 1980s.

Secondly, the emergence of the low-cost countries which has accompanied globalisation may have led the supply of products to increase faster than demand, thus having a moderating effect on the general level of prices. Conversely, however, monetary policy has been particularly accommodating in many parts of the world since 2001, counterbalancing the growth of supply.

Although globalisation may perhaps not have had any great visible impact on aggregate inflation in the industrialised countries, it has been accompanied by some major changes in the relative prices of products and production factors. Thus, the relative prices of commodities have risen sharply, while the emergence of the low-cost countries has pushed down the relative prices of manufactured goods. In addition, greater international competition has influenced wages and prices in the industrialised countries. Thus, it is reducing mark-ups in the product and labour markets, while the strong expansion of the labour supply is depressing the relative price of labour.

In principle, these relative price changes are neutral for overall inflation, as falls in the relative prices of certain categories of products will be offset by increases in those relative prices of other products or services, partly because consumers use their higher purchasing power to buy other products, and vice versa. However, there may be temporary effects on the headline inflation rate if some relative price changes are passed on more quickly than others, or if compensatory price changes take time to appear.

The next section discusses the relative price changes accompanying globalisation, dealing first with the increases in the relative prices of commodities before illustrating the decline in the relative prices of manufactured goods.

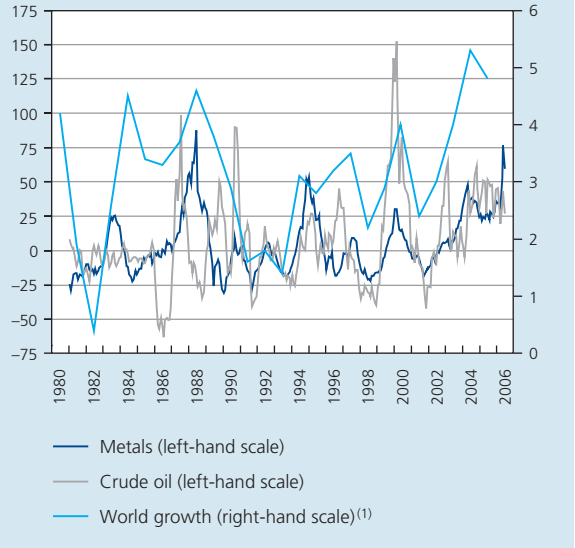
1.2 Impact of globalisation on a number of relative prices in the industrialised countries

1.2.1 Impact of growing world demand for commodities

Driven by strong demand, emanating mainly from the United States and the emerging Asian economies, commodity prices have soared to unprecedented heights. Between January 2004 and June 2006, prices of crude oil and metals increased by 117 p.c. and 111 p.c. respectively. The fact that those price rises were simultaneous indicates that the reasons lay primarily in demand rather than supply factors, since the latter are specific to each particular market. Since 1995 there has been a stronger correlation between the movements in the various commodity prices. While the correlation between the changes in crude oil and metal prices[1] was only 0.06 over the period from January 1981 to December 1994, the correlation was 0.54 between January 1995 and June 2006. In the more recent period, the pattern of crude oil prices has evidently been more closely linked to world economic growth, whereas in the past, world growth was only correlated with the movement in metal prices. This suggests that the current commodity price rises are largely due to globalisation and the associated strong demand for commodities. However, the possibility remains that geopolitical tensions and speculation may also have played some part in driving commodity prices to their present

CHART 3 COMMODITY PRICES AND WORLD GROWTH

(monthly data in US dollars, unless otherwise stated ; percentage changes compared to the corresponding period of the previous year)



Source : IMF.
(1) Annual data in volume terms.

(1) On the basis of an index published by the IMF giving the prices of copper, aluminium, iron ore, tin, nickel, zinc, lead and uranium.

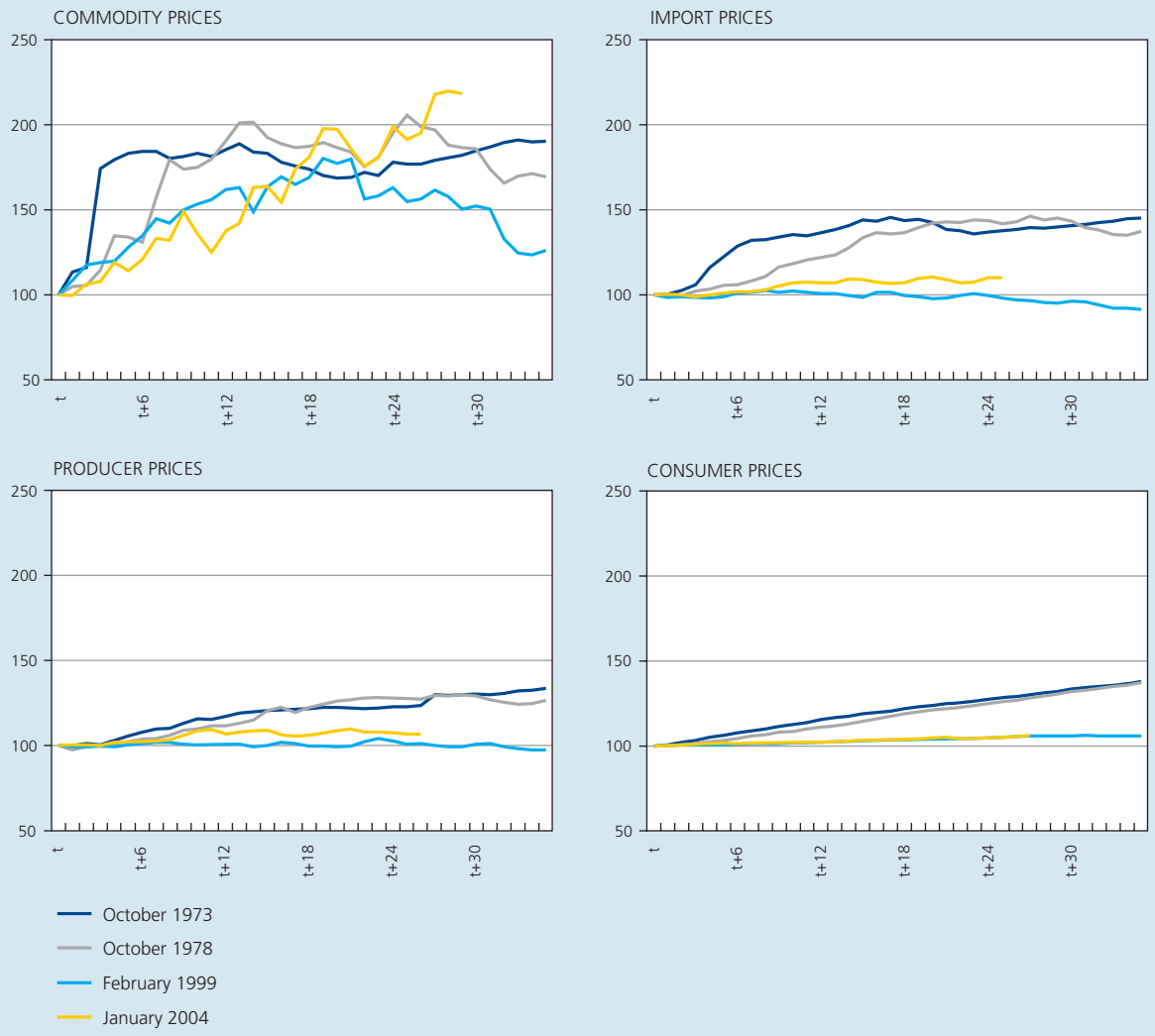
high level. For instance, the sharp commodity market correction in May and June can be attributed largely to the unwinding of speculative positions.

The rise in crude oil prices has a direct effect on headline inflation via the energy component of the consumer price index. In addition, indirect effects may also occur if the surge in commodity prices pushes up production costs of firms, and those increases are then passed on in selling prices. Finally, apart from the first-round effects mentioned, there may also be second-round effects, particularly if wage increases offset part of the loss of purchasing power resulting from the direct and indirect first-round effects. If firms in turn pass on those wage increases in their selling prices, a price-wage spiral may be triggered, which not only augments the upward pressure on inflation generated by an oil shock, but also makes it more persistent.

The direct influence of higher energy prices is considerable in the current low inflation environment. For example, the contribution of the energy component to overall inflation in the euro area was 0.8 percentage point in 2005, against an average of 0.2 percentage point from

CHART 4 TRANSMISSION OF COMMODITY PRICES TO IMPORT PRICES, PRODUCER PRICES AND CONSUMER PRICES IN THE INDUSTRIALISED COUNTRIES (1)

(indices, monthly data (2))



Sources: IMF, HWWA, NBB.

(1) The industrialised countries are Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

(2) The first month on the horizontal axis corresponds respectively to October 1973, October 1978, February 1999 and January 2004.

1991 to 1999. Despite this substantial direct effect, there do not appear to be any significant indirect and second-round effects as yet. For instance, consumer prices of non-energy industrial goods and those of services increased by 0.3 p.c. and 2.1 p.c. respectively in the euro area in 2005.

This limited transmission of higher commodity prices to the later production stages emerges most clearly if four periods of rising commodity prices are compared. The periods considered begin respectively in October 1973 (first oil shock), October 1978 (second oil shock), February 1999 (previous increase in commodity prices) and January 2004 (current increase in commodity prices). This comparison reveals that, although the current commodity price rise is larger than in the previous periods of rising commodity prices, the transmission to later stages in the production process has been very limited in comparison with previous periods. Thus, over the 24 months following January 2004 (current commodity price rise), import prices increased by only 7.5 p.c., in stark contrast to the cumulative increase in import prices of 35.5 and 44.1 p.c. respectively following the first and second oil shocks. The picture is similar for producer and consumer prices during both the current and the previous period of rising commodity prices. Analysis of the movement in labour costs in various euro area countries during the considered periods of rising commodity prices shows that the increase in labour costs was also only modest during the current and previous phases of rising commodity prices, while that increase was very pronounced during and after the oil shocks of the 1970s. The absence of those second-round effects in the more recent periods does much to explain the limited increase in inflation following the steep commodity price rises.

Various factors can be put forward to explain that limited inflationary impact of the commodity price rises. The first which can be mentioned is the change in the monetary policy regime compared to the 1970s. The crucial importance which central banks now attach to price stability has made it possible to anchor inflation expectations more firmly, so that rising commodity prices are not automatically translated into higher inflation expectations.

Secondly, structural changes in the industrialised economies also play a part in the reduced pass-through of commodity prices to consumer prices. In the first place, industry's share of GDP has declined systematically over the past thirty years, in favour of the tertiary sector which is less commodity-intensive. Production of manufactured goods has been partly relocated to the low-cost countries, so that the industrialised countries have become less sensitive to fluctuations in commodity prices. In addition, industry has become more efficient in its use of commodities. Generally speaking, one unit of output nowadays requires a smaller quantity of commodities than in the 1970s.

Thirdly, globalisation may also be a factor in reducing the transmission of commodity prices to subsequent stages in the production process. The increased competition associated with globalisation makes it more difficult for firms to raise their selling prices when commodity prices increase. However, from the theoretical angle, it must be said that, in principle, this can only be a temporary phenomenon, confined to the phase in which mark-ups are reduced to the level of perfect competition. Once the mark-ups have been cut, firms will feel a greater need than previously to increase their selling prices when production costs rise. However, it is not very likely that mark-ups have already been reduced to that extent. In addition, the threat of the relocation of production to the low-cost countries has a moderating influence on wage demands, even after a steep rise in energy prices, and that tempers inflation. Finally, it is possible that the transmission of commodity price rises is compensated by the falling prices of imported labour-intensive goods from the low-cost countries. That aspect of globalisation will be discussed in the next section.

1.2.2 Impact of increased supply of labour-intensive goods

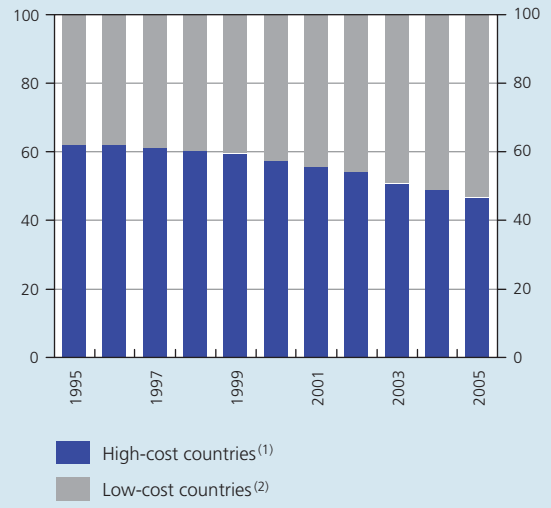
Globalisation is often associated with downward pressure on the relative prices of imported labour-intensive goods (cf. Kamin, Marazzi and Schindler, 2006). In fact, globalisation has meant a considerable expansion in the world's production capacity, greatly increasing the low-cost countries' share of world trade. As a direct consequence, import prices rise more slowly the larger the share of final imports originating from the low-cost countries. This direct effect on inflation impacts mainly on the non-energy industrial goods component of the consumer price index. Cheaper intermediate imports from the low-cost countries may also depress production costs of domestic firms, generating an indirect, moderating influence on inflation if these lower production costs are passed on in selling prices. In addition, keener international competition may inhibit inflation temporarily via four other channels. First, domestic firms may have to cut their profit margins in order to remain competitive on the international market. Second, globalisation has a moderating influence on real wage increases, because employees feel the competition from a very large group of potential workers, and employers are not inclined to grant real wage increases because they want to remain competitive. Third, stronger international competition can also drive up productivity in the industrialised countries, as firms are encouraged to

invest more heavily in research and development in order to boost productivity, and that in turn produces a cost advantage. In addition, growing international specialisation permits the exploitation of comparative advantages. Finally, the decline in the relative prices of manufactured goods could possibly produce second-round effects. The changing geographical structure of imports of manufactured goods from outside the euro area is outlined below. The downward pressure which the rising share of imports from low-cost countries exerts on relative prices at the various stages of production will then be illustrated for two specific product categories.

If euro area imports of manufactured goods[1] from countries outside the euro area are broken down into those from high-cost countries and those from low-cost countries, the share represented by the low-cost countries has clearly risen over the period 1995 to 2005. In terms of the value of imports of manufactured goods from outside the euro area, the share of the low-cost countries in total imports increased from 38 p.c. to 53 p.c. over the period considered. We can expect this rising share of imports from the low-cost countries to have a moderating effect on import prices of manufactured goods and, at a later stage, on producer and consumer prices. The next section illustrates this for two specific product categories where the share of imports from low-cost countries rose sharply over the period considered, while Box 1 discusses a number of studies which attempt to estimate the mechanical impact on aggregate inflation of the integration of the low-cost countries.

CHART 5 GEOGRAPHICAL STRUCTURE OF EURO AREA IMPORTS OF MANUFACTURED GOODS

(percentage of imports by value from outside the euro area)



Sources: EC and own calculations.
(1) The high-cost countries are Australia, Canada, Denmark, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States.
(2) The low-cost countries are the other countries outside the euro area.

(1) Imports of manufactured goods correspond to imports under headings 5 to 8 of the SITC classification.

Box 1 – Impact of low-cost countries on inflation in industrialised countries

This box discusses a number of studies which try to investigate how the growing share of imports from low-cost countries influences inflation in the industrialised countries.

On the basis of a regression analysis, Kamin et al. (2006) show a statistically significant, negative correlation between sectoral import price inflation in the United States and the change in China's share of imports in the sector concerned. Their estimates suggest that, in view of the observed increase in that country's share of US imports, China has exerted downward pressure of around 0.8 percentage point per annum on import price inflation in the United States over the past decade. Using a different methodology, Kamin et al. (2006) calculated China's contribution to import price inflation in the case of goods for a large number of industrialised countries. For this purpose, the annual average import price inflation over the period 1993-2001 was broken down into China's contribution and that of the rest of the world. The findings reveal that Chinese imports exerted downward pressure averaging 1.03 percentage points per annum in the United States over the period considered. However, China's contribution to goods import price inflation depends very much on China's weight in those imports. For example, in the case of Belgium, where imports from China represented only 2.7 p.c. in 2001, China's contribution to import price inflation is estimated at only -0.29 percentage point per annum.

BREAKDOWN OF ANNUAL AVERAGE IMPORT PRICE INFLATION OVER THE PERIOD 1993-2001

(Percentage points, unless otherwise stated)

	Total import price inflation (1)	Effect of the rest of the world	Effect of China	China's share in 1993 (1)	China's share in 2001 (1)	Change in share
Belgium	–0.75	–0.48	–0.29	1.8	2.7	0.9
France	–1.40	–1.36	–0.04	2.6	4.1	1.5
Germany	–1.74	–1.56	–0.16	3.5	4.8	1.3
Japan	–0.75	0.44	–1.19	10.3	20.6	10.3
United States	0.44	1.48	–1.03	9.2	14.3	5.1

Source: Kamin *et al*. (2006).
(1) Percentages.

In the latest issue of its "Economic Outlook", the OECD estimates the impact of cheaper imports from China and South-East Asia on the deflator of domestic demand in the euro area and the United States (OECD 2006). According to the OECD calculations, imports from Asia have inhibited the rise in the deflator of domestic demand in the euro area and the United States over the period 2001-2005 by 0.28 and 0.11 percentage points respectively. In the first half of the 1990s, this moderating effect was only 0.03 percentage point for both economies, whereas in the second half of the 1990s imports from Asia made a positive contribution of 0.05 percentage point in the euro area and a negative contribution of 0.12 percentage point in the United States.

According to the IMF (IMF, 2006), for a panel of advanced economies, a fall in the real import price has only a limited effect on consumer price inflation, and the effect disappears relatively quickly, namely after about three years. Simulations based on these estimates show that the faster than average fall in import prices (excluding oil) during the period 1997-2005 exerted downward pressure on inflation averaging 0.16 percentage point in a group of advanced economies. For the United States, this moderating effect is estimated at 0.46 percentage point.

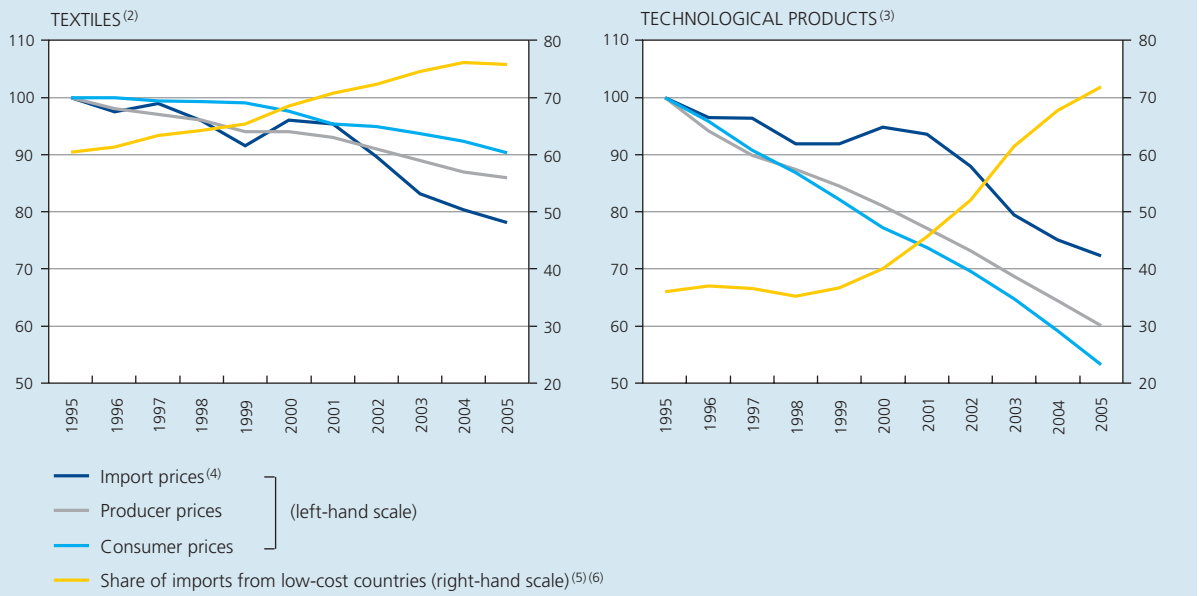
Overall, the estimated effects of globalisation on aggregate inflation appear to be limited, but are also heavily dependent on the period in question, the methodology used and the price index considered.

In value terms, the share of the low-cost countries in the textile product category has risen steadily, from 60 p.c. in 1995 to 76 p.c. in 2005. This high and growing share of imports was reflected in declining relative import prices, measured on the basis of unit values over the period considered. In real terms, textile import prices have fallen by 20 p.c. over the past ten years. This decline in relative import prices also lowered the relative producer and consumer prices of those products. However, the fall in consumer prices was less steep, since domestic costs in the production stage and transport and distribution margins displayed a more neutral pattern.

The share of imports from low-cost countries in technological products showed an even more dramatic rise, namely from 36 p.c. in 1995 to 71 p.c. in 2005. Relative import prices, measured on the basis of unit values, declined sharply in this sector, falling by around 25 p.c. In this product category there has also been major technological progress, enabling these products to be produced more cheaply. The corresponding items in the producer and consumer price index recorded an even sharper fall. The discrepancy between the trend in the unit values of imports and the movement in producer and consumer prices may perhaps be due largely to differences in adjustments for changes in product quality. Unit values of imports are not adjusted, so that the import price trend

CHART 6 DECLINE IN RELATIVE PRICES OF TEXTILES AND TECHNOLOGICAL PRODUCTS IN THE EURO AREA [1]

(Indices 1995=100, unless otherwise stated; annual data)



Sources: EC and own calculations.

(1) Prices deflated by the HICP.

(2) The categories for import prices, producer prices and the HICP are respectively "Textile yarn, fabrics, made-up articles not elsewhere specified and related products", "Manufacture of textiles and clothing" and "Clothing".

(3) The categories for import prices, producer prices and the HICP are respectively "Telecommunication and sound recording and reproduction equipment and appliances", "Manufacture of radio, television and communication equipment" and "Sound and video recording and reproducing apparatus".

(4) Import prices are unit values.

(5) The low-cost countries are all countries outside the euro area except Australia, Canada, Denmark, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States

(6) Percentages of total imports from countries outside the euro area.

may be subject to an upward bias, whereas the producer and consumer price indices are adjusted.

These price movements show that globalisation has influenced certain import prices and that the decline in relative prices is being passed on in consumer prices. According to the studies discussed in Box 1, however, these relative price falls have only a minor effect on aggregate inflation, although that impact is difficult to quantify precisely.

2. Has globalisation reduced the amplitude of cyclical fluctuations in inflation ?

2.1 A weaker link between inflation and the domestic economic cycle

Inflation is influenced to some extent by the level of economic activity or the business climate, and more particularly by the volume of excess demand measured in terms of the output gap [1]. Other factors, such as inflation expectations and the impact of cost-push shocks, also help to explain inflation. The link between inflation and the business cycle is generally illustrated by means of the Phillips curve [2]. The following equation can be estimated for the euro area :

$$\pi_t = \mu + \rho\pi_{t-1} + \beta GAP_{t-1} + \varepsilon_t$$

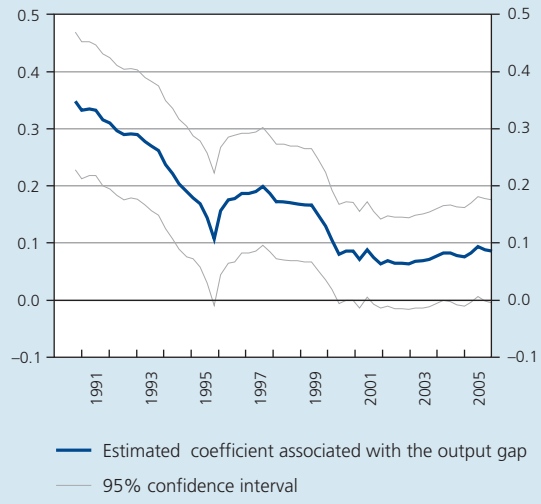
where π represents the year-on-year change in the HICP, *GAP* corresponds to the output gap and ε represents an error term which allows, in particular, for the effect of cost-push shocks not included in the model. The estimated parameters are μ, ρ and β, or respectively the constant, the autoregressive component of inflation, which measures inflation persistence, and the slope of the estimated Phillips curve. This equation is estimated on the basis of

(1) The output gap is defined as the percentage difference between real and potential GDP. The next section proxies potential GDP by applying a Hodrick-Prescott filter (with a smoothing parameter of 1600) to real GDP on a quarterly basis.

(2) For a description of the development of the Phillips curve in Belgium, the euro area and the United States, cf. NBB (2002).

CHART 7 COEFFICIENT ASSOCIATED WITH THE OUTPUT GAP IN THE EURO AREA

(slope of the estimated Phillips curve for a series of moving twenty-year periods [1])



Sources: Fagan, Henry and Mestre (2005), OECD and own calculations.

(1) For each twenty-year period, ending in the quarter considered, the estimated coefficient β is obtained from the following equation: $\pi_t = \mu + \rho\pi_{t-1} + \beta GAP_{t-1} + \varepsilon_t$

quarterly data for the euro area for a series of moving twenty-year periods. Each period therefore covers eighty quarters and moves by one quarter at a time. This exercise shows that the Phillips curve becomes flatter the more recent the period considered. While the estimated slope of the Phillips curve (β) was 0.35 between the first quarter of 1971 and the fourth quarter of 1990, that value dropped to 0.09 for the last period considered, namely from the first quarter of 1986 to the fourth quarter of 2005.

The flattening of the traditional Phillips curve, expressed in terms of the domestic output gap, evident in the euro area, appears to be a global phenomenon, as the impact of the output gap on inflation is declining in a large group of industrialised countries. That is clear from estimation of the above equation for a large number of industrialised countries for two periods, namely one which runs from the first quarter of 1980 to the fourth quarter of 1992, and a second running from the first quarter of 1993 to the fourth quarter of 2005. These estimates show that the direct effect on inflation of a 1 p.c. increase in the output gap (β) has declined in the majority of the industrialised countries considered. The cumulative impact on inflation of a 1 p.c. increase in the output gap was also calculated over a one-year period on the basis of the estimated parameters [1]. In fourteen of the sixteen industrialised countries concerned, the domestic output gap had a smaller influence on inflation over the period 1993-2005, compared to 1980-1992. However, the size of the change varies greatly between countries. In Belgium, for example, a 1 p.c. larger output gap would have implied a cumulative effect on inflation of 0.45 percentage point in the 1980s, whereas in the 1990s the effect would have ceased to be significant. In Italy, the United Kingdom, Norway, New Zealand and Sweden, the reduction in the cumulative impact would have been even greater, whereas an increase can be recorded for France and Australia. Generally speaking, however, inflation has become less sensitive to the domestic output gap.

2.2 Possible reasons for the flatter Phillips curve

Various factors can be put forward to explain the flattening of the Phillips curve. A first series of factors can be attributed to the fact that the monetary policy geared to price stability may have exerted downward pressure on the slope of the Phillips curve. First, the economic agents do not revise their inflation expectations, or only slightly, in the light of changing economic conditions if there is a credible monetary policy maintaining price stability, so that the fluctuations in inflation itself are limited. Also, the greater importance which central bankers have come to attach to price stability has probably also implied better control over the inflationary impact of cost-push shocks. This has led to lower inflation variance, at the expense of higher output gap variance. In contrast to demand shocks, cost-push shocks oblige policy-makers to choose between stabilising inflation or stabilising economic activity. The increased variance in the output gap combined with the lower inflation variance results, ex post, in a flatter Phillips curve. Finally, the lower and less volatile inflation may have encouraged firms to adjust their prices less frequently, and that in turn results in a flatter Phillips curve.

Structural changes in the production processes in the economies considered may be a second key reason for the flatter Phillips curve, because more flexible production processes mean that output can be changed across the economic cycle without causing major fluctuations in marginal costs, which in turn reduces the fluctuations in inflation [2].

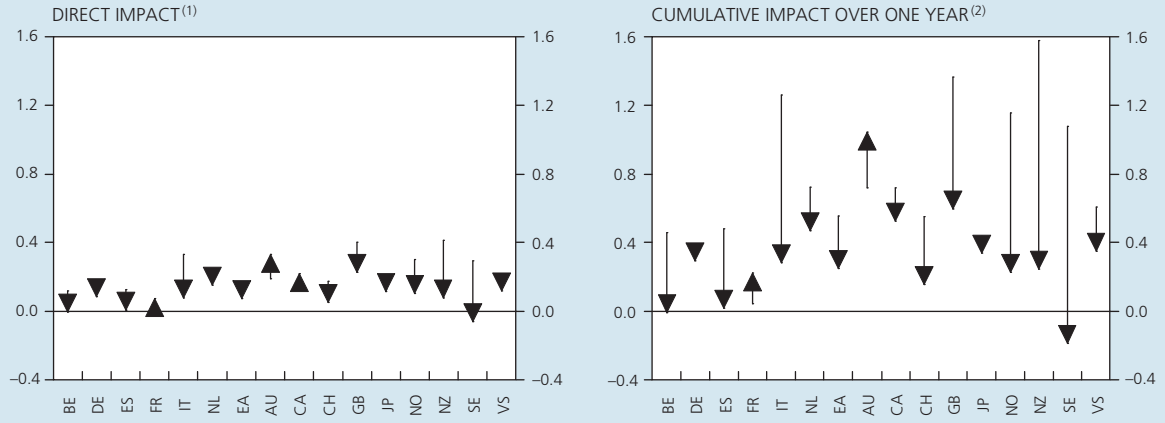
Globalisation may be a third significant reason for the flatter Phillips curve. Indeed, the flattening of the Phillips curve does seem to be a global phenomenon, which

(1) This cumulative impact corresponds to $\beta(1 + \rho + \rho^2 + \rho^3)$, since inflation persistence implies that the effect of a higher output gap has a longer lasting impact on inflation. Thus, the change in the cumulative inflationary impact of the output gap is a combination of the change in the estimated direct impact (β) and the change in the estimated inflation persistence (ρ).

(2) The microeconomic basis of the new-Keynesian Phillips curve links current inflation in the first instance to the deviations in real marginal costs from their equilibrium level. Under certain conditions, these show a positive, linear correlation with the output gap, so that the Phillips curve is often expressed in terms of this last variable.

CHART 8 DECLINE IN THE IMPACT OF THE OUTPUT GAP ON INFLATION

(the arrow indicates the change between the periods 1980-1992 and 1993-2005)



Sources: Fagan, Henry and Mestre (2005), IMF, OECD and own calculations.

(1) For each period, the change in the estimated coefficient β is indicated by the following equation: $\pi_t = \mu + \rho\pi_{t-1} + \beta GAP_{t-1} + \varepsilon_t$

(2) The change in $\beta(1 + \rho + \rho^2 + \rho^3)$ is shown for each period on the basis of the estimated coefficients obtained from the following equation: $\pi_t = \mu + \rho\pi_{t-1} + \beta GAP_{t-1} + \varepsilon_t$

therefore demands a global explanation. First, in a globally integrated economy, the prices of a growing number of goods and services are determined by global rather than purely domestic demand and supply factors. Changes in demand for goods and services can then, at least to some extent, be met by foreign production, reducing the inflationary pressure of domestic origin. Furthermore, strong foreign competition may curtail the market power of domestic firms, so that they can only introduce modest price increases during an economic upturn. The same reasoning applies to wages: in an improved economic climate, wage demands will also be modest owing to the real or virtual threat of relocation. In theory, just as in the case discussed before, the moderating influence on the cyclical pattern of inflation exerted by the reduction in market power would be confined to the phase in which mark-ups are being reduced. Once mark-ups are sufficiently low, firms are obliged to pass on cost increases, so that in the long run globalisation could actually increase the cyclical variations in inflation.

In the latest issue of its "World Economic Outlook", the IMF tries to determine the relative importance of the various factors which may lie behind the flattening of the domestic Phillips curve (IMF, 2006). The results, based on a panel of nine industrialised countries, indicate that greater openness and increased monetary policy credibility account each for about half of the reduction in the slope of the Phillips curve.

According to Borio and Filardo (2006), global demand and supply factors now play a greater role in explaining cyclical inflation movements. By extending the Phillips curve to include a global output gap, which is a yardstick for the business climate in the rest of the world, and estimating this for a panel of seventeen industrialised countries over a series of moving periods, they find that the coefficient for the global output gap increases if more recent periods are taken into account. Although the results must be interpreted with a degree of caution, they appear to indicate that global demand and supply factors are playing an increasingly important role in the cyclical movements in inflation, especially when observations since 2000 are taken into account (1).

Ciccarelli and Mojon (2005) have shown that, for a large number of industrialised countries, the national inflation figures are attracted by a global inflation measure, which in itself accounts for almost 70 p.c. of the variance in the national inflation figures. They also found indications of a global Phillips curve in the sense that global inflation can be partly attributed to global activity, measured on the basis of the rate of growth in industrial output. These two findings suggest that global factors play an important role in determining domestic inflation.

Overall, there are therefore ample indications that inflation has become less cyclical. However, since there are many potential factors which may explain this development, it

(1) Chapter 4 of the BIS Annual Report also provides some information on this (BIS, 2006).

is difficult to establish the exact marginal contribution of each factor and, more specifically, the extent to which this phenomenon is influenced by progressive globalisation.

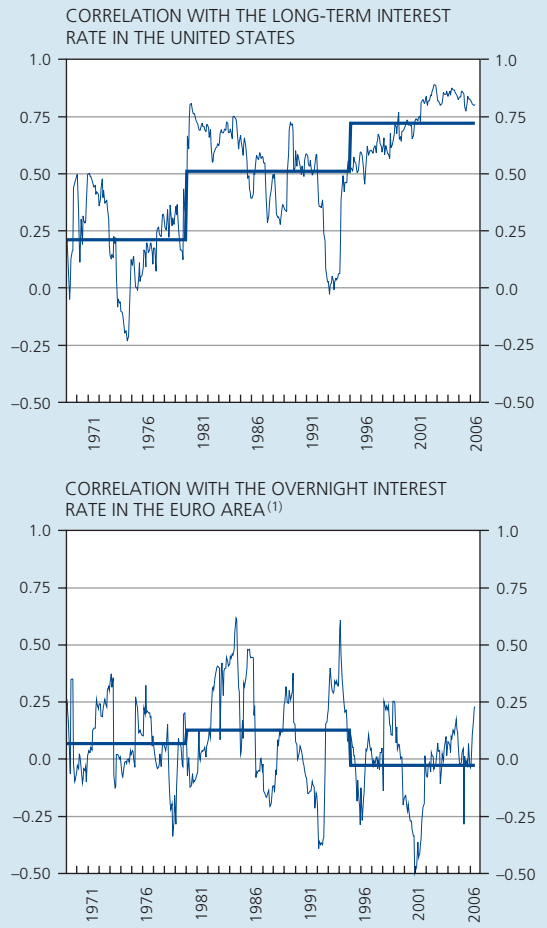
3. Has globalisation severed the link between official interest rates and long-term interest rates?

In recent years, long-term interest rates in the industrialised countries have displayed much greater similarity than they used to. Although the upward and downward trends often occurred in parallel in the 1970s and 1980s, there were still substantial differences of level. During the 1970s and 1980s, these interest rate differences largely reflected the divergences in the level of inflation between the various countries. However, if the analysis focuses on the changes in long-term interest rates, that again reveals a closer correlation in the recent period. Although the coefficients of correlation – calculated for a series of moving 24-month periods – between the changes in long-term interest rates in the United States and those in the euro area[1] present a decidedly volatile picture, a number of tendencies nevertheless emerge. For the series of periods ending between 1969 and 1980, the moving coefficient of correlation fluctuated widely around an average of 0.21, but without exhibiting any marked tendency. For the series of periods ending between 1981 and 1994, the average correlation coefficient of 0.51 was considerably higher, though once again there was no clearly discernible trend. In contrast, since the mid-1990s, the moving correlation coefficient has continued rising to an average of 0.72 for the series of periods ending between 1995 and 2006. Moreover, an upward trend is apparent, so that the correlation coefficient was around 0.8 in the last period considered. This is clear evidence that changes in long-term interest rates are indeed becoming more synchronised.

In view of this increased international coherence in interest rates, the question is to what extent long-term interest rate changes in the euro area are still connected with adjustments to the main Eurosystem interest rates. The moving correlation coefficients between changes in the overnight interest rate and the long-term interest rate, again calculated over 24-month periods, indicate that the closer international links between long-term interest rates do not necessarily mean that the correlation between changes in the long-term interest rate and the overnight rate is diminishing in the euro area. This correlation was already very small in Germany for the periods ending between 1969 and 1994, and that may be due to the credibility of German monetary policy[2]. Nevertheless, this correlation is slightly negative for the series of periods ending between 1995 and 2006. Yet the same pattern is apparent in the United States, indicating that the weak link between the official interest rate and the long-term interest rate is not a purely European phenomenon, attributable to the dominant influence of the American long-term interest rate. The long-term interest rate in the United States rose by only 40 basis points over the period from June 2004 to May 2006, while the Federal Reserve raised the fed funds rate by 400 basis points over that period.

CHART 9 CORRELATION BETWEEN CHANGES IN THE LONG-TERM INTEREST RATE IN THE EURO AREA AND CHANGES IN THE LONG-TERM RATES IN THE UNITED STATES AND THE OVERNIGHT RATE IN THE EURO AREA RESPECTIVELY[1]

(moving correlation coefficient for 24-month periods[2])



Source: BIS and own calculations.
(1) Euro area for the period 1999-2006 and Germany for the period 1967-1998.
(2) 24-month periods ending during the month considered.

(1) Euro area for the period 1999-2006 and Germany for the period 1967-1998.
(2) Christiansen and Pigott (1997) put forward some arguments on this subject.

A possible explanation for the severing of the link between the official interest rates and the long-term rates is the fact that inflation expectations are more firmly anchored, so that fluctuations in the short-term interest rate are seen as a short-term phenomenon, and therefore do not trigger adjustments to the long-term rate.

In addition, progressive globalisation has been a factor depressing especially the yield on US government bonds. The substantial savings surplus built up by the emerging economies and oil-producing countries is used partly to finance the American economy's large savings deficit. Since 2000, foreign demand for US government bonds has soared, with most of that increased demand originating from official bodies. The Asian countries have also been holding more US government bonds since 2000, probably because of the policy of the Asian central banks, aimed at preventing their currency from appreciating. Although it is not possible to give an accurate estimate of how these capital flows to the United States have affected the long-term interest rate, it seems highly likely that the strong demand from the Asian central banks has had a significant downward influence on the US long-term interest rate.

The situation of ample liquidity combined with increased risk aversion on the financial markets following the heavy stock market losses of 2000-2002 also contributed to the strong demand for long-dated government bonds. In addition, insurance companies and pension funds want to match the maturity of their assets more closely to that of their liabilities, in accordance with the new IAS/IFRS accounting rules, so that they, too, are generating stronger demand for risk-free government paper with a fairly long maturity.

4. Potential implications for monetary policy

This section examines the potential monetary policy implications of the three economic trends discussed above, and their link to globalisation.

As regards the low and stable inflation, it can be said that, certainly in the industrialised countries, this has more to do with the improved conduct of monetary policy than with increasing globalisation. However, the latter is associated with substantial changes in the relative prices of products and production factors. In principle, such changes in relative prices are neutral for inflation in the longer term, but in the shorter term they may have some effect. Moreover, since globalisation is a gradual and progressive process, it remains possible that – in the end – inflation over a fairly long period will have been (and will continue to be) influenced by a succession of effects which, taken individually, are generally short-lived. However, the net impact of these short-term effects is difficult to discern. Nonetheless, Box 2 makes a number of points which suggest that the effect of globalisation via imports may have been slightly positive in the euro area over the past seven years (1999-2005), but significantly smaller than is implied by the deviation between headline inflation and the underlying trend in inflation. Moreover, inflation has also been curbed, in particular, by wage moderation so that globalisation has also influenced domestic inflation. The overall effect has therefore probably been downwards, but it is difficult to identify ex post because the accommodating monetary policy stance in many parts of the world has counterbalanced it. Furthermore, that overall effect may vary over time, and may sometimes even change its sign, making economic analysis and hence monetary policy more complex.

In this context, the challenge for monetary policy lies in tolerating the direct and indirect effects of such relative price changes, while at the same time preventing the emergence of second-round effects. Nowadays, most central banks tolerate the first-round effects of an upward relative price shock. For example, they do not react immediately by raising interest rates if inflation exceeds their target as a result of a steep rise in commodity prices, but do so only if they see a danger of second-round effects. The downward relative price shocks which may result from globalisation require, mutatis mutandis, a similar response although the symmetry of this reasoning is sometimes questioned. In other words, the first-round effects of a positive supply shock should also be tolerated, and therefore need not trigger an immediate easing of monetary policy unless declining inflation expectations could culminate in deflation.

Indeed, globalisation is often associated with risks of deflation, and the response to that takes many forms. For instance, the IMF (2006) advocates a sufficiently high inflation target, so that positive supply shocks do not entail an imminent danger of deflation[1]. Others, such as White (2006), ask whether the inflation target should not be lowered instead, to take account of the fact that globalisation is a gradual process, and may thus tend to curb inflation over a fairly long period. If insufficient account is taken of the first-round character of that moderating influence, monetary policy is liable to be too expansionary, and thus contribute to imbalances on the financial and real estate markets.

(1) In this connection, reference may also be made to the background studies on the zero lower bound of the nominal interest rate, conducted during the assessment of the ECB's monetary policy strategy (ECB, 2003). These studies reveal that the ECB's current quantitative inflation target (inflation below but close to 2 p.c.) is sufficiently high to cushion the impact of deflationary shocks.

BOX 2 – Inflation indicators in a context of globalisation

Headline inflation – in the euro area it is the HICP – is fully affected by the short-term impact of the relative price changes resulting from globalisation. That is precisely why measures of the underlying trend in inflation are often used, since they generally have the characteristic of being less influenced by the impact of relative price changes. Moreover, they are also deemed to measure inflationary pressure of domestic origin.

However, the traditional measure of the underlying inflation trend, namely the HICP excluding unprocessed food and energy, takes the relative price changes caused by globalisation asymmetrically into account, so that its relevance for measuring domestic inflationary pressure was recently called into question (ECB, 2005). The measure in fact discards the effect of higher energy prices while retaining the full downward influence on prices of manufactured goods: both the effect via cheaper imports and that via domestic cost reduction. In contrast, the GDP deflator measures only the movement in the price of domestic value added, so that – in principle – it is not affected by changes in import prices, and is only subject to any effects which globalisation exerts on domestic prices, either via wage moderation or by driving up productivity or squeezing profit margins. By comparing the underlying inflation trend with the GDP deflator, it is therefore possible to form an overall idea of how cheaper imports of manufactured goods influence inflation. If underlying inflation is lower than the percentage change in the GDP deflator, one can conclude that cheaper imports of labour-intensive goods have made a substantial negative contribution to inflation. However, it must be said that the GDP deflator takes account of the price movement of all value added, and not only that included in private consumption.

INFLATION INDICATORS IN THE EURO AREA

(percentage changes compared to the previous year)

	Average for the period 1999-2005		2005	
Headline inflation (1)	2.0	0.1	2.2	0.4
GDP deflator	1.9		1.8	
		–0.2		–0.3
Underlying trend in inflation (2)	1.7		1.5	
p.m. Unit labour costs	*1.6*		*1.3*	

Source: EC.
(1) Measured by the HICP.
(2) Measured by the HICP excluding unprocessed food and energy.

Taking the period 1999-2005 as a whole, the underlying inflation trend was below the percentage increase in the GDP deflator, indicating that the impact of import prices on the underlying inflation trend was negative. This effect averaged -0.2 percentage point per annum for the period 1995-2005. Overall, in the present circumstances, the underlying inflation trend does appear to underestimate domestic inflationary pressure. That underestimate is somewhat greater than the overestimate of domestic inflationary pressure which would arise if headline inflation were taken as the basis, since that one was, on average, 0.1 percentage point higher than the GDP deflator over the period considered.

The effect of changes in relative prices generated via the import channel was even more marked in 2005. The upward effect of imported energy is estimated at 0.7 percentage point, whereas the downward effect via imports of manufactured goods came to 0.3 percentage point. In all, this analysis appears to indicate that, over the past six years, the net effect of globalisation on headline inflation measured by the HICP, induced via the movement in

the import prices of both commodities and manufactured goods, was slightly positive at 0.1 percentage point per annum, while in 2005 it was more positive, at 0.4 percentage point. However, these effects are far smaller than those calculated on the basis of the difference between headline inflation and the underlying inflation trend.

A major shortcoming of the proposed analysis is that it takes no account of the effect of globalisation on the prices of domestic value added. However, by comparing the movement in the prices of the various components of the GDP deflator, it is possible to examine how the remuneration of the various production factors has changed. This reveals that, in the euro area, the rise in unit labour costs has systematically lagged behind the movement in the GDP deflator in recent years, pointing to a decline in the share of value added represented by wages. This trend is probably connected with globalisation, since the expansion of the global labour supply in principle depresses the relative price of labour.

An alternative consists in leaving the inflation target unchanged, in view of its crucial role as a nominal anchor, but using it sufficiently flexible, so that there is no automatic response to a deviation between realised inflation and the inflation target. This requires an in-depth analysis of the inflation picture, to permit identification of the more fundamental trend in inflation, disregarding the first-round effects caused by globalisation. For this purpose, the analysis of the risks to price stability should be based on the broadest possible range of information and indicators. This broad analysis is not only an essential foundation for the conduct of monetary policy, it also serves as the basis for communication concerning the policy pursued, so that it helps to ensure that both the nature of the shocks and any deviation between observed inflation and the inflation target are seen in their true light. This should help to safeguard the credibility of the central bank, even if inflation does deviate temporarily from the target.

The findings concerning the flatter Phillips curve and the weaker link between official interest rates and long-term rates suggest that, in recent years, there has been a decline in the effectiveness of monetary policy via the traditional interest rate channel. In fact, a change in inflation requires a larger change in the output gap, which – assuming that output gaps are influenced primarily by long-term interest rates – in turn requires a larger change in the official interest rate.

However, the interpretation need not be so negative. Both the flatter Phillips curve and the weaker link between official interest rates and long-term rates appear to be largely due to the improved conduct of monetary policy and the associated increased credibility of the central bank. Yet this also means that those changes are not necessarily permanent, and could rapidly vanish if monetary policy were to lose its credibility by aiming to over-stimulate economic activity on the assumption that the effect on inflation is limited.

Moreover, there is a possibility that a number of structural changes beyond the influence of the central bank, including globalisation, have played a part in explaining the flattening of the Phillips curve and the severing of the link with the long-term interest rate. Even then, the consequences of weaker transmission via the traditional interest rate channel are not clear-cut. In the first instance, it is mainly cost-push shocks that could give rise to problems, since a flatter Phillips curve implies that demand shocks simultaneously have a smaller inflationary impact than before and require a more modest policy response. Secondly, one of the possible causes of a flatter Phillips curve, namely the diminished extent to which cost factors are passed on in prices, and the associated increase in price rigidity, is in principle only a temporary phenomenon which occurs exclusively during the period when mark-ups are being cut. Once mark-ups have been pruned, the economy should have become more flexible than it was initially. During the transitional phase, this phenomenon also limits the inflationary impact of cost-push shocks. Thirdly, monetary policy can try to strengthen its grip on the long-term interest rate by clear communication regarding the economic and monetary analysis conducted, the risks to price stability and – if deemed appropriate – forthcoming monetary policy decisions (Woodford, 2005). Finally, it must be remembered that there are many other transmission channels not discussed here, and their effectiveness may not have been impaired by globalisation.

Conclusion

Globalisation, which has accelerated sharply since the mid-1990s, has brought some significant economic developments. This article examined three possible effects of globalisation which could be relevant for monetary policy. It also discussed the possible monetary policy implications of the three trends examined.

The low and stable inflation appears to be due to the improved conduct of monetary policy rather than progressive globalisation. However, the integration of the emerging economies is associated with substantial relative price changes. The relative prices of commodities have risen while those of labour-intensive goods have declined. Although, in the longer term, these relative price changes are neutral, in principle, for inflation, they may still present a challenge for monetary policy. In a context of globalisation, it is therefore more necessary than ever for the analysis underlying monetary policy to be based on the broadest possible range of information and indicators, so as to identify the more fundamental risks to price stability, both upward and downward, in due time.

The flattening of the classical Phillips curve observed in the euro area appears to be a global phenomenon which can be explained both by the improved conduct of monetary policy and by structural changes in the industrial economies, including globalisation. A flatter Philips curve suggests that bringing inflation down entails higher short-term costs in terms of output. However, this finding needs to be qualified, since the flatter Phillips curve is due partly to the credible monetary policy, and because the inflationary impact of cost-push shocks is fairly small in the light of stronger international competition.

Partly as a result of global financial integration, long-term interest rates have become more closely aligned at the international level, while there is evidently a weaker link between official interest rates and long-term interest rates. These developments appear to suggest that the traditional interest rate channel has become less effective. That finding, too, needs to be qualified, since the severing of the link with the long-term interest rate is largely due to the firm anchoring of inflation expectations. Moreover, good communication regarding the economic and monetary analyses conducted can provide an additional instrument for steering long-term interest rates.

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Inflation persistence in Belgium

M. Collin [1]

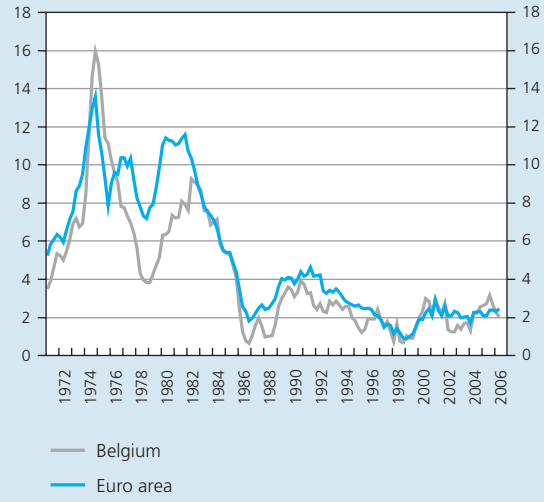
Introduction

This article examines inflation dynamics in Belgium and, in particular, the degree of inflation persistence. In general, inflation persistence refers to how quickly, following a shock, inflation reverts to its equilibrium value, which is determined by the inflation target set by the monetary authorities. In addition, this study aims to ascertain whether there have been any significant changes in inflation dynamics over the past thirty years. Thus, the article presents the Belgian results obtained via the *Eurosystem Inflation Persistence Network* (IPN). This temporary network, comprising researchers from the national central banks (NCBs) of the Eurosystem, the European Central Bank (ECB) and the academic world, has conducted and published numerous studies. A general summary of its work is given in a recent publication by the Bank [2].

The article is arranged as follows. The first section defines the concepts and the analytical framework. The second section explains the results of the study devoted to Belgium, and also compares the findings for Belgium with those for the euro area. The third section puts forward various factors which may lie behind the structural changes in inflation dynamics in Belgium over the past thirty years. Finally, the last section presents the conclusions.

CHART 1 INFLATION IN BELGIUM AND IN THE EURO AREA

(Percentage changes compared to the corresponding quarter of the previous year)



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

1. Concepts, definitions and choice of methodology

The definition of inflation persistence used by the IPN refers to the *tendency of inflation to converge slowly towards its long-run value following a shock,* that value being determined by the implicit or explicit inflation target set by the monetary authorities. Traditionally, inflation persistence has been analysed using a univariate equation – known in the econometric jargon as an "autoregressive" model – which describes inflation in terms of its own past values. More specifically:

$$\pi_t = c + \alpha_1 \pi_{t-1} + \alpha_2 \pi_{t-2} + \ldots + \alpha_p \pi_{t-p} + \varepsilon_t \qquad (1)$$

(1) The author would like to thank L. Aucremanne for his contribution to this article.

(2) Dhyne E. (2005), "Inflation persistence and price-setting in the euro area: results of the Eurosystem Inflation Persistence Network", Economic Review of the National Bank of Belgium, 4th quarter.

The inflation observed in time t, π_t [1], is thus regressed over a constant, c, and over its past values, π_{t-i}. The number of lags, p, determines the order of the autoregressive process [2]. In addition, the inflation observed in time t is affected by random shocks, ε_t, which are assumed to be zero on average, to have a constant variance and to be unconnected with past shock values.

For simplicity, equation (1) may be written :

$$\pi_t = c + \rho\pi_{t-1} + \sum_{i=1}^{p-1} \beta_i \Delta\pi_{t-i} + \varepsilon_t \qquad (2)$$

The degree of inflation persistence is estimated by ρ, which corresponds to the sum of all coefficients associated with past inflation values [3]. In general, the parameter ρ can take values ranging from 0 to 1. If the estimated coefficient ρ is close to 1, inflation is said to be persistent, which implies that – following a shock, ε_t – inflation will be very slow to revert to its equilibrium value which, on the basis of equation (2), corresponds to $c/(1-\rho)$. In the extreme case where the coefficient ρ is equal to 1, the equilibrium value of inflation is not defined, and in this case inflation presents a unit root. For the purpose of this analysis, it is essential to test whether the unit root hypothesis can be rejected, or in other words to determine whether inflation reverts to its equilibrium value. On the other hand, if the coefficient ρ takes a value close to 0, the impact of ε_t on inflation tends to be temporary and inflation reverts relatively quickly to its long-run value.

The article also examines the changes in inflation dynamics over time. For this purpose, equation (2) is estimated over a series of moving 48-quarter (12-year) periods. Thus, the first estimate covers the period from the second quarter of 1978 to the first quarter of 1990, while the last estimate refers to the period from the first quarter of 1993 to the last quarter of 2004. That choice is dictated by theoretical considerations, as well as by the dynamic aspect of this analysis. Various studies [4] have in fact shown that failure to allow for a possible break in the level of inflation may lead to a significant overestimate of inflation persistence. In view of the inflation pattern in Belgium over the past three decades, and more particularly in the mid-1980s, it is highly likely that an estimation conducted over the period as a whole, from the second quarter of 1978 to the last quarter of 2004 – without taking account of any breaks in the long-run inflation level – will also cause persistence to be overestimated. Furthermore, the definition of persistence, as already mentioned, refers to inflation converging towards its long-run value, which is defined by the implicit or explicit inflation target set by the monetary authorities. In practice, however, this can cause problems since that target was not known in the past, and it has most likely changed over time.

The national consumer price index (CPI) is used as the reference index for this study. However, from the point of view of monetary policy, it would have been more appropriate to use the HICP, but that index is not available over a long period. Nonetheless, if a recent period is considered for which both index figures are available, the analysis produces broadly similar results regardless of the consumer price index used (see section 2). The time series used for this study are defined on a quarterly basis and were adjusted to take account of seasonal variations. These data cover the estimation period extending from the second quarter of 1978 to the last quarter of 2004. More detailed information on the data and statistical instruments used may be found in the working paper on which this article is based (Aucremanne and Collin, 2006).

This empirical exercise is carried out both for overall inflation and for six major categories traditionally used in inflation analysis : unprocessed food, energy, the underlying inflation trend [5], processed food, non-energy industrial goods, and services. The analysis is also based on 60 subindices of the national CPI. As suggested by Bilke (2005) and by Cecchetti and Debelle (2006), the use of sectoral data makes it easier to determine the factors which can lead to structural changes in inflation dynamics.

Thus, if macroeconomic factors of domestic origin, such as wage-setting or economic policy – more particularly, monetary policy – are responsible for any structural changes in the mean level of inflation or inflation persistence, a relatively uniform and synchronised change in the statistical characteristics of inflation would be found in all components of the CPI. Conversely, if external or exogenous factors are the cause of those changes, the prices of internationally traded goods, particularly energy and non-energy industrial goods, would be affected first.

(1) $\pi_t = \ln(p_t) - \ln(p_{t-1})$

(2) In the econometric estimation, the number of lags p was determined by the Akaike information criterion (Akaike, 1973).

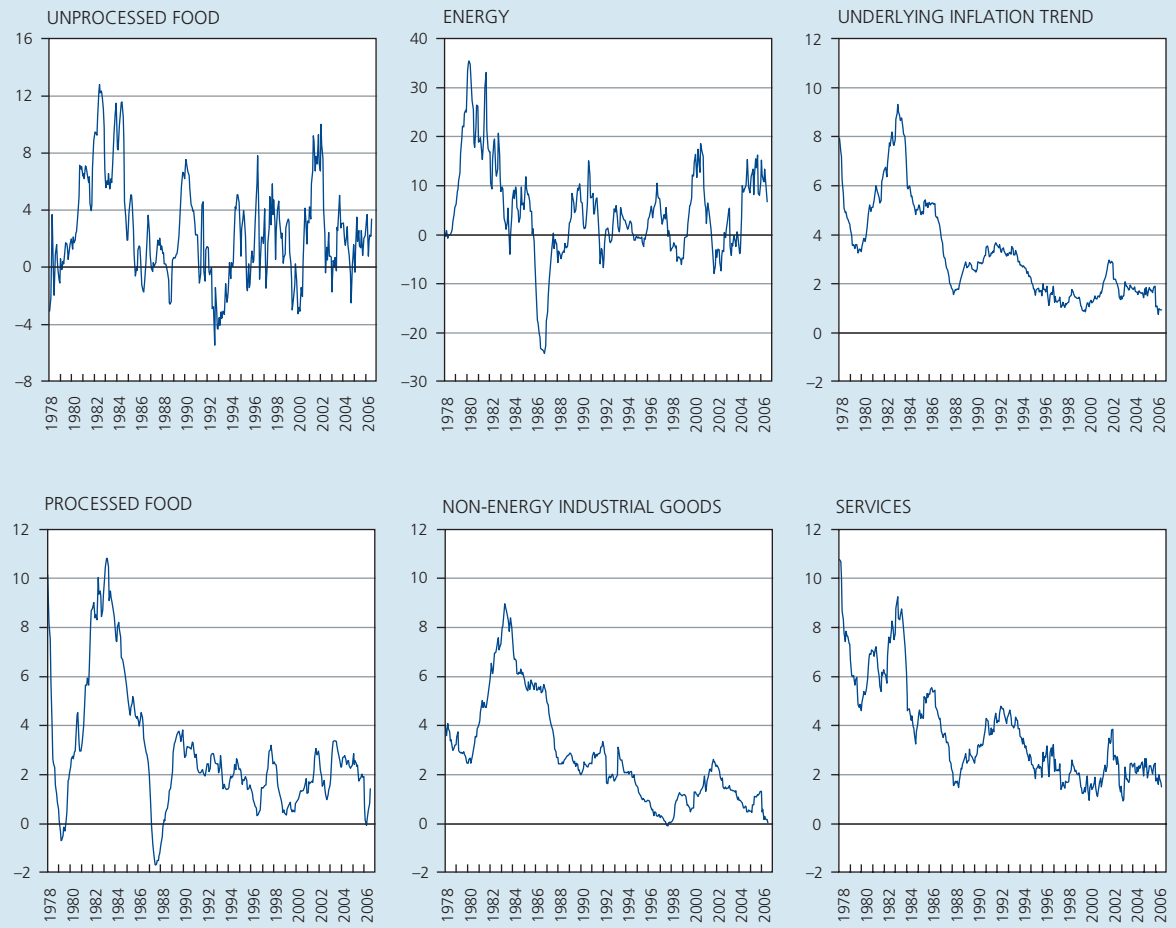
(3) Since the estimates of equation (2) obtained by the ordinary least squares (OLS) method are biased, equation (2) is estimated using a procedure developed by Hansen (1999).

(4) Cf inter alia Perron (1990) or Altissimo *et al.* (2006)

(5) The underlying inflation trend is measured by the national CPI excluding unprocessed food and energy.

CHART 2 INFLATION : COMPONENTS OF THE CPI

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



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

2. Analysis results

2.1 The mean level of inflation

The results obtained from the dynamic analysis indicate that the inflation level has changed considerably in the past thirty years. Overall inflation declined sharply between the estimation period running from the second quarter of 1979 to the first quarter of 1991 and the period running from the first quarter of 1983 to the fourth quarter of 1994. Between these two moving windows, the absolute mean level of aggregate inflation fell from 4.5 to 2.2 p.c., after which it stabilised at just under 2 p.c. A virtually identical picture emerges for the main components of the national CPI, with the notable exception of services and the underlying inflation trend, where services account for an average of 45 p.c. The decline in the mean level of inflation in services begins slightly later and is also more gradual than for the other CPI components. In the IPN studies which also comprise such an analysis, similar results were recorded for the service sector in France (Bilke, 2005).

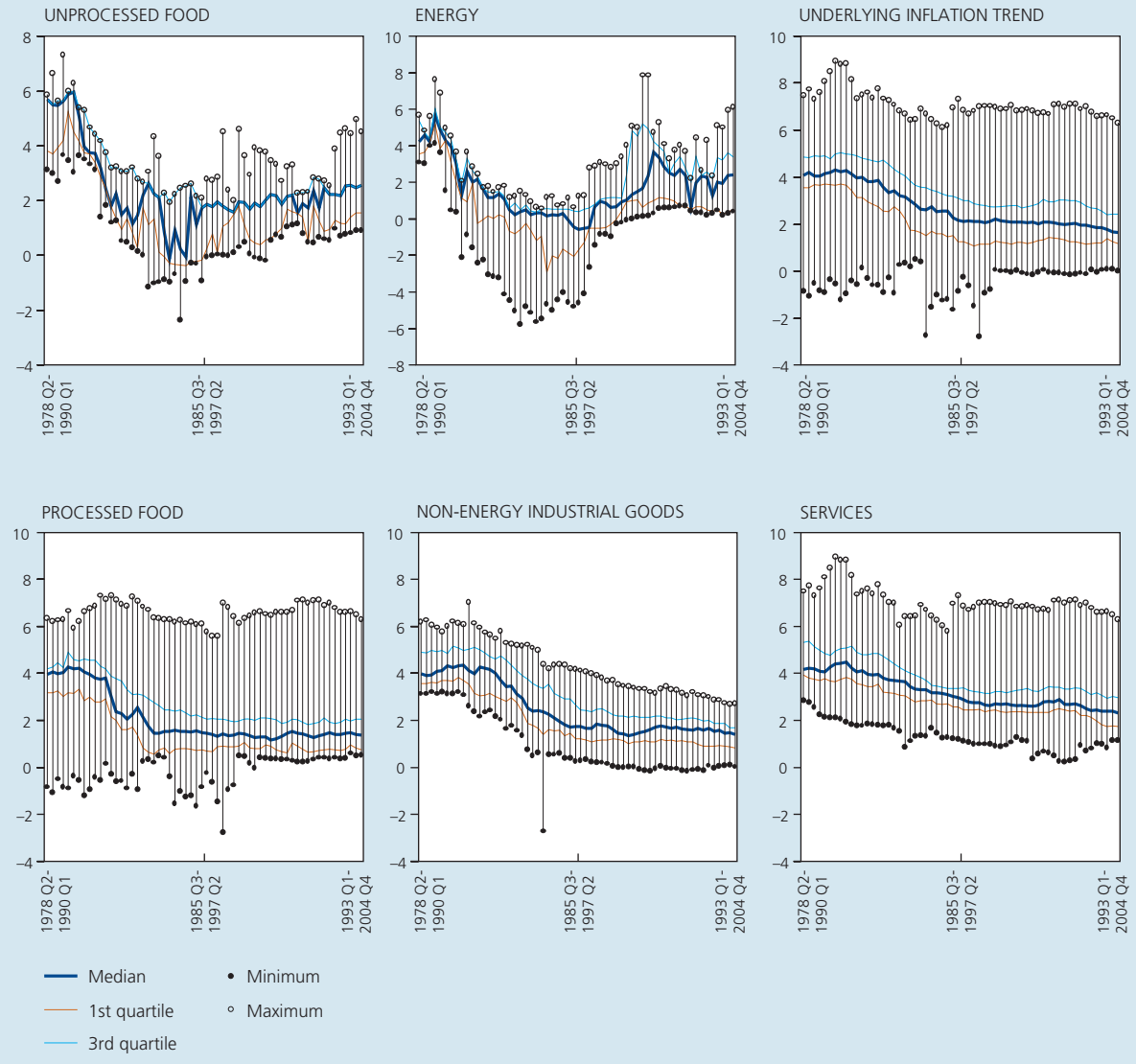
At sectoral level, the results obtained are largely comparable. The information is summed up in a chart, called a box plot, which provides information on the central tendency, the symmetry and the dispersion of the data. That chart thus summarises the overall distribution of the mean level of inflation observed in the 60 sub-sectors. More specifically, for each estimation window, the chart shows the median, the 1st and 3rd quartile, and the minimum and maximum of the mean inflation rate for the 60 product categories considered. The central part of the distribution, namely the mean inflation for the product categories between the 1st and 3rd quartiles,

shows a sharp downward trend in the various sectors, starting approximately with the window extending over the period from the second quarter of 1979 to the first quarter of 1991. This decline continues until about the period from the first quarter of 1983 to the fourth quarter of 1994. This downward shift in the central part of the distribution thus reflects a relatively uniform and synchronised change in the mean level of inflation for the majority of the product categories examined. For both services and the underlying inflation trend, the deceleration once again is clearly much more gradual.

Overall, these findings reveal that mean inflation in Belgium declined sharply in the mid-1980s. Except for services, that trend is also largely similar and synchronised in the various sectors, which therefore implies that this downward movement is due primarily to a common factor. In view of the date when that break becomes apparent – in that regard it seems crucial to consider post-1983 data – monetary policy would appear to be a key factor in this development (see section 3).

CHART 3 MOVING AVERAGE OF INFLATION: SECTORAL DATA [1]

(Annual percentage changes compared to the preceding quarter)



Source: Aucremanne and Collin (2006).

(1) Moving averages corresponding to the estimated autoregressive models.

2.2 Inflation persistence

The analysis reveals that, under the current monetary policy system, inflation persistence is relatively moderate in Belgium. The degree of persistence of overall inflation, estimated over the last window from the first quarter of 1993 to the last quarter of 2004, amounts to 0.51, though the confidence interval is relatively large, ranging from 0.11 to 0.92. Nonetheless, the unit root hypothesis is rejected at a significance level of 5 p.c. It should also be noted that the degree of inflation persistence measured by the HICP over the most recent period is equal to 0.42, and thus largely corresponds to the inflation persistence measured by the national CPI. Conversely, the degree of aggregate inflation persistence was much higher in the past. Estimates show that the persistence of overall inflation averaged 0.97 over the first five moving windows, and that the unit root hypothesis could not be rejected.

These findings therefore support the analyses published by the Bank in its annual reports. Thus, the 1976 report states that "One of the weaknesses of the Belgian economy is its vulnerability to inflationary chain reactions"…. "inflation is sustained by deeply-rooted lines of behaviour" [(1)]. This finding therefore points to high inflation persistence, in sharp contrast to the Bank's recent analyses which state that, in the past few years, the pattern of inflation has been generally influenced by unfavourable supply factors, and more particularly by the large increases in the prices of petroleum products and unprocessed food, which are assumed to have a temporary impact only [(2)].

A broadly similar profile is apparent in the case of non-energy industrial goods and processed food, where the degree of persistence declined from 1 to 0.78 and from 0.87 to 0.24 respectively between the first and last moving windows. For their part, unprocessed food and energy [(3)] already displayed a relatively moderate degree of persistence at the start of the period considered, so that the decline here is more modest than for overall inflation. The main exception is once again the service sector, where persistence remained high (hovering around 0.80) up to the estimation period extending from the second quarter of 1989 to the first quarter of 2001. The degree of inflation persistence in services subsequently diminished somewhat to 0.69 during the period from the first quarter of 1993 to the last quarter of 2004. At the end of the period, the unit root hypothesis can be rejected. The degree of persistence in the underlying inflation trend is broadly comparable to that observed in services. Thus, having remained at a very high level for a long time, it declined slightly during the last moving window to 0.79 for the latest estimation period; moreover, the unit root hypothesis can be rejected.

However, one should note that it is difficult to state with certainty whether the degree of inflation persistence in Belgium has actually declined over the past three decades. The method of studying this issue via a succession of moving windows is imperfect in that it does not permit total neutralisation of the influence of a break in the mean inflation level. If the break occurs within a window, the degree of persistence will be subject to an upward bias during that particular period. In view of the instability in the mean inflation level recorded at the beginning of the estimation period, it is therefore likely that persistence over those periods is overestimated. There is therefore a possibility that the decline in persistence simply reflects the fact that this overestimate has gradually diminished in parallel with the transition towards a more stable mean inflation level.

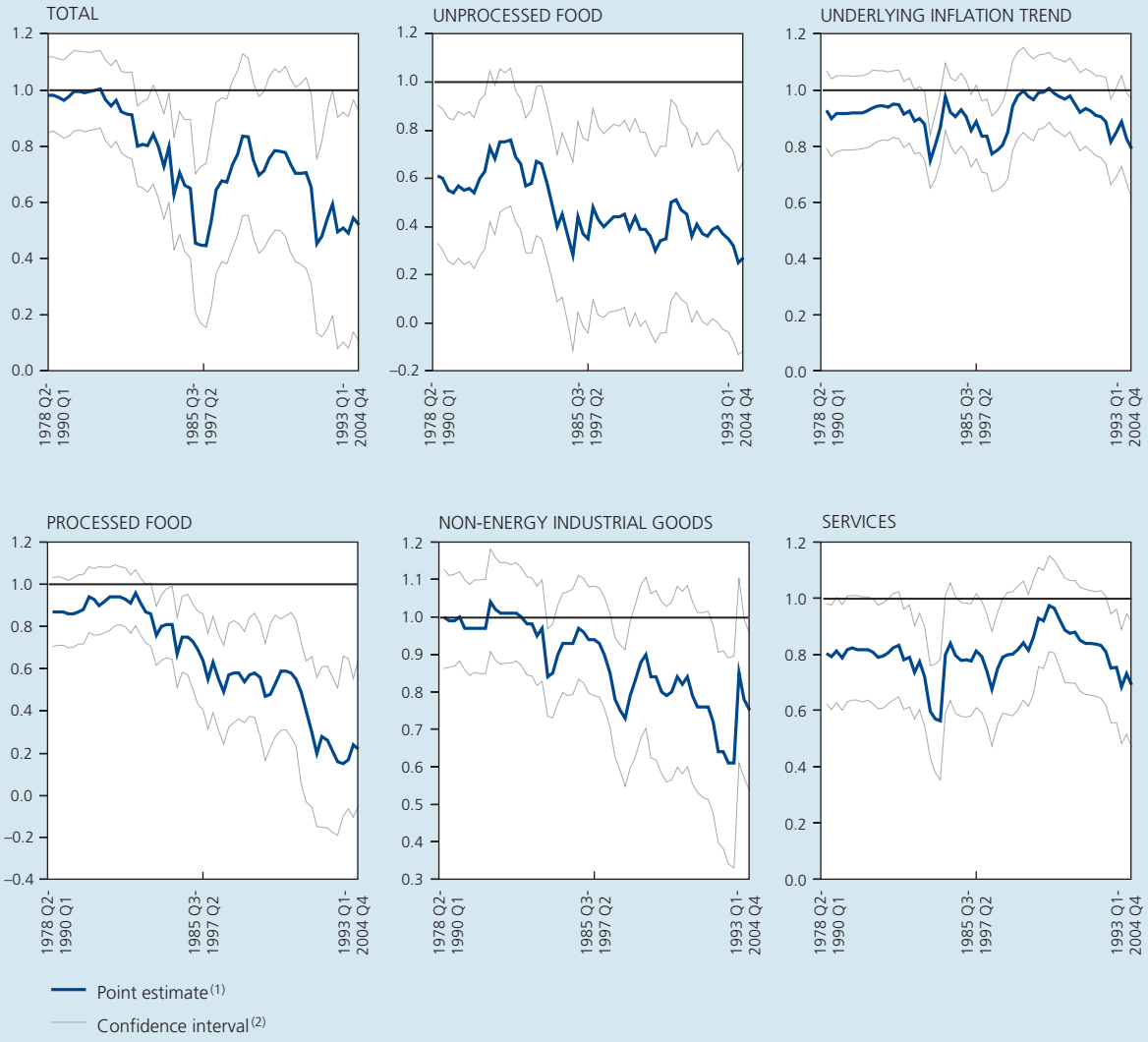
The analysis based on sectoral data confirms the results obtained for the higher aggregation level. While the unit root hypothesis can only be rejected for one-third of the 60 subindices during the first moving window, covering the period from the second quarter of 1978 to the first quarter of 1990, that percentage rises systematically as the estimation takes account of more recent periods. Thus, the percentage of products for which the unit root hypothesis can be rejected practically doubled during the estimation period extending from the first quarter of 1988 to the fourth quarter of 1999, and almost tripled for the latest moving window (first quarter of 1993 to the fourth quarter of 2004). A similar development is apparent for the various components of the national CPI. In that connection, it must be said that the percentage of products for which the unit root hypothesis can be rejected continues to rise systematically between the moving window which covers the period from the first quarter of 1988 to the fourth quarter of 1999 and the latest moving window, though the mean level of inflation remained relatively stable during those periods. These results therefore seem to suggest that inflation persistence has indeed declined in Belgium, and that this observed decline is due not only to a certain shortcoming in the method of estimation during earlier periods, when the mean level of inflation was far less stable.

Although the analysis reveals that the degree of persistence in Belgium is currently relatively moderate, those results mask some disparity between the various components of the CPI. In the service sector and non-energy

(1) National Bank of Belgium (1976), Annual Report, p. XXIV.
(2) National Bank of Belgium, (2004), Annual Report, p. 88.
(3) The chart does not show the results for these products.

CHART 4 INFLATION PERSISTENCE

(Sum of the autoregressive coefficients)



Source : Aucremanne and Collin (2006).

(1) Persistence is measured as the sum of the coefficients of an autoregressive model; it is obtained using the methodology developed by Hansen (1999).

(2) The confidence intervals are calculated for a significance level of 5 p.c., which means that they cover 95 p.c. of the observations. They are obtained using the methodology developed by Hansen (1999).

industrial goods, inflation persistence is generally much higher than for the other CPI components, namely food and energy. Furthermore, in accordance with the literature (cf Granger, 1980), the results indicate an aggregation effect, which means that the persistence for the aggregates is higher than the average for the component series. Furthermore, it is apparent that the CPI components with a higher weighting also show a higher degree of persistence.

The IPN has obtained similar results for the euro area as a whole. If the changes in the mean inflation level are taken into account, all the studies for the euro area indicate that inflation persistence is relatively modest. Depending on the study, the degree of persistence in overall inflation in the euro area ranges between 0.3 and 0.6, and in all cases the unit root hypothesis can be rejected. These results are therefore similar to those obtained for Belgium (0.5). It is also interesting to note that the results based on the consumer price index correspond very closely to those based on the GDP deflator. Just as in Belgium, the degree

TABLE 1 REJECTION OF THE UNIT ROOT HYPOTHESIS

(Percentage of products for which the unit root hypothesis can be rejected)

	1978 Q2 – 1990 Q1	1983 Q1 – 1994 Q4	1988 Q1 – 1999 Q4	1993 Q1 – 2004 Q4
Overall inflation	**33.9**	**46.4**	**64.3**	**89.3**
Energy	40.0	40.0	60.0	100.0
Unprocessed food	50.0	50.0	83.3	100.0
Underlying inflation trend	**31.1**	**46.7**	**62.2**	**86.7**
Processed food	22.2	33.3	55.6	88.9
Non-energy industrial goods	0.0	41.8	55.6	77.8
Services	57.6	57.6	72.2	94.4

Source: Aucremanne and Collin (2006).

of persistence in the underlying inflation trend in the euro area is higher than that for overall inflation.

The various analytical studies conducted by the IPN also point to considerable heterogeneity between the various components of the CPI for the euro area. Thus, in the case of non-energy industrial goods, the degree of persistence is considerably higher than that for energy and processed or unprocessed food.

3. Factors which could account for the structural changes in inflation dynamics

The results presented in section 2 show that there have been significant changes in inflation dynamics in Belgium over the past thirty years. The analysis began by revealing a substantial decline in the mean level of inflation during the mid-1980s. Various factors indicate that this was due to a fundamental change in the monetary policy system. First, the study found that the decline in the mean level of inflation was fairly uniform and synchronised for the main CPI components, and as regards the 60 product categories analysed. Second, the time when the break becomes apparent – namely the mid-1980s – largely

TABLE 2 DEGREE OF INFLATION PERSISTENCE (1)

	Euro area			Belgium		
	Consumer price index	Underlying inflation trend	GDP deflator	Consumer price index	Underlying inflation trend	GDP deflator
Dossche and Everaert (2005) (2)			**0.4**			
Lünnemann and Mathä (2004) (3)	**0.4**			**–0.3**		
Gadzinski and Orlandi (2004) (4)	**0.6**	**0.8**	**0.6**	**0.3**	0.9	**0.3**
Robalo Marques (2004) (5)	**0.3**					
Aucremanne and Collin (2006) (6)				**0.5**	**0.8**	**0.6**

(1) Persistence is measured as the sum of the coefficients of an autoregressive model of order p. The estimates in bold indicate that one can reject the assumption that the sum of the coefficients is equal to 1 (unit root hypothesis). The estimates take account of any break in mean inflation.
(2) Estimates during the period from the 2nd quarter of 1971 to the 4th quarter of 2003, assuming that the inflation target varies over time.
(3) Estimates based on the movement in the HICP during the period from the 2nd quarter of 1995 to the 4th quarter of 2000.
(4) Estimates during the period from the 2nd quarter of 1970 to the 3rd quarter of 2003, assuming a break in the mean level of inflation in 1993 for the euro area in the case of the three price indicators, and – for Belgium – a break in 1994 for the GDP deflator.
(5) Estimates during the period from the 1st quarter of 1986 to the 4th quarter of 2002.
(6) Estimates during the period from the 1st quarter of 1993 to the 4th quarter of 2004.

TABLE 3 INFLATION PERSISTENCE PER CPI COMPONENT[1]

	Euro area	Belgium
Unprocessed food	0.55	0.27
Energy	0.44	0.43
Processed food	0.61	0.22
Non-energy industrial goods	0.68	0.75
Services	0.53	0.69

Sources: Aucremanne and Collin (2006), Altissimo *et al.* (2006).
(1) Persistence is measured as the sum of the coefficients of an autoregressive model of order p.

corresponds to the changes in the monetary policy regime. As a result of the sharp deterioration in Belgium's economic situation, and more specifically in Belgian competitiveness, during the 1970s and early 1980s, the government decided to devalue the Belgian franc by 8.5 p.c. in 1982. That date marks the start of a monetary policy regime aimed more at price stability via maintenance of the parity between the Belgian franc and the German mark, and thus heralded the end of a period when monetary policy was fairly accommodating – witness the protracted period of negative real interest rates in the mid-1970s. Subsequently, the credibility of monetary policy gradually improved in the second half of the 1980s; that was reflected, in particular, in the substantial reduction in the positive interest rate differential between Belgium and Germany, and in June 1990 the monetary authorities officially announced the anchoring of the Belgian franc to the German mark. That change in the conduct of monetary policy, and especially the explicit aim of maintaining the exchange rate, made it possible to achieve a sustained reduction of inflation.

Numerous IPN studies have also shown that the pronounced changes in inflation dynamics, more precisely the movements in the mean level of inflation, in the industrialised countries were made possible by a drastic change in the conduct of monetary policy. Thus, in their analysis Corvoisier and Mojon (2005) show that the three waves of breaks in the mean level of inflation in the industrialised countries, occurring respectively in the early 1970s, mid-1980s and early 1990s, are also connected with breaks in the mean of the nominal variables, in contrast to the real variables for which no such changes were observed.

Thus, monetary policy helped to bring down the mean level of inflation and keep it stable, thereby limiting the estimated persistence by elimination of the bias which may have affected the first estimation periods. However, some results have shown that there may have been a more fundamental reduction in persistence. In Belgium, that could be due to changes in the system of wage-setting. In that respect, two specific measures most likely played a role.

First, the introduction, in 1994, of the health index as the reference index for linking incomes to inflation greatly reduced the automatic occurrence of second-round effects resulting from a change in the price of petroleum products or indirect taxes, as the health index excludes from the national CPI certain energy products such as motor fuel (petrol and diesel), and tobacco and alcoholic beverages on which excise duties are levied.

Next, the changes made to the wage-setting system in 1996 by the law on the promotion of employment and the preventive safeguarding of competitiveness also helped to diminish somewhat the risk of second-round effects, and to make wage-setting more prospective. In the negotiations on the scope available for real wage increases, the social partners must in fact take account of the expected inflation picture over the ensuing two years. In view of the automatic wage indexation, however, the ex post nominal wage increase may deviate from the increase originally planned if actual inflation differs from the expected level. In recent years, however, an increasing number of sectors have in practice opted for all-in agreements, which are intended to determine a negotiated real growth figure which may be reduced if the originally expected index increase is exceeded. With such a system, it is possible to cushion the surprise effect resulting from inflation in excess of the level expected at the time of the negotiations, albeit only partly if the forecasting error is large. Conversely, if actual inflation is below the expected level, the all-in agreements imply that the originally expected increase in nominal wages is indeed granted; the ex post increase in real wages then exceeds the rise agreed during the negotiations. This means that, in practice, wage negotiations increasingly concern nominal wages.

It is important to note that these changes were most likely an endogenous response to the changes in the monetary policy system[1]. After all, the 1996 law expressly refers to EMU. The social partners and economic agents have gradually adopted the position that, in a fixed exchange rate system, it is essential to control domestic costs in order to avoid any loss of competitiveness. That set of measures proved necessary to maintain the parity of the

(1) Bernanke (2004) recently drew attention to this aspect, pointing out that changes in the economic structure may in turn be caused by changes in the conduct of monetary policy.

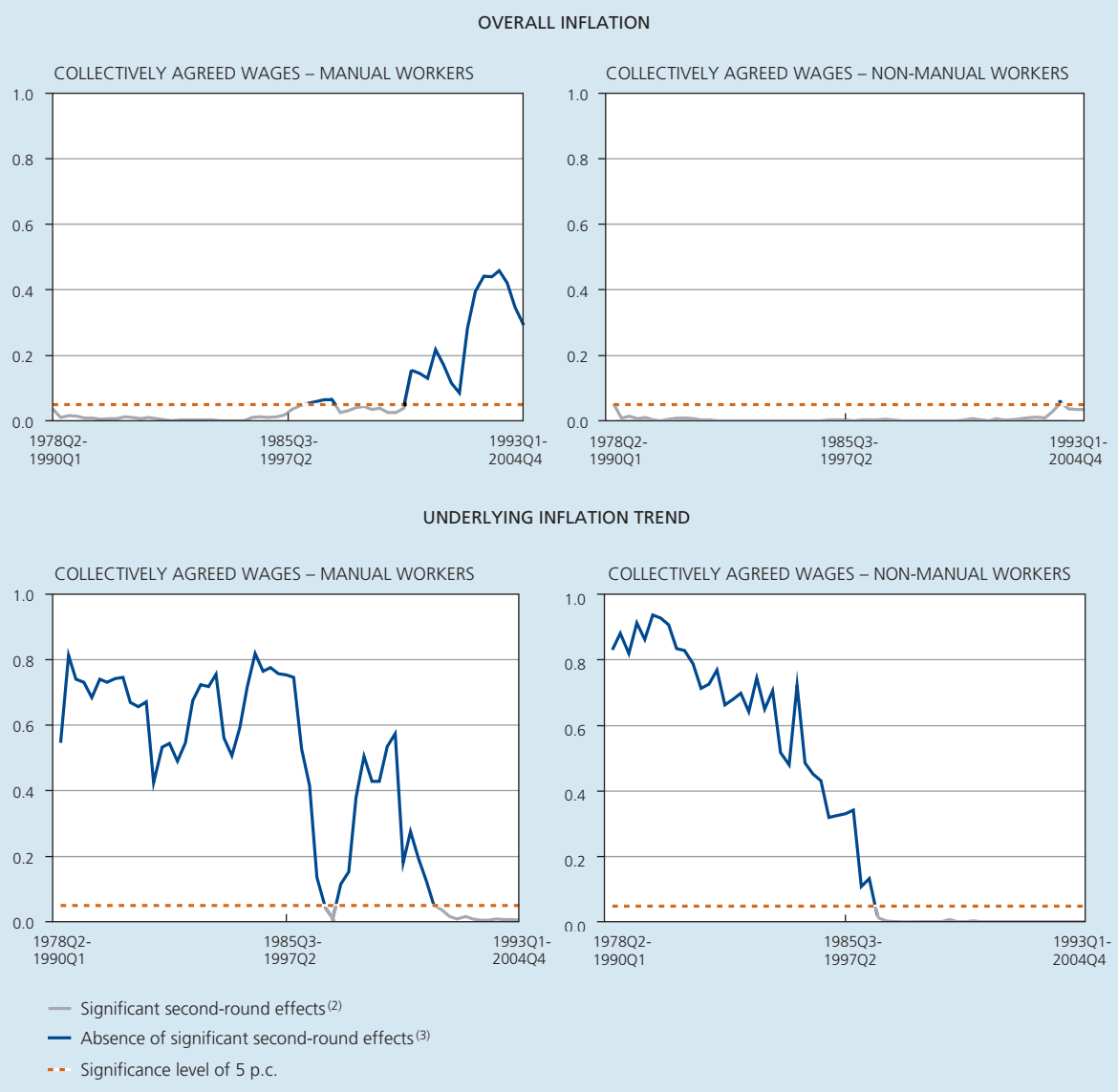
Belgian franc against the German mark, and subsequently for the Belgian economy's entry into EMU.

The significant changes in wage dynamics over the past thirty years can be illustrated using the results of Granger causality tests, which examine the extent to which past inflation values (or past values of the underlying inflation trend) help to determine the current growth of nominal wages. In order to investigate whether the causal relations have changed over the years, this empirical method was also applied to a series of 12-year moving windows.

Past inflation values used to play a substantial role in determining the growth of nominal wages, but if the 1970s and 1980s are eliminated from the estimation period, the causal relation is greatly diminished. Although

CHART 5 CAUSAL RELATION BETWEEN OVERALL INFLATION (OR THE UNDERLYING INFLATION TREND) AND COLLECTIVELY AGREED WAGES

(Probability of the absence of second-round effects (1))



Sources : FPS Employment, Labour and Social Dialogue; FPS Economy, SMEs, Self-employed and Energy ; NBB.

(1) Calculated on the basis of the Granger causality test which determines the causal relation between two variables in a bivariate system. In the case considered here, only the probability of the causal relation between inflation (or the underlying inflation trend) and the movement in wages is represented.

(2) The existence of significant second-round effects results from the rejection of the null hypothesis on the basis of which inflation (or the underlying inflation trend) does not cause the movement in wages. The null hypothesis is rejected if the probability is less than 5 p.c.

(3) The absence of significant second-round effects results from the non-rejection of the null hypothesis on the basis of which inflation (or the underlying inflation trend) does not cause the movement in wages. The null hypothesis is not rejected if the probability is greater than 5 p.c..

the conclusions are very clear in the case of manual workers, that is less true for non-manual workers. The second-round effects are always significant, although at the end of the period they appear to be smaller than in the past.

Examination of the causal relation between the growth of nominal wages and the underlying inflation trend yields different results. Thus, that link becomes significant as soon as the period from the mid-1990s is taken into account, whereas the earlier values for underlying inflation did not previously exert any significant effect on wage growth. Such results appear to be mainly consistent with the introduction of the health index as the reference index for linking wages to inflation. They also suggest that the practice of all-in agreements, which resulted from the application of the 1996 law, is partial or too recent to be shown by the estimation method used. Furthermore, those results also appear to offer a partial explanation for the relatively higher degree of persistence still exhibited by the underlying inflation trend.

In all, the changes made to wage-setting, originating to a large extent from the change towards a monetary policy regime aimed at price stability, have had a major impact on the dynamics of both wages and inflation, and on their mutual interaction. These changes in wage-setting lie behind the decline in the persistence of overall inflation during the most recent estimation periods, as a result of the elimination of second-round effects. The nature of those changes also explains why the decline in persistence is less marked in the case of the underlying inflation trend. In line with the current indexation procedures, it was found that developments in the underlying inflation trend still have an impact on the movement in labour costs at the end of the period, which is of course a source of persistence.

Conclusion

The past three decades have brought considerable changes in inflation dynamics in Belgium. This article shows, in particular, that the mean level of inflation fell sharply in the mid-1980s. A relatively uniform and synchronised pattern is apparent in the national CPI components as a whole, except for services, where the decline in inflation was much more gradual. These results indicate that the change in the monetary policy regime, which took place in 1982, directing the focus onto exchange rate stability, was a major factor in that structural break in the mean level of inflation.

Furthermore, the results showed that the degree of inflation persistence is relatively modest under the current monetary policy system, implying that, after a shock, inflation tends to revert fairly quickly to its equilibrium value. The persistence of aggregate inflation in Belgium also appears to have declined somewhat in comparison with the situation in the 1970s and 1980s, perhaps as a result of the changes made to the wage-setting system.

The results presented in this study tally closely with those obtained by the various IPN studies for the euro area. The degree of persistence in overall inflation and in the underlying inflation trend in Belgium are comparable to the findings for the euro area. As regards the main CPI categories, the sectoral variations are also very similar. These results corroborate the Bank's earlier analyses, which indicated that there is no persistent inflation differential between Belgium and the euro area. In general, that therefore indicates that the Eurosystem monetary policy is appropriate to the economic situation in Belgium, and that the risk of asymmetry in the transmission of monetary policy stimuli is relatively small.

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The role of equities in corporate finance in Belgium

V. Baugnet
G. Wuyts

Introduction

In the long term, firms face two types of financial decisions. The first concerns which investments to effect, known in the literature as *capital budgeting*, and the second concerns how to finance those investments. A firm generally has a range of ways of financing its real investments, such as the use of internal resources, borrowing or share issues. This article concentrates on that last source of finance, and aims more specifically to analyse the role of equities in the financing of non-financial corporations in Belgium, in terms of both their importance and the underlying factors determining that choice.

The first section of this article analyses the position of equities in the financing of non-financial corporations in Belgium on the basis of the financial accounts. It then examines the respective importance of quoted and unquoted shares.

The second section deals with the determinants of the capital structure and examines the factors which may cause firms to opt for equity financing. The presentation of the capital structure theory in general is followed by an empirical analysis of the capital structure of non-financial corporations in Belgium.

Finally, the third section discusses how macroeconomic variables, such as real and financial investment and financing costs, influence the timing of share issues. That analysis is based on an estimate of the cost to Belgian firms of issuing quoted shares.

1. Financing of non-financial corporations in Belgium

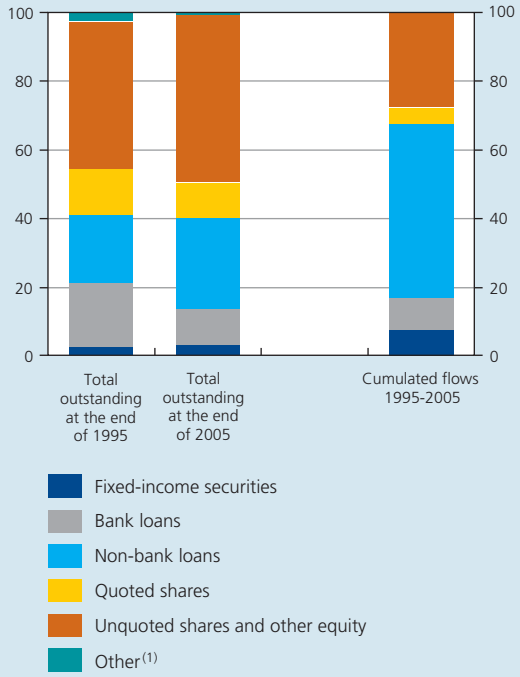
1.1 Overview

Share issues represent an important source of finance for non-financial corporations in Belgium. During the period 1995-2005, they accounted for 32 p.c. of the cumulative new liabilities of non-financial corporations, namely 27 p.c. for unquoted shares and other equity and 5 p.c. for quoted shares. They were the second most important source of finance, the primary source – representing 51 p.c. of the total – being non-bank credit, which essentially covers loans from other Belgian and foreign non-financial corporations. Non-financial corporations also make use, albeit to a lesser extent, of bank credit and the issue of fixed-income securities, which represented respectively 9 and 7 p.c. of the total cumulative financing flows for the period 1995-2005.

Compared to the financing structure of Belgian firms in the past, the last decade produced a decline in the importance of the role played directly by banks, and a strong growth of the flow of funds between firms, both affiliated and non-affiliated companies, and both Belgian and foreign; these flows of funds took the form of loans or equity investments. Direct recourse to the financial markets, via the issue of quoted shares or fixed-income securities, remained stable in the overall financing structure of Belgian firms, although – as this article will proceed to illustrate – there were nevertheless certain periods of low volumes followed by periods when large volumes of shares were issued, particularly quoted shares.

CHART 1 FINANCIAL LIABILITIES OF NON-FINANCIAL CORPORATIONS IN BELGIUM

(Breakdown by instrument, percentages of the total)



Source : NBB.

(1) Includes certain trade credit and transitory items.

On the basis of the partial statistics available for the euro area, it seems that, over the past ten years, Belgian firms have raised more finance via unquoted share issues and less by borrowing (bank credit and corporate bonds taken together), than firms in the euro area. Overall, recourse to the stock market was more or less the same as in the euro area.

The statistics on flows of quoted and unquoted share issues discussed in this article cover the cash contributions made at the time of the establishment of a company or a capital increase, and the cash issue premiums at the time of a capital increase less the capital reductions in the form of repayments to shareholders. Contributions in kind, delistings, bankruptcies and admissions to listing without the issue of new shares are not included in the flow statistics but do influence the statistics on outstanding totals.

1.2 Unquoted shares

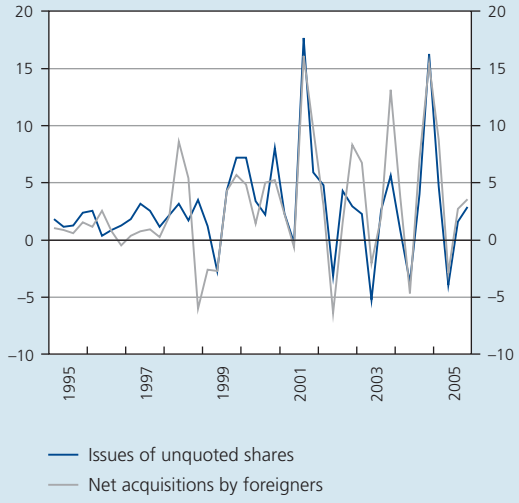
Share issues by Belgian firms consist mainly – over 85 p.c. – of unquoted shares and other equity.

There are sometimes very different motives and circumstances underlying the issue of unquoted shares. For instance, it seems that foreign direct investment represented a major part of these issue flows, as is evident from the combined movement in these two variables since the mid-1990s. These flows are probably attributable to fairly large firms, which may be affiliated with one another or linked to foreign companies which supply them with funds by buying their shares or acquiring a stake in their capital. The coordination centres based in Belgium, which channel funds to both Belgian and foreign companies, are financed mainly by the issue of unquoted shares, and are thus at the root of a large proportion of these flows.

As a result, 45 p.c. of the stock of unquoted shares issued by Belgian non-financial corporations is now held by non-residents, whereas at the end of 1995 that figure was only 25 p.c.; at the same time, cross-shareholdings by other resident non-financial corporations represented 44 p.c. of that total at the end of 2005, against 35 p.c. ten years earlier.

CHART 2 ISSUE OF UNQUOTED SHARES BY BELGIAN NON-FINANCIAL CORPORATIONS AND NET ACQUISITIONS BY FOREIGNERS

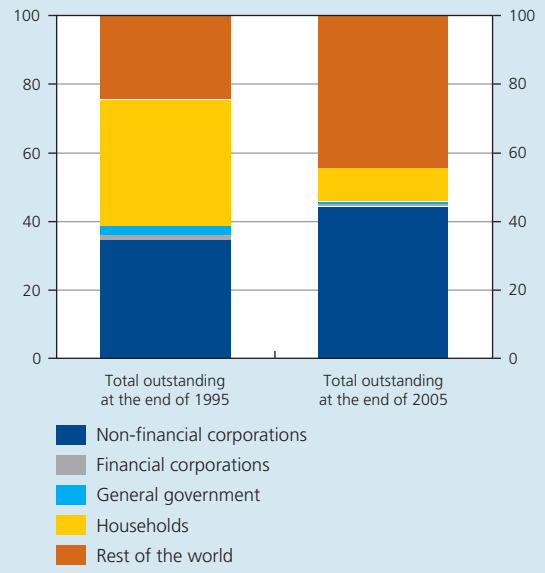
(Quarterly flows, billions of euro)



Source : NBB.

CHART 3 HOLDING OF UNQUOTED SHARES ISSUED BY BELGIAN NON-FINANCIAL CORPORATIONS

(Breakdown by holding sector, percentages of the total)



Source: NBB.

Unquoted shares may also be acquired by professional investors who are willing to operate in non-liquid markets in order to take advantage of the strong growth potential offered by certain companies. This form of financing, which is often geared to businesses in the initial stages of their development, is more commonly known as venture capital. Nonetheless, the amounts involved are fairly small from an aggregate viewpoint: on the basis of data issued by the European Venture Capital Association, it seems that around 4 billion euro was invested in Belgian firms by European venture capital companies during the period 1999-2005, representing just 1.2 p.c. of their total new liabilities. The Belgian venture capital market is still much smaller than the European average. Over half the funds granted to Belgian companies during the period 1999-2005 came from venture capital companies based abroad.

Finally, unquoted shares are also issued by small companies which are not well known and therefore have more difficulty in gaining access to the stock markets. These firms generally have a family shareholder structure, and are often reluctant to open up their capital for fear of losing control. Assuming that family share issues are mainly subscribed by the households sector, it seems that – over the past decade – such issues have declined considerably, compared to issues relating to foreign investments or venture capital. Thus, the proportion of Belgian households in the holding of the stock of unquoted shares issued by Belgian companies declined from 37 p.c. at the end of 1995 to 10 p.c. at the end of 2005.

1.3 Quoted shares

Belgian firms make far less frequent use of the stock market than of unquoted share issues. Even during the stock market euphoria of the late 1990s, quoted shares never represented more than 7 p.c. of their new financial liabilities.

This low volume of share issues should be viewed in the light of the relatively small number of listed Belgian companies. At the end of July 2006, there were 130 Belgian non-financial corporations whose shares were listed on Euronext, including 12 on the Free Market and 3 on Alternext. After reaching a peak in 2000, when no fewer than 152 Belgian non-financial corporations were listed – including 13 on Easdaq/Nasdaq –, this number had declined until 2004. In 2005 there was a marked acceleration in the stock market launch of Belgian companies, with no fewer than 13 newcomers. This trend continued in the first seven months of 2006, when there were nine new introductions of Belgian companies on Euronext.

Mainly large companies are admitted to the stock exchange, since the size criterion is undoubtedly important. Introduction onto the stock market is associated with specific requirements, particularly those concerning financial aspects, accounting and transparency, which are more onerous for small company budgets. Also, in order to attract investors, the instruments issued must be sufficiently liquid, and that means making a minimum quantity of securities available to the public. That is why admission to a regulated market is generally conditional upon a minimum amount of freely tradable capital (free float) or a minimum volume of capital to be acquired.

However, the Belgian economic fabric is typified by a large number of small and medium-sized firms. That is reflected in the relatively modest number of Belgian companies in the Euronext European indices with the largest capitalisations, namely the Euronext 100 and Next 150: at 11 July 2006, 11 Belgian companies representing 8.4 p.c. of the market capitalisation of the index, were included in the Euronext 100 while 22, representing 12.8 p.c. of the market capitalisation of the index, were listed in Next 150. Conversely, there was a stronger Belgian presence in the indices which use criteria other than size, such as NextPrime and NextEconomy, which respectively comprise companies active in the traditional sectors and in

the new economy, satisfying stringent criteria in terms of financial transparency: 36 Belgian companies (30.1 p.c. of the market capitalisation of the index) on NextPrime and 18 Belgian companies (23.4 p.c. of the market capitalisation of the index) on NextEconomy. In the light of these figures, medium-sized Belgian firms appear to be well represented on Euronext in comparison with their French, Dutch and Portuguese counterparts.

However, smaller organisations are being encouraged to open up their shareholdership by the recent creation of markets or indices appropriate to them. On Euronext Brussels, for example, there are the Bel Mid and Bel Small indices, introduced on 1 March 2005, and the compartments of the Free Market and Alternext, created in November 2004 and June 2006 respectively. These developments coincided with the desire of international investors to shift their investments into smaller companies, generally focusing more on the domestic market and less sensitive to the international, macroeconomic climate, especially in periods of great uncertainty.

Aimed at promoting SMEs in an expansion phase, the Euronext Brussels Free Market is, as its name implies, unregulated, i.e. it keeps the requirements imposed on new entrants to a strict minimum. In particular, there is no minimum capitalisation, no minimum free float, no obligation to publish interim results and no need to conform to the IFRS standards; the only requirements which must be met are a prospectus approved by the BFIC and compliance with the traditional rules on investor protection. During the twenty or so months since its establishment, no fewer than 12 Belgian SMEs with a market capitalisation of less than 25 million euro have been admitted, and several more introductions are expected in the second half of 2006.

Alternext, which occupies an intermediate position between the regulated market Eurolist and the Free Market in terms of admission requirements and listing requirements, is aimed primarily at substantial SMEs, because companies are only admitted if they were established at least two years previously and wish to raise a minimum of 2.5 million euro – unless a prior private placing has been arranged in the preceding two years for a total of 5 million euro or more. The listing requirements are less strict than on Eurolist, the main difference being the absence of any obligation to adhere to the IFRS model.

However, an institutional factor may continue to have an adverse effect on the issue of quoted shares: the Belgian legislation on commercial companies does not ensure effective separation between the right of ownership and the right to vote at the general meetings, so that there is less protection against undesirable shareholders. Consequently, few business owners could be inclined to open up more than half of their capital for fear of losing control, and that may lead to an inadequate free float.

TABLE 1 PRESENCE OF BELGIAN COMPANIES[1] IN THE MAIN EURONEXT INDICES

(Data as at 11 July 2006)

	Number of companies in the index	Belgian companies in the index (number)	Belgian companies in the index (percentages of the market capitalisation)
Euronext 100			
100 largest capitalisations	100	11	8.4
Next 150			
Next 150 capitalisations	150	22	12.8
NextPrime			
Traditional sectors	117	36	30.1
NextEconomy			
New economy	109	18	23.4

Source: Euronext.

(1) All companies listed on Euronext, including banks and financial holding companies.

TABLE 2 EURONEXT BRUSSELS : THREE SEPARATE, COMPLEMENTARY MARKETS

		ADMISSION REQUIREMENTS	REQUIREMENTS DURING LISTING	FOCUS
EUROLIST	Regulated market	+++	+++	Large, Mid & Small caps (compartments A, B and C)
ALTERNEXT		++ (compared to Eurolist : less free float, shorter track record)	++ (compared to Eurolist : no requirement concerning adherence to the IFRS model or the corporate governance code)	Mid & Small caps
FREE MARKET	Unregulated market	none (except BFIC prospectus)	none (except compliance with investor protection rules)	Micro-caps

Source : Euronext.

2. Determinants of the capital structure

2.1 The capital structure theory

Companies have various ways of financing their investments, such as internal resources, borrowing or share issues. The question is whether there is an optimum mix of these options which maximises the value of the company. In other words, can firms determine an optimum capital structure ? According to Modigliani and Miller (1958), that is not the case and, under certain conditions, the capital structure does not influence the value of the company. However, the capital structure is important in practice. There are various reasons for this, such as taxation or the costs associated with bankruptcy (trade-off theory), asymmetric information (pecking order theory) and conflicts of interest between stakeholders (agency theory).

Taxes are a first reason why the choice of finance is important. Firms can in fact deduct from their taxable income the interest charges on their borrowings, thus creating a "tax shield". This influences the firm's value and encourages the use of borrowing rather than the issue of shares. This advantage may be partly offset for the investor if interest income attracts a higher rate of tax than dividends or capital gains on shares. Generally speaking, however, it should be noted that firms borrow in order to make use of the tax shield[1], but that situation cannot continue indefinitely since over-use of debt also entails certain costs. It puts a business at greater risk of financial difficulties, of being unable to repay its debts or of becoming bankrupt. This illustrates the theory of the capital structure trade-off, which thus predicts moderate debt ratios. More specifically, a firm increases its debt until the marginal value of the tax advantage is exactly offset by an increase in the (discounted) value of the costs relating to financial problems[2].

The pecking order theory looks at the capital structure from a different angle, on the basis of asymmetric information. The basic model was developed by Myers and Majluf (1984). These authors assume that investors do not know the true value of the assets of a business or its investment opportunities, whereas the managers do have that information and act in the interests of the existing shareholders. The fact that a company is issuing new shares may then mean one of two things. The company may have an attractive investment opportunity and is looking for ways to fund it. However, it is also possible that the manager is aware that the assets are overvalued and is trying to issue overvalued shares. The presence of asymmetric information prevents the investor from distinguishing between these two possibilities. That creates an equilibrium in which firms can only issue shares at a lower price. The undervaluation of equity financing is therefore

(1) Measures such as the deduction of notional interest naturally influence this conclusion and make share issues more attractive.

(2) This type of costs includes reorganisation expenses, the cost of reduced solvency and bankruptcy, but also agency costs (see below).

linked to the level of asymmetric information, making share issues more expensive and giving rise to the capital structure pecking order (cf. e.g. Myers, 2001):

- Firms prefer internal to external financing;
- Dividends are rigid so that it is difficult to reduce them in order to finance projects. In the short run, changes in financing requirements cannot be covered by adjusting dividends. Consequently, net cash flow fluctuations are reflected in changes in the need for external financing.
- If external finance is needed, firms will opt first for the source which is safest for investors, namely borrowing.
- When more funds are required, firms will go through the pecking order, from safe to riskier debt, by issuing convertible bonds or preference shares and – as a last resort – traditional shares.

Agency costs arise because of conflicts of interests between different parties. There are two types of conflict that are relevant for the choice of the capital structure: the conflict between shareholders and managers, and the conflict between shareholders and creditors. The first type of conflict arises because managers generally act in their own interests. For example, they may invest in unattractive projects (e.g. producing a return of less than the cost of capital) or waste the assets in "organisational inefficiencies", as suggested by Jensen's free cash flow theory (1986). One example might be a project which enhances the manager's prestige (e.g. a corporate aircraft) while being of little economic value. Although remuneration systems, share options, etc. offer a partial solution to the problem, the objectives of the managers are never perfectly in harmony with those of the shareholders[1]. Debt may help in this respect: the firm is required to pay interest, and the manager's power over the cash flow is therefore limited. Leveraged buy-outs[2] (LBOs) are one example. Following an LBO, the managers have to cut down on unproductive investments and generate cash. This shows that, although a high debt ratio does entail risks, it may also have its advantages. One positive side-effect of debt is that bankruptcy seriously damages a manager's reputation. A high level of debt encourages him to work harder, to invest in better projects and curb the inefficient use of the cash flow in order to reduce the risk of bankruptcy and preserve his reputation.

Apart from the divergent objectives of managers and shareholders, conflicts of interest may also arise between shareholders and creditors. However, they occur only if there is a high risk of payment default or financial problems. That is mainly the case if the managers, as is often assumed, act in the interests of the shareholders rather than the creditors. If the risk of bankruptcy increases, the managers will be inclined to act such that the value is transferred from the creditors to the shareholders. There are various ways of achieving that (see Brealey and Myers, 2003 or Myers, 2001). First, the managers can invest in higher-risk projects. That increases the potential return for the shareholders, whereas much of the higher risk is borne by the creditors. This risk transfer behaviour was modelled for the first time by Jensen and Meckling (1976). Secondly managers may refrain from certain investments which would need to be financed by share issues, as part of the proceeds would in fact revert to the creditors. Myers (1977) looks more in depth at this problem of under-investment. Thirdly, managers may try to gain time by concealing financial problems which might alarm the creditors, who could insist on bankruptcy or corporate restructuring. Finally, managers may try to borrow even more and pay the cash obtained to the shareholders. Creditors are aware of these problems and try to conclude contracts which counterbalance for these four points. However, contracts are never perfect.

2.2 Empirical analysis

The preceding section reviewed the factors determining the choice of corporate finance from a theoretical perspective. In this section we shall conduct an empirical analysis of the determinants explaining the method of financing chosen by Belgian firms, with specific emphasis on equity financing.

2.2.1 Methodology

On the basis of the theoretical literature mentioned above and existing empirical studies, the following possible determinants of equity financing for firm i during year t, quoted by $Eq_{i,t}$, were selected:

- *Lev*: the firm's debt level, i.e. the long-term debts divided by the total assets;
- *Size*: the natural logarithm of the total assets, a measure of the firm's size;
- *Internal*: the volume of internal resources divided by the total assets;
- *Intang*: the volume of intangible fixed assets divided by the total assets;
- Quoted: a dummy variable which takes the value 1 if the firm is quoted on the stock market and 0 if it is not.

(1) Obviously, the problem disappears if the manager is also the owner and shareholder of the business.

(2) In the case of an LBO, a company's shares are bought, e.g. by a venture capital company, and the deal is financed by borrowing (bank loans or bonds). Owing to the relatively large proportion of debt on completion of such a transaction, bonds issued in these circumstances are generally accorded a low rating (often "junk bond" status).

Table 3 offers a detailed view of the different variables. By combining all the elements, we obtain the following equation:

$$Eq_{i,t} = \beta_0 + \beta_1 Lev_{i,t} + \beta_2 Size_{i,t} + \beta_3 Internal_{i,t} + \beta_4 Intang_{i,t} + \beta_5 Quoted_{i,t} + industry\ dummies + year\ dummies + u_{i,t} \quad (1)$$

in which the indices refer to firm i and year t. β_i denotes the regression coefficients to be estimated, and $u_{i,t}$ the error terms. The dummies relating to the sector to which the firm belongs are based on the NACE 1-digit codes; a dummy is also introduced for each year [1].

2.2.2 Description of the sample

The equity financing determinants are analysed on the basis of a sample of Belgian companies, over the period from 2000 to 2004. For each of those years, all Belgian firms publishing their annual accounts in the full format were included. It should be noted that a firm does not necessarily appear in the sample every year. For example, if the firm was not established until after 2000, or if it went bankrupt during the period in question, it will not be included every year [2]. Altogether, the dataset contains 28,594 individual firms, the figure varying between 17,292 and 18,208 firms in any year. For each firm, variables relating to the balance sheet were selected in order to conduct an empirical test on the theories mentioned earlier. This information was obtained from the database of the National Bank's Central Balance Sheet Office.

2.2.3 Results

The results of the estimation of equation (1) are shown in table 4. Various versions of the model were estimated in order to verify the robustness of the estimations. More specifically, each of the variables considered was introduced separately in models 1 to 5 (in addition to a constant). Model 6 included all the variables. The coefficients of the year and sector dummies are not shown in table 4. The models were estimated by the least squares method. *White standard* errors are shown in brackets in the table. All coefficients are significant at 5 p.c.

(1) For each NACE sector, a variable is included which is equal to 1 if firm *i* in year *t* belongs to that sector and 0 if it does not. A variable is also defined for each year, equal to 1 for the year concerned and 0 for the other years. To avoid perfect multicolinearity in the estimations, one sector and one year have been omitted from the model specification.

(2) Technically, this is referred to as an "unbalanced panel".

TABLE 3 OVERVIEW OF THE VARIABLES [1]

Symbol	Variable	Item
Eq	Capital + issue premiums	10 + 11
Lev	Long-term debt	17 + 42
Size	Size	ln (20/58)
Internal	Internal resources	12 + 13 + 14
Intang	Intangible fixed assets	21
Quoted	Quoted company	

(1) This table shows the variables used in equation (1). The *Item* column refers to the balance sheet items used to measure the variable. *Eq*, *Lev*, *Internal* and *Intang* are divided by the total assets.

The results obtained show that the conclusions are robust for the different model variants. Moreover, the (adjusted) R^2 is in line with other studies on leverage, and the model is highly significant (the *F*-statistic was not reported).

The analysis indicates that the quantity of intangible fixed assets and stock market listing are positive determinants of equity financing. In other words, quoted firms which own more intangible fixed assets will be more inclined to finance their investments by issuing shares.

Conversely, other variables exhibit a negative correlation. Firms with a high debt level will use less shares. Moreover, large firms make less use of equity financing. One possible explanation is that such firms have readier access to bank loans and/or they resort to issuing bonds. Firms with greater internal resources issue fewer shares.

A more detailed analysis of the results will reveal the extent to which they correspond to the capital structure theories mentioned earlier (trade-off, pecking order and agency theories). More specifically, if the sign of the result shown in table 4 corresponds to a particular theory, that will be indicated.

The negative sign of *Lev* is explained by the agency theory. In the event of financial problems, managers may refrain from making certain investments which would have been financed by issuing shares, because part of the proceeds would revert to the creditors.

The negative coefficient of *Size* can be explained by the trade-off theory, because the larger firms have a higher tax bill which they can reduce by deducting the interest charges. The fact that large firms have been in existence for a long time and enjoy a good reputation may be reflected in a better rating for their debt and/or an

apparently reduced risk of financial problems. They therefore have easier access to credit and can take on larger debts, so that there is less incentive to issue shares.

The negative link between equity finance and the variable *Internal* is in line with the three theories. The trade-off theory predicts that firms have fewer financial difficulties and can take on higher levels of debt if they generate more internal resources. According to the pecking order theory, a firm without sufficient internal resources has to use other forms of finance by working its way through the pecking order. The agency theory implies that an increase in the internal resources may tempt a manager to invest the money for unproductive purposes. Borrowing may be helpful here, so that debt financing is preferred to equity financing.

The positive coefficient of *Intang* is in line with the trade-off theory. In the event of financial problems, intangible assets are more difficult to realise than tangible assets. The firm is less able to contract debts and therefore has to make more use of equity financing.

The agency theory explains the positive sign of *Quoted*. Potential investors can form a more accurate idea of a quoted company which increases its capital, compared to one which is not quoted. The greater transparency required of quoted companies reduces the problems of asymmetric information. It is therefore easier (and cheaper) to issue additional shares if a company is already quoted.

In conclusion, the study does not enable us to identify one single theory explaining the form of financing chosen by Belgian firms; instead, that choice is based on a combination of factors taken from the various theories.

3. Macroeconomic determinants of share issue volumes

Like financial liabilities taken as a whole, the volumes of quoted or unquoted shares issued are highly cyclical. Over the past twenty years there have been at least two periods of rapid growth in share issues, defined by issue volumes exceeding the long-term trend. The first occurred at the end of the 1980s for quoted shares and slightly later, in the early 1990s, for unquoted shares. The second began in the late 1990s and continued until 2001. Those periods of accelerating issues were followed by varying periods of substantial deceleration, as in the period 1993-1997 and in the years 2002 and 2003. More recently, the issue volume has increased again.

The periods of intense stock market activity in terms of issue volumes coincide with those in which the number of quoted companies is growing. Thus, between 1997 and 2000, the number of quoted Belgian companies increased from 138 to 173, boosting the number of potential issuers by 25 p.c. The ensuing four years saw many companies disappear from the stock market, while new introductions were very rare, so that there was a net reduction of 35 units in the number of quoted Belgian companies.

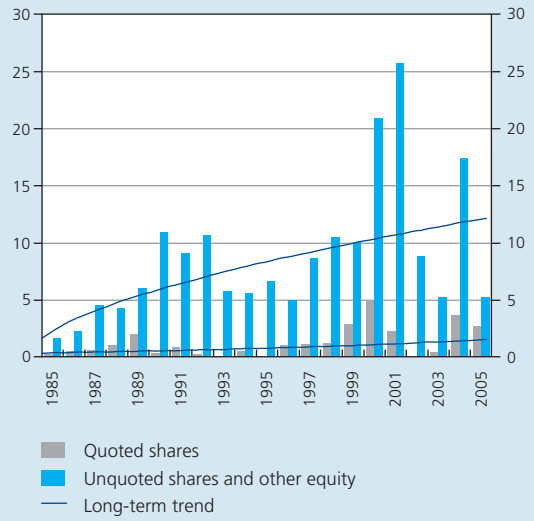
TABLE 4 **RESULTS** (1)

Symbol	Dependent variable: *Eq*					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
C	**0.445** (0.005)	**1.335** (0.015)	**0.378** (0.004)	**0.386** (0.004)	**0.388** (0.005)	**0.951** (0.022)
Lev	**–0.313** (0.007)					**–0.299** (0.009)
Size		**–0.061** (0.001)				**–0.034** (0.002)
Internal			**–0.221** (0.016)			**–0.213** (0.016)
Intang				**0.274** (0.036)		**0.169** (0.044)
Quoted					**0.242** (0.006)	**0.336** (0.002)
Adj. R²	*0.045*	*0.072*	*0.266*	*0.025*	*0.025*	*0.308*

(1) This table shows the results of the estimations of equation (1). Models 1 to 5 include the explanatory variables one at a time, while model 6 includes all the variables which are defined in Table 3. The *white standard* errors are shown in brackets. Significant coefficients are shown in bold.

CHART 4 ISSUES OF QUOTED AND UNQUOTED SHARES BY BELGIAN NON-FINANCIAL CORPORATIONS

(Annual flows, billions of euro)



Source : NBB.

Finally, more recently, Belgian firms seem to be returning to the stock market, with 13 new introductions recorded in 2005, and 9 in the first seven months of 2006. The parallel trend in the number of quoted firms and the volume of issues seems to show that, when conditions are favourable for equity financing, not only the existing quoted companies step up their use of this form of finance, previously unquoted companies also decide to go public.

3.1 The role of real and financial investments

There are various factors which motivate a firm's decision to go public, one of the main ones being to obtain permanent funding to finance long-term real and financial investments. A correlation is therefore to be expected between corporate investment behaviour and share issue volumes.

During the first period when share issues were seen to increase, at the end of the 1980s, a parallel movement was observed in gross fixed capital formation, where the annual growth rate exceeded 10 p.c. for three consecutive years. Then followed a period of shrinking investment which corresponded to a very small volume of share issues. At the end of the 1990s, the parallelism of the two variables seemed to diminish, as gross fixed capital formation, while expanding very rapidly, appeared to lag behind the exceptionally large volume of share issues.

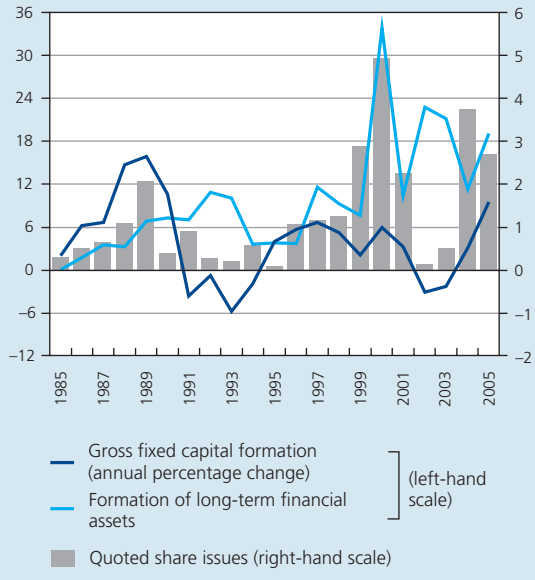
Conversely, firms effected very substantial long-term financial investments – including foreign direct investment – during this period, and more particularly in 2000. Moreover, the number of notifications submitted in Belgium to the Competition Council concerning business concentrations confirms the intense merger and acquisition activity prevailing at the time of the new millennium. Firms may also issue shares for the purpose of financing the acquisition of other companies, either via the proceeds of issues for general subscription or by issuing shares which are then exchanged for the shares in a target company.

Share issue volumes are linked to the business cycle by factors other than the direct channel of investment. Boom periods tend to coincide with periods of low risk aversion on the part of investors, periods when there is less marked asymmetry of information between managers and investors, reducing the cost of equity financing. Moreover, it is clear that share issues are to a large extent related to stock market prices, which are in turn determined by the expectation of future profits, and those profits are themselves connected with the pattern of activity and interest rates.

This leads to another key factor determining the ideal timing of these issues, namely the cost of capital.

CHART 5 QUOTED SHARE ISSUES AND REAL AND FINANCIAL INVESTMENTS OF BELGIAN NON-FINANCIAL CORPORATIONS

(Annual flows, billions of euro, unless otherwise stated)



Source : NBB.

3.2 The role of capital cost

A decisive factor in the choice of the optimum financing structure for a firm, which may therefore determine whether it becomes a quoted company, is the relative cost of each of the instruments at its disposal. Apart from the fixed launch costs – production of a prospectus, possible adjustments to the accounting scheme, etc. – and compliance with the listing requirements, particularly those concerning information and transparency, financing by means of quoted shares tends to be more expensive than financing via borrowing, in view of the risk premium required by shareholders and because the different tax treatment usually favours borrowing rather than equity.

3.2.1 Theoretical framework

While the financial cost of bank credit or bond issues is easy to measure on the basis of the corresponding interest rates, the cost of a share issue is harder to estimate, since it has to include the expected future dividends, which are – by definition – uncertain and therefore subject to a risk premium.

The yardstick used here to measure the cost of equity financing is based on a *simple dividend discount model*, in accordance with the classical Gordon-Shapiro formula which states that, in equilibrium, the value of a share must equal the discounted value of the expected future dividend flows. The discount rate, which may also be interpreted as the yield demanded by the investor, corresponds to the cost of financing entailed in issuing the security. That discount rate comprises a risk-free interest rate and a risk premium.

In accordance with certain simplifying assumptions – in particular, the assumption that dividends increase at a constant rate – it is found that, in equilibrium, the cost of equity financing depends only on the dividend yield and the long-term dividend growth rate.

While dividend yields can be observed *ex post*, the long-term dividend growth rate has to be estimated. A classical assumption stipulates a long-term dividend growth rate equal to the potential growth rate of the economy. If the share of value added distributed to the capital and the pay-out ratio – i.e. the ratio between dividends paid and profits achieved – are stable over time, the real long-term dividend growth will be equal to the potential growth of the economy. Another solution is to take the net return on equity after tax (ROE) as reflecting what the firm has available for spending after payment of all expenses and taxes, and to multiply that ratio by the fraction of profits reinvested in the business. Assuming that the firm's net investments are financed solely out of undistributed profits, the rate obtained corresponds to the long-term dividend growth rate.

The cost of equity (or COE) for quoted Belgian companies was calculated for the period from 1995 to the present day. It was assumed that the long-term dividend growth rate varies over time. During an initial four-year period, it is equal to 5.5 p.c., the rate obtained by multiplying the ROE of quoted companies (10.6 p.c.) by the undistributed share of the profits (64.1 p.c.), after adjusting for inflation (1.8 p.c.). The calculations were based on the mean values of the different variables over the period considered. The second phase is a transitional period of eight years during which the dividend growth rate gradually tends towards an equilibrium value. Then comes the third and final phase (in principle, infinite) in which the dividend growth rate is equal to that equilibrium value, estimated on the basis of the potential growth rate of the economy (2.1 p.c.).

3.2.2 Influence of financing costs on quoted share issues

The cost of equity is compared with the movement in the price of other sources of finance (bank loans and corporate bonds). In view of the important role of the assumption made regarding the long-term dividend growth rate, but also the fact that this exercise disregards a whole range of expenses, such as those relating to various obligations which must be met by companies admitted to the regulated stock market, and the distortions introduced by the tax system, which does not in fact accord the same treatment to the various forms of financing, attention should focus not so much on the respective levels of costs but on their relative movement over time.

The period examined can be divided into three phases: from mid-1996 until spring 1999, the COE declined steadily, mainly as a result of the significant rise in share prices. The low level of the risk premium demanded by the market during that period also lowered the cost of issuing bonds, while bank rates remained fairly stable. From mid-1999, all the financing costs began to rise as the financial markets first anticipated and then incorporated successive increases in the ECB's key interest rates. The rising cost of equity persisted until the autumn of 2002, when it peaked, while bank rates, which are closely linked to the key rates, continued to fall, reaching an all-time low in the spring of 2003. The cost of issuing corporate bonds remained at a high level until the end of 2002, before also beginning to fall. Apart from the deteriorating economic situation, this period was marred by various accounting scandals involving certain large foreign companies, causing the market to continue demanding an abnormally high risk premium. After the peak in the autumn of 2002,

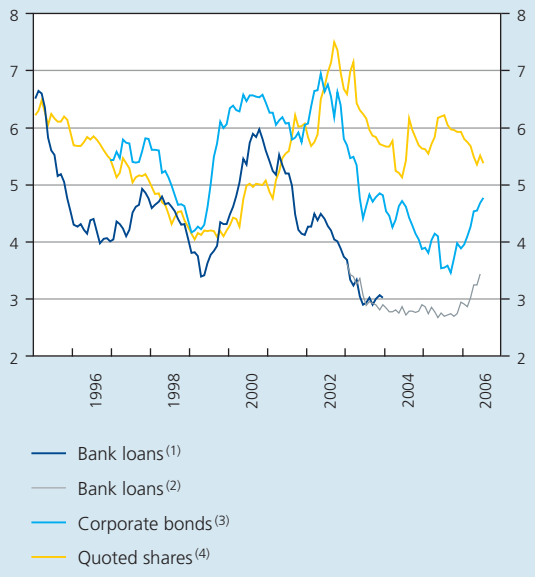
the COE declined before stabilising today at a level slightly below its long-run average.

Examination of the link between the deviation of the COE from its long-run average and the flows of quoted share issues reveals a negative correlation, albeit with a certain time lag. That is due partly to the method of annual flow smoothing, but is also attributable to the respective movement in the cost of other sources of funding: e.g., in 1999 and 2000, bank rates and bond rates climbed much faster than the COE. During the long phase of very low issues, extending from early 2002 to mid-2004 – or even the end of 2004, when excluding the public offer to exchange Interbrew shares for Ambev shares, giving rise to the Inbev group – the COE was well above its long-run average value, and the movement in the price of alternative sources of funding was much more favourable.

Since mid-2005, the COE has been falling, in contrast to the movement in the price of other forms of finance, so that it is now slightly below its long-run value. At the same time, a number of non-financial corporations seem to be showing renewed interest in raising finance by issuing quoted shares. The launch of new segments, such as the Free Market and Alternext, has probably encouraged that development. The improvement in the business outlook should continue to favour that trend.

CHART 6 FINANCING COSTS OF NON-FINANCIAL CORPORATIONS IN BELGIUM

(Percentages)



Sources: Thomson Financial Datastream, NBB.

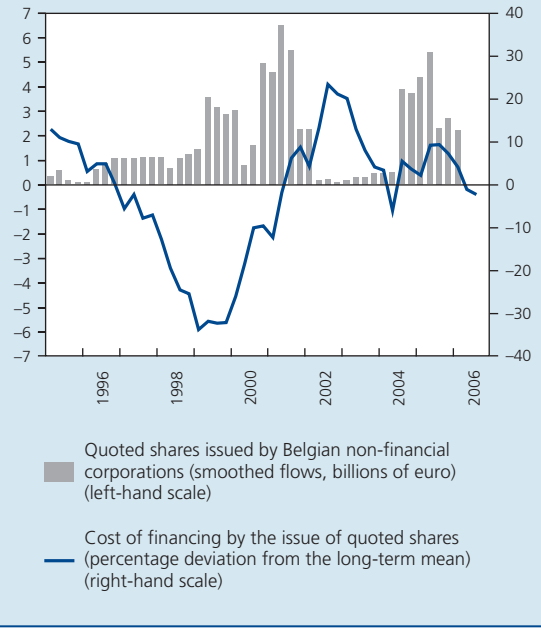
(1) Fixed-term advance.

(2) Loans of over 1 million euro, variable rate, initially fixed for a period of less than one year.

(3) Yield on a BBB bond denominated in euro, maturity of five to seven years.

(4) On the basis of the model explained in 3.2.1; with a dividend growth rate equal to 5.5 p.c. for the first four years and a transitional phase of eight years, after which the dividend growth rate is equal to 2.1 p.c.

CHART 7 COST OF FINANCING BY THE ISSUE OF QUOTED SHARES AND FLOW OF ISSUES (1) BY BELGIAN NON-FINANCIAL CORPORATIONS



Sources: Thomson Financial Datastream, NBB.

(1) In view of the rather irregular quarterly profile of flows of quoted share issues, the flows were smoothed on an annual basis. Consequently, the flow in any particular quarter corresponds to the annual average calculated on the current quarter and the three preceding quarters.

The new system of deducting notional interest could give rise to a structural increase in equity financing by Belgian companies. This measure, which came into effect on 1 January 2006, allows firms to deduct from their taxable income an amount based on the value of their own funds, adjusted for certain balance sheet items, and using a rate equal to the annual average yield on linear bonds (OLOs). This ends the tax discrimination between financing by borrowing and equity financing, and thus brings the costs of these two methods of financing more closely into line.

Conclusion

Share issues are a significant source of funding for non-financial corporations in Belgium. Between 1995 and 2005, they represented around 32 p.c. of the cumulative new liabilities of non-financial corporations. Share issues are therefore the second most important source of funding,

the first being non-bank credit, which accounted for 51 p.c. of the total. Share issues are a much more important source of funding than bank loans or issues of fixed-income securities. Unquoted shares represented the major part of this, namely 27 p.c., mainly because of the high level of foreign direct investment. Quoted shares represented only 5 p.c. of the cumulative new liabilities of non-financial corporations during the period 1995-2005.

An empirical analysis of the determinants of the capital structure highlights the fact that quoted companies having more intangible fixed assets are more inclined to opt for equity financing. Conversely, other factors, such as the company's debt level, size and internal resources have a negative influence on equity financing.

The timing of the use of this type of financing depends partly on macroeconomic factors such as real and financial investments. The cost of capital may also be regarded as a key determinant of the use of equity financing over time. Substantial issues were recorded during the period 1999-2001 and from mid-2005 onwards. These developments coincided with either a cost of capital well below its long-run average or a movement in the cost of capital which was more favourable than the price of alternative sources of finance. The recent government measure aimed at allowing the deduction of notional interest could also give a substantial boost to new share issues.

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H. Geeroms

Introduction

This article aims to provide an overview of the EU budget. The main topics here are the developments that have taken place over the years and the structure of expenditure for the immediate future, as laid down in the recent agreement on the "Financial Perspective" for 2007-2013. There will be no attempt to evaluate various suggestions made by politicians and academics for optimising the EU budget decision-making procedure, e.g. those put forward by the ECB (2005). In view of the complexity of the European budget rules, a detailed examination of more technical aspects is beyond the scope of the present article, so that only the fundamental principles will be explained.

The article is arranged as follows. The first section describes the specific characteristics of the EU budget and the expenditure and revenue structure. The second section goes into more detail on the two largest expenditure items, namely the common agricultural policy and the cohesion policy. The third section discusses the "Financial Perspective" for 2007-2013.

1. EU budget: characteristics and developments

1.1 Characteristics

Although the EU budget has many characteristics in common with the budgets of the Member States or those of other countries, it also has a number of specific features which are not found in national budgets.

1.1.1 A balanced budget

In principle, the EU budget can never be in deficit. The EU is not authorised to borrow, and its spending therefore cannot exceed its income. There are only a few exceptions to that rule, permitting limited borrowing, e.g. for the purpose of providing macro-financial support to non-Member States.

1.1.2 The European Parliament does not have exclusive power

In the Member States, as in most other countries, the Parliament has full power to determine the budget revenue and expenditure, but in the EU this is not the case, as the Council of Ministers and the European Parliament, which constitute the EU budget authority, share that power. The allocation of powers between the Council and the Parliament depends on the nature of the expenditure. A distinction is made between compulsory and non-compulsory expenditure, each making up about half of the budget. The first category comprises the expenditure resulting from the EU treaties, such as the bulk of the expenditure under the Common Agricultural Policy (CAP) or that relating to aid to developing countries. The non-compulsory expenditure consists primarily of expenditure relating to the cohesion policy and the operation of the administration.[1] The Council takes the final decision on compulsory expenditure while the Parliament has the last word on non-compulsory expenditure.

(1) The expression "non-compulsory expenditure" is somewhat misleading: under the labour laws, the payment of officials' salaries is, to be sure, "compulsory", while the structural fund expenditure forms an essential part of EU policy. Yet both items are regarded as "non-compulsory" expenditure because they are not mentioned in themselves in the EU treaties.

The annual procedure for drawing up and approving the budget is as follows:

- the European Commission (EC) draws up a preliminary draft budget which it submits to the Council;
- the Council examines the proposal at its first reading and may amend the preliminary draft by a qualified majority. Following approval by the Council, it acquires the status of a draft budget;
- the European Parliament may then, in a first reading, propose amendments to the compulsory and non-compulsory expenditure;
- after that, the draft budget goes back to the Council which, in the second reading, takes a final decision on the compulsory expenditure. The Council may, by a qualified majority, accept proposed changes put forward by the European Parliament and entailing an increase in the compulsory expenditure. Amendments not giving rise to any increase in that expenditure may be rejected by the Council by a qualified majority. The Council may also reject by a qualified majority the proposed amendments put forward by the European Parliament regarding the non-compulsory expenditure. However, the European Parliament may resubmit these last amendments when voting on the budget as a whole, and thus has the final say on the non-compulsory expenditure;
- the European Parliament has power, in the last instance, to adopt or reject the budget as a whole.

1.1.3 A binding multi-annual financial framework

The EU expenditure is defined for a period of several years by the "Financial Perspective", which lays down the maximum annual expenditure per heading. This fosters budgetary discipline and makes it easier to predict expenditure in the medium term. Prior to the introduction of this multi-annual financial framework, the annual budget negotiations in the late 1970s and in the 1980s increasingly led to sharp confrontations between the Parliament and the Council, which in 1979 and 1984 actually led to the rejection of the whole budget by the European Parliament. The first direct elections in 1979 gave the European Parliament greater legitimacy, starting the trial of strength with the Council. In that context, the Financial Perspective provided stability by curtailing freedom of choice during the annual procedure. However, the Financial Perspective cannot be regarded as a fully-fledged multi-annual budget, since the annual budget round is still necessary to set the actual amount of the expenditure and to allocate the maximum amounts per heading in detail among the various budget items.

The Financial Perspective is put into formal terms by an Interinstitutional Agreement between the three main European players, namely the European Parliament, the Council and the EC, and is an essential part of that agreement. The first Financial Perspective was incorporated in the "Delors I package" and related to a period of five years (1988-1992). All the subsequent Financial Perspectives covered a period of seven years (1993-1999 for the "Delors II package" and 2000-2006 for the "Agenda 2000"). In December 2005, the European Council reached a political agreement on the new Financial Perspective, i.e. for 2007-2013. On the basis of that agreement and following consultation between the EC, the Council and the European Parliament, a new Interinstitutional Agreement on the Financial Perspective 2007-2013 was approved in May 2006 by the Council and the European Parliament, on proposal of the Commission. It will enter into force on 1 January 2007.

1.1.4 The EU does not have any actual revenue of its own

The EU cannot levy any taxes of its own, but is financed almost entirely by transfers from the Member States. True, since the 1970 budget reform, the Union has had so-called "own resources" as a source of finance. These are specific revenue categories to which the Union is entitled without any further decision by the national authorities, once they have been defined by a Council "decision on own resources" and ratified by the national parliaments of the Member States. However, the expression "own resources" is misleading, since the revenue is still collected by the Member States and then transferred to the EU. So in the end, these resources still consist of transfers from the Member States.

Since the 1970 budget reform, the method of financing the EU has been adjusted on several occasions; the latest decision on own resources was passed in September 2000. Via the December 2005 political agreement on the Financial Perspective 2007-2013, the European Council sought a new decision on own resources. This new decision is to take effect at the beginning of 2009 at the latest, applying retroactively to 1 January 2007.

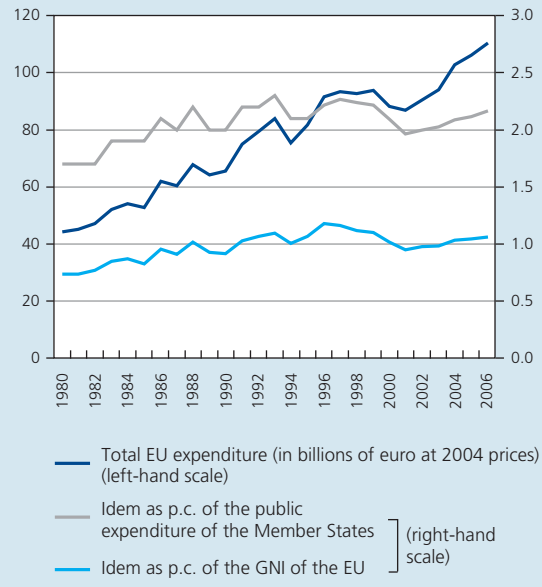
Belgium has often advocated the introduction of a genuine European tax, e.g. an energy consumption tax, or the assignment to the EU of part of the revenue generated by corporation tax or taxes on savings income, the primary argument being that this would strengthen the link between the EU and its citizens while also obviating the need for the debate on the "budget balances" (to find out which Member States are net contributors and which are net beneficiaries, cf. below). However, a number of Member States are opposed to this proposal.

1.2 Principal developments

1.2.1 Volume

The latest decision on own resources, passed in September 2000, set a ceiling on the own resources of 1.24 p.c. of the EU's gross national income (GNI), a percentage which is to be maintained according to the European Council agreement of December 2005. In accordance with the principle of balance, this percentage also represents an absolute ceiling for the expenditure. However, the commitment appropriations laid down by the Financial Perspectives in recent years have been considerably lower, at between 1.07 and 1.11 p.c. of GNI, in order to leave scope for unforeseen expenditure or in case economic growth should fall short of expectations. The volume of payment appropriations in the annual budgets has even hovered around 1 p.c. of GNI, whereas the payments actually made have even still been lower, partly because of the non-execution of certain projects, particularly under the cohesion policy. In comparison with the relative volume of public expenditure of the Member States – averaging around 47 p.c. of GNI – the EU budget is therefore decidedly modest. In absolute terms, the Community budget – which comes to around 110 billion euro in 2006 – is also barely more than the general government budget of Poland, and is actually less than that of small countries such as Austria and Belgium. This finding reflects the allocation of powers between the EU and the Member States. Over the years the total EU expenditure has nonetheless increased, both in absolute terms and in proportion to the cumulative expenditure of all governments in the Union.

CHART 1 DEVELOPMENT AND RELATIVE IMPORTANCE OF EU EXPENDITURE (1)



Source: EC.
(1) Payment angle, including expenditure by the European Development Fund.

1.2.2 Revenue

Apart from the relatively small and volatile amounts of "other revenues" (such as donations or taxes on the incomes of EU officials) and "amounts carried over from the previous year", the EU is financed by what are called the "own resources", which comprise the following major categories.

1.2.2.1 "Traditional" own resources

The traditional own resources consist mainly of agricultural duties and customs duties. These funds are collected by the Member States, which are allowed to keep 25 p.c. of the revenue to cover the collection costs; these resources are collected at the external borders of the Union and are based on tariffs laid down by the EU under its trade policy and the CAP. These traditional own resources are inseparable from the EU Treaty and can therefore be regarded as a kind of "natural" source of revenue.

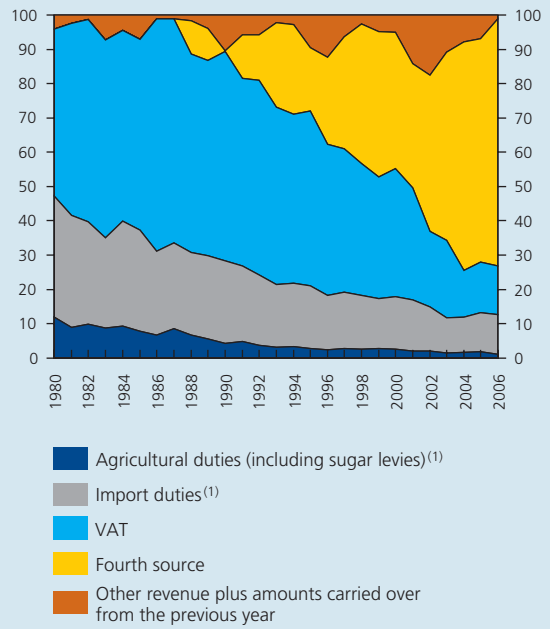
Historically, these resources have been very considerable, but their volume has now declined sharply, dropping from almost half of the EU's revenue in 1980 to around 13 p.c. for the years 2005-2006. This is not due to any reduction in the basis of assessment, since progressive globalisation has led to a sharp rise in imports, but is caused solely by the systematic reduction in the tariffs applied, in the context of the liberalisation of world trade. This last factor is also one of the driving forces behind the gradual alignment of EU agricultural product prices with world prices. According to World Bank estimates, the (unweighted) average EU import levy declined from 8.7 p.c. in 1988 to 4.4 p.c. in 2003.

1.2.2.2 VAT-based resources

This source consists of a percentage levied on the VAT base of the Member States. The same percentage is levied on a harmonised VAT base for all Member States. Harmonisation of the tax basis proved necessary because the goods and services covered by the VAT regulations may vary from one country to another. In principle, such a system is regressive in character, because consumption in proportion to GNI, and hence the harmonised VAT base, declines as the level of prosperity rises. Consequently, poorer Member States would pay a higher proportion of

CHART 2 STRUCTURE OF THE EU'S REVENUE

(Percentages of the total)



Source: EC.

(1) Excluding the compensation which Member States receive for collecting the agricultural duties and customs duties.

their GNI than the richer Member States. To counteract this perverse effect, the VAT base is limited to 50 p.c. of the GNI of each Member State. The maximum percentage for the VAT contribution on this harmonised basis is currently set at 0.50 p.c., but owing to a number of technical adjustments the real percentage applied is now only 0.30 p.c. As a proportion of the own resources, VAT-based EU revenues have declined from more than half in the early 1980s to 14 p.c. in recent years, as a result of the gradual reduction in the maximum transfer percentage. This fall was due to the efforts to make the contributions less regressive, and was therefore intended to help the poorer Member States.

1.2.2.3 GNI-based resources ("fourth resource")

Since, in principle, the EU budget must always balance, a balancing item is required on the revenue side. In 1988, the "fourth resource" was introduced for that purpose, replacing the VAT source in that role. The object of this was to reduce the regressive nature of the contributions. The "fourth resource" consists of a contribution which the Member States have to pay in proportion to their share in the total GNI of the EU. The percentage of GNI payable is calculated annually such that no financing deficit is recorded. For example, it is estimated that, in 2006, the contribution will come to around 0.7 p.c. of GNI. The share of the "fourth resource" in the total resources of the EU has increased sharply since 1988, amounting to over 70 p.c. of total revenue in 2006. Some people are calling for EU expenditure to be funded entirely on the basis of GNI, because the current allocation per Member State – taking account of the adjustments to the VAT base – is in fact little different from an allocation based exclusively on GNI, and it would be simpler.

1.2.3 The "British rebate" and the contributions per Member State

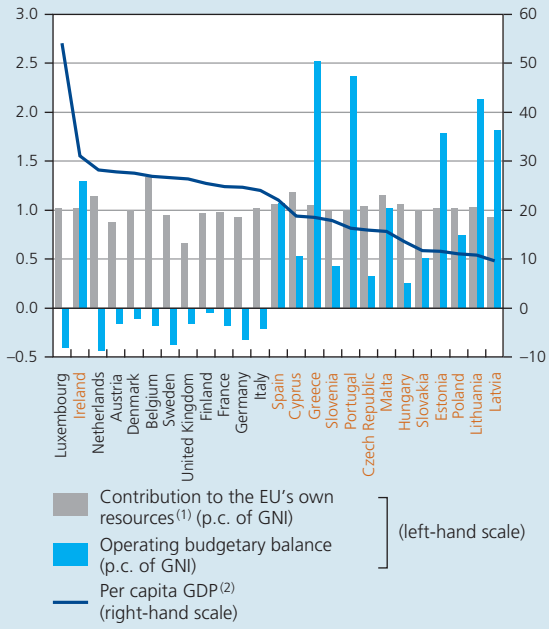
At the Fontainebleau Summit in 1984, the British Prime Minister of the day, Margaret Thatcher, had demanded a correction to the United Kingdom's contribution ("*I want my money back!*"), the main argument being that her country was paying too much in relation to its level of welfare and that a disproportionate part of the Community expenditure was devoted to the CAP, from which the British received little.

This adjustment (also known as the "British rebate") was introduced in 1985. The rebate is complicated to calculate, and there have been a number of changes since its introduction. For 2006 this rebate came to roughly 30 p.c.: without this adjustment, the United Kingdom would have had to contribute 19.4 billion euro, as opposed to the current figure of 13.7 billion. This reduction in the United Kingdom's contribution is charged to the other 24 Member States in proportion to their share in the total GNI of the EU. However, in the case of Germany, the Netherlands, Austria and Sweden, the contribution towards financing the "British rebate" is limited to one quarter of their theoretical contribution. The remaining three quarters are paid by the other 20 Member States.

At the time of the negotiation of the Financial Perspective 2007-2013, the British rebate was the subject of lively debate: the Commission and the other Member States wished to abolish this arrangement and replace it with a general correction mechanism, especially as the arguments put forward at the time are no longer valid. The United Kingdom is now one of the most prosperous EU Member States, as a result of strong economic expansion in the past few decades and the enlargement of the EU to include Central and Eastern Europe, entailing the accession of ten relatively poor Member States; moreover, spending on agriculture has become relatively less important. As a result of a hard-fought compromise, it was decided that the United Kingdom would keep its correction mechanism but would gradually contribute

CHART 3 CONTRIBUTIONS TO THE EU'S OWN RESOURCES AND OPERATING BUDGETARY BALANCE OF THE MEMBER STATES

(Payments, 2004)



Source: EC.
(1) Taking account of the British rebate.
(2) Purchasing power parities, in thousand euro.

more towards the costs of the EU enlargement, up to a maximum of 10.5 billion euro over the entire period of the Financial Perspective.

The contribution of the Member States to the EU's own resources, expressed in relation to their GNI, averages 1.03 p.c. but Belgium and the Netherlands pay a larger contribution. These two countries collect indeed a relatively large amount of customs duties and agricultural duties, since a substantial proportion of Community imports enters the EU through their ports. The United Kingdom's contribution towards the EU budget is lower in relation to its GNI, on account of the special British rebate.

France and Italy bear the major part of the cost of that British rebate, in contrast to Germany, which receives a reduction on the rebate. Thus, the German contribution to the financing of the British rebate in 2006 was just 0.35 billion euro, only slightly more than the approximately 0.28 billion euro paid by Belgium. For the same reason, the Dutch share is smaller than Belgium's, at 0.075 billion euro. The ten new Member States also contribute towards financing the British rebate; the fact that these countries, which are all significantly poorer than the United Kingdom, help to pay for the British rebate is a major criticism of the system.

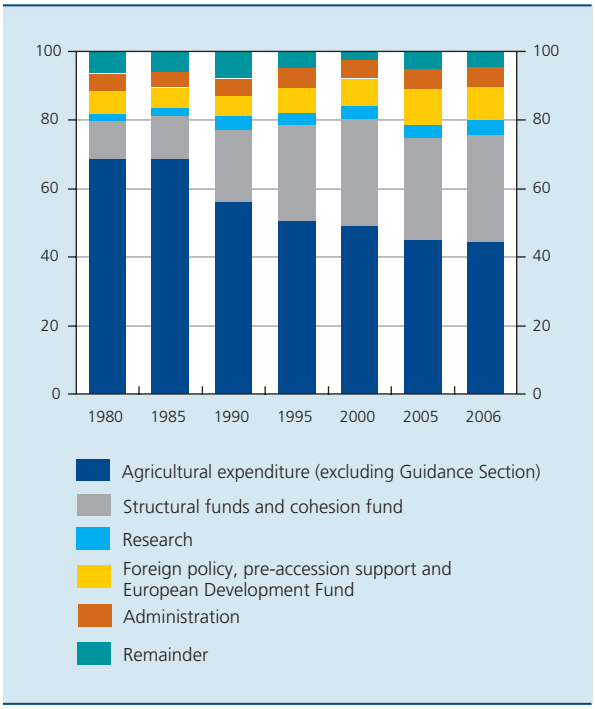
1.2.4 Expenditure

Over the past twenty-five years, the EU's expenditure has been concentrated primarily on:

- agriculture, financed by the "guarantee" section of the European Agricultural Guidance and Guarantee Fund (EAGGF); spending on price support and farm incomes has traditionally made up the bulk of EU expenditure, but the trend is clearly downward: in the early 1980s, this expenditure represented almost 70 p.c. of the total EU budget, but currently accounts for only 44 p.c.;
- the structural funds and the cohesion fund (SCF): the reduced expenditure on agriculture over the years was largely offset by higher spending via the SCF. The share represented by these funds has risen from around 11 p.c. in the early 1980s to roughly 31 p.c. in recent years;
- foreign policy: taking a broad definition of expenditure on foreign policy, e.g. by including in that category the expenditure under the pre-accession strategy and the European Development Fund (EDF), it now represents

CHART 4 STRUCTURE OF EU EXPENDITURE (1)

(Percentages of the total)



Source: EC.
(1) Payment angle.

10 p.c. of total expenditure, whereas in the early 1980s the figure was only about 7 p.c.;
- research and development: EU expenditure on research and development has risen from 2 p.c. to just over 4 p.c. of total expenditure;
- administration: in the past few decades, expenditure on the operation of the administration has made up a fairly constant proportion of the EU budget, at around 6 p.c.

In all, expenditure on agriculture and the SCF together has traditionally made up more than three-quarters of the EU budget. Furthermore, the main shifts in EU expenditure since 1980 have occurred in these two items, whereas the share of the other categories of expenditure has remained largely stable. The agricultural policy and the cohesion policy will therefore be described in more detail in section 2.

1.2.5 Net contributor and net beneficiary Member States

The "operating budgetary balances" – i.e., the difference between a Member State's contribution to the EU and the share of allocated expenditure it receives from the EU, hence excluding administrative expenditure – indicate that in 2004, the latest year for which data are available, the richest Member States were generally net contributors to the EU budget, although the size of their net contribution was not proportional to their relative income position (cf. chart 3). This is due to the United Kingdom's rebate and the fact that Member States with a relatively large number of farmers in their labour force (e.g. France) or with significant internal regional income inequality (Germany) receive relatively more from the EU budget via the CAP or the cohesion policy. The less wealthy EU-15 Member States, such as Spain, Greece and Portugal, are major net beneficiaries, principally via the SCF. All the new Member States are also net beneficiaries, notably the Baltic countries which are among the poorest Member States and receive a relatively large amount of support.

If the EU's administrative expenditure is attributed to the Member States where it is effected (the "budget balances"), that makes a significant difference for the two Member States which are home to most of the European institutions, namely Belgium and Luxembourg. These two countries then become net beneficiaries instead of net contributors to the EU budget. Belgium, in particular, opposed the use of the budget balance concept, especially in the context of the negotiations on the Financial Perspective 2007-2013, and put forward the following main arguments against the calculation of these budget balances:

- the salaries of officials paid in Brussels are not spent entirely in Belgium;
- this argument is particularly valid in the case of pensions, which are largely paid to officials who have left Brussels;
- the payment of salaries, rents, etc. represents compensation for the use of scarce factors of production, and is not the same as a free transfer.

More general arguments have been put forward against the calculation of the "operating budgetary balances" and "budget balances":
- the EU is based on solidarity, and it is inappropriate for each Member State to calculate its profit (the "fair return" principle) and to include this aspect in the budget debate;
- expenditure in one particular Member State may directly benefit another Member State, e.g. the construction of an airport in Greece by a German contractor;
- this attributable expenditure usually has indirect favourable effects on other EU Member States ("spillover"), e.g. by boosting imports.

2. The agricultural and cohesion policies

2.1 Agricultural policy

The CAP expenditure is financed by the European Agricultural Guidance and Guarantee Fund (EAGGF). This fund, set up in 1962, in the early years of the EU, comprises two sections:
- the Guarantee section of the Fund mainly finances expenditure on price support for agricultural products (the "common organisation of the agricultural markets") and the accompanying measures, particularly those concerning rural development and veterinary measures;
- The Guidance section finances the other expenditure on rural development, which is incorporated in the expenditure on the cohesion policy (cf. below).

During its existence, the CAP has undergone some major changes, and the modifications are continuing. Below is a very brief account of the key aspects of those changes.

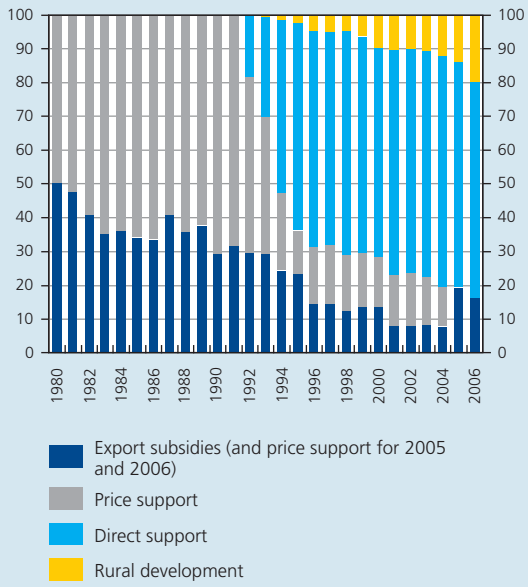
With the creation of the European Economic Community, the CAP acquired a very important role, notably in the context of a broad political agreement between Germany – which saw many advantages in the prospects of the customs union and single market – and France, which was pleased to transfer its generous agricultural support

to European level. The aims of the CAP as stated in the EU Treaty (Article 33) – namely to increase agricultural productivity and assure the security of supplies (an aim inspired by the food shortages following World War II), to ensure a reasonable income for farmers and to stabilise markets, as well as ensuring reasonable prices for consumers – were achieved for a number of decades via a system of minimum prices for most agricultural products combined with "Community preference", which means that high import duties and export subsidies kept the pricing of agricultural products within the EU's common market isolated from the world market.

The aim of self-sufficiency was achieved fairly quickly, and in the long run the price guarantees actually led to surpluses, which absorbed an ever-increasing share of the EU budget. Despite the milk lakes and butter mountains, European consumers still paid higher prices than those prevailing on the world market. (1) Moreover, in the World Trade Organisation (WTO), the agricultural policy brought the EU into conflict with other members such as the US, New Zealand, Australia and Canada, and took opportunities away from developing countries, especially those dependent on exports of agricultural products. Finally, people became increasingly concerned about the adverse environmental impact of excess production.

CHART 5 EU EXPENDITURE ON AGRICULTURE (1)

(Percentages of the total)



Source: EC.

(1) Actual payments up to 2004, credit appropriations for 2005 and 2006.

In these circumstances, the CAP has undergone systematic reform since the beginning of the 1990s. The blueprint produced by Commissioner Mac Sharry in 1992 laid the foundations for a new policy, centred on limiting output-linked price support and replacing it with more direct income support. This was intended to bring agricultural production more into line with market demand, and to reduce the surpluses. The "Agenda 2000" reforms – approved in 1999 at the Berlin European Council – were the logical continuation of this change of direction in agricultural policy, against the background of the impending EU enlargement and in anticipation of a new round of WTO negotiations. The enlargement represented a huge challenge for the CAP, in view of the still considerable share of the agricultural sector in the then candidate Member States. Finally, the 2003 reform (Luxembourg, 26 June 2003) introduced the principle of "decoupling", whereby direct income support or a single payment scheme was available on the basis of historical references without any link to production, subject to compliance with certain criteria concerning respect for the environment, food safety and other aspects ("cross-compliance"). This new scheme came into effect in 2005 for most of the EU-15 Member States, including Belgium, and subsequently for the other Member States as well. Ultimately, the aim is to reduce direct income support too, in favour of rural development and other general support measures. (2)

This reform of the CAP is reflected in the scale and structure of the expenditure. Not only, as already stated, is the CAP expenditure declining as a percentage of total EU expenditure, its composition is also changing. Up to 1991, the support consisted solely of export subsidies and market or price support, but from 1992 onwards this was increasingly replaced by direct support, with the addition of rural development aid from 1995. In recent years, price support and export subsidies together have accounted for less than one-fifth of total agricultural expenditure.

The extent to which the EU still protects its agriculture, even after these reforms, can be compared internationally on the basis of the surveys published regularly by the OECD (OECD, 2006), on the basis of the "Total Support Estimate", i.e. the sum of all the support received by agriculture in whatever form and for whatever purpose.

(1) Since the main food producing countries pursue a policy of self-sufficiency, the world markets in foodstuffs tend to be "residual" markets where surpluses are dumped. Consequently, the prices on those markets are not entirely in line with the operation of a free market.

(2) At the Brussels Summit of 24 and 25 October 2002, which resolved the last obstacles to enlargement, an agreement was concluded whereby the agricultural policy would remain unchanged up to 2006 in exchange for a ceiling on the growth of expenditure between 2007 and 2013 of no more than 1 p.c. per annum. Direct support for farmers in the new Member States was to be introduced as follows: 25 p.c. in 2004, 30 p.c. in 2005, 35 p.c. in 2006, and 40 p.c. in 2007, thereafter increasing by 10 p.c. per annum so that, by 2013, the new Member States would be receiving the same direct support as those of the EU-15.

TABLE 1 SUPPORT TO AGRICULTURE: AN INTERNATIONAL COMPARISON[1]

(Billions of euros, unless otherwise stated)

	Japan		EU		US	
	1986-1988	2003-2005	1986-1988	2003-2005	1986-1988	2003-2005
Financed by consumers	50.5	49.5	80.7	52.9	13.5	10.2
Financed out of taxes	12.9	14.3	25.0	68.4	46.4	75.5
Government revenues	–10.7	–13.1	–1.5	–0.6	–1.4	–1.5
Total	**52.7**	**50.7**	**104.2**	**120.6**	**58.6**	**84.2**
Percentage of GDP	2.36	1.35	2.77	1.23	1.35	0.87
	Canada		New Zealand		Australia	
	1986-1988	2003-2005	1986-1988	2003-2005	1986-1988	2003-2005
Financed by consumers	2.9	2.2	0.1	0.1	0.3	0.0
Financed out of taxes	4.0	4.4	0.5	0.2	1.2	1.6
Government revenues	0.0	0.0	0.0	0.0	0.0	0.0
Total	**6.9**	**6.6**	**0.5**	**0.3**	**1.6**	**1.6**
Percentage of GDP	1.77	0.80	1.71	0.38	0.82	0.32

Source: OECD.

(1) Measured on the basis of the "Total Support Estimate" concept, average over three years.

This support takes two forms: the part paid to the producer out of general resources – taxation – and the part financed implicitly by the consumer in so far as the agricultural policy involves relatively higher consumer prices. Government revenues generated by levies on agricultural products are deducted from this figure. This indicator has the advantage of being exhaustive and also permitting international comparison over time.

Comparison between two periods, namely 1986-1988 (before the CAP reform) and 2003-2005 (the most recent period for which statistics are available) for a number of major food producing and exporting countries reveals the following findings:

- total support is highest in Japan and the EU, whereas the agricultural policy in New Zealand and Australia is closest to a free market policy;
- the rate of total support (as a percentage of GDP) has fallen in all the countries mentioned, being cut by roughly half in Japan, the EU, the US and Canada. During the period considered, New Zealand made the most radical change of policy, drastically reducing its support for agriculture;
- in Japan and the EU, much of the support takes the form of "hidden" levies, primarily higher prices for consumers.

Given the high level of protection for the European agricultural sector in international terms, the question is to what extent the CAP has achieved its original objectives. Key factors in that connection are the trend in farm incomes and the extent to which food self-sufficiency has been assured by the CAP.

Measured on the basis of the total added value per full-time farm worker, the average farm income in the EU-15 has been volatile and, of course, that is largely due to fluctuating output and the volatility of certain prices, typical of the agricultural sector. Between 1993 (the year following the adoption of the Mac Sharry blueprint) and 1997, farm incomes increased systematically before levelling out. Overall, the increase between 1995 and 2003 averaged 0.5 p.c. per annum, much less than the average rise in all EU-15 incomes, which came to roughly 2 p.c. per annum. However, there were wide variations between countries: Belgium, Spain and Portugal were the countries where farm incomes showed the largest increase during that period, whereas Denmark, the Netherlands and the United Kingdom saw the sharpest decline. The reasons for these variations lie in the divergent production structures and epidemics such as "mad cow disease" (BSE) in the United Kingdom. Most of the new Member States also saw farm incomes decline during the period considered,

but since their accession in 2004, there has been a relatively steep increase in farm incomes, particularly in Poland, because the application of the EU guaranteed prices led to higher prices in those countries, and also because the direct income supplement is relatively significant there in relation to the low farm incomes.

The degree of self-sufficiency, defined as domestic production in relation to domestic consumption, has risen sharply. Immediately after World War II, the EU was still a net importer of many agricultural products, but nowadays it has long been self-sufficient in all the principal agricultural products. However, the question is to what extent that is due to the CAP, since the level of 100 p.c. self-sufficiency has been exceeded not only in the case of cereals, meat, milk, sugar and wine, which receive substantial aid under the CAP, but also for other agricultural and horticultural products.

2.2 Cohesion policy

As already explained, the financial resources assigned to the SCF represent a growing proportion of the EU budget. The accession of the new Member States has exacerbated the problem of income discrepancies and regional convergence within the EU, which would mean a growing need for finance for the SCF if the policy remains unchanged.

2.2.1 Objectives and instruments

Although the objective of greater cohesion between the Member States was endorsed right from the start of European integration,[1] one did not feel the urgent need at that time to provide explicit support for this aim via a regional policy, primarily because the founding members of the Union had already reached a relatively similar level of economic development. It is only since the 1980s, following the accession of a number of poorer, southern European countries (Greece in 1981, Portugal and Spain in 1986), that the EU has become increasingly concerned about its internal economic and social cohesion. While the creation of a single market held the promise of growing prosperity, there arose at the same time the question of how that prosperity would be shared among the various countries and regions. Following the Single European Act, the Treaty expressly included the aim of *reducing disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas* (Article 158 of the Treaty). This formed the basis for a genuine regional policy in the EU, conducted also via the structural funds and, since 1994, via the cohesion fund.

The structural funds are used for three priority intervention objectives under the Financial Perspective for the period 2000-2006 (also known as "Agenda 2000"):

1. the development and structural adjustment of regions whose development is lagging behind. These are regions where the average per capita GDP is below 75 p.c. of the European Union average;
2. support for the economic and social conversion of regions facing structural difficulties, other than those eligible for Objective 1 support;
3. all measures to promote employment – notably concerning training – except in regions eligible for Objective 1 support.

These tasks are divided among four structural funds:

- the European Regional Development Fund (ERDF) mainly grants support to backward regions and regions undergoing economic conversion (Objectives 1 and 2);
- the European Social Fund (ESF) is primarily concerned with the European employment strategy (covering the three objectives);
- the European Agricultural Guidance and Guarantee Fund (EAGGF), "Guidance" section, contributes to the development and structural adjustment of regions whose development is lagging behind (by augmenting the efficiency of the structures of production, processing and sale of agricultural and forestry products) and to the development of rural areas (mainly Objective 1);
- the Financial Instrument for Fisheries Guidance (FIFG), which is less important, supports structural changes in the fisheries sector (Objective 1).

In contrast to the structural funds, which are aimed at regions, the cohesion fund is intended to strengthen economic and social cohesion between the Member States. Only the Member States whose per capita GNI is less than 90 p.c. of the Union average qualify for financial support. This fund was set up in 1994 to make it easier for the poorer Member States to continue making up the leeway in terms of public infrastructure while at the same time satisfying the Maastricht criteria regarding public finances.

The Financial Perspective for 2000-2006 earmarks around 233 billion euro (at 2004 prices) altogether for the structural funds and the cohesion fund intended for the EU-15. Following the accession of the new Member States, that budget figure was increased by around 24 billion euro. Rather less than two-thirds of the total financing was

(1) The preamble to the Treaty of Rome (1957) refers to the desire "*…to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences existing between the various regions and the backwardness of the less favoured regions.*"

TABLE 2 STRUCTURAL FUNDS AND INSTRUMENTS PROVIDED BY THE FINANCIAL PERSPECTIVE 2000-2006

(Billions of euros[1], unless otherwise stated)

	Objective 1	Objectives 2 and 3	Cohesion Fund	Other	**Total**	*p.m. Resources in Financial Perspective 2007-2013 compared to those for 2000-2006 (percentage changes)*[3]
EU-15	150.1	50.9	19.7	12.6	**233.3**	*–27*
of which:						
Germany	22.0	8.8		1.9	**32.8**	*–17*
France	4.2	11.6		1.4	**17.2**	*–19*
Italy	24.4	6.9		1.4	**32.7**	*–11*
Netherlands	0.1	2.7		0.8	**3.6**	*–52*
Belgium	0.7	1.3		0.3	**2.3**	*–7*
p.m. So-called four "cohesion fund countries"						
Greece	23.1		3.4	1.0	**27.5**	*–19*
Spain	42.1	5.3	12.4	2.4	**62.1**	*–41*
Ireland	3.4		0.6	0.2	**4.2**	*–72*
Portugal	21.0		3.4	0.7	**25.1**	*–15*
New Member States[2]	15.0	0.3	8.5	0.7	**24.5**	

Sources: EC and Hennart F., Saintrain M. and Vergeynst T. (2006).
(1) 2004 prices for EU-15 and current prices for the new Member States.
(2) 2004-2006 for the new Member States.
(3) Estimate by the Ministry of the Walloon Region in Hennart F., Saintrain M. and Vergeynst T. (2006), table 16.

intended for Objective 1, while Objectives 2 and 3 and the cohesion fund each accounted for more or less one-tenth. The rest was intended primarily for financing Community initiatives and innovative actions via the INTERREG, URBAN, EQUAL and LEADER programmes. The Financial Perspective 2007-2013 specifies an amount of 308 billion euro (2004 prices) for the SCF.[1]

Since the end of the 1980s, in line with the cohesion policy objectives, most of the SCF resources have gone to the less prosperous regions in the south of the Union. Between 1989 and 1993, and between 1994 and 1999, all the regions of Greece, Ireland and Portugal met the criteria for structural support under Objective 1, as did large areas of Spain. Together, these four countries received around two-thirds of the resources allocated under Objective 1, the main component of the structural funds. During 2000-2006, the combined share of these four countries in the Objective 1 resources declined, partly because large regions of Ireland ceased to meet the criteria. Since the first half of the 1990s, Germany also received a substantial part of those resources, and Italy is also traditionally a major beneficiary of such funds. Moreover, up to 2003, Greece, Spain, Ireland and Portugal were the sole beneficiaries of the cohesion fund (they were known as the four "cohesion fund countries"). Since January 2004, Ireland has ceased to qualify; in contrast, all the new Member States which joined the EU in May 2004 meet the cohesion fund conditions. In the light of the criteria for the allocation of the resources, it looks as if the share of the former EU-15 countries in the SCF will decline sharply under the Financial Perspective 2007-2013, in favour of the new Member States, including Bulgaria and Romania. Thus, according to the estimates of the Ministry of the Walloon Region, published by the Federal Planning Bureau (Hennart et al., 2006), the overall budget for the SCF for the former EU-15 under the Financial Perspective 2007-2013 will be 27 p.c. less

(1) A part of these new resources is intended for "phasing out" measures, notably 4.1 p.c. for the EU-15 regions which, owing to the statistical effect of the new accessions, are no longer eligible for assistance under the Convergence objective (per capita GDP less than 75 p.c. of the EU-15 average but more than 75 p.c. of that of the EU 25), and 3.4 p.c. for degressive transitional support for the regions which come under the current Objective 1 and which, in 2007, owing to their economic progress, no longer qualify for the Convergence objective ("phasing in" under the Regional Competitiveness and Employment Objective).

than under the Financial Perspective 2000-2006. Belgium would see the smallest reduction, at roughly 7 p.c. These shifts imply a significant fall in the share of the former EU-15: having totalled around 90 p.c. of the SCF under the Financial Perspective 2000-2006, that share is expected to drop to some 50 p.c. under the Financial Perspective 2007-2013 (Grybauskaite, 2006).

2.2.2 Convergence within the European Union

These developments concerning the SCF raise the question whether the EU has indeed achieved greater convergence in income levels and – if so – what has been the role of financial support via the SCF. Convergence can be measured in various ways. For instance, the per capita GDP of a region or country can be compared with the average. If this is applied to the four former cohesion fund countries, it is evident that the difference between the average income in the former EU-15 and that of those four countries has declined considerably, overall, as the years have gone by[1], indicating a tendency towards convergence.

However, this change did not proceed steadily over time. Even before their accession to the Union, namely in the 1960s, the countries concerned, except Ireland, had caught up considerably, but their catching up slowed down significantly during the crisis of the 1970s. Following accession to the European Community (1981), Greece experienced a marked fall in its level of prosperity relative to the EU average. Only since the new millennium has Greece once again started to catch up. In contrast, in Spain and Portugal the accession to the European Community in the mid-1980s marked the start of an accelerated process of catching up. Finally, for Ireland the turning point did not come until the late 1980s. That country, which had been a member of the Union since as far back as 1973, had seen hardly any improvement in its relative income level for decades, but in the 1990s it became a leading growth centre, so that by 2005 its per capita GDP was actually a quarter above the EU average.

Formal accession was therefore evidently not an essential condition for growth to catch up, as is clear from the trend in incomes during the 1960s in three of the four countries mentioned above. Nor was accession to the Union sufficient to ensure convergence: indeed, the catching-up process accelerated in Spain and Portugal, but not in Ireland and Greece. However, it is also significant that the catching-up process in Spain, Portugal and Ireland since the end of the 1980s coincided with the growing importance of the structural funds in the EU budget.

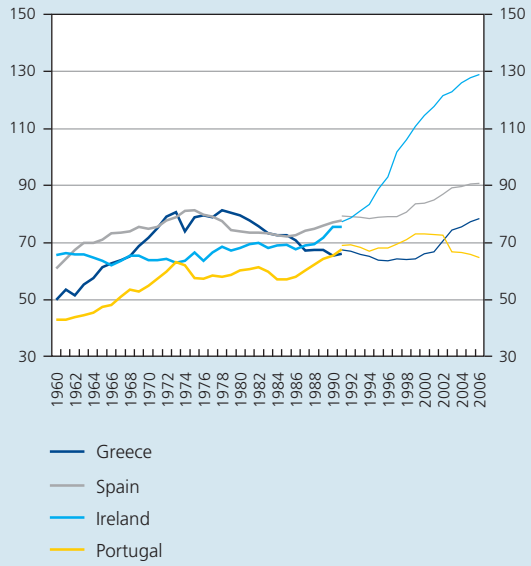
Looking at the allocation of incomes between the regions, it appears that, during recent decades, the trend towards convergence has often been less marked than at national level in the four cohesion fund countries. In that regard, it is sometimes referred to a certain "trade-off" between national and regional convergence: owing to the growth poles effects in the initial phases of growth, countries which are in a catching-up phase may encounter widening regional disparity. Also, some interregional disparities appear to be very persistent (EC, 2000; Ederveen et al., 2002).

2.2.3 Role of the structural funds and the cohesion fund in the convergence within the European Union

Opinions differ as regards the contribution of the cohesion policy towards the convergence of incomes between regions. Naturally, if the SCF are to have any long-term impact, these resources must be allocated efficiently to providing support for the production potential, e.g. by improving the infrastructure, upgrading the skills of the workers or by research and development, and they must not cause any distortion in the operation of the market. Those who are sceptical about the common cohesion policy believe that this is not always the case.

CHART 6 PER CAPITA GDP IN THE FOUR COHESION FUND COUNTRIES[1]

(Purchasing power parity, former EU-15 = 100)



Source: EC.

(1) There is a statistical break in the series in 1991.

(1) Throughout this section, per capita GDP is adjusted for variations in purchasing power. This adjustment is necessary because the level of prices in the less prosperous countries is normally below that seen in the wealthier countries.

For instance, they say that the financial support given to the former East Germany via subsidies excessively encouraged investment in sectors which are too capital-intensive in relative terms, and investments in buildings. These last investments did not favour productivity in the former East Germany. There is also the potential worry about "displacement effects": national governments receiving support for certain backward regions tend to scale down their planned national investments so that, in the end, nothing extra would be invested in those regions. The obligation to apply the principle of "additionality" indicates that the EU is aware of this danger.

These prior considerations underline the need for a direct evaluation of the macroeconomic effects of the cohesion policy. While studies based on macroeconomic models generally conclude, in this connection, that the SCF have a positive effect on the GDP of the beneficiary countries, econometric analysis – in contrast – does not permit clear conclusions.

In order to assess the macroeconomic effects of the SCF, the HERMIN model – based on an existing model for the Irish economy – was developed (ESRI, 2002). This model estimated the effect of the SCF support granted between 1994 and 1999 for various countries, including Ireland, Greece, Portugal and Spain. A distinction was made between the immediate short-term demand effects and the medium and long-term supply effects. Regarding the latter, close attention was paid to the possible external effects which may influence the economy, e.g. via an increase in factor productivity, particularly as a result of improvements to the infrastructure and better training for the labour force. However, the estimation of those effects requires a number of crucial assumptions, e.g. concerning the return on the funds invested in education and training. In the case of the four cohesion fund countries, these simulations revealed a positive combined effect of the SCF on the GDP of the beneficiary countries between 1994 and 1999. That is not really surprising, since, according to that model, financial aid also has a direct effect on GDP via demand. Taking account of the amount of the financial resources used, the estimated relative increase in GDP resulting from the SCF, viewed cumulatively over the years 1994 to 1999, was considerably greater for Ireland than the funding granted as a percentage of GDP. In Spain and Portugal, the cumulative multiplier calculated in this way came to about 1, but in Greece it was only about two-thirds. Considered over a longer period, namely from 1994 to 2010, during which supply effects may also be reflected in additional growth after the funding has ceased, it is estimated that the SCF aid to Ireland will have been recouped about three times. In Portugal and Spain, this long-term multiplier comes to roughly 2.5 and 2 respectively, but in Greece it would only be just over 1, even after 17 years.

The HERMIN model was also used to produce an ex ante estimation of the macroeconomic effects of the SCF in 2000-2006 for a number of countries, including the four cohesion fund countries. Once again, the results point to positive joint demand and supply effects. The ex ante estimation based on the European Commission's QUEST II model also reveals positive combined demand and supply effects, but they are considerably smaller because of significant differences in the basic assumptions. The QUEST II estimates nonetheless confirm that supply side effects are created in the longer term, which would be roughly of the same magnitude as the effects estimated on the basis of the HERMIN model (EC, 2000).

Ex ante estimates were also produced using the HERMIN model for the reform of the cohesion policy under the new Financial Perspective 2007-2013. According to these estimates, the GDP of some of the new Member States and accession candidates would be around 10 p.c. greater, or even more, in 2013 than without the SCF support (Bradley and Morgenroth, 2004). Thus, the money invested under the new cohesion policy would be recouped 1.5 or 2 times in most of the new Member States during the financing period 2007-2013, and – considered over 2007-2020, i.e. a period ending several years after the end of the financing period – the multiplier would actually be 2.5 or more. However, in the former East Germany, the Italian Mezzogiorno and particularly in Greece, the long-term return on the SCF would be considerably lower.

Other macroeconomic models developed for particular Member States also often arrive at the conclusion that the EU's cohesion policy makes a significant contribution to growth and employment in the beneficiary countries. Yet the results of econometric research, which is less dependent on the initial basic assumptions, present a mixed picture: some studies point to positive but sometimes modest effects, while others indicate insignificant or even negative results (Ederveen et al., 2002). There are also considerable variations between countries and regions. A frequent conclusion is that the effectiveness of the SCF depends very much on a number of basic conditions, which means that the regional policy would be mainly beneficial in an environment conducive to growth. In this regard, Ederveen et al. (2002, 2006) conclude that regional aid produces positive effects primarily in open economies such as Ireland, whereas closed economies would gain far less from it.

The appraisal of the SCF is therefore not unanimously positive. Increasing the impact of the current European cohesion policy represents a major challenge. The fact that the European institutions have recognised the need to reorganise the SCF is clear from the reform of the cohesion policy specified in the new Financial Perspective 2007-2013, to be discussed in more detail below. However, it is by no means certain that those changes will be sufficient, and it is vital to continue the constant assessment of the cohesion policy.

3. The Financial Perspective 2007-2013

The initial version of the Financial Perspective for 2007-2013 – the fourth in the series – was presented to the European Parliament in February 2004 by the then President of the Commission, Romano Prodi. As already mentioned, the Financial Perspective reflects the general stance of EU policy over a fairly long period – currently 7 years – and determines the maximum amount per heading for each annual budget. The expenditure is allocated within each heading, at the time of the annual budget round. Hereafter, the EC's original proposal is first discussed. Since this proposal was not greeted with equal enthusiasm by all the Member States, the Luxembourg Presidency arrived at a compromise in mid-2005 which the European Council subsequently approved, in slightly modified form, under the British Presidency in December 2005. This agreement is explained in section 3.2. The final section describes the Interinstitutional Agreement concluded between the EC, the Council and the European Parliament on 17 May 2006.

3.1 The Commission proposal

The proposal by the European Commission "Building our common future" (EC, 2004) defined three priorities[1]:

- *promoting sustainable development*. This refers primarily to the Lisbon Strategy (European Council, 2000) which aims to make the EU a leading knowledge-based economy. In addition, the cohesion policy must focus more than in the past on pursuing the objectives of that strategy since a properly targeted approach in this area will mobilise the Union's unused potential. Finally, natural resources require sustainable management. The new agricultural policy is to implement this by breaking the link between support and production;
- *citizenship, freedom, security and justice*. The second priority implements the conclusions of the Tampere European Council in 1999, which gave the EU more powers over immigration and asylum policy and in regard to the fight against crime and terrorism;
- *the EU in the world*. The third priority aims to allow the EU to play a greater role as a regional leader and as a global partner. This should bring the Union's political clout more into line with its economic importance.

In order to achieve these ambitious objectives in an enlarged Union, the Commission suggested gradually increasing the expenditure commitment, raising it to 1.23 p.c. of GNI by 2013. For comparison, approximately 1.11 p.c. of GNI was scheduled for 2006 (excluding the EDF expenditure; this had been included in the Commission proposal for 2013, but the Council and the European Parliament had later excluded it from the budget). The expenditure would thus remain within the absolute ceiling on the own resources with due regard, on the one hand, for existing commitments and the likely challenges ahead in respect of agricultural financing and the cohesion policy, resulting from the recent enlargement and that planned for the future, and on the other hand for the consensus achieved at the highest political level concerning the new impetus to be given to the Lisbon strategy. In addition, the Commission suggested to abolish the special rebate on the British contribution and replace it with a generalised correction mechanism guaranteeing all the poorer Member States a partial rebate.[2]

To highlight these priorities, the European Commission changed the current expenditure headings into the following categories:

1. Sustainable growth, divided into two sub-headings:
   1a: Competitiveness for growth and employment
   1b: Cohesion for growth and employment

2. Preservation and management of natural resources:
   - agriculture market-related expenditure and direct payments;
   - preservation and management of natural resources, excluding the CAP

3. Citizenship, freedom, security and justice

4. The EU as a global partner

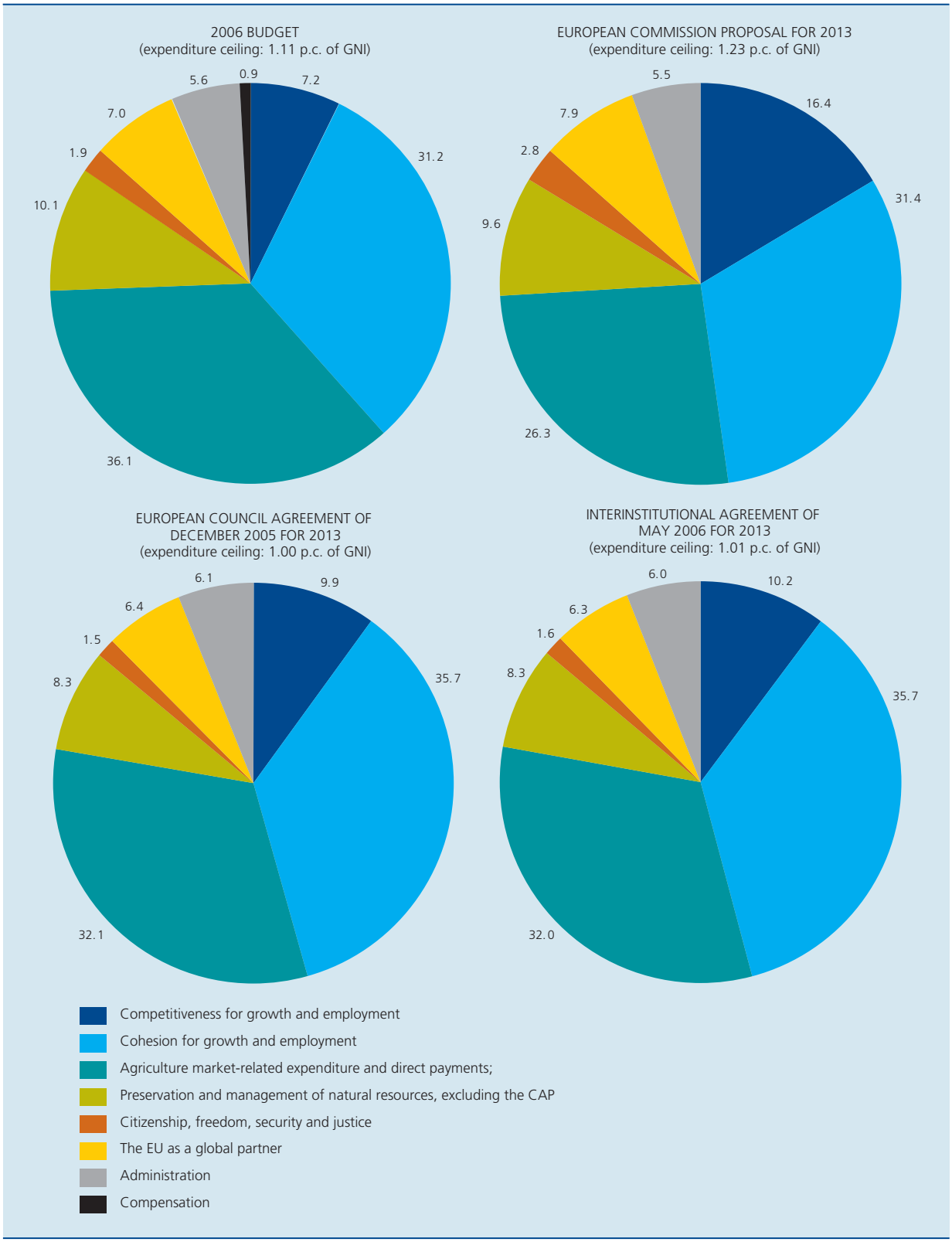
5. Administration

(1) These three priorities refer in fact to the "three pillars" of the EU as laid down in the Maastricht Treaty: the European Communities (economic affairs, EMU, etc.), the Common Foreign and Security Policy, and Justice and Home Affairs, although the European Commission reverses the order of the last two.

(2) The principle of a generalised correction had already been accepted at the European Summit in Fontainebleau (1984): "… any Member State sustaining a budgetary burden which is excessive in relation to its relative prosperity may benefit from a correction at the appropriate time." However, this principle has hitherto only been partially applied.

CHART 7 COMPARISON OF THE EXPENDITURE BREAKDOWN: 2006 BUDGET, COMMISSION PROPOSAL, EUROPEAN COUNCIL AGREEMENT AND INTERINSTITUTIONAL AGREEMENT FOR 2013 (1)

(Percentages)



Sources: EC, Council of the European Union.

(1) Commitment appropriations, 2004 prices. All expenditure on administration was concentrated under the heading of that name, not divided among the other headings as was done by the Commission in its proposals; the EDF expenditure was also excluded, for ease of comparability.

The most notable development was the growing importance assigned by the Commission to expenditure on "Competitiveness for growth and employment" (Lisbon agenda), an item which would have expanded from 7 p.c. of the total commitment appropriations in 2006 to over 16 p.c. in 2013. This increase was at the expense of the amount allocated to agriculture, except for the expenditure on protecting the environment, i.e. in broad terms the price and income support, down from approximately 36 p.c. of total spending to around 26 p.c.

The "Cohesion for growth and employment" heading, though larger in absolute terms, was set to remain constant at around 31 p.c. of the total commitment appropriations. As already stated, the European Commission proposed a reform of the cohesion policy via the Financial Perspective 2007-2013. The aim is to focus the measures more on the Union's strategic guidelines (Lisbon strategy and employment strategy), concentrating them on the least favoured regions and stepping up their decentralisation, making their implementation simpler, more transparent and more effective. To that end, the current three priorities will be replaced by the following objectives: "Convergence" (around 79 p.c. of SCF resources) – the aim being to accelerate the economic convergence of the least developed regions, particularly those with per capita GDP below 75 p.c. of the EU average following enlargement, and therefore close to the current Objective 1 –, "Regional competitiveness and employment" (around 17 p.c.), and "European territorial cooperation" (around 4 p.c.). The existing financial instruments will also be reduced to three, namely the ERDF, the ESF and the Cohesion Fund.

The share of the item "Preservation and management of natural resources, excluding the CAP" is down slightly in percentage terms, but higher in millions of euros, whereas the expenditure on "Citizenship, freedom, security and justice" and "The EU as a global partner" is increased in percentage terms.

3.2 The European Council agreement of December 2005

The Commission proposals were greeted with scepticism by almost all the Member States:

- the proposed increase in the budget encountered resistance from the six Member States which contribute most to the EU budget, namely Germany, France, the Netherlands, Austria, the United Kingdom and Sweden;
- the United Kingdom opposed the introduction of a generalised correction mechanism;
- France, in common with some other Member States, considered it very important to maintain the agricultural expenditure at a higher level than that proposed by the Commission;
- the redistribution of the SCF, intended for the poorest Member States, was criticised by a number of countries, including Belgium, which advocated a broad "phasing out" of the SCF over a long period.

The Luxembourg Presidency during the first half of 2005 suggested a compromise, but in the last instance it was rejected. However, the United Kingdom, which held the presidency during the second half of 2005, ultimately felt obliged to put forward a proposal which was not all that different from the Luxembourg compromise, except that the level of expenditure was lowered again slightly and many ad hoc elements were added which, though conducive to political agreement, made the Financial Perspective less transparent. In December 2005 the European Council concluded the following agreement:

- the expenditure ceiling was set at 1.045 p.c. of GNI for commitment appropriations and 0.99 p.c. of GNI for payment appropriations (on average for 2007-2013), excluding the EDF, which was separated from the budget (the EDF represents around 0.02 p.c. of GNI). In 2013, the final year of the Financial Perspective, the commitment appropriations would amount to just 1 p.c. of GNI, thus meeting the demand of the six largest net contributors;
- the allocation of the expenditure was revised in the direction of the existing expenditure structure: more spending on agriculture and the SCF than in the Commission proposal, and less spending on the implementation of the Lisbon objectives ("Competitiveness for growth and employment");
- the expenditure cuts were allowed partly by reducing expenditure on rural development, which is one reason for the Flemish Region's critics on the agreement;
- compared to the Commission proposal, the SCF is somewhat less concentrated on the new Member States, and the apportionment is more in line with the current allocation. In addition, a long "phasing out" period is provided in the case of the regions and Member States which would cease to satisfy the criteria for granting aid in the enlarged Union (Hainaut, for example);
- the British rebate is retained, but will be gradually reduced between 2009 and 2011 as regards the British financing of the costs of EU enlargement (the British nonetheless keep their rebate in respect of the CAP expenditure);
- while the uniform "call rate" for the VAT resource is set at 0.30 p.c., Austria, Germany, the Netherlands and Sweden receive a reduction in their VAT contribution;

an additional lump sum reduction is also granted to the last two countries in respect of their share in the fourth resource. Overall, the Netherlands gains the most from the revision of the own resources decision, since its contribution is down by an average of 22 p.c. per annum, or almost 1 billion euro (Federal Planning Bureau, 2006);
– a fundamental revision of the EU budget expenditure and revenue is planned for 2008-2009, which should permit renewed discussion of all the components of Community expenditure (including the CAP) and the British rebate.

3.3 The Interinstitutional Agreement

The Financial Perspective approved by the European Council came in for sharp criticism from the European Parliament, one reason being the small size of the budget and the fact that insufficient was done for the Lisbon objectives. In that sense, the European Parliament defended the Commission's original proposal. Following tough negotiations between the European Parliament on one side and the Council and the Commission on the other, a compromise was reached on 4 April 2006, after which a new Interinstitutional Agreement was signed by the three parties on 17 May. This differs from the December 2005 agreement on the following points:
– the expenditure ceiling is raised by 2 billion euro; a further 2 billion euro is released from the "Emergency Aid Reserve" by keeping emergency aid to developing countries out of the Financial Perspective, and by cutting expenditure on administration. The European Parliament can thus state that it has increased the total EU expenditure for 2007-2013 by 4 billion euro, half of that being spent on the Lisbon objectives, while the European Council only had to agree to increase the expenditure from 1 p.c. of GNI to 1.01 p.c. in the year 2013. The European Investment Bank also undertook to co-finance new financial instruments up to a maximum of 2.5 billion euro for expenditure relating to the Lisbon objectives;
– greater flexibility is built in for unforeseen expenditure, by increasing the maximum amount spent by a number of funds which are not subject to the expenditure ceiling, such as the "Solidarity Fund" (which supports EU Member States affected by a disaster) and the "Emergency Aid Reserve" already mentioned, and by creating the "European Globalisation Adjustment Fund" (which is meant to assist EU Member States affected by the impact of globalisation).

Conclusion

The EU budget has a number of specific characteristics which make it different from the budgets of the Member States: in principle, it must never be in deficit, and there is a special decision-making procedure, in which the European Parliament does not have full power. The structure and maximum expenditure are specified for a 7-year period in the Financial Perspective; that for 2007-2013 was approved in May 2006. In relation to GDP and national budgets of the Member States, the EU budget is small, but it has grown over the years and recently stabilised at around 1 p.c. of GNI. Import levies and VAT-based transfers from the Member States are becoming less important as the source of finance for this expenditure, which is increasingly funded on the basis of the size of each Member State's GNI. The United Kingdom receives a special rebate. The poorer Member States are all net beneficiaries of the EU budget, while the richer countries are net contributors; however, if the EU's administrative expenditure in Belgium and Luxembourg is added to what those countries receive from the EU, then they become both net beneficiaries.

Historically, the Common Agricultural Policy was the largest EU expenditure item, but its importance is steadily diminishing in favour of expenditure on the cohesion policy. Since the beginning of the 1990s, a start has been made on a fundamental reform of the CAP, culminating in the 2003 decisions whereby support for farmers became more and more decoupled from production. European agricultural prices are also increasingly moving into line with world market prices.

Financial resources earmarked for the structural funds and the cohesion fund have significantly increased and now exceed 30 p.c. of the EU budget. The growth of per capita GDP in the four former 'cohesion fund countries' compared to the EU average suggests some tendency towards economic convergence in the Union. However, opinions differ on the contribution made by the cohesion policy towards income convergence between regions, and a significant challenge lies ahead in augmenting the impact of the current European cohesion policy.

The Commission's proposals regarding the Financial Perspective for 2007-2013 entailed an increase in expenditure to 1.23 p.c. of GNI by 2013, and placed the emphasis on sustainable development, with a steep rise in expenditure on the attainment of the Lisbon objectives. However, these proposals went too far for the Member States; protracted negotiations at European Council level led to a compromise in December 2005, setting an expenditure ceiling of 1 p.c. of GNI in 2013 and realigning

the allocation of funds more closely with the current spending structure.

Following difficult negotiations with the European Parliament, a new Interinstitutional Agreement was signed on 17 May 2006, which meant a slight raising of this ceiling and built more flexibility into the expenditure. It was also agreed to conduct a fundamental debate in 2008-2009, primarily on the expenditure relating to the agricultural policy and the correction mechanisms for certain Member States, in order to prepare for a radical reform of the next Financial Perspective.

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Summaries of articles

Globalisation and monetary policy

Globalisation, which has been accelerating since the mid nineties, has triggered important economic changes. The article deals with three possible consequences of globalisation which might be relevant for monetary policy. Possible implications for the conduct of monetary policy are also discussed.

The driving force behind the observed low and stable inflation seems to be the enhanced conduct of monetary policy, rather than globalisation. Nevertheless, the emergence of low-cost countries implies some major relative price shifts as commodity prices increase and prices of manufactured goods decline in relative terms. Although neutral in the long run, these relative price changes might pose a challenge for monetary policy, as globalisation is an enduring phenomenon. Therefore, monetary policy analysis should now, more than ever, be based upon a broad range of information and indicators, from which both downward and upward risks to price stability can be inferred.

The globally observed flattening of the Phillips curve can be explained by both better monetary policies and structural economic changes, such as globalisation. This flatter Phillips curve would suggest that, in terms of output losses, the short-term costs of disinflation are higher. Given that the flattening of the Phillips curve results from better monetary policies, and that globalisation dampens the inflationary impact of cost push shocks, this finding must be qualified however.

Global financial integration partly explains the increased international synchronisation of long term interest rates. At the same time, a weaker correlation between policy rates and longer term interest rates can be observed. These findings suggest that the traditional interest rate channel has become less effective. Given that better anchored inflation expectations are the main reason for this weakening link, one can qualify this finding too. Moreover, communicating information on the economic and monetary analysis can be an important additional tool to steer longer term market interest rates.

JEL code: E31, E43, E58, F15.

Key words: globalisation, monetary policy, Phillips curve.

Inflation persistence in Belgium

The article deals with inflation dynamics in Belgium, and in particular the degree of inflation persistence. It also presents a historical perspective in order to determine whether the statistical properties of the inflation process have changed over time.

The analysis revealed significant changes in inflation dynamics over the past thirty years. First, inflation fell sharply in the mid 1980s, and this downward movement was common to all components of the national consumer price index, except services, where the decline in inflation was much more gradual. Next, the analysis showed that, under the current monetary policy regime, the degree of aggregate inflation persistence is relatively modest. The results also showed that the degree of persistence has diminished somewhat over time, presumably because of changes in the wage formation process.

Finally, the study showed that the present findings are broadly similar to those recorded in the euro area, which suggests that the Eurosystem's monetary policy is appropriate to the Belgian economy.

JEL Code: E31, C12, C22

Key words: inflation, inflation persistence, monetary policy

The role of equities in corporate finance in Belgium

Share issues are a significant source of finance for non-financial corporations in Belgium. Between 1995 and 2005, they represented around 32 p.c. of the cumulative new liabilities of non-financial corporations. Share issues are therefore the second most important source of finance, the first being non-bank credit, which accounts for 51 p.c. of the total. Share issues are a much more important source of funding than bank credit and issues of fixed-income securities. Unquoted shares represent the major part of this, namely 27 p.c., mainly because of the high level of foreign direct investment. Quoted shares represented only 5 p.c. of the cumulative new liabilities of non-financial corporations during the period 1995-2005.

An empirical analysis of the determinants of the capital structure highlights the fact that quoted companies having more intangible fixed assets are more inclined to opt for equity financing. Conversely, other factors, such as the company's debt level, size and internal resources have a negative influence on equity financing.

The timing of the use of this type of financing depends partly on macroeconomic factors such as real and financial investments of the corporations. The cost of capital may also be regarded as a key determinant of the use of equity financing over time. Substantial issues were recorded during the period 1999-2001 and from mid 2005 onwards. These developments coincided with either a cost of capital well below its long-run average or a movement in the cost of capital which was more favourable than the price of alternative sources of finance. The recent government measure aimed at allowing the deduction of notional interest charges could also give a substantial boost to new share issues.

JEL Code: G12, G3, G32.

Key words: capital structure, corporate finance, equities.

Notable trends in the EU budget

The European Union budget has a number of specific characteristics which make it different from the budgets of the Member States: in principle, it must never be in deficit, and there is a special decision-making procedure. The structure and maximum expenditure are specified for a 7-year period in the Financial Perspective.

In relation to GDP and national budgets of the Member States, the EU budget is small. It is increasingly funded on the basis of the size of the gross national income of each Member State whereas import levies and VAT-based transfers from the Member States are becoming less important. The United Kingdom receives a special rebate.

The importance of the Common Agricultural Policy, historically the largest EU expenditure item, is steadily diminishing in favour of expenditure on cohesion policy. Since the beginning of the 1990s, the Common Agricultural Policy has undergone a radical reform. Opinions differ on the contribution made by the cohesion policy towards income convergence between regions in the EU.

The Commission's proposals regarding the Financial Perspective for 2007-2013 embodied an important increase in expenditure and placed the emphasis on the attainment of the Lisbon objectives. Protracted negotiations at European Council level led to a compromise in December 2005 and following difficult negotiations with the European Parliament, a new Interinstitutional Agreement was signed on 17 May 2006.

JEL Code: F15, H10, H 77, Q18, R58

Key words: European Union, EU budget, Financial Perspective, Common Agricultural Policy, Cohesion policy

Abstracts of the working papers series

85. Firm-specific production factors in a dynamic stochastic general equilibrium model with Taylor price setting, by de Walque G., Smets F. and R. Wouters, June 2006.

The paper compares the Calvo model with a Taylor contracting model in the context of the Smets and Wouters (2003) dynamic stochastic general equilibrium (DSGE) model. In the Taylor price setting model, the authors introduce firm-specific production factors and discuss how this assumption can help to reduce the estimated nominal price stickiness. Furthermore, they show that a Taylor contracting model with firm-specific capital and sticky wage and with a relatively short price contract length of four quarters is able to outperform, in terms of empirical fit, the standard Calvo model with homogeneous production factors and high nominal price stickiness. In order to obtain this result, very large real rigidities either in the form of a huge (constant) elasticity of substitution between goods or in the form of an elasticity of substitution that is endogenous and very sensitive to the relative price are needed.

86. Economic importance of the Belgian ports: Report 2004, by F. Lagneaux, June 2006.

The paper is an annual publication prepared by the Microeconomic Analysis unit of the National Bank of Belgium. (1)

The Flemish maritime ports – Antwerp, Ghent, Ostend, Zeebrugge – and the Autonomous Port of Liège play a major role in their respective regional economies and in the Belgian economy, not only in terms of the industries they encompass but also as intermodal centers where transshipment and industrial activities are concentrated.

The current paper provides for the first time an extensive overview of the economic importance and development of the Flemish maritime ports together with the Liège port complex in 2004. The results for the rest of the period 1999-2003 have also been updated. Focusing on the three major variables of value added, employment and investment, the report provides some information about the financial situation of several vital sectors in each port. A global indication concerning the financial health of the companies studied is also provided, using the NBB bankruptcy prediction model. In addition, it includes figures with respect to the ongoing growth of several cargo traffic segments and provides an overall picture of socio-economic developments in the ports.

(1) Update of F. Lagneaux (2005), *Economic importance of the Flemish maritime ports: Report 2003*, NBB, Working Paper No. 69 (Document series) and F. Lagneaux (2005), *Importance économique du Port Autonome de Liège: Report 2003*, NBB, Working Paper No. 75 (Document series).

Annual accounts data from the Central Balance Sheet Office were used for the calculation of direct effects, the study of financial ratios and the analysis of the social balance sheet. The indirect effects of the activities concerned were estimated in terms of value added and employment, on the basis of data from the National Accounts Institute.

2004 was an excellent year for the Flemish maritime ports as a whole, in terms of the quantity of handled cargo and the value added produced. But the employment situation was more mixed, and private investment dropped. The ongoing developments in the maritime ports sector and in the world economy are having a dramatic impact on the operations of the Flemish ports, which have to deal with the global trend of increasing international competition, expansion and dispersion of foreign trade, capital concentration, privatisation and vertical integration of port logistic services, increase in containerised shipments, and so forth. At the same time, as major logistic centres, they have to face a dual challenge : increasing demand in terms of capacity, and the necessity to add value to the goods passing through them. By doing so, they pursue one goal : withstanding the climate of increasing regional and international competition, not only within the Hamburg – Le Havre range but also from Asian markets.

The port of Liège, still the second largest inland port in Europe, is striving to turn a threat into an opportunity. Although the Cockerill Sambre blast furnaces are being closed, that is creating new space and the overall Liège port complex is being restructured. In spite of this climate of uncertainty, the main goal of the Autonomous Port of Liège is to establish itself as a major logistic centre in the region, able to attract new businesses. In the meantime, the short-term impact on employment is negative, as direct employment decreased substantially in 2004, whereas value added and investment made up for the ground lost in 2003.

87. The response of firms' investment and financing to adverse cash flow shocks : the role of bank relationships, by Fuss C. and Ph. Vermeulen, July 2006.

The authors test whether firms with a single bank are better shielded from loss of credit and investment cuts in periods of adverse cash flow shocks than firms with multiple bank relationships. Their estimates of the cash flow sensitivity of investment show that both types of firms are equally subject to financing constraints that bind only in the event of adverse cash flow shocks. In these periods, firms incur lower cuts in investment expenditures when they can obtain extra credit. In periods of adverse cash flow shocks, the probability of obtaining extra bank debt becomes more sensitive to the size and leverage of the firm.

88. The term structure of interest rates in a dynamic stochastic general equilibrium model, by M. Emiris, July 2006.

The paper evaluates the implications of the Smets and Wouters (2004) DSGE model for the US yield curve. Bond prices are modelled in a way that is consistent with the macro model and the resulting risk premium in long term bonds is a function of the macro model parameters exclusively. When the model is estimated under the restriction that the implied average 10-year term premium matches the observed premium, it turns out that risk aversion and habit only need to rise slightly, while the increase in the term premium is achieved by a drop in the monetary policy parameter that governs the aggressiveness of the monetary policy rule. A less aggressive policy increases the persistence of the reaction of inflation and the short interest rate to any shock, reinforces the covariance between the marginal rate of substitution of consumption and bond prices, turns positive the contribution of the inflation premium and drives the term premium up. The paper concludes that by generating persistent inflation the presence of nominal rigidities can help in reconciling the macro model with the yield curve data.

89. The production function approach to the Belgian output gap : Estimation of a multivariate structural time series model, by Ph. Moës, September 2006.

A multivariate structural time series model is applied to the factor inputs of a production function (or components thereof) to estimate the Belgian output gap. The usefulness of capacity utilization is also investigated but the variable is not given a prominent status. The number of independent cycles – there may be more than one – and the frequencies retained in the cycles are not restricted a priori. To allow for leads and lags between variables, phase shifts à la Rünstler are introduced at a later stage. Additivity of leads and lags is not imposed. Over 1983-2004, a 3.5 years periodicity is found in the cycles. At that periodicity, the cycles in the participation and unemployment rates are negligible. Two independent cycles hide behind the cycles of the other variables : hours, total factor productivity and capacity utilization. A common cycle restriction is rejected, even allowing for idiosyncratic cycles. The cycles present in the whole data set cannot be subsumed in a single measure such as capacity utilization. Phase shifts are significant, with hours leading by as much as 3 quarters and capacity utilization lagging but additivity of leads and lags is rejected. The resulting output gap has much in common with the NBB business survey indicator.

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

BIS	Bank for International Settlements
BFIC	Banking, Finance and Insurance Commission
BSE	Bovine spongiform encephalopathy (mad cow disease)
CAP	Common Agricultural Policy
COE	Cost of Equity
CPI	Consumer Price Index
EAGGF	European Agricultural Guidance and Guarantee Fund
EC	European Commission
ECB	European Central Bank
EDF	European Development Fund
EMU	Economic and Monetary Union
ERDF	European Regional Development Fund
ESF	European Social Fund
ESRI	Economic and Social Research Institute (Ireland)
EU	European Union
EU-15	European Union excluding the ten countries which joined in 2004
FIFG	Financial Instrument for Fisheries Guidance
FPS	Federal Public Service
GDP	Gross Domestic Product
GNI	Gross National Income
HICP	Harmonised Index of Consumer Prices
HWWA	Hamburgisches welt-wirtschafts archiv
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IPN	Inflation Persistence Network
LBO	Leveraged buy-out
NACE	EC nomenclature of economic activities
NBB	National Bank of Belgium
NCB	National Central Bank

OECD	Organisation for Economic Cooperation and Development
OLOs	Linear bonds
OLS	Ordinary least squares
ROE	Rate of return
SCF	Structural funds and cohesion fund
SITC	Standard International Trade Classification
SMEs	Small and Medium-sized Enterprises
VAT	Value Added Tax
WTO	World Trade Organisation

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