

Deflation, a demon from the distant past or a real danger now?

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Introduction

This article examines to what extent deflation is currently a real danger for the euro area, and on that basis, what are the policy implications of that analysis. When it became clear, from September 2008, that the worsening financial crisis would have a significant impact on the real economy, both policy-makers and a broader public increasingly asked whether the economy of not just the euro area but also of other industrial countries was heading for deflation. Parallels were repeatedly drawn between the current crisis and the Great Depression of the 1930s. Moreover, during the summer of 2009, a number of countries recorded negative inflation.

This article is structured as follows. The first section notes that deflation is not an unknown phenomenon in economic history, at least not when defined in broad terms, i.e. simply as the observation of negative inflation, or a decline in the general price level, which amounts to the same thing. It also stresses the importance of distinguishing between deflationary periods on the basis of both the underlying shock which caused the deflation and the pattern of economic activity during the various deflationary periods. In fact, the broad definition of deflation, the original starting point, is thus modified to arrive at various types of deflation, namely benign deflation, as opposed to various degrees of harmful deflation. Since the term deflation often has negative connotations, it seems that benign forms of deflation are generally disregarded in practice, as it is specifically the harmful forms of deflation that present a serious challenge for policy. They are discussed in more detail in the second section of this article which, more

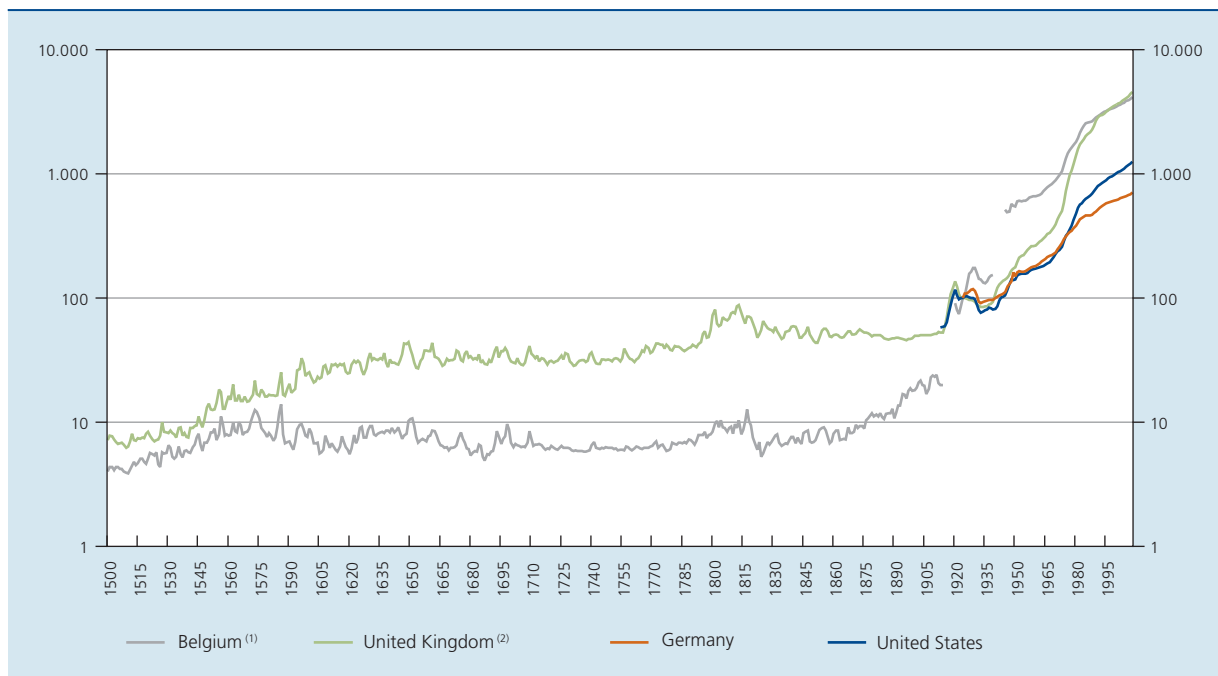
specifically, explains why they cannot be regarded simply as inflation with a negative sign. Indeed, harmful deflation appears to trigger specific economic mechanisms which may lead to a downward spiral in both the price level and economic activity. These mechanisms are attributable mainly to the existence of one or other form of downward nominal rigidity. Section 3 assesses the risk of harmful deflation in the current European context, beginning with an analysis of the recent trend in inflation. Next it examines inflation expectations – which are a key factor in the development of a deflationary spiral – and then, as in the IMF studies, considers not only price movements themselves but also a broader range of indicators. Section 4 discusses the policy options in a deflationary environment. Section 5 sets out the conclusions.

1. Deflation, an old acquaintance

In the period since the 1970s when inflation was a significant destabilising factor for the economy, and monetary policy was aimed at controlling rising inflation and inflation expectations, the subject of deflation received only sporadic attention. However, economic history since the Middle Ages teaches us that deflation has occurred fairly frequently, at least if it is defined in the broad sense – as already mentioned in the introduction – as the simple observation of falls in the general price level (negative inflation). That is inextricably linked to the prevailing monetary policy system, because the restrictions imposed by monetary policy systems which were tied to stocks of gold and silver – as was explicitly the case at the time of the gold standard – were a major contributory factor in

CHART 1 PRICE LEVELS THROUGHOUT THE CENTURIES

(indices 1924 = 100, logarithmic scale)



Sources : Bureau of Labor Statistics, International Institute of Social History, Office of National Statistics, Statistisches Bundesamt, NBB.

(1) Up to 1912 this is a consumer price index for the city of Antwerp. During the two world wars no index figure was calculated.

(2) Up to 1801 this is a consumer price index for the city of London.

the high frequency of falling prices. Sometimes there was a surge in demand for money, e.g. owing to technological changes or population growth, while the money supply was largely fixed. Conversely, the discovery of new gold and silver reserves drove prices upwards. In the early 20th century, increasing numbers of countries abandoned the gold standard, so that prices rose steeply compared to earlier centuries. After the 1970s, monetary policy focused on maintaining low, stable inflation which – at global level – led to a greater number of periods of negative inflation after 1990 (Bordo and Filardo, 2005).

However, it is worth mentioning that falling prices in the past were not necessarily accompanied by economic recession. Prices often declined during periods of strong productivity-related growth, whereas in most cases – certainly in the light of the current severe recession worldwide – a link is suggested with adverse deflationary periods such as the Great Depression of the 1930s or the stagnation in Japan during the 1990s and 2000s. In view of that diversity, Bordo and Filardo (2004) described deflationary periods as “the good, the bad and the ugly”. Deflation is not an isolated phenomenon and is usually, if not always, a symptom of an underlying economic shock. It is precisely on the basis of such underlying economic shocks (and their

repercussions on economic activity⁽¹⁾) that a distinction can be made between the various types of deflationary periods. Thus, in principle, deflation can occur in the case of a positive supply shock as well as a negative demand shock.

In the first case, Bordo and Filardo refer to “good deflation”. This occurs if, on the one hand, a series of positive supply shocks expand the economic potential while, on the other hand, nominal demand shows little or no adjustment. That is the case if the money supply does not mirror the expansion in the growth potential, a situation which often occurred in periods when the gold standard was in force and the global money supply therefore remained largely constant. The “good deflation” label refers only to the beneficial character of deflation, and more specifically to the fact that the said deflationary periods were not accompanied by a decline in economic activity or, on the contrary, were even associated with strong economic expansion, which is in turn attributable to the favourable nature of the underlying economic shock, and therefore

(1) The pattern of economic activity is in fact one of the factors identifying the shock. Thus, supply shocks are generally identified as shocks which affect prices and economic activity in opposite ways, while demand shocks are usually identified as shocks which influence prices and economic activity in the same direction.

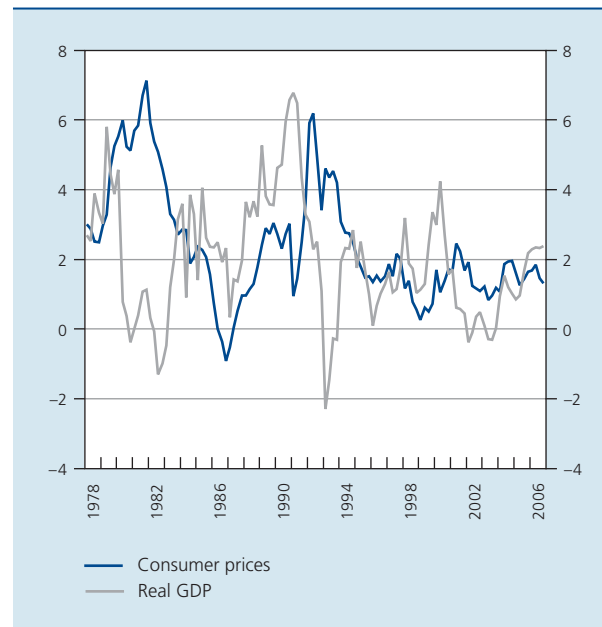
cannot be interpreted in a normative way. It therefore does not necessarily indicate that during the said periods an optimum policy was implemented. In fact, it could be argued that the failure to accommodate favourable developments on the supply side of the economy may have temporarily depressed demand, and hence effective real growth, leading to a negative output gap during that transitional period. However, it should be pointed out that this theoretical argument is perhaps less relevant for the more distant past than today, because at that time economies featured less price and wage rigidity, so that – in principle – the monetary policy implemented had fewer real effects.

The “roaring twenties” provide an example of such “good deflation”, when the post-war recovery and the spread of new technologies such as cars, telephones and radios contributed to strong real economic growth (White, 1990). International trade also revived, and international capital movements recovered once the leading exchange rates had stabilised and the gold standard was reintroduced in 1925. Another example of “good deflation” is the reverse oil shock in 1986, which in Germany’s case led to a brief period of negative inflation with no noticeable adverse impact on economic activity. The fact that, in 1986, the reverse oil shock generated negative inflation in Germany but not in most other industrialised countries is connected, of course, with the fact that inflation in Germany was structurally lower, owing to the monetary policy’s strong focus on price stability. As already stated, this illustrates how the prevailing monetary policy system has an impact on the likely occurrence of deflationary periods.

In this connection, reference may also be made to the rise of China and other new industrial countries as a significant positive and, what is more, persistent supply shock. Under the gold standard, such a shock may have led to “good deflation”, but since the monetary policy in most industrial countries is nowadays geared to stabilising inflation at a low but strictly positive level, this positive supply shock was largely accommodated, so that no deflation was recorded *ex post*. This example therefore shows once again that the occurrence of deflation depends on the prevailing monetary policy system. That also implies that, under the current monetary policy systems, persistent, good deflation is rather unlikely. While the gold standard, as already mentioned, had the inherent risk that monetary policy would be insufficiently accommodating in the event of positive supply shocks, in retrospect it could be said that during the more recent period there was too much one-sided focus on stabilising inflation – e.g. because too much importance was attached to the impact of first round effects on inflation resulting from cheaper imports from low-cost countries – so that monetary policy

CHART 2 CONSUMER PRICES AND REAL GDP IN VOLUME IN GERMANY

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



Source: Thomson Reuters Datastream.

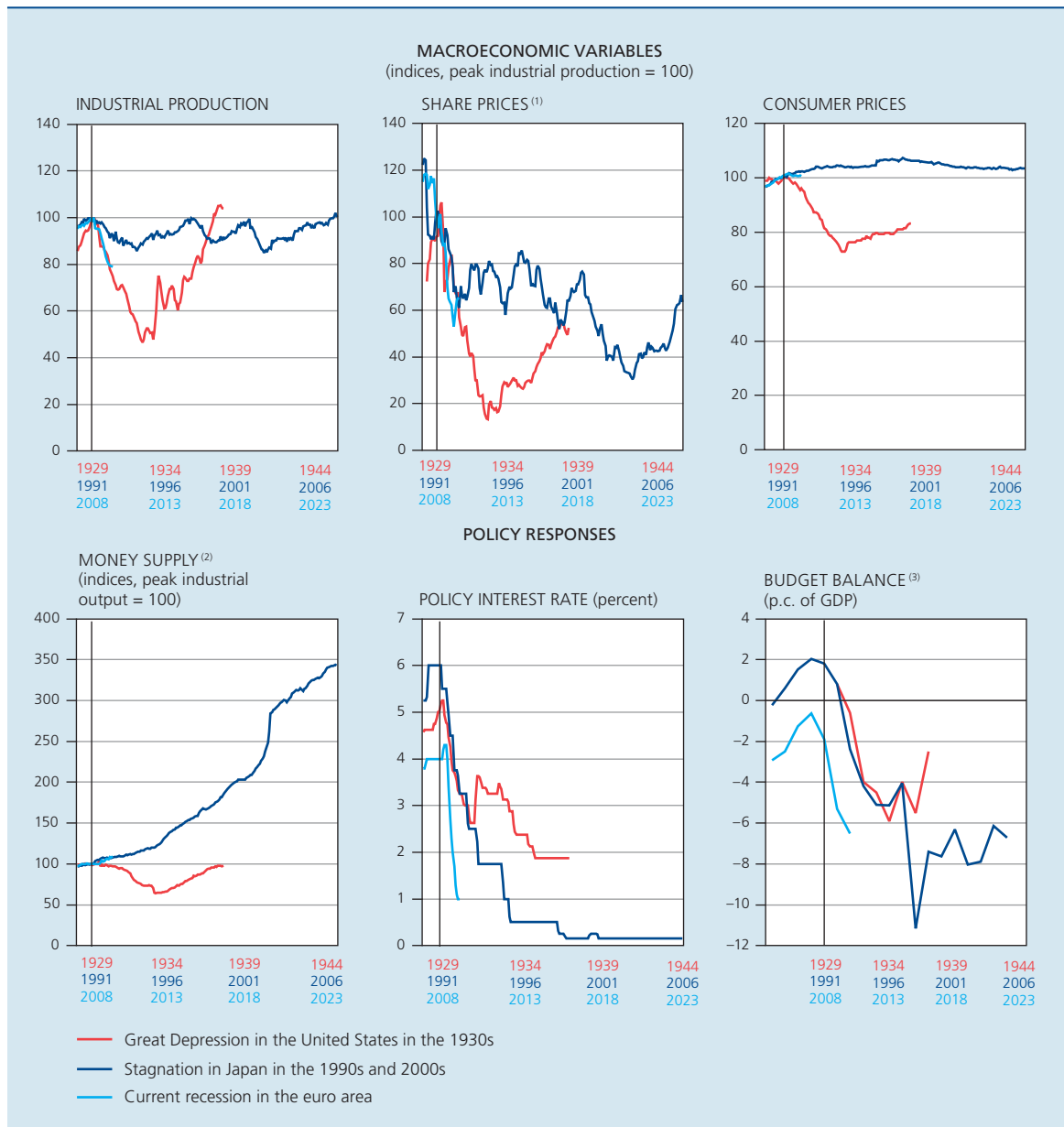
worldwide was perhaps too accommodating, thus contributing to the recent boom-bust cycle.

On the other hand, “bad deflation” results from a negative demand shock, where the contraction in activity – by its scale and/or persistence – exerts such great downward pressure on prices as to bring about a reduction in the general price level. If that downward pressure on prices leads to a genuine deflationary spiral, we call it “ugly deflation”. Owing to the establishment of such a downward spiral – the mechanisms which trigger it will be discussed later – the effects on the price level and on economic activity are far more dramatic. Box 1 discusses the Japanese stagnation during the 1990s and the present decade – an example of “bad deflation” – and the Great Depression in the United States – an example of “ugly deflation”. It also investigates to what extent the current situation displays similarities with those periods, because in those instances, too, the bursting of a stock market and property market bubble and a malfunctioning banking system were key factors. However, both in Japan and during the Great Depression the policy responses also played a leading role (or even the primary role, according to some observers). Unlike during those periods, in the current recession the policy response has been resolute, and that of course considerably reduces the risk of bad deflation actually occurring, even if the initial decline in demand is so great that, in principle, it implied a substantial *ex ante* risk of bad deflation.

Box 1 – The current crisis compared to the Great Depression and Japanese stagnation during the 1990s and 2000s

During the 1990s, Japanese economic activity stagnated for quite a lengthy period, while the price level exhibited a persistent, albeit limited, decline. However, since no deflationary spiral occurred during that period, the Japanese episode is described as “*bad deflation*”, while the Great Depression of the 1930s can be called “*ugly deflation*”.

THE CURRENT RECESSION FROM A HISTORICAL PERSPECTIVE



Sources : Thomson Reuters Datastream, NBER Macrohistory database, Federal Reserve Bank of St. Louis, Yahoo Finance, OECD, EC.

(1) For the United States this is the Dow Jones Industrial Average, for Japan the Nikkei 225 and for the euro area the Eurostoxx 50.

(2) Measured as M1.

(3) Government budget balance. For 2009 and 2010 these are EC predictions.

In the United States, economic activity contracted sharply during the early 1930s, in contrast to the Japanese stagnation of the 1990s and 2000s, and the American price level dropped by over 25 p.c. in the space of four years.

There have been various theories to explain both the Japanese stagnation of the 1990s and 2000s and the Great Depression, and that debate is still not over today. In both cases, the bursting of a bubble on the stock market and the property market plus a malfunctioning banking system played a key role. Those two factors are also present today, so that – alongside the intensity of the current recession and the steep decline in inflation – it is natural to ask whether we are moving towards bad deflation. However, the depth of the current recession is overestimated in that – in the absence of GDP data for the period of the Great Depression – the chart only shows the decline in industrial production. Nowadays, services – which display a less marked cyclical pattern – represent a much larger proportion of value added and employment than in the past.

Both during the Japanese stagnation of the 1990s and 2000s and during the Great Depression, the policy responses played a key role, according to many researchers. The main underlying cause of the persistent economic weakness in Japan does not really seem to be the deflationary process itself. Although that process has also played a role, the problems in the banking sector – which have dragged on for a very long time and were not resolutely addressed – are cited as the primary reason for the years of stagnation. During the 1990s, the Japanese government made only gradual attempts to stabilise the financial sector, initially in the form of rather modest programmes for buying up bank assets, programmes which subsequently proved to be too limited and not very cohesive. In 1998, the government therefore also set up programmes for recapitalising troubled Japanese banks, and between 2002 and 2004 the Bank of Japan bought shares in commercial banks, to safeguard financial stability.

On the other hand, this seems to indicate that, despite some hesitation, the monetary and fiscal policy implemented did act as a stabilising factor during the Japanese stagnation of the 1990s and 2000s, as the (limited) price falls in Japan did not lead to any postponement of spending in the expectation of strong price reductions in the future (White, 2006). From 1991, the Japanese interest rate was steadily reduced, and from February 1999 there was a zero interest rate policy. In August 2000, however, the Bank of Japan raised its interest rates again, a decision which it soon had to reverse. In March 2001, it reintroduced the zero interest rate policy, this time in the form of a policy of quantitative easing aimed at providing the banking system with very substantial reserves, so that the overnight rate dropped to zero. The quantitative easing had a marked effect on the money supply, which increased strongly after 2001. In March 2006, the policy of quantitative easing was stopped, and in July 2006 the policy interest rate was again raised to 0.25 p.c. Before long, Japanese fiscal policy also provided a stimulus: after the 1997 recession, the budget deficit actually rose to over 11 p.c. of GDP. The cyclically adjusted figures also indicate an expansionary policy which caused the Japanese public debt to mushroom, reaching 180 p.c. of GDP in 2006.

In contrast, at the time of the Great Depression the inappropriate monetary policy was a crucial factor, because the gold standard left little room for an accommodating monetary or fiscal policy. The numerous bank runs in the early 1930s implied a fall in the money and credit multiplier which could not be offset by monetary policy, so that the money supply contracted sharply. After the United States abandoned the gold standard in March 1933, monetary policy was eased and the money supply grew rapidly. Furthermore, the monetary expansion was supported by the decision, during the March 1933 Bank Holiday, to close the insolvent banks and to restructure others. This restored confidence in the financial system, and the process of money and credit creation could resume. From 1933, there was therefore a renewed increase in activity and in the price level, so that by 1937 the Great Depression was over. The Federal Reserve also cut its official interest rates, albeit only slightly. Moreover, at that time those rates did not have the monetary policy signalling function that they have today. In contrast, American fiscal policy did not play a major role in the recovery from the Great Depression because the budget deficits recorded were rather small, and were also largely offset by a more restrictive fiscal policy at local government level.



In contrast to what happened with the Japanese stagnation and the American Great Depression, the European monetary and fiscal authorities took swift action to deal with the steep economic decline (and the same was true in other industrial countries). Moreover, the rapid cuts in policy interest rates by the ECB were supplemented by non-conventional measures intended to maintain normal money and credit creation and thus help prevent a Great Depression scenario. In addition, right from the start of the crisis the national authorities set up substantial rescue operations to stabilise the financial system and maintain confidence, while the macroeconomic stimulus generated by fiscal policy was greater and more rapid than in the other two periods. Part of the reason is that, certainly in Europe, the automatic stabilisers are much more important now than in the past, in view of the well-developed social security systems. The current recession is, furthermore, a global phenomenon and for that reason central banks and national governments worldwide are taking measures to tackle the crisis, and some of the measures are being coordinated to a certain degree. Owing to political tensions between the countries concerned, there was no question of a more or less joint approach of this kind in the 1930s.

2. Why deflation is not just inflation with a negative sign

There are various reasons why the rest of this article focuses on the bad forms of deflation. First, they could have disastrous consequences for economic activity and hence present a serious challenge for policy-makers, especially those in charge of monetary policy. Moreover, as already stated – in the light of the monetary policy systems currently prevailing in the industrial countries – there is now little chance of good deflation actually occurring (in contrast to the 19th and the first half of the 20th century). Finally, the current crisis is to some degree comparable to the situation in Japan and to the Great Depression of the 1930s, so that in the present circumstances bad deflation is far more relevant than good deflation.

In practice, deflation is therefore often immediately defined as bad deflation, and good deflation is implicitly disregarded. Such a definition – which is narrower than the one used so far in this article – systematically refers to deflation as a persistent fall in the general price level prompting expectations of further falls (Bini Smaghi, 2008). This narrower definition comprises a number of important elements. First, it refers explicitly to a fall in the *general price level*. In practice, this means that the consumer price index as a whole must fall, and the price reductions must be widely distributed. In other words, it is not sufficient to see a reduction in the price of just a few specific goods or services, because that type of price fall is quite common – certainly when inflation is low – and is due to changes in relative demand and/or productivity, not developments at aggregate level. Furthermore, there must be a *persistent* price fall, not brief periods of falling prices, e.g. lasting a few months. Finally, a third essential feature is the creation of *expectations of further price*

falls. The second and third features are interlinked: the persistence of the price falls may help to generate further expectations of falling prices, which in turn encourages the persistence of the falls. These two elements are very important because they may trigger a deflationary spiral.

Deflation entails first of all a number of costs which also apply in the case of inflation, e.g. distortion of the relative price signal. From that point of view, deflation appears to be merely the mirror image of inflation. However, that view is incorrect because it is only part of the picture: deflation also produces a number of specific effects which do not occur under inflation, and which may entail additional and potentially high costs for the economy. These effects of deflation are also the factors which trigger a deflationary spiral. There are three types of effect, and they are essentially attributable to one or other form of downward nominal rigidity (the fact that certain nominal variables cannot become negative or cannot fall, or at least display a specific resistance to moving in that direction).

The lower bound of the nominal policy interest rate

The first nominal rigidity is the zero lower bound of the nominal policy interest rate. This amounts to an almost absolute lower bound. Once the nominal interest rate reaches zero, the central bank can no longer ease monetary policy by using the conventional interest rate instrument, because everyone would rather hold cash than lend at a negative interest rate (liquidity trap). Although the monetary policy debate often focuses on the nominal interest rate, it is the real interest rate that influences the economy and inflation. The real interest rate is the difference between the nominal rate – which in turn comprises

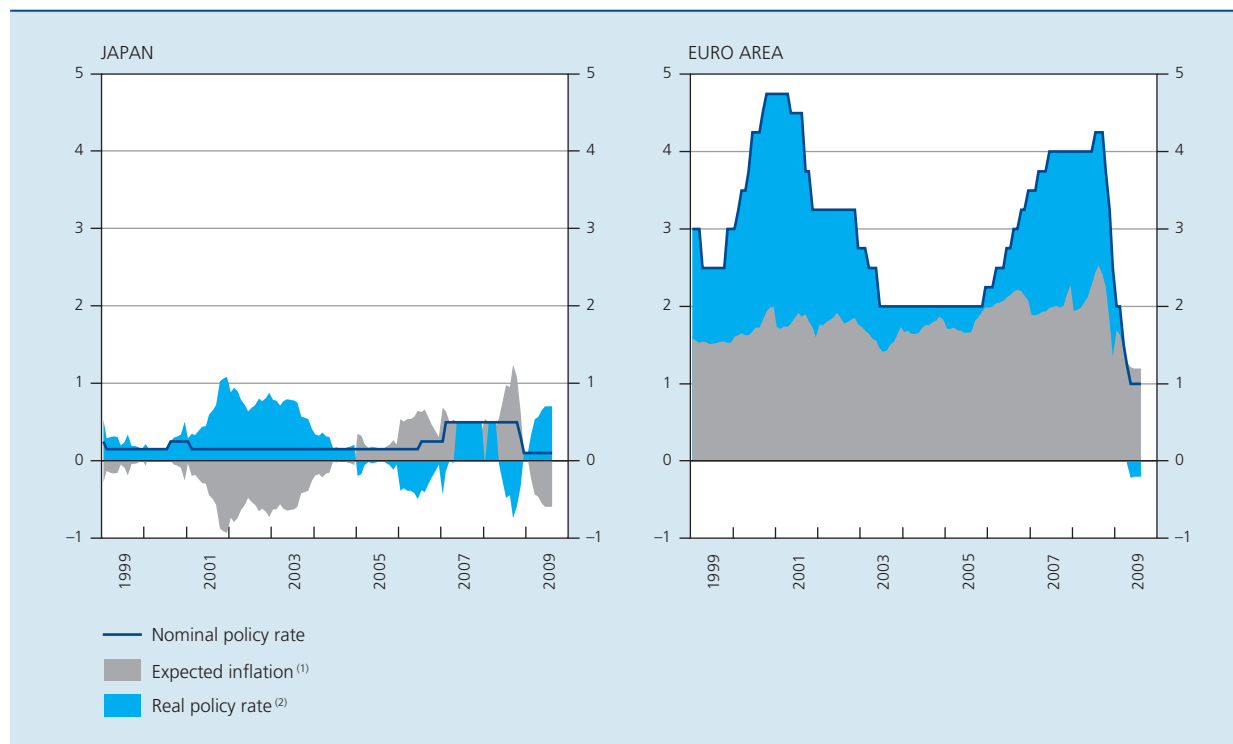
the nominal policy interest rate and the spreads consisting of risk and liquidity premiums – and the expected inflation. The development of negative inflation expectations (expectations of price falls) is an essential feature of bad deflation, in which the real interest rate may become increasingly positive, while the fact that the deflation occurs after a strong negative demand shock specifically implies that the real natural interest rate is very low or even negative⁽¹⁾. This difference between the real actual interest rate and the real natural interest rate may prolong the shortfall in demand in the economy, generating further downward pressure on prices, a further increase in negative inflation expectations, an even higher real interest rate: in short, a genuine deflationary spiral. That spiral may thus develop because monetary policy has lost control over the real interest rate and is therefore no longer capable of steering the economy and inflation. In more intuitive terms, this mechanism refers to the fact that the expectations of falling prices cause the postponement of expenditure.

(1) If the deflation is due to a positive supply shock, there is much less chance that such a destabilising mechanism will be triggered, because in that case it is not only the actual real interest rate that increases, but also its equilibrium value. That also makes it unlikely that what begins as good deflation may in time turn into bad deflation.

If the nominal key interest rate is zero, monetary policy can try to continue steering the relevant real interest rate by reducing the spreads and/or maintaining or creating positive inflation expectations. For that purpose it is possible to pursue an unconventional monetary policy, as discussed in section 4. However, monetary policy-makers are less familiar with these alternative policy instruments, and apart from the possible practical implementation problems, their impact on the economy is harder to assess than that of a change in the nominal policy rate. This may impair the effectiveness of monetary policy.

Japan provides a perfect example of how real interest rates are affected by the zero lower bound on the nominal policy rate. In the late 1990s and early 2000s, the Japanese economy was bogged down in a deflationary environment, and the Japanese central bank cut its key interest rate to almost zero. However, since the deflation had also affected expectations, the real interest rate remained markedly positive. This forced the Japanese central bank to pursue an unconventional monetary policy, in the form of quantitative easing. While negative inflation expectations have resurfaced in Japan during the current crisis, that is not the case in the euro area

CHART 3 NOMINAL AND REAL POLICY RATE
(percentages)



Sources : Thomson Reuters Datastream, Consensus Economics.
(1) Expected inflation for the next calendar year.
(2) Calculated as the difference between the nominal policy rate and expected inflation.

(see below for more information). The result is that the steep cut in the ECB key interest rate has also actually resulted in the relaxation of monetary conditions, and the lower real interest rate – actually a negative real rate at the end of the period – can provide a significant stimulus for economic activity.

Increase in the real burden of existing debts

Second, since most debt contracts are concluded in nominal terms, if deflation occurs the real burden of debts previously incurred will increase. As deflation often follows a period of excessive lending, this hampers the ongoing process of debt reduction which, *ceteris paribus*, further boosts the propensity to save and thus exacerbates the slump in demand. Another significant consequence is an undesirable *ex post* redistribution of wealth from borrowers to savers. Since borrowers often have a greater propensity to consume, this redistribution also adds to the negative effect on demand⁽¹⁾. In combination with the already sharply deteriorated economic conditions, there will also be a strong rise in repayment problems and bad debts. Moreover, this is often accompanied by falling asset prices, causing a steep decline in the value of the collateral behind the loans. In such a situation, the banks will tighten their lending conditions, and repayment problems and declining collateral values will also affect the solvency of the financial institutions, causing the crisis to become even more acute. The pursuit of price stability and avoidance of deflation are therefore crucial from the point of view of financial stability, too.

Downward nominal wage rigidity

A third important downward nominal rigidity concerns the difficulty of reducing nominal wages, even if such a move would be justified on the grounds of the deteriorating economic situation or the decline in the general price level. The reason lies in the “money illusion” of the economic agents, whereby they focus mainly on nominal wages rather than real wages, and consequently always see a reduction in wages as a loss of purchasing power – even if that is not the case.

In the short term, a relatively high degree of downward nominal wage rigidity (DNWR) may be favourable, because it supports real disposable incomes (and hence demand in the economy), and in the first instance eases the problem of repaying loans. In the early stages, this can counterbalance deflationary pressure. However, rigidities also hamper the adjustment of the real economy, certainly if the downward shock is persistent. In the end, as a result

of a non-adjusted high real wage level, this puts further pressure on business profitability, leading to higher unemployment and therefore exacerbating the impact of the demand shock⁽²⁾. This seems to imply that, in view of the higher degree of rigidity, the euro area is better protected initially against the emergence of deflation than the United States, but once a deflationary process has started, the euro area would be harder hit. In this connection, however, De Grauwe (2009) comments that some specific characteristics of ‘rigid’ economies, such as the existence of an extensive social security system or minimum wages, may halt the deflationary mechanism, because despite falling to some degree, disposable incomes will not drop below a certain level, so that consumption and debt repayment are still supported. According to this reasoning, any negative effects of greater rigidity are thus absorbed by fiscal policy, and more specifically by the ‘automatic stabilisers’ which are more significant in Europe than in the United States and the cost which this implies for the government would be less than the expense which the government would face in a decidedly deflationary environment. However, it must be added that the fiscal scope available to the government, and therefore its potential for stabilising the economy, is not unlimited.

The relevance of DNWR varies greatly from one country to another, depending on the institutional characteristics of the labour market. For instance, in Portugal, nominal wage reductions are prohibited by law, so that there is a high degree of downward nominal wage rigidity (Duarte, 2008). In contrast, Belgium has hardly any DNWR owing to automatic wage indexation, because in the event of negative inflation, indexation will imply downward adjustments in nominal wages. This protects real wages from any upward effect caused by deflation, so that the real consequences are less disastrous for Belgian businesses and hence also for unemployment. Moreover, the existence of DNWR in the trading partners may ultimately lead to an improvement in Belgium’s competitive position in an international deflationary environment, though on the other hand, indexation accelerates the nominal effect on wages and prices, so that Belgium may suffer more acutely from the problem of the real interest rate and the increase in the debt burden explained above. Yet in a small, open economy such as Belgium, the absence of an effect on real wages is perhaps more important than the fact that there may be a bigger effect on the real interest rate or the debt burden. While indexation in Belgium may thus attenuate the effects of deflation, in other instances

(1) In principle, this redistribution effect is no different from a sharp fall in inflation. Thus, in the late 1980s and early 1990s the most severe recessions occurred in countries which had previously seen the biggest rise in their debts (see for example Groth and Westaway, 2003 and King, 1994).

(2) If deflation is due to a positive supply shock, then an increase in real wages is not necessarily a problem because their equilibrium value also rises, e.g. as a result of higher productivity.

– such as terms of trade shocks – that mechanism has the drawback of hampering the adjustment of the economy precisely because the required adjustment to real wages is more difficult to achieve. Indeed, Du Caju et al. (2007) find that Belgium features a low degree of nominal wage rigidity but a high degree of real wage rigidity.

In countries without wage indexation, the impact of DNWR increases, in principle, the lower the level of inflation. Of course, that phenomenon will be more plainly visible in a deflationary environment. For example, Fehr and Goette (2005) show that the decline in inflation in Switzerland, from 4.7 p.c. in 1991 to 0 p.c. in 1997, was accompanied by a distortion in the distribution of the wage changes recorded in the individual data. The histogram for 1997 was less symmetrical than the one for 1991, and the distortion lay in the fact that in 1997 fewer downward adjustments to real wages were recorded than in 1991, precisely because there was a substantial rise in the percentage of wages that remained unchanged (and thus evidently could not be adjusted downwards), from less than 5 p.c. in 1991 to almost 20 p.c. in 1997. Such an increase in the percentage of unchanged wages is a typical symptom of DNWR. Yet it is also evident that DNWR is not an absolute given in Switzerland, since there was also a considerable increase in the proportion of wage reductions between 1991 and 1997 (from 11 p.c. in 1991 to 31 p.c. in 1997). In Hong Kong, a country where the institutional characteristics of the labour market are admittedly very different from those of the euro area, the consumer price index declined between May 1998 and August 2003 by a cumulative total of 16.3 p.c., and during that period wage reductions were frequently observed. Furthermore, the distribution of wage adjustments was symmetrical during that period (Gerlach, 2009). The degree to which the DNWR problem would manifest itself in a deflationary environment therefore appears to be an open question.

3. The risk of deflation in the current context

In order to assess the risks of deflation in the current context, the analysis focuses not only on the recent pattern of inflation but also on the inflation expectations of various economic agents at different horizons. Since the deflation risks cannot be viewed separately from the underlying negative demand shock, a wide range of indicators is then taken into account alongside inflation measures.

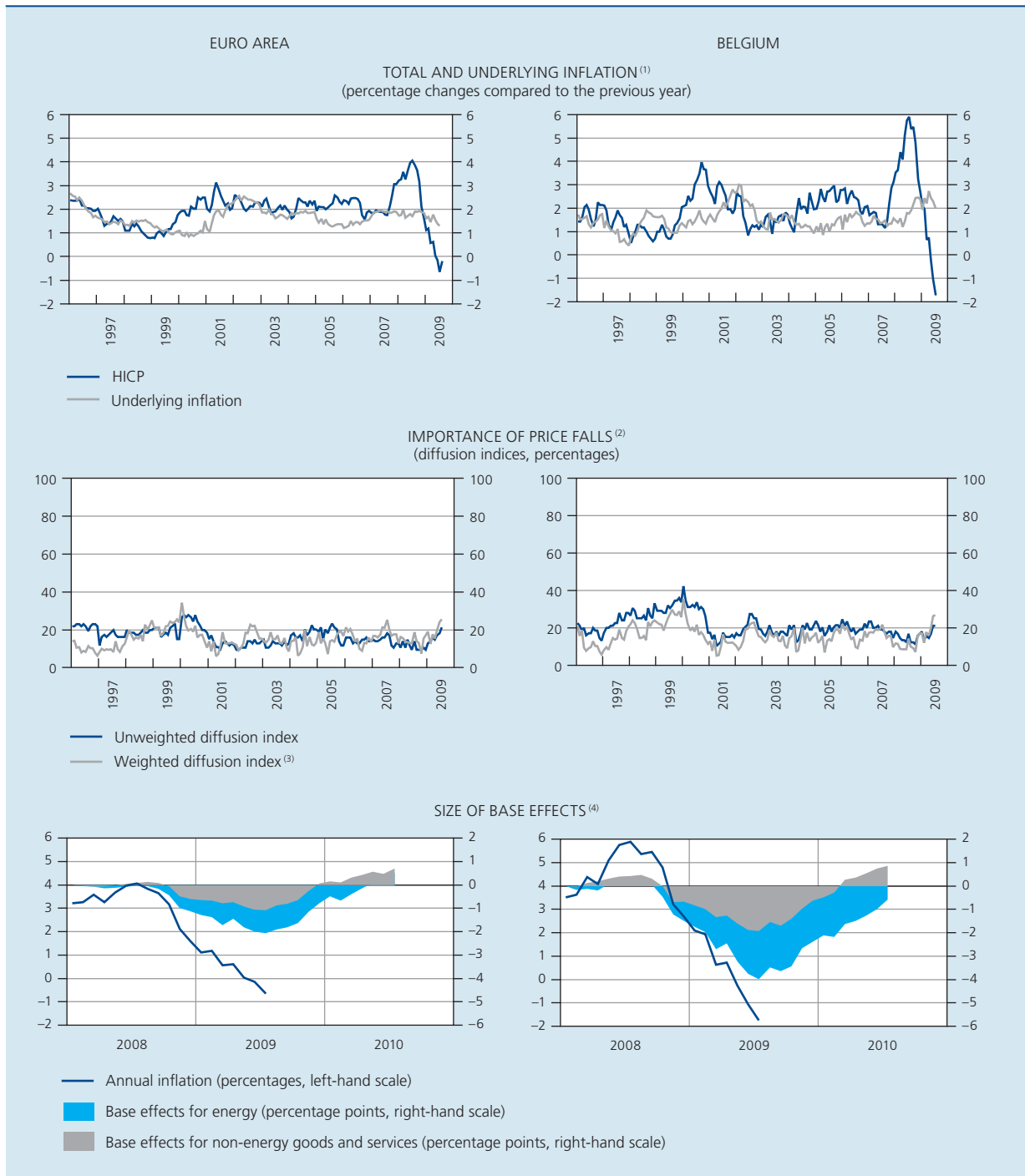
Are the price falls widespread at present ?

The global inflation picture currently features a process of disinflation (in many cases even negative inflation) as a result of the sharp fall in energy and food prices since the summer of 2008. Before that, energy prices – and to a lesser extent food prices – had given a strong boost to inflation, which thus reached its highest level for decades in the various developed economies. In contrast, core inflation, defined as total inflation excluding energy and food, is only declining slowly in both the euro area and in many other industrialised economies. In Belgium, the turning point in core inflation was reached somewhat later as the high indexations of 2008 and early 2009 were still exerting upward pressure.

This implies that the contraction of activity and, in general, weak demand have not (yet) had a major effect on prices of non-energy and non-food goods and services in the euro area, and especially not in Belgium. This means that the rapid decline in inflation observed in recent months is not so much an indication of a fall in the general price level but rather the outcome of relative price movements. Viewed in that way, the current decline in inflation looks similar to the period of “good deflation” in Germany following the reverse oil shock in 1986. Precisely because the decline in inflation is attributable to imported goods, it supports purchasing power in the industrial countries via the accompanying improvement in the terms of trade, and counteracts the negative forces in the real economy. This can hardly be seen as a mechanism triggering a harmful deflationary spiral, unless the sharp fall in inflation is incorporated in inflation expectations.

The fact that the price falls are not as yet widespread is also evident from a ‘diffusion index’ which shows the percentage of product categories in the harmonised index of consumer prices which record a year-on-year fall in price. It is apparent from this criterion that price reductions are not exceptional, certainly not in sectors exhibiting major productivity gains such as communication services or multimedia products. It is also evident that this index has not increased exceptionally strongly during the recent period, confirming that there is no evidence of a general tendency towards falling prices, either in the euro area or in Belgium. That finding holds regardless of whether or not the HICP weights are applied to the diffusion index. For Belgium, the Institute of National Accounts (2009) reached similar findings on the basis of individual price notations which form the basis of the consumer price index.

CHART 4 HARMONISED INDEX OF CONSUMER PRICES



Sources : EC, NBB.

(1) HICP excluding energy and food.

(2) Share of product categories with price falls in the total.

(3) Weighted with the HICP weights.

(4) Cumulative base effects since January 2008, calculated as the contribution to the change in inflation in a particular month attributable to marked movements in the corresponding month of the previous year. For that purpose, the month-on-month change in the HICP was compared with the usual pattern of change for each month. This method makes it possible to predict the impact of the base effects for the next twelve months.

As a result of the steep rises in energy and food prices in the first half of 2008, base effects⁽¹⁾ exerted strong downward pressure on inflation during the first half of 2009. In June and July, the impact of the downward base effects showed a further slight increase; those were the very months in which inflation peaked in 2008. In Belgium, base effects are more marked than in the euro area, owing to the much stronger surge in Belgian inflation in 2008. In August 2009, however, the downward impact of the base effects started to weaken so that, *ceteris paribus*, the downward trend in inflation should be reversed. However, it is uncertain whether that will actually happen, and if so, to what extent, because in the months ahead inflation will be determined not only by the mechanical impact of these base effects but also by the movement in prices during those actual months, which will in turn depend in particular on the movement in commodity prices and the pressure on prices caused by the general economic situation.

Will the price falls persist for long?

Inflation expectations play a crucial role in determining current inflation, and are therefore important for assessing the possible risks of deflation now and in the near future. They are also important as a determinant of the monetary policy stance, and – in the case of a very low nominal policy interest rate – influencing inflation expectations becomes the principal if not the only instrument left for influencing the real interest rate (see above). It is therefore very important to conduct a close analysis of the pattern of inflation expectations.

The European Commission's monthly consumer survey asks a question about the expected movement in consumer prices over the coming twelve months, compared to that during the past twelve months. This balance statistic is converted to an inflation indicator comparable to the HICP via a standardisation procedure. This shows that both in the euro area and in Belgium this expected inflation based on the balance statistic has fallen sharply since mid 2008, and has become slightly negative in recent months. That movement tallies with what other sources predict and thus confirms the information value of this – albeit qualitative – criterion.

When analysing deflation risk, it is interesting to examine what proportion of consumers claim to expect a fall in consumer prices. In the past, that figure was negligible, except for a small rise in the Netherlands in 2003, when that country was affected by a contraction in activity accompanied by a price war in the distribution sector. Recently it has become apparent that a growing

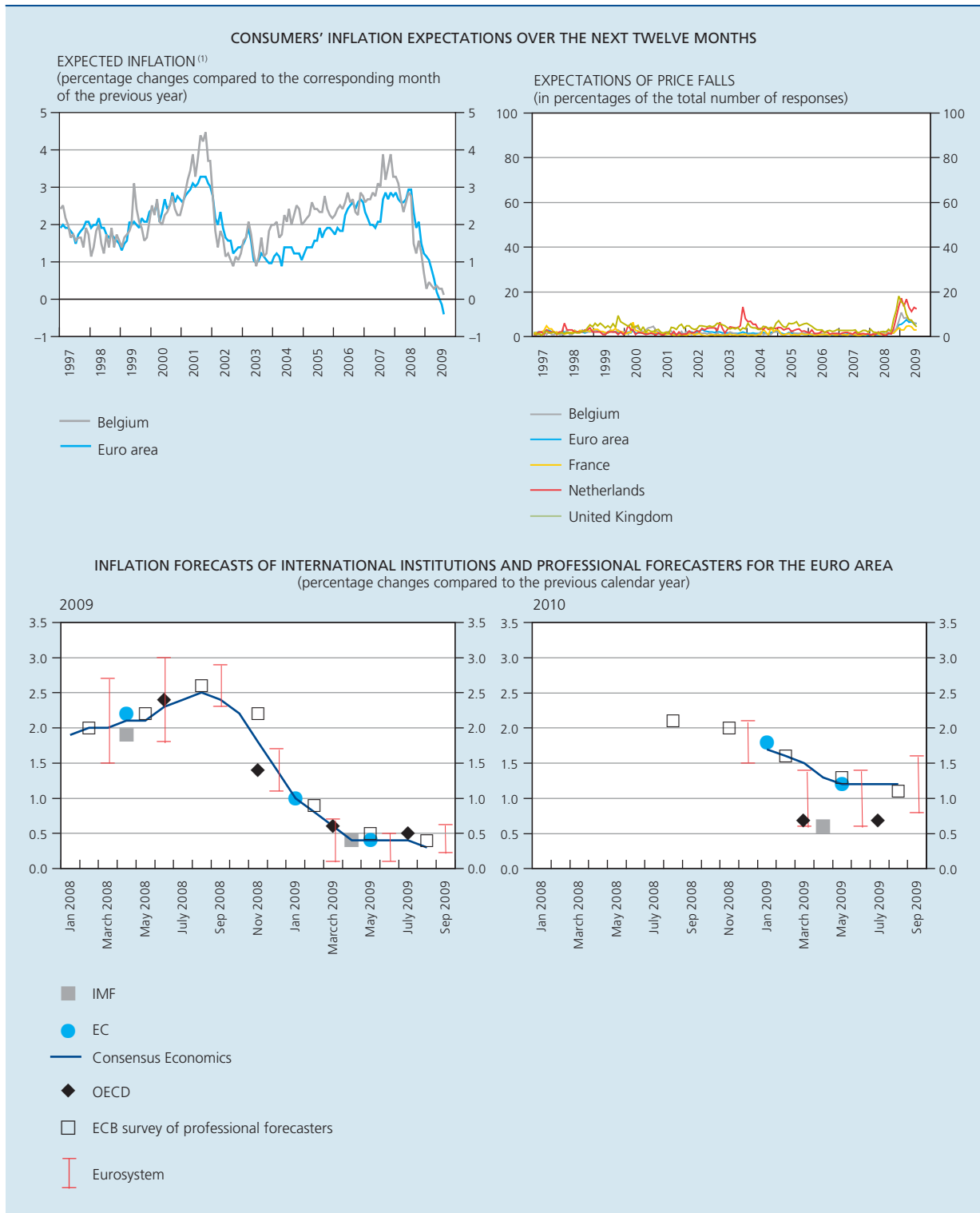
proportion of consumers in various euro area countries are expecting prices to fall, but the percentage is still rather low overall.

Since September 2008, inflation predictions for the euro area produced by international institutions and other professional forecasters have undergone sharp downward revision. That is particularly true for 2009, and to a lesser extent for 2010, indicating that these forecasters are assuming that inflation will pick up again to some extent compared to the low level expected in 2009. That view corresponds to the diminishing downward impact of base effects explained above. Nonetheless, the latest predictions for 2010 are well below the upper limit of the quantitative definition of price stability applied by the ECB Governing Council. Yet all forecasters still expect positive inflation in 2010. At the same time, however, the uncertainty has greatly increased. That is evident from the fact that the dispersion of the forecasts for 2010 produced during the first half of 2009 is greater than for those produced for 2009 in the first half of 2008. Since the prediction horizon is the same in both cases, that increased dispersion has nothing to do with technical factors but definitely indicates greater intrinsic uncertainty for the latest exercises. The OECD and IMF inflation forecasts, in particular, are much lower than the others.

Another important source for measuring inflation expectations in the euro area is the ECB's quarterly survey of professional forecasters. The added value of this survey is not only the large number of participants – between forty and sixty – but also the fact that, as well as making forecasts for the current and the next calendar year, they also provide information on inflation expectations within one, two and five years respectively. This last item of information is very important because it concerns long-term inflation expectations and therefore offers an indication of the credibility of monetary policy. These data again show that the professional forecasters have adjusted their expectations downwards since September 2008, but that adjustment declines with the prediction horizon. According to the latest survey, the average inflation forecast within one year (actually June 2010) is 1.2 p.c., the average inflation forecast within two years (actually June 2011) is 1.6 p.c. and the average inflation forecast within five years is 2.0 p.c. Although the long-term inflation expectation is thus still anchored at a level corresponding to the quantitative definition of price stability, it is nevertheless evident from the data that the downward deviation from the

(1) A base effect refers to the influence – on a particular month's inflation figure – of an unusual or extreme development during the base period, namely in the corresponding month of the previous year. The impact of base effects was quantified as the contribution to the change in inflation originating from a deviation in the month-on-month change in the base period compared to the usual pattern of change. Those monthly effects were then cumulated from January 2008.

CHART 5 SHORT-TERM INFLATION EXPECTATIONS



Sources : Consensus Economics, EC, ECB, IMF, OECD, NBB.

(1) Balance of responses to the EC survey, converted to an inflation indicator comparable to the HICP using the standardisation procedure described in Aucremanne, L., M. Collin and T. Stragier (2007).

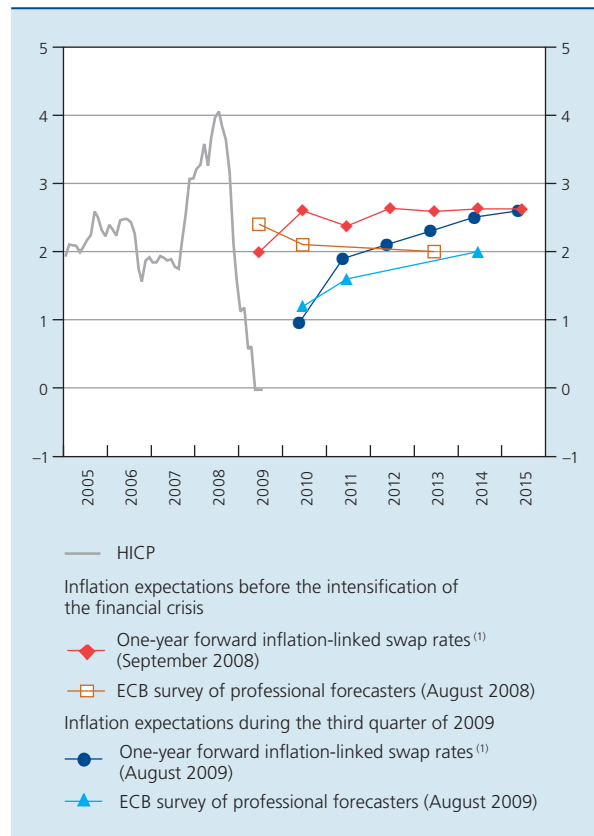
long-term inflation expectation is assumed to be somewhat persistent (at least until 2011).

Inflation expectations can also be deduced from financial market instruments such as indexed bonds and inflation swaps, but these measures have to be interpreted with some caution in times of heightened financial market volatility. However, that proviso applies less to inflation swaps than to the inflation expectations deduced from indexed bonds (NBB, 2009), so that the analysis which follows is based on the former. From the spot price of inflation swaps it is possible to calculate implicit forward prices for one-year inflation swaps, the latter reflecting the expected HICP inflation for the ensuing year for various points in time⁽¹⁾. The advantage of these implicit forward prices is that, in contrast to the survey of professional forecasters, they also provide information for intermediate horizons, namely not only within one, two and five years but also within three and four years. Thus, in September 2008, the expected inflation for June was priced at 2 p.c. for 2009 and roughly 2.5 p.c. for subsequent years, a level which is not necessarily contrary to the definition of price stability since inflation swaps incorporate not only the actual inflation expectation but also quite considerable risk and liquidity premiums. Since September 2008, however, inflation expectations for the coming five to six years have shifted downwards, primarily – though not exclusively – for the shorter horizons. On the basis of the August 2009 inflation swaps, the financial markets do not expect any negative inflation or deflation, but anticipate only a gradual return to inflation at levels corresponding to price stability. Nonetheless, it is also apparent that the long-term expectations are still firmly anchored. In the event of a longer period of downward deviations from the quantitative definition of price stability, there is a risk that economic agents will gradually adjust downwards their perception of the Eurosystem's inflation objective. If that should happen, then there will of course be a greater risk of deflation.

This was also reflected in the Eurosystem's September 2009 inflation projections. Those projections form part of a coherent macroeconomic exercise and therefore take account of the outlook for the real economy⁽²⁾. For the euro area, inflation has become negative during the summer, mainly as a result of base effects. However, it is likely to gather pace again thereafter. For 2010, inflation is expected to run at between 0.8 and 1.6 p.c. That assumes that, in view of the disappearance of the negative contribution from energy, core inflation will decline further. On the basis of the centre point of the published intervals, it therefore seems that, in the baseline scenario, although inflation in 2010 will be well below the 2 p.c. upper limit of the definition of price stability, negative

CHART 6 LONGER-TERM INFLATION EXPECTATIONS FOR THE EURO AREA

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



Sources: Bloomberg, EC, ECB.

(1) Implicit forward price for a one-year inflation swap.

inflation is unlikely. However, the uncertainty interval indicates that the figure could be lower or higher. A steeper decline in economic activity and/or a slower recovery than assumed in the September 2009 projections⁽¹⁾ could lead to lower inflation. Higher commodity prices – the September projection was based in particular on an average crude oil price of 62.4 and 78.9 dollars per barrel of Brent in 2009 and 2010 respectively – and/or a speedier economic recovery could lead to higher inflation.

In qualitative terms, the inflation projection for Belgium published by the Bank in June 2009 differs little from this pattern. A brief period of negative inflation during May to October 2009 will be followed by a slight rise in inflation

(1) Since the consumer price index is published after a certain delay, the inflation swap contracts reflect expected inflation for the month three months ahead of the due date of the inflation swap. Thus, the August 2009 contracts reflect expected inflation for the month of May, while the September 2008 contracts reflect the expected inflation for the month of June.

(2) They are also based on market expectations regarding short- and long-term interest rates and on implicit crude oil prices as indicated by forward contracts, while the bilateral exchange rates were kept constant at their mid August value.

to an average of 1.3 p.c. in 2010. The fact that inflation in 2009 (average 0.1 p.c.) will be slightly below the figure for the euro area is the net outcome of a stronger downward effect for energy – Belgian inflation is traditionally more sensitive to this factor – and the fact that the moderation of underlying inflation is initially slower than in the euro area, suggesting the presence of some second round effects due to the very high inflation in 2008. However, the impact of this last factor will gradually ebb away, and in 2010 wage indexation will actually become a factor contributing to wage moderation. Of course, the inflation projection for Belgium is also uncertain, and that uncertainty is actually greater than for the euro area, since the movement in the crude oil price has a greater influence on Belgian inflation.

A broader approach to the risk of deflation: the IMF methodology

While this section has so far focused on inflation itself and on inflation expectations, it is also important to consider a broader set of economic variables in order to identify potential deflationary risks, because deflation is not a phenomenon expressed purely in price movements. As already stated, it is a macroeconomic phenomenon with clear interactions between prices and activity. Furthermore, in the past it has been evident that deflation is very difficult to predict, one reason being that price and wage rigidities initially inhibit a sharp decline in (core) inflation, and that may conceal substantial downward pressure on prices exerted by a low capacity utilisation rate. Finally, indicators of inflation expectations need to be interpreted with due caution, as they are based not only on the expected impact of economic shocks but also on the expected monetary policy response⁽¹⁾. If the economic

agents assume that the authorities will do everything possible to avoid deflation, inflation expectations will remain largely stable, certainly in the long term, but that does not of course imply that the policy should remain neutral.

A broader approach is therefore required. For that purpose, the IMF has developed a methodology aimed at proposing a wide range of relevant variables in synthetic form. The result is known as the IMF “*deflation vulnerability indicator*” (see IMF, 2003 and Decressin and Laxton, 2009). Here, the IMF selected eleven variables which are relevant for detecting deflation risks. A threshold value is associated with each variable. If a variable is below its threshold value, it is assigned the binary value 1, which indicates an increased risk of deflation; otherwise it is assigned the binary value 0. The average of these binary scores yields a standardised indicator with values ranging between 0 and 1. A high (low) value for this synthetic indicator indicates a high (low) risk of deflation. In view of its composition, however, this indicator cannot be interpreted as a percentage risk of deflation. For this article, it was possible to calculate a synthetic indicator up to the second quarter of 2009⁽²⁾. Box 2 lists the eleven selected variables and their threshold values.

As expected, the value of the indicator for Japan is high throughout the period considered. An increased risk was also identified for some countries at the end of 2002 and in 2003. During that period, it was mainly Switzerland and the euro area that had an increased risk of deflation. At the time, the IMF (2003) mainly drew attention to a

(1) See also Gerlach (2009).

(2) In the IMF's original methodology, some responses were weighted on the basis of the relative size of the stock market and the bank lending market. That is not the case in our own calculations. Small deviations from results previously published by the IMF may also be attributable to the use of different data banks and/or data revisions. The data used for this article are quarterly figures.

Box 2 – Measuring the deflationary risk according to the IMF methodology

The IMF synthetic indicator for deflation risk comprises eleven indicators and the associated threshold values which are listed below. They can be divided into four categories. First, three general inflation criteria are considered, because low inflation is logically regarded as potentially problematic. Since bad deflation is associated with a negative demand shock, a series of variables was also selected which focus on the scale of the demand shock, and more specifically on the degree to which there is excess capacity in the economy. The trend in asset prices also functions as an indicator, as some periods of bad deflation are not only preceded by a *boom-bust* cycle in asset prices but the movement in asset prices – via income and wealth effects – has a significant impact on the negative demand shock, which it may or may not reinforce. Finally, four indicators focus on aspects of monetary conditions, precisely because it is evident from the foregoing that monetary policy plays a key role in the occurrence or avoidance of deflation.



THE ELEVEN QUESTIONS IN THE SYNTHETIC IMF INDICATOR OF THE DEFLATION RISK

Inflation criteria

- Is total annual inflation below 0.5 p.c. ?
- Has the GDP deflator risen by less than 0.5 p.c. in the past year ?
- Is annual core inflation below 0.5 p.c. ?

Capacity utilisation

- Has the output gap shrunk by more than 2 percentage points over the past four quarters ?
- Is the output gap less than 2 p.c. ?
- Is the average real GDP growth over the past three years below two-thirds of the average real GDP growth over the preceding ten years ?

Asset prices

- Have share prices dropped by more than 30 p.c. over the past three years ?

Monetary conditions

- Has the real effective exchange rate appreciated by more than 4 p.c. over the past year ?
 - Is annual credit growth lower than nominal GDP growth ?
 - Is cumulative credit growth over the past three years below 10 p.c. ?
 - Has broad money grown by 2 percentage points less than base money over the past two years ?
-

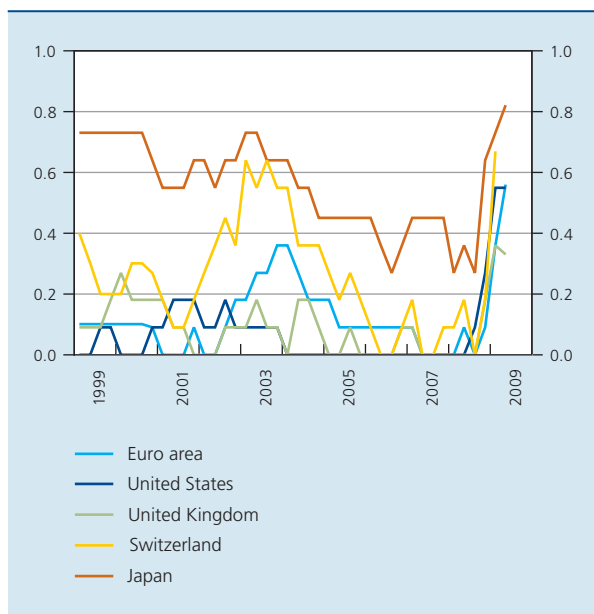
When interpreting this indicator, it should be borne in mind that (in the absence of comparable criteria for the various countries) no account is taken of inflation expectations, and excess capacity is very difficult to measure accurately, certainly in real time. Finally, determination of the threshold value for each partial indicator is not obvious. Owing to the limited number of recent periods of deflation, those threshold values were based mainly on Japan's experience during the 1990s. It is therefore not surprising that the indicator for Japan points to an increased deflation risk towards the end of the 1990s and in the initial years of the present decade.

heightened deflation risk in Germany. Conversely, the indicator for the United States is surprisingly low in 2002-2003. This last finding, which is admittedly based on a rather rudimentary indicator, is in line with the findings of other studies which indicate that US monetary policy may have overestimated the deflation risk at that time, and was therefore too accommodating. Taylor (2009) argues that monetary policy was too lax in the period 2002-2004, and Jarocinsky and Smets (2008) conclude that this lax monetary policy contributed to the asset price boom in the United States.

For the recent period, the deflation risk seems to have increased considerably in virtually all the industrialised economies, both in the last quarter of 2008 and in the first and second quarter of 2009. The deflation risk seems to be particularly great in Japan and Switzerland. In the euro area and the US, it is quite considerable and clearly greater than in the period 2002-2003.

The fact that this indicator unmistakably points to an increased deflation risk is not inconsistent with the monetary policy stance adopted in the countries mentioned since September 2008. Owing to the sharp decline in inflationary pressure (and the potential threat of deflation), key interest rates in all these economies were cut at an unprecedented speed, and the expansionary monetary policy was further backed by non-conventional measures. The contradiction between the increased deflation risk according to the IMF methodology and the earlier findings whereby many other indicators suggest only a limited risk is merely an illusion. This paradox can be explained as follows. The prevailing inflation expectations and forecasts embody not only the expected impact of the economic shocks but also the strong monetary policy response, and in many cases also the (implicit) expectation of additional measures if the deflationary pressure should nevertheless manifest itself. Precisely because of this reliance on the stabilising role of policy, the eventual *ex post* risk is therefore significantly smaller than the *ex ante* risk of deflation. The IMF indicator perhaps comes closer to measuring

CHART 7 SYNTHETIC INDICATOR OF THE DEFLATION RISK ACCORDING TO THE IMF METHODOLOGY⁽¹⁾
(average of the binary scores for the eleven indicators)



Sources: IMF, NBB.

(1) See IMF (2003) and Deccessin and Laxton (2009).

this *ex ante* risk. That should encourage policy-makers to remain constantly vigilant, and if necessary to take appropriate, resolute action. The policy options in the case of an increased risk of deflation, or if deflation has already set in, are discussed in the next section of this article.

4. Policy options in a deflationary environment

This article has already drawn attention to the crucial role of monetary policy, in particular, in determining whether or not deflation occurs. Economists in general agree that economic policy – be it monetary or fiscal policy, or a combination of the two – is always capable of generating inflation (Bernanke, 2002), so that persistent deflation can ultimately be viewed as either a policy choice or a policy failure (Buiter, 2003). This section discusses the various policy options, with reference to examples from the recent past.

Prevention is better than cure

Since, as mentioned above, deflation may be accompanied by a number of reinforcing mechanisms which do not apply in the case of inflation, it is far more difficult to revive a deflationary economy than to curb inflationary

tensions in an overheated economy. Prevention is therefore better than cure, certainly where deflation is concerned.

Even in times when deflation does not appear to be an immediate problem, it is possible, when determining the monetary policy strategy, to do something to ward off deflation by creating a kind of buffer zone against deflation risks. That is why central banks typically define price stability as low but strictly positive inflation. For instance, in the euro area the ECB Governing Council has, since 2003, defined price stability as an annual rise in the HICP for the euro area of less than – *but close to* – 2 p.c. in the medium term. When the definition was clarified by adding “but close to” in May 2003, that was an explicit reference to the risks of deflation. This buffer zone reduces the likelihood of the key interest rate reaching the lower limit in the event of a substantial negative demand shock. This last argument was precisely one of the elements expressly taken into account in determining the buffer zone for the euro area (Coenen, 2003), because the risk of the key interest rate encountering the lower limit appeared to increase in a non-linear way for inflation objectives below 2 p.c. Of course, the advantage of creating such a buffer zone has to be weighed against the possible costs of positive inflation in normal circumstances. Other central banks with an explicit inflation objective have typically set theirs at between 1 and 3 p.c.

Furthermore, a quantitative inflation objective offers a clear reference point for inflation expectations, so that they can be more firmly anchored, reducing the risk of a deflationary spiral. Central banks which, like the Eurosystem, have an explicit inflation objective are therefore better equipped, in principle, for the battle against deflation than central banks with no explicit inflation objective.

This also implies that if inflation and inflation expectations fall below the threshold associated with price stability, that may prompt an adjustment of the monetary policy stance in exactly the same way as if they exceed it. Such a symmetrical approach to achieving price stability – as there are not only upside but also downside risks to price stability – is best emphasised from the start and systematically applied in order to ensure that it is sufficiently credible when a real risk of deflation arises.

If, in the event of a sudden, sharp deterioration in the economic fundamentals, a real deflation risk nevertheless looms, it is best for monetary policy to be proactive – i.e. to produce a stronger response than under normal circumstances – by making speedy and significant cuts in the key interest rate (see Ito, 2009 and Orphanides, 2009). If this causes the nominal interest rate to fall faster

than inflation expectations, monetary policy can remain sufficiently expansionary by cutting the real interest rate, which in those circumstances has a stabilising effect on the economy, ultimately counteracting the decline in inflation expectations and reducing the risk that the key interest rate will actually come up against the lower limit. The existence of a lower limit for the key interest rate therefore implies that more aggressive use is made of the interest rate instrument than in a (hypothetical) situation without a lower limit (Adam and Billi, 2006), and that hesitation in using the interest rate instrument, e.g. in order to retain the option of further cuts later on, is certainly not to be recommended in those circumstances.

In regard to the lower limit, it must be said that in theory the limit is zero, but in practice allowance must be made for the fact that a very low interest rate can be damaging to the profitability of banks and other financial institutions, with implications for the transmission of the monetary policy impulse and for financial stability. One of the factors at work here is that the banks pay rates which are below the key interest rate on their customers' deposits. Once those interest rates have reached zero – i.e. before the key policy rate does so – if the monetary policy is eased further, that either squeezes the banks' interest rate margin or means that the additional monetary policy impulse is no longer passed on in full in lending rates. The consequences have to be weighed against the fact that a further easing, via the improvement in the macroeconomic situation which in principle results, generates positive feedback effects on the profitability of the financial sector. In practice, central banks seem to adopt very low but nonetheless strictly positive key interest rates in exceptional circumstances⁽¹⁾.

In addition to cutting the key interest rate, central banks can also take unconventional monetary policy measures, as they have done in the past few months. The recent unconventional monetary policy measures were taken for three reasons, which will be briefly explained below. First, additional liquidity was provided in order to ensure financial stability, in other words, central banks have definitely fulfilled their role as lender of last resort during the financial crisis. Second, some of these measures were aimed at restoring the smooth operation of the money market, the interbank market and other segments of the credit markets, so that the monetary transmission mechanism could continue to work as efficiently as possible. Third, certain measures were motivated by the fact that in some economies the key interest rate had been reduced very close to the absolute lower limit. For, once that rate reaches its lower limit, monetary policy is not powerless against persistent deflationary pressure. In such circumstances, the focus of monetary policy may shift from the traditional

instrument, namely the short-term interest rate, to other aspects of monetary policy such as the quantity of base money, the size and structure of the central bank balance sheet, and the steering of longer-term interest rates. However, it must be noted that not all of the recent additional measures were expressly related to the risk of deflation, as such a link is less evident for measures in the first and second category. Nevertheless, they also contribute, at least indirectly, towards reducing the risks of deflation.

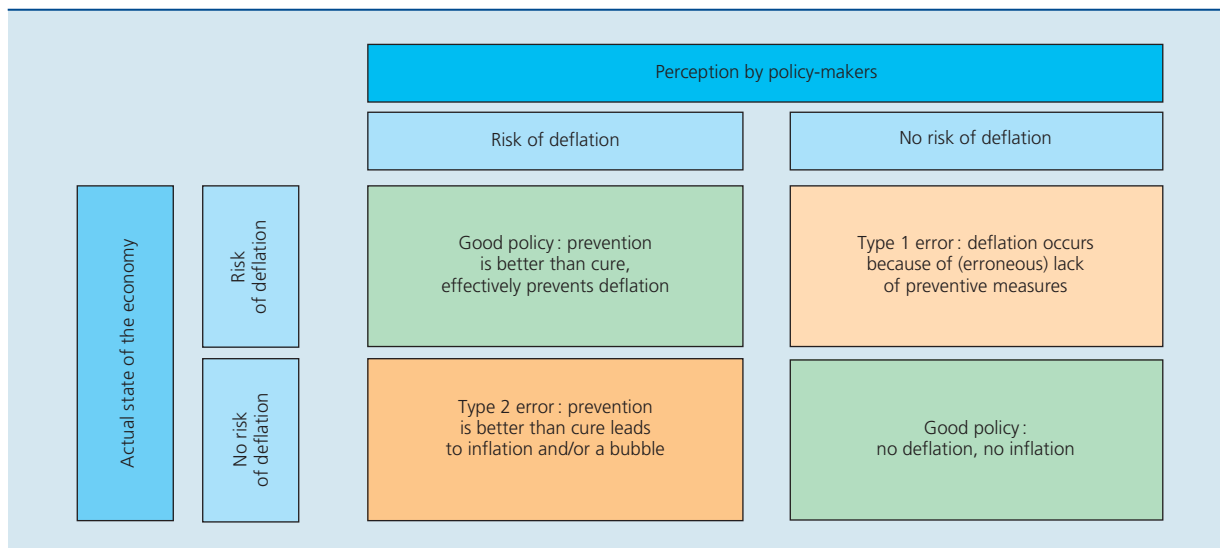
Apart from monetary policy, fiscal policy can also help to limit deflationary risks. If deflationary periods are accompanied by risks to financial stability – which is often the case – it is crucial to tackle the banks' solvency problems without delay. One of the lessons which can be drawn from the Japanese stagnation in the 1990s and 2000s is that hesitation in that respect prolongs the crisis. In addition, fiscal policy can provide macroeconomic stimuli, either via the automatic stabilisers or via additional discretionary action plans. For the fiscal policy to succeed, it must focus as far as possible on measures with the biggest multiplier. Moreover, it is also necessary to ensure that public finances are sustainable in the long term, otherwise there will be Ricardian effects which impair the efficiency of fiscal policy. This policy therefore cannot be implemented without constraints. The fiscal policy adopted in the EU Member States and in the United States is discussed in detail in another article in this issue of the Economic Review.

Since deflation often sets in totally unexpectedly and it is not easy to distinguish between, on the one hand, a sharp growth slowdown or recession forming part of a more or less normal, albeit very pronounced, economic cycle and, on the other hand, a recession which may trigger a deflationary spiral, policy in practice faces the difficult challenge of correctly assessing the situation at a very early stage in "real time" – i.e. on the basis of the data available at the time of the policy decision – and then implementing the appropriate policy response. In view of this real time character of the decisions, both type 1 and type 2 type errors (terms borrowed from statistics) can be made. In this context, a type 1 error occurs if the policy is not aimed at avoiding deflation, whereas there is a real danger of deflation. In that case, it is very likely that deflation will actually occur as a result of the underestimation of the deflation risk and the inadequate policy response. A type 2 error consists in conducting a decidedly anti-deflationary policy whereas in reality there is no real risk of deflation. The result in that case will be that

(1) An exception in this respect is the Swedish central bank. It cut its main policy rate to 0.25 p.c. on 8 July, but, as the difference between the interest rates for the marginal lending facility and the deposit facility was kept constant, the interest rate for the deposit facility was lowered to -0.25 p.c.

CHART 8

COMPLEXITY OF CONDUCTING POLICY IN "REAL TIME"



an over-accommodating policy fuels inflation and/or the development of a bubble. At a later stage, the bursting of the bubble may then present major challenges for policy, and perhaps even deflation risks. A type 1 error is generally regarded as worse, owing to the considerable costs in terms of prosperity resulting from a period of deflation. Therefore, type 2 errors can be regarded as payment of an insurance premium against type 1 errors. However, in some cases the cost of that insurance premium may be very high, because type 2 errors can also have substantial implications. In retrospect, it could be argued that monetary policy in the United States in 2003-2004 over-estimated the risk of deflation so that the policy pursued was too expansionary, and may have contributed to the development of a bubble on the housing and credit markets. The bursting of that bubble was in turn among the reasons for the current economic problems.

This makes it more complicated to conduct policy, not least when it comes to following the advice: "prevention is better than cure".

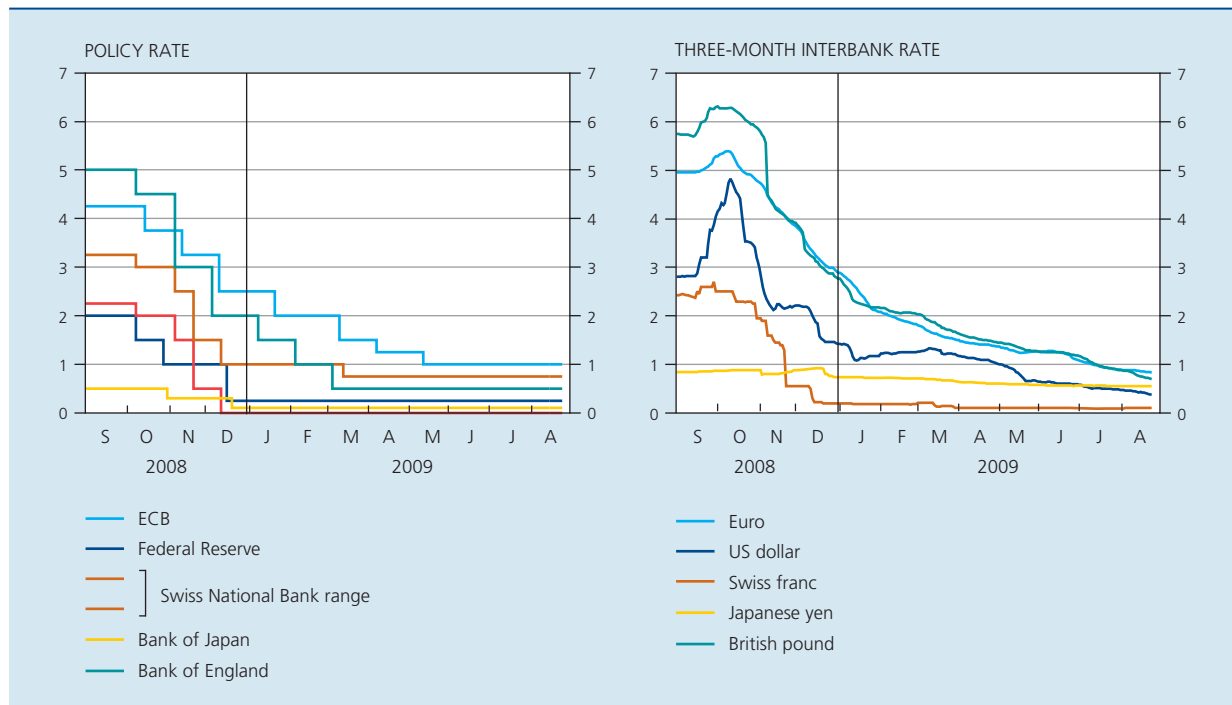
An outline of the monetary policy pursued from September 2008

In September 2008, when the financial turbulence developed into a full-blown financial and economic crisis with a significant impact on the real economy, all the leading central banks decided to make substantial cuts in their key interest rates, taking account of the downward pressure on inflation. At the beginning of October, the first cuts were coordinated; thereafter, the respective central

banks reduced their key interest rates as the negative demand shock intensified and the (expected) pressure on prices weakened. The cumulative interest rate cuts in the individual countries and their rapid succession indicate that all central banks opted for a very marked easing of monetary policy in order to achieve their respective goals and thus reduce the risk of deflation. The differences between the respective economies in terms of key interest rate responses are generally greater than the differences in money market rates, which are more relevant for transmission to the economy. For instance, the British key interest rate is well below that in the euro area. However, the three-month Euribor is at roughly the same level as the three-month Libor. If the euro area is compared with the US, the difference is also smaller for the three-month money market rate than for the key interest rate.

Since the eruption of the financial crisis, most central banks have supplemented these sharp interest rate cuts with unconventional measures. Some of them, such as the provision of liquidity for the purpose of safeguarding financial stability, were implemented regardless of the level of the key interest rate. However, other measures were explicitly designed to ensure further easing of monetary policy. In practice, this means that the central bank tries to steer the real market interest rates – possibly even the longer-term rate – downwards by influencing spreads or by maintaining or creating sufficiently positive inflation expectations. Below is a brief outline of these unconventional measures, though it does not aim to be exhaustive since that would be beyond the scope of this article. It seems useful here to divide them into six main categories,

CHART 9 SHORT-TERM INTEREST RATES



Source : Thomson Reuters Datastream.

but in the literature slightly different classifications are sometimes used.

Since the start of the financial turbulence in July 2007, virtually all central banks began by stepping up the provision of liquidity. To that end, a wider range of counterparties were admitted to the refinancing transactions, the respective central banks provided liquidity in foreign currencies, and/or adjustments were made to the way in which the requested liquidity was allocated. In addition, most central banks increasingly provided longer-term liquidity, and the eligible collateral was expanded. This more ample provision of liquidity was intended mainly to ensure that liquidity shortages in individual institutions, in the event of a non-functional interbank market, were not converted into solvency risks, increasing the systemic risk. They also reduced the uncertainty over the borrowing requirements of the financial institutions, and helped to compensate for the lower money and credit multipliers, possibly with a supporting effect on the lending of these institutions. Thus, apart from a pure financial stability motive, there was also to some degree an inherent monetary policy aspect.

Quantitative easing, for its part, focuses on the liabilities side of the central bank balance sheet, and in particular on the banks' reserves. The deliberate expansion of banks'

reserves via open market operations, e.g. by the purchase of government paper, should in principle lead to more lending and the holding of riskier assets, and should maintain or revive sufficiently high inflation expectations. Only the Bank of Japan has explicitly applied quantitative easing in recent times, namely between March 2001 and March 2006. Despite the fact that base money grew by around 70 p.c. during that period, the effect on inflation expectations was negligible. Svensson (2009) attributes this to a central bank's inability to create the credible expectation of a permanent expansion of the money supply and thus have a positive effect on the expected price level, as there is nothing to prevent the central bank from cutting the money supply back in the future. Many of the measures taken nowadays – such as more ample provision of liquidity – in practice lead to an expansion of the central bank balance sheet and in many cases also to an increase in the quantity of base money, but are nevertheless not, or at least not so explicitly, classed as quantitative easing because they focus more on the assets side of the central bank balance sheet. Moreover, in the specific case of the Eurosystem, it should be noted that there is no target at all for the volume of reserves or base money – an essential feature of quantitative easing –, since the volume of the reserves held by banks with the Eurosystem is driven entirely by demand from the banks, and not actively steered towards a particular level by the

TABLE 1 UNCONVENTIONAL MONETARY POLICY

	Eurosystem	Federal Reserve	Bank of Japan	Bank of England	Swiss National Bank
Ample provision of liquidity	X	X	X	X	X
Quantitative easing			X (until March 2006)		
Credit easing					
Government bonds		X	X	X	
Private debt instruments	X	X	X	X	X
Communication on the future path of interest rates		X			
Exchange rate					X
Price-level targeting					

Eurosystem. The unconventional measures taken by the Eurosystem are discussed in more detail in box 3.

The measures focusing on the assets side of the central bank balance sheet are often referred to as credit easing, a term which was first used by Bernanke (2009). In the case of credit easing, the emphasis is more on the qualitative changes to the central bank balance sheet, rather than simply the fact that most of these measures also lead to its enlargement. Credit easing generally refers to the purchase of assets such as debt instruments issued by the private sector or the government, where the main aim is to create more favourable financing conditions in the economy and/or to restore the operation of certain credit market segments which were hard hit by the crisis. While the purchase of private sector debt instruments is intended mainly to ensure liquidity on a particular market segment and exert downward pressure on the spreads for those assets, the purchase of government paper is designed to flatten the (risk-free) yield curve. Both contribute to a reduction in spreads and the maintenance or creation of positive inflation expectations, so that real financing conditions remain sufficiently expansionary. The latest unconventional monetary policy measures approved by the ECB Governing Council at its meetings on 7 May and 4 June also fall into this category.

Another way of flattening the yield curve is to offer information on the future interest rate path, and more specifically by making an announcement, as soon as the key interest rate has reached its lower limit, stating that it will remain at a very low level for a long period. Some central

banks, such as the Swedish and the Norwegian Central Bank, systematically publish their future interest rate path, even under more normal conditions. However, the big central banks do not do that. The Federal Reserve alone announced in December 2008, after it had reduced its key interest rate to 0.25 p.c., that it would maintain that rate at a very low level “for some time”.

In an open economy, a policy aimed at exchange rate depreciation may ease monetary conditions and help to create positive inflation expectations⁽¹⁾. Up to now, only the Swiss central bank has opted for such a policy, namely by announcing on 12 March this year that it would counteract any further appreciation of the Swiss franc against the euro. It is not by chance that the central bank in question is that of a small, open economy. Of course, in view of the synchronised, global character of the current crisis, this instrument can hardly be viewed as efficient, because it is not possible for all currencies to depreciate at the same time. Moreover, such a policy can be seen as exporting domestic problems (“*beggar thy neighbour*”) and therefore unleashing a protectionist backlash, which can only exacerbate the crisis.

Finally, the literature often says that aiming at a clear target for the price level, rather than for annual inflation, can provide better protection for the economy against a deflationary spiral. If such a target for the future price level is credible, then a fall in today's price level caused by a strong negative demand shock automatically implies an increase in inflation expectations, generating downward pressure on the real interest rate. In that way, an automatic stabiliser is triggered. Aiming at a target for the price level is equivalent to aiming at a target for average inflation calculated over a fairly long period, such as five years. While

(1) Some economists claim that this is the most efficient way of creating positive inflation expectations (Svensson, 2009).

the greater stabilisation potential of such a strategy is clear from model simulations, it has not yet been applied by any of the large central banks. Moreover, Walsh (2009) argues that it seems unadvisable to switch to price-level targeting in a crisis. One of the reasons is that, if this switch is made when deflation becomes a threat, the new strategy will presumably lack the necessary credibility.

The degree to which the various central banks have gone down the road of unconventional measures, and the type of measures chosen, depend on various factors. It is beyond the scope of this article to describe them all, so we confine ourselves here to briefly listing the most important. Of course, the macroeconomic situation of the respective national economies is one of the principal

determinants, and it can be assumed that a higher risk of deflation generally leads to a more pronounced monetary policy response. The structural characteristics of the various economies also have an influence, primarily on the choice of measures. For instance, up to now the Eurosystem has made exclusive use of the bank transmission channel, precisely because the euro area economy is financed mainly via the banks. In contrast, in the United States and in the United Kingdom, monetary policy focused relatively more on certain financial market segments, because direct financing of the economy via the market is far more significant there. Finally, policy-makers' preferences may vary, especially in regard to avoiding type 1 and type 2 errors respectively, and that may have had an impact on the policies eventually chosen.

Box 3 – The Eurosystem's unconventional monetary policy measures

As soon as the financial crisis worsened in September 2008, the Eurosystem took a series of unconventional policy measures which are still in force today. Since 15 October, liquidity has been provided at a fixed rate of interest with full allotment, so that the banks' demand for reserves is accommodated in full. In addition, a larger percentage of the liquidity is provided over a fairly long term. To that end, refinancing operations with terms of one reserve maintenance period (roughly one month) and six months were introduced, in addition to the existing long-term operations with a maturity of three months. Furthermore, the banks can obtain liquidity from the Eurosystem in US dollars and in Swiss francs, while euros are made available to a number of other central banks in order to enable them to provide their counterparties with liquidity in euros. Finally, in view of the strong expansion of the provision of liquidity, the list of eligible collateral was temporarily extended. In the case of most of these measures, it was also announced at an early stage that they would remain in force at least until the end of 2009.

One of the main implications of these measures was the creation of a liquidity surplus at the level of the consolidated banking sector, a surplus which was stored at a penalty interest rate in the Eurosystem's deposit facility. This generated strong downward pressure on the overnight interest rate. Thus, during that period, the EONIA deviated significantly from the central policy rate, while the provision of liquidity had previously been intended specifically to keep the EONIA stable at close to that rate. This made it possible to neutralise part of the increased premiums in the term interest rates in the non-guaranteed segment of the money market, which are the relevant ones for the transmission of monetary policy.

In the light of the persistent downside risks to price stability, the ECB Governing Council decided on three supplementary measures on 7 May and 4 June.

First, the European Investment Bank (EIB) was recognised as an eligible counterparty for the Eurosystem's refinancing operations. The ultimate aim of this measure is to support lending to small and medium-sized enterprises (SMEs), because this measure should help the EIB to satisfy additional demand for loans totalling an estimated 10 billion, which – in view of the usual leverage in this type of loan – could lead to a total expansion of 40 billion in the volume of lending to SMEs.

Second, it was also decided to conduct longer-term refinancing operations with a maturity of twelve months in June, September and December 2009. Not only will these supplementary refinancing operations give a further boost to structural liquidity, offering the banks additional comfort, but they will also help to flatten the yield curve

on the money market. These operations are also conducted at a fixed rate with full allotment. While it was decided to conduct the June and September operations at the key policy rate, which then stood at 1 p.c., a premium may be added to the prevailing key interest rate at the time of the December operation. To maintain consistency between the various measures, it was also decided to extend the list of eligible collateral until December 2010, precisely the month in which the December 2009 twelve-month refinancing operation will mature.

Third, it was decided to buy a portfolio of covered bonds for the sum of 60 billion. These purchases will be spread over the period July 2009 – June 2010 and will be conducted on both the primary and the secondary market. There are two reasons for specifically choosing covered bonds. First, these bonds are issued mainly by banks. By increasing liquidity in this market segment, which was hard hit by the financial crisis, and lowering the spreads in relation to the risk-free interest rate, an attempt is therefore being made to improve the long-term financing of the banks and thus support lending to the non-bank sector. Furthermore, the banking sector is also the main holder of covered bonds, so that the purchases on the secondary market will also provide additional liquidity for the banks, or at least enable them to reduce their leverage without squeezing the volume of lending to households and businesses. Thus, the supplementary easing of monetary policy is still clearly aimed at the bank transmission channel, which is important for the euro area. Second, covered bonds have a low risk profile, because the holder has a dual claim: a claim on the issuer of the covered bond (often a bank) and – if the issuer defaults – a claim on a pool of underlying assets (often mortgage loans or loans to the government) which the issuer must hold in order to cover the bond. This ensures that the risk incurred by the Eurosystem in buying these instruments remains manageable.

Conclusions

Since September 2008, in both the euro area and most developed economies, there have been unmistakable signs of an increased *ex ante* risk of bad deflation. In the past, a negative demand shock which originates partly from, but is also reinforced by, a financial crisis and which is preceded by the bursting of a bubble affecting various asset prices has quite often led to deflation. However, prompt, accurate assessment of this increased risk of deflation has led the policy-makers to conduct a decidedly expansionary policy. The measures to support the banks, the recovery plans of the various governments, and the interest rate cuts supplemented by unconventional measures on the part of central banks throughout the world have significantly reduced the deflation risk. Such a resolute policy response is in stark contrast to what happened at the time of the Great Depression. This has ensured that inflation expectations remain positive and to a large extent anchored. In that regard, the analysis has focused on the euro area (and where possible on Belgium) and shown that the current situation of (slightly) negative inflation will in all probability be short-lived. Low but nonetheless definitely positive inflation is then likely to ensue. The baseline scenario therefore does not assume deflation and recently indicators have increasingly become available showing that the freefall of the economy has come to a standstill.

Yet monetary policy faces two major challenges for the immediate future.

First, it is absolutely essential to ensure that the price falls reflected in the inflation figures for the summer months are not incorporated in expectations concerning the pattern of the general price level, thus increasing the risk of a deflationary spiral. It is therefore vital to make clear and credible statements about the inflation analysis. This article has attempted to make a contribution here. More particularly, it stresses that the sharp fall in inflation during recent months does not point to bad deflation, but to negative inflation resulting from relative price adjustments, and that there are no widespread price reductions taking place at present. This sharp fall, resulting in negative values during the summer of 2009, is due mainly to the decline in the crude oil price at the end of last year, which in itself is a factor bolstering the purchasing power of the oil-importing economies, and therefore can hardly be seen as a mechanism triggering a bad deflationary spiral. The Eurosystem's monetary policy strategy comprises all the ingredients for addressing this communication challenge. The quantitative definition of price stability does not only provide a clear anchor for inflation expectations. Its explicit medium-term orientation also indicates that temporary deviations from the inflation level corresponding to price stability – in either direction – are less relevant from the point of view of monetary policy.

Second, monetary policy must remain vigilant in order to avoid the type 1 and type 2 errors described in this article, as there is unusually great uncertainty over the macro-economic outlook at present, including inflation expectations in both the short and medium term.

On the one hand, it is not possible to state with any certainty that the deflation risk has definitely faded, since there are still risks of a contraction in activity. More specifically, there is still a possibility that, following an initial recovery, the economy will contract again once the – in principle short-term – support provided by the rebuilding of stocks and the fiscal policy stimuli ceases to apply, or that the recovery takes longer than expected to materialise, e.g. owing to persistent problems in the

banking sector. In both cases, there will be additional downward pressure on inflation, and further monetary policy easing may be desirable. In this connection, the ECB Governing Council has indicated that the key interest rate, at 1 p.c., has not necessarily reached its lowest level, although during the summer months that level was deemed appropriate in view of the general macro-economic situation.

On the other hand, there is also the risk that the massive monetary stimuli of recent months may not be removed sufficiently promptly, certainly if the economy picks up faster than expected. The change of direction evident in most economic indicators and commodity prices in recent months naturally requires close monitoring in this respect.

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