

## IV. Monetary policy in the advanced industrial economies

### Highlights

Monetary policy was stimulative in industrial economies during the period under review. This was due, in part, to the tepid recovery in 2002 and, in part, to risks of a sharp downturn in economic activity in an environment of heightened uncertainty. In particular, policymakers faced the challenges of lending support to consumption spending, countering the demand effects of financial headwinds in late 2002 and bolstering confidence in the midst of geopolitical risks in early 2003.

In the United States, lingering effects of past imbalances continued to weigh heavily on the prospects for a robust recovery. Against this background, the Federal Reserve held its policy target interest rate constant for most of the period, lowering the rate once in late 2002. The ECB initially held rates steady at a higher level, as inflation remained a concern, but eventually reduced them as growth weakened unexpectedly. The Japanese policy environment was unique. The economy showed signs of stabilising, but prospects remained highly uncertain. As a consequence, the Bank of Japan continued to pursue and intensify its policy of quantitative easing. Conditions were more mixed in other industrial countries, with some central banks tightening rates on concerns about rising inflationary pressures.

Despite the widespread assumption that growth will recover in a low-inflation environment, economies still appear to be vulnerable to various imbalances. These raise the possibility of a more protracted period of weakness, a scenario in which deflation could conceivably spread beyond Asian borders. A special section at the end of this chapter deals with the issue of deflation risk and its implications for central banks in advanced industrial economies.

### Review of developments

#### *United States*

The Federal Reserve maintained its highly accommodative stance for monetary policy during the period under review, responding to an economy beset by sluggish activity, economic and geopolitical risks and some possible attenuation of the transmission mechanism of monetary policy. As economic conditions evolved, however, the Federal Reserve found the need to make several adjustments to its degree of accommodation.

US monetary policy continued to be very accommodative

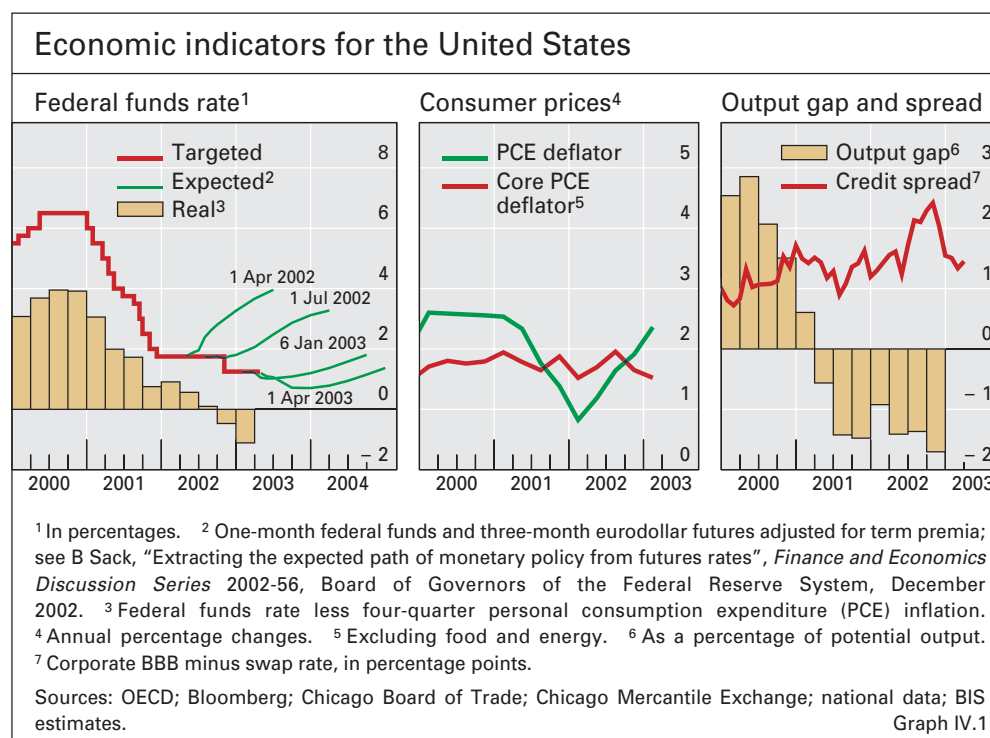
In early 2002, the Federal Open Market Committee (FOMC) revised its assessment of the risks from one weighted mainly towards economic weakness to a balanced evaluation of the prospects for output growth and inflation. Consumer spending had proved to be more resilient than previously expected and the inventory cycle had become more favourable. With this brighter outlook and a policy rate of only 1.75%, markets expected a significant near-term increase in the federal funds rate target (Graph IV.1). By August, however, the FOMC had revised downwards its expectations of both the strength of the recovery and the degree of inflationary pressures, tipping the balance of risks back towards sub-par growth. By November, conditions had become sufficiently weak to justify a somewhat larger than expected 50 basis point cut in the policy rate; with headline inflation running near 2% on a year-over-year basis, the inflation-adjusted federal funds rate fell to roughly -1% for the first time since the mid-1970s.

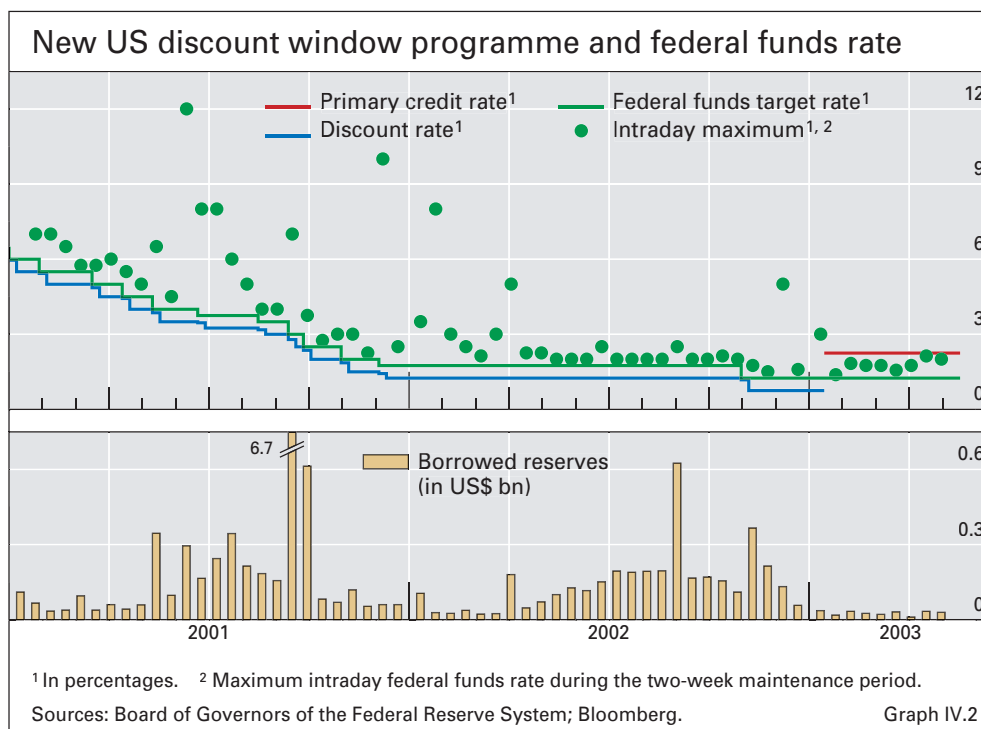
Federal funds rate cut to 40-year low

Widening uncertainties were noted as a major factor in the November decision because of their inhibiting effect on spending, production and employment. Market apprehension about corporate scandals and reporting irregularities also represented unusual headwinds, showing up as weaker equity markets and elevated credit spreads (see Chapter VI). In a somewhat surprising move, the FOMC paired the rate reduction with the adoption of a balanced assessment of the risks. This combination of decisions seemed to create some confusion in the market as to the Committee's true views about the near-term direction of the policy rate.

Uncertainties intensified, especially geopolitical ones

In early 2003, the policy rate was held steady even as uncertainties about the short-run economic outlook mounted. However, the FOMC temporarily suspended its practice of announcing its risk assessment at the conclusion of regularly scheduled meetings. A press statement indicated that useful





information could not be conveyed because developments had become too fluid. By May, however, the FOMC had resumed this practice and assessed the risks to be predominately weighted towards weakness. While the risks to the attainment of sustainable growth in the short run were seen to be roughly balanced, the FOMC considered that the probability of an unwelcome substantial fall in inflation, though minor, exceeded that of a pickup in inflation.

Two other important policy issues attracted particular attention during the review period: deflation and the effectiveness of monetary policy. The prospect of deflation at some point in the future, while remote, could not be completely ruled out this past year against the background of a low-inflation environment, persistent economic slack, potentially serious financial imbalances and a recovery still vulnerable to downside developments. During the period, Federal Reserve officials stated that, even in the unlikely event that nominal interest rates were to fall to zero, other policy tools were judged sufficient to fight deflation (see below).

The tepid recovery also raised questions about the effectiveness of monetary policy in the current environment. There is little doubt that activity in some sectors, such as capital spending and commercial real estate, was particularly disappointing. Business and consumer confidence also appeared somewhat insensitive to lower interest rates. One reason for this was the heightened uncertainties, but an additional drag came from lower equity prices and the need to strengthen corporate balance sheets. These developments, as well as a fall in the dollar, seemed to provoke some flight to quality, although this shift was orderly and manageable (see Chapter VI). Overall, these lingering headwinds called for lower policy rates than usual to establish the desired degree of stimulus. Even so, monetary policy had a positive effect on several other interest-sensitive sectors such as housing,

Deflation concerns were addressed ...

... as were questions about the effectiveness of monetary policy

housing-related demand and consumer durables, especially motor vehicles (see Chapter II). Thus, the evidence so far suggests little risk of policy ineffectiveness in the aggregate.

In January 2003, the Federal Reserve adopted a new institutional structure for its discount window. It replaced the adjustment and extended credit programmes with a new lombard-type facility of the kind found at other major central banks. The primary credit programme – now its main programme – extends credit to sound depository institutions at an interest rate above the federal funds rate target on a “no questions asked” basis (Graph IV.2). This practice eliminates many of the administrative burdens associated with the previous programme. The lending rate should also serve as a cap on intraday volatility for the federal funds rate. The redesign of the discount window was not intended to reflect a change in the stance of monetary policy, which continues to be primarily determined by the federal funds rate target.

### Euro area

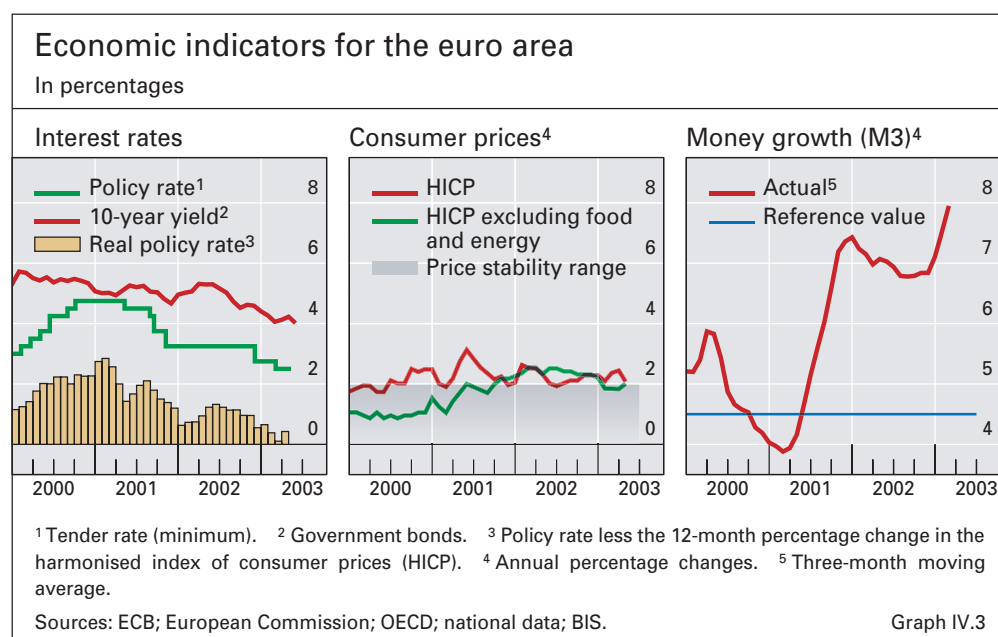
Policy rates were held steady in the euro area for most of 2002 (Graph IV.3). The policy environment was characterised by surprisingly weak growth and stubbornly high inflation, which remained above the upper bound of the ECB’s price stability range. For a time, the ECB was particularly concerned that inflation expectations might become entrenched above this ceiling.

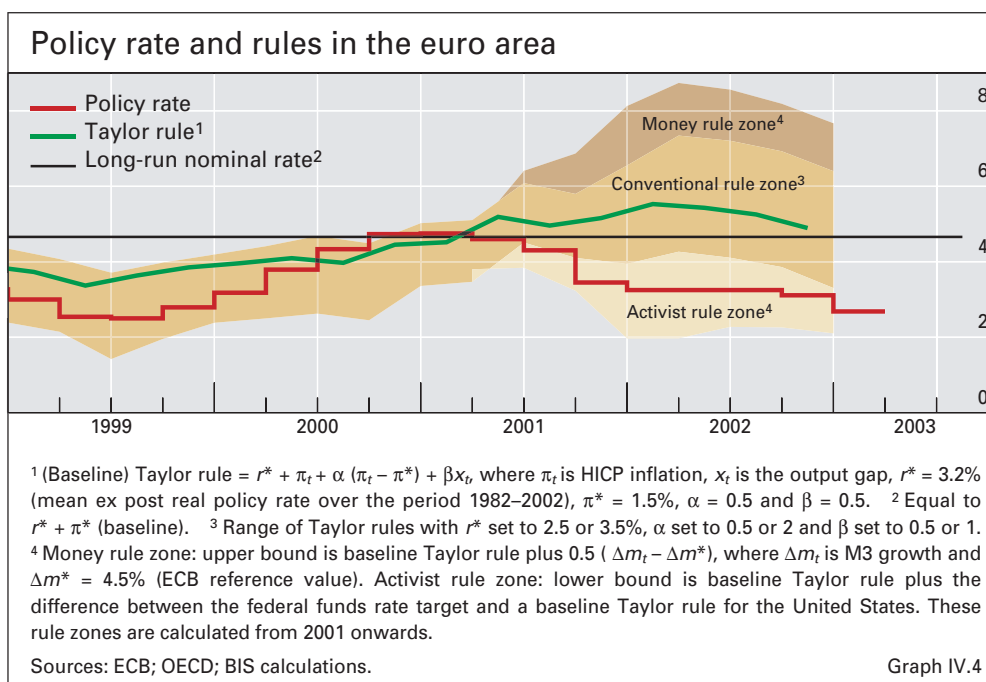
The ECB’s view on the balance of risks to price stability did, however, evolve over the course of the year. The risks of inflation were taken to be on the upside in summer 2002 in the light of continued high money growth, wage developments and the public’s perception of the inflationary effects of the cash changeover to euro notes and coins. The ECB took a more neutral view in early autumn, even though money and wage trends were still unfavourable and oil prices rose. By early November, the risks were seen as firmly on the downside, dominated by the high uncertainty over growth developments.

The Federal Reserve adopted a lombard-type lending facility

Monetary policy was cautiously stimulative in the euro area

Inflationary pressures were a concern in the first half of 2002 ...





In December, the ECB lowered the main refinancing rate by 50 basis points, as inflationary pressures were seen to be easing owing to sluggish growth and downside risks that seemed to loom ever larger. Meanwhile, M3 growth stayed well above the ECB’s reference value of 4.5%. The ECB explained that the high money growth was largely driven by portfolio reallocations due to heightened uncertainty in the existing economic environment, financial market stress and lower interest rates. Nevertheless, the persistent deviation of M3 growth from the reference value raised the question of how long it would take for the demand for broad money to once again become stable enough to be used as a reliable indicator for monetary policy.

... but later  
downside risks  
loomed larger

A further policy interest rate cut was undertaken in early March, as inflationary pressures were expected to moderate still more in the face of continued sub-par growth and appreciation of the euro. In the light of significant uncertainty from geopolitical tensions, the ECB, like the Federal Reserve, noted that it was difficult to characterise the short-term balance of risks. Moreover, the direction and potential effectiveness of monetary policy over the medium term were deemed dependent on other policies in the euro area, notably further fiscal consolidation and progress on labour and product market reforms.

Rates were lowered  
in early 2003

During much of the period under review, the ECB’s policy stance was criticised for having been too tight, particularly in comparison to that of the Federal Reserve. It is possible that differences in the monetary transmission mechanism and in policy frameworks, notably the ECB’s more explicit focus on achieving price stability and the larger weight it places on monetary aggregates, played a role here. At the same time, differing economic conditions between the euro area and the United States may also have been consistent with the maintenance of relatively higher rates.

The ECB’s policy  
stance was  
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too tight ...

... but this was at odds with conventional benchmarks

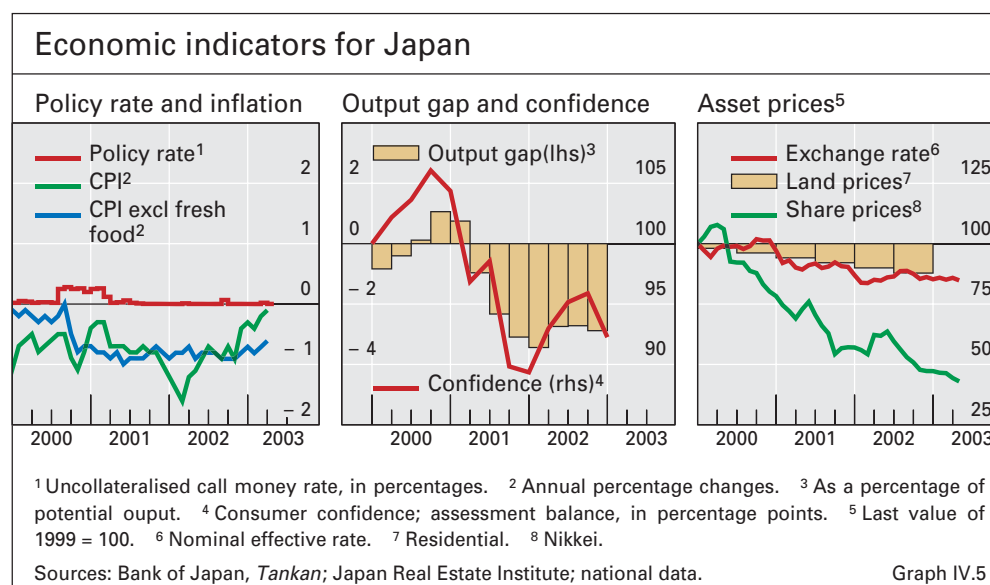
Indeed, there are indications that, conditional on circumstances in their respective economies, the policies of the ECB and Federal Reserve have been broadly in line with each other. One assessment of the stance of policy in the euro area is provided in Graph IV.4. The graph plots the actual policy rate against ranges for the value of the policy rate implied by various Taylor-type rules. According to these measures, not only has the policy rate been below its long-run neutral level, but ECB policy has also been more stimulative than would have been consistent with the range of conventional Taylor rules. The case would be even stronger if it were thought appropriate that policy should respond directly to M3 growth, in addition to inflation and the output gap. However, just as in the United States, where the federal funds rate has similarly been kept below Taylor rule levels, the particularly stimulative stance in relation to such simple benchmark rules could be regarded as justified on the basis of a number of unusual circumstances. These include the previous collapse in stock prices, the geopolitical situation and even the possibility of hitting the zero lower bound, all of which are factors not easily incorporated into conventional policy rules.

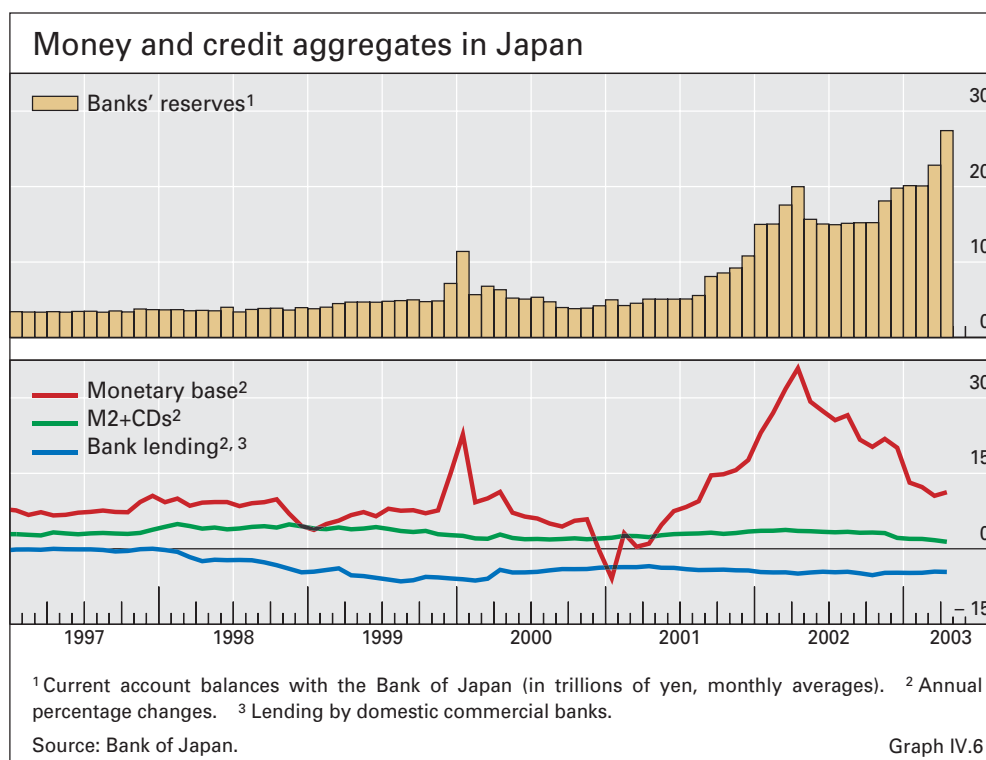
In May 2003, the ECB announced the results of its review of its monetary policy strategy. While maintaining its definition of price stability, the Governing Council clarified that it aims to keep inflation rates close to 2% over the medium term, underlying its commitment to guard against deflation. In addition, while confirming its two-pillar approach, the ECB underscored that the pillars pertain to two distinct policy horizons. Risks to price stability over the short to medium term will be assessed based on a broad economic analysis, emphasising shocks affecting the euro area and projections of key variables. Monetary analysis will serve as a means of cross-checking medium- to long-term inflation trends.

### Japan

The Bank of Japan continued with quantitative easing

Japan continued to experience deflation during the period under review, albeit at a moderate rate, with the decline in core CPI at just below 1% (Graph IV.5). At the same time, the Japanese economy showed some signs of stabilising





during 2002, led by external demand. In the midst of these developments, the Bank of Japan maintained its policy of quantitative easing, which helped to keep short-term interest rates anchored virtually at zero. The target for the level of current account balances was initially maintained at ¥10–15 trillion, but was raised in October to ¥15–20 trillion (Graph IV.6). In addition, the Bank of Japan increased its outright purchases of long-term government bonds by about 20%. The monetary base grew at a lower rate during the latter half of 2002, although the growth rate of broad money (M2+CDs) remained steady at roughly 3%. Commercial credit declined further, reflecting the continued downward trend in business fixed investment, efforts by firms to shore up their balance sheets and more restrictive lending attitudes on the part of financial institutions.

Policy was eased further in the early part of 2003 in response to greater risks to the economic recovery posed by the strengthening of the yen against the dollar and geopolitical tensions. In addition, equity prices and commercial and residential property prices continued to fall. At an extraordinary board meeting in March, the Bank of Japan reaffirmed its intention to provide ample liquidity to the economy, even in excess of its target for current account balances. It also announced an increase in the limit on its purchases of private banks' stockholdings, from ¥2 trillion to ¥3 trillion, and set up a committee to deal with potential negative market reactions to developments in the war in Iraq. The Bank raised its target for current account balances further in April, to ¥22–27 trillion, and again in May, to ¥27–30 trillion.

With deflation persisting and the Japanese economy showing no immediate signs of a strong revival, the effectiveness of quantitative easing was brought into question. In addition to other measures taken, such as a

Additional extraordinary measures were introduced

Doubts about quantitative easing were raised ...

reduction in collateral standards, the move to purchase equity holdings from banks was intended to supplement the programme of quantitative easing. One reason for resorting to this measure was to help insulate banks' balance sheets against further declines in stock prices. It was also hoped that this would help restore confidence in the equity market more generally. To date, these stock purchases have been on a relatively small scale. Arguably, a more important factor behind the Bank's decision to purchase equities was to underscore the severity of Japan's financial problems.

... as calls for more radical policies continued

The Bank of Japan also continued to face pressure to adopt other, still more radical policies to combat deflation. One alternative that received widespread support was an expansion of the Bank's purchases of risky assets to include asset-backed securities, real estate trusts and exchange-traded funds. In fact, in April 2003, the Bank of Japan announced its intention to purchase securities backed by loan claims and accounts receivable in an effort to channel funds directly to small and medium-sized companies. Alternative policy options included the adoption of inflation targeting, although the Bank of Japan has already pledged to maintain its policy of zero interest rates and quantitative easing until price declines cease. Also suggested was the pursuit of monetary actions that would lead to the depreciation of the yen as a means of complementing the exchange rate policies formulated by the Ministry of Finance. The authorities, in fact, intervened a number of times in foreign exchange markets, particularly in the early part of 2003, although this was directed towards stemming the appreciation of the yen against the dollar rather than encouraging a depreciation.

#### *Inflation targeting countries*

Stimulative monetary policies were the rule

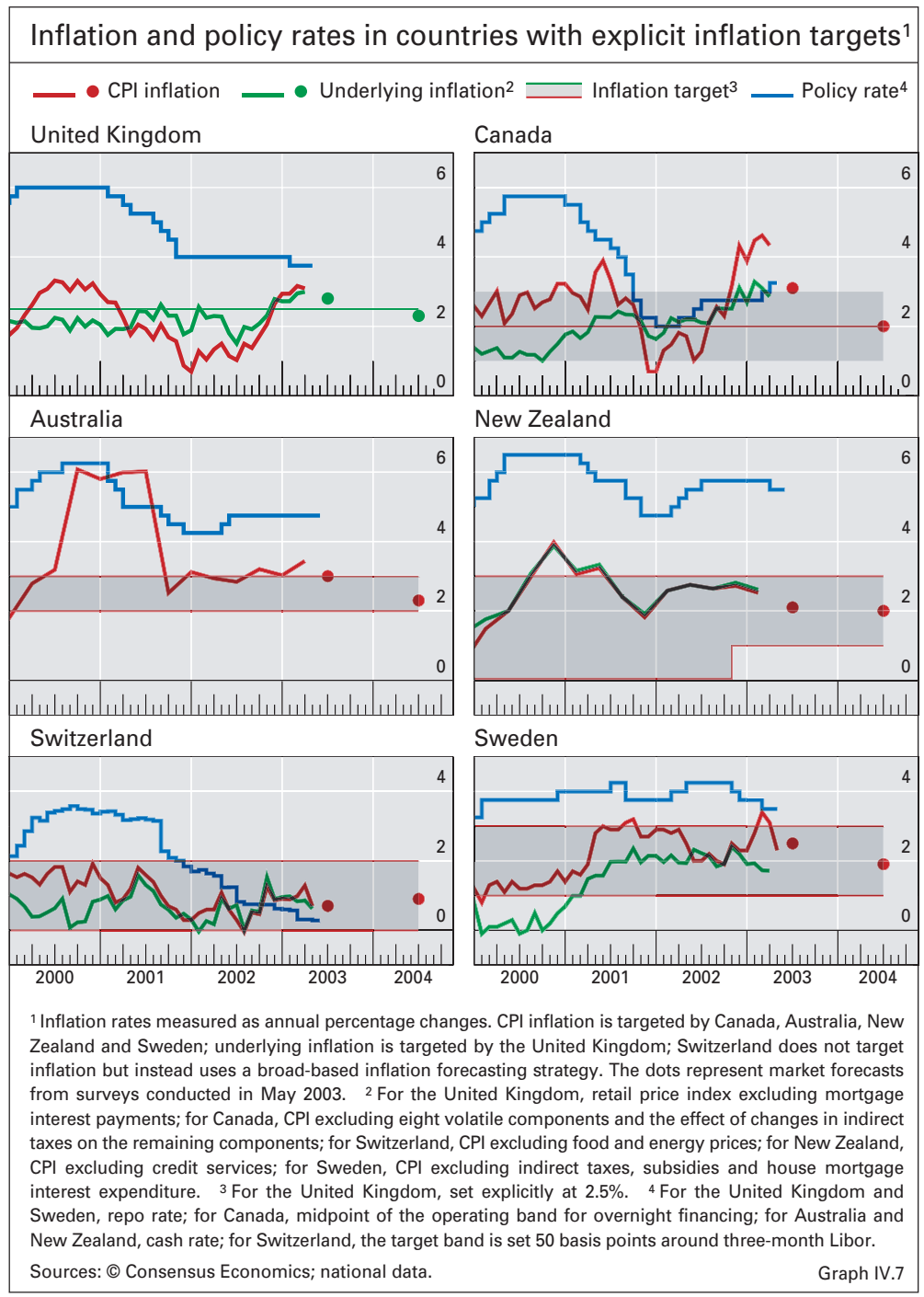
Central banks in countries with explicit inflation targets generally maintained an accommodative stance in the period under review. Several common factors lay behind this overall thrust of policy, including the global slowdown in demand, geopolitical uncertainties and the lingering effects of past falls in equity prices. Stimulative policies were pursued even though short-term inflationary pressures were generally elevated or rising during the period (Graph IV.7). To some extent, these were seen to reflect higher energy prices and other adverse supply developments. Assuming these pressures were of a temporary nature and that their impact would be likely to wear off over the forecast horizon, inflation rates would decline, especially if offsets were in place from exchange rate appreciation and economic slack.

Policy rates were generally steady in the latter half of 2002

Specific developments in each country highlight other key policy issues faced by policymakers over the past year, not least how to target inflation while balancing key uncertainties, such as risks posed in some cases by rapid increases in housing prices. The Bank of England kept its policy rate steady during most of the period, as output remained below potential and inflation fluctuated around its target rate of 2½%. The Bank expressed some reluctance to lower rates because of domestic demand pressures and potential growing imbalances in the household sector, especially those arising from the ebullient housing market. After having tightened policy in early 2002, the Bank of Canada, the Reserve Bank of Australia and the Reserve Bank of New Zealand



held rates unchanged for a time, despite robust domestic growth and diminished slack, as a precaution in the face of significant downside risks. Exchange rate appreciation and some moderation of prospects for global growth helped to maintain inflation close to the upper bound of the respective target ranges. The Reserve Bank of Australia and, to a lesser extent, the Reserve Bank of New Zealand also became increasingly mindful of potential problems arising from rapidly rising domestic housing prices. In Sweden, the Riksbank maintained its policy rate near 4% in 2002. A key concern during the year was whether inflation, which remained at the upper end of the target range, might become embedded in higher inflation expectations.



Geopolitical uncertainties helped to prompt lower rates

Switzerland is now close to the zero lower bound

Further sectoral rebalancing may be needed

Concerns about housing prices

Deflation has become a widespread concern

Several central banks found cause to ease policy in 2003. This was in part due to worsening international economic prospects and lower confidence associated with the spike in uncertainty just prior to the war in Iraq. The Bank of England eased its policy rate by 25 basis points in February to 3.75%, the lowest level since 1955. The Riksbank cut its repo rate by 25 basis points in mid-March to guard against the downside risks. The Swiss National Bank responded to weakening international activity by reducing the lower and upper bands of its target range for three-month Libor to 0% and 0.75%, respectively, with the actual daily rate falling as low as 0.29%. With little short-term room to manoeuvre, Swiss policymakers also announced their intention to use foreign exchange market interventions, if necessary, to stimulate demand. The Reserve Bank of New Zealand lowered its policy rate by 25 basis points as it became more confident that inflationary pressures would ease. By contrast, continued upward momentum in inflation prompted the Bank of Canada to increase its policy rate by 50 basis points in early 2003.

Even if the global recovery takes hold, policymakers in the inflation targeting countries will still face a number of challenges. One issue is whether temporary adverse supply developments over the past year, such as the spike in oil prices and service sector prices in some countries, could feed through into higher inflation. In practice, these developments, even if they lingered, would be less likely to cause as marked a deterioration in the inflation picture as they did in the 1970s. Since then, expectations have become better anchored at a low level of inflation, in part because of hard-earned inflation fighting credibility. Inflation targeting frameworks have increased public confidence that inflation rates will no longer be allowed to rise inexorably.

A second issue is whether elevated housing prices in some countries will be sustained. If increases in housing prices – such as in the United Kingdom, Australia and New Zealand – do prove sustainable, then central banks need not give them special attention. If, on the other hand, the run-up in housing prices were to prove unsustainable and the subsequent correction sizeable, policymakers might face a potentially destabilising period of adjustment. In the context of other financial imbalances, steep enough declines in spending could even lead to deflation if initial CPI inflation levels were low enough.

## Deflation risk and its implications

Deflation – a decline in the general price level – is a term that had fallen into disuse during most of the postwar period of high inflation, but has cropped up more frequently in policy discussions of late. The successful taming of inflation has increased the possibility that most advanced industrial economies might be one deep recession away from experiencing deflation. In fact, accounting for measurement bias in standard aggregate price measures, the quarterly frequency of “effective deflation” has jumped significantly (Table IV.1; see also Chapter III). The recent Japanese experience, as well as the Great Depression era, clearly illustrates that a seemingly benign low-inflation environment can turn into one with disruptive deflation.

Frequency of effective deflation, 1960 Q1–2002 Q4 <sup>1</sup>						
	1960–69	1970–79	1980–89	1990–99	2000–01	2002
Headline inflation	13.7	3.0	7.5	11.8	22.1	28.9
GDP deflator <sup>2</sup>	8.7	2.0	5.3	15.4	32.2	34.7
Core inflation <sup>3</sup>	3.5	1.6	3.4	14.7	31.3	17.9
Services less housing <sup>4</sup>	4.0	1.3	2.2	12.2	28.6	16.1
Wholesale inflation <sup>5</sup>	27.6	7.6	23.1	35.2	25.0	57.3

<sup>1</sup> The frequency of effective deflation is defined as the percentage of quarters with yearly inflation less than 1% for each type of price index from Argentina, Belgium, Brazil, Canada, Chile, China, Colombia, France, Germany, Hong Kong SAR, Indonesia, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, Peru, Singapore, Sweden, Switzerland, Taiwan (China), Thailand, Venezuela, the United Kingdom and the United States. <sup>2</sup> Excluding Argentina, Chile, China, Colombia, Peru, Singapore and Venezuela. <sup>3</sup> Excluding the countries in footnote 2 and Brazil, Hong Kong SAR, Indonesia, Malaysia and Taiwan (China). <sup>4</sup> Excluding the countries in footnote 2 and Hong Kong SAR, Malaysia, Taiwan (China) and Thailand. <sup>5</sup> Excluding China and Hong Kong SAR.

Table IV.1

One of the most daunting challenges faced by central banks in a deflationary environment is the zero lower bound (ZLB) constraint. The relevance of the ZLB as a binding constraint ultimately depends on the seriousness of the deflation as well as the level of the natural real interest rate. The latter varies positively with the potential growth rate of output and will differ from country to country. The main problem for central banks is that they would need to employ unconventional means to further ease monetary policy if short-term nominal interest rates were driven down to zero.

Following the adage “hope for the best but plan for the worst”, this section explores some of the lessons to be learned about deflation from history, with particular reference to the role of monetary policy and the ZLB.

### *Problems of deflation*

Central banks view deflation as undesirable because it is inconsistent with their goal of promoting welfare through price stability. In practice, most central banks consider price stability to be equivalent to some low but positive rate of inflation. The objective of price stability reflects the familiar economic costs arising from inflation on the upside and deflation on the downside, such as relative price distortions and arbitrary redistributions of wealth. In addition, deflation entails other costs that will depend greatly on the particular economic conditions associated with each episode.

Deflation is inconsistent with central bank objectives

On the one hand, there may be situations where deflation is relatively benign. In an economy with flexible labour and product markets, a modest deflation may be no more costly or risky than a similarly sized deviation of inflation above the central bank’s desired inflation rate. In consequence, such deflations might not be viewed as events that require exceptional policy responses. For instance, an economy with low average inflation is likely to experience occasional brief periods of deflation, as a matter of course, as economic activity experiences its normal cyclical fluctuations in response to demand and supply shocks. Unexpected weakness in demand may create economic slack that puts downward pressure on inflation, possibly enough to lead to deflation. Likewise, favourable supply developments, such as rapid

Costs of deflation depend on circumstances

productivity growth or declines in imported intermediate goods prices, may generate deflationary pressures as product prices fall and unit labour costs remain subdued. Such supply-driven deflations may be the most benign of all because they would tend to be accompanied by rapid growth in output as well as in physical and financial asset prices.

Deflations can be disruptive ...

On the other hand, deflation can be more disruptive than inflation because of several types of economic asymmetries. First, if nominal wages were especially rigid downwards, their failure to fall could interfere with adjustments in labour markets during a deflation. Real wages would rise, thereby slowing a recovery or adding to contractionary forces by raising unemployment rates and reducing income growth. Second, debt deflation – the increased servicing costs in real terms on nominal credit contracts due to deflation – can have a restraining effect on demand during a deflation, although this effect would by itself not be dissimilar from that associated with an unexpected disinflation. The consequent deterioration in their financial position could induce borrowers to curb spending so as to bolster balance sheets, make external funding harder to come by and, at the extreme, increase bankruptcies and seriously undermine the asset quality of financial institutions. Third, deflation can impair the ability of monetary policy to stimulate economic activity once the ZLB is reached because real rates will rise if deflation is expected to increase. Without stimulative monetary policy, the downside risks to growth would be greater and the speed of recovery would be slower.

... particularly when associated with asset price declines

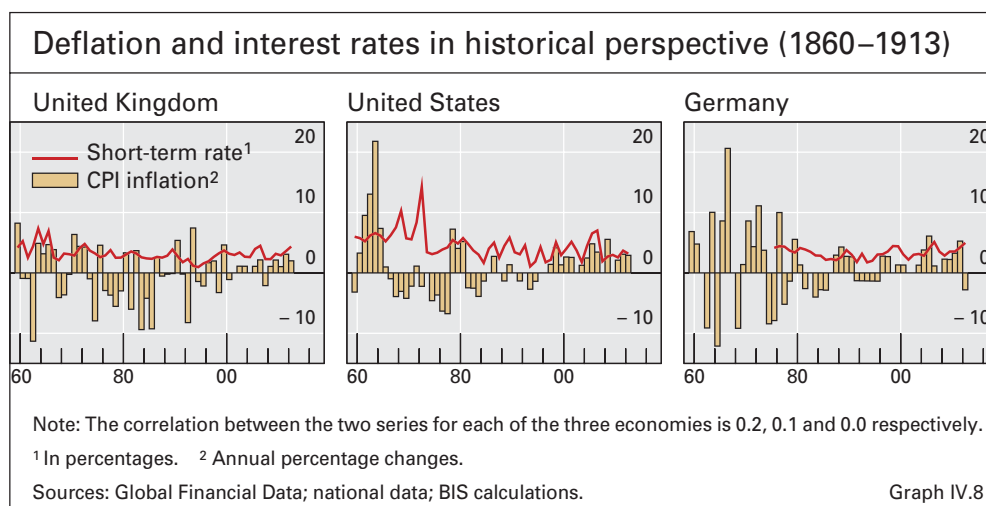
The consequences of deflation would be particularly disruptive if preceded by a build-up of large debts and accompanied by sharp declines in asset prices. The unwinding of financial imbalances could even lead to a deflationary spiral taking hold. In such an extreme scenario, subsequent rounds of debt deflation, large reductions in the value of collateral and equity ratios and entrenched deflation expectations could have serious repercussions on the financial system, including failures of financial institutions and dysfunctional financial markets. The outcome could be very damaging, including a contraction in output and a rise in unemployment. A prime example of such processes, abetted by poor policy choices, is the Great Depression in the United States.

#### *The historical record*

Past experiences with deflation, particularly in the 19th and early 20th centuries, provide insights about the nature of deflation and its challenges for monetary policymakers. Several stylised facts emerge.

Deflation was commonplace

The most striking feature of that period is that deflation was a much more common occurrence than in recent history. For example, deflation was just as prevalent as inflation during the period 1860–1900 in the United Kingdom, the United States and Germany (Graph IV.8). This phenomenon partly reflects the rule-based nature of the monetary system during that time – the gold standard. Under the gold standard, the price of gold was maintained by national governments at a fixed parity, which effectively constrained the inflation process. As a result, price levels could not continually rise as they did



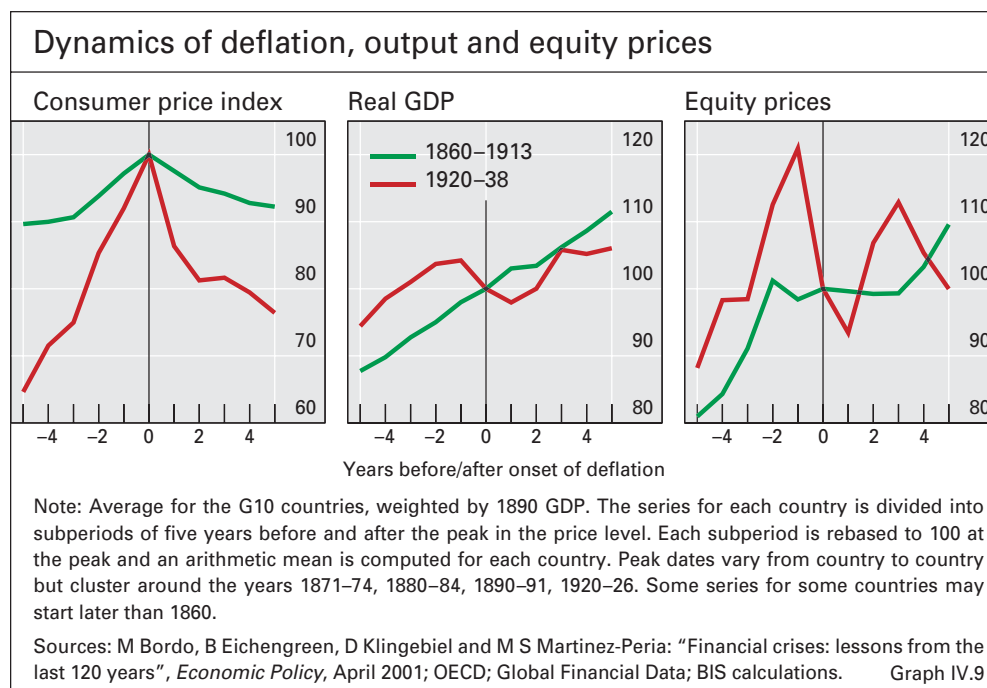
in the latter part of the 20th century unless there was a sustained increase in gold reserves. This meant that, over time, periods of inflation alternated with periods of deflation and, over long horizons, prices tended to be comparatively stable.

Another interesting historical feature is that deflation in a variety of countries was rarely accompanied by an obvious deceleration in real GDP. In fact, to the extent that historical annual data are accurate, output typically kept growing even after peaks in the price level (Graph IV.9). Among the factors that might explain this are fairly flexible nominal wages, the nature of the monetary regime and the way in which price expectations were formed (see below), and historically modest debt levels. The Great Depression stands out as one notable exception, as there was a major collapse of output, an asset price crash and significant financial strains. In a broad historical context, the Great Depression may be best interpreted as a unique period when many particularly unfavourable economic and policy developments interacted to produce the most severe contraction in the past 100 years.

Mild deflations were consistent with good economic performance

Historical evidence also seems to indicate that, typically, the onset of deflations in the 19th century, even deep deflations, was largely unanticipated. More generally, it appears that price expectations adjusted only slowly to economic developments. While survey data are not available from this period, indirect evidence from the behaviour of nominal interest rates is consistent with this view. Short-term nominal rates were remarkably stable despite wide swings in the rate of price change (see Graph IV.8); indeed, such stable behaviour was particularly evident in long-term nominal rates. One possible explanation is that inflation expectations were not very sensitive to past inflation developments because price data were generally not available in a timely fashion, the theory behind aggregate price indices was still in its infancy and theories of nominal interest rate determination were either not developed or not well known. Another possible, complementary, explanation is that expectations simply reflected the nature of the monetary regime. Since inflation and deflation rates were less persistent under the gold standard, as noted earlier, expectational errors committed in the short run would have tended to be offset over time, thereby involving little cost on average.

Deflations were largely unanticipated



The ZLB was not important

A fourth, somewhat more surprising, feature of deflations in the 19th and early 20th centuries is that the ZLB was hardly ever reached. Indeed, except during the interwar years, short-term interest rates were rarely close to zero. This was probably due, in part, to sluggish changes in expectations but also to the nature of the monetary regime. In particular, under the gold standard, policy (discount) rates were kept largely stable around historical norms and adjusted upwards only when the gold parity came under pressure.

#### *Lessons from past experience*

Monetary regimes matter

When viewed through the proper lens, the historical record can provide lessons for policymakers today. A first point to note is that under the current fiat-based monetary system, policies aimed at delivering low and stable inflation act in a very similar way to the implicit rules imposed by the gold standard, despite obvious differences between the two systems. In both, deviations from price stability cause a feedback response that effectively constrains the behaviour of prices. Under the gold standard, international reserves and gold would naturally flow from countries with relatively high inflation; in the current system, central banks take action to adjust domestic monetary conditions. One important difference is that current monetary policy frameworks generally allow for sustained upward drift in the price level, whereas gold reserves provided a rough anchor for the price level over long horizons.

The historical record also provides more specific lessons concerning the likelihood of deflation and of hitting the ZLB, as well as whether economic problems associated with deflation today are likely to be more or less severe than in the past.

Unanticipated deflation still a relevant concern

First, despite more sophisticated economic analysis and forecasting abilities, recent experience suggests that the risk of failing to anticipate the onset of deflation should not be underestimated. Deflation in Asia, for

example, was in large part unexpected, as weaker than anticipated growth dashed expectations of positive price increases (Table IV.2).

Second, it would be problematic to conclude from the historical experience that the ZLB constraint is unlikely to become a relevant consideration (Graph IV.8). Monetary policy is much more activist today than in the past. On the one hand, this tends to reduce the likelihood of generating deflation in the first place, as monetary authorities are now more apt to react pre-emptively to unfolding economic events. On the other hand, there is a greater chance that central banks will drive the policy rate towards zero during periods of sluggish economic activity if inflation threatens to go below the desired rate. For example, the Bank of Japan has already pushed short-term interest rates effectively to the ZLB, and, more recently, the Swiss National Bank has lowered its policy rate close to zero.

Third, expectations now seem to be more responsive to economic developments, reflected in the historical data by the higher correlation over time between inflation and nominal interest rates. To the extent that this depends upon the greater availability of information, there is a higher risk that, at the onset of deflation, expectations of further price decreases will become more easily entrenched. This puts a premium on current monetary frameworks being credible in the pursuit of low and stable inflation, thereby muting the responsiveness of expectations to undesirable short-term price dynamics. The gold standard, especially during its heyday from 1880 to 1913, played the role of a stable policy anchor. A key question today is whether the credibility of formal or informal inflation targeting frameworks would prove to be similarly stabilising.

Fourth, downward nominal wage rigidity is more prevalent today than in the past as labour market practices have changed significantly over the centuries. Such changes include higher rates of unionisation, more generous unemployment benefits and greater protection of workers' rights. Arguably, these factors would tend to increase rigidity in nominal wages. In addition, workers may be more likely to resist nominal wage cuts as a result of the

The ZLB may be more important now

Expectations formation plays a key role

Deflation may be more disruptive now due to more rigid nominal wages

Episodes of deflation in 2002					
	Inflation			Output growth	
	Actual <sup>1</sup>	Forecast <sup>1,2</sup>	Forecast error <sup>2,3</sup>	Actual <sup>1</sup>	Forecast error <sup>2,3</sup>
Economies experiencing deflation <sup>4</sup>	-0.8	1.6	-2.3	4.8	-0.8
China	-0.7	2.5	-3.2	8.0	-0.1
Hong Kong SAR	-3.0	2.5	-5.5	2.3	-2.5
Japan	-0.9	0.0	-0.9	0.3	-1.6 <sup>5</sup>
Singapore	-0.4	2.0	-2.4	2.2	-4.3
Taiwan, China	-0.1	1.8	-1.9	4.0	-1.7

<sup>1</sup> Average annual percentage changes. <sup>2</sup> January 2001 consensus forecast. <sup>3</sup> In percentage points.  
<sup>4</sup> Weighted by 2000 GDP at PPP exchange rates. <sup>5</sup> Part of the forecast error is probably due to the changes in the national accounts methodology.

Sources: © Consensus Economics; national data; BIS calculations. Table IV.2

legacy of high inflation from the 1970s and 1980s. The combination of expectations that are more sensitive to developments, and nominal wages that are less flexible, suggests that deflations associated with deficient demand could be more disruptive in certain respects than those a century ago. For example, the recent experience in Hong Kong has illustrated that, in an environment of persistent deflation and rising unemployment, nominal wages appear to have been less flexible than would otherwise have been expected.

Financial systems  
may be more  
resilient now

Finally, financial systems have clearly undergone major changes since the late 19th century. These may have increased their resilience in the face of deflationary pressures. For instance, risk management practices have grown considerably in sophistication and there have been significant improvements in prudential frameworks (see Chapter VII). On the other hand, higher leverage ratios today relative to the more distant past may have raised the exposure to debt deflation.

### *Dealing with deflation*

Deflation raises specific challenges for monetary policy largely because of the presence of the ZLB. When the ZLB is reached, central banks must turn to alternative instruments in their efforts to stimulate demand. This raises three questions. First, what are the best monetary policy tactics when facing a risk of deflation? Second, how should central banks respond after falling into a deflationary environment? Third, and more broadly, does the recent brush with deflation, particularly the Japanese experience, suggest a need to adapt the current objectives or strategies of monetary policy? This subsection addresses these questions in turn.

### *Tactics to avoid deflation*

The ZLB calls for  
aggressive easing

Since the ZLB imposes an asymmetry on interest rate movements, it has been suggested that monetary policy itself should be conducted asymmetrically as inflation falls towards zero. That is, interest rates would be lowered somewhat further and faster than would normally be the case in the face of a slowdown in economic activity that took place at already low inflation rates. This approach would aim to limit the risk of deflation taking hold in the first place. In addition, policy rates could be kept very low until clear signs emerged that demand had recovered and inflation had started to rise. To some extent, this may describe the behaviour of the Federal Reserve in rapidly lowering the federal funds rate target in 2001 and continuing to keep it low into 2003. Other countries also adopted and maintained very stimulative policies during this period.

At the same time, one possible risk associated with sharp reductions in policy rates is that they could, under some circumstances, have the potential to undermine confidence. This might be so if the public saw such moves as revealing negative information about the outlook, or if the public became concerned about the prospect of the central bank running out of ammunition. In either case, what policymakers said would play an important role in shaping public expectations about their policy intentions and assessment of economic



conditions. Communication of such views could have an economic influence above and beyond the direct effects of interest rate changes alone.

A second complication could arise depending on the circumstances in which deflationary forces developed. In particular, historical experience indicates that, given an initial low level of inflation, the unwinding of financial imbalances can be an insidious source of deflationary pressure. Such imbalances, however, might be primarily concentrated in certain sectors or asset classes and could respond with different speeds and degrees of sensitivity to monetary policy actions. If so, lowering the policy rate to counteract headwinds arising from one sector might contribute to the build-up of imbalances in another. This could present the central bank with a subtle trade-off over time when setting its policy rate.

#### *Tactics to combat deflation*

Ending deflation may require another set of monetary policy tactics than those used when simply trying to avoid it. As long as the ZLB has not been reached, the central bank can use conventional means to influence demand through the standard transmission channels. However, if the ZLB becomes a binding constraint, alternative approaches need to be adopted. In this case, potential measures include supplying massive liquidity, trying to influence more directly the relative price of specific assets, altering inflation expectations by other means, eliminating impediments in the monetary transmission mechanism and leveraging monetary policy responses through other macroeconomic policies.

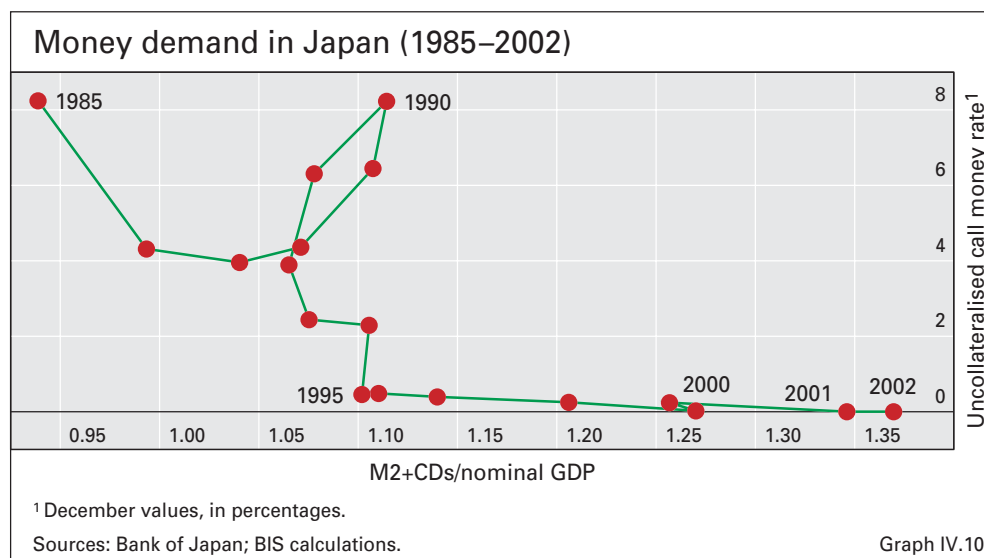
Ending deflation may require unconventional measures ...

Supplying liquidity is a traditional monetarist response. Once the ZLB is reached, this means adding reserves to the banking system well in excess of normal amounts, such as under the Bank of Japan's policy of quantitative easing. But the willingness of banks and the public to hold idle cash balances can offset the stimulative effects of liquidity expansion, as appears to have been the case in Japan recently (Graph IV.10). The effectiveness of this tactic may also be compromised by the composition of the debt instruments the central bank chooses to purchase to add liquidity. If highly liquid debt were a good substitute for money, which is likely to be particularly true at the ZLB, central bank purchases of such debt would simply replace one form of money with another, with little net impact on the net provision of liquidity.

... such as massive injections of liquidity ...

A second approach is for the central bank to attempt to influence asset prices directly. Even when the short-term policy rate is zero, targeting the acquisition of specific assets, such as long-term risk-free bonds, corporate bonds, equities and real estate, may have direct demand effects on their relative price. In addition to wealth effects, higher asset prices raise the value of collateral, thus helping to counteract lending restrictions. It may be desirable, at the extreme, to attempt to peg certain prices, such as the exchange rate. In fact, many countries escaped deflation during the interwar period through currency devaluations. This helped alleviate economic dislocations associated with deflations caused by the restoration of the gold standard at pre-World War I parities. Of course, a change in the value of

... changing the relative prices of assets ...



the currency involves other countries, and thus its feasibility depends upon external economic conditions as well.

The purchase of risky assets, whether for the purpose of injecting liquidity through unconventional means or in an effort to raise prices, raises political economy issues for public institutions to wrestle with. To be effective, such purchases would probably have to be conducted on a large scale. This would mean that public institutions could end up owning a significant portion of the economy's productive resources, with potentially undesirable consequences for corporate governance and, ultimately, economic efficiency. In addition, there is the issue of whether these transactions should be undertaken by the central bank at all. In particular, the central bank's independence might be called into question if such purchases led to large losses on its balance sheet requiring recapitalisation by the government.

... altering inflation expectations ...

Central banks can also try to alter price expectations, which can help to alleviate deflationary pressures. They can achieve this in two ways. One is by making it clear that ample liquidity is being supplied. Another is for the central bank to reiterate its positive inflation goals and to introduce an explicit inflation target, if it does not already have one. For example, it has been suggested that the Bank of Japan adopt a formal inflation targeting framework. However, it is doubtful that this step alone would stop deflation. A key benefit of inflation targeting is how it affects the public's expectations, but without other strong measures to back up this type of change, the policy framework is unlikely to be credible.

... and other macroeconomic policies

For all the reasons discussed, other supporting policies, which require actions outside the central bank, might be necessary to combat deflation. One example is the removal of impediments to the monetary transmission mechanism. Overindebtedness in corporate balance sheets, credit crunches, heightened risk assessments and greater risk aversion have all played some role in severe deflations of the past. Combating these is an important step towards reflating an economy. An early example is the reversal of the credit crunch in the United States during the Great Depression, which was

accomplished primarily by stabilising the banking industry. Large-scale relief to corporate balance sheets was also provided by suspending legal clauses in bond contracts that were indexed to gold. More recently, the relatively quick recovery in Korea after the 1997 Asian crisis is evidence of how effective the cleaning-up of bad bank assets can be. Similarly, the ongoing poor condition of bank and corporate balance sheets in Japan serves as a warning of how sub-par growth and deflation can be prolonged when such problems are not solved. Countercyclical fiscal policies may also be effective measures to reinvigorate economic activity and thereby counteract deflationary forces (see Chapter II). These could include expansionary government spending and tax policies.

Coordinated actions by official bodies are likely to be thought more credible and to gain more notice from the public. This might allow a monetary authority to leverage its monetary resources by optimally sequencing monetary, fiscal and regulatory responses. The potential benefits of such an approach would be a more potent cocktail of stimulus and the chance to keep the less attractive monetary policy options in reserve.

*Possible refinements to the monetary policy framework*

The previous analysis suggests that the economic costs associated with deflation can be significant and that, under some circumstances, the effectiveness of monetary policy levers may be impaired. Whether this would warrant refinements to current monetary frameworks depends upon the specific characteristics of each regime and the economic structures under which they operate. Moreover, the evaluation of the relevant trade-offs for monetary policy will also depend on broader factors, not least the features of the mandates of each central bank. Even so, a number of possibilities might be considered.

One possibility would be to institutionalise a policy of easing somewhat faster and further than normal as the risk of deflation increases. For instance, inflation targeting central banks could introduce asymmetric target bands: the lower end of the band would be closer to the otherwise unchanged target inflation rate than the upper end of the band. Accordingly, a fall in inflation below target would elicit a stronger response than a similar rise above target to counter the risk that the lower bound would be reached sooner.

Asymmetric  
inflation target  
bands

A second possibility would be to increase the target rate of inflation. Of course, central banks would need to reassess the trade-off between the costs of somewhat higher average inflation rates and those associated with a higher incidence of deflation given a lower target. The former would, moreover, be of a permanent nature, while the latter would only be incurred from time to time.

Inflation objectives

A more fundamental change to existing monetary policy frameworks would be the adoption of a price level target, perhaps with an upward trend. In this framework, as the price level falls below its target level, a monetary authority would be expected to ease policy just as under inflation targeting. The chief merit of this alternative is that, as the gap between the actual and target price level widens, increasingly aggressive monetary policy actions would be expected. Relative to an inflation targeting framework, the central

Flexible price level  
targeting

bank would be prepared to accept a temporarily higher inflation rate as the price level rose back up to the target level. In such an environment, there would be a greater likelihood of deflation expectations turning into expectations of inflation, at least over a near-term horizon. Such a system would add a price level anchor similar in some respects to features of the gold standard. Even though price level targeting sounds like a radical change from current practices, it can be viewed as simply targeting an average inflation rate over a long policy horizon that takes into account past deviations of inflation from its target. In comparison, current practices largely ignore such past deviations. However, the differences between this system and existing frameworks may present a challenge in communicating with the public.

Greater emphasis  
on financial stability

Another possibility could be to modify existing frameworks by placing somewhat more emphasis on financial stability. The historical record, both recently and in the more distant past, indicates that deep deflations are normally accompanied by serious financial strains. Being mindful of financial imbalances as they build up in good times could help to reduce the likelihood and severity of their subsequent disruptive unwinding. In turn, this could help to limit the risk of financial crises and deflation. In practice, such a modification need not call for a redefinition of the objectives of monetary policy; rather, it would call for some refinements in the way those objectives are pursued. First, central banks could adopt longer policy horizons (ie beyond the conventional one to two years), recognising that the processes involved tend to be drawn out. Second, greater emphasis could be placed on avoiding the most undesirable outcomes, such as prolonged deflations, when assessing the balance of risks.

Limits of monetary  
policy

Finally, it should be recognised that there are limits to the effectiveness of monetary policy. The Japanese experience, in particular, has highlighted potentially important interactions between monetary, fiscal and prudential policies. Given such possibilities, central banks might wish to explore systematically, along with fiscal and prudential authorities, the set of policy options available to address deflationary forces well in advance of their actual emergence. To the extent that there is coordination of policies across separate institutions, questions might be raised about central bank independence. However, this risk could be worth bearing if the exploration of such options helped to inspire confidence in the ability of the central bank, and policymakers as a group, to fight deflation.