

## IV. Monetary policy in the advanced industrial countries

### Highlights

During the period under review, the stance of monetary policy generally tightened as central banks in the advanced industrial countries raised policy rates. The shift largely reflected rising resource utilisation in the context of expanding global demand and the concomitant threat of inflation pressures. Elevated commodity prices, especially very high crude oil prices early in the period, added to concerns that short-term inflation momentum could spill over to longer-term inflation expectations.

In the United States, the Federal Reserve kept rates on hold for most of the period, as economic activity moderated and inflation pressures for the most part were expected to recede. Concerns grew, however, that a desired moderation of US core inflation would not materialise. The ECB tightened policy appreciably, basing its decisions on, amongst other things, diminishing economic slack and rapid growth of money and credit. The Bank of Japan found itself in a different set of circumstances. With previous structural impediments to growth largely behind it, the Japanese economy showed more promising signs of a sustained recovery. The Bank of Japan used its new “two-perspective” framework for monetary policy to explain two increases in the policy rate, which nonetheless left it very low at the end of the period.

Other advanced industrial countries generally tightened monetary policy in the face of a diverse mix of external and domestic forces. The Bank of Canada, the Bank of England, the Reserve Bank of Australia and the Reserve Bank of New Zealand tightened in the context of already relatively high policy rates, but with inflation running in the middle or on the high side of policymakers’ preferences. The Central Bank of Norway, Sveriges Riksbank and the Swiss National Bank made further progress towards normalising policy rates from a comparatively low starting point.

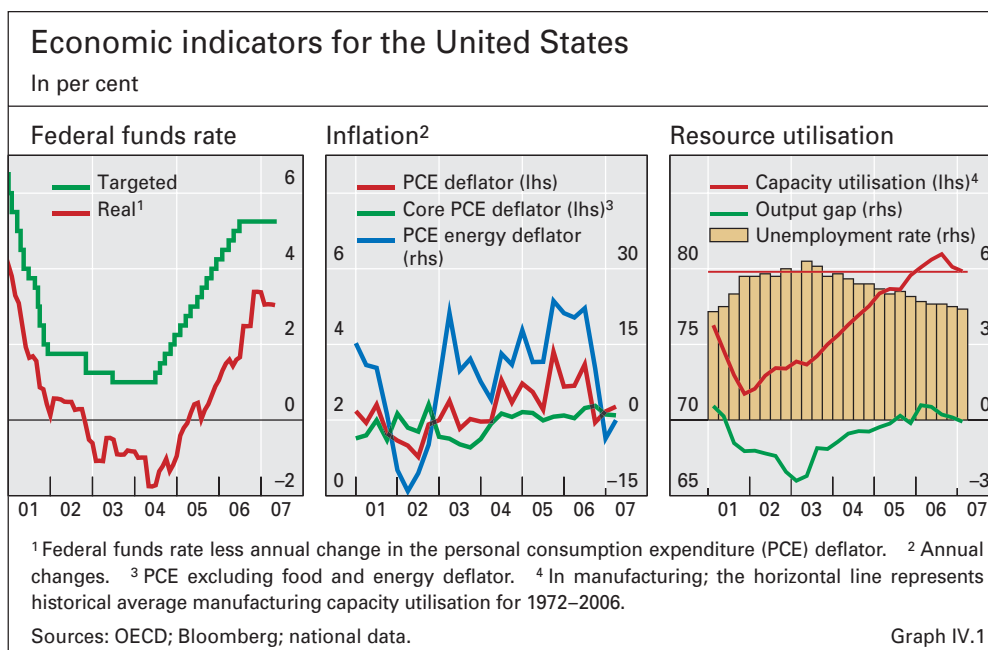
Although policy interest rates were raised, and inflation on the whole was kept low, concerns have been expressed in some quarters about rapid money and credit growth. These concerns have been shaped in part by the evolving views about the appropriate role of monetary and credit aggregates in the conduct of monetary policy. To clarify the debate, the final section of this chapter assesses the range of views against the backdrop of central bank experiences over the past 35 years.

### Review of developments

#### *United States*

US monetary policy tightened further before a long pause

During the period under review, the Federal Reserve initially further reduced the degree of policy accommodation. It raised the federal funds target rate to



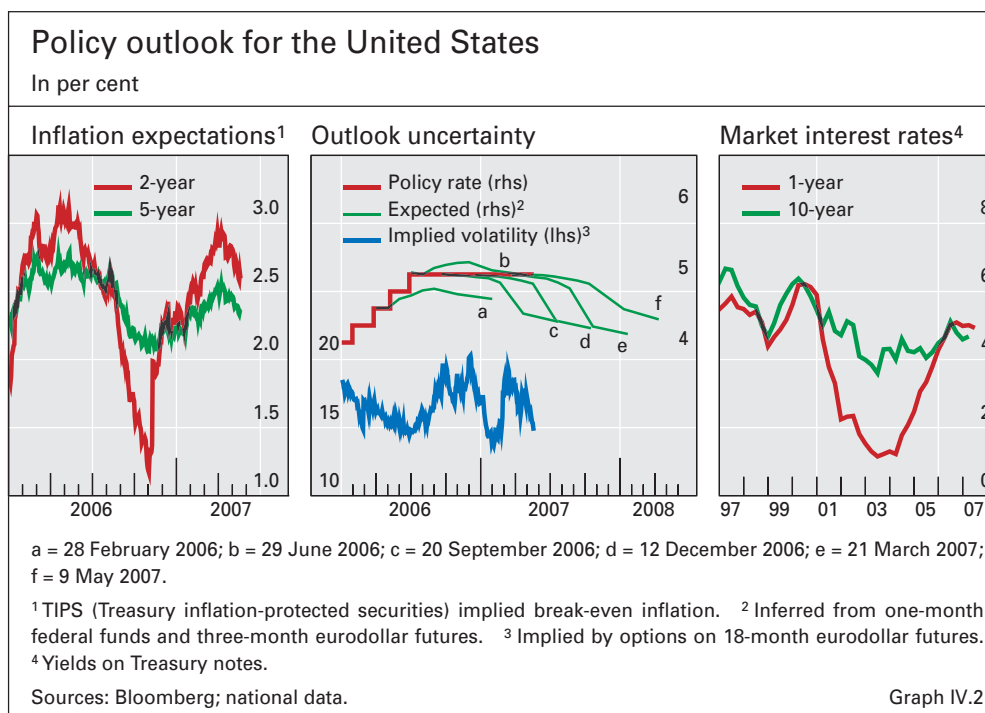
5.25% in June 2006, the 17th consecutive 25 basis point increase, and then held the target rate stable (Graph IV.1). However, this stability belied the shifting risks that policymakers had to balance as economic and inflation outlooks evolved. For most of the period, the central question for the Federal Reserve was whether additional moves, largely oriented towards tightening, would be necessary to ensure a gradual decline in core inflation and sustainable economic growth. But, as the year wore on, concerns that output might significantly overshoot its sustainable path began to wane as economic activity moderated. Subsequent economic performance proved to be largely consistent with the Federal Reserve’s view that, in a lagged response to higher interest rates, the economy, and in particular the housing market, would decelerate.

Incoming data in late 2006 and early 2007 weighed particularly heavily on the Federal Reserve’s assessment of the prospects for growth. Several countervailing forces were at work, raising uncertainties about the appropriate policy setting. While the ongoing adjustments in the interest-sensitive sectors contributed to a welcome moderation in economic activity, growing troubles in the subprime mortgage market led to concerns about a deeper and more pronounced softening in the housing sector (see Chapter II). Evidence of only modest knock-on effects on other markets, and on consumers’ willingness to spend, provided some confidence that the potential fallout would be limited in the near term. However, against this backdrop, the somewhat atypical sluggishness in business fixed investment (despite low credit spreads, healthy profits and moderate expansion of aggregate demand) took on increased significance in assessing the downside risks to growth.

At the same time, the Federal Reserve expressed concern about the elevated level of core inflation and the possibility of a pickup in inflation expectations. While high energy and non-energy commodity prices contributed

Economic activity moderated ...

... but core inflation was elevated



to the slowing of economic activity, they also put upward pressure on headline inflation. Moreover, there appeared to be a gradual pass-through to core inflation, especially during 2006. Even though energy price pressures were subsiding by the end of the year, the Federal Open Market Committee (FOMC) became increasingly worried that core inflation might be running near or above the upper end of the range most conducive to achieving sustainable growth and price stability over the medium term. While the FOMC expected core inflation to moderate, it also attached significant weight to the possibility that inflation might not decline as much as expected, as a result of which inflation expectations might become entrenched at too high a rate (Graph IV.2). This possibility was heightened by labour markets becoming increasingly tight and wage pressures in some sectors picking up. And, in the light of evidence implying some flattening of the short-run Phillips curve, reducing inflation could entail greater output costs than in the past.

The Federal Reserve's communication with the public also evolved during the period under review. As the policy outlook became increasingly data-dependent, the FOMC noted that the public would generally find it harder to fully anticipate future policy decisions owing to the more contingent nature of its policy statements. Although this development did not signal a change in the FOMC's transparency, it nonetheless left an imprint on financial markets, as illustrated by swings in six-month-ahead implied policy rates from federal funds futures in 2007. However, as the implied volatility from options indicated, the general level of uncertainty remained near historical lows (Graph IV.2).

By the end of the period, markets viewed the near-term direction of the federal funds rate as being somewhat more uncertain than it had been on average in the previous few years. On the one hand, as long as core inflation continued to run at the upper limit of, or even above, the FOMC's apparent

Policy outlook more uncertain and data-dependent ...

... especially with respect to inflation developments

comfort level, the Committee left open the possibility of its needing to raise rates or extend the period over which current rates would be maintained. On the other hand, if the FOMC's expectations of moderating core inflation were realised without an adjustment in the policy rate, or if the economy decelerated more sharply than expected, rates would probably be adjusted downwards. Even so, long-term interest rates remained low, appearing to be somewhat insensitive to these short-term uncertainties, and traded in a narrow corridor around 5%.

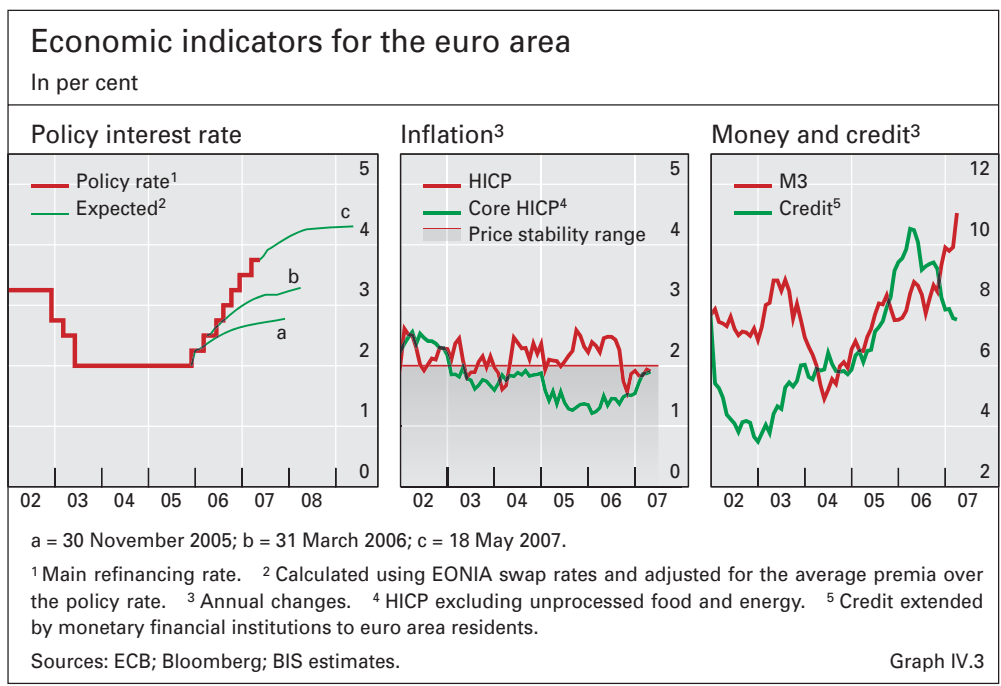
*Euro area*

Monetary policy in the euro area was tightened appreciably during the period under review. The ECB raised its policy rate to 3.75% in five 25 basis point moves, continuing the process of interest rate normalisation begun at the end of 2005. Previously, the policy rate had been increased to 2.5% from the historically low level of 2% that had prevailed for two and a half years (Graph IV.3). The tightening was largely in response to indications of upside inflation risks drawn from both the economic and the monetary analyses of the ECB, even though realised inflation remained well contained. Despite its actions, the ECB still assessed policy to be on the accommodative side at the end of the period. Market participants also appeared to expect policy to be tightened further in 2007, to around 4¼%, about 75 basis points above where markets had expected the tightening episode to end a year before.

The ECB continued to increase rates ...

Market participants' expected path for the policy rate shifted up over the period under review, in large part because the pace of economic activity and associated momentum were more vigorous than had been expected, potentially resulting in heightened inflation pressures. Real GDP growth in 2006 exceeded the upper limit of the range forecast by ECB staff earlier in the year. Moreover, their projection for output growth in 2007 was marked up by about ½ percentage point.

... as economic activity was vigorous ...



... and even as inflation fell

Headline HICP inflation fell over the period to 1.9% in March 2007, consistent with the ECB's price stability objective of below but close to 2%. Core inflation remained subdued, but drifted up. The ECB projected headline inflation to be in a range centred slightly below 2% in 2007 and on 2% in 2008. Nevertheless, it considered the inflation outlook to be subject to upside risks. The robust advance in output had coincided with a drop in the unemployment rate to historically low levels, and the ECB expressed concern that wage gains could pick up as a consequence (see Chapter II). Also contributing to the assessment that risks were tilted to the upside were the potential for renewed oil price increases and the possibility of additional upward adjustments in administered prices and indirect taxes.

The drop in unemployment ...

... and rapid money growth pointed to inflation risks

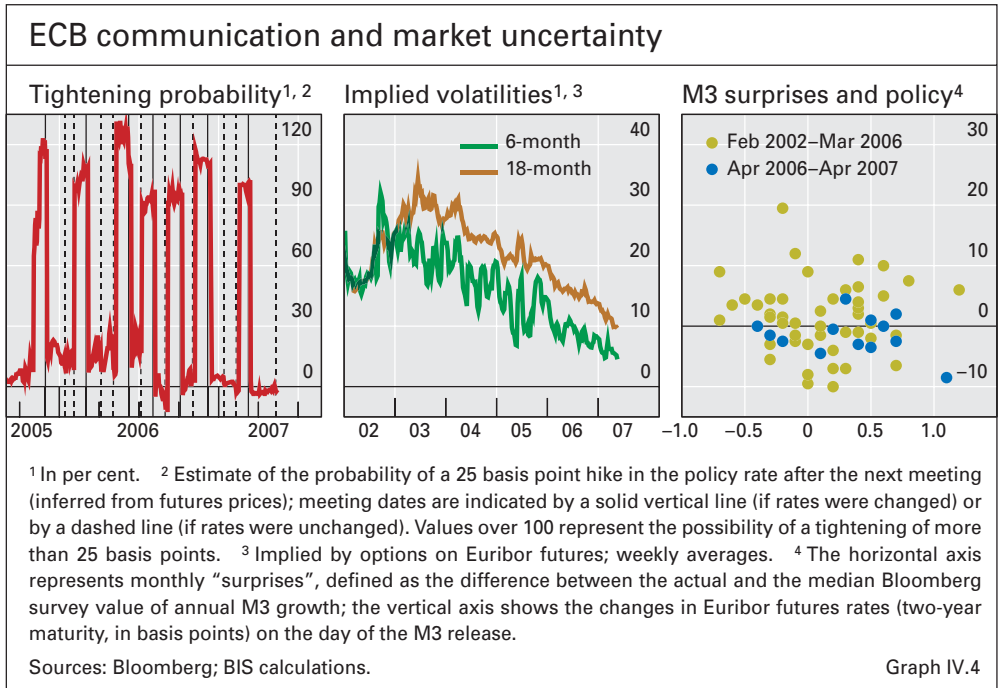
The ECB's monetary analysis confirmed the assessment that there were upside risks to the inflation outlook. Annual M3 growth picked up to 10.9% in March 2007, the highest level since the introduction of the euro. Moreover, unlike in previous years, the rapid rise in M3 did not appear to reflect shifts out of longer-term investments. Rather, it seemed primarily to reflect efforts by financial institutions to fund continued robust asset growth. Total credit extended by monetary financial institutions to euro area residents in March 2007 was 7.7% above its year-earlier level. The continued substantial increases in euro area monetary and credit aggregates reflected the generally low interest rates, solid economic expansion and strong property market developments in many parts of the euro area – a build-up of liquidity and a constellation of factors that the ECB saw as requiring especially careful monitoring.

Markets anticipated policy moves accurately ...

The successes of, and challenges to, ECB communication efforts were reflected in the response of financial markets to monetary developments. The Bank sought to be reasonably predictable in its near-term policy actions, and broadly succeeded. Market participants have been able to anticipate policy moves quite accurately over the current tightening episode (Graph IV.4). The probability of a rate rise at the next monthly meeting of the Governing Council, as implied by interest rate futures, either jumped to essentially 100% or fell to virtually zero in response to the statements released after each meeting, remaining close to those values until the next policy decision, which was in each case correctly anticipated. This predictability of near-term policy actions could have contributed to the decline of Euribor implied volatilities to historically low levels. However, similar declines were also seen in a broader array of financial market measures of uncertainty (see Chapter VI).

... but still did not respond to M3 releases

On the other hand, the ECB recognises that conveying clearly how money growth is factored into policy decisions has been challenging. In fact, there is some evidence that market participants did not pay especially close attention to M3 statistical releases during the period under review, despite repeated indications from the ECB that the marked acceleration in M3 was an important contributing factor to its assessment that there were upside risks to inflation. In particular, money market interest rate futures did not respond significantly on the day of data releases pointing to higher or lower annual money growth than expected by the markets. At the same time, it remains unclear whether this reflects communication difficulties or a link that, by its nature, is too episodic



and conditioned on other developments to show up as a consistent response in interest rate futures.

*Japan*

During the period under review, the Bank of Japan maintained a very low policy rate with the intention of keeping financing conditions accommodative. Nonetheless, as economic slack shrank and underlying downward price pressures subsided, it saw the need to raise the rate twice, thereby ending its zero interest rate policy. The target rate was increased to around 0.25% in July 2006 and then to around 0.50% in February 2007 (Graph IV.5). These moves, along with expectations of further gradual increases, were seen by the central bank as consistent with the goal of sustainable economic growth and price stability.

The Bank of Japan maintained low rates ...

The end of the zero interest rate policy reflected in large part an increasingly favourable macroeconomic backdrop, characterised by strengthening corporate balance sheets, structural adjustments in the financial system and a pickup in headline inflation in early 2006. The multi-year efforts of firms to shed excess production capacity, labour and debt appeared to have come to an end. The financial system had made significant progress in reducing its chronic non-performing loan burden and was showing clear signs of more normal lending practices. The Bank of Japan also interpreted the expansion of broad monetary aggregates and lending as a reflection of growing public confidence in the long-awaited return of stability to the financial system.

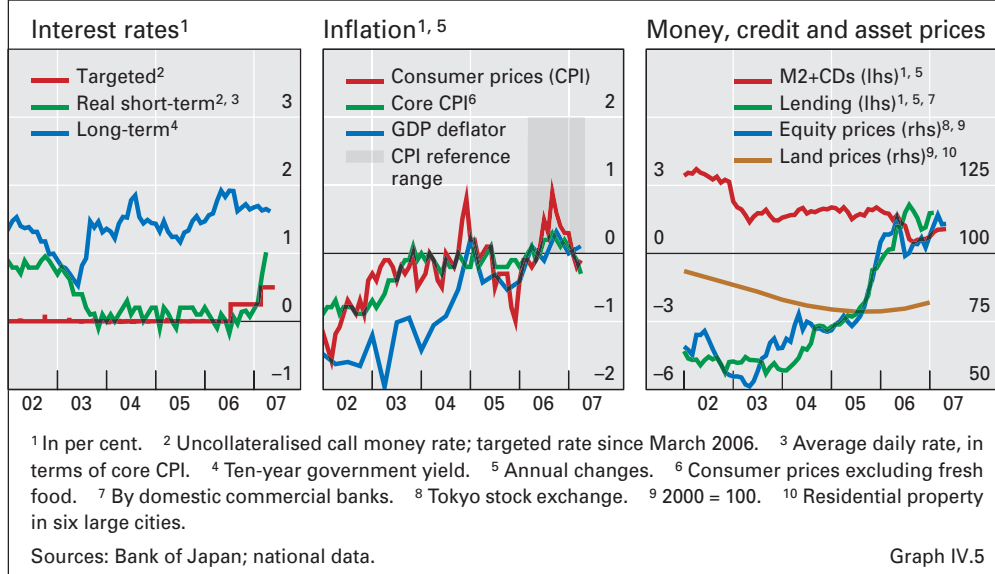
... despite ending its zero rate policy

The decision to raise policy interest rates modestly also illustrated how the Bank of Japan was using its new two-perspective framework. The new framework was introduced in March 2006 (see the *76th Annual Report*). The first monetary policy perspective focuses on developments affecting output

New policy framework applied



## Economic indicators for Japan



and inflation over the one- to two-year horizon. The second perspective emphasises risks, and their associated costs, over a longer horizon. This approach implies that policy might be tightened even in situations where the risks of rising inflation over the short run are judged to be negligible.

The first perspective factored heavily into the July 2006 decision to raise the policy rate to 0.25%. At the time, the Bank of Japan expected a continued expansion of domestic and external demand, which would naturally lead to increased resource utilisation rates and less downward pressure on unit labour costs. Driven by surging energy prices in early 2006, measures of headline and core inflation showed both moving above zero and towards the middle of the Bank of Japan's preferred inflation range of zero to 2%.

The second perspective also played a role in the decision. The Bank's Policy Board was concerned about the possible longer-term implications of resource misallocations that might arise from holding interest rates too low for too long. Part of the concern was that firms might embark on projects under the unrealistic assumption that such accommodative financing conditions would be maintained, irrespective of the likely paths for economic activity and prices. While acknowledging that there existed little firm evidence of overinvestment, the Bank of Japan nonetheless factored this possibility into its decision. Resource misallocation, if left unchecked, poses serious risks to sustainable future economic growth. In a sense, the aim was not to cool an overheating economy per se, but to ensure that the experience of the late 1980s was not repeated.

The subsequent policy rate move in early 2007 illustrated the importance of the second perspective even more clearly. On this occasion, the Bank of Japan noted that the first perspective provided little justification for additional tightening. Economic activity was gaining traction, but core prices were losing upward momentum as the short-term deceleration in energy prices took hold. Indeed, abstracting from energy prices, consumer prices were not obviously

The first rate move illustrated the importance of both the first ...

... and the second perspective

The second move was based on the second perspective

rising. Nevertheless, risks of a sustained deflation were no longer a major concern. In part, this was because the Policy Board continued to see an upward underlying price trend, primarily due to increased resource utilisation and the expectation of continued expansion in economic activity. But another factor was that the associated costs of a modest deflation were now judged to be much smaller because of the improved economic and financial fundamentals. In early 2007, output was growing, employee incomes were rising, asset prices were up, banks were lending, and household and corporate debt levels had subsided considerably from their 1990s peaks (Graph IV.6). Moreover, it had become increasingly clear that the recent decline in headline CPI had its origins in deregulation, globalisation and other positive supply shocks, and was thus of a different nature to demand-driven deflation.

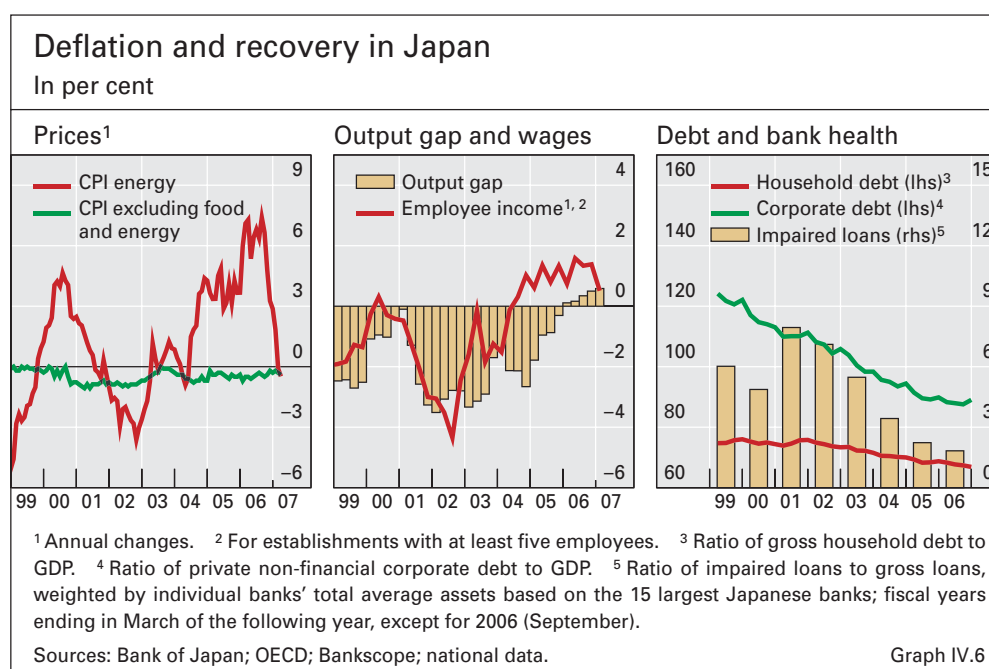
Short-term risk of price declines ...

Instead, the Policy Board was primarily concerned that a policy rate increase was needed to forestall the build-up of unsustainable conditions – in other words, the possibility of overinvestment that would prove unprofitable. In February, the Board was nearly unanimous in its decision to raise the policy rate target to 50 basis points; still very low, but nonetheless the highest rate in 10 years. In fact, several Board members were already on record as having voted for a policy rate hike in January. Carry trade issues and some localised evidence of frothy land prices did not appear to factor prominently into the Bank of Japan's decision earlier this year.

... but concerns about long-run risk of overinvestment

These two policy actions were largely anticipated, as financial markets reacted moderately and nominal long-term interest rates remained stable. The muted responses were seen by the Bank of Japan as evidence that its newly adopted monetary policy framework, and efforts to explain it to the public, were effective in communicating its policy intentions. This was so despite some short-lived market volatility in early January, when markets had incorrectly expected a policy move.

Markets anticipated actions





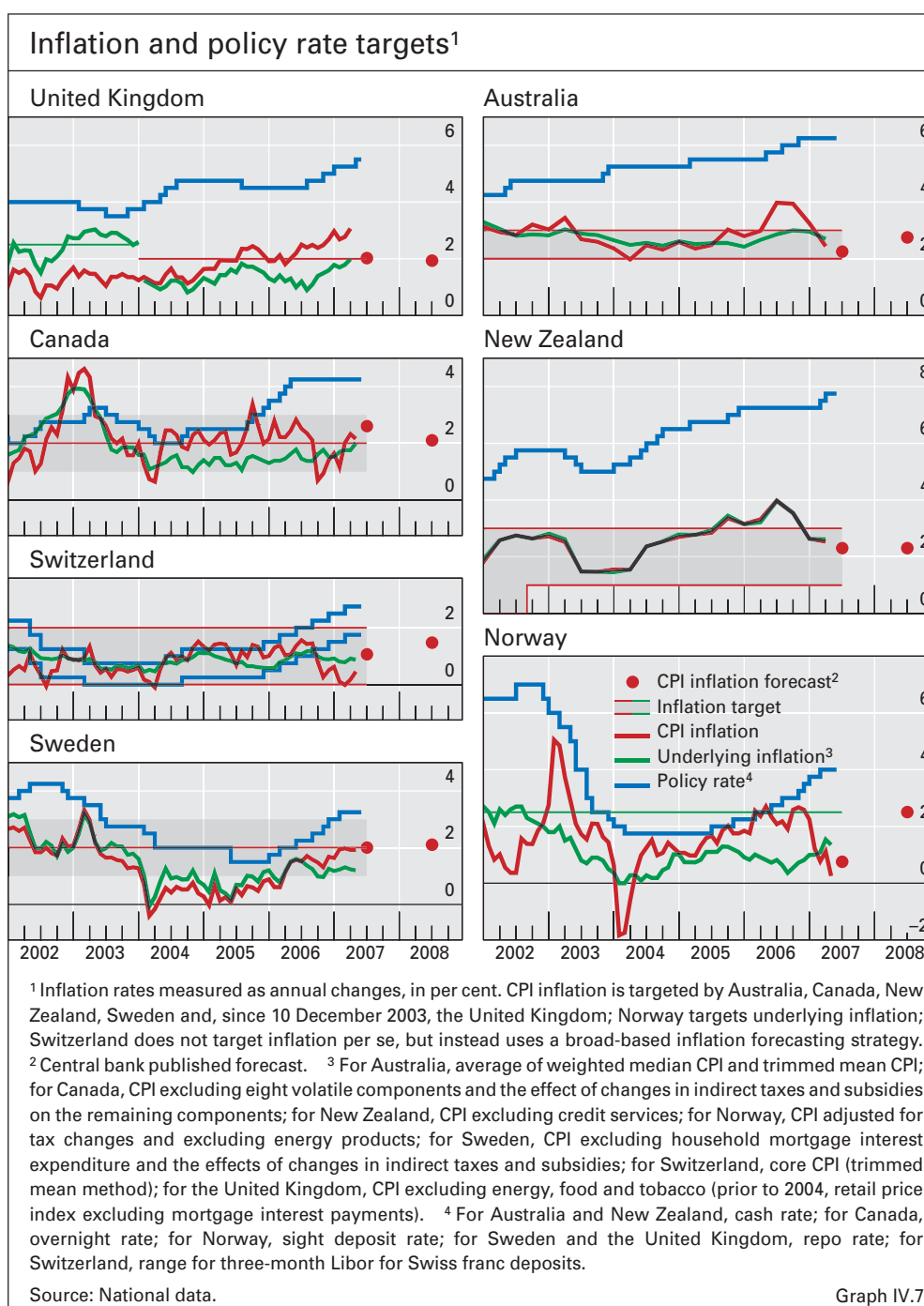
Policy accommodation expected

At the end of the period under review, the Bank of Japan's policy outlook indicated that the very low interest rate environment would continue so as to foster accommodative financial conditions and that, over time, policy rates would probably adjust upwards gradually as developments warranted.

### *Inflation targeting countries*

Central banks with inflation targets raised rates

During the period under review, central banks in countries with explicit numerical targets for inflation raised their policy rates, albeit at different times and by different amounts (Graph IV.7). This tightening occurred in the context of a continued expansion of the global economy and high commodity prices.



Domestic economic conditions in general were also strong, with most economies experiencing rising inflation pressures as productive capacity and labour markets became tighter. Despite this, inflation on the whole remained low, owing in part to favourable import price developments for consumer goods.

To varying degrees, these central banks expressed four concerns. First, uncertainty about the global economic outlook remained high, even though the projected outcome was deemed largely favourable. Indeed, it was difficult to assess with confidence the full impact of rising policy rates in the major advanced industrial countries. In particular, there was uncertainty surrounding the implications of higher rates for the ongoing rotation of demand in the United States, especially as regards housing activity. Second, stronger than expected domestic demand raised concerns about higher price and cost pressures, against the backdrop of generally elevated energy and other commodity prices. Third, robust broad money and credit growth in some countries, especially when associated with buoyant equity and house prices, continued to point to two possible outturns. For the near term, strong domestic demand might increase inflation pressures. For the longer term, the risk of a sharp reversal in asset prices raised questions for some central banks about sustainable economic growth. Finally, global imbalances remained large and capital flows associated with carry trades persisted, posing the danger of disorderly adjustments affecting both exchange rates and economic activity.

The global outlook was uncertain ...

... but strong domestic demand and money growth signalled inflation pressures

Against this backdrop, the central banks that started the period with relatively high policy interest rates – those of Australia, Canada, New Zealand and the United Kingdom – felt the need to tighten monetary policy further.

The Bank of Canada raised its policy rate by 25 basis points on two occasions early in the period under review, to 4% in April 2006 and 4.25% in May. It then kept its policy rate stable, despite an uptick in headline inflation in early 2007, as economic activity evolved in line with projections and inflation risks were seen as roughly balanced.

Canada ...

The Reserve Bank of New Zealand raised its official cash rate to 7.5% in March 2007 and to 7.75% in April, after having kept it unchanged at 7.25% since December 2005. This was the highest policy rate in the economies covered in this chapter. Strengthening domestic demand was supported by a resurgence in housing markets and expansionary fiscal policy. There was a risk that inflation would be elevated over the medium term, and the Reserve Bank noted that it might need to raise rates further.

... New Zealand ...

The Reserve Bank of Australia raised its policy rate from 5.5% to 6.25% in three 25 basis point moves in 2006. Income and spending were buoyed by high commodity prices, spare capacity was limited, and the labour market remained tight. Both headline and underlying CPI inflation ran at or above the Bank's medium-term target for most of the period. While the former had come back into the target range at the end of the period, medium-term inflation risks were still thought to remain significant.

... Australia ...

The Bank of England raised its repo rate from 4.5% to 5.5% in four moves between August 2006 and May 2007. Strong domestic demand squeezed spare resource capacity further as CPI inflation swelled to just above 3%,

... and the United Kingdom raised already elevated rates a little further

necessitating a letter of explanation from the Bank to the Chancellor of the Exchequer. Policymakers also became increasingly concerned that rapid growth in broad money and credit and buoyant asset prices were indications of building inflationary pressures. Nonetheless, headline inflation was projected to return slowly to target under the influence of tightening policy.

The central banks of Norway, Sweden and Switzerland began the period with relatively low policy rates compared to the other inflation targeting countries. Even though none of these central banks anticipated inflation rates exceeding their targets over the next one to two years, continued economic growth and the prospect of gradually rising inflation encouraged them to remain firmly on the path of policy normalisation.

Norway ...

Starting in May 2006, the Central Bank of Norway lifted its sight deposit rate from 2.5% to 4% in six 25 basis point increases. Even though inflation remained well below the Bank's target, the Norwegian economy had been in a clear upswing since the summer of 2003, and its limited spare capacity was dwindling further. Employment rose rapidly in the period under review and, amid signs of higher wage growth, underlying inflation was expected to pick up gradually. The central bank indicated its expectation that its policy rate would move up to 5% by the end of 2007, and still higher thereafter.

... Sweden ...

Sveriges Riksbank raised its repo rate from 2% in June 2006 to 3.25% in February 2007 in five consecutive moves, in response to brisk economic activity. However, inflation remained near the Riksbank's 2% target due to downward price pressures from abroad, including falling energy prices in the second half of 2006, and a stronger krona. Moreover, inflationary pressures were expected to remain relatively limited. Nevertheless, the Riksbank expected another potential 25 basis point hike before a possible pause on a path of generally rising rates.

... and Switzerland  
tightened to  
normalise relatively  
low rates

From June 2006, the Swiss National Bank raised the target range for its policy rate in four consecutive 25 basis point moves, from 0.75–1.75% to 1.75–2.75%. Switzerland continued its economic recovery, with both external and domestic demand, and especially private consumption, contributing to above potential growth. Capacity utilisation rose considerably in 2006 and unemployment was expected to fall further in 2007. After the dampening effect of the drop in oil prices in the second half of 2006 wore off, inflation was expected to begin to drift up in mid-2007 but to remain well within the Bank's inflation objective of below 2%.

Exchange rate and  
carry trade issues

Over the past year, many of these smaller advanced industrial economies had to factor into their policy decisions the implications of strong capital flows, in part associated with the so-called carry trade (see Chapter V). Capital generally flowed from countries with low interest rates such as Switzerland (and Japan) to those with relatively high rates such as Australia, New Zealand and the United Kingdom (and some emerging market economies). This tended to weaken the currencies of the former and to strengthen those of the latter. These developments had a variety of implications for monetary policy, not least the need to address the consequences of exchange rate movements for aggregate demand and inflationary pressures. The downward pressure on longer-term interest rates in the recipient countries also tended to offset

desired restraint imparted by higher policy rates, and the possibility of a sharp adjustment from the current situation added risk to the outlook. By way of example, the risk of a disorderly unwinding was one reason why the Reserve Bank of New Zealand was more cautious in tightening monetary policy than it might otherwise have been.

In early 2007, the Riksbank began publishing its projection of the future policy rate path, following similar decisions by the Reserve Bank of New Zealand in 1998 and the Central Bank of Norway in November 2005. The interest in publishing forward-looking paths for policy rates has been growing in recent years. It is seen by some central banks as a way to be more transparent about the policy outlook, thereby improving the effectiveness of monetary policy as well as leading to more accountability.

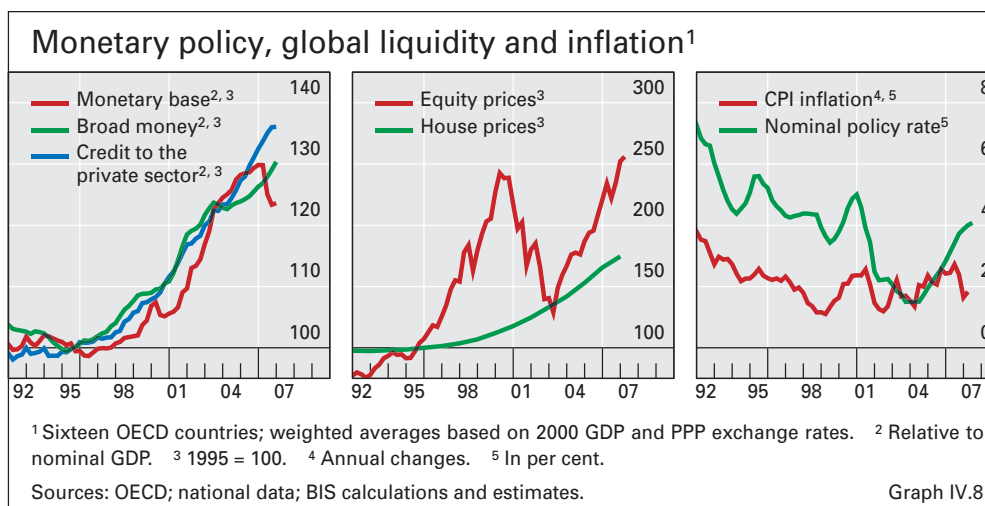
Sweden began publishing policy rate projections

At the same time, these efforts are not without risks. Success is generally thought to depend critically on whether the public truly understands the conditional nature of the published forward-looking paths. If not, deviations from an announced path could lead to a loss of monetary policy credibility. In addition, it is important that central bank announcements of the expected future path of policy rates do not adversely affect the quality of financial market information, which central banks often use for cross-checking purposes. Such an outturn could arise, for example, if financial market participants responded to the paths by significantly reducing their own efforts to assess the consequences of macroeconomic developments for their interest rate outlooks. Finally, there is the risk that financial markets might take the published path as a foregone conclusion and make one-way bets, leading to excessive risk-taking in the financial system. The experiences of these central banks will provide valuable lessons with which to judge the effectiveness of these newer monetary policy approaches.

## Monetary and credit aggregates in the conduct of monetary policy

A close look at how central banks behave, and how they communicate, indicates that there are different views about the appropriate role of monetary and credit (“quantitative”) aggregates in the conduct of monetary policy. These views combine, to varying degrees, three conceptual perspectives on the role of such aggregates in the economy. The first perspective reflects scepticism about the reliability of aggregates in helping to chart the course of economic activity and inflation, especially at short horizons. It would therefore not assign a prominent role to them in policy frameworks. The second stresses the central role of money as a causal driver of inflation. In particular, it emphasises the special information content that monetary aggregates can have for medium-term trends in inflation. Thus, it would assign a prominent role to these aggregates in policy frameworks. The third, more recent, perspective stresses the information content that unusually rapid increases in monetary and, particularly, credit aggregates can have, especially if observed in association with a surge in asset prices and unusual spending patterns. It regards these increases as a potential sign of the build-up of financial imbalances and hence of a prospective boom-bust cycle, with implications of significant economic

Different views on the importance of monetary and credit aggregates



costs over time. Like the second perspective, this view would assign a prominent role to quantitative aggregates in policy frameworks, but primarily as indicators of medium-term risks in the form of recession, financial instability and unwelcome disinflation.

This section provides a brief overview of past experiences and the history of economic thought which form the backdrop for these different perspectives, examines the extent to which they have been incorporated into current monetary policy frameworks, and considers the challenges ahead. The stakes in the debate at this policy juncture are high. As noted above, monetary and credit aggregates have been rising sharply even though inflation has, so far, remained quiescent (Graph IV.8). The question is: should this rapid growth be a source of policy concern or not?

Is rapid money and credit growth a cause for concern?

#### *The changing role of money and credit prior to the 1980s*

Quantity theory

Conceptually, emphasis on the key importance of money goes back to the origins of the quantity equation in the 19th century. This theory states that the quantity of money used in transactions multiplied by the number of times it turns over in a year must be equal to all nominal transactions. This approach became a key strand in modern macroeconomics, with nominal GDP being used as a substitute for transactions. The distinction between money and credit was, at least at the beginning, not clearly drawn. But, at the cost of some oversimplification, credit tended to be more immediately associated with the ability to obtain external funding to carry out transactions and to be regarded as one potential source of the “supply” of money, via bank lending.

In the highly regulated financial systems of the 1950s and early 1960s, credit growth took centre stage in policy implementation in many countries. With various types of controls on interest rates and lending, credit availability was regarded as a key channel to influence economic activity. At the same time, however, little attention was paid to either money or credit as predictors of inflation. Accumulating empirical evidence convinced many economists and policymakers that inflation was largely determined by the level of the unemployment rate. Indeed, the existence of this relationship (the Phillips

curve) was taken by many to mean that the level of output and employment could be permanently increased by simply accepting a little more inflation. In pursuit of this objective, monetary and credit aggregates were allowed to accelerate, as this was not initially treated as a source of concern.

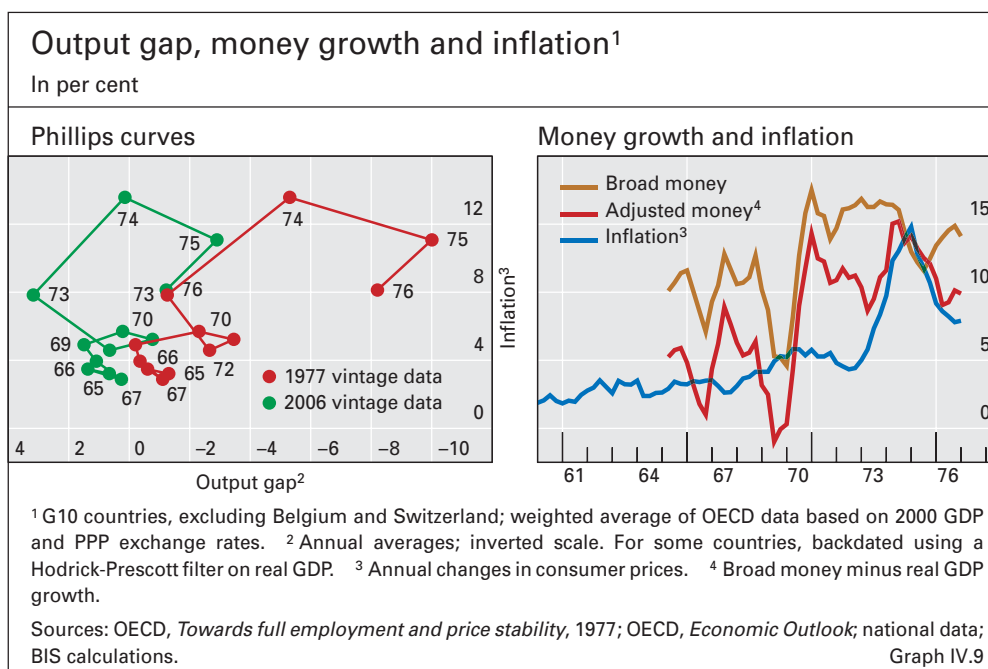
The subsequent unwelcome rise in inflation, and indeed its tendency to accelerate as inflation expectations ratcheted up, was seen as a direct indictment of the prevailing wisdom. The experience illustrated just how unstable the Phillips curve could be if monetary policy actions were aiming at an unemployment rate below the natural rate. Compounding the seriousness of the charges, the monetarists, amongst many, had already challenged this view from a theoretical perspective. They had warned that the pickup in money growth would only stoke the flames of inflation, without any permanent effect on economic slack (Graph IV.9). In the light of the subsequent inflationary outturn, these views gained increasing influence within the central banking world, encouraging central banks in the 1970s to seek to enhance their control over inflation and the economy by using monetary aggregates as intermediate target variables.

This was when the quantity equation experienced a renaissance. Postulating that the ratio of nominal GDP to money (“velocity”) was stable, at least over medium-term horizons, and that money did not affect output in the long run provided the intellectual basis for central banks to control inflation through their influence on the money stock.

Industrial countries across the board adopted the new approach to monetary policy in the mid-1970s, although in differing degrees. Germany and Italy were first in 1974; Canada, Switzerland and the United States followed a year later, and Australia, France and the United Kingdom in 1976. To be sure, the practices adopted varied widely. For example, Germany and the United Kingdom chose broad measures of money as intermediate targets while the

Breakdown of the Phillips curve

Monetary targeting was widely adopted in the 1970s





United States and Canada chose M1. Whatever the differences in practices, however, the goal was the same: to squeeze inflation out of the system. The experiences of Germany, Switzerland and Japan in the 1970s were the first to illustrate that attention to monetary aggregates could help to tame inflation. The experience of the United States in the early 1980s, with inflation being quickly reduced from double digits to about 4%, pointed in the same direction.

*The declining importance of monetary aggregates since the 1980s*

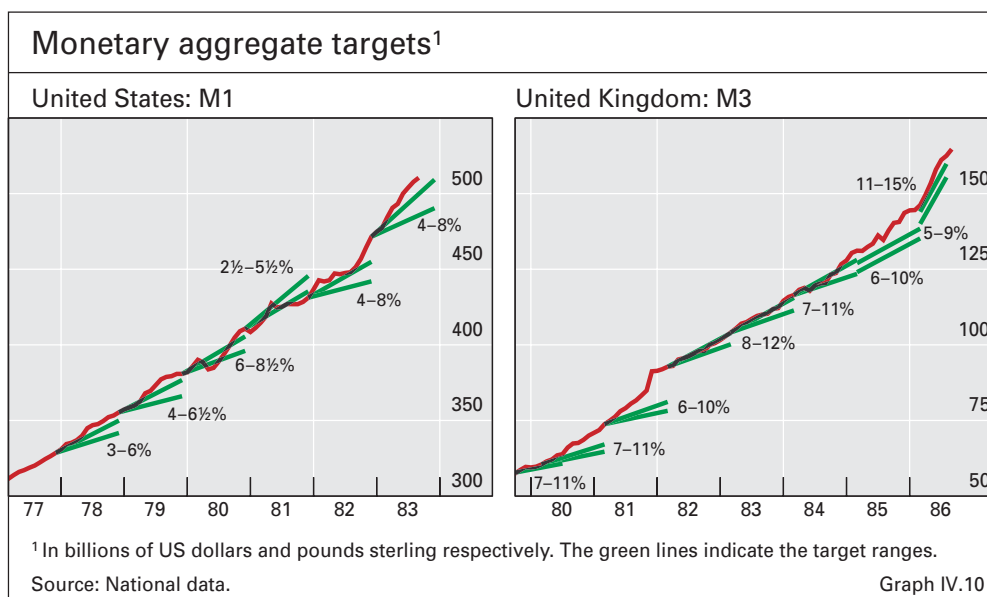
Against this backdrop, it might seem strange that monetary targeting fell out of favour. Two factors, however, undermined it. First, in part, the policy eventually became a victim of its own success. High and variable inflation is generally the result of excessive and volatile monetary stimulus. But at lower rates, inflation can, in the short run, be significantly influenced by many real factors that are less amenable to control through monetary aggregates. Second, financial deregulation and innovation over time changed the financial environment sufficiently to reduce the reliability of monetary aggregates as a guide. In the United States in the early 1980s, for example, M1 velocity veered sharply off its trend and became more unpredictable. The lifting of interest rate ceilings on transaction accounts and the introduction of a wide array of deposit accounts complicated monetary control. Rapid financial innovation had similar effects elsewhere. Even monetary targeting stalwarts such as Germany and Switzerland were not immune to such developments: more liberal capital flows across their borders became a significant complication in the tracking of the relevant aggregates.

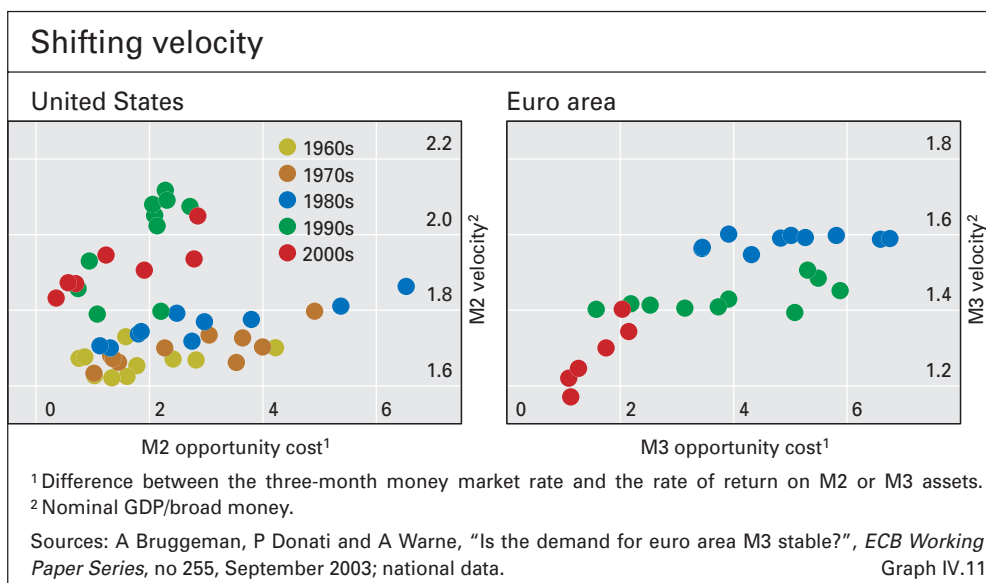
With the targets for monetary aggregates being missed, in many cases systematically, central banks faced increasing difficulties in explaining their actions (Graph IV.10). Naturally, attempts were made to “fix” the problems arising from the changing circumstances, such as by adjusting the target bands and redefining the monetary aggregates of choice. Even so, sceptics and supporters of quantitative targeting alike became increasingly concerned about

Monetary targeting began to fall out of favour in the 1980s

Chronic missing of targets complicated communication

Various fixes tried





the inconsistency between the rhetoric of monetary targeting and practice, thereby raising questions about the framework as a credible medium-term nominal anchor.

Given these difficulties, by the early 1990s short-run monetary targets had largely been abandoned in the advanced industrial countries in favour of using monetary aggregates as less prominent information variables about potential inflation, particularly over medium-term horizons. This led a number of central banks to adopt official, and sometimes unofficial, monitoring ranges for the aggregates (see the *67th Annual Report* for a chronology of such regime changes for the advanced industrial countries). For some, the ranges were for narrow and broad monetary aggregates as well as credit aggregates. But even these were not without their challenges, especially as financial developments continued to adversely affect the stability of velocity for extended periods of time (Graph IV.11).

For completeness, however, it should be noted that the change in approach was not universal. Germany continued to target the growth rate of money from year to year (switching from central bank money to M3). Moreover, in the 1990s Switzerland switched to a novel medium-term strategy based on a three- to five-year average monetary growth rate.

#### *Inflation targeting in the ascendency*

Arguably, the nadir of the formal use of monetary and credit aggregates for monetary policy was reached with the adoption of inflation targeting frameworks by a number of the smaller advanced industrial economies in the late 1980s and early 1990s. These frameworks essentially involved targeting the forecast of inflation one to two years ahead, by adjusting a short-term interest rate (as the policy instrument). In making such forecasts, measures of economic slack acquired greater prominence. To be sure, in principle nothing ruled out the use of quantitative aggregates as important information variables in forecasting. However, for all practical purposes, at many of these countries'

Quantitative aggregates were downgraded to monitoring status in most countries

Many central banks abandoned quantitative aggregates

central banks the aggregates did not play any such role. After all, many of these central banks adopted inflation targeting in the first place precisely because monetary targeting strategies had failed them.

In the subsequent decade, the importance of quantitative aggregates waned further. In practical policymaking, this reflected the rapid spread of inflation targeting frameworks to an increasing number of countries, not least in the emerging market world. In academia, the downgrading, if not outright obsolescence, of quantitative aggregates reflected the development and rise to benchmark status of new macroeconomic paradigms which effectively ignored the role of money and credit altogether, focusing exclusively on interest rates and measures of slack.

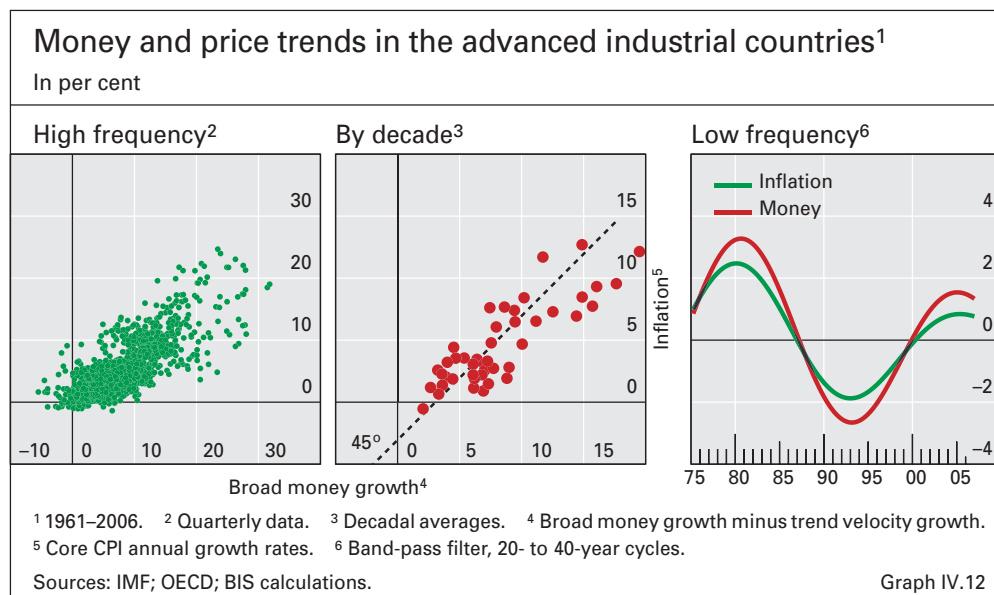
*A recent revival?*

The ECB has inherited the monetarist tradition

The establishment of the ECB helped breathe new life into the debate about the role of quantitative aggregates. From the start, the ECB chose to follow developments in money closely, along the lines of the monetarist tradition of the Bundesbank, making monetary analysis an important pillar in assessing developments and conducting monetary policy. The formal adoption, subsequent reaffirmation and consistent use of the two-pillar framework has been very significant. Indeed, the ECB has consistently relied on its monetary analysis as a means of cross-checking, from a medium-term perspective, the signals of inflationary pressures that emerge from a more conventional economic analysis focused on a shorter-term horizon. The Bank has also conducted extensive research that has generated considerable empirical and theoretical support for its approach.

Some empirical evidence supports this approach

The type of empirical evidence employed to support this perspective has, until recently, very much focused on the money-inflation link stressed by the quantity equation. A few examples can be noted. First, the existence of the long-run link has been argued to survive the various changes in the economic and financial environment (Graph IV.12). Second, horse races between



Money growth as a predictor of core inflation <sup>1</sup>				
	Constant	Lagged one year		
		Core inflation <sup>2</sup>	Output gap	Money growth <sup>3</sup>
Australia	0.4	0.7**	0.4	0.1
Canada	-0.1	0.5**	0.1	0.3**
Euro area	-0.1	0.8**	0.4**	0.2**
Japan	-0.8	0.5**	0.5**	0.3**
New Zealand	-0.3	0.6**	0.3	0.2*
Norway	0.2	0.7**	0.6**	0.1*
Sweden	0.6	0.7**	0.3**	0.1*
Switzerland	0.1	0.6**	0.6**	0.1**
United Kingdom	-0.0	0.8**	0.5**	0.2
United States	0.5	0.8**	0.5**	0.1**

<sup>1</sup> Results of a regression of core consumer price inflation on the indicated variables. Sample period 1971–2006, annual; \* and \*\* indicate statistical significance at the 10% and 5% level respectively.  
<sup>2</sup> CPI inflation less food and energy. <sup>3</sup> Money is defined as M2 for Canada, the euro area, Sweden, Switzerland and the United States; M2+CDs for Japan; and broad money as defined by the OECD for Australia, New Zealand, Norway and the United Kingdom.

Sources: IMF; OECD; national data; BIS calculations. Table IV.1

measures of output gaps and money have sometimes found a complementary role for monetary aggregates (as illustrated in Table IV.1), pointing to their potential usefulness as additional information variables. Moreover, empirical analysis has underlined how the information content of monetary aggregates for inflation appears to rise, and that of measures of economic slack to fall, as the horizon lengthens, supporting a cross-checking role at medium-term horizons.

#### *Credit back from the wilderness*

At the same time, in the early 2000s another perspective emphasising the role of quantitative aggregates, and especially credit, began to emerge. This perspective had distant roots in those theories of business fluctuations from the early part of the 20th century which had stressed the self-reinforcing processes that led to occasional booms and busts. It also borrowed from the intellectual tradition that highlighted the role of credit and speculative behaviour as a cause of financial instability. Finally, it retained elements of the more recent advances in economic theory, which emphasised how credit imperfections could amplify business cycles.

The backdrop for these evolving views was the observation of a number of recent economic and financial booms that had ended in quite severe busts with costly consequences. The Japanese downturn that had begun in the early 1990s was a dramatic example. The expansionary phase in this case was characterised by rapid credit growth, rising asset prices and unusually high levels of domestic capital formation, and, of particular significance, overt inflation during the boom was not a problem at all, probably because of favourable supply side developments (Graph IV.13).

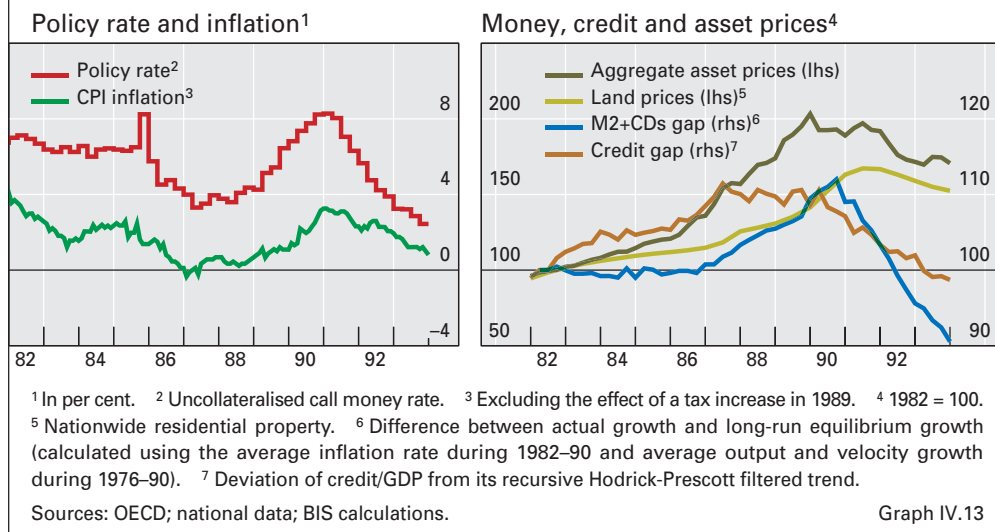
Moreover, research increasingly revealed that these types of “credit booms gone wrong” had been seen in other advanced industrial countries and

Boom-bust experiences underscore the potential role of money and especially credit ...

... particularly the Japanese experience

“Credit booms gone wrong” also seen elsewhere

## Japanese boom-bust experience, 1982–93



emerging market economies and in other time periods. While the performance of inflation had not always been uniform across episodes, inflation had not generally been a particularly worrisome consideration. Examples include the banking crises in the Nordic countries in the late 1980s to early 1990s, the Southeast Asian crisis of 1997–98 and, to a certain extent, aspects of the business cycles in the United Kingdom and United States which had ended in recessions during the early 1990s. Others looked back further in history to note that the run-up to the Great Depression had exhibited similar non-inflationary characteristics. This suggested that the economic mechanisms and human behaviour which contributed to this type of cycle had persisted in the face of major changes in the structure of economies, their level of openness and regulatory regimes.

This perspective found some support in more formal statistical work which indicated that real-time measures of the coexistence of unusually rapid credit and asset price increases could help to provide information about financial distress, output weakness and disinflation beyond the traditional one- to two-year horizon normally used in policy frameworks. More generally, econometric work began to find a significant role for quantitative aggregates, both money and credit, in boom-bust economic fluctuations of this kind, with property prices playing a key role.

### Policy implication

The main policy implication of this perspective was that it might be desirable for monetary policy frameworks to allow for the option to lean against a perceived build-up of financial imbalances even if the near-term inflation outlook is benign. This would act as a form of insurance, limiting the risk and costs of a potentially disruptive unwinding of the imbalances further down the road, either because they collapse under their own weight, or because delayed inflationary pressures eventually emerge, forcing the central bank to tighten. In fact, in the context of the low-inflation environment, the disinflationary consequences of a bust could translate into deflation risks, along with the

complications arising from real debt burdens and the zero lower bound for nominal policy rates. Operationally, a pre-emptive tightening would call for an extension of policy horizons beyond the usual one to two years, thereby allowing for a more structured assessment of tail risks to the outlook.

#### *Factoring monetary and credit developments into policy decisions*

Central banks have adopted various perspectives on the role of quantitative aggregates in current policy frameworks.

Many central banks have found it hard to extract sufficiently reliable information from monetary aggregates as indicators of inflation and, as a consequence, have been reluctant to assign them a prominent role in controlling it. The Federal Reserve and the bulk of inflation targeters fall into this category. Some of these central banks, however, have begun to question whether a benign neglect approach to the monetary aggregates is justified, particularly in economies where the quantitative aggregates have been rising fast. The Bank of England and, to a greater extent, the Swiss National Bank are two such examples. By way of contrast, from its inception, the ECB has consistently emphasised the role of monetary aggregates in cross-checking the evidence from short-run determinants of inflation.

In recent years, the intellectual climate among central banks has become somewhat more receptive to the perspective which highlights the potential role of quantitative aggregates in signalling financial imbalances. For example, the ECB has extended and nuanced the interpretation of the monetary analysis pillar to reflect the role of credit and asset prices. Similarly, the second (medium-term) perspective of the Bank of Japan's new monetary policy framework can accommodate these factors. And several inflation targeting central banks now allow for the possibility of extending the normal policy horizon in the light of the potential build-up of financial imbalances, as is consistent with this perspective (eg the Bank of England, Sveriges Riksbank and the Central Bank of Norway), or else have stressed the importance of a medium-term horizon to start with, as in the case of the Reserve Bank of Australia.

The years ahead are likely to see a further intensification of the debate over the extent to which monetary and credit aggregates should be given prominence in policy frameworks. Indeed, the current rapid expansion of these aggregates in various parts of the world may lead some central banks to ask soul-searching questions about the appropriate policy response. As noted above, the stakes are high. Attaching too much weight to the aggregates runs the risk of overreaction and of possibly confusing the public concerning central bank strategies and priorities, especially in economies where near-term inflation pressures remain subdued. Discounting their signals runs the risk of reacting too little and too late. Either way, ultimately, the credibility of central banks lies in the balance.

Some central banks are still reluctant to assign a prominent role to money ...

... but others are more willing

Greater readiness to see credit as contributing to financial imbalances

Two-way risks