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How long can the party continue?

Domestic demand growth ahead of output growth for five years

Britain's good fortune in the late 1990s

The late 1990s were a fortunate period for the British economy. In the five years to the end of 2000 domestic spending rose much faster than output. Britain's people were able to increase their living standards and their investment in housing, and Britain's companies were able to boost their investment in the capital stock, more rapidly than Britain's people and companies together expanded their output. To be precise, in 1996, 1997, 1998, 1999 and 2000 domestic demand increased by 3.1%, 3.8%, 4.6%, 3.8% and 3.7% respectively, while in the same years GDP went up by 2.6%, 3.5%, 2.6%, 2.3% and 3.0% respectively. (All these figures are in constant 1995 prices and are taken from *Economic Trends.*) Cumulatively over the five years, domestic demand climbed by 20.5% and output by 14.8%. It seems almost certain that domestic demand growth will again exceed output growth in 2001.

Domestic demand has grown faster than output for several years,

This divergence between domestic demand and output is unprecedented. In a meaningful sense the British people have received "something for nothing". This has not happened in the past and cannot persist in the future. In the 47 years to 1995 domestic demand and output grew at the same annual rate of 2.5%. In resource terms, the gap between the increases in domestic demand and output has been filled in two main ways, a widening in the current account deficit and an improvement in the terms of trade. Neither of these is likely to be found in the next few years. If the current account deficit and the terms of trade stabilize, output will in future have to keep pace with domestic demand. Even worse, if inward capital flows are more modest and the current account deficit narrows, and if the terms of trade weaken, domestic demand will have to be restrained to grow more slowly than output. Indeed, were the long-run equivalence of growth in domestic demand and output to return by, say, 2006, domestic demand growth between now and then might have to run at half the rate in the last five years.

but this cannot continue

The discrepancy between domestic demand and output has not gone unremarked at the Bank of England. In a recent speech at the Cardiff Business School Professor Mervyn King, the Deputy Governor, warned that "imbalances" had built up in the expansion of the late 1990s. There can be hardly be much dispute that the growth trends of recent years are unsustainable. The difficulty is to know when a more normal pattern, with similar increases in demand and output, will resume. Crucial to the timing will be the behaviour of the pound on the foreign exchanges. The strength of the pound in the last five years has been something of a puzzle. It may be due largely to investor aversion to the newly-created euro, but no one really knows. A fall in the pound might reflect a weakening in the capital inflows to the UK. It would imply a fall in the terms of trade and would probably necessitate a rise in interest rates to keep inflation on target.

Professor Tim Congdon 29th June 2001

Summary of paper on

"Will inflation stay within target?"

Purpose of the paper

The Bank of England's job in Labour's second term, as in its first, is to keep retail inflation at 2 1/2%. In the last 18 months money supply growth - on the M4 measure - has been close to a double-digit annual rate. The paper asks whether this rate of money growth can be reconciled with 2 1/2% inflation over the medium term.

Main points

* **In the four years to May 2001 the annual increase in the RPIX index (i.e., index of retail prices excluding mortgage interest costs) was just above 2.4%, almost exactly in line with the 2.5% target set when the Chancellor of the Exchequer gave the Bank of England operational independence in June 1997.**

* **The Bank of England - unlike the European Central Bank - seems reluctant to accept that inflation is a "monetary phenomenon", in the sense that inflation is caused by the quantity of money growing more rapidly than the quantity of goods and services. (See pp. 3 - 5.)**

* **The inflation target remains unchanged at 2 1/2%. This would be broadly consistent with a 5%-a-year increase in nominal GDP.**

* **Given the past data, it is possible to derive a histogram of the quarterly values of the excess of M4 growth over the increases in nominal GDP in two periods, 1948 - 2000 and 1971 - 2000. (See p. 10 and p. 12.)**

* **On the (debatable) assumptions that the data in the histograms are an unbiassed sample and are normally distributed, it is also possible to calculate - for any given M4 growth - the probability that the annual increase in nominal GDP will exceed 5%. In other words, the probability that high money growth will lead to above-target inflation can be estimated.**

* **If M4 growth continues to run at 8% a year or more over the next few years, the probability that inflation will stay under 3 1/2%, the maximum allowed before the MPC has to write an Open Letter to the Chancellor, is extremely low. (See p. 11 and p. 13.)**

This paper was written by Professor Tim Congdon, with help from Lombard Street Research's UK Service in the preparation of the charts.

Will inflation stay within target?

UK money supply growth is too high

Bank of England's impressive record since 1997

Since receiving its operational independence in May 1997 the Bank of England has done a good job in keeping UK inflation under control. In June 1997 the Chancellor of the Exchequer set the Bank a target that the annual increase in the RPIX measure of prices (i.e., the retail price index excluding mortgage interest costs) should be 2 ½%. If a departure of more than 1% either side of the 2 ½% figure emerged, the Bank would have to write an Open Letter to the Chancellor in explanation. But this did not imply a target range (of 1 ½% to 3 ½%), as "the Bank is to aim consistently at 2.5% as a mid-point". In the event, the compound annual increase in RPIX in the four years to May 2001 was 2.4%. Rarely – if ever – has an official target been met so precisely in UK macroeconomic policy-making. (It should perhaps be emphasised – for anyone with a historical perspective – that 2 ½% inflation is certainly not "price stability". In fact, if continued for a century a 2 ½%-a-year increase in prices reduces the value of money by over 90%.)

Could RPIX inflation move above 3 1/2% in 2002?

But the past record does not justify complacency. Recent inflation news has been disappointing, with the 0.8% May increase in RPIX coming as a nasty surprise. Many analysts had expected that the annual increase in RPIX would drop beneath 1 ½% this summer, prompting the Bank's first Open Letter to the Chancellor. These expectations have now been proved wrong. Further, fears are starting to be expressed that the annual increase in RPIX in 2002 will be in the 2 ½% - 3 ½% vicinity and might even breach the 3 ½% figure. An important influence here will be the Chancellor's decisions on indirect taxation. This year he cut petrol duty, with the result that the RPIX inflation measure (up 2.4% in the year to May), which is affected by indirect tax, fell behind the RPIY measure (up 2.8% in the same period), which is not. If Mr. Brown increases indirect taxes in the normal way in his 2002 Budget, the RPIX and RPIY figures will move closer together.

Bank of England's attitude towards the monetary theory of inflation is unclear

But changes in indirect taxation have only an impact effect on the price level. The Bank's officials have made numerous statements that in the long run inflation is "a monetary phenomenon". This might appear to imply that they accept inflation is caused by the quantity of money rising too rapidly compared with the quantity of goods and services. In fact, the Bank's position on money and inflation is unclear and has been mostly sceptical. The *Inflation Report* refers only tangentially to the money supply, while these references are not integrated into the analysis of inflation prospects. The Bank's understanding of inflation as "a monetary phenomenon" seems to have almost nothing to do with the relationship between money and the price level; it seems instead to reflect the Bank's focus on the short-term interest rate as the key policy instrument and a view that this is a "monetary" variable.

The Bank explains how it derives an inflation forecast,

At any rate, the Bank has written in some detail about the analytical process behind the inflation forecast in the *Inflation Report*. As is well-known, the forecast is not single-valued, but is described by a "fan chart". This fan chart represents a probability distribution of prospective inflation outcomes. According to an article in the February 1998 issue of the *Bank of England Quarterly Bulletin*, the probability distribution

is the result of an interplay between assumption-setting and research work, in which both the members of the Monetary Policy Committee and the Bank's staff are involved. No one model is chosen. "The multiple model approach to forecasting allows the Bank to develop and use the appropriate models for each issue." A separate article by Mr. John Whitley, in the May 1997 issue of the *BEQB*, outlined the contents of the models which make up "the multiple model approach". In fact, it mentioned no fewer than five models or types of models.

with five models or types of models

The first ("the small analytical model project" or SAM) itself consists of several small models which "include a real business cycle model and a set of labour market models"; the second is a "stylised macro model" with five equations determining five variables, real output, money, prices, exchange rates, and the interest rate; the third is "the macroeconometric forecasting model" which has 20 core equations and – like the more modest "stylised model" – draws heavily on "the Dornbusch overshooting model" of the exchange rate; the fourth is "a simple output gap model" (or, again, a number of such models); and the fifth is a "VAR model of inflation", where a data-mining exercise unrestricted by prior theoretical beliefs is allowed to find the indicators which precede changes in inflation. According to the article, "[m]oney plays an important role" in the third model, but exactly how and why is not discussed at any length. With this exception, the five models more or less ignore the relationship between the quantity of money and inflation.

Variety of models said to make it more difficult to criticise Bank of England for mistakes,

According to Mr. Whitley, "The multi-model approach implies that it is not possible to 're-run' history using the policy-makers' 'model' of the economy to test whether the policy decision could have been improved, relative to some welfare criteria. This is because there is no comprehensive model that is adequate for all situations." The alleged inadequacy of any one model would be convenient to the Bank. Taken at face value, Mr. Whitley's words imply that the economy changes so much and so frequently that no single model can be applied and tested (in a "re-run" of history) from one cycle to the next. If this were true, the selection of the "right" model would become a matter of personal (or perhaps committee) preference. Because of the resulting uncertainties, it could never be shown conclusively – even after the event - that the Bank had made a mistake.

but the Bank's eclecticism is worryingly similar to that in past periods of mismanagement

This is unsatisfactory. The Bank of England has to be held to account, as its long-run record as an inflation fighter in the post-war period is poor. The value of money fell by almost exactly 95% in the UK in the 50 years to May 2001. It has done better since 1997, but four years hardly amounts to a meaningful track record. Moreover, the eclecticism of the Bank's current attitude towards the causes of inflation is reminiscent of its public statements during past periods of monetary mismanagement such as the Heath-Barber boom of the early 1970s and the Lawson boom of the late 1980s. In both these episodes the Bank produced elaborate research papers, and the Governor made lengthy and quite recondite speeches, denying that high money supply growth would have any serious inflationary consequences. As the historical record shows, the inflationary consequences – and the associated boom-bust cycles – were in practice extremely serious.

The monetary approach to inflation - endorsed by the European Central Bank and (before that) the Bundesbank - is the heart of the story

The details of the inflationary process (in terms of the huge multiplicity of local pressures on labour markets, asset markets, foreign exchange rates and so on) are indeed complex, but the central theme of the story is not. *Excessive growth of the quantity of money is both a necessary and sufficient condition for inflation. In that sense, there is only one valid model of inflation.* The key to the Bundesbank's success as a currency manager in post-war Germany, and its eclipse of the Bank of England as Europe's most admired central bank, was that it took this lesson took heart whereas the Bank of England did not. The unfortunate message from the Bank of England's research effort in recent years is that it still has not fully learned the lesson. (Indeed, a clear contrast has already emerged between research from the Bank of England, which is erratic but mostly indifferent to money, and the European Central Bank, which – like the Bundesbank – most certainly does care about money. An article on 'Framework and tools of monetary analysis' in the May 2001 issue of the ECB's *Monthly Bulletin* harks back to dozens of similar articles over the decades in the Bundesbank's *Monthly Report.* The first paragraph's opening sentence says, "The statement that inflation is a monetary phenomenon in the long run is one of the central tenets of economic theory"; its closing sentence remarks that the relevance of money for policy-making "is attributable to the close relationship between monetary growth and inflation at longer time horizons, which has been demonstrated for a wide variety of countries".)

Monetary data can be used to make estimates of the probability of above-target inflation

What, then, do current money supply growth rates imply for the inflation outlook in the UK? It is a fairly simple matter to use historical data to assess the probability of a particular inflation outcome from monetary trends. This note suggests how a fan chart, on the same lines as that in the *Inflation Report*, might be estimated from money supply data by themselves. To claim that inflation is caused by excessive monetary growth begs the question of what constitutes an "excessive" money supply growth rate. In normal circumstances an excessive money supply growth rate is one above the desired rate of increase in nominal GDP, where the desired rate of increase in nominal GDP is equal to the trend increase in real GDP plus the target inflation rate. In the UK the trend rate of output growth is usually put at 2 ¼% - 2 ½% a year, while the target inflation rate is 2 ½%. (The retail price index is of course not the same thing as the GDP deflator, but over time they move together. The simplification does no great harm.) So – for present purposes - the desired rate of increase in nominal GDP can be taken as 5% a year.

Broad money is the relevant measure of money in this analysis

An "excessive" money supply growth rate might therefore be one of, say, 7% or above, because that would be higher than the desired rate of nominal GDP growth and might imperil the target inflation rate. Obviously, the key to reconciling such apparently high money growth rates with target inflation is that money supply growth has to rise more than nominal GDP. The question becomes, "what is the probability that – in any one year or sequence of years - the money supply will rise faster than the 5% increase in nominal GDP which is consistent with 2 1/2% inflation?". (The following exercise relates to the broad measure of money, M4, partly because a continuous data series over several decades is available. Narrow money measures

are not considered, on the grounds that they do not play an active role in the determination of national income. See 'An Open Letter to Professor Patrick Minford', in the July 1996 issue of this *Monthly Economic Review*, for further discussion of the passive status of narrow money in a modern economy.)

Summarising the analytical approach

The historical record (see p.7) shows – quarter by quarter and year by year – those periods when the growth of the money supply growth was above and beneath that of nominal GDP. The chart on p.10 shows a histogram of the differences between annual money and GDP growth in the 212 quarters from the first quarter of 1948 to the fourth quarter of 2000, with the mean value and standard deviation of these differences. The shape of the histogram is slightly surprising, as it has two peaks, but it approximates to a normal distribution. On the assumption that the 1948 – 2000 period is an unbiased sample of the money/ GDP relationship in the UK in the late 20th and early 21st centuries, it is straightforward to calculate the probability that annual money growth rates of 7%, 8%, 9%, 10% and 11% can be reconciled with increases in nominal GDP of 5%-a-year or less. The results of these calculations are given on p.11.

Using 1948-2000 sample, 8% money growth very unlikely to be consistent with 2 1/2% inflation for long

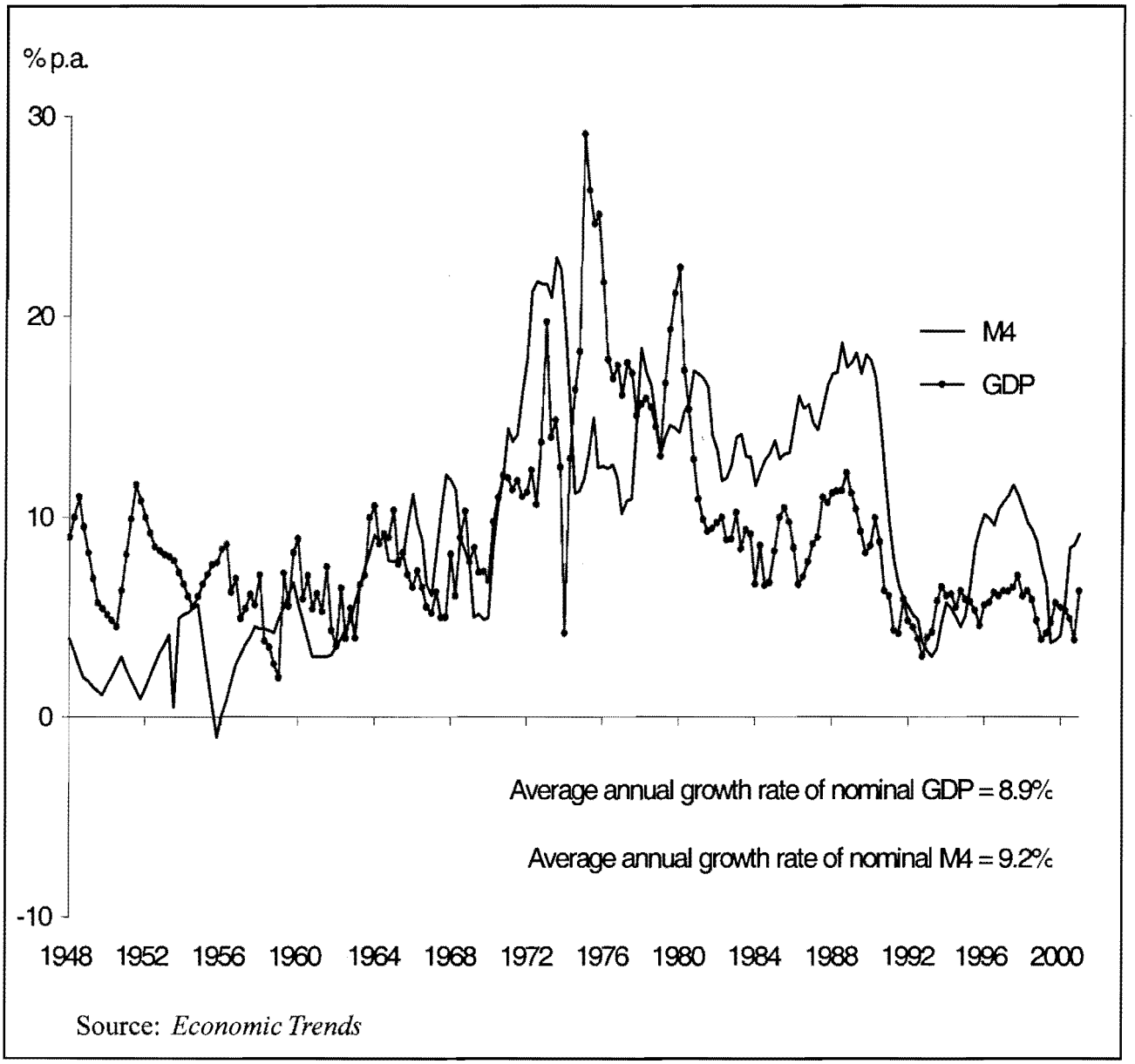
In the year to April M4 grew by 7.9% or, roughly, by 8%. According to the calculations, the probability that M4 growth of 8% will be associated with 5% or less nominal GDP growth (and so with target inflation) in any one year is 0.298. The probability that it will be associated with target inflation in two consecutive years is 0.089 and in three consecutive years 0.026 (i.e., little more than one in 40). (Note that the calculations assume that the outcomes in one year are independent from those in the next and subsequent years, and this assumption is not strictly correct in the context.) Of course, if M4 growth were to be even higher than 8%, the probability of keeping inflation at target would be reduced. The message seems to be that, by allowing M4 growth to run at 8% a year, the Bank of England is at considerable risk of not meeting its inflation target over the next few years.

But, arguably, 1948-2000 sample is "biassed"

However, there are at least two problems with this conclusion. The first is that one or more of the key assumptions may be unreliable, the second that M4 growth may not persist at 8% a year or higher. The first problem – the potential unreliability of the assumptions in the statistical exercise – demands the most extended treatment. The main difficulty is that the data from 1948 to 2000 may not be an unbiased sample of the economy's underlying behaviour, as the relationship between money and nominal GDP is changing all the time. Closer inspection of the data shows that the first half of the 1948 – 2000 period saw a falling ratio of broad money balances to GDP and the second half a rising ratio. This difference may be explained in various ways, with at least three influences undoubtedly at work.

Post-war trends in money and GDP

Medium-term structural shifts, but long-run similarity of growth rates



Source: *Economic Trends*

Over the 1948 – 2000 period the average growth rates of nominal GDP and the M4 measure of the money supply were very similar, at 8.9% and 9.2% respectively. On the face of it this is impressively consistent with a crude "quantity theory of money", in which the velocity of circulation is stable, and money and nominal expenditures grow together. In fact, the period splits into three. From 1948 to the early 1960s money balances grew more slowly than nominal GDP. People had excess liquidity built up during the wartime shortages and gradually eliminated it. In the 1960s the ratio of money to GDP was more or less stable. Finally, the period from the 1971 banking reforms has seen the ratio of money to GDP rise, as intensifying competition in the banking system made deposits more attractive to hold.

Ratio of money to GDP rising in the last 25 years or so

First, in the first half of the post-war period inflation was on an upward trend from cycle to cycle, making non-interest-bearing money a less attractive asset to hold (i.e., reducing the desired ratio of such money to nominal GDP). By contrast, in the second half of the post-war period inflation fell, making non-interest-bearing money more attractive to hold. Secondly, intensifying competition between banks increased the proportion of deposits paying interest, which again made it more worthwhile to keep wealth in the form of broad money. Finally, the real interest rate paid on interest-bearing bank deposits was generally higher in the 1980s and 1990s than in the 1970s, which further strengthened the appeal of broad money as an asset. Also relevant in explaining the rise in the ratio of money balances to GDP in the final quarter of the 20th century may be privatisation (which increased the equilibrium ratio of money to GDP, because privately-owned companies have a significant precautionary demand for money balances whereas publicly-owned do not) and the institutionalisation of savings (analysed in the May and June 2000 issues of this *Monthly Economic Review*).

1971-2000 period chosen as a unit instead of 1948-2000 and calculations can be re-worked

It is not easy to choose a precise dividing line between the period when the ratio of money to GDP was rising and when it was falling. Evidently, the change took place at some point in the 1970s. A case can be made that the removal of lending restrictions in the September 1971 Competition and Credit Control reforms was crucial, because it enhanced competition between the banks, and so was responsible for the tendency for banks to pay interest on deposits and hence for an important part of the increase in the money-to-GDP ratio. (An alternative view is that the real turning-point came with the beginning of the long-run decline in inflation expectations, which occurred in the late 1970s or early 1980s. As noted below, if this view were preferred, it would alter the calculations of the probability of above-target inflation.)

Choice of 1971-2000 period as the "unbiassed" sample improves the odds of keeping inflation at target with 8%-plus money growth, but risks remain high

The September 1971 CCC reforms are therefore chosen as the watershed and the period from Q3 1971 to Q4 2000 is regarded as a well-defined historical unit. The histogram of the quarterly values of the excess of annual M4 growth over annual GDP growth (both in %) is shown on p.12. The mean value was 2.23, reflecting the rise in the ratio of broad money to GDP, while the standard deviation was 5.29, similar to that in the full 1948 – 2000 period. Assuming that the quarterly values are normally distributed and that they constitute an unbiased sample, it is again straightforward to work out the probability that nominal GDP growth will be 5% (i.e., consistent with 2 ½% inflation). With 8% M4 growth, the probability that in any one year nominal GDP growth will be 5% or less is 0.440; with 9%, it is 0.371; and so on. A "fan chart", analogous to that in the Bank's *Inflation Report*, appears on p.13.

All models are vulnerable to bias in the data sample

The choice of the Q3 1971 – Q4 2000 period as the sample for the probability calculation leads to a marked improvement in the likelihood of reconciling virtual double-digit annual money growth rates with target inflation. Nevertheless, the message from p.13 is that - by allowing virtual double-digit annual money growth - the Bank of England continues to run serious risks of exceeding the inflation target.

Unless money supply growth is reduced, inflation will move above target in the next few years. (It should be conceded that the choice of a somewhat different period for the sample – say, that from Q3 1979 [i.e., the election of the highly inflation-conscious Thatcher Government] to Q4 2000 – would dampen the inflation risks further, as the 1980s saw a particularly marked rise in the ratio of money to GDP. The vulnerability of this exercise to the chosen sample may appear to be a major weakness, but it is in fact common to any statistical calculation of probabilities. For example, it applies to all the Bank's five models.)

Bank of England runs high risk of not meeting its target, if money growth stays high

So the bias inherent in the selection of sample period does matter, but – even after choosing a period in which the money-to-GDP ratio was mostly rising – the main conclusion of the probability analysis stands. The Bank of England runs a high risk of exceeding its inflation target in 2002 and 2003 if it allows money supply growth to continue at the same sort of rate as that seen in the last 18 months.

What about the second analytical issue, that money supply growth will – spontaneously, without any action on interest rates from the Bank of England – slow down to a more moderate rate consistent with 2 ½% inflation? With the bulk of broad money consisting of banks' deposit liabilities, its growth depends principally on their ability to expand their assets by extending new credit to the private, public and overseas sectors.

And, crucially, money supply growth unlikely to slow at current interest rates

The charts on p.16 show two key indicators of the prospects for credit demand in the next few months, the stock of mortgage approvals and the value of unused sterling credit facilities. The message is clear-cut. Banks and building societies have plenty of new business to do, and can readily expand their balance sheets. In fact, the buoyancy of these advance indicators of bank balance sheet growth implies that money supply growth might accelerate.

Dangers of rising inflation increased if high money growth occurs in an over-heated economy about to suffer currency depreciation

The next three years will be an interesting test of competing economic theories. In the long run inflation is indeed a monetary phenonemon, but low inflation can be reconciled with high supply growth while the economy is depressed (i.e., when the output gap - the excess of actual output over trend output - is negative) and the exchange rate is over-valued. The upturn in UK money supply which began in 1995 did presage several years of buoyant asset prices and above-trend growth in domestic demand. But inflation stayed under reasonable control, partly because the economy started with a fair amount of slack (i.e., the output gap was still slightly negative in 1995), and partly because the pound appreciated sharply on the foreign exchanges in late 1996 and remained over-valued for the next four-and-a-half years. Money supply growth fluctuates from month to month, but a fair generalisation is that it is running at an almost double-digit annual rate. Further, the level of national output is now almost certainly above trend and further significant sterling appreciation is unlikely, even if it were desirable. If the monetary analysis of inflation is right, the Bank of England will have a hard job keeping inflation under 3 1/2% over the next few years.

Over 50 years of monetary experience

Money and output rise together, but big short-run divergences

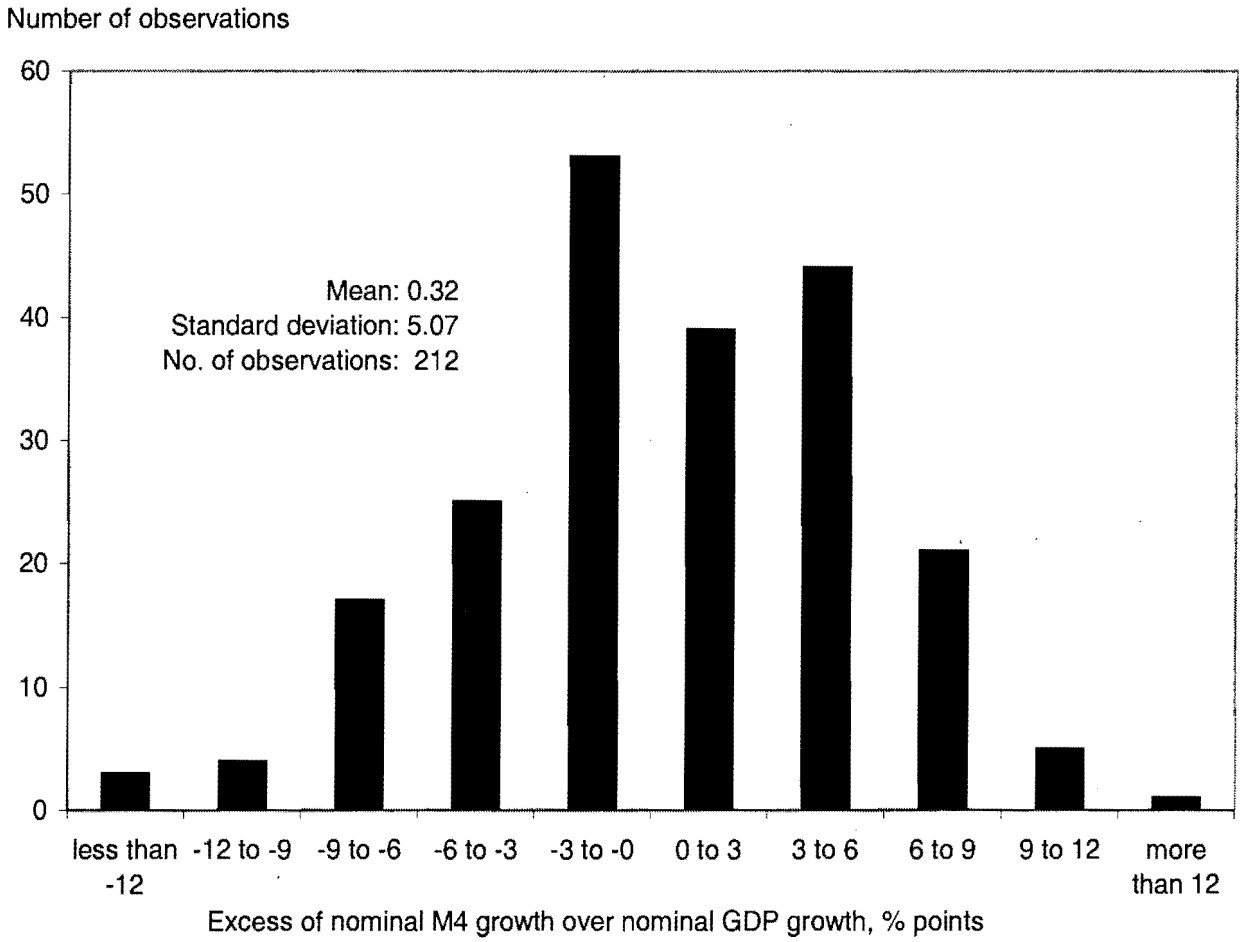


Chart is of quarterly data. It is a histogram of the excess of the annual % increase in nominal M4 over that in nominal GDP.

Despite the long-run similarity of the growth rates of money and nominal output in the UK over the 1948 – 2000 period, there were many quarters when the annual growth of money and nominal GDP diverged by over 6%. In the early 1950s money grew sluggishly, at little more than 3% a year on average while nominal GDP growth was typically in the 5% - 10% area. The slow money growth reflected official controls on bank lending. These continued until major reforms in 1971, since when the banking system's balance sheet and broad money have generally grown faster than nominal GDP. However, sharp fluctuations have occurred. In the year to the first quarter 1974 money growth exceeded GDP growth by 15.3%, whereas in the year to Q1 1975 nominal GDP growth exceeded money growth by 17.2%.

Assessing the inflation risks

Using the 1948-2000 sample to estimate inflation probabilities

Table gives answer to question, "what is the probability in any one year, or in two, three or four consecutive years, that money growth of x% will be associated with an increase in nominal GDP of 5% or less (i.e., of inflation of 2 1/2% or less)?"

Money growth	Probability of nominal GDP growth of 5% or less			
	In one year	In consecutive periods of: -Two years	-Three years	-Four years
7%	0.371	0.138	0.051	0.019
8%	0.298	0.089	0.026	0.008
9%	0.233	0.054	0.013	0.003
10%	0.179	0.032	0.006	0.001
11%	0.131	0.017	0.002	0.000*

*Less than one in a thousand.

Source: Lombard Street Research calculations.

Note: See text for discussion of the reliability of using the 1948-2000 data as a sample. Note that the probability estimates for two and more consecutive years assume that the probabilities in any one year are independent from the probabilities in any other year. This is not strictly correct in the context.

A crucial question for policy-makers and financial markets is, "if the current rate of money growth continues, what is the probability that inflation will stay close to target?". It is a relatively straightforward matter to calculate – from a sample of past data – the probability that in any one year 7%, 8% or 9% money growth will be associated with a particular rate of increase in nominal GDP. The first column here shows the probabilities in any one year, using the 1948 – 2000 period as the sample. The estimates for two, three and four consecutive years are obtained simply by multiplying (two, three and four times) the probability in any one year. This assumes that the probabilities are independent, which cannot be quite right in the context. At any rate, the probability of consistently hitting the 2½% inflation target must decline while annual money growth stays at almost 10%.

Monetary experience after big 1971 reforms

Money rising 2% a year faster than incomes, after de-regulation

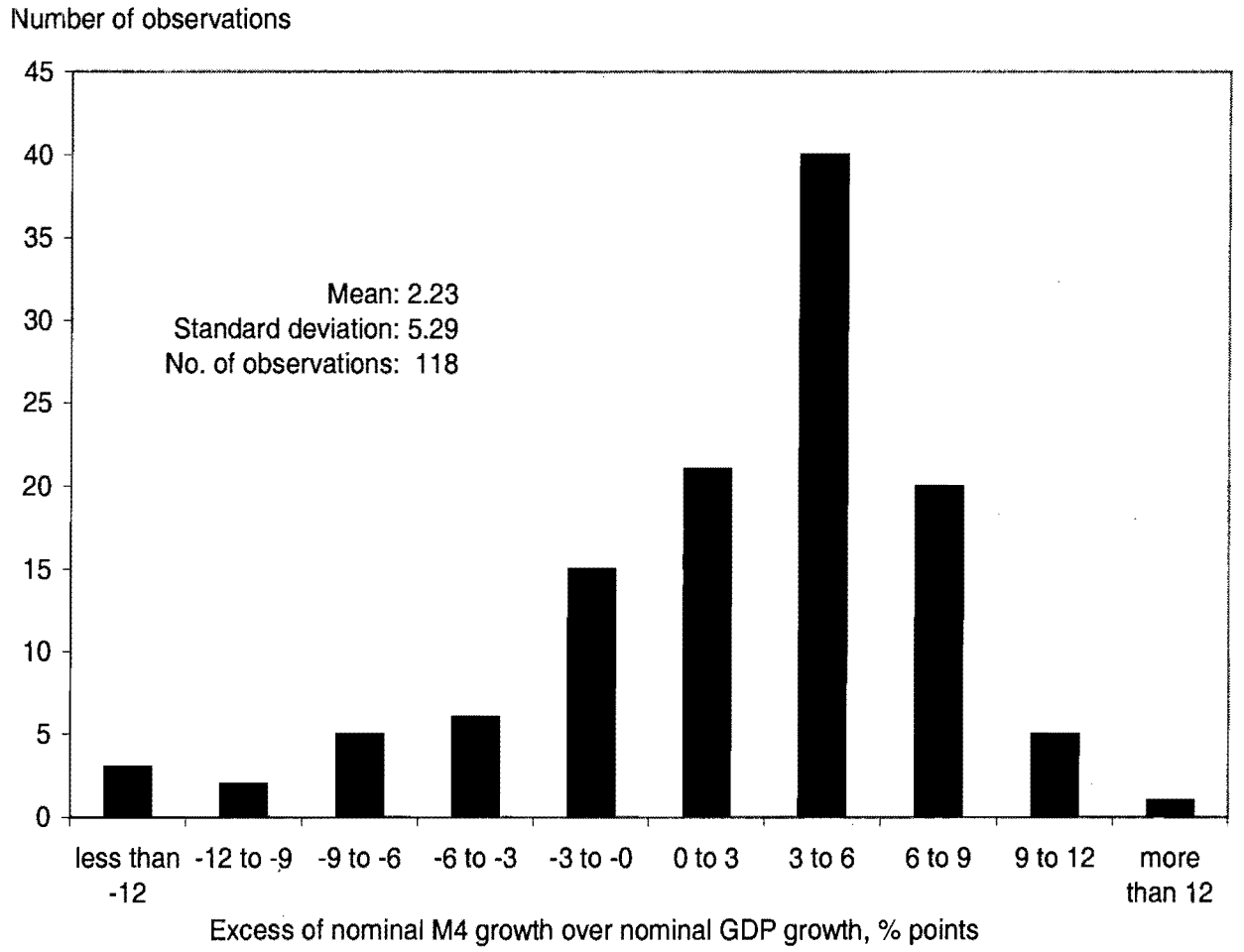


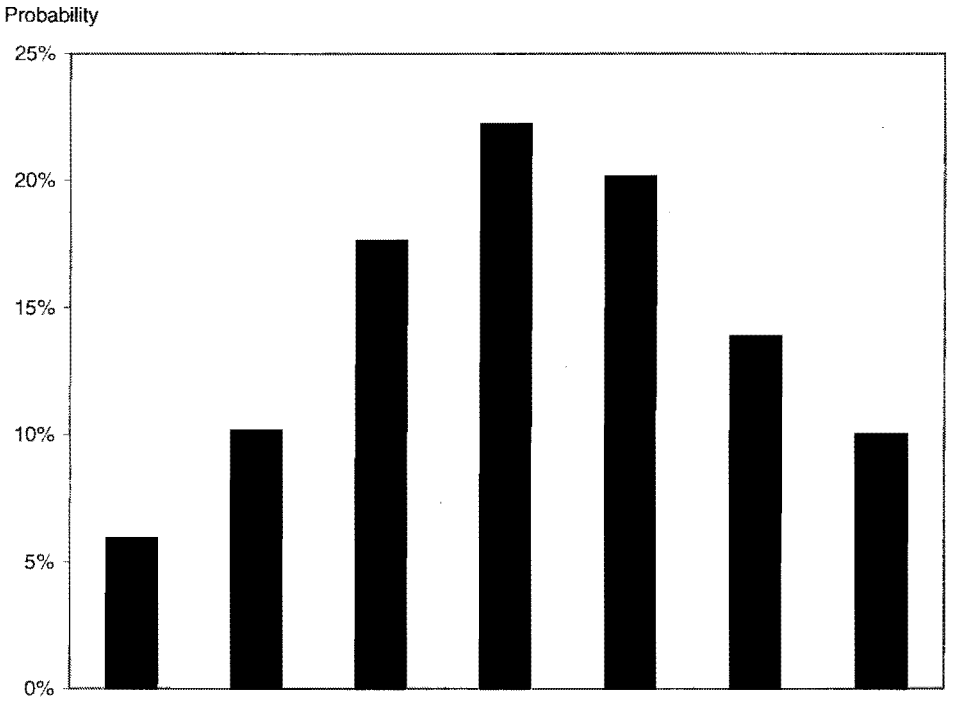
Chart is of quarterly data. It is a histogram of the excess of the annual % increase in nominal M4 over that in nominal GDP.

In September 1971 the Bank of England announced a set of reforms known as "Competition and Credit Control". Their purpose was to end the quantitative restrictions on bank credit to the private sector which had been in place, off and on, since 1939. These restrictions had been a powerful – if blunt and inefficient – means of curbing the growth of bank assets and, therefore, the deposits which make up most of the money supply. The immediate sequel to CCC was an explosion in bank credit and extremely fast money supply growth, and the inevitable macroeconomic result was a big boom and rapid inflation (of over 20%) in 1975. As the high inflation made money an unattractive asset to hold, the ratio of money to GDP fell in the mid- and late 1970s. But in the 1980s and 1990s falling inflation was associated with a rise in the ratio of money to GDP.

Deriving a fan chart

Estimating probable GDP growth from money trends

Chart shows the probability of different values of the excess of M4 growth over nominal GDP growth, using the 1971-2000 data (see opposite on p.12) as the sample. So, for example, with 8% M4 growth, the probability in any one year of nominal GDP growth between 5% and 8% is 22.2%. (With 5% to 8% nominal GDP growth, the excess of M4 growth over nominal GDP growth is 0% to 3%.)



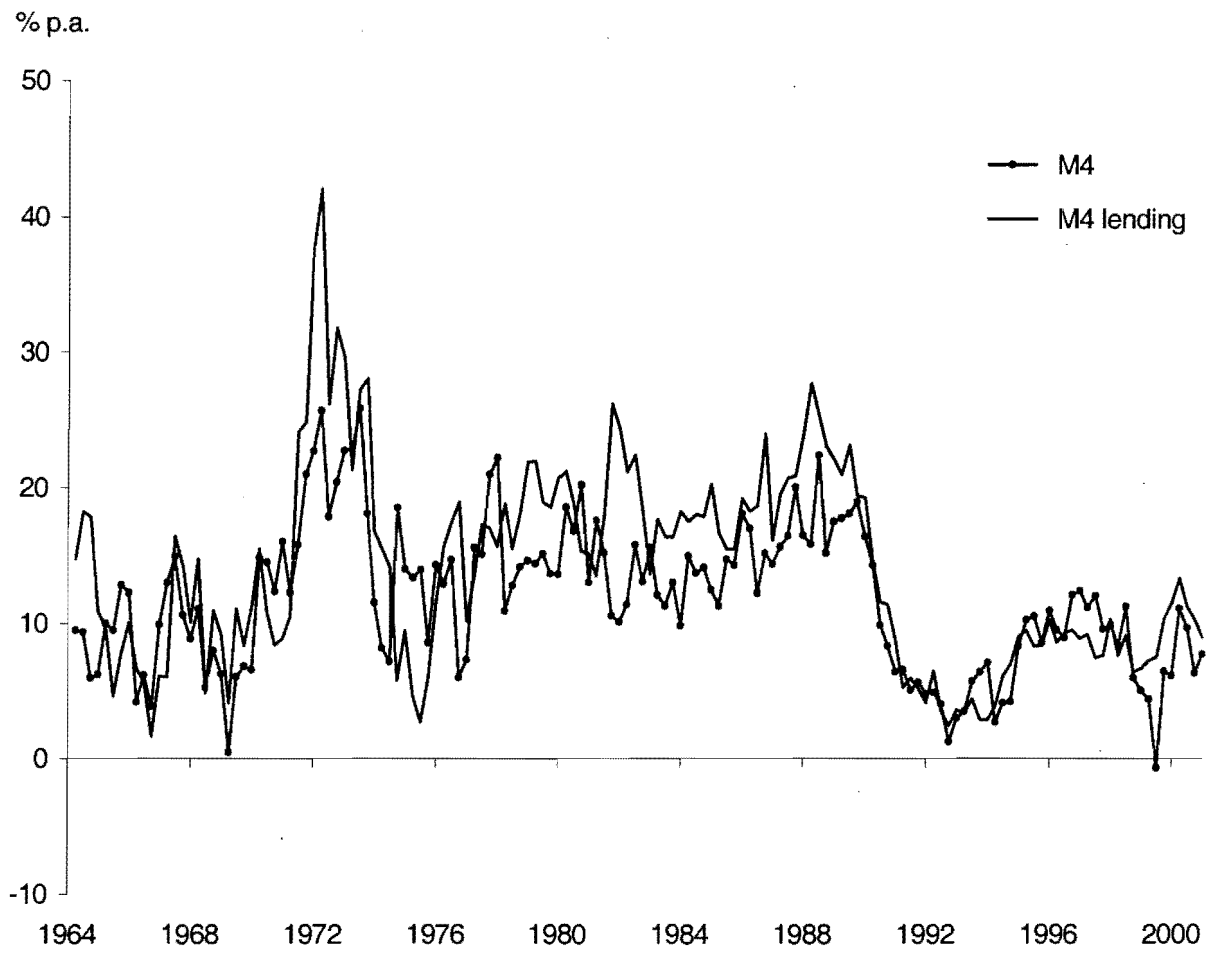
Excess of M4 over nominal GDP growth.%	Less than -6	-6 to -3	-3 to 0	0 to 3	3 to 6	6 to 9	More than 9
Implied % rise in nominal GDP assuming 8% money growth	14 or more	11 to 14	8 to 11	5 to 8	2 to 5	-1 to 2	Under 1%

The histogram here is derived from the data on p. 12. As explained on p. 12, for most of the 1971 – 2000 period the ratio of money to GDP was rising, as falling inflation made money a more worthwhile asset to hold and more intense bank competition caused banks to offer interest on a higher proportion of deposits. On average the ratio of money to GDP rose by a little over 2% a year, but – evidently – there were huge divergences from this average. The histogram above shows the probability of different values of the excess of money growth over GDP growth. With 8%-a-year money growth, the most likely single value of annual GDP growth is about 5 ¾% (i.e., 8% minus 2 ¼%), which is somewhat above the 5% figure normally associated with 2 ½% inflation. Nominal GDP growth of between 5% and 8% is the most likely outcome of the 300-percentage-point bands illustrated, but the probabilities of quite different GDP numbers are high.

The fraternity of money and bank credit

Bank credit a key determinant of money growth

Chart relates to quarterly data; it shows the three month annualised growth data.



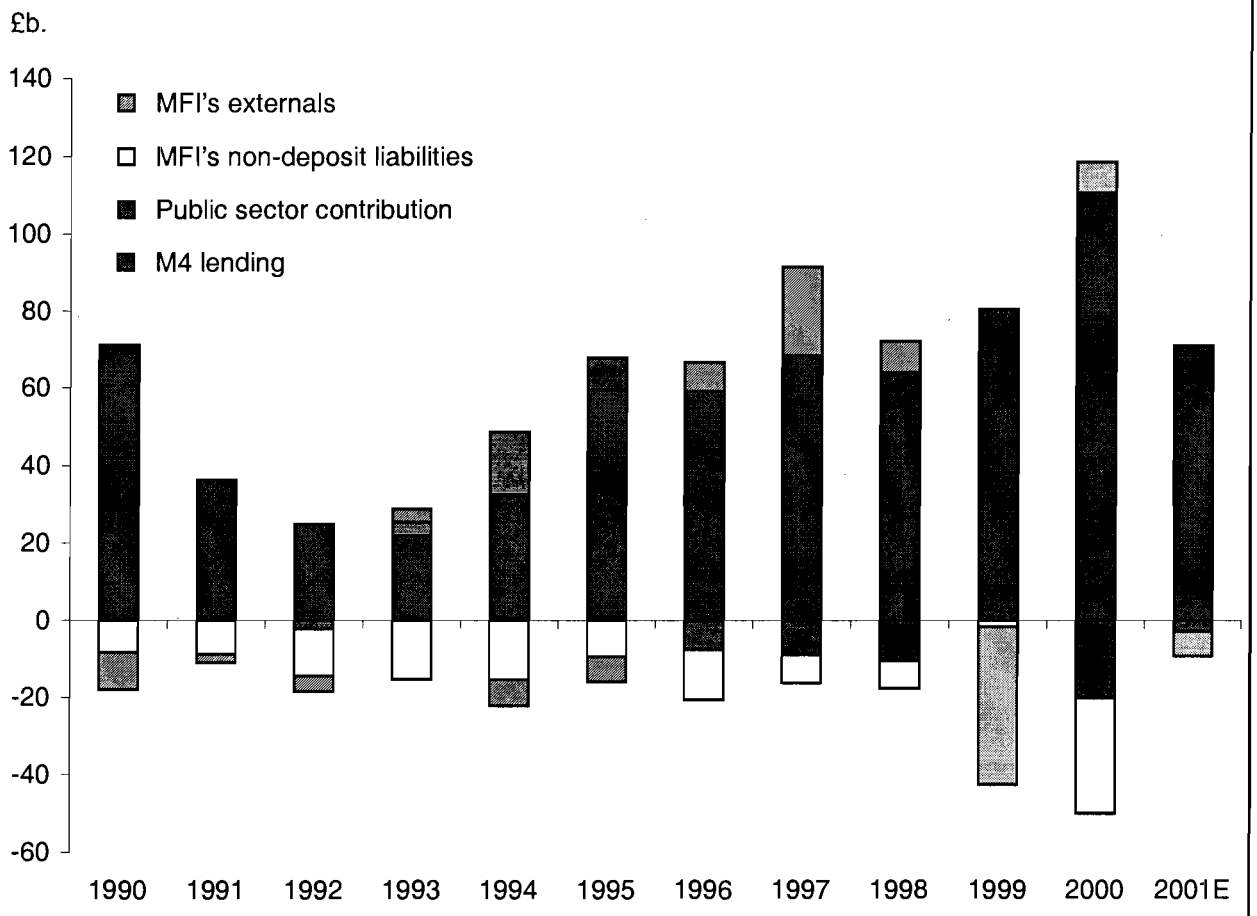
Souce: Bank of England *Bankstats*

The argument in the text and in the preceding charts can be briefly summarised. By allowing M4 growth to run at 8% or more, the Bank of England is taking serious risks that inflation will move above target in 2002 and 2003. A key policy question raised by the analysis becomes "will M4 growth decelerate with present interest rates?". Because of the similarity of the growth rates of bank credit to the private sector and M4 in recent decades (see above), a natural development of the question is "will the growth of bank credit slow at unchanged interest rates?". Advance indicators of credit demand on p. 16 are basic to the answer, but the other credit counterparts to M4 growth are relevant and are analysed on p. 15. The Bank of England, the Treasury and the Debt Management Office show little interest in the linkages between these variables and money growth.

Four counterparts to money growth

Is bank credit growth falling? Will other counterparts compensate?

The change in the M4 measure of money is equal to the sum of the four credit counterparts, represented by the segments in the bars. (MFIs are monetary financial institutions, i.e. banks and building societies.)



2001 estimated by multiplying data for first four months by three.

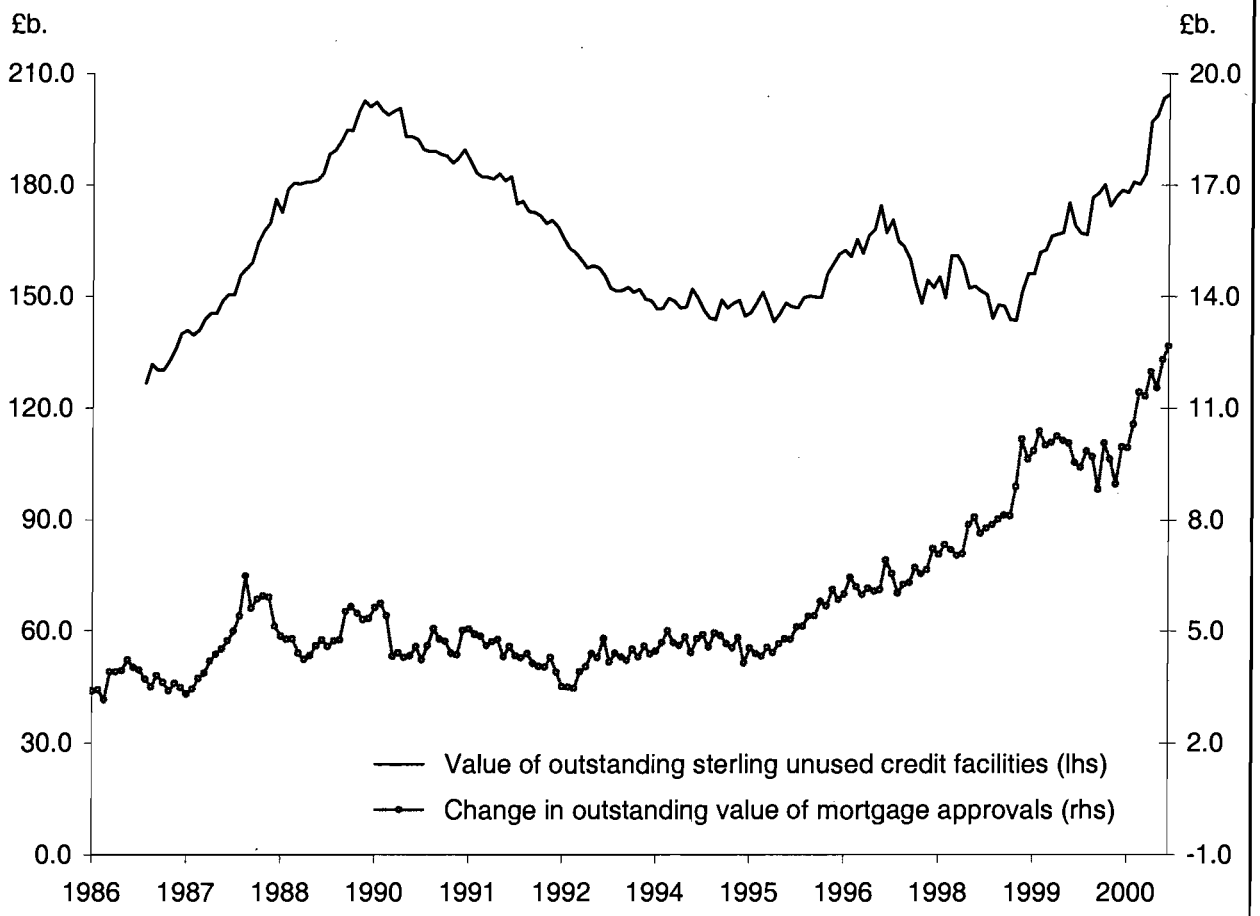
Source: Bank of England *Bankstats*

The chart shows the credit counterparts to the growth of M4. (Three of these mostly reflect changes in the banks' assets – M4 lending to the private sector, the "public sector contribution" [i.e., banks' lending to the public sector] and the MFIs' externals. The final one – the change in non-deposit liabilities – measures the extent to which the growth of banks' assets is not matched by extra *deposit* liabilities.) The key features of 2000 were very buoyant bank lending to the private sector (notably to phone companies), a negative public sector contribution due to the large budget surplus and a heavily negative effect on M4 from the increase in non-deposit liabilities. So far 2001 has been different, with much weaker bank credit. But this is unlikely to continue (see p. 16), while the Debt Management Office's plans imply a positive public sector contribution to M4 growth.

Pointers to credit demand

Credit growth likely to revive in late 2001

Chart relates to monthly data.



Note that mortgage approvals series relates to *change in stock*, whereas the credit facilities series relates to *level of stock*. They are not directly comparable.

Source: Bank of England *Bankstats*

The early months of 2001 saw notably slower growth of bank lending to the private sector than 2000. In 2000 M4 lending averaged £9.3b., whereas in the first five months of 2001 the figure was £5.7b. The apparent deceleration was largely due to repayments of bank debt by phone companies and financial borrowers. The chart above suggests that the deceleration is unlikely to last. As mortgage lending is almost half of UK monetary financial institutions' loan assets, the surge in mortgage approvals is interesting and perhaps a little disturbing. The leap in unused sterling credit facilities in recent months is also important. As phone companies have been repaying bank debt and emphasising their determination to avoid balance sheet gearing, the rise in unused facilities is surprising.