MONETARY BASE CONTROL

PART 12

Setting Targets for Monetary Base

SETTING TARGETS FOR THE MONETARY BASE

Introduction

1.   This note considers how we might go about choosing a target for the monetary base. Setting targets for the broad aggregates has never been simply a matter for applying mechanical formulae, nor of reading figures for monetary growth off the post-Budget forecast. The published ranges need to convey a clear message about the Government's intended approach to inflation. They also need to be credible. In practice, what has already been said about monetary growth, and what has been achieved, have severely constrained our choice of targets.

2.   Even though there have never been published targets or guidelines for the monetary base, the slate is not entirely clean. A range for Mo needs to be consistent with the targets for broad money, and what is said (and implied) in the MTFS about the Government's medium term objectives on inflation. It also needs to make sense in relation to recent experience, since we will be arguing that the reason for adopting an Mo target is that it has been a relatively good indicator of monetary conditions, and future inflation, over the past few years.

3.   The illustrative figuring discussed here relates to the framework set out in the last MTFS. The ranges set for £M3, PSL2 and M1 were 7-11 per cent for the current target period, declining by 1 percentage point a year over the next two years (when the ranges are described as "illustrative"). There were no precise objectives for inflation beyond the general statement that "the objective over the medium term is to continue reducing inflation". By implication, however, the target ranges are consistent with the inflation and money GDP assumptions on which the fiscal projections are based. The 1983 Red Book showed money GDP rising by about 8 per cent a year over the next three years, with the GDP deflator increasing by a fairly steady 5 per cent a year, and real output rising more or less in line with productive potential.

The growth of Mo relative to other aggregates

4.   We already have a target for narrow money: 7-11 per cent. M1 is well outside it, but we shall be arguing that the rapid growth in interest bearing sight deposits

makes M1 a bad indicator of narrow money. At first sight, it might seem natural to stick with the same target, but simply apply it to our preferred measure. We have, of course, always argued that there are good reasons why the growth in different aggregates may diverge; but the point applies with more force to the relative growth of broad and narrow measures, than it does to that of different versions of narrow money. This line of reasoning gets some support from chart 1 and Annex A, which suggest that over the 1960s and much of the 1970s, the growth rates of Mo and M1 were really quite similar, even from year to year.
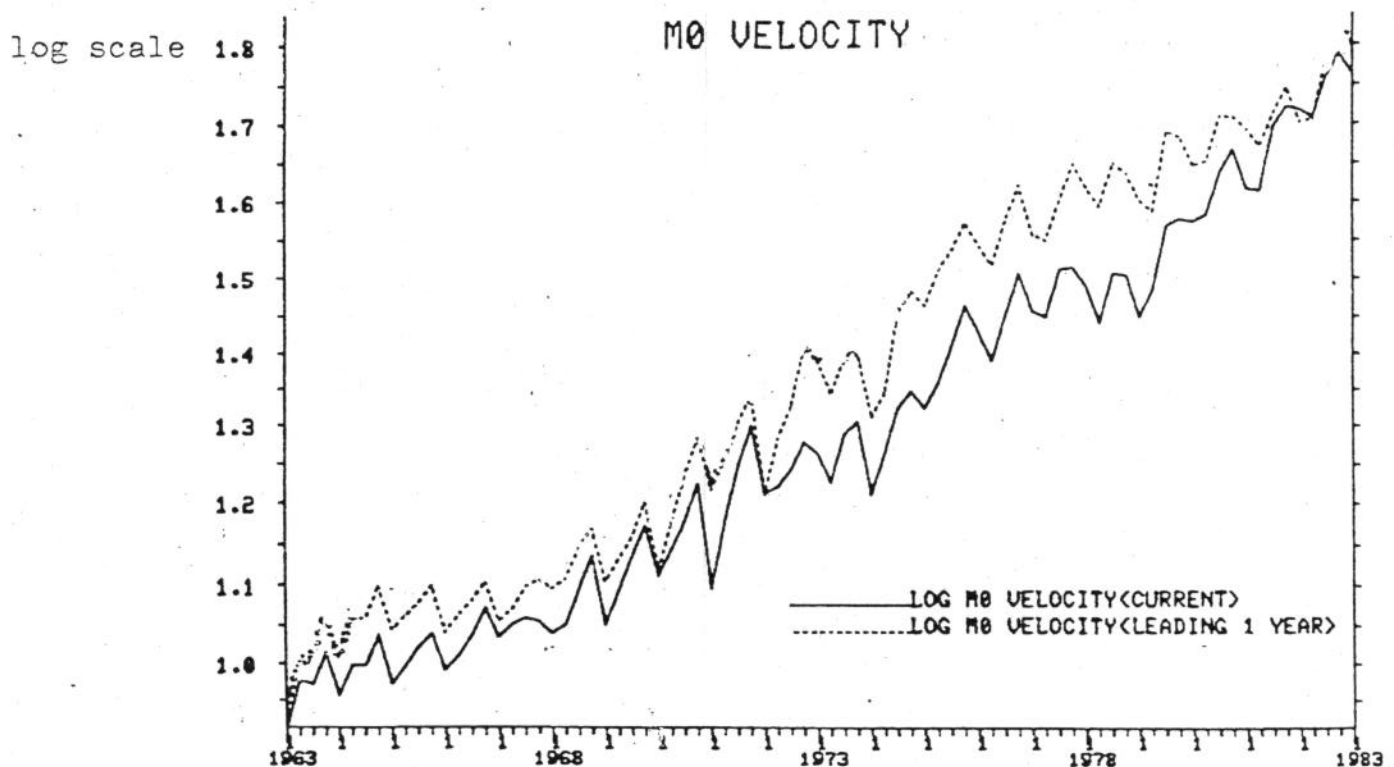
Chart 1: Growth of Narrow Money: Mo and M1
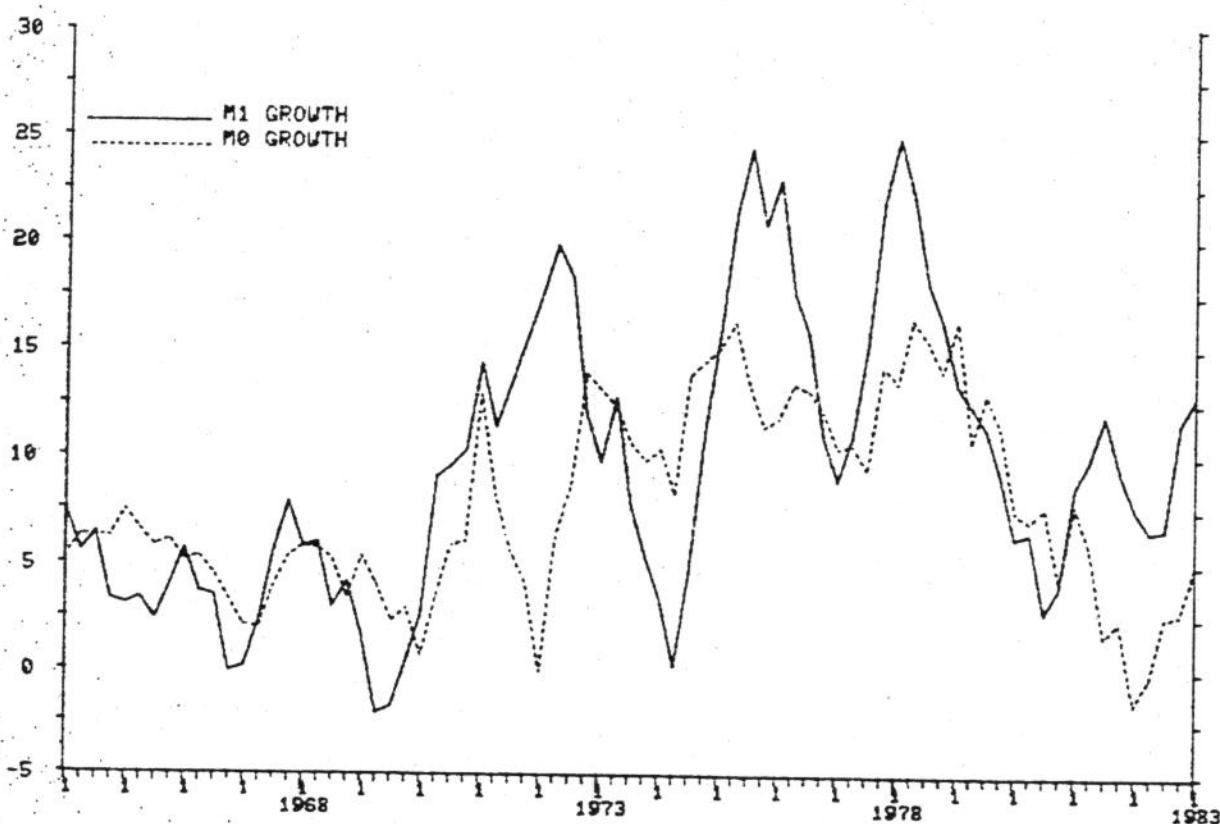
5. The most recent experience – since 1980 – establishes a rather different presumption. The monetary base has grown slowly relative not just to M1, but to the targets we set for M1 from February 1982 onwards (see Annex). We will not want to concede that policy was unduly restrictive over this period, as some proponents of MBC have argued (eg Professor Niehans). To avoid this implication, we will therefore need to say that it was appropriate to look for a relatively low growth in the base (eg to take account of changes in the demand for cash). It would be consistent with this position to start with a target for Mo lower than those previously suggested for M1.
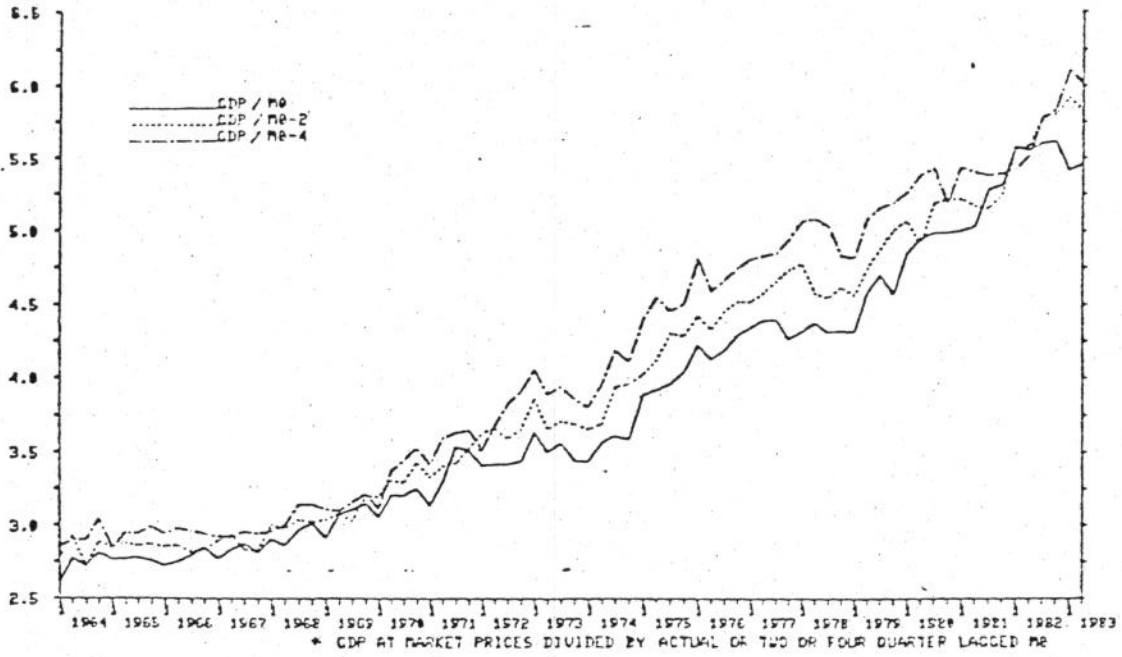
Velocity trends

6.   This points to constructing an Mo target from first principles. The simplest approach is to work back from some assumption about the desired rate of growth of money GDP, by deducting an allowance for the _trend_ change in Mo velocity. This is very broad brush; all it does is identify the average rate of monetary growth that, over a period of years, should be consistent with a given growth in money GDP. Its value depends on being able to establish a clear trend in velocity, which can be extrapolated into the future with reasonable confidence.

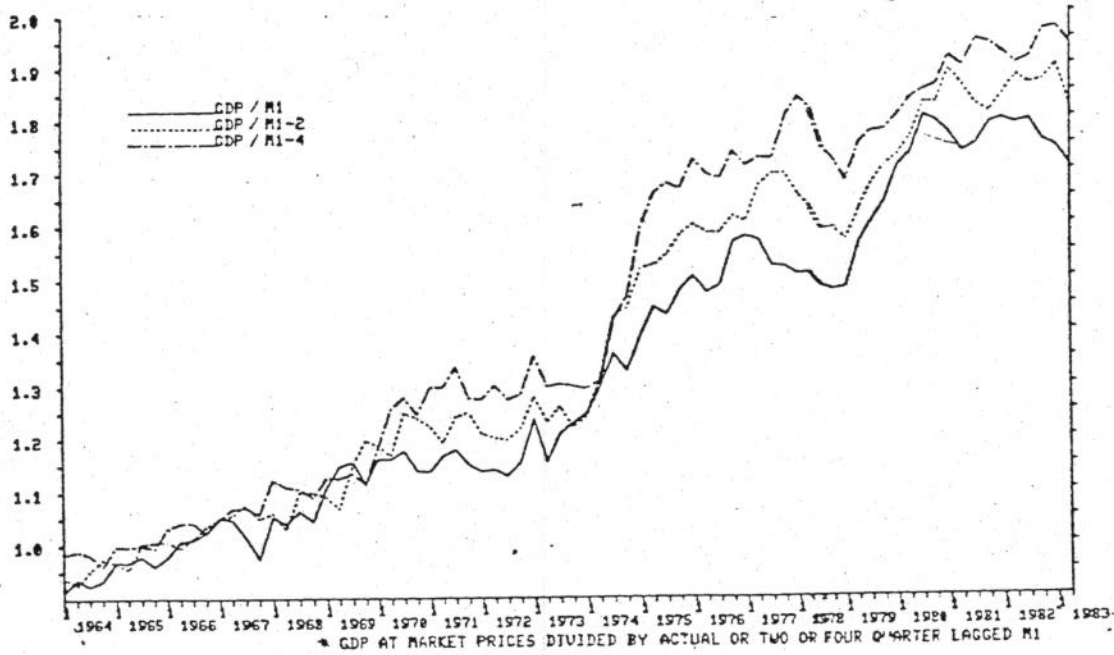7.   As charts 2 and 3 show, there is sizeable upward trend in the velocity of Mo.

Chart 2

Chart 2 — MO VELOCITY. Log scale vertical axis from 1.0 to 1.8; horizontal axis 1963 to 1983. Legend: solid line — LOG M0 VELOCITY (CURRENT); dotted line — LOG M0 VELOCITY (LEADING 1 YEAR).
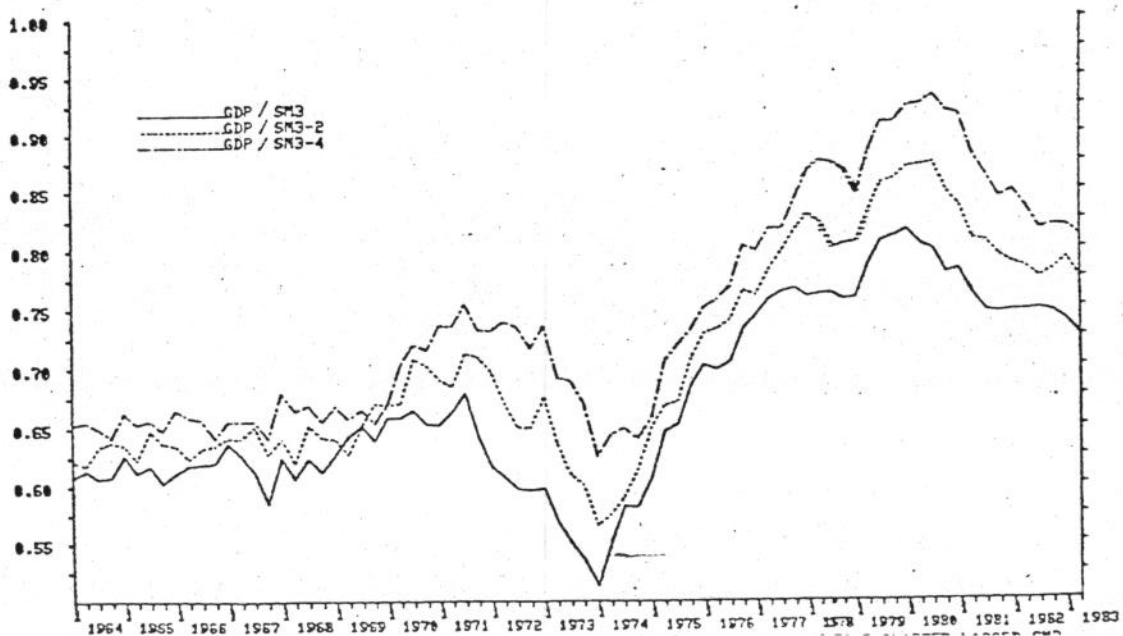
Fluctuations about the trend are very small relative to the trend itself – by contrast with the broader aggregates, where the trend is almost swamped by large fluctuations that have persisted for several years. Relative to M1, the trend also looks fairly unbroken; there are no obvious signs that it shifted upwards in the early 1970s, when inflation and interest rates increased sharply. Nevertheless, the Mo velocity trend does seem to have accelerated, albeit fairly smoothly, since the early 1970s, and even more clearly since about 1978 and 1979.

CHART 3

ACTUAL AND LEADING M2 VELOCITY*

GDP / M2
GDP / M2-2
GDP / M2-4

* GDP AT MARKET PRICES DIVIDED BY ACTUAL OR TWO OR FOUR QUARTER LAGGED M2

ACTUAL AND LEADING M1 VELOCITY*

GDP / M1
GDP / M1-2
GDP / M1-4

* GDP AT MARKET PRICES DIVIDED BY ACTUAL OR TWO OR FOUR QUARTER LAGGED M1

ACTUAL AND LEADING STERLING M3 VELOCITY*

GDP / SM3
GDP / SM3-2
GDP / SM3-4

8. This acceleration is illustrated in table 1.

Table 1: Monetary Base, Money GDP, and Velocity

| | | % growth per year in:- | |
Period	Money GDP	Mo	MO Velocity (GDP/Mo)
1961 - mid 1983	13	8½	4¼
1961 - 1971	8	4¾	3
1972 - mid 1983	16	10½	5
1978 - mid 1983	12¾	5½	6¾

The final column shows the effect of fitting simple linear time trends to the series shown in chart 2, over different time periods. The trend over the 1970s is, in a statistical sense, significantly different from that over the 1960s. Not surprisingly, a non-linear time trend is a better fit to the period since the early 1960s than a simple straight line. This allows for a gradual rise in the trend growth in velocity, bringing the implied underlying growth rate to about 6½ per cent by mid 1983.

9. Mechanical extrapolation of these statistical trends yields numbers ranging from 4¼ per cent to 6¾ per cent for the growth in velocity over the next few years. If we take an 8 per cent growth in money GDP as being broadly consistent with the Government's objectives, that implies a target range for Mo of something like 1½-4 per cent.

10. Whether or not this makes economic sense depends on the interpretation that is put on the high (and possibly accelerating) growth in velocity over the 1970s, and more particularly over the last five years. On one view it is the result of technical innovations and changes in payment habits that have allowed people to economise in the use of cash, and that are likely to persist, and even gather pace, over the medium term, more or less regardless of wider economic developments[1]. But, arguably, the pace of change has itself been due to the persistence of high nominal interest rates and high inflation since the early 1970s. If we are entering a period when inflation and interest rates are likely to return to rates closer to those prevailing in the 1960s, it might be reasonable to expect some slackening in the growth in velocity. On the whole, however, the evidence does not seem to support this argument. Whilst changes in the Mo velocity do seem to be associated with interest rates, most clearly over the

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[1]This view is documented in recent BEQB articles on the use of cash (December 1982) and the effect of financial innovation on the British banking system (September 1983). It is broadly supported, for the past at least, by the research reported in Mr Lankester's paper on Narrow Money.

past five years, the size of the trend in velocity does not seem to be significantly affected by the level of nominal interest rates.

11.   Another problem with extrapolating the time trends shown in table 1 is that they may be unduly influenced by recent Mo growth, the full effects of which have yet to come through on to money GDP. Since money GDP reacts to changes in monetary growth with a significant lag, "leading velocity" (which compares current GDP with the money stock some periods earlier) may be a better guide to the underlying trend than 'actual' velocity. As the charts show, the two series[1] have moved rather differently, especially over the past decade. Leading velocity has been a somewhat flatter series since the mid 70s, with no evidence of acceleration since 1978-79. However, the trend seems to have risen slightly between the 1960s and 1970s, even on this series, as table 2 shows:-

Table 2: Trends in "Leading Velocity"

	Leading Mo velocity $\dfrac{GNP}{Mo_{-4}}$	% growth per year
1963 – 1983	$4\frac{1}{2}$	
1961 – 71	3	
1971 – 83	$4\frac{1}{2}$	
1979 – 83	4	

12.   On the basis of the discussion so far, a reasonable estimate of the trend growth in velocity seems to be about 4 per cent a year - though there is clearly a margin of uncertainty. The implication is that Mo growth of around 4 per cent a year would, over a run of years, be constant with average GDP growth of 8 per cent.

Forecasts for Mo

13.   Whether or not velocity grows at a steady trend rate in the medium term, it clearly does not do so from one year to the next. If the demand for Mo is a reasonably complex function of lagged money incomes and interest rates, there may be a lot of systematic variation in velocity, in addition to random noise. A more elaborate approach to target setting involves trying to predict year to year movements in

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[1] The measure of leading velocity used in charts 1 and 2 is defined as the ratio of GDP at market prices to the level of the monetary base lagged 4 quarters. Research at HMT and the Bank suggests that the average lag between changes in Mo and subsequent changes in inflation is between six months and a year.

velocity, rather than simply extrapolating the past trend; and trying to take some account of whether the starting point is one in which velocity is especially high or low relative to trend.

14. In practice, this is likely to mean paying some attention to forecasts, both Treasury and, where available, those produced by outsiders. The latest Treasury forecasts suggest a growth of Mo of about 5½ per cent a year over the current target period, falling to around 4½ per cent over the subsequent two target periods. The Bank forecast is much the same. None of the outsiders forecast Mo, as such. Phillips and Drew forecast the growth of currency in circulation, put at 5½ per cent in the year to 1984 Q1, in their September update. Greenwells, Liverpoool, and the City University all discuss movements in the base without offering precise forecasts. To judge by his September Bulletin, Patrick Minford seems to be looking for a year-on-year growth in Mo of about 5 per cent, consistent with the MTFS. City University Business School seem to be more or less alone in expecting a pick-up in Mo growth; in their Spring 1983 Review they suggested that the growth rates of the broad and narrow aggregates (including Mo) would be converging.

The effect of lower inflation and interest rates on velocity

15. The City University's argument is an echo of one that has appeared in each of the last two Red Books. We have argued that falling interest rates and inflation are likely to lead to a shift back into non-interest bearing money. If this represents a permanent increase in the demand for money, it can be accommodated by allowing a faster growth in narrow money, without damaging implications for future inflation.* The forecasts quoted above do not betray much evidence of this sort of effect. But it is worth considering how far the argument applies to Mo; and, if it does, how much allowance to make for it in setting targets for the next few years.

16. In principle, the velocity of any interest sensitive aggregate is liable to shift when there is a step change in the rate of inflation. This is on the assumption that changes in inflation are more or less fully mirrored in nominal interest rates. The argument is simply that people will be more willing to hold higher money balances, relative to their incomes, the lower, on average, the opportunity of cost doing so. It is particularly relevant to cash and current accounts because the oportunity cost of holding these forms of money varies directly with the general level of interest rates. (Whether it applies to broader measures of money depends on how changes in the average level of interest rates affect the pattern of relative interest rates.) This argument has important implications for targeting interest sensitive aggregates, which are spelt out more fully in a companion paper by Mr Sedgwick.

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*Failure to accommodate the velocity shift would, of course, imply an unintentionally restrictive policy stance.

17.   The practical significance of this effect, in current circumstances, depends on

(i)   how sensitive Mo is to changes in the level of short term interest rates,

and   (ii)   how short term rates themselves are likely to move over the next few years.

Assumptions on either are inevitably subject to major uncertainty. In the case of M1, we stopped short of publishing a separate range for M1, even though our best view was that the velocity of M1 was likely to shift down quite markedly in the next few years. This was partly because the target range needed to accommodate this effect would have been high relative both to the range chosen for the broader aggregates, and to M1 growth over the preceding period. It did not seem worth paying the presentational price of announcing a high range, given the inevitable uncertainty about what would in fact happen to M1 over the year ahead.

18.   The balance of judgement may be slightly different in the case of Mo, even though the same uncertainties apply. First, the scale of any shift in velocity is likely to be much smaller than for M1, because the interest sensitivity of Mo is almost certainly less. Second, a downward shift in Mo velocity would be superimposed on a strong upward trend, mainly due, as far as we can tell, to financial innovation. Some attentuation in this trend could still be consistent with Mo growth that looked modest relative to that in the other aggregates, money GDP, or even prices.

19.   The forecasts, for what they are worth, suggest that the effect of falling interest rates on velocity is likely to be quite small over the next few years, and more than offset by the longer term developments that are allowing people to economise in the use of cash. This also seems to be the implication of the more interest sensitive equations that have emerged from recent research. Annex B shows some of the numbers suggested by the best of these equations, given the interest rate and money GDP paths in the autumn NIF. They are highly sensitive to what is assumed about financial innovation: the degree of interest sensitivity seems to be less important. If the cash dispenser etc trend terms are extrapolated at their recent rates of growth, Mo is forecast to grow by about 6-6½ per cent in the current financial year, falling sharply to 2 per cent or less thereafter. Halving the rate of financial innovation (a fairly extreme assumption) pushes up the figures, but they remain comfortably below 10 per cent this year, and around 5 per cent or less thereafter. Nor would the numbers have been very much higher, if we had taken a lower interest rate profile; other things being equal, each 1 per cent fall in interest rates increases Mo by only 1½ per cent, over a period of years (according to this equation).

20. Clearly there are considerable uncertainties both about the underlying trend in velocity, and the effect of lower interest rates and inflation. Without trying to be too precise it might be sensible to reduce the time trends estimated from past data by a percentage point or so, to leave room for some adjustment in the Mo stock over the next few years. So, in broad terms, we might be looking for a growth in Mo about 3 per cent less than that of money GDP over the next few years.

Choosing a Range

21. The discussion so far suggests that a rate of growth of Mo of around 4 or 5 per cent over the next year or so is likely to be broadly consistent both with the framework set out in the MTFS, and the picture emerging from the forecast. One remaining question is how to express this in terms of ranges. It has become customary to set targets as bands with a width of four percentage points. Arguably, at relatively low rates of growth, we should be thinking in terms of a narrower band.

22. There is no great science about the width of the current band. In broad terms, it is intended to allow for:-

(i) uncertainty about the choice of target, eg resulting from the problems of extrapolating future movements in velocity;

(ii) imprecision in control. The difficulty of detecting the underlying trend in monetary growth, the uncertainty about the effect of policy instruments, and the delays with which they impact on the monetary aggregates mean that we cannot hope to control monetary growth very closely, even over a period as long as a year;

(iii) the inherent volatility of the series. The chances are that a very noisy aggregate will be outside a very narrow target range most of the time, even if it is "on track" in an underlying sense.

23. The present ranges are almost certainly far too narrow to allow adequately for these factors. Our poor record in hitting targets is suggestive – though scarcely conclusive; £M3 growth has been within the target range only twice since 1977-78 – and one of those times was during the operation of the SSD scheme. As far as Mo goes, our uncertainty on points (i) and (ii) is at least as great as for the broader aggregates – and probably greater than for M1. Mo is also a very noisy series, especially in terms of monthly data; it seems to be at least as noisy as M1, itself a much noisier series than £M3 and PSL2.

24. All this points to setting a range for Mo at least as wide as that used for the other aggregates. On the basis of the figuring set out earlier in this note the choice for the current target period would seem to be between 2-6 per cent and 3-7 per cent. It might be as well to choose the higher figure initially to leave room for some presentational decline in the published ranges, however modest, over the MTFS period. There is also much to be said for choosing a range that is reasonably compatible with current rates of growth, if our overall judgement is that monetary conditions are broadly satisfactory. Chart 4 shows how the recent behaviour of Mo would look against target ranges of 2-6 per cent and 3-7 per cent respectively. Last year's growth would have fallen near the middle of a 2-6 per cent range. The current trend in Mo looks more consistent with the higher range.

HF3
October 1983

CHART 4 : MO GROWTH - ILLUSTRATIVE TARGET RANGES

This chart shows how Mo behaved relative to a
putative target range of 2%-6% over the last
target period. For the target period starting
in Feb.83, illustrative ranges of 2%-6% and
3%-7% are shown, together with the movement in
Mo to date.
KEY
Cumulative growth in Mo
2%-6% range for Feb.82-Feb.83
3%-7% illustrative range for Feb.83-April 84
2%-6% illustrative range for Feb.83-April 84
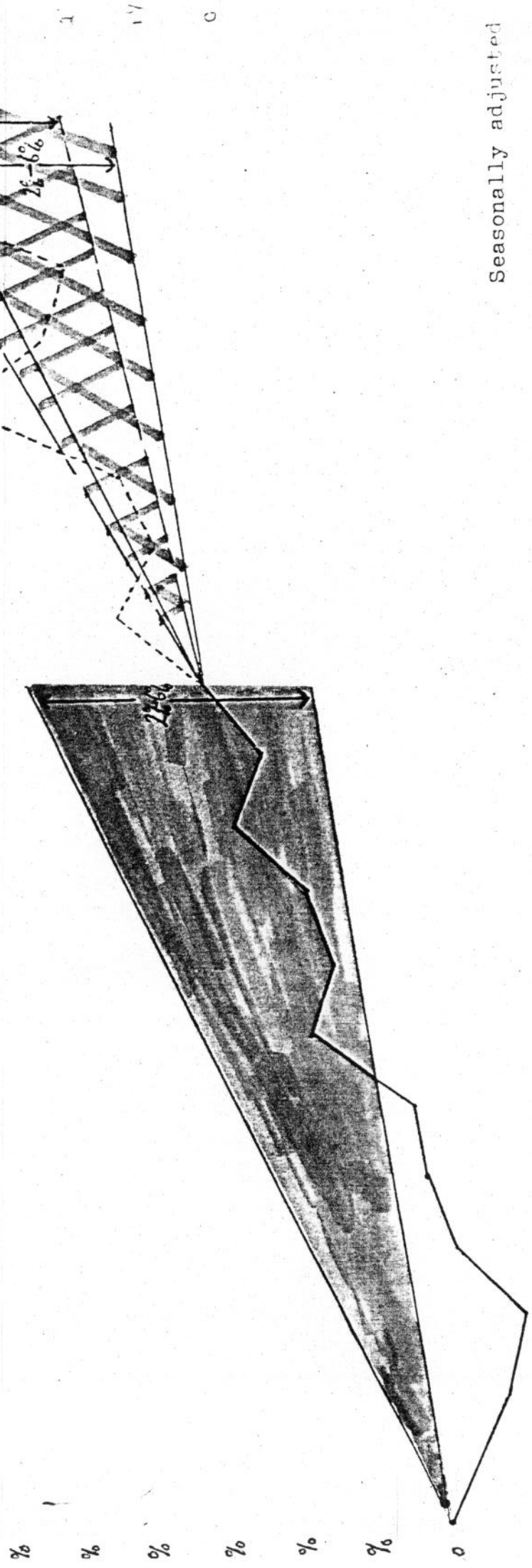
Seasonally adjusted

MONETARY GROWTH 1963-83

average % change p.a.

	Mo	M1	£M3
1963 - 82	7.7	8.5	11.8
1963 - 68	5.1	3.9	6.8
1968 - 73	6.7	8.9	13.8
1973 - 78	12.9	14.7	11.1
1978 - 82	6.1	6.5	16.5

TARGET PERIODS

% change at annual rate

	Mo	M1	£M3	Target range
FY 1977-78	14.2	22.9	15.5	9-13 (£M3)
FY 1978-79	14.3	14.7	10.8	8-12 (£M3)
Oct 1978-Oct 1979	14.1	14.1	13.1	8-12 (£M3)
Jun 1979-Oct 1980	8.0	5.9	16.2	7-11 (£M3)
Feb 1980-April 1981	5.1	8.9	19.4	7-11 (£M3)
Feb 1981 Apr 1982	2.0	13.9	12.8	6-10 (£M3)
Feb 1982-Apr 1983	3.6	12.3	11.2	8-12 (M1, £M3, PSL2)
Apr 1983-Sept 1983	7.6	11.6	9.7	7-11 (M1, £M3, PSL2)

Mo Forecasts: based on FEU's preferred equation

% change on year earlier

	A	B	C
1982-83	←————— 5.1 —————→		
1983-84	6.3	8.6	6.8
1984-85	1.8	4.8	3.9
1985-86	1.6	4.6	4.3
1986-87	0.9	3.9	3.6

All cases are based on interest rate, prices and income paths in Autumn NIF

A   :   Financial innovation terms extrapolated at recent rate of growth.

B   :   Financial innovation terms at half recent growth rate.

C   :   As B, with interest rate elasticity halved.