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The Formulation
of Monetary Policy: A
Reassessment in the Light
of Recent Experience

**Paul Atkinson,
Jean-Claude Chouraqui**

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Paul Atkinson and
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Monetary and Fiscal Policy Division

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This paper reassesses, in the light of recent experience, the formulation of monetary policy in terms of targets for monetary aggregates in the major countries. A number of difficulties which have arisen are discussed: instability of the money-income relationship; constraints created by fiscal imbalances; exchange rate variability, as well as debt problems and threats to banks' solvency. The responses of monetary authorities to these difficulties are described and some possible options for the formulation of monetary policy in the future are considered (including nominal income and exchange rate targeting).

* * * * *

Ce document réexamine, à la lumière de l'expérience récente, la formulation des politiques monétaires fondée sur l'annonce d'objectifs en termes d'agrégats de monnaie ou de crédit. Il passe en revue un certain nombre de difficultés auxquelles se sont trouvées confrontées les autorités monétaires, à savoir : l'instabilité de la relation entre masse monétaire et revenu national, les contraintes créées par les déséquilibres budgétaires, la variabilité des taux de change ainsi que les problèmes d'endettement et les menaces pesant sur la solvabilité des banques. Le document analyse ensuite la façon dont les autorités monétaires ont réagi à ces difficultés et présente certaines options possibles pour formuler la politique monétaire dans l'avenir (dont l'adoption d'un objectif de revenu national en valeur ou d'un objectif de taux de change).

THE FORMULATION OF MONETARY POLICY:
A REASSESSMENT IN THE LIGHT OF RECENT EXPERIENCE

by

Paul Atkinson and Jean-Claude Chouraqui*

Monetary and Fiscal Policy Division

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I. INTRODUCTION

Since the mid-1970s, a number of countries have formulated their monetary policies primarily in terms of targets for money or credit aggregates (1). While contributing, almost everywhere, to a gradual reduction in inflation to rates which prevailed during the 1960s, this approach has provided the required flexibility to cope with the external shocks of the 1970s and the emergence of large budget deficits. It has also allowed central banks to adjust interest rates in a more timely way than was often previously possible, as such adjustments become endogenous in the context of pursuit of the targets. However, problems have arisen in recent years which have considerably complicated the conduct of target-oriented monetary policies. In some countries the relationship between major aggregates and money income has been disturbed by a number of factors, notably the widespread development of financial innovation, the process of deregulation and the growing international integration of financial markets. At the same time, the concerns raised by the increased variability of exchange rates, the difficulties of some heavily indebted developing countries and questions about some banks' solvency (mainly in the United States), have put additional constraints on policy. As a result, doubts have been expressed about the continued feasibility or usefulness of monetary targeting in policy formulation.

This paper examines this issue in the light of the experience in the countries of the Group of Ten (2) since the early 1980s. Part II below discusses the main difficulties which have surrounded the conduct of monetary policy in recent years. Part III describes the ways monetary authorities have responded to these problems. Part IV considers a number of possible options for formulating monetary policy in the future.

II. DIFFICULTIES SURROUNDING THE CONDUCT OF MONETARY POLICY IN THE PRESENT CONTEXT

A. Instability of the money-income relationship

Chart 1 illustrates the behaviour of the income velocity of the main monetary aggregates in the seven major OECD countries in recent years. For each aggregate, the chart presents actual velocity and a (centered) nine-quarter moving average, which shows its underlying trends, abstracting from short-run fluctuations. Two series of observations emerge:

- i) In the three countries where instability of the money-income relationship has been of greatest concern -- the United States, the United Kingdom and Canada -- the underlying trends of velocity for most of the aggregates shown have shifted substantially in recent years, either oscillating with no clear long-term tendency, as with M2 in the United States, or changing direction altogether. These shifts, which have persisted for two or three years, have often broken previous trends which had appeared to be well-established.

- ii) Among the other major countries, there has been little sign of an important change in velocity trends which have established themselves during the past decade for M2+CDs in Japan and M3 in Germany. In France, a downward trend in velocity of M2R reversed itself around 1977 and velocity has risen gradually since then, while in Italy, velocity of M2 has displayed no stable pattern.

Another way to examine the stability of the money-income relationship is to analyse it econometrically through the behaviour of the demand for money function. If this is stable, fluctuations in the money-income relationship will be systematically related to fluctuations in the determinants of real money demand (i.e. real income, interest rates and expected inflation), and if the trends in these determinants are predictable so will be the medium-term behaviour of the money income relationship. The instability that has recently been observed in velocity movements in some countries has, therefore, two possible explanations. First, the effects of financial innovation, deregulation and the increased international integration of world financial markets may have affected the demand for money function itself. Indeed, they have influenced both the pecuniary and the non-pecuniary returns from holding the monetary assets included in particular aggregates, and they have increased the range of substitutes not covered by these aggregates. This may have resulted in a complete change in the parameters of demand for money functions or, where close substitutes for assets included within an aggregate exist outside this aggregate, in the lack of any meaningful relationship at all. As the effects of innovation, deregulation and internationalisation of markets are likely to continue in ways that are difficult to foresee, and since their impact on money demand cannot be fully assessed until there has been more experience with the changed environment, this explanation calls into question the role that monetary aggregates may usefully play in the process of policy formulation.

The alternative explanation for the erratic behaviour of velocity is that while the demand for money function may have been stable, despite the structural and regulatory changes in the financial environment, determinants of money demand, i.e. interest rates and inflation expectations, may have changed sharply and unpredictably as a consequence of the successful disinflationary process. On this argument, as gains against inflation are consolidated, a stable relationship between money and income should reassert itself, implying that while some flexibility may be called for in the short run, monetary aggregates should retain an important role in policy formulation.

Two years ago the OECD Secretariat investigated the stability of demand for money functions in the seven major countries (3). A conventional specification was used for all the main aggregates (4), with real income, expected inflation and a short-term interest rate as explanatory variables (5). Inflation expectations were modelled in two ways: as extrapolative, i.e. equal to the actual inflation rate; and as essentially adaptive, being determined by an autoregressive process. The equations were also estimated with the expected inflation term suppressed, and all equations were subjected to a number of stability tests. The estimation period began with the shift to floating exchange rates, in the second quarter of 1973 for most countries, and ended in the first quarter of 1983. The majority of specifications were found to perform unsatisfactorily in the sense that the parameters of the implied long-run money demand function were theoretically incorrect or of implausible magnitudes, the equations were dynamically

unstable, or they systematically failed the various tests of parameter instability. Nevertheless, at least one broadly satisfactory equation was found for each country (6). The ability of these equations to explain recent developments provides a further test of their stability, and hence may be indicative of the extent to which monetary aggregates may still be relevant for policy formulation in the future.

Chart 2 presents dynamic simulations of velocity behaviour, both during the sample period and a forecast period beginning in the second quarter of 1983, for the main equations which performed satisfactorily. Among the countries for which money-income instability has been a serious policy concern, the United States has two aggregates (M1 and M2) which were found to have reasonably stable demand functions. These aggregates have been targeted by the Federal Reserve for the past ten years, although with varying degrees of priority attached to the achievement of the targets. The corresponding equations include an expected inflation term based on an autoregressive process. They successfully simulate both the recovery in velocity which began early in 1983 and the recent slowdown, although the extent of these changes was somewhat underestimated and, in the case of M1, the equation missed the timing of turning points slightly. Furthermore, the errors out of sample are comparatively small. Broadly, the equations suggest that the underlying money demand functions have been reasonably stable and that a large part of the recent money-income instability is explicable in terms of downward adjustment of interest rates and inflation expectations associated with successful disinflation.

For the United Kingdom, the only aggregate for which a satisfactory equation was found was M1, which the authorities were targeting when the equations were being estimated. For Canada, only M1A appeared to have a reasonably stable demand function: this aggregate has never been targeted, but following the suspension of the target for M1 in November 1982, due to distortions associated with shifts from sight deposits to daily interest-bearing checking accounts, it appeared to be the best alternative since it included these accounts. However, neither the equation for M1 in the United Kingdom nor M1A in Canada forecasts correctly the events since early 1983. Both equations predicted recoveries in velocity during 1984, whereas it actually fell sharply, and the size of the errors increased substantially in comparison to those within-sample. It may be germane that neither equation contains an expected inflation term, so that they may underestimate the impact of disinflation on the attractiveness of holding highly liquid assets. Shifts from financial assets not included in these aggregates to comparatively new types of interest bearing deposits which they take into account may be in fact more significant.

Among the countries where money-income instability has been of less concern, in Japan the aggregate which has played an important role in policy formulation (M2+CDs) was found to have a stable money demand function. It shows no sign of instability in out-of-sample forecasting. The same is true for Germany with respect to M3, which, while not targeted, tends to move closely over the medium term with central bank money, the aggregate used as a target. In France, a stable equation was also found for M2R, which, until the recent redefinition of the money aggregates, has been targeted by the authorities. However, its forecasting performance out of sample is not good, as the equation predicts a fall in velocity over the two years to early 1985 while actual velocity has remained at historically high levels. This may

reflect, at least in part, the availability of increasingly attractive financial assets not included in M2R, some issued by the government in order to facilitate the smooth financing of the increased budget deficits in recent years, and some offered by commercial banks as part of the process of financial innovation. In contrast to the case of the United Kingdom and Canada, the hypotheses that the equation fails because it does not adequately take account of disinflation cannot explain the instability of M2R demand because the errors are in the opposite direction.

Finally, for Italy, where policy is formulated primarily in terms of targets for total domestic credit, the only stable money demand equation that could be identified was for M1, with the inflation expectations term suppressed. As this aggregate contains transactions and savings deposits, both of which earn interest at rates which are broadly related to their size, rather than their maturity, the distinction between it and the broader aggregates, M2 and M3, may be irrelevant in the case of Italy (7). In fact, this aggregate has never been seriously considered for the purposes of monetary targeting, and the equation has not explained recent developments well.

The above results must be interpreted very cautiously, since, as in any econometric work, equations may be sensitive to a large number of technical assumptions. These results appear, however, to be broadly representative, in a qualitative way, of the recent literature in this area (8). In particular, the conclusion that a reasonably stable demand function exists for the main monetary aggregates in the United States, Japan and Germany seems to be a robust finding. This is true notwithstanding the fact that the effects of financial innovation and deregulation in these countries have ranged from major in the United States, to significant but not disruptive in Japan, to minor in Germany. The greater instability of the money-income relationship in the United States is perhaps due to the fact that the necessary (and actual) degree of disinflation was larger in this country than in Japan and Germany, so that the associated effects on money demand were greater.

In the other major countries, the data do not appear to warrant such a conclusion. For the United Kingdom there has not appeared to be a stable demand function for the main broad aggregate, £M3, for many years (9), and the apparent stability of demand for the narrow aggregate, M1, has not survived the rapid changes in the financial environment. This has left the authorities without an obvious aggregate to target, except the very narrow M0, to provide an anchor for nominal magnitudes in order to restrain inflation over the medium term; the increasing role of the exchange rate in policy formulation owes much to this consideration (see Part III). In France and Italy the evidence suggests that financial assets outside the main aggregates have become increasingly important as substitutes for those within the aggregates, calling the significance of the latter into question. In Canada, demand functions for narrow money have collapsed completely in the face of financial innovations, while it has always been difficult to identify a demand function for broad money. In the latter three countries, close attention has been paid to exchange rate stability vis-à-vis main trading partners. In this circumstance the increasing international integration of financial markets may have also contributed to money demand instability (via currency substitution), exacerbating the effects of financial innovation, more than in countries where there exists greater exchange rate uncertainty in the short run.

B. Constraints created by fiscal imbalances

In a number of countries, the existence of large budget deficits may have exacerbated the problems facing monetary authorities in recent years. Indeed, except for Japan, Germany and to some extent, the United Kingdom, where progress has been made in reducing fiscal imbalances, most of the countries considered have experienced a deterioration in their budget position since the second oil shock (Table 1). To a considerable extent this deterioration has reflected cyclical factors, but in three major economies -- the United States, Italy and Canada -- deficits have also increased substantially on a structural (i.e. cyclically adjusted) basis (Table 2). As a result, government borrowing in credit markets has grown markedly.

In the context of the greater reliance on market-oriented mechanisms to allocate resources in financial markets and the commitment to monetary policies aimed at controlling inflation, such increases in government credit demands, particularly where they have been structural rather than cyclical, have tended to be reflected in higher domestic real interest rates. This has exposed monetary authorities to pressures, since high interest rates are often perceived by the public as having been determined by them. The commitment to non-inflationary monetary policy may tend to be undermined by high real credit costs, as these lead to concern about their adverse effect on investment and are particularly unpopular with households in view of their implications for housing finance. Such a situation may strengthen market expectations that central banks will be forced at some point to allow inflationary monetary accommodation.

Monetary authorities may have been constrained not only by budget deficits in their own country, but also by the impact, at the world level, of borrowing needs of governments in general. In this regard, the change in the international distribution of budget deficits during recent years has been important (see Section C below). In the context of increasing integration of financial markets, changes in the international pattern of government borrowing tend to influence the direction of international capital flows. Where monetary policies are formulated in terms of exchange rates, money market rates must be raised quickly if increases in foreign budget deficits lead to capital outflows which put pressure on exchange markets. Where exchange rates play little or no role in policy formulation, such incipient capital outflows lead to exchange rate depreciation in the first instance, and eventually to a current account surplus. The financial counterpart to this current account improvement -- i.e. net capital outflows -- tends to raise interest rates in a way similar to that required to prevent the exchange rate from moving (10). Regardless of how policy is formulated, therefore, interest rates are influenced by fiscal policies internationally, and not just domestically.

C. Exchange rate variability

In analysing the variability of exchange rates, it is useful to distinguish between short-term volatility and medium-term swings. Short-term volatility is the degree of variability in nominal exchange rates from day-to-day, week-to-week or month-to-month. Table 3 shows the standard deviations of exchange rates against the dollar and the main non-dollar cross rates around their six-month moving average. Standard deviations greater than two are underlined in order to highlight periods or currencies which have been

Table 1

ACTUAL BUDGET BALANCES

Financial surplus (+) or deficit (-) of the general government sector,
as a percentage of nominal GNP/GDP

	1979	1980	1981	1982	1983	1984	1985(a)	1986(a)
United States	0.6	-1.2	-0.9	-3.5	-3.8	-2.9	-3.8	-3.8
Japan	-4.8	-4.5	-3.9	-3.7	-3.8	-2.2	-1.3	-0.8
Germany	-2.6	-2.9	-3.7	-3.3	-2.5	-1.9	-1.1	-0.7
France	-0.7	0.2	-1.8	-2.7	-3.1	-2.8	-3.1	-3.2
United Kingdom	-3.5	-3.5	-2.8	-2.3	-3.7	-3.9	-3.3	-3.3
Italy	-9.5	-8.0	-11.9	-12.6	-12.4	-13.5	-13.3	-13.2
Canada	-1.8	-2.7	-1.6	-5.0	-6.2	-6.3	-6.3	-5.0
Total major seven	-1.7	-2.4	-2.5	-3.9	-4.2	-3.5	-3.7	-3.5
Total smaller countries(b)	-2.5	-2.7	-4.2	-5.0	-5.5	-4.3	-3.8	-3.9
Total of above countries	-1.8	-2.4	-2.7	-4.1	-4.4	-3.6	-3.7	-3.5
OECD less United States	-3.5	-3.3	-4.0	-4.4	-4.7	-4.1	-3.6	-3.3

a. OECD estimates and forecasts.

b. Australia, Austria, Belgium, Denmark, Finland, Greece, Ireland, Netherlands, Norway, Spain and Sweden.

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Table 2

STRUCTURAL BUDGET BALANCES

Cyclically-adjusted surplus (+) or deficit (-) of the general government sector, as a percentage of potential GNP/GDP*

	1979	1980	1981	1982	1983	1984	1985(a)	1986(a)
United States	1.2	0.7	1.0	0.4	-0.2	-0.6	-1.3	-1.4
Japan	-4.2	-3.8	-3.3	-3.0	-2.4	-1.1	-0.2	0.7
Germany	-2.3	-2.3	-2.1	-0.6	0.6	0.6	1.1	1.0
France	-0.9	0.5	-0.7	-1.4	-1.2	-0.6	-0.4	-0.6
United Kingdom	-4.0	-1.8	1.2	1.9	-0.2	-0.7	-0.9	-1.7
Italy	-9.7	-8.6	-12.2	-12.0	-10.8	-12.0	-11.9	-11.7
Canada	-1.5	-2.0	-1.1	-1.5	-3.1	-4.0	-4.8	-4.2
Total major seven	-1.3	-1.2	-0.9	-1.0	-1.3	-1.4	-1.5	-1.5
Total smaller countries(b)	-1.3	-1.6	-2.3	-2.4	-2.7	-2.1	-2.0	-2.2
Total of above countries	-1.3	-1.2	-1.1	-1.2	-1.5	-1.5	-1.6	-1.5
OECD less United States	-3.1	-2.6	-2.6	-2.4	-2.4	-2.0	-1.8	-1.7

* Measured at peak cycle levels.

a. OECD estimates and forecasts.

b. Australia, Austria, Belgium, Denmark, Finland, Greece, Ireland, Netherlands, Norway, Spain and Sweden.

Table 3

EXCHANGE RATE VOLATILITY

(Standard deviation expressed as a percentage of the weekly nominal exchange rate around its six-months (27 week) moving average)

A. EXCHANGE RATES AGAINST THE U.S. DOLLAR

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
Yen	<u>2.34</u>	0.91	1.03	1.60	<u>2.93</u>	<u>2.22</u>	<u>3.18</u>	<u>2.31</u>	<u>3.15</u>	<u>2.01</u>	1.56	<u>2.17</u>
Deutschemark	<u>2.88</u>	<u>2.13</u>	0.97	1.12	<u>2.18</u>	1.36	<u>2.60</u>	<u>3.15</u>	<u>2.05</u>	1.82	<u>2.52</u>	<u>2.78</u>
French franc	<u>2.21</u>	<u>2.18</u>	1.09	0.61	1.75	1.31	<u>2.40</u>	<u>2.62</u>	<u>2.79</u>	1.94	<u>2.44</u>	<u>2.79</u>
Pound sterling	1.83	1.29	<u>2.52</u>	0.85	<u>2.10</u>	<u>2.49</u>	1.87	<u>2.43</u>	1.38	<u>2.00</u>	1.87	<u>3.87</u>
Italian lira	1.92	1.75	<u>3.11</u>	0.20	1.31	1.17	<u>2.43</u>	<u>2.18</u>	<u>2.09</u>	1.59	<u>2.21</u>	<u>2.35</u>
Canadian dollar	0.47	0.48	0.98	0.83	1.03	1.02	1.04	0.82	1.18	0.29	0.70	1.03
Belgian franc	<u>2.55</u>	1.95	1.03	1.03	<u>2.24</u>	1.49	<u>2.57</u>	<u>2.86</u>	<u>2.67</u>	1.64	<u>2.51</u>	<u>2.75</u>
Dutch guilder	<u>2.43</u>	1.95	1.07	0.97	<u>2.19</u>	1.44	<u>2.51</u>	<u>3.09</u>	1.75	1.72	<u>2.50</u>	<u>2.81</u>
Swedish krona	<u>2.45</u>	<u>2.06</u>	0.90	<u>2.35</u>	1.19	0.92	1.81	1.57	<u>3.77</u>	1.06	1.75	<u>2.10</u>
Swiss franc	<u>2.67</u>	<u>2.13</u>	0.79	1.07	<u>4.09</u>	1.68	<u>3.15</u>	<u>3.51</u>	<u>2.30</u>	1.91	<u>2.10</u>	<u>3.38</u>

B. OTHER MAJOR CROSS RATES

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985*
<u>Yen against:</u>												
Deutschemark	1.69	<u>2.02</u>	1.44	1.53	<u>2.55</u>	<u>2.01</u>	<u>2.12</u>	<u>3.19</u>	1.61	1.31	1.86	1.94
Pound Sterling	1.22	1.03	<u>2.34</u>	1.77	<u>2.88</u>	<u>2.21</u>	<u>2.21</u>	1.57	<u>2.90</u>	<u>2.40</u>	1.53	<u>3.14</u>
French franc	1.97	<u>2.18</u>	1.64	1.44	1.89	1.99	<u>2.14</u>	<u>2.76</u>	1.90	1.29	1.79	1.92
Swiss franc	<u>2.13</u>	<u>2.04</u>	1.62	1.49	3.40	1.81	<u>2.03</u>	<u>3.46</u>	1.92	0.67	1.16	<u>2.44</u>
<u>Deutschemark against:</u>												
Pound sterling	1.49	1.58	<u>2.93</u>	1.13	1.85	<u>2.17</u>	1.37	<u>2.69</u>	1.64	<u>2.30</u>	1.10	1.98
French franc	<u>2.10</u>	0.90	1.55	0.63	1.76	0.27	0.35	1.15	1.20	1.12	0.20	0.21
Swiss franc	1.18	0.65	1.10	0.51	<u>2.89</u>	0.81	0.93	1.47	1.35	1.33	1.07	0.81
<u>Pound sterling against:</u>												
French franc	1.30	1.80	<u>2.66</u>	0.83	<u>2.20</u>	<u>2.06</u>	1.25	<u>2.50</u>	<u>2.28</u>	<u>2.57</u>	1.06	1.97
Swiss franc	1.79	1.68	<u>3.07</u>	1.06	<u>2.89</u>	<u>2.21</u>	1.78	<u>3.04</u>	<u>2.21</u>	<u>2.19</u>	1.01	1.79
<u>French franc against:</u>												
Swiss franc	1.99	1.15	1.21	0.59	<u>3.52</u>	0.89	1.04	<u>2.09</u>	1.87	1.26	1.03	0.84

Note: All numbers exceeding 2.00 are underlined.

* January to October.

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characterized by high degrees of volatility. Two features stand out from this table. First, the bilateral rates between the U.S. dollar and the Canadian dollar, and, since 1975, between the Deutschemark and the French franc, have been more stable than most of the other exchange rates considered, reflecting the priority given by the authorities in Canada and France to such stability. Apart from the Deutschemark-Swiss franc rate, all cross rates involving the U.S. dollar, yen, Deutschemark, pound sterling and Swiss franc have experienced substantially greater degrees of instability. Second, while some years were clearly more turbulent than others, with 1977 comparatively calm and 1978, 1981 and 1985 particularly disturbed, there is no apparent trend in volatility in either direction. This runs counter to some views originally expressed that a diminishing trend would become evident as exchange markets gained experience with floating.

The costs of short-run volatility, notably the possibility of adverse effects on trade due to risk considerations, have been analysed in a number of studies (11). The general consensus of these studies is that while volatility may be a nuisance it is not a serious problem. Where there are no impediments in the form of exchange controls the risk can be covered by using forward markets. This has the disadvantage of precluding a trader from benefitting from favourable movements in exchange rates, but for major currencies a considerable degree of "one-way" cover (i.e. protection against unfavourable movements while allowing benefits of favourable changes) can be obtained by using currency options.

Medium-term swings in exchange rates refer to movements which may persist for several years in the same direction and reverse only in the longer run. As an illustration, Chart 3 shows the behaviour of nominal and real effective exchange rates, as well as bilateral exchange rates against the U.S. dollar, for the G-10 countries over the period since the shift to floating in 1973. Among the countries which have attached less priority to exchange rates in policy formulation, two broad features stand out:

- i) the United States, Japan, the United Kingdom and Switzerland have all experienced very large swings in both nominal and real exchange rates over a two to five year period. Each has at some stage registered an effective appreciation in real terms of around 40 per cent. In the United States this more than offset an earlier large depreciation, while in the other three countries it was subsequently to a large extent reversed over periods of three to four years.
- ii) In Germany, the secular appreciation of the nominal effective exchange rate has largely offset differential inflation so that in real terms the Deutschemark has not fluctuated so widely on a trade-weighted basis as the other major international currencies. As Table 4 indicates, this primarily reflects its stability against European currencies as a result of joint floating arrangements (the "snake" and, later, EMS). However, both its appreciation against the dollar during the 1970s and its subsequent depreciation shows that it has not avoided major swings against the other main international currencies.

Even in those countries where greater priority has been attached to exchange rate considerations in the formulation and conduct of policy,

Table 4

REAL EXCHANGE RATES VIS-A-VIS THE DEUTSCHEMARK (a)
(1980 = 100)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985 (b)
United States	119.3	117.6	115.9	121.2	114.0	101.7	96.8	100.0	130.3	142.1	149.9	170.4	178.1
Japan	102.6	104.2	99.3	105.3	109.5	121.4	105.4	100.0	126.8	117.8	126.8	140.4	144.1
France	94.5	88.0	100.4	97.8	92.1	91.1	93.6	100.0	103.9	99.6	95.8	97.9	102.3
United Kingdom	73.6	72.9	78.8	72.6	71.4	72.4	80.3	100.0	115.5	110.9	103.0	103.1	106.3
Italy	96.2	92.4	97.0	88.7	88.6	86.9	90.2	100.0	106.6	108.6	113.2	118.6	120.4
Canada	121.0	129.0	123.3	137.7	121.9	100.5	94.8	100.0	128.9	142.3	152.7	163.5	162.3
Belgium	92.4	94.0	100.3	101.7	104.7	103.0	101.6	100.0	99.2	88.9	85.7	87.5	89.9
Netherlands	89.0	91.4	97.0	99.8	101.6	100.8	99.4	100.0	100.4	102.5	99.1	99.0	99.1
Sweden	96.7	94.0	103.2	108.7	103.8	93.6	93.4	100.0	109.4	98.5	90.0	98.7	102.7
Switzerland	84.2	86.7	96.1	100.8	93.4	107.9	103.8	100.0	108.9	116.5	118.6	119.3	118.1

a. Bilateral exchange rates vis-à-vis the Deutsche mark, adjusted for differential movements in the GDP deflator.

b. Secretariat estimates.

Source: OECD.

significant swings have occurred. The French franc, Belgian franc and Dutch guilder have all experienced major movements against the main international currencies similar to those experienced by the Deutschemerk. In effective terms, however their variability has been less marked, reflecting the influence of European currency arrangements. Finally, both Canada, where monetary policy was formulated primarily in terms of monetary targets until emphasis shifted toward resisting currency depreciation against the U.S. dollar after 1978, and Sweden, where the exchange rate target has been formulated in terms of a basket of currencies, have experienced substantial swings in their real exchange rates.

The impression given by the chart is broadly confirmed by the global measure of exchange rate variability presented in column 1 of Table 5. This shows the standard deviation of real effective exchange rates since 1973. Only for Belgium does this measure indicate that variability has been greater, on a comparative basis, than was suggested by the chart. However, the picture appears different if the openness of the economy is taken into account. To this end, the standard deviations have been weighted by the share of trade in GNP (column 3). According to this adjusted measure, the United States and Japan shift from being among the most affected by variability when the exchange rate is considered in isolation to being among the least affected when external exposure is taken into consideration. On the other hand, Belgium stands out strongly as having been most affected by exchange rate swings. Otherwise, the figures continue to show France as comparatively unaffected, the United Kingdom as highly affected, and Canada and the remaining European countries in the middle.

Since exchange rates are best viewed as prices which adjust to balance the supply of and demand for stocks of assets denominated in different currencies (12), the wide swings which have been experienced can be attributed to changes in the main factors influencing this balance:

- i) by directly influencing the rate of return on financial assets, fiscal and monetary policies can cause large exchange rate movements, particularly when divergent changes are occurring in a number of countries at once. Some of the most striking episodes of exchange rate instability during the past dozen years owe much to this factor. In particular, the shift in the United States from easy monetary policy and tight fiscal policy during the late 1970s to the opposite mix during the 1980s, while fiscal policy in some other major countries moved from expansion to restriction, contributed much to the wide swings of the dollar during this period.
- ii) Exogenous non-policy factors such as technological innovations, divergent movements in productivity across countries, discovery and development of natural resources, and changes in demand patterns also affect exchange rates. These factors influence the current account of the balance of payments, leading to shifts in the ownership of financial assets at the world level. If investors wish to hold the bulk of their wealth in their own currency, the exchange rate will tend to rise in countries where such factors tend to generate an external surplus.

Table 5

VARIABILITY OF REAL EFFECTIVE EXCHANGE RATES OVER THE PERIOD 1973.Q1-1985.Q3

(Standard deviation of the logarithm of the quarterly real effective exchange rate)

	(1) Standard deviation	(2) External exposure*	(3) Weighted standard deviation (3)=(1)X(2)
United States	10.84	0.102	1.10
Japan	8.84	0.142	1.25
Germany	7.31	0.276	2.02
France	4.74	0.211	1.00
United Kingdom	14.95	0.273	4.09
Italy	6.61	0.256	1.69
Canada	7.32	0.281	2.05
Belgium	10.69	0.624	6.67
Netherlands	4.56	0.512	2.33
Sweden	8.83	0.304	2.68
Switzerland	7.91	0.347	2.75

* Average trade exposure (average of exports and imports as a share of GDP) during 1974-1983.

iii) Since the returns on financial assets are importantly influenced by capital gains and/or losses due to exchange rate movements, expected future developments affect the current exchange rate. Therefore, any new information which leads market participants to reassess the likely evolution of future rates of return on financial assets can have a large impact on exchange rates. In periods of high uncertainty, where it is difficult for markets to form a clear view about future exchange rates, expectations may lose their anchor and bandwagon effects or speculative bubbles may be generated by some news (13).

The costs associated with the large swings in real exchange rates may have been substantial in recent years. Although it is difficult to identify an "appropriate" or "sustainable" real exchange rate, the possibility exists that any particular persistent appreciation or depreciation might be an adjustment from an "inappropriate" level to a "correct" one. However, the tendency of such movements to reverse themselves subsequently strongly suggests that they are as likely to be increasing misalignments as corrections. To the extent that investment and resource allocation decisions, which cannot easily be modified, are taken on the basis of relative cost and price considerations reflecting unsustainable real exchange rate movements, these may entail serious real costs. Furthermore, large changes in real exchange rates, regardless of their longer run sustainability, influence demand patterns and competitiveness. This may create pressures in favour of protectionist measures which, in recent years, have increasingly threatened the commitment of major countries, notably the United States, to free trade. As recent experience suggests, when such concerns about resource misallocation and protectionism become sufficiently serious monetary authorities may have to reconsider their policy stance.

Such costs of large exchange rate movements must of course be measured against their benefits. The shift to the present regime occurred in large part because countries committed to maintaining low inflation rates wished to insulate themselves from the increasingly inflationary international environment of the 1970s. By relieving them of the need to intervene in exchange markets and/or to ease monetary conditions to maintain fixed parities, the change in regime has been successful in this regard. In Japan, Germany and Switzerland, in particular, non-inflationary monetary policies have been implemented reasonably successfully, and secular upward movements of effective exchange rates have contributed importantly to restraining price increases. This has also been the case in some smaller European economies, such as the Netherlands, which have chosen to stabilize their currency in terms of the Deutschemark. Similarly, monetary policies intended to reduce inflation from the high rates prevailing during the 1970s were implemented in the United States and the United Kingdom after 1979, and sharply rising exchange rates played an important role in the success of these policies. It is true that, at the same time, this exchange rate appreciation contributed to the slowdown of real demand and the unusually severe recessions of the early 1980s, but it is doubtful that any successful anti-inflation policy could have avoided a severe recession.

D. Debt problems and threats to banks' solvency

An additional constraint on the conduct of monetary policy in recent years has been the difficulty experienced by a number of developing countries

in servicing their external debts. This constraint has been particularly serious in the United States for two reasons. First, since a large percentage of the debts of those developing countries whose situation is most precarious is denominated in dollars, adjustments in U.S. monetary policy can potentially exacerbate or alleviate the situation. Second, U.S. commercial banks have been most exposed to the risk of default of these countries -- a situation aggravated by the existence of a large amount of questionable loans to some distressed domestic sectors, notably agriculture and natural resource extraction. While many banks have improved their capital adequacy and have already made provisions for some bad loans, large write-offs of debts would threaten the solvency of some of them, which could entail the intervention of monetary authorities. To date, however, there have only been isolated cases of defaults leading to insolvency of financial institutions, such as Continental Illinois, but banks' overall exposure remains substantial.

III. POLICY RESPONSES: OVERVIEW OF THE CURRENT APPROACH

To cope with the internal and external difficulties described above, the monetary authorities, in countries most seriously affected, have generally adopted a pragmatic attitude, relying increasingly on judgement and taking into account the information contained in a broad range of real and financial indicators. In particular, they have felt less constrained to adhere rigidly to previously announced targets as circumstances have changed in unforeseen ways. This has been the case in the United States, the United Kingdom and Canada, where the authorities have at times missed targets (all three countries), rebased their targets in mid-year (U.S.), incorporated overshoots in the following year's target (U.S., U.K.), announced multiple targets (U.S., U.K.), changed the relative weights attached to various targeted aggregates (U.S., U.K.) or suspended targets altogether (Canada).

In the context of such greater flexibility in monetary targeting, the exchange rate has played an increasing role. In the United States it is one of the indicators which has been influencing the formulation of policy in recent months -- though in ways that reflect conflicting considerations. On the one hand, the authorities have been concerned to moderate the strength of the dollar in view of the growing current account deficit and its adverse effects on certain sectors, which have encouraged protectionist pressures. Another consideration has been the necessity to alleviate the burden of developing countries' debts and their servicing costs in order to avoid the risk of widespread default, to which, as noted above, the U.S. banking system is particularly exposed. On the other hand, concerns have been expressed that too rapid a decline of the dollar might create potential inflationary pressures (14) and should therefore be resisted. In the United Kingdom and Canada the exchange rate has been accorded even greater significance, although neither country has attempted to fix specific objectives for it. In the United Kingdom this process began in 1981, when it was concluded that the strength of the pound indicated that the stance of policy was far tighter than suggested by the growth of EM3. Since January 1985 the emphasis of policy has been more explicitly directed toward the exchange rate. In Canada, the attention paid to the exchange rate began to increase during the late 1970s, when depreciation against the U.S. dollar aggravated inflationary pressures. Since targets for the growth of M1 were suspended in 1982 due to distortions caused by financial innovation, stabilization of the exchange rate has become de facto the main intermediate objective of monetary policy.

In Japan, while financial innovation and deregulation have not led to problematic distortions in monetary aggregates, the authorities have sometimes faced a serious problem of exchange rate instability. The strength of the yen during 1978 was probably excessive, as has been the subsequent decline. More generally, the yen's fluctuations have caused concerns about resource misallocation, and the general tendency toward weakness against the U.S. dollar has helped to make Japan the main target of protectionist pressures. Although the Bank of Japan has not allowed major swings in monetary growth, it has at times adjusted monetary policy in light of exchange rate considerations. For example, the expansion of M2+CDS was permitted to accelerate somewhat in 1978, and in recent years has been held down to the region of 7-8 per cent, although at times somewhat higher growth might have been desirable from a domestic viewpoint. This owes much to the severe constraints on reducing Japanese interest rates during the recent period due to the high levels of rates prevailing in the United States. Finally, following the Group of Five initiative to encourage dollar depreciation in late September 1985, the Bank of Japan engaged in "non-sterilized" intervention on the exchange market, which provoked a squeeze on bank liquidity. As a result, both domestic interest rates and the yen rose sharply.

In continental Europe, as noted in Part II, the difficulties created by financial innovation, exchange rate swings and developing countries' debts have been somewhat less severe. Generally, the conduct of monetary policy has been less constrained than in North America, Japan and the United Kingdom. Thus, in Germany, the monetary authorities have adhered closely to pre-set targets in order gradually to reduce the rate of inflation. Moreover, while the timing of adjustments in interest rates has sometimes been motivated by exchange rate considerations, the adjustments themselves have rarely been such as to compromise monetary targets, and never by very much. This contrasts with the attitude which was taken in 1978, when rapid monetary expansion was permitted in order to moderate the rise of the Deutschmark against the dollar.

Most other European countries, except the United Kingdom and Switzerland, have been constrained in their scope to be flexible by exchange rate commitments vis-à-vis the Deutschmark within the EMS or, in the case of Sweden, an exchange rate policy formulated in terms of a currency basket in which the Deutschmark has a large weight. While there were several realignments during the early 1980s, mainly involving devaluations against the Deutschmark, exchange rates have for the most part been maintained in nominal terms since early 1983. This has greatly facilitated the reduction of inflation throughout Europe, despite the strength of the dollar, although in most countries price increases still remain more rapid than those in Germany.

IV. OPTIONS FOR POLICY FORMULATION IN A CHANGING ENVIRONMENT

Although there is no simple answer to what is "best" for all countries in all circumstances, a number of interrelated issues must be addressed in order to define what could be the most appropriate way to formulate monetary policy in the present context. For purposes of exposition these are considered below under four headings: (1) what is monetary policy attempting to accomplish? (2) how can it be accomplished? (3) how much reliance should be placed on judgement? and (4) how should policy be presented to the general public?

A. What are the basic objectives of monetary policy?

It is widely accepted that the main role of monetary policy is to control inflation over the medium term in order to maintain the stability of the currency and preserve its use as a store of value. This means that while there are a number of considerations which may lead to conflicts in policy objectives in the short run, these should be resolved in such a way that monetary policy does not fail to provide an anchor for the behaviour of nominal magnitudes over longer periods. To this end, given the progress in reducing inflation achieved in most countries, a broad strategic judgement must now be made, either explicitly or implicitly, about what constitutes an appropriate rate of inflation over the medium to longer term. Should countries attempt to reduce inflation further towards zero or should they aim at stabilizing it at the relatively "low" rates currently prevailing (15)?

The argument for stabilizing inflation at the prevailing rate stresses the costliness, in terms of lost output and still higher unemployment, of reducing it further. The forces working to maintain real wages are held to give the inflationary process a great deal of inertia, while the influence of forward-looking expectations on price formation is confined primarily to financial markets. Further reduction in inflation would therefore require substantial prolonged deflation affecting a wide range of markets and sectors. Adherents of this view would consider the costs of continued inflation at current rates as moderate, especially as it stabilizes and becomes widely and correctly anticipated. The conclusion which follows is that the costs in terms of prematurely aborting the recovery, particularly in light of the international debt situation, would outweigh the benefits from a further reduction in inflation.

The opposing view assesses the costs of inflation as more severe than does the first. On this view, therefore, it is appropriate to accept the costs of incomplete recovery for longer in order to achieve a given reduction in inflation. Furthermore, longer-term output and employment performance are held to be improved by a non-inflationary environment, i.e. the short-term trade-off is reversed over time. A second consideration is that experience suggests that it is very difficult to stabilize inflation at any rate significantly above zero without encountering tendencies for it to accelerate. Therefore, it is unrealistic to hope that the costs of inflation would be mitigated as the inflation became fully anticipated. Because inflation is seen to be costly and politically unpopular, any such acceleration would make deflationary policies inevitable. Finally, more stress is placed on forward-looking inflation expectations as an influence on wage and price formation. A clear and credible commitment by the monetary authorities toward eliminating inflation would favourably affect wage and price formation so that the costs would be less than generally thought. Adherents of this view argue that inflation should be reduced until price stability is fully restored, i.e. that the appropriate rate of inflation is zero.

B. How can monetary policy objectives be best accomplished?

Once a judgement has been made about the desirable evolution of inflation and nominal magnitudes more generally, it is necessary to find a way to conduct policy in order to achieve these objectives. Given that central banks cannot control spending or price formation directly, most find it useful

to have an intermediate target which offers a clear set of guideposts around which policy can be formulated, either rigidly or more flexibly, over the medium term.

Two approaches, interest rates and real exchange rate targeting, are usually regarded as unsatisfactory for this purpose, as neither of these offers an anchor which monetary policy can stick to in an attempt to prevent unlimited cumulative divergences of the price level from a non-inflationary path (16). It is generally difficult for monetary authorities to identify what is the appropriate real or nominal interest rate level consistent with non-inflationary policies. Since interest rates are affected by fiscal policy, as well as by exogenous domestic and international developments, their movements are not easily predictable. Furthermore, attempts to keep interest rates at relatively low levels may entail an acceleration of monetary growth and eventually the loss of control over inflation. Thus, while interest rates may be useful as operating instruments to assist the achievement of intermediate targets in terms of money or credit aggregates or exchange rates, they cannot, themselves, offer a viable basis for policy formulation over the medium term. Similarly, there is no uniquely appropriate real exchange rate, and, even if there were, a policy of fixing it, as under a crawling peg arrangement, would imply automatic accommodation of domestic inflationary disturbances.

If monetary policy is to be successful, it must therefore be conducted in such a way that inflationary pressures will be resisted. Three approaches merit consideration in this respect (i) retention of monetary targets; (ii) adoption of nominal income targets; and (iii) stabilisation of the nominal exchange rate, i.e. a "hard currency" option.

1. Retaining the monetary targeting approach

Notwithstanding the difficulties experienced in a number of countries with monetary targeting, a retention of this approach, perhaps in a modified form, may still appear useful if it is possible to identify an appropriate aggregate displaying a stable relationship, in the sense of being predictable, with nominal income over the medium term. In most countries attention has so far focussed mainly on aggregates of varying breadth consisting of monetary assets held by the non-bank public. Conceptually, construction of such aggregates involves, first, ordering the various types of assets by their "moneyness" and then adding up the value of those with at least a particular degree of liquidity. A major difficulty is that financial innovations and deregulation have tended to "distort" the aggregates by changing the attractiveness and "moneyness" of previously existing assets, both relative to each other and to new assets as they become available (17). In principle, this problem can be addressed by periodically altering the definitions to include new types of financial assets in the appropriate aggregates and to adjust the statistical treatment of existing assets where their characteristics have changed. While this would be a way of endeavouring to maintain meaningful aggregates to target, it would not preclude some change in the parameters of demand functions for the redefined money aggregates. Furthermore, if the financial environment were changing too rapidly the frequency of changes in definition that would be required would be too high to make the effort useful.

An alternative way to deal with this problem, within the monetary targeting framework, would be to focus on divisia monetary aggregates. These are essentially index numbers which weight various monetary and quasi-monetary assets according to their degree of liquidity. The weights depend upon the shares of the assets in the total and upon their relative opportunity costs, which, in practice, are measured as the difference between the rates of return on these assets and the maximum available market return. Advocates of giving divisia monetary indices an important role in policy formulation argue that much of the variability of income velocity and instability in the demand for money -- a feature of relationships involving conventional monetary aggregates -- is eliminated when the divisia counterparts of these aggregates are used instead.

Some empirical evidence has been provided to support the view that divisia aggregates are superior to conventional ones (18), but a number of studies have come to the opposite conclusion (19), so that there is no clear empirical case in their favour in terms of the behaviour of money demand and velocity. Moreover, divisia monetary aggregates have a number of drawbacks (20). The reaction of markets to the framing of monetary targets in terms of a composite index is uncertain, and it might prove difficult to establish confidence in such an indicator, which has a much less obvious interpretation than conventional aggregates. In addition, control of divisia monetary aggregates would be subject to the same difficulties as those met in controlling conventional ones. Finally, the weights used in the divisia index are not independent of the quantities of the assets considered. If, for example, the monetary authorities attempted to reduce the growth of the divisia aggregate by restricting the supply of cash, the return on financial assets would rise. This would increase the weight given to cash in the index and alter the weights attached to the other assets. Therefore, control of a divisia index would require that the weights of the components be predictable.

A third possibility in the context of an aggregates-oriented approach would be to consider an aggregate consisting only of high-power money, i.e. essentially notes in circulation and bank reserves, which represent liabilities of the monetary authorities. Targets for central bank money in Germany and Switzerland and M0 in the United Kingdom fall into this category at present, although, as discussed below, operating procedures in two of these countries differ substantially from those sometimes associated with "monetary base control" proposals. From a purely technical viewpoint there may appear to be advantages in focussing on a aggregate that consists solely of high powered money, as the monetary authorities should normally be in a position to control their own balance sheets. Furthermore, at least some of the shifts in private portfolios and changes in financial behaviour, which arise as a consequence of innovation, would be unlikely to affect or distort an aggregate consisting entirely of base money.

Such an approach could, however, introduce other types of difficulties. Indeed, any policy focussing on a broadly defined base money aggregate must take account of the public's demand for notes, which largely relates to spending intentions and is not very sensitive to short-run changes in interest rates. Since banks usually hold very little spare cash, over and above what they are required to deposit with the central bank, a policy of restricting the supply of central bank money, in the face of an increase in the public's demand for notes, would run the risk of draining the banking system of cash and causing pressures in the money market. This could force

the central bank to intervene in order to provide additional cash, accommodating the demand for notes but at the risk of undermining the effectiveness of the policy. To avoid these problems, control of CBM in Germany and M0 in the United Kingdom operates indirectly: money market management is primarily designed to restrain the growth of broader aggregates and/or spending intentions, and hence the demand for bank notes, in order to achieve the targets. In so doing, however, monetary policies are subject to the same difficulties as those affecting broader aggregates.

Alternatively, policy formulation could focus on a narrower concept of base money -- i.e. bank reserves -- with a view to restraining banks' lending activities and, hence, the expansion of their balance sheets. A passive attitude might thus be taken with regard to the demand for notes, with the central bank accommodating the public's desire to switch between deposits and currency, on the assumption that notes constitute only a small share of monetary assets. However as banks' demand for free cash is generally very small, quantitative control of bank reserves would provide a poor basis for restraining other nominal magnitudes. Where reserves are required and not remunerated, they act as a tax on banks' activities and encourage disintermediation, which exacerbates the problems which have affected monetary targeting. Increased reliance on reserve requirements could also be seen as running counter to the general trend towards deregulation in financial markets. In practice, while bank reserves have been used as an operating target, as in the United States during 1979-82, they have not been seriously considered by central banks as a potential intermediate target.

2. Nominal income targeting

An alternative to controlling monetary aggregates that has attracted increasing interest in recent years is nominal income targeting (21). This is generally seen as offering a medium-term framework for setting policy in the short run. In some respects such an approach would be similar to monetary targeting. First, the choice of a target range for either intermediate variable incorporates a judgement about the appropriate behaviour of inflation over the time horizon covered by the targets. Second, both imply a degree of non-accommodation of upward and downward movements of inflation in comparison to the rate of price increase compatible with the chosen target range. More inflationary wage and price behaviour than envisaged by the authorities would lead to tighter monetary conditions and lower real activity, while less inflation, or actual price deflation, would provide more room for real growth.

The nominal income approach has several attractions. At the strategic level, it would make it more transparent to the public that while the authorities assume responsibility for the medium-term growth of nominal magnitudes, the split between prices and output depends on the behaviour of the private sector. It therefore offers a clear incentive to moderation in wage and price formation in order to make room for more real output. At the operational level, if money velocity is predictable, the nominal income target can be regarded as a velocity-adjusted monetary target. However, nominal income targeting is in some sense more general than monetary targeting as it allows the authorities to bring more information to bear on the conduct of monetary policy. In particular, it gives the authorities the possibility of responding to disturbances which influence money velocity in unforeseen ways by offsetting adjustments in policy. Moreover, it provides an overall

framework encompassing instruments other than monetary policies, and remains applicable regardless of the short-run stability of the demand for money or the relative effectiveness of fiscal and monetary policies in influencing demand.

There are, however, some clear operational problems associated with the nominal income targeting approach. Perhaps the most serious is that nominal income is not a variable that the monetary authorities themselves are in a position to control, at least within a year, which is the normal projection period for monetary targets. If it showed signs of deviating from the target during the projection period, it would be very difficult to engineer a correction. The way the economy responds to monetary variables is not sufficiently well understood, and the lag structure of these responses is too uncertain, to allow any confidence that short-run adjustments would be successful. Efforts to make short-run corrections could thus lead to serious instability in subsequent years.

Another difficulty is that the non-accommodating nature of a nominal income target implies that policy should respond to a disturbance affecting prices with a view toward causing a one-for-one offsetting movement in output. As the money-income relationship, even where it is stable, has some elasticity during the short run, a monetary target would not normally have this effect. The nominal income approach could be therefore comparatively destabilizing with respect to output in the face of price disturbances, if attempts were made to implement it over periods as short as a year. Formulation of targets in terms of ranges would possibly ease this problem somewhat, as the authorities could, in principle, aim for the lower or upper ends of the ranges in this circumstance. However, this is also true of monetary targets, so the comparatively greater ability of the real economy to absorb price shocks under monetary targets remains.

Finally, the statistical base for nominal income targeting is not very satisfactory. While monetary data are available quickly and are rarely revised to a significant extent, apart from the seasonal adjustment, national accounts data are generally available only after a lag of several months and are subject to considerable subsequent revision.

3. Nominal exchange rate targeting

The nominal exchange rate offers an alternative intermediate target which is currently used by a number of countries, mainly smaller ones (22). Choosing this approach and adhering to it implies that the objectives concerning the desirable evolution of domestic inflation over longer periods are similar to those formulated abroad, since nominal magnitudes, and hence inflation, are forced to adjust to foreign ones. Operationally it involves choosing a reference exchange rate, usually the currency of a major trading partner or a basket of currencies, and some combination of exchange market intervention and adjustment of monetary conditions to influence capital flows to ensure that the target is met. Generally the achievement of a nominal exchange rate target is more straightforward than is often the case with monetary targets. A policy of intervention in the exchange market, if not sterilized, quickly affects short-term interest rates and leads, in principle, to equilibrating capital flows which allow the exchange rate to be maintained. In practice, most central banks moderate the effects of exchange rate intervention on the domestic money market and in some cases, notably

Canada, they rely primarily on money market operations to stabilize the exchange rate. Nevertheless, whatever the precise operating procedure, a policy of allowing rapid and substantial movements in money market rates should normally make nominal exchange rate targeting viable in a technical sense without necessitating unsustainable movements in official reserves.

There are a number of positive aspects of a policy formulated in terms of stabilizing the nominal exchange rate:

- i) If inflation is low in the reference currency country, pegging the exchange rate to it will contribute to restraining price increases.
- ii) The exchange rate is an instantly observable market price whose meaning is clear to everyone; if policy is successful in stabilizing it, its behaviour will not be subject to the problems of interpretation which often arise with monetary targets.
- iii) In the case of domestic wage and/or price disturbances, a fixed exchange rate allows some scope for monetary accommodation. Therefore, while the effect of such a disturbance on competitiveness should set up forces tending to cause a correction, the adjustment process should occur more gradually, and the overall impact on economic activity should be less, than in the case of monetary non-accommodation.
- iv) If the rate of inflation has converged toward that achieved in the reference currency country, and the parity is appropriately chosen, a policy of nominal exchange rate stabilization should limit the extent of real exchange rate misalignment and associated resource misallocation. Some divergence of wage and price behaviour from that prevailing in trading partners, resulting in an inappropriate real exchange rate, can always occur. To correct the situation, nominal exchange rate stabilization relies more heavily on constraints imposed by competition in international product markets than on overall monetary deflation of demand. This avoids the situation which often arises with monetary targeting where slow adjustment in goods and labour markets leads to overadjustment in exchange rates, exaggerating the extent of apparent misalignment.

On the other hand, adhering to a nominal exchange rate target may have potential disadvantages. First, it ultimately implies abdication of control over domestic monetary conditions in favour of adjusting to foreign ones. To the extent that it is difficult to find reliable relationships between domestic monetary variables and economic performance this may not be a problem, and if monetary policies in the country responsible for the reference currency are steady and non-inflationary this may be a welcome feature. However, targeting a nominal exchange rate raises issues concerning the sovereignty of national policies and implies domestic monetary adjustment to both external shocks and policy changes (either inflationary or deflationary) taking place abroad. Second, because a fixed nominal exchange rate ultimately involves acceptance of the endogeneity of money and credit conditions, inflation control must rely heavily on the direct effects of international cost competitiveness and price arbitrage in tradeable goods markets. In those countries where international trade accounts for a relatively small share in

activity, this can be a comparatively weak restraining force, while the loss of control of the domestic money supply would imply risks of both inappropriate overall levels of aggregate demand and accommodation of undesirable wage and price behaviour. Third, it is not possible for all countries simultaneously to rely on a fixed exchange rate to determine their monetary policies. At least one country, or a group of countries whose currencies play a dominant role, must have an important responsibility in determining the rate of inflation in the system as a whole.

C. What is the room for judgement in the conduct of policy?

In implementing their policy the monetary authorities must take a view about the usefulness of exercising discretion and judgement in the short term with respect to the achievement of pre-set targets. In the light of recent experience, three cases can be distinguished:

- i) judgement is sometimes necessary at the operational level in order to achieve the authorities' medium-term objectives;
- ii) judgement must be used to decide at what point unanticipated events necessitate a reconsideration of the authorities' medium-term objectives;
- iii) judgemental adjustments of the stance of policy in the short term may assist in the pursuit of secondary objectives without compromising the main ones.

Regarding case (i), the choice of the intermediate target used to achieve medium-term goals strongly influences the need for the exercise of judgement. Where reliance is placed on controlling the growth of monetary aggregates, the policy will be successful only if these aggregates constitute reasonable proxies for the concept of "money". Given the present environment of innovation and change in financial markets, judgement must be exercised to ensure that policy is geared to controlling an economically meaningful aggregate likely to have a stable relationship with nominal income, and not an arbitrary statistic. If such an aggregate can be identified, however, it can serve as a guide for policy implementation, eliminating the need for interpretation of a range of indicators.

In contrast, implementation of a policy formulated in terms of nominal income relies on judgement so completely as to raise questions as to whether it provides any guidance at all at the operational level. Indeed, the scope for making use of all available information and adjusting policy in response to events is seen by adherents of the nominal income approach as a major advantage. Equally, those who doubt that central banks have enough information or knowledge about the functioning of economies, to take advantage of this scope for discretion successfully, would see this reliance on judgement as the major drawback of the approach.

The hard currency option is, in this regard, the opposite extreme from the nominal income approach. As noted above, the nominal exchange rate is a quoted market price whose evolution is known without any lag and which poses no problems of interpretation. Opting for this approach implies essentially making a decision to adhere rigidly to a policy rule and to leave the problems

requiring operational judgements to the foreign monetary authorities who issue the currency or currencies chosen as reference.

Regarding case (ii), the authorities must always be prepared to alter their objectives in the light of unanticipated developments if the costs of not doing so are sufficiently high. Since these costs may not be directly comparable to those incurred by missing an inflation objective, the balance must essentially be a political judgement. The monetary authorities cannot avoid such a judgement when they decide how much priority to attach to their inflation objectives. This is true regardless of the choice of intermediate target. In recent years the two most important developments which have been taken to justify a reconsideration of the overall stance of policy are the fragile international debt situation and the increase in protectionist pressures associated in part with the rise in the dollar until the early part of 1985. These are widely believed to have been important factors behind the easing of policy in the United States in 1982 and 1985. Concern about protectionism has also resulted in a tightening of monetary policy in Japan, especially following the Group of Five initiative in September 1985 designed to lower the dollar's value, notably vis-à-vis the yen.

Case (iii) essentially concerns fine-tuning, i.e. the scope for stabilizing real output and employment in the short term. Over the medium term, the monetary authorities are not really in a position to influence the average level of activity, but views differ on their scope for limiting the amplitude of fluctuations. The advantage of exercising judgement in this area is that in many cases short-run macroeconomic performance can be improved. The danger, however, is that it might prove easier to provide extra support for demand when activity is low than to restrict demand when it is unsustainably high, resulting in an inflationary bias. There are two reasons for this. First, it is very difficult for the authorities to know what the sustainable average level of activity is and there may be a tendency to overestimate what is possible because it appears desirable. Second, even if the authorities have the information required to make an objective and accurate assessment of what is possible, political pressures may make it difficult to respond to fluctuations in real activity in a symmetric way.

D. How should monetary policy intentions be presented to the general public?

Another important aspect of policy formulation in the present context concerns the way monetary authorities can make their intentions known to the public and, in particular, the extent to which they should commit themselves openly and explicitly to achieving specific goals. While the widespread decline in inflation and gradual adjustment of the public's expectations in this regard may have reduced the necessity to influence the public's behaviour in order to minimize output losses, monetary authorities cannot afford to neglect the effects of their actions on inflation expectations. Indeed, a worsening of expectations would threaten much of the progress that has been made in recent years toward establishing an environment conducive to non-inflationary growth. Moreover, changes in expectations can have important effects on financial markets, and, in particular, can exacerbate the problem of exchange rate instability.

The strongest attitude the monetary authorities can take vis-à-vis the public is to commit themselves to the achievement of an announced target.

This would make clear what they intend to do and would provide an objective way to hold them accountable, which implies that the target to be achieved must in fact be something for which they are in a position to accept responsibility. In this regard a formal target for nominal income would pose serious problems. Since nominal income cannot be controlled over shorter periods such as a year, the monetary authorities will normally be reluctant to make commitments of this type. Furthermore, among the factors which influence the behaviour of nominal income in the short run, fiscal policy plays an important role. While, as noted above, one of the advantages of the nominal income approach is to encompass the effects of policies generally rather than those of monetary policy alone, it would blur the role of the monetary authorities. Central banks which have traditionally had a high degree of independence might find this threatened if they were forced to share responsibility with the government for a target which they cannot achieve on their own.

In contrast, targets expressed in terms of monetary aggregates or exchange rates offer clear statements of the contributions which central banks can make towards achieving a stable financial environment. These have the advantages of (i) providing scope for adjusting interest rates in a timely way and (ii) allowing the authorities to resist political pressures for excessively easy policies. Furthermore, if the targets are regarded by the public as meaningful, in the sense that their achievement would have implications for inflation, and if the authorities' commitments to achieving them are credible, the effect on private sector expectations is likely to be favourable. As recent experience has shown, however, there are potential disadvantages associated with public commitments to achieve announced targets for these variables. First, they may limit the authorities' freedom in the short-run conduct of policy in undesirable ways. There is, of course, some scope for building in some flexibility by expressing targets in terms of ranges rather than points, but once the limits of the ranges are reached the problem is fundamentally the same. Second, a high priority would have to be attached to the achievement of the target, which implies confidence in the targeted intermediate variable. Where financial innovation is considered to be a problem, or where exchange rate movements would quickly lead to reconsideration of policy, central banks would probably avoid committing themselves strongly to targets they might be forced to abandon.

A more flexible approach would be for the monetary authorities to announce targets but to make them conditional on certain other developments (23). Monetary targets subject to certain caveats about exchange rate behaviour or nominal income developments fall into this category. An important issue here is the severity and explicitness of the conditions. If these are constraining and clearly stated, conditional targets boil down to complicated versions of simple targets. They do, however, allow for some flexibility in the face of unforeseen developments. If the conditions are weak, or vaguely stated, conditional targets essentially commit the authorities to very little. This has the advantage of allowing them to exercise more flexibility in the conduct of policy, but at the cost of undermining any favourable effects on expectations which could be expected from a persistent achievement of announced targets.

Some flexibility could also be introduced in policy formulation by making only projections for the evolution of the intermediate policy variable, which is the case in Japan with M2+CD. Unlike a target, a projection is not

an explicit statement of the authorities' intentions. However, it indicates the way the central bank views economic and financial developments in the near future and, since projections can only be made on the basis of assumptions about policy, it implicitly takes account of the authorities' likely behaviour. Projections do not put the authorities' credibility at risk in the way that targets do, because if they turn out to be wrong the markets cannot easily distinguish the extent to which this is due to developments in the private sector or to policies. They therefore allow the authorities more flexibility in the conduct of policy than do targets. On the other hand, they offer less scope for establishing a central bank's credibility when this does not already exist.

A final possibility is for central banks to preserve their room for manoeuvre by not making any public statements about the future evolution of intermediate variables. This would essentially involve foregoing the advantages of influencing expectations that are associated with the clear and credible announcements of targets. However, where inflation has been reduced to rates that would be appropriate over the medium term and the central bank's credibility is well established, the costs of sacrificing such advantages may be minimal. On the other hand, they could be substantial if the decision not to announce targets is perceived as reflecting a central bank's bias toward laxity.

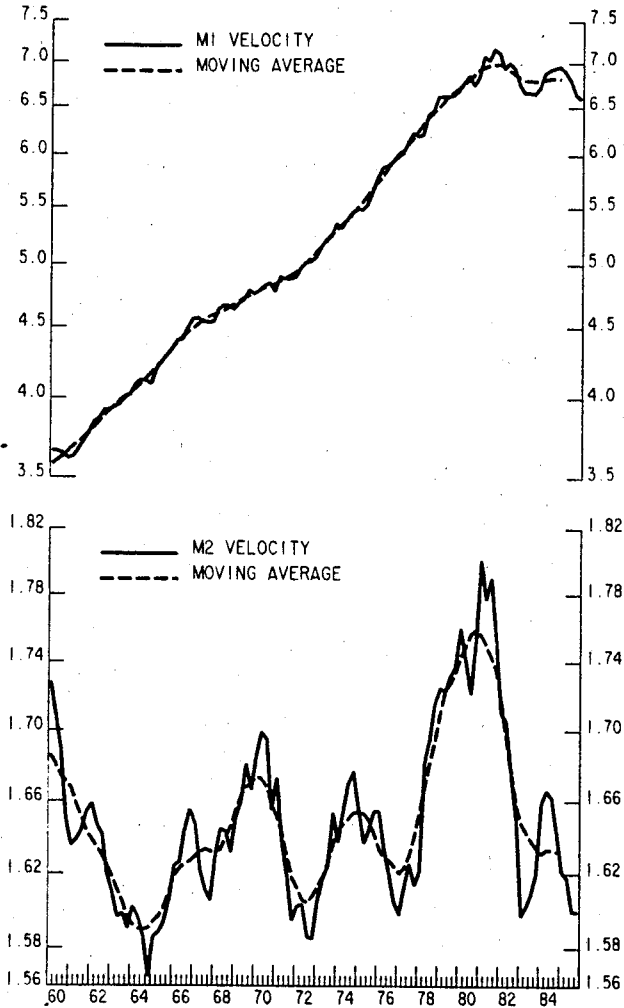
In practice it may prove difficult for monetary authorities to avoid giving some form of explicit public indication of their policy intentions in terms of an intermediate target. Historically this has been the norm: until the early 1970s the fixed exchange rate system placed a well-understood constraint on policies and the move toward monetary targeting followed soon after the shift to floating. At present only Canada among the major countries makes no formal statement designed to explain its policies in terms of an intermediate target, but the importance attached to the exchange rate by the Canadian monetary authorities is well known. For most central banks, therefore, to dispense for a long period with any public formulation of policy intentions in terms of intermediate targets would represent an entirely new posture.

Finally, while it may be convenient for a central bank to preserve its options, even if it in fact adheres fairly rigidly to a policy rule which is not formally disclosed to the public, there are also limits to this approach. Lack of information about the monetary authorities' intentions could be damaging if it caused uncertainty in the private sector and, consequently, resource misallocation. Furthermore, the government and the public will inevitably wish to be able to hold the central bank accountable for its actions, and to have benchmarks by which the success of these actions can be measured. By formulating their policies in terms of an intermediate target central banks can increase the likelihood that they will be held responsible for developments they are in a strong position to control. The alternative may be that, in the public's mind, they are held accountable for developments they are either poorly placed to influence or cannot responsibly do anything to change.

TRENDS IN MONEY VELOCITY*

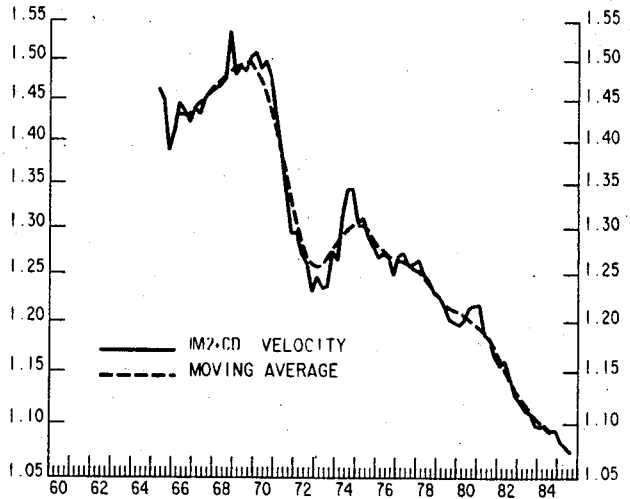
UNITED STATES

VELOCITY OF M1 AND M2



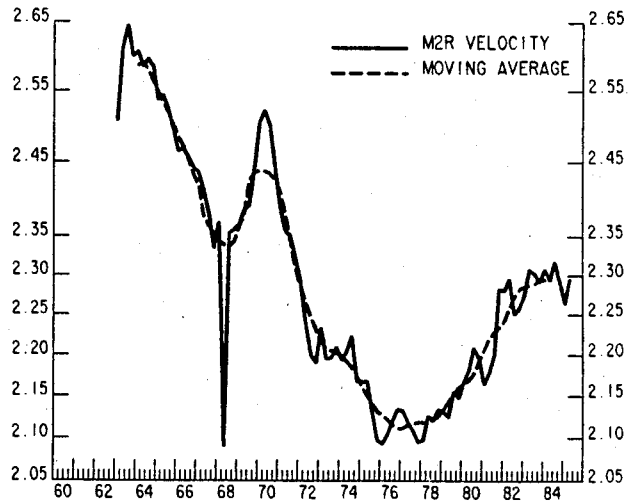
JAPAN

VELOCITY OF M2+CD



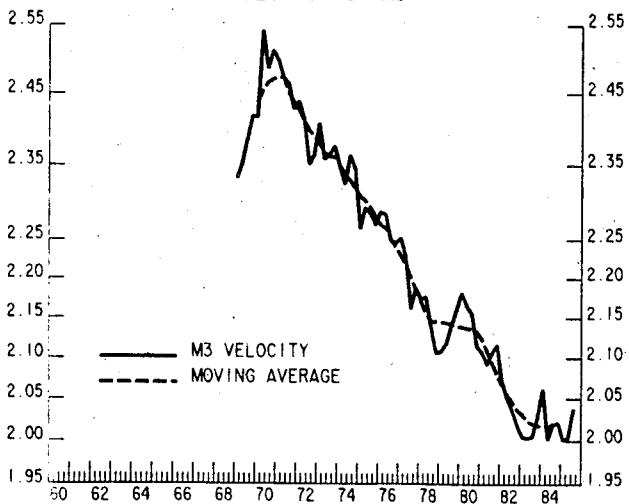
FRANCE

VELOCITY OF M2R



GERMANY

VELOCITY OF M3

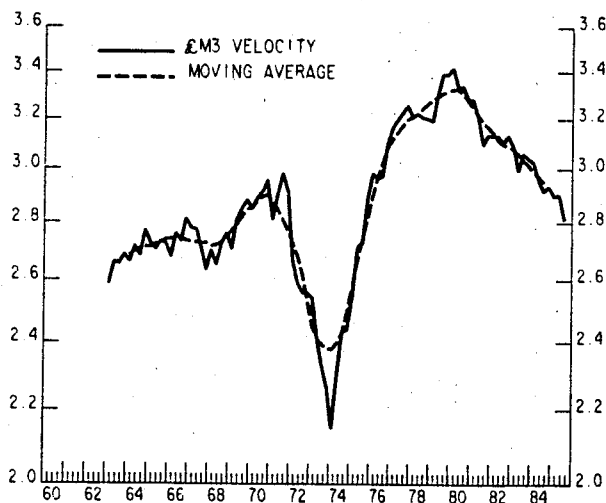
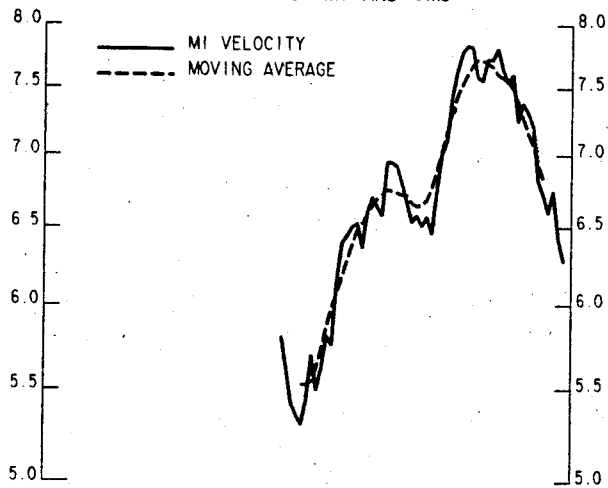


* Velocity is the ratio of GNP or GDP to the monetary aggregate in question. The moving average is centred, calculated on a nine-quarter basis.

CHART 1 (continued)

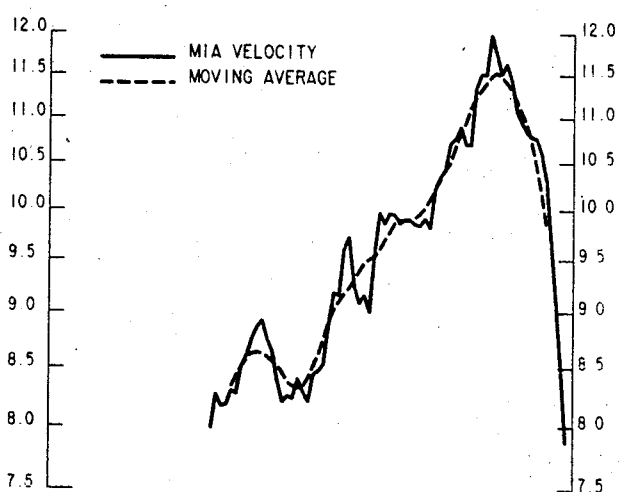
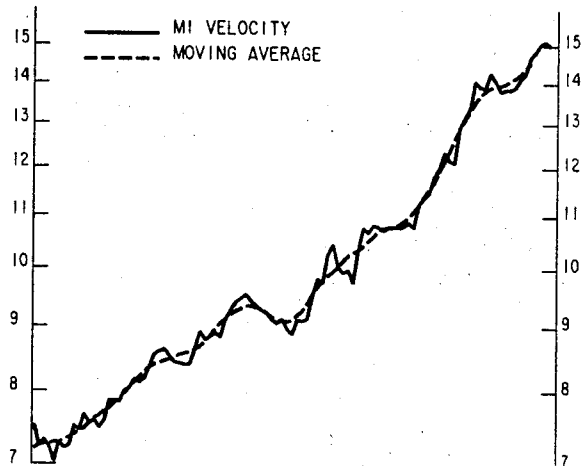
UNITED KINGDOM

VELOCITY OF M1 AND £M3



CANADA

VELOCITY OF M1, M1A AND M2



ITALY

VELOCITY OF M2

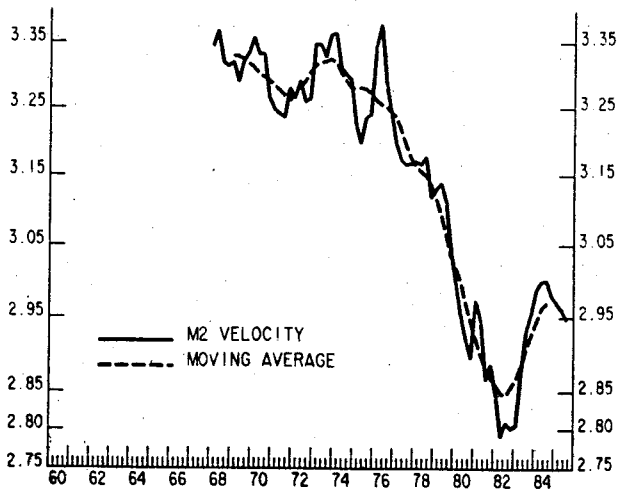
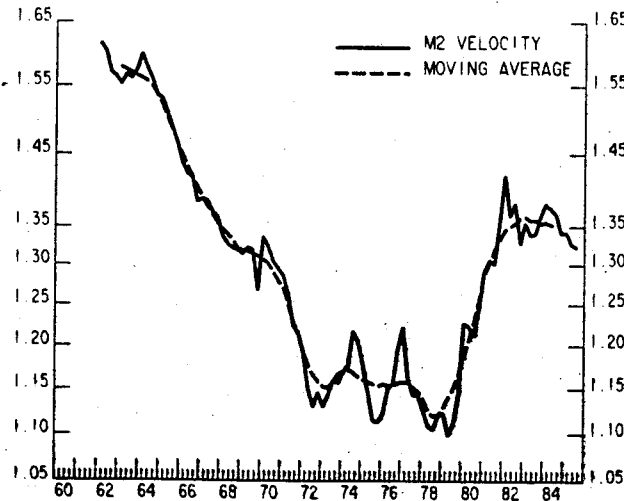
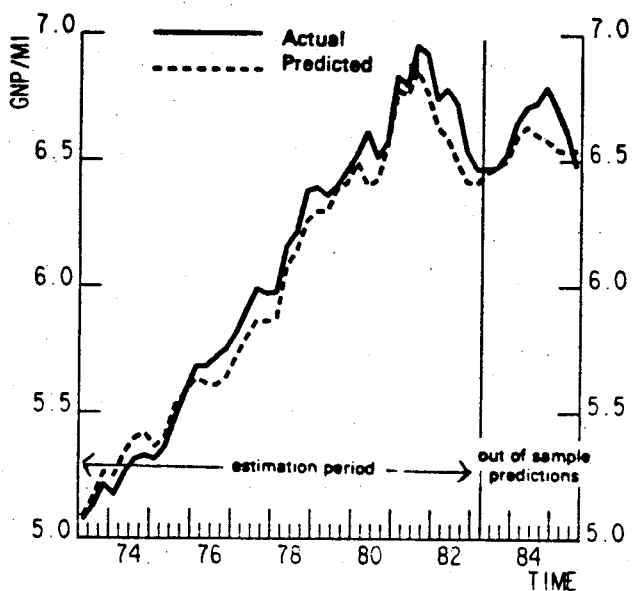


CHART 2

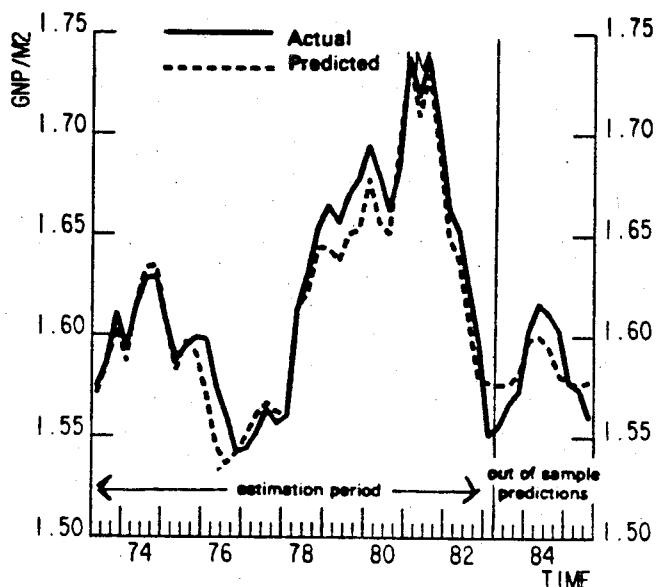
PREDICTIONS OF THE INCOME VELOCITY OF MONEY*

UNITED STATES

M1 VELOCITY

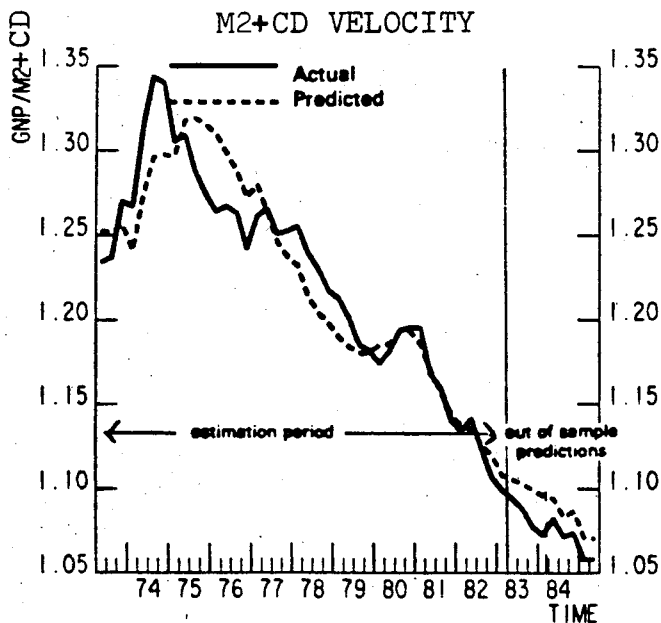


M2 VELOCITY



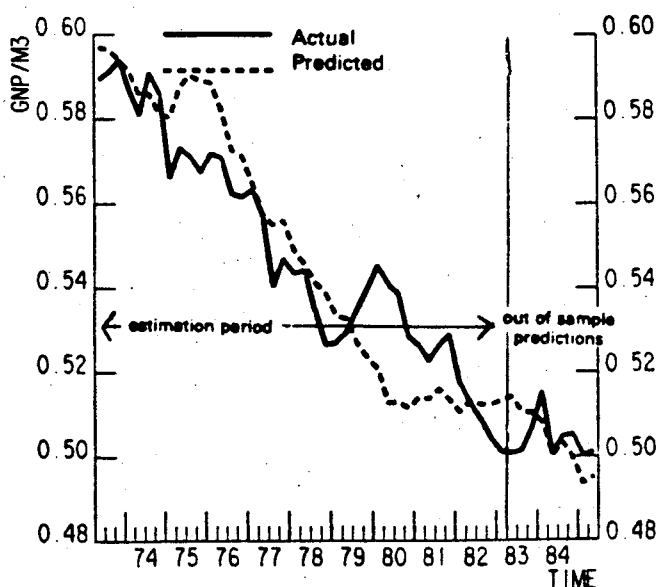
JAPAN

M2+CD VELOCITY



GERMANY

M3 VELOCITY

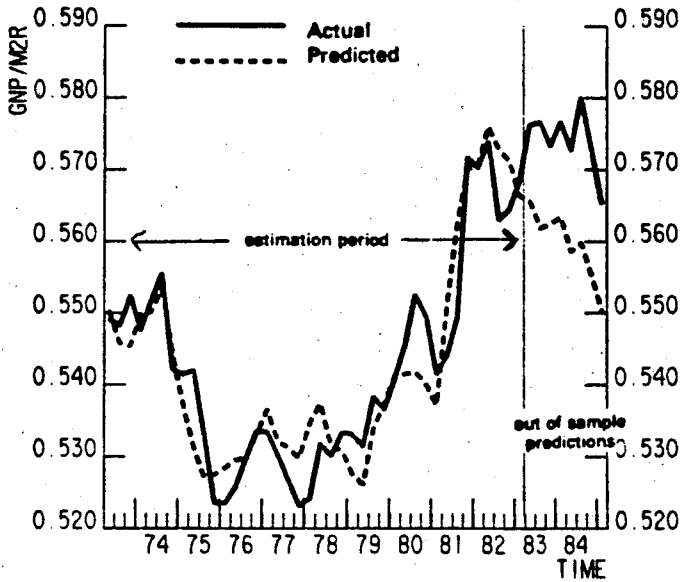


* Velocity behaviour implied by simulations of money demand equations, whose specification is described in footnote 5. Further details are available from the Secretariat upon request.

CHART 2 (continued)

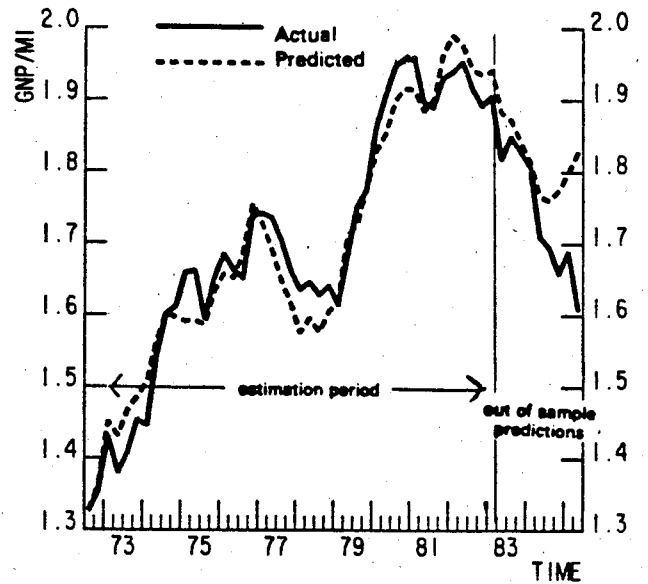
FRANCE

M2R VELOCITY



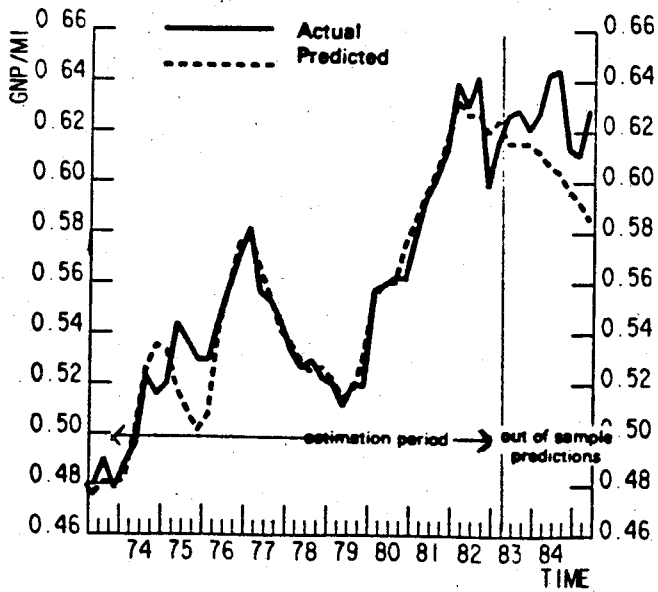
UNITED KINGDOM

M1 VELOCITY



ITALY

M1 VELOCITY



CANADA

M1A VELOCITY

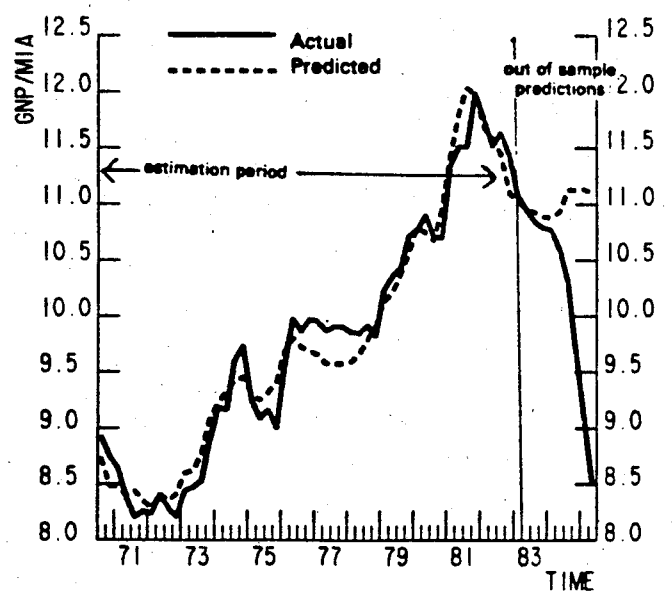
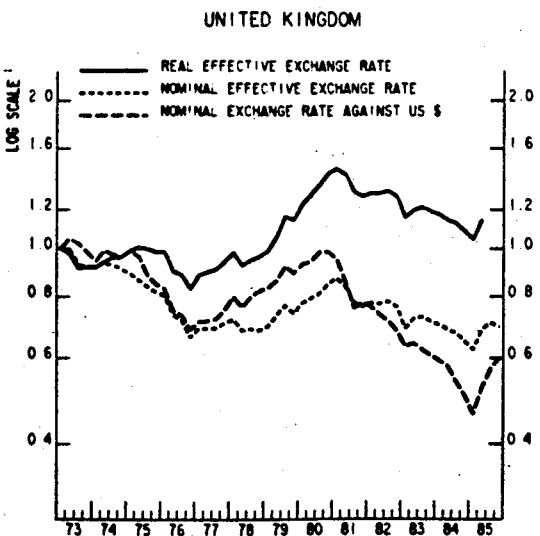
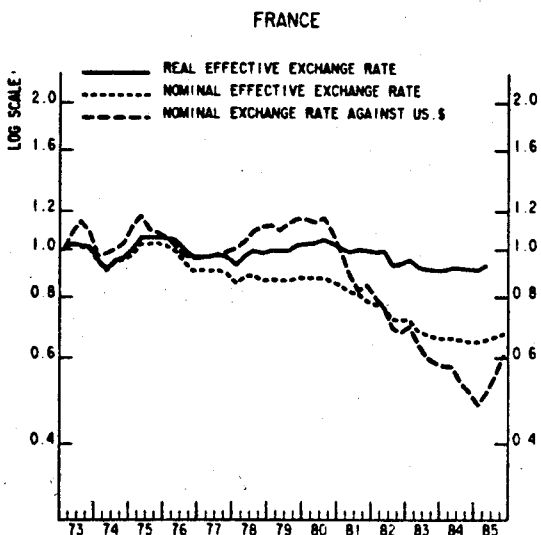
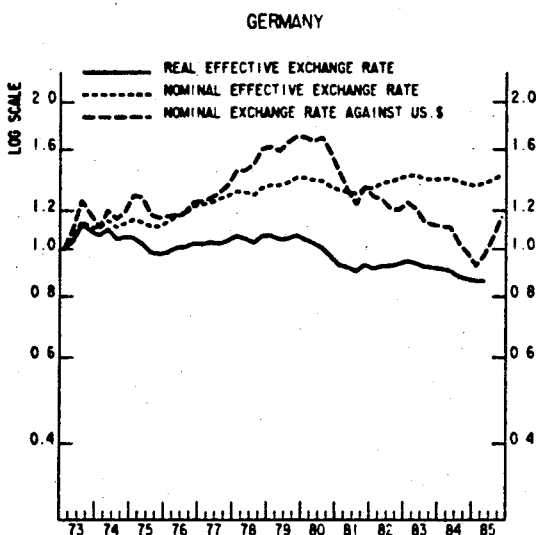
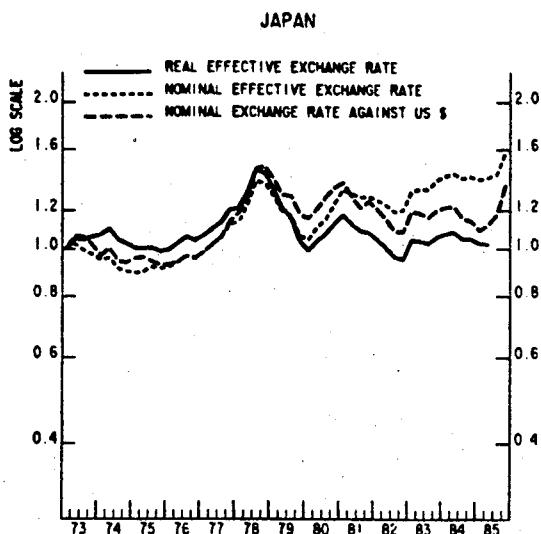
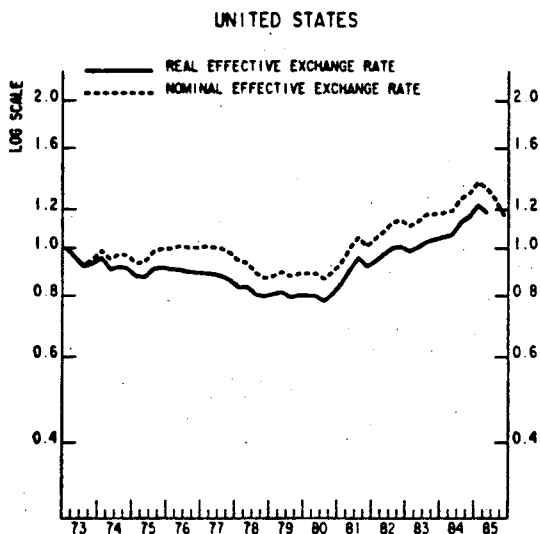


CHART 3

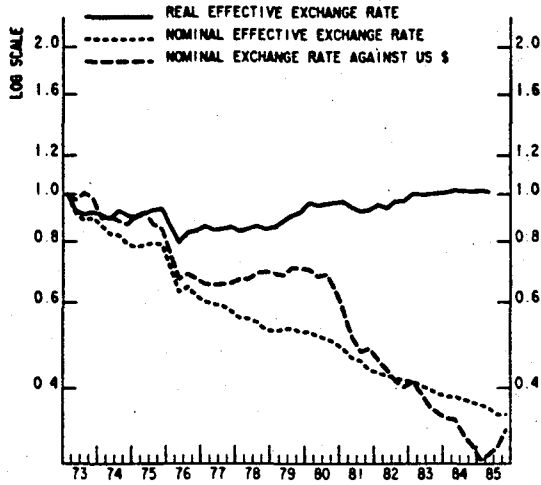
NOMINAL AND REAL EXCHANGE RATES*
(1973 Q1 = 1)



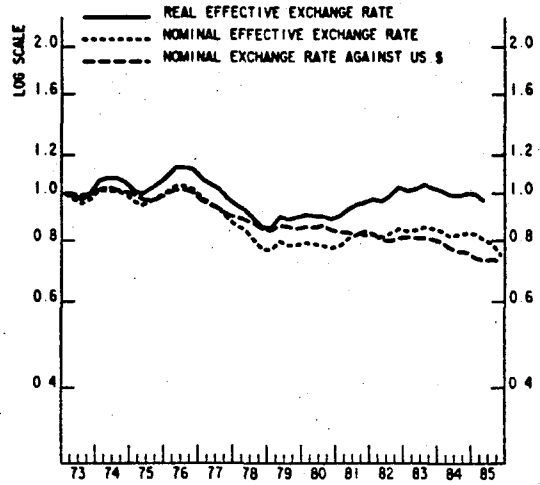
* Effective exchange rates are calculated on a trade-weighted basis. Real effective exchange rates are adjusted for movements in GDP deflators.

NOMINAL AND REAL EXCHANGE RATES
(1973 Q1 = 1)

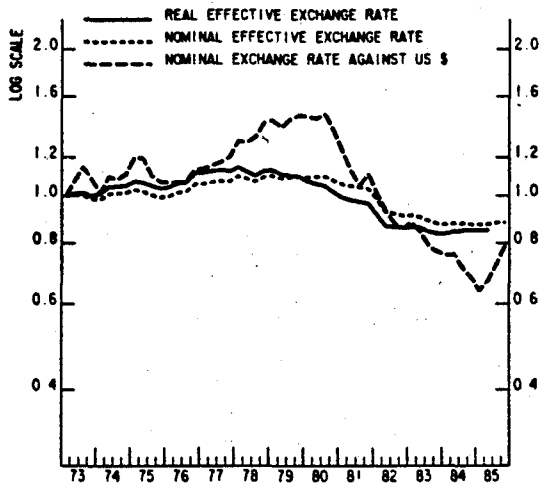
ITALY



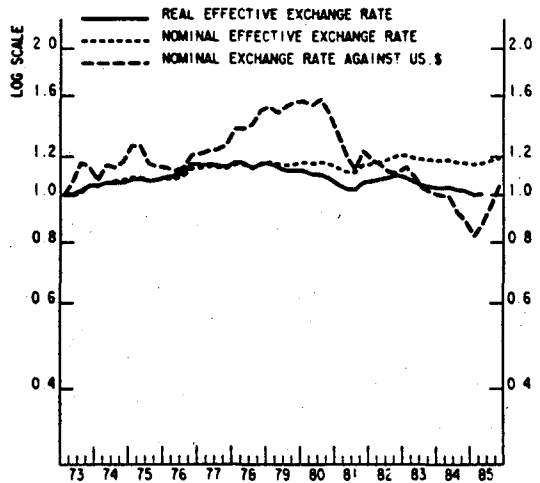
CANADA



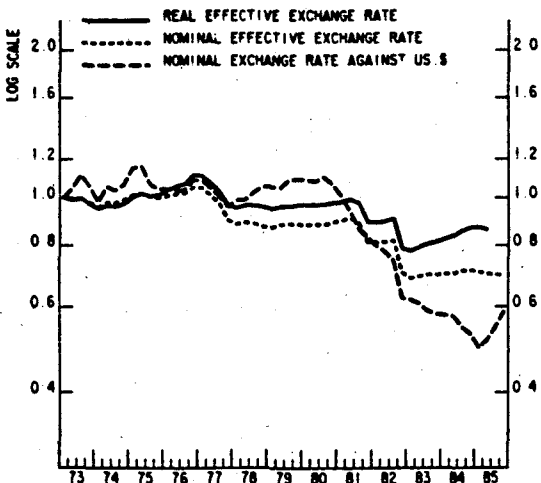
BELGIUM



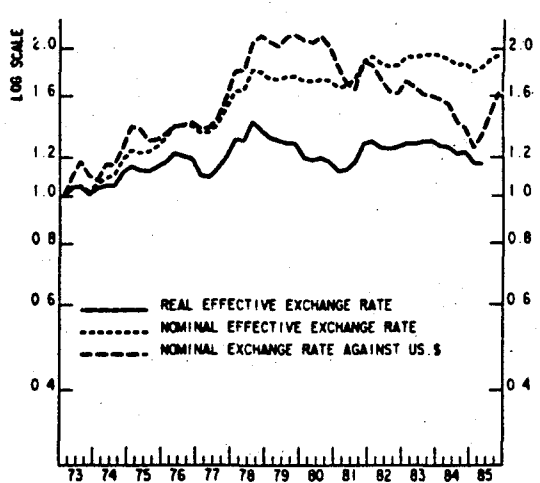
NETHERLANDS



SWEDEN



SWITZERLAND



NOTES

1. For a discussion of the factors which motivated the adoption of monetary targets, see OECD (1979).
2. United States, Japan, Germany, France, United Kingdom, Italy, Canada, Belgium, Netherlands, Sweden, and Switzerland.
3. See Atkinson, Blundell-Wignall, Rondoni and Ziegelschmidt (1984) and Blundell-Wignall, Rondoni and Ziegelschmidt (1984).
4. An exception was the United Kingdom, where only M1 and £M3 were analyzed. For Germany, CBM was regarded as a proxy for M3 and not considered.
5. The following specification was used:

$$D\ln\left(\frac{M}{p}\right) = a_0 + a_1\ln y + a_2\ln(1+r) + a_3D\ln p^e + a_4\ln\left(\frac{M}{p}\right)_{-1}$$

where:

M = the monetary aggregate under consideration;

y = real GNP;

p = GNP deflator;

r = short-term interest rate;

D = the difference operator;

and a superscript 'e' refers to an expected variable.

6. In the case of Japan, the Secretariat study reported that equations for M1 performed best. The equation for M2+CD's, with the expected inflation term suppressed, was in many respects satisfactory, but the Durbin 'h' statistic was high and it failed to pass some of the more rigorous stability tests. However, the evidence pointed to instability near 1974, while there was no evidence of a structural break in the more recent period of financial innovation. Furthermore, Blundell-Wignall, Rondoni, Ziegelschmidt and Morgan (1984) reported that much of the problem disappeared if simultaneity, due to the monetary authorities influence on interest rates in the short run, were taken into account. In view of the importance accorded to M2+CDs in policy formulation in Japan, therefore, the demand function for this aggregate was incorporated in the Secretariat's INTERLINK model, and it is the one analysed in this paper. In the case of France, the equation for M2 was re-estimated using M2R when the authorities changed the definition of the monetary aggregate they target. The parameters and statistical properties of the M2R equation are very similar to those of the original M2 equation.
7. For discussion, see Vaciago (1985).
8. For the United States, Judd (1983) and Judd and Motley (1984) report results similar to those mentioned in the text. However, a number of studies report a tendency for the interest elasticity of money demand to increase in recent years which may reflect changes in the financial environment. Radecki and Wenninger (1985) point out that the estimated

interest elasticity in conventional equations increases as the sample period is extended to include the early years of the 1980s, and reports accurate predictions for the first half of 1985 from an equation estimated on data to 1984. Brayton, Farr and Porter (1983) indicate that allowing for a rising elasticity by modelling the components of M1 separately produces a 'number of models [that] can fairly accurately explain the behaviour of M1 over 1982 and the first quarter of 1983', and Simpson (1984) reports that a non-linear model based on their work performs fairly well during 1983 and early 1984. Dooley and Spinelli (1985) report results similar to those mentioned in the text for France and Japan. Their results for Italy, like those reported by Calliari, Spinelli and Verga (1984) and Spinelli (1980), indicate that there was no serious stability problem for the demand for broad money provided sample periods do not run into the early 1980s. They point out a persistent over-prediction of money demand since then, about half of which they attribute to financial innovation. Buscher (1984) reported results for Germany similar to those in the text. For the United Kingdom and Canada difficulties in finding stable money demand equations have been so severe that few studies have recently been published in this area. Andersen (1985), however, reported results on data for 1983 broadly similar to those reported in the text.

9. See, for example, Hacche (1974).
10. For discussion, see Atkinson and Chouraqui (1985).
11. See, in particular, International Monetary Fund (1984) and Bank of England (1984). The only well-known study which succeeds in finding a significant effect of currency variability on trade flows is Akhtar and Hilton (1984). This study has been criticised on methodological grounds, for example by Gotur (1985). Gotur reported that straightforward application of the Akhtar-Hilton methodology to France, Japan and the United Kingdom 'yields mixed results', while Davies and Hale (1985) reported being unable to replicate these results for the United Kingdom.
12. See, for example, OECD (1985), pp.121-54.
13. The appreciation of the pound during 1979-80 and the dollar since 1980 are sometimes attributed to such a process following major policy shifts. See, for example, Okina (1985).
14. See, for example, Axilrod (1985).
15. For a more detailed discussion of the main considerations in choosing an appropriate inflation rate objective, see Atkinson and Chouraqui (1984).
16. See, in this respect, OECD (1985) and Atkinson and Chouraqui (1985).
17. This has particularly been a problem in some countries where the assets included in monetary aggregates have been restricted to the liabilities of the monetary authorities and commercial banks, as with M1 and M2 in the United States before 1980, M2R in France and £M3 in the United Kingdom, making the significance of these aggregates vulnerable to disintermediation.

18. Support for Divisia aggregates using U.S. data is reported in Barnett (1980, 1982), Barnett and Spindt (1979) and Barnett, Offenbacher and Spindt (1981).
19. See, for example, the studies by Cockerline and Murray (1981) using Canadian data and Bailey, Driscoll et al. (1982a and 1982b) for the United Kingdom.
20. A more detailed discussion of the limitations of Divisia aggregates is contained in Goldfeld (1982).
21. See, for example, Meade (1978) and Tobin (1983).
22. For more detailed discussion, see OECD (1985).
23. For an argument in favour of conditional targets see Artis and Currie (1981).

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