Monetary Growth and Monetary Policy

The first meeting of the SOMC (1) on September 14, 1973 concluded with a proposal that monetary growth be held to a range between 5 per cent and 6 per cent (at annual rates). This proposal expressed the SOMC's evaluation of the longer-run policy required to moderate inflation. Our discussion at the meeting also expressed serious concern about the Federal Reserve's record in the past three years. It is thus noteworthy that Senator Proxmire addressed on September 17, 1973 a letter to the Chairman of the Board of the Federal Reserve System requesting "comments on certain criticisms of monetary policy over the past year". The Chairman of the Board replied on November 6, 1973 with a letter published in the Federal Reserve Bulletin and the Reviews of individual Federal Reserve Banks. The letter attempts to justify the past record and wishes to absolve the Federal Reserve authorities from any responsibility for the renewed surge of inflation.

There emerged in the months following the first meeting of the SOMC another development deserving the SOMC's serious attention. Several members of the SOMC began to suspect the adequacy of the monetary data published at the time. Observations bearing on the behavior of velocity, the currency ratio and the time deposit ratio suggested that the data available on demand deposits seriously underestimated the true state of affairs. Allan H. Meltzer further developed and expressed these surmises in a comment published by several major newspapers. The revised data were eventually released at the beginning of February and revealed some interesting changes in the patterns of monetary growth. It appeared that the measurement error was essentially concentrated in the non-member bank data. This circumstance offered the Federal Reserve Authorities an opportunity to exploit the inadequate measurement procedure for institutional purposes. It was argued that the growing share of non-member banks in the U.S. monetary system substantially eroded monetary control.

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1 The Shadow Open Market Committee is a private group of economists who meet occasionally to recommend monetary policies to the Federal Reserve.

The measurement problem prompted the Federal Reserve Authorities to assemble an Advisory Committee of academic economists. This Committee is apparently instructed to survey the measurement problem and to offer advice concerning the development of reliable techniques. The SOMC should applaud the organization of such a Committee. We should also hope that the Advisory Committee will seriously attend to this task. The Federal Reserve System has vast resources available for data collection and examination. It is laudable that our Central Bank considers to use these resources effectively for the acquisition of the relevant information required to pursue its function.

We encounter thus in recent developments of monetary policy several important issues. The measurement problem will be disregarded in this paper. The position paper prepared by James Meigs discussed this issue. The subsequent material describes the patterns of monetary growth observed in the recent past and traces the role of the monetary authorities and of other factors in the process. This discussion of actual and emerging patterns is followed by an investigation of the role of non-member banks in the money supply process and the Federal Reserve's proposal to Congress. The last section examines the Chairman's letter to Senator Proxmire and discusses the crucial elements in the Federal Reserve's justification of its record.

1. The Central Bank and Monetary Growth

Central Banks cultivate some common traditions. One major tradition is the frequent denial of responsibility for sustained or large accelerations or decelerations in the money stock. Our Federal Reserve Authorities share this propensity and often attribute variations in monetary growth to events evolving independently of the Federal Reserve's behavior. The role of the Central Bank in the money supply process deserves thus a critical examination. We can easily agree that evolutions of the money stock emerge from the interaction between banks and public in response to the monetary authorities' behavior. The research accomplished over the past fifteen years by various groups of economists clarified the nature of this process. It also offered information about the relative role of banks, public and monetary authorities. The patterns summarized in the subsequent

tables describe the major contours concerning the relative contribution of monetary authorities or banks and public to the evolution of monetary growth.

TABLE I

THE ROLE OF THE MONETARY BASE IN THE SHORTER AND INTERMEDIATE RUN

1. Regression of percentage change of M between non-overlapping *three* month moving averages of seasonally adjusted data on contribution made by base B and remaining proximate determinants RPD	
$\hat{M} = .82 + .76\ \hat{B}$	$R^2 = .58$
$\hat{M} = 3.27 + .48$ RPD	$R^2 = .10$
2. Regression of percentage changes of M between non-overlapping *six* month moving averages of seasonally adjusted data	
$\hat{M} = .47 + .86\ \hat{B}$	$R^2 = .75$
$\hat{M} = 3.23 + .46$ RPD	$R^2 = .05$
3. Regression of percentage change of M between corresponding months in adjacent years on contribution made by base B and remaining proximate determinants RPD.	
$\hat{M} = .46 + .87\ \hat{B}$	$R^2 = .81$
$\hat{M} = 3.23 + .32\ \hat{RPD}$	$R^2 = .02$

The sample in all regressions covers the period 1/1947 to 6/1973. The remaining proximate determinants are the currency ratio k, the time deposit ratio t, the adjusted reserve ratio (r + l) and the Treasury deposit ratio d. All data used were seasonally adjusted.

We should remember before examining the table that the monetary base effectively summarizes the behavior of the monetary authorities. The base can be expressed as the sum of the monetary liabilities of the Federal Reserve's and the Treasury's monetary account adjusted for changes in reserve requirements. All base money is issued by the monetary authorities and their behavior completely determines the magnitude of the adjusted base.

The three regressions in table I use different time units to express the data. Regressions 1 in table I examine percentage changes of the money stock between successive three month periods for seasonally adjusted data. The first regression under 1 shows that 58 per cent of the variations in monetary growth between successive three month periods is attributable to variations in the growth rate of the monetary base. This second regression under 1 shows on the other hand that only 10 per cent of the variations in monetary growth

over the period under consideration can be attributed to the operation of the remaining factors expressed by the behavior of public and banks. The reader should also note the large difference between the constant terms in the two regressions. These terms inform us that the factor disregarded in the second regression (i.e., the base) contributes 3.27 per cent p.a. to the average monetary growth over the post-war period, whereas the RPD (i.e. the remaining proximate determinants) factors only contribute .82 per cent p.a., once the effect of the base is explicitly recognized.

The regression under 2 in table 1 examines a somewhat longer horizon. The percentage changes in the money stock are now computed between successive six month periods with no overlap. The reader will note that 75 per cent of the variations in monetary growth over the longer period are reducible to variations in the monetary base and only 5 per cent to variations in the remaining factors. The increasing influence of the base with the extension of the horizon is also visible with the larger coefficient attached to the base and the smaller constant term in the first regression.

A further extension of the horizon was applied to obtain regression 3. The percentage changes of the money stock pertain to change between corresponding months in successive years. The reader will observe values for the constant terms practically identical with regression 2. But the longer horizon raised the proportion of the total variation in monetary growth attributable to the monetary base. This proportion is now 81 per cent, whereas only 2 per cent of the total variation in monetary growth can be assigned to variations in the remaining proximate determinants.

It should be noted that the patterns reported are somewhat blurred by a substantial serial correlation of the random residuals in the regressions. This serial correlation reveals accelerations and decelerations of the money stock attributable to the factor omitted in each regression. It is noteworthy that the supplementary accelerations are more pronounced in the regressions of M on the remaining factors RPD, i.e., when the monetary base is omitted. Still, the supplementary accelerations also occur when the money stock is regressed on the base. The remaining proximate determinants evidently contribute to the observed evolution of monetary growth.

Additional information concerning occurrence and magnitude of the "remaining proximate determinants" may be found in tables

TABLE 2

RANGE OF VALUES OF CONTRIBUTIONS MADE BY PROXIMATE DETERMINANTS OF MONETARY GROWTH

The data cover 1973 and are computed from non-overlapping four weeks moving averages of seasonally adjusted data. All numbers are percentages and refer to annual rates of growth between successive non-overlapping four week averages.

M	B	k	t	r+1	d
− 7.2	− 1.2	− 5.3	− 8.3	− 5.3	− 2.3
15.3	13.0	4.2	+ 2.5	10.7	2.8

TABLE 3

RANGE OF VALUES OF CONTRIBUTIONS MADE BY PROXIMATE DETERMINANTS OF MONETARY GROWTH

The data cover the period 1969-70 to 1972-73 and refer to percentage changes between corresponding months in adjacent years

M	B	k	t	r+1	d
2.8	2.8	− 1.3	−3.7	− 2.9	− .24
8.5	8.3	.5	1.9	3.1	.34

M = money stock, k = currency ratio, r+1 = adj. reserve ratio
B = monetary base, t = time deposit ratio, d = Treasury deposit ratio

The reader should note that each percentage number describes the contribution of the factor listed to the stated percentage change of the money stock.

2 and 3. The tables list the smallest and the largest contribution to monetary growth made by each of the proximate determinants for two different horizons. The information in table 2 pertains to percentage changes (at annual rates) between successive four week periods in 1973. Table 3 on the other hand presents the patterns associated with the percentage change of the money stock between corresponding months in successive years from 1969-70 to 1972-73. We note that the longer horizon compresses the range of variation. Table 4 offers a comparison of the two ranges. Changes in Treasury deposits vanish in longer-run assessment of monetary events, but do clearly disturb the evolution of monetary growth over shorter horizons. We also note that the range of money stock and base essentially

TABLE 4

THE RANGES OF CONTRIBUTION MADE BY PROXIMATE DETERMINANTS OF MONEY STOCK IN THE PERIODS LISTED IN TABLES 3 AND 4

M	B	k	t	r+l	d	
22.5	14.2	9.5	10.8	16	5.1	short horizon
5.7	5.5	1.8	5.6	6	.58	long horizon

The symbols are defined under table III.

coincide over the longer horizon. A similar range persists apparently for the time deposit ratio and the adjusted reserve ratio (r + l). It should be noted however that the decomposition of monetary growth into its elementary contributions has not been fully executed. An important strand of the effect of t operates via the adjusted reserve ratio (r + l) and offsets the " direct " effect of t on M. It follows thus that a complete decomposition would lower the range of both t and (r + l) by a substantial margin. Still, the time deposit ratio and the adjusted reserve ratio remain the dominant factors beyond the base affecting monetary growth. They are joined in importance over the shorter horizons by the movement of the currency ratio.

The information offered clearly reveals some contribution of the public's and banks' behavior to the movements of the money stock. It appears useful therefore to outline with additional material the *comparatively* dominant role of monetary authorities in the U.S. money supply process. This material is not affected by the blurring of patterns due to the serial correlation noted above. The reader is referred first to table 5. The first regression presents the dependence of monthly changes in the money stock on similar and contemporaneous changes in the monetary base and the volume of Treasury deposits TRD. All data used in the regression are seasonally unadjusted. It should be noted that independent seasonal adjustment of causally related magnitudes seriously distorts the relative patterns of the time series involved. The reliability of seasonally adjusted data for short-run analysis is thus quite suspect.

The reader will observe that 70 per cent of the *variations* experienced over the post-war period in *monthly changes* of the money stock are attributable to variations in contemporaneous changes of the base or of changes in Treasury deposits. An accumulation of

TABLE 5

SHORT-RUN AND LONGER-RUN PATTERNS OF THE MONEY STOCK

1. Regression of monthly changes in money stock M on monthly changes in the monetary base B and Tretsury deposits TRD for seasonally unadjusted data.
$\Delta M = -.07 + 3.06\,\Delta B - .90\,\Delta TRD$
$R^2 = .70$; D.W. = 2.47; constant term non-significant at the 10 per cent level. The sample covers the period 1947/1 to 1973/12.

2.a. Percentage changes over Half-Cycles of Money Stock M, Monetary Base B and Monetary Multiplier m.

Half Cycle beginning at	Percentages of M	B	m
October 1949	− 1,25	− 1.79	+ .54
July 1953	13.02	11.88	1.14
August 1954	1.56	.75	.82
July 1957	5.00	4.09	.90
April 1958	.59	− .20	.79
May 1960	3.10	2.74	.36
February 1961	2.94	1.65	1.30
November 1966	19.76	24.86	−5.07
April 1967	1.18	1.32	− .13
November 1969	16.28	14.20	2.06
	2.02	3.28	−1.26

2.b. The Rank-Correlations between percentage changes of M and B, and percentage changes of M and m

between M and B: +.89
between M and m: +.20

2.c. Relative frequency of co-movements between M and B, or between M and m

between M and B: 1
between M and m: .6

Treasury deposits clearly retards monetary growth. The regression also implies that beyond several months the monetary base essentially dominates the movements of the money stock. This follows from the observed pattern that the net movements of Treasury deposits decay to a small order beyond several months. There remains however a range of 30 per cent in the total variations of monthly changes in the money stock attributable to the remaining factors. The reader should also note the small (and statistically non-significant at 10 per cent) value of the constant term and a Durbin-Watson statistic denying substantial serial correlations produced by the omitted factors.

The second part of table 5 offers information concerning the

longer-run patterns of the role of monetary authorities. It presents the percentage changes of money stock, monetary base and monetary multiplier over the half-cycles of the post-war period. We note that monetary growth in each downswing is less than the monetary growth over the preceding and suceeding upswing. Also, monetary growth in each upswing exceeds monetary growth in the preceding and succeeding downswing. The same pattern applies to the monetary base. It holds however only in 7 out of 10 cases for the monetary multiplier. The information under 2c in table 5 reveals furthermore a perfect score on the co-movements between M and B, whereas the corresponding relative frequency for co-movements between money stock and multiplier drops to .6. A rough inspection of the tabulation under 2a clearly suggests that the magnitude of the swings in the money stock is dominated by the swings of the base. Point 2b shows a rank correlation between M and B of .89 for movements over the half-cycles and only .2 for similar movements between money stock and monetary multiplier.

The patterns discerned in the evolution of the money stock yield some definite conclusions concerning the role of the monetary authorities in the money supply process. The conclusions are summarized as follows:

(a) The public's and the banks' behavior modify monetary growth substantially over shorter horizons.

(b) Even within shorter horizons however the relative force of Central Bank behavior is clearly visible.

(c) We can reasonably expect that Central Bank behavior dominates beyond the shorter horizons the evolution of monetary growth. Substantial accelerations or decelerations of the money stock over twelve month periods are rarely generated by the public's or the banks' behavior. They occur in response to the Central Bank's behavior.

(d) The shorter run patterns are conditioned by the prevailing institutional structure. This applies most particularly to $(r+l)$ and t. The Federal Reserve Authorities never examined thus far the institutional modifications required to lower the variability of $(r+l)$ and t and to improve thereby substantially the shorter-run controllability of monetary growth.

2. The Evolution of Monetary Growth

The previous section assigned to the behavior of Central Banks or monetary authorities a major responsibility for sustained accelerations or decelerations of the money stock. This pervasive role of the monetary authorities will again emerge from closer examinations of recent monetary growth.

It is useful to place our current position into the context of monetary evolutions since 1969-70. Table 6 summarizes the relevant information. We note four distinct phases since the beginning of 1970. From the first quarter 1970 until the third quarter 1971 (remember August 15, 1971) the monetary impulses applied to the economy accelerated from 3.3 per cent to 7.3 per cent p.a. The monetary impulse more than doubled over this period. The table

TABLE 6

PERCENTAGE CHANGES OF MONEY STOCK AND MONETARY BASE BETWEEN CORRESPONDING QUARTERS

Period	*Money Stock*	*Monetary Base*
1969 I - 1970 I	3.3	2.9
1969 II - 1970 II	3.8	3.7
1969 III - 1970 III	4.8	5.2
1969 IV - 1970 IV	5.5	5.7
1970 I - 1971 I	6.1	7.2
1970 II - 1971 II	7.2	7.6
1970 III - 1971 III	7.3	7.8
1970 IV - 1971 IV	6.3	7.1
1971 I - 1972 I	6.0	6.8
1971 II - 1972 II	5.5	6.9
1971 III - 1972 III	5.9	6.5
1971 IV - 1972 IV	7.5	7.6
1972 I - 1973 I	7.9	7.9
1972 II - 1973 II	7.7	8.0
1972 III - 1973 III	7.0	8.0
1972 IV - 1973 IV	5.9	7.2

The computations were made with seasonally unadjusted data.

also informs us that monetary acceleration was essentially due to the acceleration of the monetary base. This persistent acceleration was hardly compatible with a steady policy of gradual moderation of inflation planned by the Administration.

The second phase was initiated with President Nixon's NEP (new economic policy) in August 1971. This policy was accompanied by a substantial deceleration of the monetary impulse until the second quarter of 1972. About 50 per cent of this deceleration is assignable to the decline of the growth rate of the base. The monetary authorities permitted over this phase a more substantial moderation in monetary growth. This moderation seems most appropriate in retrospect and we should commend the Federal Reserve Authorities for the reversal in policy. Prices were decelerating since 1970 and continuation of the monetary trend initiated in the first phase would have seriously endangered the gradual decline of our inflation rate. The change in monetary evolution initiated in the late summer 1971 contributed thus to maintain the retardation in price movements. The third phase stretches from the second quarter 1972 to the first quarter 1973. The monetary impulse expanded over this period at a rapid pace and increased approximately by 44 per cent. The monetary base also accelerated and contributed about 40 per cent to the monetary acceleration. The last phase covers the remainder of 1973. The monetary impulses hovered on a high level, receded slightly in the summer and declined in the fall. The monetary base also decelerates but its movment was again smaller than the monetary retardation.

The SOMC should note with some interest that monetary growth did converge last year from the exaggerated expansion permitted by the monetary authorities towards the range of 5-6 per cent recommended at our last meeting on September 14, 1973. This deceleration eventually contributes to retard the inflation fuelled by the Federal Reserve's recent policies. Such retardation requires however a persistent adherence by the monetary authorities to a moderate trend of monetary growth. The SOMC should thus be interested in assessing the probability of such monetary developments.

Observations about recent monetary growth presented in table 7 offer some relevant information for our purposes. The reader should note that the table uses corresponding changes between monthly data. The basic pattern of money stock and base exhibited in table 6 are amplified by the monthly data used in table 7. Attention is

TABLE 7

CONTRIBUTIONS OF PROXIMATE DETERMINANTS TO MONETARY GROWTH
(in percentage p.a.)

BETWEEN CORRESPONDING MONTHS OF SUCCESSIVE YEARS

Period	M	B	k	t	r+l	d
1/1969 - 1/1970 . . .	3.7	3.0	−1.0	1.9	− .26	.03
7/1970 - 7/1971 . . .	7.9	8.1	.3	−2.8	2.2	.08
6/1971 - 6/1972 . . .	5.0	6.8	− .6	−2.2	1.2	− .15
1/1972 - 1/1973 . . .	8.6	8.0	.3	−1.4	1.7	0
6/1972 - 6/1973 . . .	8.4	8.0	− .2	−2.1	2.7	0
12/1972 - 12/1973 . . .	5.6	7.1	−1.1	−2.4	1.80	.1

All computations are based on seasonally unadjusted data.

M = money stock, B = monetary base, k = currency ratio, t = time deposit ratio, r+l = adjusted reserve ratio, d = Treasury deposit ratio.

directed to the smaller changes in the growth rate of the base relative to the changes in monetary growth. The growth rate of the base fluctuates since the summer of 1971 within a narrow band of 6.8 to 8.1 per cent. The changes in monetary growth beyond this band are due to the behavior of the currency ratio k, the time deposit ratio t and the adjusted reserve ratio (r+l). An examination of these patterns reveals some pronounced regularities. The contribution of the k-ratio moves in a cyclic fashion between .5 and −1.25 over the past three years. An indication of these movements appears in table 7. The k-contribution recently fell to its lowest levels since the first half of 1970. We may thus expect no substantial further decline of this contribution. We may on the contrary expect over the current calendar year a gradual upwards drift of the k-contribution.

The time deposit ratio t produced for many years a larger numerical contribution than the currency ratio. This contribution was however mostly negative. This can be attributed to the persistent rise of interest rates offered on many time deposit accounts. The k-contribution declined sharply between 1/1969-1/1970 and 3/1970-3/1971 from 1.91 per cent to −3.68 per cent. From 3/1970-3/1971 to 1/1972-1/1973 the contribution rose again from −3.68 per cent to −1.36 per cent and fell again during 1973 to −2.45 per cent. Previous patterns

suggest that the t-contribution is unlikely to fall substantially further this year. I expect on the contrary a gradual increase of this contribution over the next nine months. Similarly, the (r+l) contribution is unlikely to continue its recent fall. The sum of my assessment thus implies that the monetary growth emerging for this calendar year will be centered by the growth rate of the monetary base. My assessment implies in particular that monetary growth converges under current trends to the growth rate established by the monetary base.

It may be useful to supplement our examination with data bearing on the shortest horizon. The reader should be cautioned however that measurement problems bearing specifically on the short-run analysis may exaggerate the movements observed in the contribution of the k, t and (r+l) ratio. Table 8 presents the

TABLE 8

CONTRIBUTION OF PROXIMATE DETERMINANTS TO MONETARY GROWTH
(in percentage p.a.)
BETWEEN SUCCESSIVE FOUR WEEK PERIODS
(seasonally adjusted data)

The date lists the terminal day of the second four week period in the comparison.

Period	*M*	*B*	*k*	*t*	*r+l*	*d*
8/29/73	− .5	− 1.1	−4.2	−5.5	9.0	1.3
12/12/73	11.7	13.0	− .3	2.3	−3.9	.7
2/ 6/74	− 4.0	5.4	−5.0	−7.4	3.2	− .2

extreme points of short-run monetary evolution over the past six months. The first row summarized the state prevailing just before our first meeting of the SOMC. A rapid acceleration of the base until the middle of December carried monetary growth from −0.5 per cent to about 12 per cent. We notice also that the remaining factors essentially cancelled each other at the dates indicated in the first two rows. The effect of the base thus dominated the events. For two months beyond the middle of December monetary growth collapsed to −4 per cent. The temporal distortions of seasonal adjustment may easily exaggerate this decline and blur our judgment.

Still, a substantial decline seems probable. And we note in particular that the fall in the k and t contributions dominate the fall in the base contribution. An inspection of the shorter-run patterns of the k and t contribution thus suggests that a continuation of the recent trend is highly unlikely. It suggests on the contrary a gradual recovery of this contribution over the next three to six months. This implies again convergence of monetary growth to the central thrust determined by the monetary authorities.

And what can we say about the trend of the monetary base? The growth of the monetary base remained throughout 1973, when compared to the corresponding month in 1972, *above* the rate required for an effective anti-inflationary policy. Moreover, the 21 overlapping four week periods recorded thus far since our last SOMC meeting show 9 periods with an annual growth rate of the base in excess of 10 per cent. There is no indication at this stage (middle of February) that the Federal Reserve Authorities really plan to constrain the growth rate of the base to a level assuring a gradual moderation of the new round of inflation unleashed since 1972. Two pervasive patterns lower furthermore the probability of a moderate growth in the base. We note first the rapid increase over the next 16 months in the deficit of the Federal budget. We also know that the absorption of debt by the Federal Reserve System has been systematically associated with the magnitude of the deficit. The base generally retarded in periods of low deficits (or surplus) and accelerated in periods of larger deficits. This pattern was determined by the Federal Reserve's traditional concern about "stable" interest rates. The traditional response of our monetary authorities thus enhances the probability of a marked acceleration in monetary growth over the current year. This development would further entrench the rate of inflation and move the whole structure of interest rates to a higher level (than reached in the first two months of 1974). The prospects appear thus not very promising. Our previous recommendation of moderation in monetary growth applies even more strongly at this stage. Our society experienced to a minor extent the potentially high social cost associated with unstable permanent inflations. These costs typically result from the social conflict fostered by the political responses to an accelerating inflation. The small sample conditioned by the history of the last three years should strengthen our resolve to apply the monetary brakes. The evolution of our economy offered us in the spring of 1972 an excellent chance to contain inflation to low

levels. The inflation moderated from its peak in early 1970 until the spring of 1972. The financial policies initiated in 1969 *were* thus effective. But our chance was lost again by the Federal Reserve System's behavior in 1972. Monetary growth increased by a large magnitude over an extended period and inflation accelerated from below 3 per cent in the spring 1972 to almost 11 per cent in the first quarter of 1974. The problem has become more difficult, more deeply entrenched, with inflationary expectations less responsive to signals of anti-inflationary policies. The shorter-run social costs of such policies are probably larger at this point. Substantially more political determination is thus required in 1974, compared to our lost chances in the past (1967, 1970, 1972), to hold monetary growth along a moderate path.

3. The Alleged Erosion of Monetary Control by the Dual Banking System

The Board of Governors of the Federal Reserve System submitted to Congress on January 28 a "draft legislation designed to implement its recommendation for uniform reserve requirements". This request to extend the Federal Reserve's power to impose reserve requirements has been motivated by the growing importance of non-member institutions supplying checking deposits. The Board of Governors notes that "the purposes of the proposed legislation are to make the nation's monetary system more responsive to Federal Reserve action, to facilitate better management of money and credit, to provide a more equitable system of reserve requirements for financial institutions offering similar deposit services, and to permit Federal Reserve credit assistance to a broader range of financial institutions...". This justification invokes essentially two points: monetary control and equity.

We omit consideration of equity but note in passing substantial skepticism concerning a government agencies attention to "equities". The control problem remains a serious and resolvable problem. It is unfortunate that the Federal Reserve authorities never examined this issue systematically. Our prevailing institutions substantially obstruct the short-run control over the money stock. Among these institutions should be listed the variations in reserve requirements with respect to types of banks or deposits and with respect to

magnitude of deposits, the lagging of required reserves with respect to the relevant deposit base, the ceiling on interest rates payable on demand and time deposits, the measurement of the deposit base used to compute the volume of required reserves, etc. It would appear most appropriate that our monetary authorities systematically analyze our existing arrangement and examine the changes required to improve its control over the money stock.

Such examinations are particularly important for the present case. The draft legislation submitted to Congress offers a narrow proposal for a broad purpose. The proposal involves an extension of the prevailing (complicated) patterns bearing on member bank reserve requirement to all financial institutions with liabilities used in third party payments. We should also believe, it appears, that this extension raises the "precision of monetary control". It removes, we are informed, the erosion of monetary control caused by the increasing weight of non-member banks in our monetary system. The Federal Reserve reports an increase in the proportion of demand deposits included in the nation's money stock issued by non-member banks from 17.2 per cent in 1960 to 25.4 per cent in 1973. The relative weight of non-member banks thus rose over 13 years by 50 per cent.

These changes seem impressive and *obviously* monetary control suffers. But plausible impressions are a poor guide to rational assessment. We receive nothing beyond the Federal Reserve's assurance on this point and one wonders whether the Board seriously investigated this issue. A preliminary examination of the role of non-member banks in the monetary system assigns little significance indeed to the observed changes in the weight of non-member banks. Some computations determine that the increase in the proportion of non-member bank deposits *raised the money stock over 13 years by approximately 4.5 per cent*. This means that the shifting weight of non-member banks added (in the average) *slightly more than one third of one per cent* (i.e., about .3 per cent per annum) to monetary growth. This is surely no magnitude endangering monetary control. It is completely dwarfed by the monetary accelerations produced over the 13 years by our monetary authorities. The minor contribution to growth conveyed via the $(r+1)$ factor could easily be discounted in setting the proper course of policy actions whenever the deposit shifting process works with some regularity.

The Board of Governors could still claim, however, that the problem results from the erratic variations around the trend in the weight of non-member banks. The data attached by the Board to the memorandum justifying the proposal show two distinct subperiods. From 1960 to 1968 the proportion of non-member bank deposits rises with an average .475 percentage points and a range extending from .1 to .7 percentage points. From 1968 to 1973 the proportion rises at an average 1.08 percentage points with a range extending from .8 to 1.3 percentage points. The rate of increase in the weight thus more than doubled between the two subperiods. It is noteworthy that one major difference between the two subperiods is the cost of required reserves determined by the general level of interest rates. Interest rates in the second subperiod rise by more than 50 per cent above the level exhibited in the first period. It should also be noted that this increase is essentially due to the inflationary policies pursued by the Federal Reserve System. The largest deviation from trend change in each subperiod is less than .4 percentage points. Appropriate computations determine that contributions to monetary accelerations (or decelerations) attributable to "erratic changes" in the proportion of non-member bank deposits around its average trend remain within a band with a width of less than .2 per cent p.a. This is a negligible fraction of the monetary growth observed over the past years. I conclude thus that the proposal contributes little to effective monetary control and essentially enlarges the political clientele of the Federal Reserve Authorities.

The general purpose of an improved monetary control is most commendable and the SOMC should certainly support this goal. But the SOMC also hopes that the Federal Reserve Authorities would attend to the really significant changes in institutions which promise to raise the effective level of control. The radical simplification of reserve requirements and adjustments in the measurement of the deposit base governing the computation of required reserves would be among the first items on the required agenda.

It follows from the analysis of the role of non-member banks in the money supply process summarized above that the arguments of the Board submitted in support of its proposal are essentially irrelevant or misplaced. It adduces first the principle "that equivalent cash reserve requirements should apply to all deposits that effectively serve as part of the public's money balances...". But what does this sentence really mean? It surely could not mean *equal*

reserve requirements. The proposal implies very unequal requirements for different banks and different magnitudes of deposits. So what are *equivalent* requirements? The reader obtains no information beyond the implicit suggestion that requirements imposed by the Federal Reserve Authorities on all financial institutions according to the legislation proposed are equivalent. "Equivalence" does not determine the institution, the institution controlled by the Board determines the meaning of "equivalence".

The Board also asserts that the proposal "would buttress the basic role of reserve requirements". The proposal is particularly said to strengthen the role of reserve requirements by changing the form in which non-member banks may hold their reserves. The latter refers to the fact that the proposal would only admit base money for reserve purposes. But the result of the examination presented above indicates the negligible role of this aspect. One also wonders whether an extension of the complicated reserve requirements developed over the past eight years to a larger group of financial institutions may not *worsen* the control problem. The lagging of required reserves introduced without much thought by the Federal Reserve Authorities injected random disturbance into the process and lowered the level of control. It seems hardly appropriate to extend and entrenche even further, a poorly designed institutional arrangement. Lastly, the Federal Reserve's general concern about the growth of depositary liabilities with third party payment features at non-member institution deserves some attention. We should admit that this development affects the Federal Reserve's political clientele. But we should also doubt its relevance, per se, for monetary control. But the Federal Reserve Authorities have the resources and facilities to explore this issue more systematically and *may* convincingly document the economic relevance of its concern. The SOMC should encourage such studies.

4. The Chairman's Justification of Recent Monetary Policy

The Chairman's reply to Senator Proxmire's letter was addressed at two major issues: the general variability of monetary growth and the monetary acceleration experienced in 1972. The evaluation of the first issue depends on the conception governing some fundamental properties of the economic system. In particular, it depends

on the view concerning the "inherent stability of instability" of the process. The Chairman argues with many Keynesians that "neither historical evidence, nor the thrust of explorations in business cycle theory over a long century, give support to the notion that our economy is inherently stable". Once the Federal Reserve Authorities accept the "fundamental instability" of the economic process the general position concerning the nature of policymaking is essentially determined. Policies must be "discretionary and flexible". They will be "needed to cope with undesirable economic developments", developments emerging independently of public policy. Moreover, "economic forecasts are an essential tool of policymaking". The fundamental thesis also implies assignment of substantial weight to fluctuations in velocity. These fluctuations reveal the operation of the hidden forces driving the economy. The governing conception rationally determines moreover the use of "a blend of forecasting techniques". In particular, the monetary authorities must cultivate a wide range of diverse information channels. It also follows that the Federal Reserve necessarily cultivate an "eclectic approach". This "eclectic approach" eventually became more eclectic and includes monetary growth with all the previously assembled signals. And no doubt, the central thesis implies that it "would be unwise for monetary policy to aim at all times at a constant or nearly constant rate of growth of money balances". There emerges furthermore the warning that "it is never safe", under the circumstances, "to rely on just one concept of money". The general idea of an unstable process is supplemented with a specific view that the "public's attitude towards liquidity" changes abruptly and widely. Such changes must be offset by suitable adjustments in open market operations. The fundamental thesis thus yields an array of consequences which explain and apparently justify the observed variations in monetary growth. It apparently also justifies an extensive apparatus to assure a broad range of contacts with the economy. We may only note in passing the usefullness of such designs for a political organization.

The Chairman's defense of the policies pursued in 1972 and 1973 is an immediate consequence of the general theme. We are cautioned that "monetary policy... had to balance the twin objectives of containing inflationary pressures and encouraging economic growth". The balancing yielded an expansion of M_1 in 1972 which was "low relative to the demands for money and credit". And lastly, the surge in prices occurring in 1973 "reflected a variety of special influences". And so follows the Chairman's final conclusion: "The severe rate of inflation that we have experienced in 1973 cannot responsibly be attributed to monetary management or public policies".

The nature of a position paper prohibits a detailed exploration of the Federal Reserve Authorities justification. A short critique seems however necessary. More importantly, it should be emphasized that substantially more research efforts support the critique than the Chairman's apologia. The Federal Reserve's fundamental thesis of an inherently unstable process generating major fluctuation may be very plausible. It is quite probable that this thesis guided much of the Chairman's previous activities at the National Bureau of Economic Research. Still, all the time series collected yield no relevant evidence favoring this thesis against the rival view of a fundamental stable process. Nor does a century of explorations in business cycle theory offer, per se, any relevant evidence. It is most intriguing that major pieces of work published by the National Bureau of Economic Research yield information incompatible with the Federal Reserve's hypothesis. The detailed monetary history prepared by Friedman-Schwartz clearly established the responsibility of government policies, or of arrangements imposed by public policy for major depressions or substantial inflations. Moreover, a detailed survey of econometric models also published by the National Bureau [2] established uniformly that substantial variations in policy variables are a necessary condition for the generation of larger economic fluctuations. None of the models examined justifies the thesis of internal instability. They exhibit on the contrary highly stable and shock absorbing processes.

An interesting implication of the instability thesis was explored by Milton Friedman. He examined in a contribution to the Fourty Fourth Annual Report of the National Bureau of Economic Research the correlations between magnitudes of upswings and downswings in business cycles. The instability thesis implies that correlations between upswings and *succeeding* downswings are not significantly different from correlations between upswings and *preceding* downswings. The stability thesis implies on the other hand that correlations between upswings and *preceding* downswings significantly exceed correlations between upswing and *succeeding* downswings. He also presented data demonstrating the relative dominance of the former correlation. The instability thesis found thus little support by these data. A preli-

2 *Econometric Models for Business Cycles*, ed. by Bert Hickman, New York 1972.

minary report on the role of public policy in moderate inflation also offers some relevant evidence.[3] The data from three countries show that substantial accelerations *and* decelerations in price movements were systematically preceded by substantial changes in government financial policies.

The work adduced in support of the stability thesis and against the Federal Reserve's contention is certainly not conclusive. It is remarkable, however, that a fundamental thesis with far-reaching ramifications for policy appears firmly accepted by the monetary authorities without any systematic examinations bearing on this issue. The wondrous claim to a superior knowledge implicitly made in the Chairman's argument is thus even more remarkable. The instability thesis justifies indeed the proposition that *appropriate* variability of monetary growth dampens economic fluctuations. But the actual determination of this *appropriate* variability requires *reliable* information about the economy's detailed structure. Can we reasonably believe that the Chairman possesses such knowledge? The variability of monetary growth actually experienced remains thus properly suspect. We notice in particular the persistent positive correlation between monetary growth and cyclic movements in aggregate spending. Stabilizing policies implemented in a world satisfying the Federal Reserve's instability hypothesis are quite unlikely to produce such cyclic conformity between monetary impulses and major measures of the business cycles. Stabilizing policies are more likely to yield a random pattern or a pattern with negative correlations under the circumstances. The Federal Reserve's own conception about the process thus implies that its policies were in the average poorly designed.

The application of the general theme to the year 1972 exhibits the political advantages offered by a "flexible application" of the thesis. It is argued that a moderate "encouragement" was still appropriate. This encouragement balanced the cautious policy applied "against the rising inflationary pressures". The "balanced" encouragement offered by monetary policy in 1972 is elaborated in terms of the relative movement of money demand and money stock. The forces of the economy operating independently of current or past

3 Karl Brunner, Michael Fratianni, Jerry Jordan, Allan H. Meltzer and Manfred Neumann: « The Role of Monetary and Fiscal Policy in Moderate Inflation », *Journal of Money, Credit and Banking*, February 1973.

monetary accelerations raised in the Federal Reserve's view the public's money demand. A comparatively smaller increase of the money stock satisfied in the Chairman's opinion the requirement of an anti-inflationary policy, whereas its actual *increase* injected the required modicum of encouragement. But the reader should note the hard dependence of this argument on the instability thesis which determines the dominant impulse driving the economy's private sector. The interpretation of the relative movement of money stock and money demand in the manner suggested by the Chairman's letter presupposes that the movements of money demand are dominated by non-monetary events.

The special justification of 1972 thus fails with its underlying thesis. We should also note the dependence of the argument on a very Keynesian view of asset markets denying "direct" substitution relations between money, or financial assets, and real assets. This view implies that increasing interest rates reveal an acceleration of money demand relative to money supply. An alternative view about the operation of asset markets, recognizing substitution relations between money and all assets, rejects such interpretations and offers no analytic basis for the Chairman's rationalizations. This alternative view suggests that the Chairman's argument perpetuates the hoary confusion between money and credit in a somewhat modified form. Many events operating on the credit markets modifying the public's asset supply to banks are falsely attributed to money demand. The distinction is important, as it can be shown that "erratic behavior" of the public's asset supply yields substantially different policy implications than changes in money demand.[4]

The Chairman's letter referred to the behavior of velocity for an apparent support of the major thesis advanced. The behavior noted by the Chairman is however also a consequence of a stable process driven by monetary impulses exhibiting substantial variability. Monetary accelerations (or decelerations) operate with a lag on velocity. Larger fluctuations in velocity are thus the result of previous accelerations and decelerations of the money stock. In general, the larger the changes in velocity the larger the previous acceleration or deceleration of the money stock. Inflationary experiences from many

4 The reader may find an analysis of the alternative view in my paper « A Diagrammatic Exposition of the Money Supply Process », *Schweizerische Zeitschrift für Volkswirtschaft und Statistik*, February 1974.

countries offer some interesting material in this respect. Money demand seems substantially influenced by prior accelerations of the money stock.

This argument extends to the surging inflation in 1973. The decline in the volume of real money balances observed in 1973 is occasionally interpreted to cause a deflationary effect on output and employments. This inference probably misinterprets the observed phenomenon. The decline in real balances was partly caused by an increase in the public's anticipated rate of inflation. This increase of inflationary anticipations raises velocity and consequently lowers the public's desired stock of real money balances. The decline in real balances thus emerges to some extent from a process which simultaneously expands output and accelerates price levels. Moreover, the rise in inflationary anticipations did not emerge independently from the results produced by recent financial policies. Proposals to raise the level of real balances via monetary expansion generate under the circumstances a pattern of gradually accelerating inflation. This conclusion applies particularly to the proposal requiring that monetary growth always exceed the observed rate of inflation.

The Chairman absolved monetary policy from responsibility for the "severe inflation" in 1973 and attributed this event to the influence of special factors. Indeed, special factors were at work. They certainly explain the rapid changes in specific *relative* prices and the emergence of food and oil in the upper tail of the distribution of price changes. The "special influences" may also explain in 1973 a smaller portion in the movement of the *whole distribution of prices*. The major portion of this movement, expressed by an accelerated increase in the *average* price-level, did result, however, from *the financial policies pursued in* 1972. Indeed, the policies applied in 1973 exerted possibly little effect on price movements in 1973 beyond their effects via the revision of inflationary anticipations. But this does not justify the Chairman's convenient refusal to accept the responsibility for the new inflation. It is noteworthy that the Chairman's reply invokes a thoroughly eclectic theory of inflation in order to repudiate the critics. Inflation emerges and is maintained in this view by a sequence of real effects or shocks imposed on the economy. The favorite choices for 1973 are bad wheat crops in Russia and Australia, the monopoly pricing of oil producers and the Arab oil embargo. If such real shocks actually lower output relative to the money stock the price level indeed increases. Any negative real shock

thus produces a *temporary* inflation. But our problem concerns a *persistent* inflation. This requires according to the Federal Reserve's ecletic "specific factors" or "real shock theory" a persistent sequence of shocks lowering available resources. A persistent inflation would thus be generally associated with a *persistent* decline in real output per capita. But we surely do not observe such patterns. Still, a real shock lowering total output does reenforce *temporarily* a prevailing inflation produced by monetary acceleration. The application of this proposition should be carefully pondered however. The "specific factors theory" of inflation frequently involves some fundamental confusions bearing on the role of aggregative and relative price (or allocation) processes. Specific events affecting the relative demand of supply position of some objects explain the location of the associated price change under the whole distribution of price changes. But this relative price process is rarely connected with the inflation problem. The confusion between aggregation and allocation processes occurs in this context most typically in form of the frequently applied "upper tail principle". This principle asserts that the inflation problem is essentially expressed by the upper tail of the distribution of price changes. Monetary theory informs us on the other hand that events affecting the specific location of price changes *under* the distribution exhibit in general negligible connection with the inflationary process. The inflation problem is revealed by the position of the whole distribution of price changes. Moreover, the position of this distribution is modified by variations in monetary expansions or by real factors *affecting a broad spectrum of the economy* expressed by variations in *total* output. It follows that inferences about the inflation problem according to the "upper tail principle" usually yield a distorted or thoroughly misconceived view. Assessments of the inflation problem guided by a "special factors theory" reenforced by the "upper tail principle" produce "anti-inflationary policies" which are bound to fail. The characteristics of the theory assuring its *political* usefulness simultaneously determine its uselessness as a guide to an effective anti-inflationary policy.

KARL BRUNNER

Rochester