

**Section II: Stabilization Policies:  
Critique of the '70s and  
Preview of the '80s**

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## THE CASE FOR GRADUALISM IN POLICIES TO REDUCE INFLATION

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Inflation is usually defined as a sustained rate of increase in a broadly based index of prices. Whatever meaning one gives to the imprecise term "sustained," the past fifteen years seem to meet the standard. Both the all-item consumer price index and the implicit GNP deflator have increased in every quarter since late 1965, and neither seems likely to reach a zero rate of change in the near future.

Sustained inflation at the rates of recent years is rare, even if not unique, in the histories of developed economies. It seems useful, at a conference summarizing the lessons of the seventies and drawing implications for the eighties to look back on the path we have travelled and to explore the path we might take to restore price stability. I shall use the opportunity to discuss some of what has been learned about monetary policy. The list is a long one, particularly if we include propositions that once were "known" but later forgotten or rejected in the years of Keynesian orthodoxy, so I shall not attempt to be complete.

Any long-term gain from ending inflation depends on a negative relation between inflation and real output. The most common reason for suspecting that a gain will occur is the observed association between inflation and changes in relative prices. See Cukierman (1979). The

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principal problem for monetary policy at present is to achieve this gain by ending inflation at minimum transitional loss of output. Every six months, I join with my colleagues on the Shadow Open Market Committee in recommending a policy of pre-announced, gradual, sustained reductions in the growth of money as a means of restoring price stability. A clear statement of the reasons for a policy of this kind -- often called gradualism -- has not been provided. I will try to partially fill that gap and to relate the case for gradualism to some of the lessons we have learned from recent experience with sustained inflation.

The history of recent inflation is surrounded by myths that obscure the origins of the inflation and the reasons for its persistence. I begin with an account of the origin and an explanation of persistence. Much of the case for gradualism depends on the way in which individuals form anticipations of the future. I present one view of rational expectations, in the sense of Muth (1961), and use this model of expectations to show how Federal Reserve policy procedures can convert real shocks into permanent changes in the rate of price change. Then I present the case for gradualism in a world in which persistent and transitory changes in monetary policy cannot be identified quickly.

#### THE ORIGIN AND PERSISTENCE OF CURRENT INFLATION

The most enduring myth about the origins of the current inflation is that the inflation started during the Vietnam war. According to a standard version of history, President Johnson rejected the recommendations of his advisers by refusing to choose between "guns and butter." The President delayed asking Congress for increased taxes

(or for smaller expenditures for redistribution) and allowed the budget deficit to overstimulate the economy in 1967. Since 1967, inflation has been intractable. According to some estimates, ten or more years of recession would be required to eliminate inflation by monetary and fiscal policies.<sup>1</sup>

The facts do not correspond to this capsule history. The rate of increase of consumer prices reached the 3 to 4% range at least a year before the Vietnam deficits. Spending by the federal government in dollars of constant purchasing power remained 3 to 5% below the 1962 level during most of 1965. Budget deficits and government spending did not start the inflation or encourage the Federal Reserve to expand in 1965 or 1966. The budget had a small surplus in 1965, and a small deficit in 1966. The Federal Reserve slowed the growth rate of the monetary base late in 1966 in a sudden burst of concern about rising inflation. The 1967 deficit of more than \$13 billion comes after these first steps to slow inflation and much too late to explain the start of the inflation.

A surtax was added to the income tax in 1968, so the Vietnam deficit proved to be temporary. By late 1968, the budget again was in surplus, and the surplus persisted in 1969. The 1969 surplus of \$8.5 billion is one of the largest of the past thirty years in real as well as in nominal terms.

To sustain the thesis that the Vietnam deficits started the current inflation, one must not only ignore the problem of the timing of

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<sup>1</sup>See Perry (1978) for a more complete statement of this view and for an extreme form of the argument that inflation is intractable. Perry's Phillips curve implies that it costs \$200 billion dollars of real output for each percentage point reduction in the rate of inflation.

the start of inflation, on which I commented earlier, but must accept the improbable proposition that six quarters of wartime deficit generated anticipations that were irreversible. Credulity is strained further when the 1967 deficit is expressed in constant dollars to compare with the deficits in earlier and later years. The 1967 deficit is almost identical to the 1958 deficit when both are expressed in dollars of the same purchasing power. The 1958 deficit did not initiate years of sustained inflation. On the contrary, inflation fell from the 3 to 4% range of 1956-57 to the 1 to 2% range in 1958-59 and to less than 1% by 1961.

The 1975 nominal budget deficit of \$70 billion is four times larger than the deficits of 1958 and 1967 when the three are expressed in dollars of comparable purchasing power. The 1975 deficit is not followed by a balanced budget or a surplus but by sustained deficits. Yet, most broad measures of the rate of price change declined in 1976. The GNP deflator rose by less than 4.5%, on average, for the first three quarters of the year, and the consumer price index rose by less than 5% for the year as a whole.<sup>2</sup>

The proximate cause of the start of the current inflation is the monetary policy of the early 1960s. Inflation persists because policy continues to sustain anticipations of future inflation by producing persistent inflation. Bursts of anti-inflation policy, and announcements of firm commitments to reduce inflation, are not followed by policies that reduce money growth.

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<sup>2</sup>The decline in the rate of inflation affected more than just food prices as is sometimes claimed. The wholesale price indexes of consumer finished goods rose by less than 2.5% for the year.

CHART 1

Rate of Growth of the Monetary Base  
(3 Year Moving Average)

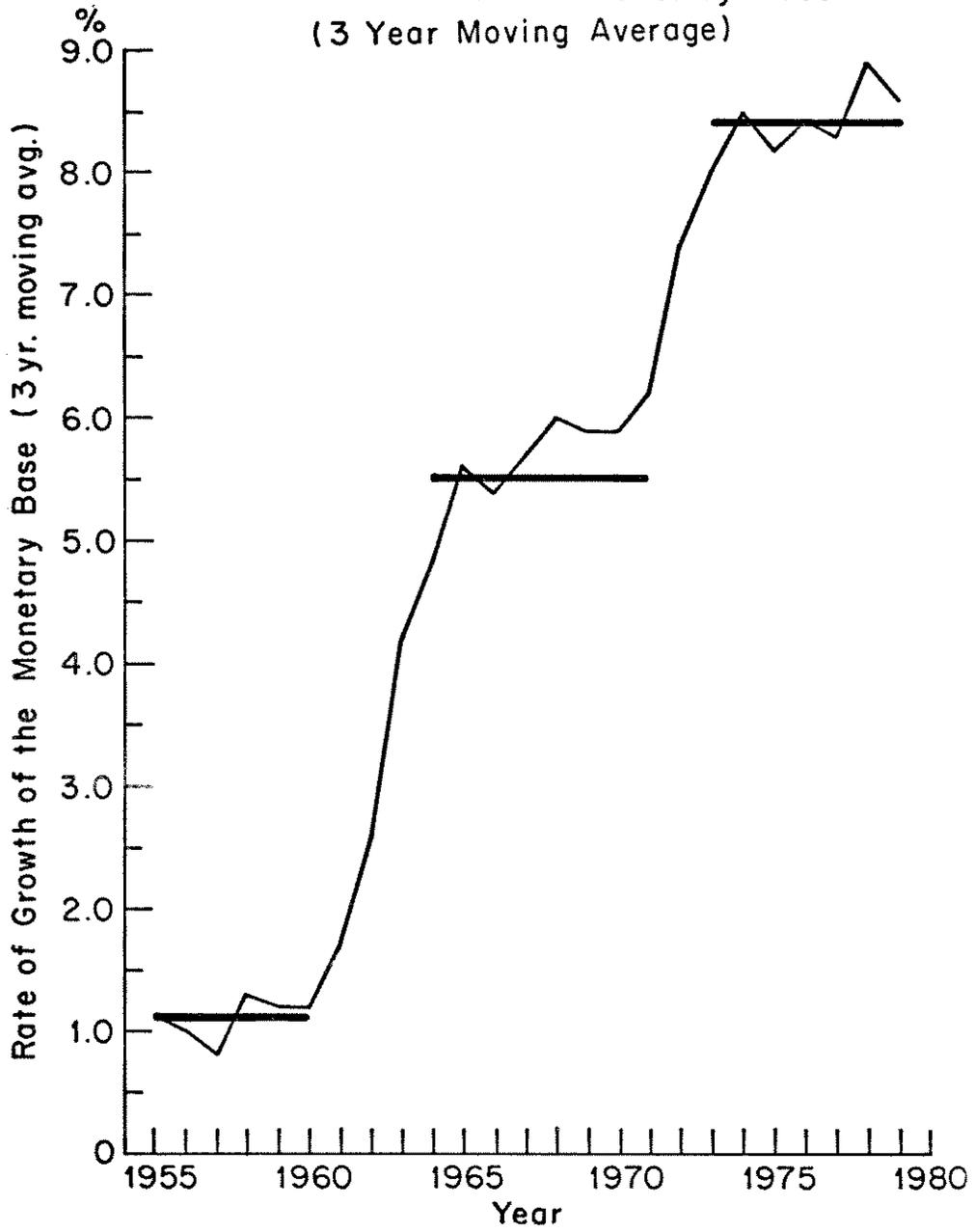


Chart 1 uses a twelve quarter moving average of the growth of the adjusted monetary base as a measure of the long-term effect of monetary policy. Using this measure as an index of the sustained thrust of monetary policy, we can divide the monetary history of the past twenty-five years into five episodes. The first, from 1955 to 1960, has a low average rate of monetary growth, 1.1%. The second is a three-year transition. The twelve quarter moving average rises steadily toward the 5.5% range. In the third period, 1964-71, the growth of the base remains in the neighborhood of 5.5%. The fourth period is a one-year transition, 1972, during which the maintained growth of the base moves from about 5.5% to 8.5%. Since 1973, the moving average of the base has grown at a maintained rate of about 8.5%.

A number of studies, including my own Meltzer (1977), suggest that inflation follows money growth with an average two-year lag. The mean of the three-year moving average ending in year  $t$ , shown in Chart 1, is an unweighted average centered in year  $t-1$ . If we impose a two-year lag, inflation in year  $t+1$  is influenced by the twelve quarter rate of growth of the monetary base ending in year  $t$ . To measure persistence, I have computed the standard deviation of the percentage rates of change of the consumer price index and the percentage rate of change of money wages for the years 1956-61, 1965-72 and 1974-78 that correspond to the two-year lag of prices behind the maintained growth of the monetary base.<sup>3</sup> The data are shown in Table 1.

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<sup>3</sup>The rates of price and wage change are one-year averages of the all-item consumer price index for six-month spans and average hourly earnings over six-month spans from BCD. Wage data are not available before 1965.

TABLE 1

Mean ( $\mu$ ) and Standard Deviations ( $\sigma$ )

Years (t)	Growth of Adjusted Monetary Base in t		Rate of Price Change t+1		Rate of Wage Change t+1	
	$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
1955-60	1.1	.18	1.9	1.00	N.A.	
1964-71	5.7	.44	4.0	1.26	5.9	1.13
1973-78	8.4	.31	7.5	2.42	8.0	.79
Omitting 1974			6.4	.85	7.7	.36

The data show a tendency for the standard deviation of the rates of change of money and wages to fall in recent years. Removing the effects of the oil shock, by omitting 1974, further reduces the standard deviations. The standard deviations of the rates of change of wages and prices are not startlingly different from the standard deviations of the maintained growth of the adjusted base. The persistence of rates of price change from year to year appears to be related to the persistence of maintained rates of money growth.

To examine further the relation between the persistence of money growth and the persistence of inflation, Table 2 compares the two quarter average rates of growth of base money to the quarterly averages of the rates of change of prices and wages used in Table 1. As before, I imposed a two-year lag of rates of price change behind rates of money growth. The data now suggest that the variability of base money growth is of approximately the same magnitude as the variability of the rate of wage change.<sup>4</sup> The standard deviations of the rate of price change,

<sup>4</sup>The time periods for the base differ from those in Table 1 because Table 1 has a three-year moving average. I have kept the periods for rates of price and wage change the same as in Table 1.

however, are not closely related to the standard deviations of rates of base money growth. Short-term variability of the rate of price change reflects more than the variability of monetary growth.

TABLE 2

Mean ( $\mu$ ) and Standard Deviations ( $\sigma$ )

Period	Two quarter moving average of growth of monetary base		Period	Standard Deviations ( $\sigma$ ) quarterly average rate of change over six-month spans			
	$\mu$	$\sigma$		Consumer prices	Money wages	$\mu$	$\sigma$
t	$\mu$	$\sigma$	t+2	$\mu$	$\sigma$	$\mu$	$\sigma$
1954-59	1.1	0.87	1956-61	1.5	1.61		
1963-70	5.7	1.10	1965-72	4.00	1.34	5.9	1.19
1972-76	8.2	0.91	1974-78	8.2	2.61	8.0	0.90

The data for 1963-70 and 1972-76 include several periods in which inflation was given "highest priority" as a goal of public policy. Careful inspection of the data shows that periods of slower growth of the base coincide with these announcements in 1966, 1969-70 and 1974-75, but none of these periods of slower growth is long enough to have any marked effect on the standard deviation of the growth rate of the base. Table 2 shows that the standard deviation of the two quarter moving growth rates is independent of the rate of growth of the base and not very different in the three sample periods.

The data suggest two reasons for the persistence of inflation and the slow response of inflation to changes in the growth rate of money. First, short-term rates of price change are relatively variable, so people have difficulty separating the effects of money growth from other influences on short-term price changes. This is particularly the

case for recent years, when announced changes in oil prices have had considerable influence on measured rates of price change and their variability. Second, the commitment to anti-inflation policies does not last. People are unwilling to buy long-term contracts based on the assumption that the slower rate of money growth will persist long enough to reduce the trend rate of inflation. In the next section, I offer an explanation of the relation between the variability of money growth and the persistence of inflation.

#### THE BASIC INFERENCE PROBLEM<sup>5</sup>

Each week the Federal Reserve reports the growth rates of various monetary aggregates. Market participants try to infer the future course of money growth, interest rates, prices and exchange rates from the announcement. Their problem, and ours as economists, is to separate transitory changes in money growth (or other variables) from persistent changes. I call this problem of separating permanent or persistent changes from ephemeral or transitory changes the basic inference problem because it arises for most economic variables and is a major problem for people making decisions.

To illustrate the problem, suppose that in a given week the announced change in money is large relative to past changes. Few observers will use the observation for a single week to predict the growth path, and fewer still will predict an equiproportionate change in the rate of inflation. Let the increased rate of money growth persist, for a month or two, and the balance of opinion will start to

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<sup>5</sup>This section owes a large debt to Brunner, Cukierman and Meltzer (1979).

change. More observers will infer that there has been a persistent change in the growth rate of money.

The effect of the first week's observation on market prices, interest rates and exchange rates differs from the effects of a change that is perceived to be permanent. Although the change in money is reported, and therefore is known, the correct inference to be drawn from the information is uncertain because the content of the information is uncertain. A rational investor who uses all available information, must first decide what he knows; that is to say, he must decide how much of the changes he has observed can be expected to persist.

This view of the world in which monetary and other policies operate differs in an important way from the usual model of rational expectations developed by Lucas (1975) and others. There, people are uncertain about whether the changes they observe are the result of shocks that change relative prices or shocks that change the absolute price level; once information becomes available, there is no doubt about its meaning.

Given the speed with which information becomes available, the confusion between aggregative and relative changes cannot be the principal source of confusion. The main aggregates in our models -- money, debt and deficits or GNP, prices and output -- are observed within a month or a quarter. Once they are observed, the confusion between absolute and relative changes disappears.

The permanent-transitory confusion does not disappear when data are published. The principal uncertainty that individuals face arises, in this model, from an inability to properly interpret information, not from lack of information. People observing the price index must decide

whether a reported increase or decrease in an aggregate is a one-time change that will soon be reversed or the start of a higher or lower maintained rate of change. Expectations remain rational, but the use of all available information does not solve the inference problem and does not eliminate error.

A simple model brings out the source of the permanent-transitory confusion. It is, of course, only one of many ways in which the problem can be formulated, but it is the way that has been used in an application to the problem of stagflation where it produces changes in prices and employment that resemble the aftermath of the oil shock.<sup>6</sup>

An observable variable  $X_t$  can be divided into two components, a permanent component,  $X_t^p$ , and a transitory component  $X_t^q$ .  $X_t^q$  and  $\Delta X_t^p$  are normally distributed random variables with mean zero and known, constant variances,  $\sigma_{xp}^2$  and  $\sigma_{xq}^2$ . People cannot observe  $X_t^p$  or  $X_t^q$  but must infer the permanent value by observing current and past values of  $X_t$ .

$$X_t = X_t^p + X_t^q,$$

The expectation of  $X_t$ , conditional on all information available in period  $t$ , is  $X_t^p$ .

The inability to separate permanent and transitory components makes the optimal forecast of  $X$  a distributed lag of past observations. Contrary to much of the rational expectations literature,<sup>7</sup> we find that

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<sup>6</sup>Brunner, Cukierman and Meltzer (1979). This application considers the effects of real shocks. The role of the permanent-transitory confusion in the transmission of monetary shocks to real variables introduces additional problems.

<sup>7</sup>Benjamin Friedman (1979) is an exception.

using a distributed lag of past observations is an optimal method of forecasting. The reason is that repetitive observation of an aggregate are required to learn whether a permanent change has occurred. If permanent changes are frequent, and transitory changes are infrequent, a change in  $X$  is more likely to be treated as permanent soon after it occurs. At the opposite extreme, transitory changes are frequent and permanent changes are rare, so it is optimal to observe a relatively long series of observations before concluding that a permanent change has occurred. In more technical terms, the larger the ratio  $\frac{\sigma_{xp}^2}{\sigma_{xq}^2}$  the faster people correctly infer that a permanent change has occurred; the smaller the ratio, the larger is the number of observations required to sustain the inference that a permanent change has occurred.

We can put more content into the terms "frequent" or "infrequent" by using the computed standard deviations for the two quarter and three-year moving averages in Tables 1 and 2 to estimate the relative variance of permanent and transitory components and to find the implied length of the lag in reaching rational judgments about permanent shocks. The permanent variance of the growth rate of the monetary base is set equal to the variance of the three-year growth rates. The two quarter moving average growth rates include both permanent and transitory components. We assume that permanent and transitory variances are independent and compute the transitory variance by subtracting the variance of the twelve quarter average from the variance of the two quarter average. Muth (1960, pp. 302-4) shows that the best (minimum variance) linear estimator of the permanent value of a variable can be computed from past actual values using the variances of the permanent and

transitory components. For the problem at hand, the calculations for the three periods of relatively constant growth of the monetary base show that the relative variances of the growth rates of the base are:

	1955-60	1964-71	1973-78
$\frac{\sigma_p^2}{\sigma_q^2}$	.04	.19	.14

These ratios imply very different lags in the adjustment of the expected growth of the base. In 1955-60, only 55% of the adjustment of expectations occurs within three years. The reason is that the very low variance around the three-year average growth of base money obscures the change in the maintained rate of growth, when it occurs. Rational individuals interpret most of the permanent change as transitory and fail to adjust fully for several years. In the two remaining samples, the variance of the permanent component is higher relative to the variance of the transitory component. Expectations adjust more quickly; more than 95% of the full adjustment occurs in the first three years.<sup>8</sup>

Expectations of inflation are related to the growth of money that individuals expect to be maintained. The expected growth of base money can be reduced permanently only if the actual growth of base money is reduced. The speed of adjustment of expected to actual growth can be reduced, also, if the variability of the growth rate of the base is reduced. For example, if the Federal Reserve reduces the variance of the two quarter growth rate to equal the variance of the twelve quarter

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<sup>8</sup>"Transitory" variances are computed from two quarter moving averages, so two quarters are used as one period when computing the lags.

growth rate, 85% of the adjustment of expectations about the permanent growth occurs in the first year. Expectations of inflation respond more rapidly to monetary policy; the length of the lag of inflation behind money growth declines.

It is, no doubt, a mistake to use these numbers as precise estimates of the expected length of the lag. Fortunately, the principal implications do not depend on the precision with which we measure the speed of adjustment of expectations. If short-term policies are less variable, the speed of adjustment increases. Faster adjustment of expectations lowers the length of time between changes in the growth rate of the monetary base and changes in the expected growth of the base and, therefore, in the expected rate of inflation. The shorter the lag, the smaller, ceteris paribus, is the persistence of inflation.

A related, but distinct, implication explains why short-term changes in the growth rate of the base have little effect on maintained inflation. The larger the transitory variance of the growth rate of the base, given the long-term or permanent variance, the longer is the lag. Short-term reductions in the growth rate of the base have little effect on long-term expectations if the short-term growth of the base is highly variable. The real costs of reducing inflation are higher, under these circumstances. The costs take the form of recession and rising unemployment. Recession encourages the Federal Reserve to shift to a policy of monetary expansion thereby reinforcing expectations that the maintained average growth rate of the base will not be reduced. Chart 1, above, shows that past periods of anti-inflation policy have, in fact, had little effect on the maintained growth rate of the base.

The calculations in Tables 1 and 2 imply that the lag in the formation of expectations is shorter now than in the fifties. The data suggest, however, that the reason for the shorter lag is the increase in the measured variance of the permanent component, not a reduction in the measured variance of the transitory component.

#### THE POLICY PROBLEM

The Federal Reserve can reduce the short-term variance of the growth of the monetary base by adopting targets expressed in terms of the base. Reserves and currency, the uses of the base, are approximately equal to the sum of reserve bank credit and international reserves. With floating (or adjustable) exchange rates, the Federal Reserve can control the two quarter growth rate of the base by controlling the stock of Reserve bank credit. To control the base the Federal Reserve need not solve an impossible or even a difficult problem. All they must do is control the asset side of their balance sheet.

As is well-known, the Federal Reserve cannot control both interest rates and the growth rate of the base. By specifying short-term targets in terms of values (or ranges) of the Federal funds rate, the Federal Open Market Committee surrenders control of short-term changes in the base. The problem of separating permanent and transitory changes helps to explain how loss of short-term control of the base contributes to persistent movements of the base even if the dominant shocks in the economy are real, not nominal shocks.

To illustrate the problem, I use the three equation, equilibrium model based on Brunner, Cukierman and Meltzer (1979). All variables

are natural logarithms. Production or output,  $y_t$ , is given by a neo-classical production function

$$(1) \quad y_t = u_t + \delta l_t$$

with  $l_t$ , the number of man hours of labor and  $u_t$  a productivity shock;  $\delta$  is the elasticity of output with respect to labor. Real aggregate spending is always equal to output,  $y_t$ , and depends on expected or permanent income,  $y_t^p$ , on the real rate of interest and on shocks to aggregate demand,  $\varepsilon_t$ . The anticipated rate of inflation is the difference between the logarithms of the price level anticipated for next period ( ${}_t p_{t+1}$ ) and today's prices ( $p_t$ ). The market rate of interest is  $i_t$ .

$$(2) \quad y_t = a + b y_t^p + c [i_t - ({}_t p_{t+1} - p_t)] + \varepsilon_t$$

$$b > 0 ; c < 0$$

Equation (3) equates the current stock for base money,  $B + \psi_t$ , to the demand for base money, where  $\psi_t$  is the shock to the level of nominal money balances.<sup>9</sup> Some part of the shock to spending,  $\varepsilon_t$ , affects the demand for money; the rest affects the demand for bonds and the supply of labor. Increases in spending are financed by reducing the demand for money so  $\theta$  is positive and increases in  $\varepsilon$  reduce the demand for money.

$$(3) \quad B + \psi_t = \alpha + p_t + \beta i_t + y_t^p + \gamma (y_t - y_t^p) - \theta \varepsilon_t$$

$$\beta < 0$$

$$1 > \gamma, \theta > 0$$

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<sup>9</sup>The analysis can be cast in terms of growth rates of money by making minor adjustments.

The three equations form an augmented IS-LM model. The principal novelties are the distinction between permanent and current income and the introduction of permanent and transitory shocks. The three shocks,  $u_t$ ,  $\epsilon_t$  and  $\psi_t$ , have permanent and transitory components, but people are not able to distinguish the permanent and transitory components when observing the shocks. For example,  $u_t = u_t^D$  with known variances  $\sigma_{up}^2$  and  $\sigma_{uq}^2$ , normal distributions and expected values  $Eu_t^D$  and  $E\Delta u_t^D$  equal to zero.

Substituting eq. (1) into (2) and (3) and solving for  $i_t$  reduces the system to two equilibrium relations. The money market equilibrium or LM, in eq. (4) and the IS curve, eq. (5) relate  $i_t$  to the three shocks, to the price level and to other variables. For the current analysis, I treat  $y_t^D$  and  $l_t$  as given and independent of the shocks.<sup>10</sup>

$$(4) \quad \beta i_t = B + \psi_t - p_t - \gamma u_t + \theta \epsilon_t - \gamma^A l_t - (1-\gamma)y_t^D - \alpha$$

$$(5) \quad c i_t = c({}_t p_{t+1} - p_t) + u_t - \epsilon_t + \delta l_t - b y_t^D - a$$

During most of its existence, the Federal Reserve used the market interest rate (or some surrogate like the level of free reserves) as the operating target. Suppose the Federal Reserve sets the target interest rate at  $i_0$  and supplies or absorbs base money to keep  $i_t = i_0$ .

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<sup>10</sup>A full solution is given in Brunner, Cukierman and Meltzer (1979) by specifying the labor market equations. The additional detail would not alter the conclusions of this discussion. The principal differences that have been neglected are the dependence of  $y_t^D$  on the expected values of the real shocks and the dependence of  $l_t$  on the actual values of the real shocks. The reader who is disturbed by the partial solutions can substitute permanent and actual values of shocks -- real shocks -- for  $y_t^D$  and  $l_t$ . For the analysis that follows what matters is that the responses of IS and LM to the shocks cause  $i_t$  to differ from  $i_0$ .

The stock of base money  $B + \psi_t$  changes only as required to maintain the interest rate at  $i_0$ , which is to say that the stock of money now depends on the real shocks.

$$(6) \quad \psi_t = \psi(\varepsilon_t, u_t)$$

Equations (4) and (5) are shown as solid lines in Figure 1. The slope of LM from eq. (4) is positive in the  $i, p$  plane. The slope of IS is  $-1$ . The price level is  $p_0$ . The policy of fixing interest rates, temporarily at  $i_0$ , makes the interest rate pre-determined at  $i_0$ . Monetary policy keeps the interest rate constant by changing money. Whenever there are real shocks to productivity or to spending and the demand for money, the Federal Reserve changes the stock of money enough to hold interest rates fixed until it decides that the shock is permanent.

Consider the effect of a negative productivity shock,  $du_t < 0$ . From (4) and (5) we compute the elasticities

$$\left. \frac{di_t}{du_t} \right|_{LM} = \frac{-\gamma}{\beta} > 0 \quad \text{and} \quad \left. \frac{di_t}{du_t} \right|_{IS} = \frac{1}{c} < 0.$$

A negative shock shifts both the LM curve and the IS curve to the right in Figure 1. If  $\gamma$  is small, the demand for money changes very little, and interest rates rise. The Federal Reserve offsets the rise in interest rates by increasing the money stock.

$$\frac{di_t}{d\psi_t} = \frac{1}{\beta} < 0$$

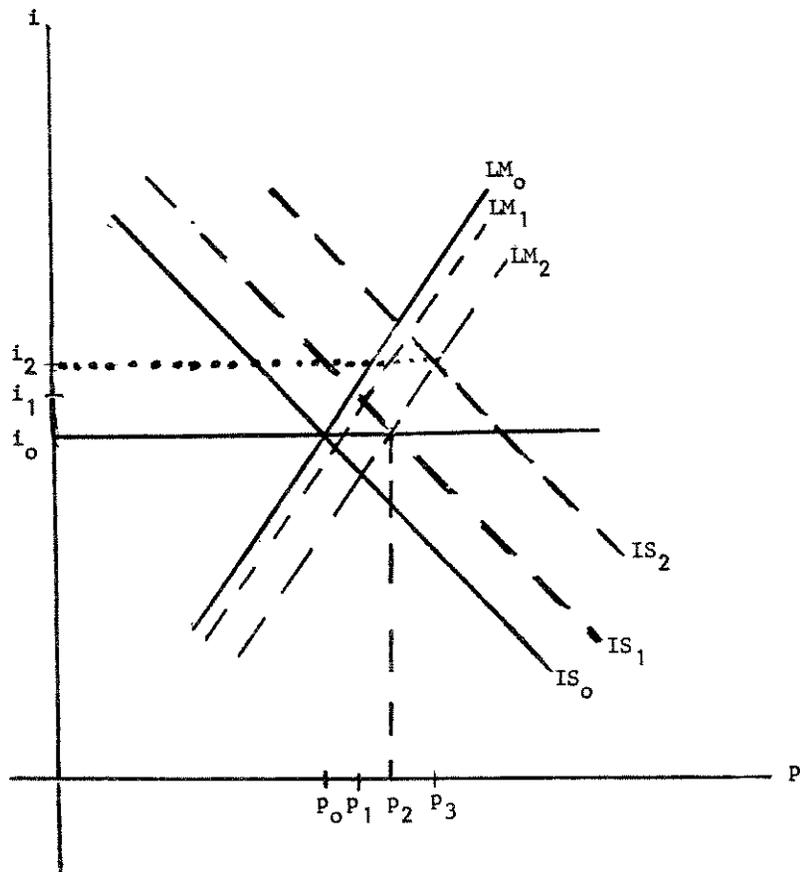


FIGURE 1

If the negative productivity shock is transitory, Federal Reserve policy eliminates any effect on interest rates but increases the price level by more than the increase resulting from the transitory decline in productivity. The dotted lines  $IS_1$  and  $LM_1$  in Figure 1 show the effect of the transitory change in  $u_t$ . Prices and interest rates rise;  $p_1$  is the log of the price level at the intersection of  $IS_1$  and  $LM_1$ , and  $i_1$  is the interest rate. Federal Reserve policy shifts the LM curve further to the right, shown by  $LM_2$ , restoring the interest rate  $i_0$  and increasing the price level to  $p_2$ ;  $p_2 - p_1$  is the relative rate of change in the price level resulting from Federal Reserve policy, and  $p_1 - p_0$  is the rate of price increase caused by the decline in productivity.

The mean values of the transitory shocks are zero so the effect of Federal Reserve's response to transitory shocks is on the variance of rates of price change and not on their average over time. A policy of pegging interest rates increases the variability of the measured rates of price change resulting from transitory shocks. Our earlier finding that the variance of the rate of price change rose during the period in which there were oil shocks is consistent with this implication.<sup>11</sup>

Suppose, however, that the negative productivity shock is permanent, or persistent, not transitory. In this case, the price level fluctuates around  $p_2$  following the increase in money to  $LM_2$ . Because permanent and transitory shocks cannot be observed separately, or

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<sup>11</sup>There are, of course, other causes of variability including the shocks to spending and the demand for money ( $\epsilon_t$ ) and the Federal Reserve's response to these shocks.

separated reliably, people must decide whether the observed rate of price increase,  $p_2 - p_0$ , the change in money,  $\psi_t$ , and other changes have caused a one-time price change or a persistent change in the rate of price change. If the inferences drawn from available information lead people to believe that some part of the change in the measured rates of price change and money are persistent changes in the rates of change, instead of one-time changes in level, the IS curve shifts further to the right. The size of the shift depends on the degree to which the anticipated rate of inflation,  ${}_t p_{t+1} - p_t$ , rises.<sup>12</sup>

The Federal Reserve policy of fixing the interest rate at  $i_0$  sustains the inference that the observed changes in prices and money reflect a persistent increase in rates of change, not a one-time change in levels. The reason is that, when IS shifts to the right the policy of fixing interest rates requires the Federal Reserve to again increase the money stock, shifting LM further to the right.

The additional changes in money and prices reinforce beliefs about the persistence of the changes in money and prices. As the perceived and measured rates of inflation rise, anticipated inflation rises, and there is a further rightward shift in IS. Additional increases in money are now required to hold the market interest rate at  $i_0$ .

Each increase in the stock of money reinforces the belief that there has been a persistent change in the rate of money growth. Each increase in the equilibrium price level reinforces the belief that the

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<sup>12</sup>A run of transitory, negative shocks to productivity produces a similar result.  ${}_t p_{t+1}$  is today's expectation of next period's price. The rational expectation takes the form of a distributed lag, as indicated earlier, so expectations adjust gradually.

rate of price change has increased. The Federal Reserve's policy of maintaining the level of interest rates converts a one-time change in the price level into a series of price changes that strengthen perceptions that there has been a change in the rate of change.

Rational investors "know" the model, so they know that anticipations about the price level adjust slowly because they and others are unable to separate persistent and transitory changes. The policy of holding the interest rates at  $i_0$  implies that the price level will rise as long as the money stock grows. That is, as long as  ${}_t p_{t+1} - p_t$  is positive, the policy of fixing interest rates will require the Federal Reserve to let the money stock rise.

The Federal Reserve can eliminate the bulge in the money stock and in the measured rate of price change by raising the target rate of interest. I have drawn a dotted line at the intersection of  $IS_2$  and  $LM_2$  in Figure 1 to show the rise in interest rates required to keep the price level from exceeding  $p_3$ . The dotted line shows that the required interest rate is  $i_2$ ;  $i_2 - i_1$  is the additional increase in interest rates resulting from Federal Reserve policy. The increase  $i_2 - i_1$  is temporary, not permanent. Once people recognize that the money stock is constant, anticipations of rising prices decay; IS shifts to the left; the market rate of interest falls to  $i_1$ ; and the price level falls between  $p_2$  and  $p_3$ . (The precise level of prices is at the value of  $i_1$  on  $LM_2$ .)

The combination  $i_1, p_1$  is the interest rate and price level combination to which the economy moved following the permanent loss of productivity. It is not an accident that the economy eventually settles at the rate of interest  $i_1$  following the "anti-inflationary" increase in interest rates to  $i_2$ ; it is an implication of the neutrality

of money. Monetary policy, at first, allowed the money stock to rise, then held the money stock constant, eliminated the anticipation of rising prices and allowed the interest rate to decline. The lasting effect of the interest rate policy is a higher price level. The amount of increase depends, of course, on the speed with which the Federal Reserve abandons the interest rate target  $i_t = i_0$ .

This discussion of policy has neglected many complicating features. The adjustment of prices and interest rates has been analyzed as if these changes occur without real effects. The gradual adjustment of employment when rational individuals cannot distinguish permanent and transitory productivity changes has not been emphasized. The case for fixing the level of interest rates is not strengthened by these omitted effects.

A principal result of the policy of fixing market interest rates is that additional changes in prices (and output) are induced by monetary policy. People are forced to decide how much of the observed change in money is persistent and how much is transitory. The determination of the new permanent price level is made more difficult.

The permanent decline in productivity produces a temporary increase in unemployment and a permanent loss of real income. Unemployment rises because people do not recognize instantly that the shock is permanent. Hence, they do not instantly adjust their real incomes (and real wages) to the level they eventually reach. Monetary policy can reduce this cost of adjustment only if the monetary authority can succeed in reducing real wages to their new, permanent level without setting off anticipations of rising prices. The monetary authority must have superior information on the speed with which people recognize the

permanent loss of real income and the speed with which anticipations of price changes form and decay. There is no reason to believe that monetary authorities have information of this kind or are able to set market interest rates in a way that minimizes the cost of adjusting to real shocks. On the contrary, monetary policy produced persistently higher rates of price change following the productivity shocks of this decade.

#### THE CASE FOR GRADUALISM

Reliance on market interest rates as the operating target of monetary policy produced high rates of growth of the monetary base and sustained inflation. The low variance of the long-term average growth of the base suggests that the 8.5% growth rate of the base is perceived as a "permanent" rate of change. To end inflation the rate of growth of the base must be reduced.

If expectations form and decay quickly in the presence of new information, the problem of ending inflation is made easier. A credible policy to stop inflation causes prompt revision of expectations. Revised expectations, and slower growth of base money bring inflation to an end. Rational individuals recognize that sunk costs or contracts must be forgotten, so as contracts are revised, they enter into agreements or commitments that reflect their revised expectations. Even in this case, there are benefits to gradualism if costs of adjustment can be reduced by permitting people to learn about the new environment.

The analysis in the preceding section suggests some of the difficulties people face when forming judgments about the persistent rate of change of money. Some of these difficulties can be reduced if policy

makers announce the intended rate of money growth. Announcements are not sufficient to change anticipations permanently. A principal reason is that policymakers statements are not entirely credible. Past promises to slow money growth and reduce inflation have been followed within a few quarters by renewed expansion. Consequently, rational individuals treat any initial reduction in money growth (or budget expenditures) as temporary, not permanent, changes. An announced reduction in the growth of money, initially, will not be interpreted as a reduction in the maintained rate of money growth.

Gradual reduction in money growth can reduce the cost of lowering the rate of inflation in three ways. First, maintaining the growth of the base at a steady rate lowers the variance of the transitory component and reduces the lag in the formation of expectations. Second, the maintained average rate of money growth falls gradually, so people have time to adjust future commitments to reflect revised expectations. Third, if costs of adjusting to a lower rate of inflation are not proportional to the total adjustment but increase with the rate per period, costs of adjustment are reduced by lowering the rate per period.

If the rate of adjustment of money growth is very low, the variance of the permanent component is low, so the lag in adjustment of expectations increases. If the rate of adjustment of money growth is rapid, the variance of the transitory component increases, so costs of adjustment rise. The optimum rate of adjustment is achieved by increasing the variance of the permanent component and reducing the variance of the transitory component of money growth. This is equivalent to finding the minimum lag in the formation of anticipations.

The policy of gradual, pre-announced reductions in money growth advocated by the Shadow Open Market Committee did not emerge as a solution to the problem of finding an optimal lag. The choice of an optimal policy depends on information that is not yet available. Our proposal, like most policies, depends more on empirical judgments about the length of lags and costs of adjustment than on hard evidence. I have no doubt that future research will find a better path.

#### SOME FINAL SPECULATIONS

The chief difficulty in the policy of gradualism is the length of time required to reach the rate of growth consistent with non-inflationary growth in the economy. If we use the long-run growth of real output as a guide, the rate of base money growth must fall from the current rate of 8% to no more than 3%. If payments technology continues to improve, base velocity will rise in the future as it has for at least the past quarter century. The non-inflationary rate of base money growth is then no more than 1 or 2%.

Is a seven year program of sustained reductions in money growth the best that can be done? I expect not. There is reason to believe that policymakers can increase their credibility by meeting pre-announced targets. Increased credibility permits policymakers to lower the maintained growth rate while lowering the relative variance of the transitory component of money growth. Credible announcements mean that individuals distinguish permanent changes closer to the time they occur by using announcements of proposed changes as a reliable indicator of future money growth.

No one can be very certain about these issues. The evidence on which we rely comes from experience in Germany, Switzerland, the United Kingdom and our own experience in the middle seventies. Each of these experiences suggests that within two to three years at most, the anticipated rate of inflation declines. The rate of price and wage change falls; long-term interest rates decline, and real output rises or accelerates.

Those who desire "incomes policies" to reduce the lag for adjustment might find pre-announced monetary policies more attractive than either the failed incomes policies of the past or present, or complicated, inefficient programs to tax wage and price changes. Instead of announcing the rate of price and wage changes that the government favors, the government can announce the rates of monetary and fiscal expansion that the government intends to maintain. These announcements, if they are credible, help individuals to form expectations about future rates of inflation.

Analysis of the length of the lag in the adjustment of anticipations relates these adjustments to the adjustment of permanent values or maintained rates of change. The evidence we have is neither inconsistent with the theory of expectations that I have sketched nor more consistent with any other explanation I have seen. This is not a strong claim, but it is considerably better founded than the belief that inflation is intractable.

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FEDERAL BUDGET POLICIES OF THE 1970s:  
SOME LESSONS FOR THE 1980s

Michael E. Levy

At the close of the 1970s, the public and the politicians alike perceive inflation as the foremost economic challenge of the day. Other important economic and social issues will carry over into the 1980s; forsaken claims will be revived and new demands are bound to surface. But our effectiveness in coping with all these -- in fact the very survival of this country's traditional economic, social, and political structures -- may well depend on our ability to contain and control inflation in the coming decade.

There is a growing belief that inflation control may require fiscal restraint, a slowing of government spending, a reduction in the size of the realized budget deficit. Yet, as we approach the threshold of the 1980s, I can think of at least five major policy issues in search of solutions, each of which would place new claims on our fiscal resources.

- o Half a decade after the initial "energy crisis," we are still in search of an energy policy that generates widespread public and political support for economically viable solutions.

- o Our efforts to channel the hardcore unemployed into the mainstream of our economy have yet to succeed.

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o Success in slowing the nuclear arms race -- even if attained through SALT II -- may have to be bought at the cost of accelerating defense spending for years to come.

o Welfare reform has been the subject of several aborted proposals of the 1970s; it is bound to resurface as a major issue in the 1980s.

o National health insurance -- a major unfulfilled social promise of the 1970s -- is high on the public agenda of the coming decade.

It is all too easy to add to this list of enlarged public claims -- even at a time when inflation control is our top priority and budget restraint is promulgated. (Note that I have omitted any mention of "safety" or "environmental issues.") Such are the complexities and contradictions of budgetary policy which would seem to place inflation control practically beyond our reach.

Yet my monetarist friends are able to collapse the social and political complexities of inflation control into the simple issue of "monetary integrity." To them, the deep-seated inflation of the last decade-and-a-half is strictly a monetary phenomenon. Its "cause" (like that of every inflation) was excessive monetary growth reinforced, perhaps, by a few nasty "shocks," such as the oil price escalations of 1973 and 1979. Its "cure" (like that of every inflation) is secured through a persistent slowdown in money growth. On a purely technical level, the monetarists have, of course, all the answers. In fact, some of my own econometric exercises have tended to reconfirm their valuable, if somewhat simplistic, generalizations.<sup>1</sup>

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<sup>1</sup>Michael E. Levy, assisted by Steven Malin, International Influences on U.S. Inflation, 1971-1976, a study prepared for the U.S. Department of Commerce, September 7, 1977 (unpublished, available from the author).

However, even if they were formally correct, these simple monetary propositions would tell us nothing about the changes in social attitudes and national priorities which generated the political pressures that bent the economic structure and drove the monetary printing press. They provide no clues as to how and why the economic and social structure was changed and whether this process is reversible or cumulative.<sup>2</sup>

By contrast, analysis of "budgetary policy," such as it is, promises to shed some light on these unanswered questions, because the government budget is a fulcrum of social and political change. Unfortunately, it is difficult, at best, to chart a course of fiscal and budgetary policy over years and decades. In fact, one may even question the existence of a meaningful "course" other than the drift created by the complex and contradictory forces and events that shape the federal budget from year to year.

Obviously, if this "drift" were governed by a powerful current and if "bends" in this current could be discerned, we should expect far-reaching economic implications, because the federal budget powerfully touches all social groups, all segments of our economy. I have interpreted my assignment as the search for such bends in the current.

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<sup>2</sup>For more formal analyses that question the independent contribution of money growth in "explaining" the inflationary process, see, for example, Franco Modigliani and Lucas Papademos, "Targets for Monetary Policy in the Coming Year," Brookings Papers on Economic Activity, 1:1975, pp. 141-63; George L. Perry, "Slowing the Wage-Price Spiral: The Macroeconomic View," esp. pp. 45-46, in Curing Chronic Inflation, Arthur M. Okun and George L. Perry, eds., The Brookings Institution, Washington, D.C. 1978; also Martin Neil Baily, ibid., p. 58.

## VIETNAM: THE ORIGINS OF U.S. INFLATION

There is widespread agreement that the persistent U.S. inflation of the last decade-and-a-half got under way in 1965 as "Keynesian" excess demand inflation.<sup>3</sup> In 1965, rapidly escalating defense expenditures for the Vietnam War were superimposed on a full-employment economy that was on the verge of a private investment boom. Not only did we fail to enact timely tax increases (until the belated ten-percent surcharge of 1968-1969), but our exuberant "guns and butter" (or "guns and Great Society") policy added new and rapidly escalating civilian programs (Medicare, Medicaid, Food Stamps, Job Corps, Model Cities).

Vietnam War costs rose rapidly from about \$100 million in fiscal 1965 to almost \$29 billion at their peak, in fiscal 1969.<sup>4</sup> Total defense expenditures rose by nearly \$32 billion, or 67 percent, during this period; and the share of GNP devoted to national defense advanced from 7.2 percent in fiscal 1965 to 9.5 percent in fiscal 1968 -- its high for the decades of the 1960s and 1970s.

Yet it would be a mistake to attribute the persistence of U.S. inflation first and foremost to the Vietnam War -- even if one's time horizon is limited to the period preceding the oil crisis of late 1973.

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<sup>3</sup>E.g., see Perry, loc. cit., p. 23. Note, however, that some monetarists have pointed out that the onset of this inflation was preceded by about two years of what was considered at that time rapid monetary growth.

<sup>4</sup>These are "full-cost" estimates. For further details and for "incremental-cost" estimates, see Michael E. Levy with Juan de Torres, Delos R. Smith and Vincent Massaro, The Federal Budget: Its Impact on the Economy, fiscal 1973 edition, The Conference Board, New York, 1972, esp. pp. 26-27.

From fiscal 1969 through fiscal 1973 annual expenditures for Vietnam dropped by about \$18 billion in current dollars -- the decline in real terms was, of course, much greater -- while total defense expenditures declined by nearly \$5 billion. The share of GNP devoted to national defense dropped from its 1968 peak of 9.5 percent to 6 percent in fiscal 1973 and continued to decline to 5 percent by fiscal 1979. Yet the large Vietnam "peace dividend" of the early 1970s brought no end to U.S. inflation. When the 1970 recession barely reduced the inflation rate, a ninety-day wage and price freeze was introduced on August 15, 1971. It followed by four phases of wage and price controls that lasted through the third quarter of 1973. (The final decontrol phase ended in April 1974.) Yet these controls brought, at best, a modest and inadequate respite, before the quadrupling of OPEC oil prices pushed the economy into double-digit inflation in 1974.

#### "SHOCKS" AND THE INFLATION OF THE 1970s

A significant part, if not a major one, of the inflation surge of 1973-1974 that resulted in double-digit inflation has been attributed to special factors -- "shocks" of a largely international nature. Three distinct inflationary influences deserve to be distinguished:

- o The depreciation of the external value of the dollar. (It got under way around mid-1970 and accelerated after the closing of the "gold window" on August 15, 1971, hitting bottom in July 1973.)
- o The escalation of agricultural commodity prices, particularly grains, from late 1972 through 1973. (It was caused largely by the prior depletion of U.S. agricultural stocks, the temporary disappearance of the Peruvian anchovies, bad weather and poor crops in many

parts of the world in 1972, the "Russian wheat deal" of 1973, and the worldwide boom that raised consumption of high-protein foods.)

o The sharp rise in the prices of fuels and some industrial commodities, but mainly the quadrupling of OPEC oil prices during the last quarter of 1973.

Elsewhere I have described these special events and reviewed the best available evidence as to their impact on U.S. inflation.<sup>5</sup> This combined inflationary impact seems not to have been significant before mid- or late 1972. It increased rapidly thereafter, appears to have peaked during the second half of 1974, and faded during the second half of 1975.<sup>6</sup> On the basis of econometric estimates, I concluded that "the joint impact of these major identifiable 'international shocks' accounted for about 5.5 percentage points -- or roughly 60 percent -- of the dramatic increase in the inflation rate of the implicit GNP deflator from about 3.5 percent (annual rate) in the second half of 1971 to around 12.5 percent in the second half of 1974. The elimination of this shock-induced inflation during 1975 accounted for over 70 percent of the decline in the inflation rate of the GNP deflator to an average of about 5 percent by the second half of 1976."<sup>7</sup>

Research evidence developed more recently leads me to believe that these estimates of international influences on U.S. inflation may well represent upper limits of these "shock effects." In any case, the

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<sup>5</sup>Michael E. Levy, assisted by Steven Malin, International Influences on U.S. Inflation, 1971-1976, op. cit., esp. chap. 1.

<sup>6</sup>Ibid., chap. 4, esp. Table 10.

<sup>7</sup>Ibid., p. 8.

evidence suggests that U.S. inflation would have remained substantial throughout the first half of the 1970s -- though well below the double-digit level -- even in absence of these special price-escalating international developments. In fact, a convincing case could be made that the "basic" inflation rate embedded in the U.S. economy was trending higher, irregularly but persistently, during the last decade-and-a-half and that this uptrend was masked mainly by temporary deviation caused by the controls of the early 1970s on the one hand, and by special international shocks on the other.<sup>8</sup> Not even the 1974-1975 recession -- by far the most severe of all postwar declines -- was able to brake this long-term (1965-1979) uptrend of U.S. inflation rates.

#### "INFLATIONARY EXPECTATIONS" AND "INFLATION INERTIA"

Most econometric models designed to explain this persistence of U.S. inflation have assigned a major role to "inflationary expectations" that influence future wage agreements and pricing patterns, and to increased "inflation inertia" (a concept which implies simply that the longer inflation persists, the more persistent it becomes). In the words of one leading expert "the significance of ongoing inflation has risen together with the rising rate of inflation."<sup>9</sup>

To the layman, this may seem a bit like a dog chasing its own tail, but for the econometrician, the loop has been closed: econometric

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<sup>8</sup>This uptrend is clearly illustrated by Perry, *loc. cit.*, esp. p. 24, Table 1, when the two periods labelled "Controls (1972-73)" and "Food-fuel explosion (1974-75)" are excluded. The latest international shocks came from the rapid slides in the value of the dollar in 1978 (until November) and in 1979 (May through October), and from the 1979 round of OPEC oil price increases.

<sup>9</sup>Perry, *loc. cit.*, p. 37.

requirements for a technical "explanation" have been satisfied. The end result of these elaborate econometric exercises is a widely accepted model -- Perry calls it a "mainline model" -- that explains 15 years of accelerating U.S. inflation on the basis of a few initial years of excess demand, a few years of price escalations caused by special "shocks," and a lot of "inflationary expectations" and "inflation inertia" designed to link and extend these inflationary spurts and to bridge all the intervening years when inflation should have subsided -- but did not.<sup>10</sup>

I would like to propose a somewhat different approach: a search for fundamental changes in our economic and social system that appear to have originated in the mid-1960s and persisted -- if not gained momentum -- during the past decade-and-a-half. If such structural changes could be identified, and if they carried strong inflationary implications, they would go a long way toward explaining the persistence of inflationary expectations and the increase in inflation inertia. Analysis of U.S. budgetary policies of the last two decades proves to be extremely useful in this search.

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<sup>10</sup>Leading supporters of the "mainline model" are well aware of this difficulty. Thus, Perry notes: "From 1975 through 1977, all available measures of tightness in either labor markets or product markets registered ample slack. And no large upward movements have occurred in particular components of the price level since the Organization of Petroleum Exporting Countries increased oil prices in 1974. Yet despite all these disinflationary developments, the rate of inflation, by any broad measure, has continued at a historically high rate and now shows signs of creeping still further upward."

## U.S. BUDGETARY POLICY: LOOKING FOR TRENDS

Analyses of budgetary policy often tend to be too global in approach, focusing mainly on what is perceived to be the overall expansionary (or restrictive) impact of the budget on the economy. Because of our narrow preoccupation with "fiscal policy" as a major neo-Keynesian tool for economic stimulation (or restraint), we have tended to lose sight of the more complex ways in which the size, composition, and rate of growth of the federal budget may affect the economic system. Moreover, the tendency to focus on short periods -- usually a single fiscal year or two -- and excessive reliance on simple, rather inadequate, measures of "fiscal impact" (such as the "full-employment budget surplus") has compounded the myopia of traditional fiscal analysis.

Since I have chosen U.S. inflation as the focus for the present review of federal budgetary policies, I am concerned mainly with longer-term trends and their implications, rather than with short-term fiscal impact. Such an analysis should pay special attention to those budget components that tend to create special inflationary pressures. It seems to me that national defense spending and transfer payments to individuals deserve special attention in this context.

Defense expenditures have an inherent inflationary tendency. They create employment and income, but do not produce any "market goods," nor do they yield the kind of "public benefits" that are perceived by the "average consumer" as an immediate enhancement of well-being (as, say, public spending for health care, education, or police and fire protection). This inflationary tendency of defense spending

becomes, of course, particularly pronounced in the case of war expenditures.

Among civilian programs, transfer payments to individuals give rise to special inflationary pressures. Designed to redistribute income within the private sector (often in favor of the poor and the needy), transfer payments tend to increase short-term inflationary pressures if the income gainers tend to spend a higher proportion of their marginal income than the "contributors" (as is usually the case). More important for the present analysis, these transfers tend to generate longer-term inflationary pressures in at least two distinct ways:

- o They impair incentives to work and to invest among the "contributors," if not also among the income gainers.<sup>11</sup> Reductions in productivity gains and in growth of real GNP are the more obvious inflationary consequences.

- o If the "contributors" consider themselves reluctant losers (rather than "voluntary donors") -- as may often be the case -- they will strive to recapture what they consider their "rightful" (e.g., traditional or expected) share of real income, or real growth. If the "losers" are concentrated in the productive sector of the private economy, while the income gainers are mainly nonproducers, this attempt at "recapturing rightful shares" will manifest itself in wage and price escalations.

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<sup>11</sup>The list of theoretical studies and empirical research on disincentive effects on "income gainers" from unemployment insurance and welfare payments is too extensive for review here. Lately, additional evidence on this subject has become available from analyses of various "negative income-tax experiments."

With these analytical considerations in mind, I have reviewed trends in total federal budget outlays as well as national defense expenditures and transfers to individuals.<sup>12</sup> The results are summarized in Chart 1 and Table 1. Unemployment compensation has been excluded from transfers to individuals as shown there (but not from my own detailed analyses) because its large cyclical fluctuations tend to mask the trends that concern us here.

#### FOUR PHASES OF NATIONAL DEFENSE SPENDING

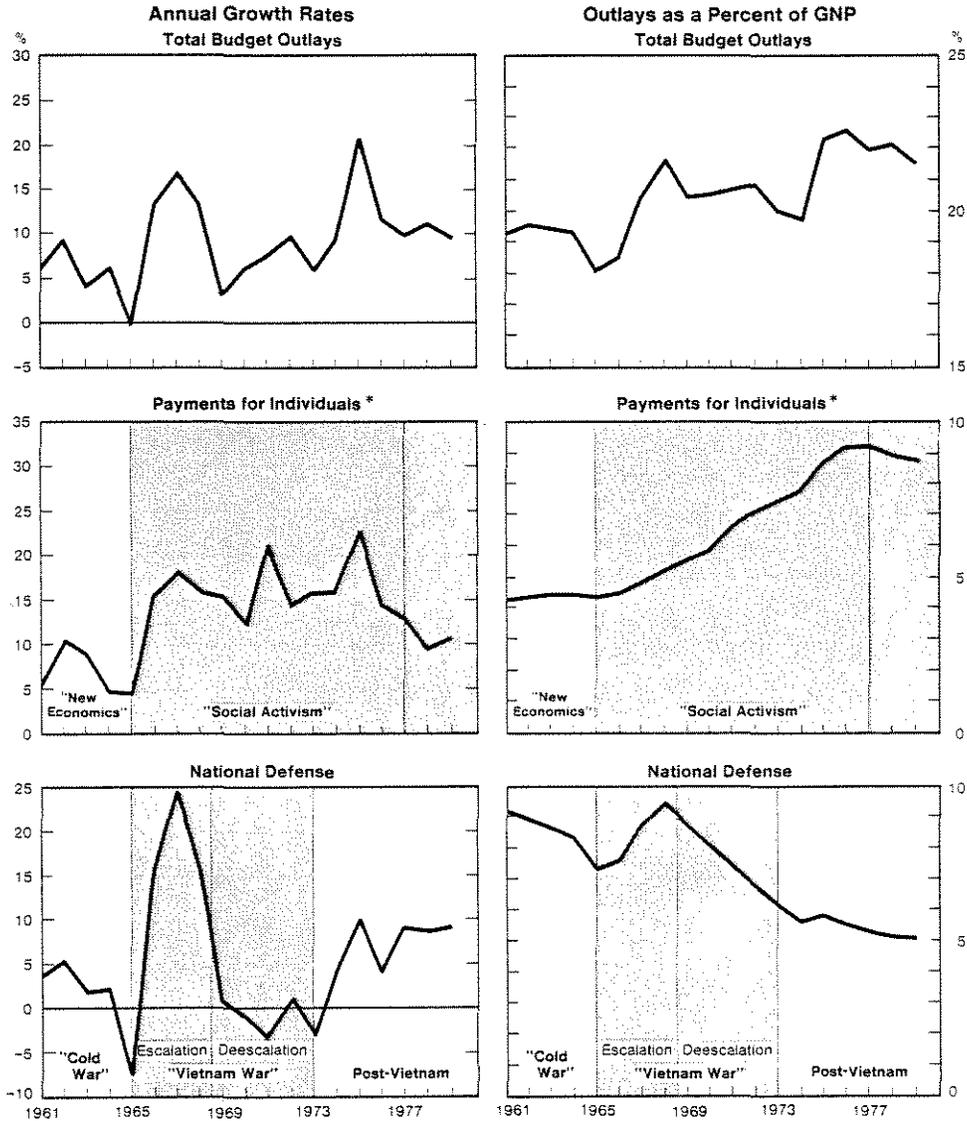
National defense expenditures of the 1960s and 1970s may be divided into four distinct phases: (1) the "cold war" phase preceding Vietnam; (2) the escalation phase of the Vietnam War (fiscal 1966 through 1968); (3) the de-escalation phase until the completion of the troop withdrawal in February, 1973; and (4) the recent post-Vietnam phase. Only during the escalation phase did defense spending grow much faster than GNP; during the pre-Vietnam phase of the early 1960s, it barely advanced, and during the deescalation phase it declined rapidly (see Chart 1 and Table 1). More recently, the growth rate of defense spending has accelerated, but it has remained below the growth rate of GNP. If this latest uptrend continues (as is suggested by the current political climate and initial congressional debates of the SALT II

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<sup>12</sup>For the analysis of transfers to individuals, unpublished tabulations from the Office of Management and Budget on direct and indirect "payments for individuals" were used, rather than federal transfer payments to individuals as tabulated for the national-income-accounts (NIA) budget. The former data are more appropriate for the analysis at hand, since they include, for example, both Medicare and Medicaid, while the NIA data treat Medicaid as a purchase of health services by state and local governments.

Chart 1.

FEDERAL BUDGET OUTLAYS BY MAJOR COMPONENTS, FISCAL 1961-1979



\* Includes all direct and indirect transfer payments, except unemployment compensation, which was excluded here as the major cyclical component.  
Sources: Office of Management and Budget; The Conference Board.

**Table 1**  
**Selected Data for Analysis of Federal Budget Policy, Fiscal 1961-1979**

	<u>1961-65</u> <u>Average</u>	<u>1966-79</u> <u>Average</u>	<u>1961-65</u> <u>Average</u>	<u>1966-69</u> <u>Average</u>	<u>1970-73</u> <u>Average</u>	<u>1974-79</u> <u>Average</u>
<b>Annual Growth Rates</b>						
Total Budget Outlays	5.2	10.8	5.2	11.9	7.6	12.3
Payments for Individuals*	6.6	15.3	6.6	16.1	15.9	14.5
National Defense	1.1	6.7	1.1	14.1	-1.6	7.4
Productivity	3.2	1.6	3.2	2.4	2.0	0.7
Real GNP	4.2	2.9	4.2	4.6	3.2	1.6
Inflation (Implicit GNP Deflator)	1.5	5.9	1.5	3.6	4.9	8.0
<b>Percent of GNP</b>						
Total Budget Outlays	19.1	21.0	19.1	20.3	20.5	21.7
Payments for Individuals*	4.3	7.1	4.3	5.0	6.7	8.8
National Defense	8.5	6.8	8.5	8.7	7.1	5.4
Budget Deficit	0.8	1.7	0.8	1.1	1.5	2.3
Fiscal Thrust	1.4	2.0	1.4	1.5	1.8	2.5
Expenditure Component	1.0	2.1	1.0	2.2	1.7	2.3
Revenue Component	0.4	0.0	0.4	-0.7	0.2	0.1

\*Includes all direct and indirect transfer payments, except unemployment compensation, which was excluded here as the major cyclical component.

Sources: Office of Management and Budget; The Conference Board.

agreement), a point may soon be reached when the share of GNP devoted to national defense will be rising again.

But with the exception of the early Vietnam War escalation -- its contribution to the inflation of the second half of the 1960s was discussed earlier -- defense spending as a percent of GNP has been declining. The decline in the share of GNP devoted to national defense could have been expected to moderate (rather than stimulate) inflationary pressures during the 1970s.

#### TRANSFER PAYMENTS: THE BEND IN THE TREND

Transfers to individuals present a drastically different picture. Fiscal 1965 marks a clear dividing line between the moderate growth of these transfers during the first half of the decade and the much higher growth rates that began with fiscal 1966 and lasted at least through fiscal 1977 (see Chart 1). During fiscal years 1978 and 1979, the growth of transfers to individuals slowed significantly. The share of GNP redistributed through federal transfer programs rose rapidly and persistently from 4.2 percent in fiscal 1965 to 9.1 percent in fiscal 1976 and 1977; it declined slightly during fiscal years 1978 and 1979. Clearly, it is much too early to tell whether fiscal 1977 marked the end of the rapid-growth phase of these transfers and the beginning of a new phase of relative containment, or whether it represents simply a brief "pause." Whether pause or change, this is the first noticeable downward deflection in a trend that started in fiscal 1966.<sup>13</sup>

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<sup>13</sup>Note that payments for individuals grew at an average annual rate of 15.3 percent during fiscal 1966-1979, compare with 6.1 percent during fiscal 1961-1965. As a percent of GNP, these payments averaged 4.3 percent in fiscal 1961-1965, 5 percent in fiscal 1966-1969, 6.7 percent in fiscal 1970-1973, and 8.8 percent in 1974-1979 (see Table 1).

Clearly, fiscal 1965 marked a watershed for transfer programs: it was the end of the "New Economics" and the beginning of a new "Social Activism."

The relatively moderate growth of transfers to individuals during the first half of the 1960s reflected the basic policy approach to the Kennedy Administration's "New Economics." The acceleration of real growth and the reduction in the unemployment rate were to be achieved through stimulation of the private sector, rather than through public programs and an expansion of the government sector. The major policy tools were the liberalized depreciation of 1962, the investment tax credit of 1963, and the corporation and personal income tax cuts of 1964 and 1965. The New Economics proved remarkably successful. During fiscal 1961-1965, the unemployment rate declined gradually toward the 4 percent full-employment target (as defined in the 1960s), real GNP grew at an average annual rate of 4.2 percent and annual productivity gains averaged 3.2 percent. All these were far better performances than those obtained during the 1970s, yet price stability was preserved right up to the onset of the Vietnam War.

The assassination of President Kennedy in 1963 and, in its wake, the assumption of power by Lyndon B. Johnson, the passage of the Civil Rights Act in 1964, and the burning of the inner cities during the long, hot summer of 1965, ushered in a new era of "Social Activism." President Johnson -- one of the great parliamentarians of this century and a great admirer of President Roosevelt's New Deal -- secured the passage of far-reaching new social and economic legislation; this included the Economic Opportunity Act of 1964, the Permanent Food Stamp Act of 1964, the Social Security Amendment of 1965 which created

"Medicare" and "Medicaid," and the Demonstration Cities and Metropolitan Development Act of 1966 which established the new "Model Cities" program.

Many of the new federal programs took the form of transfers to individuals and expanded at a very rapid pace even during the 1966-1968 expansion phase of the Vietnam War. In fiscal 1965, federal expenditures for Food Stamps, Medicare and Medicaid were negligible; by fiscal 1968, they amounted to \$0.2 billion, \$5.3 billion, and \$2.0 billion, respectively; and by fiscal 1978, the latest year for which actual data (rather than estimates) are available, they had risen to \$5.5 billion, \$25.2 billion, and \$10.7 billion -- for a combined total equal to 2.0 percent of GNP.

This rapid expansion of social programs with heavy reliance on transfer payments extended from the second half of the 1960s through the 1970s. After repeated large adjustments in Social Security benefits far in excess of inflation, the entire Social Security program was put under the umbrella of a cost-of-living escalator clause in 1975, while real after-tax take-home pay of many workers and real returns on investment were lacking such protection and declined during a major part of the 1970s.

Rapidly growing transfers, mainly from the producing to the non-producing sectors (such as the retired, the disabled, the nonworking poor), were financed in what would appear to be highly inflationary ways:

- o By frequent large increases in Social Security taxes which are, in the view of many economists, among the most inflationary taxes.

o By large budget deficits that contributed to excessive money growth.<sup>14</sup>

o By inflation itself which fattened the federal government's income-tax take, while eroding real after-tax purchasing power of workers and real after-tax return on investment.

The limited statistics available on the subject tend to confirm this erosion of real purchasing power of the producing sector. For example, real after-tax weekly earnings of nonfarm production workers -- the best measure available from the Bureau of Labor Statistics -- grew at an average annual rate of 2 percent during 1948-1965, as compared with 0.1 percent during 1966-1978 (see Chart 2). Even after allowing for all the limitations of these data, the sharp erosion since

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<sup>14</sup>While there is no simple, positive, short-term relationship between budget deficits and inflation (e.g., deficits may be induced or enlarged by a recession which also tends to curtail inflation), persistent high budget deficits during relatively prosperous periods exert strong upward pressure on money growth. This linkage was illuminated during the September 5, 1979 testimony of Paul Volcker, Chairman of the Federal Reserve Board, before the House Budget Committee.

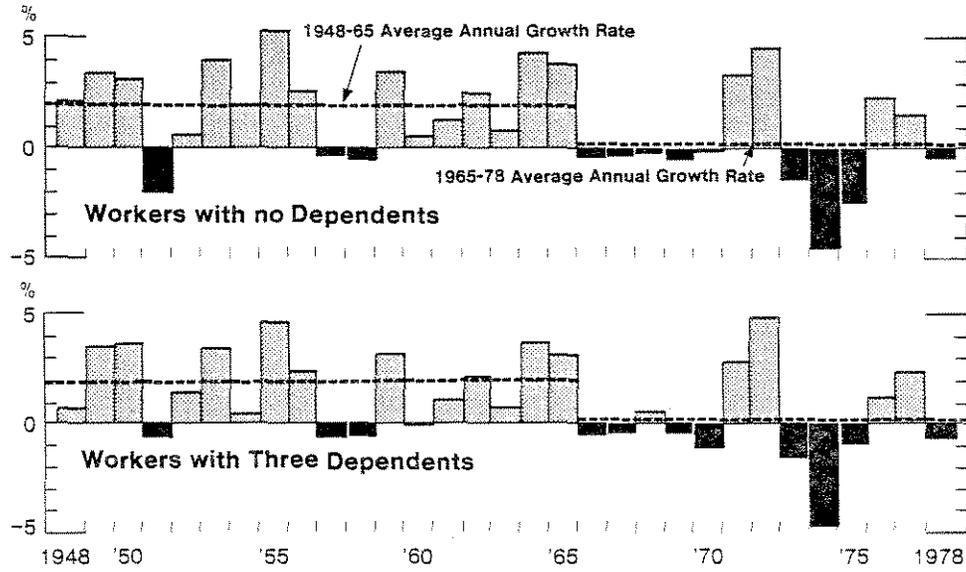
Representative Simon: "There are those who say there is no relationship between money supply and the money supply policies of the Fed and our deficits?... How do you describe it and what kind of relationship is there between that increase in the money supply and the deficits?"

Mr. Volcker: "The degree to which the budgetary deficit puts pressure on the Federal Reserve, puts pressure on the credit markets and through the credit markets pressure on the Federal Reserve to increase the money supply, depends a great deal on what else is going on. And the relationship becomes much more difficult in a boom period than in a recession period. But all things equal, over a period of time, the deficit means at the very least that credit markets will be tighter than they otherwise would have been with a constant Federal Reserve money-supply target and that the money-supply target will have to be increased, which in turn has inflationary repercussions."

Chart 2.

### ANNUAL PERCENT CHANGES IN REAL AFTER-TAX WEEKLY EARNINGS

Private Nonfarm Production Workers



Sources: Bureau of Labor Statistics; The Conference Board.

1965 is obvious. In its 1979 Annual Report, the Council of Economic Advisers discussed the erosion of investment incentives and stressed the need for stimulating investment.<sup>15</sup> After reviewing four alternate measures of profitability, the CEA concluded: "Of the four measures of profitability, only one, the rate of return on stockholders' equity, has regained the 1955-70 average. The other three are well below the 1955-70 average and still further below the average for 1962-66, when investment outlays rose very strongly."<sup>16</sup>

Not only were investment incentives eroded in the 1970s, but a large and increasing amount of investment had to be devoted to "non-productive uses" in order to meet new safety and environmental regulations. In this setting of poor real after-tax gains for workers and low investment incentives, productivity and real growth could be expected to suffer. In fact, average productivity gains have been declining steadily since the first half of the 1960s and real growth of GNP during the 1970s averaged well below that of the previous decade. (For details, see Table 1.)

Thus, not only did the federal government redistribute a steadily rising share of real income -- mainly from the producers to nonproducers -- but this redistribution appears to have contributed to, and was in turn affected by, a slowdown in real growth. Thus, workers conditioned during the 1950s and early 1960s to sizable real-income

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<sup>15</sup>Op. cit., pp. 124-34. The CEA concluded: "If the investment needed to reach our economic goals in 1983 is to be realized, policy actions are required that will strengthen investment incentives and reduce investment costs and risks" (p.130). It went on to recommend "tax reductions designed to strengthen investment incentives."

<sup>16</sup>Ibid., p. 129.

gains were doubly disappointed as they received a smaller part of a more slowly growing pie. In such an environment, attempts to restore real gains of workers through higher wage demands, and to shore up profitability through price increases, could be expected to recur frequently, since they were bound to fail against the power of the federal government to enforce its own priorities.

In the struggle to recapture a "fair share" of real income growth (probably based on the patterns of an earlier and happier period), strongly positioned groups could be expected to do better than those in relatively weaker bargaining positions. Thus, highly paid skilled workers and strong unions would experience less erosion of real gains than unskilled or unorganized labor. Some recent evidence presented by Perry indicates that this is precisely what happened in the 1970s. He concludes that "for the eight years as a whole (1970-77), union wages have risen an average of 1 percent a year faster [than average wages]. But while they have outpaced average wages over this period, the 1.7 percent average annual increase in real wages in the union sector during the 1970s just maintained the average rate of real wage increase of the previous decade."<sup>17</sup>

During the 1970s, the federal government -- unwilling to adjust its own inflationary policies and priorities -- applied wage and price freezes and controls intermittently. These "incomes policies" were intended to suppress inflationary pressures from the private productive sector that had been created, or at least intensified, by the government's own policies. In order to minimize the political

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<sup>17</sup>Loc. cit., pp. 31-32.

pressures that arise from large and frequent tax increases (and that ultimately led to the "taxpayers' revolt" of the late 1970s), the federal government relied mainly on increases in Social Security taxes (which are less "visible" and create less popular resistance than income taxes), on the inflationary feedback that swells income-tax receipts as it erodes real after-tax buying power, and on deficit financing. During fiscal 1961-1965, annual federal budget deficits as a percent of GNP averaged 0.8 percent; this percentage rose steadily to 1.1 percent during fiscal 1966-1969; 1.5 percent during fiscal 1970-1973; and 2.3 percent during fiscal 1974-1979 (see Table 1).

#### FISCAL POLICY: THE EXPANSIONARY "FISCAL THRUST" OF THE 1970s

I have sketched some of the processes through which the diversion of an increasing share of GNP to transfers (mainly from the producing to the nonproducing sector) added inflationary pressures after 1965. Implicit in this analysis were the following two propositions:

- o Direct and indirect transfers to individuals, jointly with national defense spending, dominated the patterns of fiscal growth over the last decade-and-a-half. (But except for the Vietnam escalation phase, transfers were by far the most prominent component shaping fiscal growth.)

- o The budgetary policies and processes described here resulted in far more expansionary budgets in the 1970s than had been the case in the previous decade. Moreover, this increased expansionary thrust originated from rapidly growing spending programs (mainly transfers), rather than from tax reductions.

The extent to which the first proposition is true may be gleaned from Chart 1. To my knowledge, the second proposition is new and has, so far, been unproven. Therefore, it calls for empirical investigation and evidence.

Until recently, I had suspected but had been unable to document satisfactorily that, on the average, fiscal policy of the 1970s had been more expansionary. With the cooperation of the Bureau of Economic Analysis of the Department of Commerce, I have been able to develop reasonably consistent (preliminary) quarterly and annual estimates of "fiscal thrust" back to fiscal 1959 -- just in time for this meeting (see Table 2).<sup>18</sup> This measure consists of an "expenditure component" which measures change in autonomous government expenditures,<sup>19</sup> and a "revenue component" which measures the initial revenue loss (expansionary (+)) or revenue gain (restrictive (-)) from structural changes in tax provisions (rates or base). Each component, as well as total "fiscal thrust" (their sum) is best measured as a percent of GNP, in

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<sup>18</sup>I coined the term "fiscal thrust" in 1974 when I published my first annual estimates in The Federal Budget: Its Impact on the Economy, The Conference Board, New York, 1974, fiscal 1975 edition, p. 12. My first quarterly estimates were published in 1976 (op. cit., fiscal 1977 edition, p. 11). The measure itself is, of course, derived from Keynesian macroeconomic analysis. Previous uses of similar measures may be found in William H. Oakland, "Budgetary Measures of Fiscal Performance," Southern Economic Journal (April 1969), pp. 348-58; E. Gerald Corrigan, "The Measure and Importance of Fiscal Policy Change," Federal Reserve Bank of New York Monthly Review (June 1970), pp. 135-45; Paul W. McCracken, "Federal Budget Discipline and National Priorities of the 1970s," in Michael E. Levy, editor, Major Economic Issues of the 1970s, The Conference Board, New York, 1973, esp. p. 9.

<sup>19</sup>National-income-accounts (NIA) budget data were used; induced expenditures (mainly regular unemployment compensation) are excluded; and long-lead defense expenditures are adjusted from their "delivery basis" to a timing that reflects more closely actual production.

**Table 2**  
**Quarterly and Annual Estimates (Preliminary) of "Fiscal Thrust" and Its Major**  
**Components, Fiscal 1959-1980<sup>1</sup>**

(NIA budget data; \$ billion at seasonally adjusted annual rates)

	Expenditure Contribution <sup>2</sup>		Tax-change Contribution <sup>2</sup>		Fiscal Thrust <sup>3</sup>		As a % of GNP		Fiscal Thrust <sup>3</sup>	
	(1)	(2)	(3) = (1) + (2)	(4)	(5)	(6) = (5) + (6)				
<b>FY 1959</b>	<b>3.5</b>	<b>-0.9</b>	<b>2.6</b>	<b>0.74</b>	<b>-0.18</b>	<b>0.55</b>				
III	5.3	0.3	5.6	1.17	0.07	1.24				
IV	1.6	0.2	1.8	0.34	0.05	0.39				
I	-2.3	-1.4	-3.7	-0.48	-0.29	-0.77				
II	-1.1	0.0	-1.1	-0.22	0.00	-0.22				
<b>FY 1960</b>	<b>1.5</b>	<b>-2.6</b>	<b>-1.1</b>	<b>0.30</b>	<b>-0.52</b>	<b>-0.22</b>				
III	1.2	0.0	1.2	0.25	0.00	0.25				
IV	0.2	-0.6	-0.4	0.04	-0.12	-0.08				
I	-0.5	-2.0	-2.5	-0.10	-0.39	-0.49				
II	0.6	0.0	0.6	0.12	0.00	0.12				
<b>FY 1961</b>	<b>10.2</b>	<b>-0.4</b>	<b>9.8</b>	<b>2.00</b>	<b>-0.07</b>	<b>1.93</b>				
III	1.8	-0.1	1.7	0.36	-0.02	0.34				
IV	2.0	0.0	2.0	0.40	0.00	0.40				
I	2.7	-0.3	2.4	0.53	-0.06	0.47				
II	3.7	0.0	3.7	0.71	0.00	0.71				
<b>FY 1962</b>	<b>7.1</b>	<b>0.7</b>	<b>7.8</b>	<b>1.30</b>	<b>0.13</b>	<b>1.43</b>				
III	1.2	0.0	1.2	0.23	0.00	0.23				
IV	1.0	0.0	1.0	0.18	0.00	0.18				
I	5.4	0.3	5.7	0.98	0.05	1.03				
II	-0.5	0.4	-0.1	-0.09	0.08	-0.01				
<b>FY 1963</b>	<b>4.3</b>	<b>-2.4</b>	<b>1.9</b>	<b>0.75</b>	<b>-0.42</b>	<b>0.33</b>				
III	2.2	0.0	2.2	0.38	0.00	0.38				
IV	1.9	0.2	2.1	0.33	0.04	0.37				
I	-0.2	-2.5	-2.7	-0.03	-0.44	-0.47				
II	0.4	-0.1	0.3	0.07	-0.02	0.05				
<b>FY 1964</b>	<b>5.3</b>	<b>10.1</b>	<b>15.4</b>	<b>0.86</b>	<b>1.64</b>	<b>2.50</b>				
III	-1.0	0.0	-1.0	-0.17	0.00	-0.17				
IV	5.3	0.1	5.4	0.87	0.01	0.88				
I	0.6	4.6	5.2	0.10	0.74	0.84				
II	0.4	5.4	5.8	0.06	0.86	0.92				
<b>FY 1965</b>	<b>2.1</b>	<b>3.4</b>	<b>5.5</b>	<b>0.32</b>	<b>0.52</b>	<b>0.84</b>				
III	0.0	-0.1	-0.1	0.00	-0.01	-0.01				
IV	-0.7	0.0	-0.7	-0.11	0.00	-0.11				
I	0.2	1.7	1.9	0.03	0.26	0.29				
II	2.6	1.8	4.4	0.38	0.27	0.65				
<b>FY 1966</b>	<b>19.9</b>	<b>-2.1</b>	<b>17.8</b>	<b>2.75</b>	<b>-0.29</b>	<b>2.46</b>				
III	5.8	2.9	8.7	0.83	0.42	1.25				
IV	3.4	0.2	3.6	0.48	0.02	0.50				
I	7.2	-5.0	2.2	0.98	-0.68	0.30				
II	3.5	-0.2	3.3	0.47	-0.03	0.44				
<b>FY 1967</b>	<b>21.2</b>	<b>-2.3</b>	<b>18.9</b>	<b>2.74</b>	<b>-0.30</b>	<b>2.44</b>				
III	7.1	-0.5	6.6	0.94	-0.07	0.87				
IV	4.8	-0.2	4.6	0.62	-0.02	0.60				
I	6.9	-1.9	5.0	0.89	-0.25	0.64				
II	2.4	0.3	2.7	0.30	0.04	0.34				
<b>FY 1968</b>	<b>20.4</b>	<b>-5.2</b>	<b>15.2</b>	<b>2.46</b>	<b>-0.63</b>	<b>1.83</b>				
III	2.0	0.0	2.0	0.25	0.00	0.25				
IV	5.6	0.2	5.8	0.68	0.03	0.71				
I	3.3	-5.5	-2.2	0.39	-0.65	-0.26				
II	9.5	0.1	9.6	1.10	0.01	1.11				
<b>FY 1969</b>	<b>7.3</b>	<b>-14.8</b>	<b>-7.5</b>	<b>0.81</b>	<b>-1.64</b>	<b>-0.83</b>				
III	-0.3	-6.3	-6.6	-0.03	-0.72	-0.75				
IV	2.7	-1.0	1.7	0.30	-0.11	0.19				
I	1.5	-7.1	-5.6	0.16	-0.77	-0.61				
II	3.4	-0.4	3.0	0.37	-0.05	0.32				
<b>FY 1970</b>	<b>16.2</b>	<b>5.8</b>	<b>22.0</b>	<b>1.69</b>	<b>0.60</b>	<b>2.29</b>				
III	0.1	3.6	3.7	0.01	0.38	0.39				
IV	4.3	-0.4	3.9	0.45	-0.04	0.41				
I	0.9	3.1	4.0	0.09	0.32	0.41				
II	10.9	-0.5	10.4	1.12	-0.05	1.07				

**Table 2 (continued)**  
**Quarterly and Annual Estimates (Preliminary) of "Fiscal Thrust" and its Major Components, Fiscal 1959-1980<sup>1</sup>**  
(NIA budget data; \$ billion at seasonally adjusted annual rates)

	As a % of GNP						
	<u>Expenditure Contribution<sup>2</sup></u> (1)	<u>Tax-change Contribution<sup>3</sup></u> (2)		<u>Fiscal Thrust</u> (3) = (1) + (2)	<u>Expenditure Contribution</u> (4)	<u>Tax-change Contribution</u> (5)	<u>Fiscal Thrust</u> (4) = (5) + (6)
<b>FY 1971</b>	<b>14.9</b>		<b>7.9</b>	<b>22.8</b>	<b>1.46</b>	<b>0.77</b>	<b>2.23</b>
III	—1.7	6.7		5.0	—0.17	0.67	0.50
IV	3.6	—0.3		3.3	0.36	—0.03	0.33
I	6.7	1.8		8.5	0.65	0.17	0.82
II	6.3	—0.3		6.0	0.60	—0.03	0.57
<b>FY 1972</b>	<b>23.6</b>	<b>—5.1</b>		<b>18.5</b>	<b>2.12</b>	<b>—0.46</b>	<b>1.66</b>
III	1.4	2.6		4.0	0.13	0.24	0.37
IV	3.7	—2.3		1.4	0.34	—0.21	0.13
I	11.7	—8.0		3.7	1.04	—0.71	0.33
II	6.6	2.6		9.4	0.59	0.22	0.81
<b>FY 1973</b>	<b>18.3</b>	<b>—4.8</b>		<b>13.5</b>	<b>1.48</b>	<b>—0.39</b>	<b>1.08</b>
III	—4.9	1.9		—3.0	—0.41	0.16	—0.25
IV	21.4	0.4		21.8	1.75	0.04	1.79
I	1.6	—7.5		—5.9	0.12	—0.59	—0.47
II	0.2	0.4		0.6	0.02	0.03	0.05
<b>FY 1974</b>	<b>31.0</b>	<b>—3.5</b>		<b>27.5</b>	<b>2.28</b>	<b>—0.26</b>	<b>2.02</b>
III	2.3	0.2		2.5	0.17	0.02	0.19
IV	7.0	0.5		7.5	0.52	0.03	0.55
I	7.5	—4.4		3.1	0.55	—0.32	0.23
II	14.2	0.2		14.4	1.01	0.02	1.03
<b>FY 1975</b>	<b>60.0</b>	<b>—1.4</b>		<b>58.6</b>	<b>4.12</b>	<b>—0.10</b>	<b>4.02</b>
III	14.0	0.2		14.2	0.98	0.01	0.99
IV	3.4	—2.8		0.6	0.23	—0.19	0.04
I	23.9	—1.8		22.1	1.64	—0.12	1.52
II	18.7	3.0		21.7	1.25	0.20	1.45
<b>FY 1976</b>	<b>26.0</b>	<b>12.9</b>		<b>38.9</b>	<b>1.60</b>	<b>0.79</b>	<b>2.39</b>
III	9.0	39.8		48.8	0.56	2.54	3.12
IV	13.0	—30.6		—17.5	0.81	—1.91	—1.10
I	4.4	—0.6		3.8	0.27	—0.04	0.23
II	—0.4	4.3		3.9	—0.02	0.25	0.23
III T.Q.	5.9	—0.7		5.2	0.34	—0.04	0.30
<b>FY 1977</b>	<b>46.9</b>	<b>7.0</b>		<b>53.9</b>	<b>2.54</b>	<b>0.38</b>	<b>2.92</b>
IV	19.1	—3.2		15.9	1.09	—0.18	0.91
I	1.2	4.0		5.2	0.07	0.22	0.29
II	9.6	2.5		12.1	0.51	0.13	0.64
III	17.0	3.7		20.7	0.88	0.19	1.07
<b>FY 1978</b>	<b>32.0</b>	<b>—9.3</b>		<b>22.7</b>	<b>1.55</b>	<b>—0.45</b>	<b>1.10</b>
IV	12.9	—4.1		8.8	0.65	—0.20	0.45
I	4.4	—0.3		4.1	0.22	—0.02	0.20
II	2.7	—0.2		2.5	0.13	—0.01	0.12
III	12.0	—4.7		7.3	0.56	—0.22	0.34
<b>FY 1979</b>	<b>45.9</b>	<b>9.8</b>		<b>55.7</b>	<b>1.99</b>	<b>0.42</b>	<b>2.41</b>
IV	17.8	—2.4		15.4	0.80	—0.11	0.69
I	6.0	15.8		21.8	0.26	0.69	0.95
II	8.0	—1.7		6.3	0.34	—0.07	0.27
III prel.	14.1	—1.9		12.2	0.59	—0.08	0.51
<b>FY 1980</b>	<b>33.7</b>	<b>—0.1</b>		<b>33.6</b>	<b>1.36</b>	<b>0.00</b>	<b>1.36</b>
IV est.	10.8	—8.8		2.0	0.45	—0.37	0.08
I est.	7.1	9.7		16.8	0.29	0.40	0.69
II est.	4.8	—0.6		4.2	0.19	—0.02	0.17
III est.	11.0	—0.4		10.6	0.43	—0.02	0.41

<sup>1</sup>Author's preliminary estimates derived from the best available published and unpublished sources. Data revisions and refinements have not yet been completed.

<sup>2</sup>Increases (+) or reductions (—) in "adjusted" NIA budget expenditures. Adjustments include subtractions of changes in "regular" unemployment benefits and of the NIA "defense timely adjustment."

<sup>3</sup>Initial increases (—) or reductions (+) in tax revenues resulting from structural changes in tax bases or rates, based on best published and unpublished estimates from the Treasury Department and the Bureau of Economic Analysis. Timing of the effect of the increases in the tax base on the employee's part of contributions to social security has been changed by author to concentrate this increase mainly in the last two calendar quarters.

T.Q.—Transitional quarter

Sources: Bureau of Economic Analysis; The Conference Board.

order to permit historical comparisons and minimize inflation-induced distortions of these measures.<sup>20</sup>

In short, fiscal thrust and its components are designed to measure the initial expansionary impact originating from the federal budget to which the traditional Keynesian multipliers could be applied (or which could trigger fiscal simulations in econometric models.)

What concerns us for the present analysis are not so much the quarterly, or even the annual, levels or changes in fiscal thrust, but rather the average degree of stimulation of the budget over the broad longer time periods distinguished here. The results, summarized in Table 1, confirm the proposition that, on balance, the budgets of the 1970s were more expansionary than those of the 1960s, largely as the result of much faster spending growth.

Fiscal thrust averaged 1.4 percent of GNP during fiscal 1961-1965, compared with a 2.0 percent average for fiscal 1966-1979. Within the latter period, average fiscal thrust rose from 1.5 percent of GNP during fiscal 1966-1969 to 1.8 percent during fiscal 1970-1973 and 2.5 percent during fiscal 1974-1979. The expenditure component was dominant throughout. But tax cuts provided significant stimulation during the period of the "New Economics"; tax increases provided belated and limited restraint during the escalation phase of the Vietnam War (partially off-setting the "guns and Great Society" spending); and tax changes were nearly neutral over the course of the 1970s.

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<sup>20</sup>A "weighted fiscal thrust" could be constructed (analogous to the "weighted full-employment budget surplus"), but the complications created by such a refinement are hardly warranted in the light of the use of any simple overall measures of fiscal impact and the crudeness of the basic estimates.

## THE NEW "SOCIAL REGULATION"

Changes in the composition and growth of the federal budget and its components were not the only inflationary manifestations of what has been termed here a new "social activism." The same emphasis on social welfare and on the consumer, rather than on real growth and the producer, gave rise to a new wave of "social regulation" in the mid-1960s and the early 1970s.<sup>21</sup> The impetus came from consumer groups, environmentalists, labor unions, civil rights advocates and diverse public interest groups, who felt that the traditional regulatory agencies were not achieving "social goals," such as product safety, clean air and water, equal employment opportunities, safer and healthier working conditions.

In response to these public pressures, twenty new "social regulation" agencies have been created since 1970. Among these, the most important ones are the Consumer Product Safety Commission, the Environmental Protection Agency, the Equal Employment Opportunity Commission, and the Occupational Safety and Health Administration. These new agencies charged with social regulation were among the most prominent "growth industries" of the 1970s; their full-time staff increased from 17,324 in fiscal 1970 to 69,258 in fiscal 1979 (86 percent of the federal government's total regulatory staff). The administrative and

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<sup>21</sup>For further discussion of the evolution of new "social regulation" and some cost estimates, see Michael E. Levy, assisted by Delos R. Smith and Steven Malin, The Federal Budget: Its Impact on the Economy, fiscal 1980 No. 2, pp. 12-14. For an encompassing critical review of the impact of government regulation, see Murray L. Weidenbaum, Business, Government, and the Public, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1977; also Murray L. Weidenbaum, The Impacts of Government Regulation, Working Paper No. 32, Center for the Study of American Business, Washington University, St. Louis, July 1978.

reporting costs imposed on businesses grew accordingly. More important, business had to divert large and increasing amounts of cash flow and capital into investments designed mainly to achieve compliance with new social regulation. A major part of these investments -- regardless of whatever their social benefits -- was "unproductive" in terms of our traditional measures of real output and productivity. In fact, according to the best available estimates, productivity of the nonresidential business sector was 1.4 percentage points lower in 1975 than it would have been under the regulatory conditions of 1967.<sup>22</sup>

The tendency of the new "social activism" to pursue socially desirable goals without any proper regard for economic implications, without due consideration of benefit-cost relationships, also has been felt in the regulatory area. Excessively short deadlines for meeting regulatory standards, detailed prescriptions of specific technological solutions, absolute prohibition of the use of certain substances or processes have often raised marginal compliance costs well in excess of marginal benefits.<sup>23</sup> Consequently, the new social regulation -- regardless of whatever its social merits -- has been highly inflationary. In its 1979 Annual Report, the Council of Economic Advisers

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<sup>22</sup>Edward Denison, "Effects of Selected Changes in the Institutional and Human Environment upon Output per Unit of Input," Survey of Current Business, January 1978, pp. 21-44.

<sup>23</sup>For a discussion of these problems, see the section on "Regulatory Reform" in the 1978 Annual Report of the Council of Economic Advisers (pp. 206-216); also the section on "Regulatory Policy" in the 1979 Annual Report of the CEA (pp. 85-91).

described the dynamics of the inflationary process induced by the new social regulation in the following way:

Once incurred, the costs of regulatory actions enter into the wage- and price-setting mechanisms of the economy. Most of the costs of regulatory action show up not as governmental budget expenditures, but as increased costs to industry. Acceptance of higher prices relative to wages and other money incomes is the way in which society pays for the benefits of social regulation. In fact, however, our economic institutions and measures of prices do not distinguish between these sources of price increases and others. Individuals and groups try to escape paying the costs of regulation by increasing wages and other forms of income to match the higher prices. The result is an additional round of price increases. But the costs of regulation cannot be avoided, and widespread attempts to do so simply add to inflation.<sup>24</sup>

#### SOME LESSONS FOR THE 1980s

My journey along the inflation road of the last decade-and-a-half has ended with a thesis, rather than with solid conclusions. The search for an explanation of the largely unexplained aspects of our inflation (or of the "excessive" money growth, if you will) -- its duration, persistence and steady escalation -- uncovered basic changes in social and political orientation and in our public policy. These changes -- I referred to them as a new social activism -- originated in the mid-1960s and gained momentum in the 1970s. This social activism manifested itself in increased reliance on the federal government to achieve socially desirable goals through new, or enlarged, budgetary and regulatory programs. The consumer and "social benefits" were stressed, often at the expense of higher costs, slower real growth and lower productivity gains. Among consumers -- many of whom are, after

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<sup>24</sup>Op. cit., p. 87.

all, producers as well -- these new social benefits were often to be focused on the nonproducers (who tend to be perceived as "more needy" and, hence, more deserving of "social benefits").

The "costs" of this new social activism included increased disincentives to work and to invest, slower growth of real GNP, and lower productivity gains. A main result was a persistent increase in inflationary pressures of our entire economic system.

If this thesis has any merit, if it contributes in any significant way to the explanation of the ongoing U.S. inflation, the implications are clear: Successful inflation control depends on removal of the fundamental causes of U.S. inflation. Fiscal and monetary policy restraint, while necessary, will not be sufficient. New policies to encourage greater productive efforts and faster real growth will be essential, if price stability is to be restored in the 1980s.

## DISCUSSION OF THE LEVY AND MELTZER PAPERS

William Poole

Michael Levy has assumed the task of explaining the persistence of inflation. I confess, though, that I got off to a bad start at the very beginning of his paper. His second sentence reads: "Monetarist explanations of this deep-seated inflation provide no insights as to its economic, social, and political causes" (emphasis added). And a sentence towards the end of his summary reads: "Fiscal and monetary policy restraint will be necessary, but may not be sufficient [to control inflation]." Fortunately, however, Levy does not really believe these claims. On page two of his paper he says that, "on a purely technical level, the monetarists have, of course, all the answers. In fact, some of my own econometric exercises have tended to reconfirm their valuable, if somewhat simplistic, generalizations."

If we strip away the loaded words such as "simplistic," then it is clear that Levy accepts the basic argument that inflation cannot occur in the absence of excessive money growth. Accepting this proposition, Levy surely does not believe that successful control of inflation would be possible without slowing money growth. Indeed, I cannot believe that Levy would claim that slowing money growth would fail to reduce inflation. He simply does not in fact believe that monetarist explanations provide no insight into the economics of inflation.

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Levy's paper is not about monetarist propositions linking money growth to inflation, but about the causes of excessive money growth. This issue is obviously important. But the reasons monetarists have not paid much attention to this issue to date are, first that it was important to gain agreement that inflation is indeed a monetary phenomenon -- a proposition not widely accepted thirty years ago -- and, second, that the methods of economic analysis may not provide great insight into the causes of excessive money growth. Levy feels that the important issues concern changes in the economic and social structure that have produced an inflationary environment.

Before commenting further let me introduce a qualification to the simple monetarist view. Clearly, insofar as changes in the economic and social structure, in the average tax rate, and in the regulatory burden affect incentives and productivity, the rate of productivity growth may slow down. Reduction in the growth of real output, given the rate of money growth, will raise the rate of inflation. As a first approximation, what matters is the money stock per unit of real GNP. But the slow-down in productivity growth and therefore in output growth can directly account for only a very small part of our inflation. We might be able to explain one to two percentage points of the inflation in recent years by the slow-down in output growth. But that is not what all the shouting is about. If the current rate of inflation were only one or two percentage points above the rate of the early sixties, then the subject of this conference would not be inflation but rather productivity or some other issue.

If I understand Levy correctly, he feels that sociological and non-monetary factors have accelerated the rate of inflation and that

the monetary authorities have been dragged along -- forced to accommodate with money growth the more fundamental factors producing inflation. Even on this view, however, Levy should be much more interested than he is in what he calls the simplistic monetarist explanation.

If the price level were very closely linked to the money stock, with a very small margin of error, then it would be absolutely clear that non-monetary factors could work to increase inflation only insofar as they operated quite directly on the Federal Reserve. The greater the amount of slack or imprecision in the money/price relation, the more credible Levy's argument becomes. If the relation is imprecise, especially in the short run, there is much room for non-monetary factors to produce an acceleration in the rate of inflation directly, and for the Federal Reserve to be drawn into monetary expansion later by pressures to sustain the ongoing inflation process. The very word "accommodation" has the flavor of the central bank responding to an inflation that has already occurred in order to prevent longer-run forces from reversing the inflation through a process involving unemployment.

Levy presents data showing changes in defense spending, government transfers, and so forth. But he presents no evidence whatsoever that even bears on the validity of his claim that factors such as these are responsible for the inflation. Surely time series evidence on United States inflation relative to government spending would be relevant. Also, cross section evidence relating the rate of inflation to the size of the government budget or its rate of growth in different countries would be relevant. Does Levy dispute the common finding that inflation follows rather than leads money growth, a finding that seems inconsistent with the accommodation argument?

Since Levy has presented no evidence, I'm forced to make a few comments based on casual empiricism and a priori plausibility. One of Levy's claims is that the erosion in the growth of real incomes has led workers and firms to seek higher wages and prices in an attempt to recoup their lost income growth. If this argument is true, why did wages and prices fall sharply as people became poorer between 1929 and 1933? Is the short-run Phillips curve -- which shows that wage inflation slows as people become poorer through unemployment -- consistent with Levy's proposition? If growth in taxes has been a major factor in reducing growth in disposable income, then why have we not seen more activity to reduce government spending and taxes rather than the activity claimed by Levy to raise nominal wages and prices? I may be wrong, but Proposition 13 pressures seem awfully weak to me at the federal level, and in any event seem to be a lagged result of the inflation process rather than part of a process that can explain the inflation.

What other evidence beside nominal wage and price increases can we look at? What about strike activity, or union membership, or concentration ratios in industry? All of these would seem to have some possible connection to inflation, or at least as symptoms of the process Levy is talking about. My impression is that these factors all cut in the wrong direction in the United States. Most fundamentally, how can real factors, other than through productivity effects and effects on Federal Reserve behavior, have anything to do with nominal magnitudes?

Levy seems to recognize the importance of explaining Federal Reserve behavior; his footnote on page seventeen deals at some length

with the question of the role of budget deficits in explaining Federal Reserve money creation.

I believe that a number of factors, some of which are closely connected to the ones Levy has emphasized, should be examined in terms of their effect on Federal Reserve behavior. My list of important items is this:

1. Since the mid-sixties there have been consistent underestimates of the natural rate of unemployment by the Federal Reserve and by the economics profession. These underestimates have led to money growth that on average has been too high, even accepting the view that monetary policy should aim for an unemployment rate close to the natural rate.
2. There has been a great over-emphasis on nominal interest rates and a view that short-run money growth doesn't really matter. Although the Federal Reserve has long recognized the importance of long-run money growth, it always seems to be operating in a series of short runs that never add up to a long run.
3. The Federal Reserve has from time to time made political miscalculations based on a combination of overly optimistic forecasts of the effectiveness of fiscal actions and overly optimistic forecasts of when fiscal actions would occur. Probably the best example of this point is the Fed's delay in tightening money in 1967 while waiting for Congress to pass a tax increase.
4. The Federal Reserve's policy horizon has been too short. Ordinarily, the Fed looks ahead long enough to see significant impacts of monetary policy on employment and output but not long enough to see any important impact on prices.

5. The Federal Reserve has used a poor control mechanism based on the federal funds rate. This mechanism has produced a procyclical monetary policy because it makes persistent procyclical mistakes so easy.
6. The Federal Reserve is obviously responsive to political pressures, especially from the administration. These political considerations may have reflected concern, from time to time, over reelection of a President and over reappointment of a Federal Reserve Board Chairman. I continue to believe that Federal Reserve behavior is not at all a simple function of broad societal trends. Accidents of history such as assassinations do happen and are important. While I certainly would not rule out the importance of research on general principles of political behavior, I still feel that neglecting the interplay of personalities and events is a mistake. In an endeavor of this type, traditional historical analysis can provide very substantial insights.

In summary, I believe that Levy provides a misleading interpretation of what monetarism is all about. Monetarism involves the economics of the relations between money, output, prices, and interest rates, and the economic processes responsible for these relations. It does not pretend to offer an economic explanation of money growth and should not, therefore, be criticized for not doing so.

Now that monetarist propositions -- at least in their long-run form -- are so widely accepted, it clearly makes sense to move on to issues concerning why the monetary authorities behave the way they do. Levy has offered a number of interesting hypotheses on this question, but has not provided any evidence. To my taste, his approach is less

productive than it might be because he pays so little attention to the monetary authority itself. Surely the Federal Reserve should be the focal point of the political and sociological analysis. The Fed has far more than a caretaker function. If the factors Levy discusses are important, we need to know how they impinge on the Federal Reserve in order to have much confidence in the argument.

Now let me turn to the paper by Allan Meltzer. I will start with an outline of his argument as I understand it.

First, Meltzer believes that expectational errors affect output. The expectational errors that he stresses are those between the normal, or permanent plus the transitory components. He mentions in passing that this view is different from that of Lucas. While it is true that Lucas uses a spatial rather than a temporal model, I think that it really comes to much the same thing. Additional output can be obtained in the Lucas model only if labor is willing to substitute hours intertemporarily.

In any event, the Meltzer view is that when prices are viewed as temporarily high the level of output is expanded, and when prices are temporarily low the level of output is contracted. Actually, it is probably better for me to state Meltzer's proposition a bit differently: the permanent level of prices depends on the permanent level of the money stock and it is deviations of the actual money stock from the permanent level that are most clearly related to deviations of output from normal full employment output.

Since deviations of output from potential output are related to expectational errors, it is important to investigate the formation of these expectations. To illustrate the basic idea, Meltzer uses a

simple model from the statistics literature in which a time series has known properties consisting of permanent and transitory variations. The inference problem is to use the past data to make the best guess as to the permanent component in the next period. The solution to the problem requires knowledge of the permanent and transitory variances. Given that information, the next-period forecast depends on a distributed lag of the past observations of the series, with the distributed lag weights depending on the permanent and transitory variances. This basic idea can be generalized easily -- although the technical problems may not be solved easily -- by considering more complicated time series models including multivariate frameworks. However, the basic idea comes through quite clearly in the univariate model analyzed by Meltzer. His tables 1 and 2 provide the flavor of how the means and permanent and transitory variances might be extracted from the data for different periods.

Now let me make an important distinction that does not seem very clear in Meltzer's paper. When we examine a policy of gradualism there are two analytically distinct considerations. One concerns the time series of agents' forecasts of permanent values and the magnitudes of expectational errors under the assumption that agents' estimates of the permanent and transitory variances remain fixed and given an assumed money growth path. Here, it is clear that if money growth slows sharply, then the market will interpret the initial slow-down as being largely transitory; if the slow-down is in fact permanent, then there will be a large and persistent expectational error. Under these assumptions, the case for gradualism is compelling. Only with a gradual

decline in money growth would it be possible to avoid large expectational errors and the accompanying losses in output.

An entirely separate issue -- and one that I think is at the heart of the problem -- concerns the way in which agents change their estimates of the permanent and transitory variances over time. Meltzer's discussion is much less helpful on this issue. If the Federal Reserve could convince agents that the money growth process had changed and could convince agents that it would slow money growth sharply, then forecasts of the permanent money stock would not be determined by the old distributed lag on past observations. Under these assumptions, the Fed could slow money growth abruptly without producing expectational errors and there would be no case for gradualism.

Meltzer has not offered any formal analysis of how agents learn from experience to change their estimates of the permanent and transitory variances. Nor has Meltzer offered an analysis of how agents might be led to change their estimates of these variances by the Fed introducing a new policy, a process which would not require any learning from past money stock observations at all. My comment on this point is not meant to reflect a criticism of Meltzer's paper; I do not know of any interesting models of learning and I do not have the foggiest idea of how to go about modeling this process. My point is simply that it is important to separate the issue of calculating permanent values given estimates of the variances from the issue of how agents form new estimates of these variances over time.

The only constructive thought I can offer is that prescriptions as to the best path for the money stock in the future might be based in part on an analysis of the effects of reducing transitory variance.

Money growth has been high in the recent past; if the actual rate of money growth is brought down only slowly from this high initial starting point and if the transitory variance is compressed by making this slow-down smooth and in accordance with announced intentions, then it is possible that the initial effects would actually be to raise agents' estimates of the permanent rate of money growth for the next few periods. This result would occur if a significant part of the recent high money growth had been regarded by agents as transitory and therefore had not been built into their estimates of the permanent part of money growth. The likelihood of the perverse result could be investigated by examining the effect of a reduced transitory variance on money growth expectations for next year in a time series model applied to actual money growth over the past few years.

I have two final comments. First, as John Taylor has emphasized, there is considerable uncertainty about the relative validity of purely expectational theories of the business cycle and theories that stress lagged adjustment due to contracts and similar types of institutions. As Meltzer has noted but not emphasized, the case for gradual reduction of money growth is considerably strengthened by this uncertainty because insofar as the contract view has validity, a sharp reduction in money growth -- even if fully anticipated -- would produce a sharp decline in output.

Secondly, although we have concentrated on economic factors, I think it is worth mentioning political processes. It is not obvious to me that maintenance over a long period of time of a gradual reduction of the money stock is politically feasible. It is certainly conceivable that a quick and dirty reduction of money growth, accepting the

severe output effects that would occur, is the only solution that is politically viable. I am not sure whether or not I believe that a quick purging of inflation would be better politically, and even if I did know what I believe I would not have any idea of why I believed it. Nevertheless, this issue is surely important for a full policy analysis of winding down inflation. An economic analysis of the minimum cost method of reducing inflation is obviously important, but unfortunately it is not at all clear that the cost-benefit calculation that governs the political process is very closely connected to the economic costs and benefits, however firmly we may establish them.

## DISCUSSION OF THE LEVY AND MELTZER PAPERS

Albert E. Burger

What did the experience of the last half of the 1960s and the decade of the 1970s teach us about the effects of monetary policy actions? It did not teach us anything "new." It only gave us another set of empirical observations to support the long-standing proposition that a maintained excessive growth of money will generate an acceleration in inflation and will raise inflationary expectations. The policy actions that engineered the move from price stability in the first half of the 1960s to a 6 percent rate of maintained inflation by 1973 were an accelerated rate of purchase of government securities by the Federal Reserve which resulted in a faster growth of monetary base and bank reserves and, hence, a rise in the trend growth of money from 1-2 percent to 6 percent.

Prior to the mid-1960s there already existed a very large amount of evidence that this would be the expected result of these types of policy actions. Indeed, one does not have to use highly sophisticated methods of analysis to come to this conclusion. Simply a close look at the data should be enough to convince most people of this strong relationship between the growth of money and inflation.

The experience since 1973 has reminded us that price theory can be useful in analyzing macroeconomic developments. Severe supply

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shocks raise the level of prices and, hence, contribute to the measured rate of inflation. However, as 1975-1976 illustrate, these effects do not result in sustained inflation.

Both Meltzer and Levy point out that sustained inflation is a monetary phenomenon. They differ with respect to whether monetary actions are the "fundamental" cause of inflation. Meltzer puts the blame for inflation and its acceleration directly at the door of the Federal Reserve. He rejects the assertion that the Vietnam War, deficits, and government spending of the mid-1960s were the origin of inflation or were the motivating force causing the Fed to expand money. I agree with Meltzer that the Fed must accept the blame for starting and maintaining inflation. The money stock grew at steadily more rapid rates because the Fed allowed it to do so by providing the necessary bank reserves. If the Fed had not supplied more reserves, money growth would not have accelerated and, hence, inflation would not have accelerated. The Fed can make excuses about why it followed such a policy, but the fact remains that it did follow such a policy.

Levy raises the interesting question of why policy moved from one that underwrote price stability to one that underwrote accelerating inflation. His conclusion is that, in the mid-1960s, there were major political and social changes that led to greater social activism on the part of the government (such as a shift toward increased "nonproductive" transfer payments and regulation) that reduced productivity and set off the inflationary spiral. I would interpret his conclusion as meaning the Federal Reserve was caught up in this process and essentially pulled along the path it followed by forces over which it had no control.

There is a growing body of evidence supporting the idea that the factors Levy discusses operated to lower potential real output growth. However, if these factors had not been accompanied by a surge in monetary expansion, there is considerable doubt we would have had the acceleration in inflation that we experienced.

This still leaves open the question of why, despite repeated statements of policy intent to halt inflation, the Federal Reserve allowed its policy actions to feed inflation. If the Fed had actually planned an acceleration in inflation, it could not have followed a program that was better grounded in theory and supported by empirical evidence. I have difficulty accepting the explanation that the Federal Reserve was simply pulled along by the tide of expansionary sentiment. To some extent, that may have been the case. Especially, one can point to the repeated failure of certain members of Congress to accept the interest rate consequences of their deficit spending. However, the basic cause of the high and rising interest rates that have characterized the last 15 years has been the inflation generated by Federal Reserve actions and the resulting rise in inflationary expectations.

I would ascribe the failure of monetary policy to achieve its objective of stable overall prices to a failure to accept and remain committed to a few very basic principles. These are: (1) the primary job of a central bank is to prevent an acceleration in the basic rate of inflation and monetary policy cannot fine tune real output; (2) excessive money growth means an acceleration in inflation; (3) money grows at a sustained, faster rate only when the central bank provides more monetary base; (4) if there is a surge in government demand for credit or private demands for credit or a surge in measured inflation, short-term

interest rates will rise and Federal Reserve attempts to prevent this rise will only ensure that interest rates remain at these higher levels; (5) the Federal Reserve can control the trend growth of money; and (6) although in theory, money growth can be controlled by operating on the federal funds rate, in practice this is a very unsatisfactory procedure. If the Federal Reserve had remained committed to these six basic principles, it seems very unlikely that monetary policy would have followed the path that characterized the last 15 years.

Of the above six principles, the last two have been the hardest for the Federal Reserve to accept: ability to control money and the flaws in a federal funds target. More than anything else, these two items have contributed to the failure to achieve policy objectives. Too often the question of "can the Fed control money?" has gotten mixed up with the question of "should the Fed control money?" If the central bank can control the growth of the monetary base, it can control the supply of money. This should be a lesson that is learned in an introductory money and banking course. During the past 15 years the Federal Reserve has tried to control the federal funds rate, not growth of monetary base and bank reserves. Hence, the Federal Reserve has not "controlled" money.

This is why the most important aspect of the policy actions announced by the Fed's Open Market Committee on October 6, 1979, was the part announcing a change in operating procedures. Primary emphasis was shifted from the federal funds rate to growth of a reserve aggregate. If the Federal Reserve remains committed to this change, monetary actions may start to match the intent of monetary policy.

It is much easier to analyze how we got into our current predicament than it is to state how to get out of it. Obviously, to lower the trend rate of inflation, the growth rates of the monetary base and money must be reduced. However, the objective of monetary policy is not just to slow inflation, but to do so with a minimum loss of real output. As other papers at this conference have emphasized, there is a great deal of uncertainty about the effects of alternative "slowing" policies on real output and employment as well as their short-term effects on the financial markets. Traditional macroeconomic models usually assign a fairly large and prolonged real output effect to anti-inflationary monetary policy. However, as Taylor points out in his paper, recent developments in economic theory raise serious questions about implications of traditional models.

Despite our uncertainty about the exact magnitude of the effects on real output, it is becoming generally accepted that the less the degree of uncertainty about the path of monetary actions the less effect these actions will have on real output and the larger and quicker their effect on inflation. Meltzer discusses this issue under the heading of the "basic inference problem." He shows that, if transitory changes in the growth of money are frequent, it is optimal to observe a relatively long series of observations before concluding that a permanent change has occurred. The past behavior of the Federal Reserve with respect to the growth of money has made this a good rule to follow. The Federal Reserve has announced monetary targets and then repeatedly failed to hit these targets. The Federal Reserve has announced major policy actions designed to slow money growth, as it did in November 1978, and then actually substantially reduced money growth for five months.

However, this was apparently only a transitory change in money growth, as the last six months have completely reversed the pattern of slow money growth.

Hopefully, one lesson that the Federal Reserve has learned is that it must make its policy announcements credible to the public. Credible means taking actions, and maintaining those actions that are consistent with its stated policy intent. Also, when the Federal Reserve makes a major change in its method of implementing policy, it should clearly explain this new procedure. The immediate case in point is the October 6 announcement of a move toward a reserve targeting procedure. To minimize disturbances in financial markets and to have a maximum effect on inflationary expectations, the Federal Reserve should clearly explain the new rules of the game. How much more short-run flexibility does the Fed plan to allow in the federal funds rate? Exactly which reserve aggregate is going to be the new target? What is the Federal Reserve's growth target for this reserve aggregate? How is the Federal Reserve going to project the relationship between the reserve aggregate and money? An improved monetary policy for the 1980s must include answers to these questions.