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THE CASE FOR RAPID GROWTH

A STAFF STUDY

PREPARED FOR THE USE OF THE

SUBCOMMITTEE ON ECONOMIC GOALS AND INTERGOVERNMENTAL POLICY

OF THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

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LETTERS OF TRANSMITTAL

September, 1983

Hon. Roger W. Jepsen,
Chairman, Joint Economic Committee,
Congress of the United States, Washington, D.C.

Dear Mr. Chairman:

I transmit herewith a staff study entitled "The Case for Rapid Growth." The study was prepared by Dr. James K. Galbraith, Deputy Director of the Joint Economic Committee, at my direction, in response to a request from the Senate Minority Leader, Senator Byrd. The study provides an evaluation of the recovery in comparison with past business cycle expansions, an analysis of the recent performance of monetary policy, and a prescription for the monetary-fiscal mix in the period ahead. The principal policy conclusion of the study is that efforts to reduce future budget deficits should be accompanied by a less restrained monetary policy and lower interest rates.

The views expressed in this study are those of the author and do not necessarily reflect the views of the Joint Economic Committee or any Member.

Sincerely,

Lee H. Hamilton,
Chairman, Subcommittee on Economic Goals
and Intergovernmental Policy

September, 1983

Hon. Lee H. Hamilton,
Chairman, Subcommittee on Economic Goals
and Intergovernmental Policy
Joint Economic Committee
Congress of the United States, Washington, D.C.

Dear Mr. Chairman:

Pursuant to your letter to the Minority Leader of July 20, 1983, I am pleased to transmit a study, entitled "The Case for Rapid Growth,"

The study was prepared by me, with assistance from colleagues on the Joint Economic Committee staff and elsewhere, who are acknowledged in the study. I wish especially to thank June Copeland, who prepared the figures and tables, and who otherwise made it possible for me to complete this study in the allotted time. I am, of course, solely responsible for any errors.

To understand recent monetary events requires an accurate perspective on the strength of the recovery, and the probable future course of inflation. Section Two of the study attempts to provide this perspective. Section Three deals with monetary issues specifically, including the matter of velocity, and Section Four addresses recent trends in nominal and real interest rates. Section Five provides an analysis of the interest rate effects of expected future deficits, and concludes with implications for monetary policy and for the fiscal/monetary mix.

Finally, may I record my sorrow that Bob Weintraub, of the Republican staff, is not here to read and respond to this paper? Bob would have disagreed with much of what I have said, but he would have enjoyed the scrap.

Sincerely,

James K. Galbraith,
Deputy Director, Joint Economic Committee

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THE CASE FOR RAPID GROWTH

A Study Prepared for the Use of the Joint Economic Committee

Congress of the United States

By James K. Galbraith

Deputy Director, Joint Economic Committee[1]

1 Summary

In the early summer of 1983, the Federal Reserve shifted monetary policy toward restriction. Implicit in that decision was a fear that the economic recovery might be proceeding too fast, and might lead, too soon, to renewed inflation. The purpose of this paper is to evaluate such fears, and to judge whether they provide sensible support for changes in policy to slow the pace of economic growth.

The first task is to analyze the pace of recovery and its implications for major indicators of economic welfare: inflation, unemployment, and productivity growth. The conclusions are:

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1. The author owes thanks to Andrew Bartels, Bill Buechner, Lucy Ferguson, Paul Manchester, Arnold Packer and David Smith for advice and assistance, to Jeff Shear and Doris Mohrherr for diligent research, and to June Copeland for editing, none of whom bear responsibility for remaining errors. Walt Rostow and John Kenneth Galbraith read an earlier paper developing some of these ideas, now changed beyond recognition. The author is also indebted to Martin S. Feldstein, whose exposition of the opposing viewpoint provides the point of departure for much of this paper. The views expressed herein are the author's own and do not necessarily reflect the views of the Joint Economic Committee or any Member.

- In comparison with past recoveries, the present expansion is not unusually rapid.

- All past expansions, fast or slow, have eventually led to increased inflationary pressures. A slow recovery in the early quarters does not markedly improve the subsequent inflation performance. Nor does a fast recovery make matters worse.

- A more rapid early recovery does mean greater and earlier progress against unemployment and idle capacity, and faster productivity growth.

Therefore, policies that would act immediately to slow the pace of recovery, such as more restrictive monetary policy, combine doubtful benefits with distinct and measurable costs. Such policies may delay inflation, but they do not prevent it. A policy of rapid growth, on the other hand, yields immediate gains in productivity and employment, with little or no increase of inflation in relation to the real economic growth achieved.

Second, the paper reviews the performance of monetary policy, and asks whether monetary stimulus in this recovery implies higher future inflation than would otherwise occur, taking into account the size of expected future deficits. The conclusions of this analysis are:

- Recent cyclical increases of money growth are not abnormal, when considered in light of the recent extreme tightness of monetary policy.

- The prolonged declines in monetary velocity since early 1982 probably do not presage a future burst of rapid nominal demand growth and avoidable

inflationary pressure. It is more likely that these shifts represent a return to velocity patterns of the period before 1978, or that they are structural, reflecting a changed environment of financial market competition.

- Nominal interest rates remain unusually high for the early phases of recovery. However, nominal rates have fallen sharply in relation to their past peaks, and, because private sector perceptions of expected inflation remain high, real rates have fallen sharply since the end of 1982. As private inflation expectations now adjust downward, there is a danger that real interest rates will rise unless nominal rates are brought down further.

- Cutting future deficits, while holding monetary stimulus constant, would not stimulate the economy. Such action might lower interest rates, but only to the extent that expected future deficits are associated with expectations of continued growth and rising inflation. The proposition that future deficits are contractionary, through an autonomous positive effect on current real interest rates, is a novel one for which little evidence exists.

These conclusions imply that the shift to easier monetary policies was necessary for economic recovery, that it has not been excessive, and that it does not presage more inflationary pressure than recovery itself will bring. There is thus no justification in recent policy performance for restrictive monetary policies at this time. To the contrary, monetary policy should aim to sustain expansion at, at the least, a normal rate. Monetary policy should reverse the tightening of early summer, and ease further if signs appear that the recovery is falling below a normal path. In addition, cutting deficits, current or expected, will slow growth. If the benefits of greater capital formation and higher rates of investment are to

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be achieved, the negative effects of deficit reduction on purchasing power must be offset by an equivalent further easing of money.

2 Is the Recovery Too Rapid?

The economic news of 1983's second quarter was at first read by some as evidence of an incipient boom. Revised estimates of Gross National Product for the second quarter of 1983 were released on August 19, 1983. Next day, the Washington Post headlined: **U.S. Economy Roars Ahead at 9.2% Rate in 2d Quarter.** A Commerce Department official was quoted stating that this growth rate was "one of the larger ones on record," and a White House spokesman expressed satisfaction that "the recovery continues to build and pick up steam."[2] A month later, although some commentators had revised their assessments, press reports still referred to the second quarter as "extraordinary," and Treasury Secretary Donald Regan was still predicting that the economy would now "sit up on its haunches and roar."[3] Most recently, estimates putting real growth in the third quarter at 7 per cent show that expansion continues at rates far higher than most forecast at the beginning of the year.

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2. The Washington Post, August 20, 1983, page one.

3. The Washington Post, September 18, 1983, page K1.

2.1 Fears of Inflation

Other officials see a dark side to these rates of economic growth. Martin S. Feldstein, Chairman of the President's Council of Economic Advisers, has warned that they might mean an early return of inflation. In recent testimony, he outlined the mechanism by which this could occur[4]:

> The inflation rate has often been relatively low during the first year of an economic recovery but then has risen substantially in the years ahead... Experience shows that the rate of inflation rises when the level of demand is too high or when it is rising too fast. And once inflation starts to rise, expectations begin to change and the anticipation of further increases in inflation makes it that much more difficult to reduce the rate of inflation. (Emphasis added.)

Underlining Feldstein's fears, in its July forecasts the Administration now predicts rising inflation to begin in 1984, since the estimate of 1983's inflation has fallen, from 5.6 per cent in January's forecast to 4.6 per cent in July, while the estimate for 1984's inflation remains unchanged at 5.0 per cent. (The Administration also assumes that growth will continue but inflation will again decline after 1984. How this is reconciled with Feldstein's analysis of the inflation process is not explained.)

Feldstein's concern is shared by the Board of Governors of the Federal Reserve System. In its July, 1983 report to Congress on monetary policy[5], the Board

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4. Testimony before the Senate Committee on Banking, Housing and Urban Affairs, July 21, 1983, pages 3-4. This document is cited hereafter as "Feldstein's testimony."

5. Board of Governors of the Federal Reserve System, Midyear Monetary Policy Report to Congress Pursuant to the Full Employment and Balanced Growth Act of 1978, July 20, 1983, pages 2-3.

expressed confidence that the "near-term outlook for inflation continues to be reasonably favorable." But:

> ...there are indications that some of the cyclical influences that helped reduce inflation during the recession have waned. With demands for goods and services strengthening, price discounting is diminishing; and the downward pressures on prices and wages in some markets will lessen as orders and labor demand rise. Such developments are to some extent inevitable. What is of critical importance is that these cyclical influences not impair more lasting progress toward reduction in the underlying rate of inflation, as reflected in the interactions of wages, productivity and costs.
>
> Recently, the concerns on that score have been heightened somewhat by several factors. Preliminary indications are that growth in nominal GNP approached 11 percent in the second quarter. That high rate of spending growth is a welcome development insofar as it has come about in the context of accelerated real output growth and moderating prices. However, growth in some measures of money and credit have also been relatively large recently, and growth in nominal spending at the present rate over a sustained period would suggest renewed inflationary pressures. (Emphasis in original.)

For 1984, "...most FOMC Members feel that, with appropriate policies, prices over all are likely to rise in the same range as, or only a shade more rapidly than, in 1983." In other words, at the least, continued declines in inflation are not likely.

Fears of inflation are thus present at the highest levels of the Administration and the Federal Reserve. In both cases, they are not merely due to the fact that economic expansion is underway. Rather, there is concern that the expansion may be too rapid, and that monetary policy may have provided too strong a boost to recovery. Federal Reserve has already, as noted above, effected a modest tightening of monetary policy, in May and June of 1983, in response to this concern. Interest rates began to rise in May, and continued to increase over the summer, while monetary expansion slowed down. By September, there were signs

that these measures were beginning to be felt.

This raises a first empirical question: how rapid is the recovery, and what do such growth rates actually imply for future inflation?

2.2 How Fast is the Recovery?

In February 1983, Administration forecasts were for real economic growth of 3.1 per cent in 1983[6], with most of that in the second half of the year. Actual growth has been much better: 2.6 per cent in the first quarter and 9.7 per cent in the second[7], and by preliminary estimates 7.0 per cent in the third, for an average annual growth rate of 6.4 per cent over the first half. The second quarter performance was high by the general standards of the postwar period, having been exceeded only ten times since 1950.

By the standards of past recoveries, however, this performance is not unusually strong. Five of the seven previous postwar recoveries experienced higher average growth rates in the first three full quarters of expansion, as Table One demonstrates. Given, however, that the preceding recession was second in severity since 1949, one might have regarded even higher growth as normal, since deep recessions should tend to generate rapid rebounds.

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6. Fourth-quarter over fourth-quarter. On a year-over-year basis, the President's budget forecast for 1983 was for growth of only 1.4 per cent.

7. Revised estimate.

Table One

POST-WAR BUSINESS CYCLES

Year:Qtr			GNP Growth Rate				
Trough	Peak	Length (months)	T+1	T+2	T+3	Average T+1:T+3	Average T:P
1949:4	1953:3	45	18.99	11.21	13.89	14.70	6.63
1954:2	1957:3	39	5.92	7.67	10.37	7.99	3.89
1958:2	1960:2	24	9.90	10.04	5.22	8.39	4.99
1961:1	1969:4	106	6.90	5.16	10.61	7.56	4.47
1970:4	1973:4	36	10.26	1.96	3.19	5.14	5.29
1975:1	1980:1	58	9.23	3.64	9.11	7.33	4.59
1980:3	1981:3	12	3.80	9.00	0.64	4.48	4.21
1982:4	NA	NA	2.56	9.7	7.00	6.42	NA

2.3 Does Rapid Growth Cause Inflation?

Simple historical comparisons can be misleading. Some economists argue that all of the post-war recoveries have started too fast, and have led to higher rates of inflation later on, at higher rates of unemployment, than would otherwise have been the case. According to this view, only steady growth at slow rates can put the economy on a sustainable, non-inflationary growth path. The present recovery should, if possible, be the first to begin on such a path.

This view has a wide acceptance, both in academic economics and among policy-makers. Indeed, it underlay the Administration's economic thinking as recently as February, 1983. At that time, the long-range economic assumptions of the President's budget called for slow recovery at rates never exceeding four per cent. Making virtue out of what was then thought necessity, the Administration's long-term forecast showed this to be consistent with progressive defeat of the Phillips Curve: simultaneous lower inflation and lower unemployment.

A theory of marketplace expectations is integral to this argument for a slow start to growth, since the argument is counter-intuitive in straightforward supply-and-demand terms. Rapid growth clearly does the least actual damage to price stability in the early phases of recovery. At such times, labor, capital and commodities are all still in relative surplus, so increased demand means more activity, not higher prices. Current levels of demand are not excessive. Even after a period of rapid growth in an early recovery, rates of capital and labor utilization will remain low. So, such rapid rates do not directly cause, nor directly

lead to conditions that cause, increased inflation.

But, according to the theory, marketplace transactors — companies, workers, and holders of commodities — interpret high rates of growth as portending future excess levels of demand. This can happen in two ways. Marketplace transactors might simply project high rates of growth into the future — boomlet today means boom tomorrow. Or they may conclude that such rapid rates signal that policy-makers have lost their anti-inflationary nerve. They develop expectations of inflation, and begin to behave in inflationary ways, such as demanding inflation premia in credit contracts, and cost-of-living escalators in wage settlements.

In a sense, the expectations-augmented theory of inflation is a theory lifted by its own bootstraps. The theory says that because financial market participants believe the theory, they adjust their behavior in ways that make the theory true. All of this, the theory implies, can be avoided if growth is slower.

The crucial, purported result would be rates of inflation permanently lower than would otherwise be the case. The theory is not simply that inflation can be delayed by slow growth until a later date. It is that it can be permanently forestalled. Indeed, the whole calculus of costs and benefits depends on achieving, through slow growth, a large permanent reduction in inflation.

The record of the May 24, 1983 meeting of the Federal Open Market Committee contains a clear application of this theory, in defense of the decision on that date to tighten monetary policy[8]:

> Several members commented that slightly greater restraint on reserves would be desirable at this point to minimize the possible need for more substantial restraint later, reducing the interest rate impact on financial markets over time and helping to sustain the expansion. Reference was made to the favorable effect such a move might have on market perceptions about monetary policy and the outlook for containing inflation, with the consequence that prospects for stable or declining interest rates in long-term debt markets would be enhanced as the recovery proceeded. (Emphasis added.)

The FOMC's argument is quite specific. It is not the fact that recovery is occurring, that real growth is positive, which engenders inflation expectations. Rather, the cause lies in a perception about speed. "Too fast" means a risk of inflation engendered by doubts about the commitment of monetary policy to fight inflation. So, there must exist a rate which is "slow enough," or "just right," and which does not carry this risk.

It is possible to doubt on theoretical grounds that market perceptions should link high current growth with future inflation. In the real economy, there are forces which work the other way. Rapid growth takes advantage of existing physical capital and the stock of human skills, both of which are depreciating assets which tend to lose their efficiency with disuse. Rapid growth keeps these resources in trim. This improved productivity means smaller increases in unit costs for any given increase of nominal wages. Rapid rates of growth also may cause firms to anticipate an earlier need for more capacity than would otherwise be the case. So

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8. Record of Policy Actions of the Federal Open Market Committee; Meeting Held on May 24, 1983, page 10.

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they plan and undertake investment projects more rapidly than they would do if growth were slow. Rapid rates of growth thus increase productivity immediately and investment with a short lag, both of which would help depress the ultimate rate of inflation.

In this connection, Table One shows that the four longest sustained post-war expansions, including the Ford-Carter expansion of 1975-80, started with four of the five highest growth rates, while two of the three shortest expansions started with the two lowest growth rates.

The link between rapid economic growth in the early phases of expansion and the rate of inflation later on is thus theoretically and, on a cursory examination, empirically ambiguous. To base policy on such a link would only make sense if a deeper look at the historical record shows that it really exists.

2.4 A Theory of Inflation

According to Feldstein:

> **Experience shows that the rate of inflation rises when the level of demand is too high or when it is rising too fast.**

This proposition will be referred to below as "Theory F," for short.

Most fundamental, for our purposes, is the second half of the statement. Theory F contends, to be precise, that expansions which proceed slowly generate increases of inflation which are less, per dollar of real GNP growth, than expansions which proceed quickly. The entire case for slow growth in a recovery depends on this

being true.

Theory F corresponds in its implications to the views of the Administration and the Federal Reserve. It is both cautious and hopeful. Cautious, because it warns that restraint must be applied against inflation at all times — there is no safe period for rapid economic growth. Hopeful, because it holds that sustained expansion without accelerating inflation is possible, provided policies are set right. Feldstein in his testimony[9] is explicit on this point:

> With a continuation of sound policy, inflation should remain essentially stable or decline in the years ahead.

The operational word in Theory F is "demand." Demand is a theoretical concept, for which no single statistical definition is necessarily valid. Choosing such a definition is therefore a vital step in analyzing Theory F.

Feldstein's testimony does not say what he considers the appropriate statistical definition of demand to be. However, one may infer, from the discussion of the economic recovery which precedes his discussion of inflation, that the intent is to measure demand in real terms. Thus Theory F holds that inflation rises when when real economic growth is too rapid, or when the level of production is too high[10].

Feldstein's testimony measures inflation broadly, as the annual rate of change in

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9. Page 3.

10. For some purposes the appropriate definition of demand is the flow of nominal dollar spending or nominal GNP. But since the growth of nominal GNP is the sum of the rate of real growth and the rate of inflation, under such a definition of "demand" Theory F would amount to saying that "when spending rises faster than production, inflation results." The FOMC, in the quotation given, makes this statement, which is true but uninteresting; one would not need experience to show it.

the implicit deflator for the nominal Gross National Product (INFLATION). The rate of real economic expansion is measured by the annual rate of change in real GNP, at 1972 prices (GROWTH).

In designating a variable for the level of demand and output, it is necessary to choose a measure which makes sense of the idea that real production might be "too high." The conventional way to do this is to calculate a ratio of actual production to full employment potential production. But this can be treacherous. It implies reaching conclusions about an appropriate rate of "full" employment, and estimating what real production would be at that level, both of which are difficult tasks. Moreover, if incorporated in a regression equation, such a ratio may interact with other variables in ways which complicate interpretation of the results.

A test of Theory F should also make use of certain information that Feldstein clearly thinks important, namely the relationship between inflation and the timing of the business cycle. In his testimony Feldstein states, "The inflation rate has often been relatively low during the first year an economic recovery but then has risen substantially in the years ahead." This suggests a view of inflation which is state-of-the-economy dependent: inflation rises after recessions if growth is too rapid or if the level of output rises too high. There is a hint of an expectations effect: "Once inflation starts to rise, expectations begin to change..." In other words, the beginning of growth tends, if too rapid, to raise inflation, while the beginning of rising inflation means an adverse psychological change which persists so long as the cyclic expansion continues.

A measure of the level of output and demand which permits taking account of

business cycle timing is the cumulative increase in real Gross National Product over each business cycle. In what follows GAIN is the total amount, in percentage terms, by which real output today exceeds output in the trough quarter of the previous recession. This variable has a great virtue: it is readily calculated with no heroic assumptions, relying only on the GNP statistics as published and NBER business cycle timing[11].

In sum, Theory F is testable. If it is true, then the rate of inflation in any given quarter ought to depend positively on two variables: it should rise when growth is high, and it should rise when the cumulative increase in GNP since the beginning of sustained expansion has been great.

2.5 A Different Theory of Inflation

An alternative hypothesis is that given enough economic growth, inflation eventually follows, irrespective of the rate at which growth occurred, or of how long it took to achieve a given increase of production. We may designate this alternative as Theory A.

Theory A states that the increase in the rate of inflation in each business cycle depends on the increase in real production in that cycle. Therefore the rate of

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11. In evaluating the robustness of the results reported below, numerous other proxies for the level of demand were substituted for GAIN, including an estimated ratio of actual to potential GNP and the ratio of GNP to its past peak. These variables correspond more explicitly to the Keynesian idea of pressures on capacity, and give results which are consistent with the conclusions reported, but not as robust.

inflation depends on two things: the rate of inflation at the time the expansion began, and the total amount that GNP has grown since then. What does not matter is the amount of time elapsed, or whether the increase in real output was fast or slow.

Theory A does not counsel caution. It suggests that restrained growth will not permanently restrain inflation. All business cycle expansions bring with them a future of increased inflation. If there are benefits to faster real economic growth, Theory A suggests they should be enjoyed, since whether the meal is eaten quickly or slowly the check will be the same.

The issue between Theory F and Theory A comes down to an argument over the importance of the rate of real growth in a recovery as a determinant of inflation, insofar as the effects of that rate can be separated from those of a cumulative increase in output.

It is possible to test both Theory F and Theory A in a single econometric equation. Such an equation is given here:

$$2.1 \quad \text{INFLATION} = A + B_1 * \text{GROWTH} + B_2 * \text{GAIN} + B_j * D_j$$

The predictions of Theory F are that the coefficients B_1 and B_2 will be positive and significantly greater than zero. The predictions of Theory A are that B_2 will be positive and significant, but not B_1. The D_j are business cycle dummy variables which permit a rebasing of the inflation rate for each business cycle at its trough level in that cycle. They correspond to each business cycle, trough to trough,

after the second quarter of 1954. The dummies thus capture aspects of the inflation rate which are idiosyncratic to each cycle, while the growth and gain variables capture relationships common to all cycles.

Table Two presents this test of Theory F and Theory A. The variable GAIN has the correct sign and is significant well beyond the .001 level. The variable INFLATION has the wrong sign and is not significant[12]. The equation explains 58 per cent of the variance in quarterly rates of inflation. The coefficient estimates indicate that over the course of each business cycle expansion and the recession which follows, each point of cumulative GNP growth raises the rate of inflation by about one-tenth of a point. This is a small amount, suggesting that inflation does not re-emerge quickly in recoveries from the pressure of growth alone. But such pressures build inexorably over time. Recessions cut inflation by a process which is not completely modeled; then, at the beginning of the next cycle, the base inflation rate becomes built-in and the process begins again.

A more profound understanding of the relation between growth, output gain and inflation can be had by taking into account the influence of productivity changes, which are known to be influenced by growth and to have a negative influence on inflation.

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12. Various lagged values of INFLATION up to two years were also estimated and proved not significant. The value of the Durbin-Watson statistic suggests that the Ordinary Least Squares estimating technique may be inefficient due to the presence of serially correlated residuals. This is because, as will be seen, significant variables have been omitted. The only implication is a possibility that the estimated standard error of the coefficient on GROWTH may be too high, which, if true, would not be helpful to Theory F, since the sign is wrong.

Table Two

A JOINT TEST OF THEORY A AND THEORY F

Dependent Variable = INFLATION

Term	Coefficient	T-Test
CONSTANT	0.155	
GROWTH	-0.014	-0.315
GAIN	0.098	4.72
D[1]	1.49	1.85
D[2]	0.808	0.915
D[3]	0.268	0.405
D[4]	5.630	7.16
D[5]	5.660	7.82
D[6]	6.670	6.72
D[7]	4.74	2.93

R-SQUARED	.58
F-TEST	18.37
DURBIN-WATSON	1.26

D[1] = 1954:3 - 1958:2

D[2] = 1958:3 - 1961:1

D[3] = 1961:2 - 1970:4

D[4] = 1971:1 - 1975:1

D[5] = 1975:2 - 1980:3

D[6] = 1980:4 - 1982:4

D[7] = 1983:1 - 1983:2

Table Three presents the results of estimating equation 2.2, which differs from equation 2.1 only by the inclusion of an estimate of quarterly productivity growth (PRODUCTIVITY-HAT)[13].

$$2.2 \quad \text{INFLATION} = A + B_1 * \text{GROWTH} + B_2 * \text{GAIN} + B_3 \text{PRODUCTIVITY-HAT} + B_j * D_j$$

Table Three shows that when the influence of productivity gains on inflation are estimated separately from those of real growth, the growth rate does independently raise the rate of inflation. As with gain effects, the amount is small, about an eighth of a point per point of increase in growth. However, each point of productivity growth reduces inflation, by nearly a third of a point. Since, as will be shown in the next section, each point of real growth increases productivity by about four-tenths of a per cent, the net effect is that productivity effects roughly cancel rate-of-growth effects on the rate of inflation[14].

The results call attention to the importance of exploiting opportunities for productivity gain. Since the most rapid gains in productivity are known to occur at the beginning of each business cycle expansion, at such times especially growth

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13. The estimate is derived by regression analysis using instrumental variables, which is necessary to avoid simultaneous-equations bias in the coefficient estimates.

14. That is, 0.31 * 0.43 (from Table Four) - 0.12 = 0, approximately. In various alternative specifications the precise coefficient estimates on productivity and inflation proved somewhat unstable, but their ratio remained constant, hence this conclusion appears robust. The T-test on GROWTH and PRODUCTIVITY shows these variables to be significant only at low confidence levels, but, given the serial correlation of the residuals, prudence dictates that they be considered significant.

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Table Three

EFFECTS OF REAL GROWTH, CUMULATIVE GROWTH, AND PRODUCTIVITY GAINS ON INFLATION

Dependent Variable = INFLATION

Term	Coefficient	T-Test
CONSTANT	0.685	
GROWTH	0.120	1.28
GAIN	0.076	3.15
PRODUCTIVITY-HAT	-0.312	-1.63
D[1]	1.51	1.89
D[2]	0.585	0.659
D[3]	0.573	0.839
D[4]	5.39	6.78
D[5]	5.33	7.13
D[6]	6.48	6.49
D[7]	4.75	2.96

R-SQUARED	.59
F-TEST	17.03
DURBIN-WATSON	1.28

can be pursued without flinching. It is only later on, when productivity gains begin to slow, that rapid rates of growth become independently dangerous. Then, policies to sustain increasing productivity become urgent.

Both equations confirm that slow growth does not eliminate pressures for increased inflation. Such pressures are inexorable, if there is to be any growth at all.

Judging from Table Three, if one wishes to predict the rate of inflation, the most important single thing to know is what the rate of inflation was, for whatever reason, at the last business cycle trough. After that, gains in output contribute a slow increase, while independent effects of the rate of growth and the rate of productivity increase may or may not offset each other, depending on how much of one accompanies the other.

The last of the dummy variables reported (D_7) captures the base inflation rate in the current business cycle expansion. It is interesting to note that this rate, while the lowest base rate since the expansion of 1961, is within a single percentage point of the base rate in the 1970-73 and 1975-80 expansions, both of which led eventually to double-digit inflation. Thus, although inflation rates are down, it seems that a fundamental shift back to the non-inflationary environment of the fifties and sixties has not occurred.

2.6 Costs of Slow Growth: Productivity

It appears that there is little or no anti-inflation benefit from a policy of

restrained growth in the early phases of recovery. However, slower growth has costs, in higher unemployment, and in slower growth of productivity. This section presents a measure of the relationship between output growth and productivity gains.

Table Four presents an analysis of the effects of growth, and expansion on productivity. The dependent variable is the annual rate of quarterly increase in output per hour (PRODUCTIVITY). The expected sign on the growth variable is positive, while that on the total gain variable is negative, since productivity tends to slow after long periods of expansion.

The equation captures about half of the variation in productivity growth over the sample. Of this, most is due to the strong association in all phases of the business cycle between real GNP growth and productivity growth: every additional point of the former produces 0.43 points of the latter. The effects of cumulative growth have the expected sign, but they are small. There does not appear to have been a shift in productivity growth trends as a result of factors idiosyncratic to particular business cycles.

The equation clearly shows that a slowdown in the growth rate involves a large sacrifice in the growth rate of productivity. This result also implies that the well-known tendency of productivity growth to rise in early recovery periods is a function of the rapid rates of growth experienced at such times, not an autonomous event that will occur even if growth is slow. Moreover, the negative effect of the gain variable on productivity suggests that if rapid productivity growth rates are foregone in the early recovery period, they cannot be made up in full by more rapid growth later on.

Table Four

COSTS OF SLOW GROWTH: PRODUCTIVITY

Dependent Variable = PRODUCTIVITY

Term	Coefficient	T-Test
CONSTANT	1.67	
GROWTH	0.431	8.05
GAIN	-0.068	-2.81
D[1]	0.071	0.075
D[2]	-0.742	-0.716
D[3]	1.02	1.31
D[4]	-0.721	-0.782
D[5]	-1.02	-1.20
D[6]	-0.706	-0.604
D[7]	0.030	0.016

R-SQUARED	.47
F-TEST	11.65
DURBIN-WATSON	1.77

2.7 Costs of Slow Growth: Unemployment

Table Five presents a theory of the reduction of unemployment. UNEMPLOYMENT is the rate of unemployment, all workers, civilian labor force. GROWTH, GAIN and PRODUCTIVITY are defined as before.

The expected coefficient signs are negative on the growth and gain variables, positive on productivity. That is, rises in growth, and in cumulative production, are expected to reduce the rate of unemployment; rises in productivity will, other things equal, raise unemployment.

The equation explains 85 per cent of the variance in unemployment rates. The three explanatory variables are significant above the .001 level, and have the correct signs. The relationships between gain effects, growth effects and productivity effects help explain why progress against unemployment is slow in the early quarters of an expansion, but increases in the later phases as productivity slows down, and why even slow recoveries produce some unemployment reduction.

The coefficient estimates suggest that each percentage point added to the rate of real growth cuts unemployment by about a fifth of a point, divided between a growth effect of 0.12 and a gain effect of 0.07. From the growth effect one should subtract the deleterious effects of productivity growth on employment, for a net growth effect of about 0.07 and a total (productivity-adjusted growth plus gain) effect of about 0.14, given the relation between real growth and productivity. Thus a 7 per cent growth rate in a single year will cut unemployment by one point. For the range of real growth rates between zero and 7 percent, this result

is strikingly consistent with Okun's law, which stipulates that 3 points of GNP growth above the economy's long-run growth potential are required to reduce unemployment by a single point.

The coefficient estimates on the business cycle dummy variables represent the excess of the rate of unemployment at the trough of each cycle over the rate at the beginning of the sample period, 5.1 per cent. The sequence of rising coefficients reflects the worsening unemployment performance of our time. And there appears to be no evidence that the ability of the economy to absorb the unemployed has improved, per unit of growth in output.

2.8 Conclusions

It appears there is no simple link between the rate of real economic growth and the rate of inflation. The Federal Reserve, the Administration, and others are therefore not justified in asserting such a link as a reason for policies designed to slow economic growth. Instead, a complicated picture emerges, in which some return of inflationary pressures is inevitable with economic expansion, but in which the inflationary effects of more rapid growth are counterbalanced by more rapid productivity gains.

In the early phases of recovery, inflation cannot be avoided by a policy of going slow, nor increased by a policy of going fast. But, slower growth in the early stages of recovery means permanently higher unemployment, and permanently foregone productivity improvements. The record of past business cycle expansions thus does not support a case for slow growth at the outset.

Table Five

COSTS OF SLOW GROWTH: UNEMPLOYMENT

Dependent Variable = UNEMPLOYMENT

Term	Coefficient	T-Test
CONSTANT	5.14	
GROWTH	-0.123	- 6.33
GAIN	-0.068	- 9.32
PRODUCTIVITY	0.128	4.81
D[1]	0.270	0.978
D[2]	1.47	4.85
D[3]	1.57	6.86
D[4]	1.43	5.28
D[5]	3.17	12.71
D[6]	3.48	10.17
D[7]	5.39	9.73

R-SQUARED	.85
F-TEST	69.81
DURBIN-WATSON	1.15

We now turn to the belief that the performance of monetary policy may provide an independent justification for restrictive policies at this time.

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3 Has Monetary Policy Been Too Loose?

A second source of pressure for more restrictive policy is the view that high rates of money growth imply high future rates of inflation. According to this strongly held and long established monetarist position, growth in the money stock above the economy's long run capacity to produce is the ultimate and only cause of inflation. Further, such growth confers no offsetting benefits on the economy that permits it. Monetarists differ as to the precise specification of the relationship between money growth and inflation, but most regard the recent expansion of the monetary aggregates as excessive and as, at the least, courting the eventual revival of inflation.

Feldstein, in his testimony before the Senate[15], categorically endorses the monetarist view:

> Experience shows that faster money growth leads to higher inflation and higher interest rates.

Feldstein asserts that recent M1 growth has been too high, and that it "must be slowed."

This is not the place to review the ancient disputes between Keynesians and monetarists, particularly since the monetarist fear of increased inflation is shared, up to a point, by this paper. Instead, this section will address two subsidiary

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15. Pages 10, 14.

questions, which bear on whether a different monetary policy could have put us on a better course:

- First, how rapid is money growth at the present time, in comparison with past experience; to what extent has monetary policy "pumped the recovery," beyond what was necessary to get any recovery at all?

- Second, is the fall in velocity which has accompanied recent rapid money growth more likely a structural phenomenon, requiring no policy response, or a transitory phenomenon, premonitory of more rapid nominal GNP growth and inflation in the years ahead?

If monetary policy has not been unusually expansionary over the turning point of the cycle, and if the recent rapid falls in monetary velocity will not be offset soon, then both Keynesians and monetarists would agree that a tighter monetary policy would be costly, if not futile. No available alternative monetary policy would exist which would have preserved the recovery while averting the threat of future inflation.

3.1 How Rapid Is Money Growth?

Recent institutional changes which have affected the definitions of M1 and M2 cloud the question of how rapid money growth actually has been. Money Market Deposit Accounts, which have some liquidity characteristics, are counted as part of M2. SuperNOW accounts, which have some savings characteristics, are counted as part of M1. Both are new forms of financial intermediation whose relation to

income and spending is not well understood. Any statement about whether the expansion of M1 or M2 is "too fast" or "too slow" must be qualified by recognition that the statistical aggregates which represent the money stock, M1 and M2, may no longer represent the same behavioral entities that they did in earlier years.

The Federal Reserve, knowing as much as it could know at the time about the public's response to MMDA's and SuperNOW's, did set targets for M1 and M2 expansion in February of 1983. Those targets allowed for a very generous rate of expansion of M2, 7-10 per cent above a base which was not fixed until all of the rapid expansion of M2 through March, 1983 had occurred. The M2 target was not exceeded in the first half of the year. A less generous and flexible target was exceeded for M1, since although the specified range of growth was 4-8 per cent, the base from which it was calculated was fixed in the fourth quarter of 1982, and the rapid growth rates early in the year were not automatically rolled into the base. However the Federal Reserve in February had specifically de-emphasized the importance of hitting its M1 target, and in July it ratified the excess by rolling the above-target growth of M1 into the base for the second half of the year.

Second, M1 and M2 growth are high by historical standards and in comparison with the money growth rates of past cyclical recoveries. The annualized growth rate of M1 from the trough quarter through the second quarter of the recovery (1982:4 to 1983:2) was 13.8 per cent, higher than in any similar period of recovery after 1960, and nearly double the average rate of M1 expansion of 7.03 per cent in such earlier periods. The annual growth rate of M2 in from the trough quarter through the second recovery quarter was 14.06 per cent, compared with an average of 11.2 per cent in the comparable period of previous recoveries. On only one

occasion, the recovery of 1971, did M2 growth from the trough to the second quarter after exceed the present case.

Third, the turn-around in M1 and M2 growth, from the last three quarters of recession to the trough and following two quarters, is not exceptional by historical standards. This turnaround was higher for M1 on one occasion, the recovery of 1980, and higher for M2 in 1971, 1975 and 1980. Thus while rates of monetary expansion are high today in comparison with the past, the acceleration in such growth due to policies fostering recovery is not particularly high.

Table Six summarizes the information presented above. From this information, the Federal Reserve cannot be accused of "pumping the recovery" more than has been required in the past to achieve recovery in the first place. The question is then what the high underlying rates of money expansion portend, if anything, for future levels of nominal demand and inflation. A discussion of velocity is essential to arriving at an answer.

Table Six

Cyclical Increases in Money Growth

Year:Qtr	M1			M2		
Trough	T-4:T-1	T:T+2	Shift	T-4:T-1	T:T+2	Shift
1961:1	0.97	2.64	1.67	5.50	7.22	1.73
1970:4	4.37	7.88	3.50	4.33	14.24	9.91
1975:1	4.04	5.62	1.57	5.16	12.86	7.71
1980:3	2.24	11.98	9.74	5.58	10.67	5.09
1982:4	6.83	13.80	6.97	9.16	14.06	4.90

3.2 How Much Does Velocity Vary?

One cornerstone of monetarism is the proposition that velocity, the ratio of the stock of money to the value of production, is predictable. If so, then rises in the money stock will be transmitted quickly into nominal demand, and hence to inflation. But if not, then the relationship between money growth and nominal demand growth becomes slippery, and it grows very difficult to draw policy inferences from short-term fluctuations in the money stock. If velocity is flexible, or subject to unforeseen structural shifts, then a rise in money growth in a given year may simply be absorbed by the financial system through lower velocity of money, without there necessarily being increased inflationary pressures.

Measured on a quarterly annualized basis from 1959 through 1983, M1, the narrowly defined money stock, has a mean growth in velocity (RV1) of 2.8 per cent per year, with a standard deviation of 4.5, which indicates that about 70 per cent of the observations fall within the range -1.7 to +7.3 per cent. The growth (RV2) of velocity of M2 , defined as M1 plus certain short-term time deposits, is about equally stable in absolute terms: a mean of -.14 per cent and a standard deviation of 4.5 over the same period, for a 70 per cent confidence interval of -4.6 to +4.4 per cent.

Looking at the outlying cases, in the period 1959 to 1983, M1 velocity grew by more than 7.3 per cent in 17 quarters, and fell by more than 1.7 per cent in 14 quarters. M2 velocity grew by more than 4.4 per cent in 12 quarters, and fell by more than 4.6 per cent in 17 quarters.

Most recently, both measures of velocity have been falling sharply, by 7.5 per cent on average over five quarters (through 1983:1) for M2 and by 5.4 per cent on average in the same period for M1. These individually are large but not unprecedented drops for either variable. They are unusual in that both contain the largest single quarterly drop of velocity on record for that aggregate, and both are sustained over exceptional periods of time. There is no postwar precedent for the sustained drop in money velocity since the beginning of 1982. This drop in velocity thus corresponds to the sustained rise in underlying rates of money growth since early 1982 with which we are concerned.

The interpretation of the velocity drop is the crucial issue in deciding whether the rate of money growth has been too rapid. If the falls in velocity represent a

structural shift in the public's demand for money balances, or if there is some other benign explanation, then the drop should be permitted, and not offset with tighter monetary policies. If there has been no structural shift, and therefore the recent falls in velocity will soon be reversed, then one might sustain the monetarist argument for monetary restriction.

3.3 Is Velocity's Fall Structural or Transitory?

There are several reasons why a large and sustained increase in the public's demand for money might be expected under present conditions. If any hold in practice, the sustained drop in the income velocity of money is structural, not likely to be reversed soon, and no cause for a monetary tightening.

3.3.1 Effects of Falling Inflation Perceptions

The first possible explanation is based on the fact that falling inflation reduces the opportunity cost of holding cash balances. If the Administration is correct in its contention that inflation perceptions have been lowered, then there should be a need for a one-shot "level adjustment" of the monetary aggregates to accommodate the public's desire to hold more money. Feldstein's testimony[16] acknowledges this phenomenon, but argues that such an adjustment has already taken place, in the monetary expansion of late 1982:

> It is, of course, always possible that institutional or other factors

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16. Page 15.

> are causing a decline in the M1 velocity..., implying that the current M1 growth is not excessive. Last fall and winter, I repeatedly defended the Federal Reserve's policy of allowing M1 to grow rapidly in the second half of 1982, and explained at that time that the apparently rapid growth was in fact just a one time 'level adjustment' in the stock of money that would permit interest rates to adjust to the lower level of inflation that had already been achieved.

It is difficult to assess Feldstein's assertion that the adjustment has already occurred. He offers no rationale for assigning the particular magnitude of the late 1982 increases in money growth to this particular cause. But it is difficult to see how an ordinary monetary turnaround can finance an ordinary recovery, and at the same time also finance a permanent reduction in inflation perceptions. More likely, the one-shot "level adjustment" has not yet been made fully, since, as will be argued in the next section, the hypothesized reduction in perceptions of inflation is still underway. If this is true, then as the adjustment of inflation perceptions to reality proceeds, further expansion of money relative to income will be necessary.

3.3.2 Velocity's Behavior Relative to Historical Norms

A second possibility is that the fall in money velocity represents a return to the velocity patterns of the period before 1978, when the current period of tight monetary policies began. If this is true, then there is no reason to expect a sharp offsetting rise in velocity in the period ahead, and no reason to attempt to offset recent high rates of money growth.

The evidence for this proposition is seen most readily by examining the velocity of M2, which exhibits virtually no trend over time.

M2 velocity from 1959 through 1977 exhibited a mean of 1.6 and a standard deviation of 0.037, which implies that over 70 per cent of the values fell between

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1.56 and 1.64. Beginning in 1978, however, M2 velocity shifted abruptly upward, to a mean of 1.65 through 1983, standard deviation = 0.05. Thus, for a period of five years, each dollar of M2 had to support an additional three cents of production, compared to the earlier period.

The salient change in the structure of the economy in 1978 was the beginning of a sustained period of tight money and rising interest rates. This period includes defenses of the dollar in 1978 and 1979, a sharp monetary contraction in 1980 and a second one in 1981-2 — possibly the longest sustained effort to induce a recession on record. The high velocity of M2 chronicles, quarter-by-quarter, the efforts of the Federal Reserve to slow the economy by tightening money and credit.

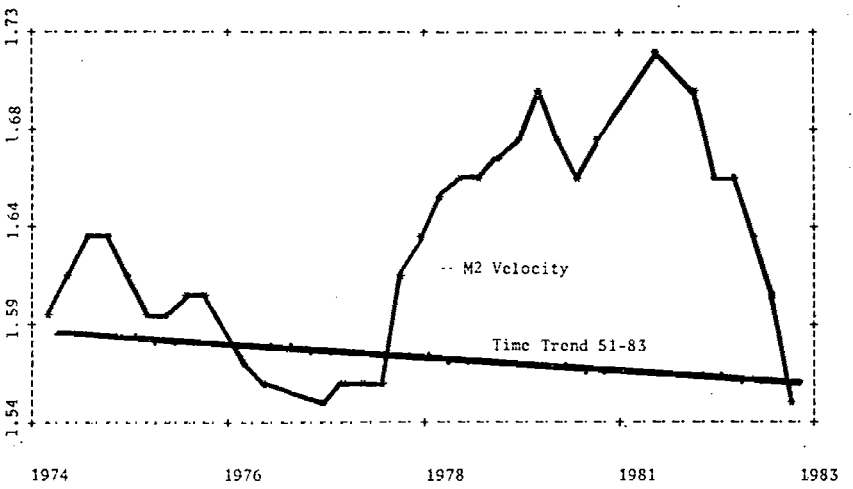
M2 velocity has now returned, for the first time, to levels below 1.6. Naturally, it took a large fall in the velocity of M2 to get there. Perhaps, this only indicates the degree to which monetary policy has now abandoned the policies of 1978-82. If so, and indeed we have now returned to the normal M2 velocity of past times, then there is no reason to expect a spontaneous rebound of velocity in the near future, hence no reason to fear the recent fall.

Figure One shows the course of M2 velocity, relative to a trend line calculated on 1959 to 1977 data. This figure clearly shows how these velocities departed from, and are only now returning to, the levels characteristic of past performance.

3.3.3 Possible Effects of Regulatory Changes on Velocity

Figure One

VELOCITY OF M2 AGAINST TIME TREND



A similar analysis of M1 velocity does show a fall in that variable below its historic trend in the first two quarters of 1983. However, this was a predicted consequence of regulatory innovations. In their February Report to Congress on monetary policy[17], the Federal Reserve Governors wrote:

> ...the rapidly changing composition of M1 since the introduction of NOW accounts at the beginning of 1981 seems to have altered, and made less predictable, the behavior of that aggregate. ...As a result, the relationship of this aggregate to income may well be in the process of change that, by the nature of things, can only be accurately determined as new behavior patterns are reflected in the data over time.

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17. Board of Governors of the Federal Reserve System, Monetary Policy Report to Congress Pursuant to the Full Employment and Balanced Growth Act of 1978, February 16, 1983, page 25.

By July of 1983, the predicted falls in M1 velocity had occurred, and the Board of Governors had this to say[18]:

> The decreases in M1 velocity may reflect in substantial part the changing nature of M1. With interest-bearing regular NOW accounts and SuperNOW's making up a growing share of M1, this aggregate is becoming increasingly influenced by components that bear interest and may attract "savings" as well as transactions balances. ...With market rates registering large declines in the latter half of 1982, the opportunity cost of holding NOW accounts — which carry a ceiling rate of 5-1/4 per cent — fell sharply. As money demand usually responds to falling rates with a lag, this would help explain the strong growth of M1 in the latter half of 1982 and early 1983.

In short, the Federal Reserve itself regards most of the recent decline in M1 velocity as structural, reflecting shifts in portfolio demand, rather than a build-up of transitory monetary stimulus.

A final possibility is that structural shifts in banking industry regulation have created conditions which require the Federal Reserve to supply more reserves to the banking system, and hence to permit the creation of more money, relative to national income[19]. Specifically, the end of the subsidy to borrowers and to banks implicit in the prohibition of interest payments on demand deposits, may imply that an increased volume of money is required to preserve a smoothly functioning banking system. This effect would be independent of the shifts in public financial portfolios due to regulatory innovation.

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18. Board of Governors of the Federal Reserve System, Midyear Monetary Policy Report to Congress Pursuant to the Full Employment and Balanced Growth Act of 1978, July 20, 1983, page 28.

19. This is a policy-oriented variant of the minority view in economics that financial deregulation per se raises interest rates. A discussion of this view appears in Leonard Rapping and Stephen Bennett, "Financial Deregulation, Speculation and the Interest Rate," unpublished paper, revised August 15, 1983.

Up until the mid-seventies, commercial banks benefited from a source of deposits on which they were expressly forbidden to pay interest, namely checking accounts. Such accounts constituted the bulk of the narrow money supply as then defined. At the same time, regulations kept other financial instruments aside from low-interest passbook savings accounts out of the hands of ordinary consumers, and a generally low level of market interest rates held down the opportunity cost of holding cash deposits in checking accounts. A rough equilibrium existed, providing for a given ratio of narrow money to production, at the then-prevalent average spread between bank earnings and bank interest payments, which allowed the number of banks then in existence to earn the return to which their investors had become accustomed.

Rising interest rates in the late seventies interacted with deregulation to unsettle these relationships. Higher interest rates raised the opportunity cost of holding interest-free checking accounts, and induced consumers to seek out alternative stores for liquid funds. Deregulation, responding in part to this fait accompli, began to permit banks to pay interest on checking accounts, and to provide other liquid, interest-bearing assets, which competition obliged them to do.

What followed was a competitive scramble among banks and other financial institutions to maintain their deposit base, and their profitability. However, given competition and absent additional action by the Federal Reserve, the removal of the subsidy meant that the total pool of financial institution profits had shrunk. Some banks and some savings and loans were going to suffer; some would go broke. Gross profitability for the industry could be restored, but only by the provision of additional reserves, either through the discount window, or via open

market operations. While it would not be an overt objective of Federal Reserve policy to sustain bank profitability at any given level, it may be that to allow a sharp fall would imply consequences which, when faced with them, the Federal Reserve will choose to avoid.

There is no solid empirical evidence for this hypothesis, and it would be difficult to confirm. Simple arithmetic can, however, illustrate its plausibility. Bank earnings (E), the difference between what a typical bank pays on money and what it gets for it, may be calculated as the average rate of interest on loans (r_l) times loans (L), less the average rate of interest on deposits (r_d) times deposits (D). Since for any one bank in equilibrium assets must equal liabilities and since, ignoring currency, the sum of all deposits in banks is equal to the money supply (M), bank net earnings may be thought of most simply as a charge, the average spread ($S = r_l - r_d$), on the stock of money.

We have, for bank (j):

$$E_j = r_l * L_j - r_d * D_j$$

$$L_j = D_j$$

$$\text{Sum of } D(j), \text{ all } (j) = M$$

$$\text{Sum of } E(j), \text{ all } (j) = [r(l) - r(d)] * M = S * M$$

The marginal cost of funds to a bank is the interest rate set in the market by supply and demand, including the monetary authority. Assume for purposes of analysis that that rate is held constant by the Federal Reserve. Now suppose a regulatory change occurs which raises the average rate of interest payable on deposits, such as an end to the prohibition of interest payments on checking accounts. Clearly, S, the average spread, and E, earnings, must fall. This can only be avoided if the banks raise the average rate of interest on loans, which is not influenced directly by the monetary authority, or if the Federal Reserve expands the money supply, M, by the same proportionate amount that S falls.

Suppose the same competition among banks which forces the rise in r_d prevents a full offsetting adjustment of r_l. The monetary authority must then choose whether to allow the fall in earnings and to tolerate the risk of potential bank failures which will ensue. If not, it must increase M so as to restore aggregate bank earnings.

Alternatively, if banks act oligopolistically, and do raise r_l to offset the rise in r_d, the monetary authorities must decide whether the resulting higher interest charge against productive economic activity is in the public interest. If not, then the general schedule of interest rates may be shifted back down to desired levels. Again this is done by increasing the stock of money.

In practice, partial adjustment in all three dimensions may occur: higher interest, fewer banks, more money. But whatever the mix, it is clear that deregulation puts some unambiguous pressure on the monetary authorities to create more money, not less. Failure to do so implies social costs either to the industrial or to the financial sector, and the monetary authorities must consider that those costs may

not have been fully understood by the legislative power at the time the decision to deregulate was taken.

3.4 Conclusion

Most probably, monetary velocity is not destined to rebound rapidly, and so inflation and real growth will not be subjected to a near-term additional boost from the recent past performance of monetary policy alone. Yet, fears of such a velocity rebound are the only basis for arguing that recent monetary policy has contributed avoidable impetus to inflation. There is therefore no conclusive reason to tighten monetary policy in response to its own past performance.

4 Have Interest Rates Fallen Enough?

Despite the unexpected speed with which interest-sensitive sectors began their recovery from the recession, the level of nominal and real interest rates remains a principal policy concern. Secretary of the Treasury Donald Regan joins many others in the belief that there are mysterious forces holding up the interest rate. In a speech before the Chemical Manufacturers Association on September 8, 1983, as reported in the Washington Post[20], Regan asserted that real interest rates remained "unusually high," and placed the blame on the banks. He said,

> Other major sections of the American economy are now moving in accord with the current environment of low inflation. And sooner, I hope, rather than later, the banks and other financial institutions must do the same.

Others who share the view that interest rates remain abnormally high for the current phase of the business cycle and state of inflation expectations believe that the responsibility lies with the projected future deficits. This group includes many prominent economists, among them Martin Feldstein, and the editorial board of the Washington Post, which in 1983 alone has already devoted some sixty editorials to the subject.

The next section will examine in detail the relationship between future deficits and current interest rates. Before turning to that task, however, it is worthwhile to place the current level of interest rates, nominal and real, into historical

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20. The Washington Post, Friday September 9, 1983, Page One.

perspective.

4.1 How Much Have Nominal Interest Rates Fallen?

At the crudest level, it is clear that current nominal interest rates remain high. Table Seven compares the nominal interest rates on Treasury bills, one-year Treasury notes, and ten-year Treasury bonds in the most recent quarter with the average level of those variables over the period 1960 to 1983. In each case, the current level is well above average (approximately 30 per cent higher), although in two cases of three it is within one standard deviation of the mean.

Table Seven

Current Interest Rates and Averages, 1960-83

Interest Rate	Value in 1983:II	Average 1960-83
90 Day Treasury Bills	8.4%	6.1% (3.05)
1 Year Treasury Notes	9.2	6.7 (3.19)
10 Year Treasury Bonds	10.5	7.0 (2.82)

(Standard deviations in parentheses)

On the other hand, nominal interest rates have fallen sharply since the peak of

the previous business cycle in the second quarter of 1981. Table Eight shows the ratio of each of three interest rates — Treasury bills, notes and bonds — in the trough quarter of each recession since 1960 to the same rate in the quarter of the preceding peak. As the table shows, interest rates virtually always drop sharply over a recession. In the present case, the proportionate magnitude of the drop is greater than on any previous occasion.

This reflects the unprecedented extent to which the recession of 1981 - 82 was caused by monetary policy in the first place. Nevertheless, the data suggest that the monetary turnaround since July of 1982 has indeed "done its job:" interest rates have fallen by as much as one might expect, given extraordinarily high starting levels and an ordinary reversal of monetary thrust. Nominal interest rates are now generally lower than at the trough of the 1980 recession, although higher than at the starting point of any earlier expansion.

Table Eight

Cyclical Decline Of Interest Rates

Year:Qtr				
Peak	Trough	Tbills T/P	Yrnotes T/P	10yrbonds T/P
1960:2	1961:1	0.79	0.74	0.89
1969:4	1971:4	0.62	0.72	0.94
1973:4	1975:1	0.77	0.85	1.12
1980:1	1980:3	0.68	0.73	0.91
1981:3	1982:4	0.52	0.56	0.72

4.2 How Much Have Real Interest Rates Fallen?

The recent history of nominal interest rates is well-known; one often hears it said that "while nominal interest rates have fallen, real interest rates remain extremely high." And it is high real interest rates which motivate concern in high quarters. Feldstein, in his Senate testimony[21], is explicit on this point:

> Real interest rates are abnormally high for this stage of an economic recovery. During the first year of the past six recoveries the real interest rate on Treasury bills — i.e., the excess of the Treasury bill rate over the rate of inflation — was never as high as 2 per cent. At present, the real interest rate on Treasury bills is at least 5 per cent. Since investors' long-term price expectations cannot be observed, the long-term real rate cannot be measured with precision. Nevertheless, the market rate of more than 11 per cent for long-term governments suggests an unusually high real long-term interest rate... Since it is the real interest rates on short-term and long-term securities that keep the exchange value of the dollar high and cause problems for interest sensitive industries, the current high real rates are a cause for serious concern.

The concern with real interest rates is, on the face of it, somewhat puzzling. It is precisely those sectors of the economy allegedly most sensitive to real interest rates — housing and motor vehicle production in particular — which have recovered most rapidly and unexpectedly from the recession. Counting by the annual rate of new starts, housing production has almost doubled since the trough month in 1982, and motor vehicle production is up over 30 per cent since last fall. This suggests that, if Feldstein's measurement of real interest rates is accurate and pertinent, the relationship between real rates and real activity may have changed so as to

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21. Page 6.

render high real rates less noxious to production. Or, more plausibly, there may be something wrong with the counting.

Feldstein's measure of short-term real interest rates is derived by subtracting from the current Treasury bill rate the current rate of inflation, and it is fair to presume that his notion of the current long-term real rate is informed by the Administration's inflation forecast, which shows inflation peaking at 5.0 per cent in 1984 and declining thereafter. By these measures, real interest rates now range between 5 and 7 per cent, both extremely high by historic standards. There are problems, however, with both underlying estimates of expected inflation.

First, with respect to long-term rates, not everyone shares the Administration view of the prospects for future inflation. For example, the immediate response of bankers to Secretary Regan's speech was to challenge his view on this point. One banker, as reported in the Post, replied:

> There is sort of a latent fear among most investors that while inflation has been reduced substantially, it has also been reduced in the past... In those cases, inflation declined temporarily and began to rise rapidly... We're not at all sure that it's going to stay down.

The consulting firm of Data Resources, Inc., provides econometric confirmation of the fears of the bankers. DRI calculates several measures of expected inflation, all of them higher than current inflation performance or the Administration's own expectations. Two such measures are presented in Figure Two. These are a measure based on the past experience of the personal consumption expenditure deflator (PCEXP), and one based on inflation in the cost of capital (CAPCOST)[22].

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22. To users of the DRI model, these variables are known as KOYCKPCEXP89 and IFIXNRCOSTEXP85, respectively.

These two measures are compared in the figure with the actual pattern of change in the GNP deflator (INFLATION). As the figure shows, expectations of inflation based on the whole recent history of inflation show a far higher current expected inflation rate than a simple extrapolation of the immediate past would suggest[23]. As a result, the true current real interest rate will be lower than conventionally measured.

Data Resources' own measure of the real interest rate on new corporate issues supports the same conclusion. Figure Three presents this variable, compared to its own mean level for the period 1951 - 1983[24]. The figure shows that, by the method of computation employed, real interest rates have in fact dropped sharply since the end of 1982, and are now nearly at their average level of the entire post-war period. These rates are still high by the standards of the mid-seventies. They are not high by the standards of the sixties. There is no reason to suppose such real rates to be incompatible with continued growth, so long as fiscal policy remains expansionary.

Whether such high inflation expectations and low perceived real rates of interest are reasonable is almost immaterial. At any time, different people believe different things about the future; there will be a distribution of individual inflation

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23. A non-econometric source points the same way. The "leading index of inflation" compiled for the Committee to Fight Inflation by the Center for International Business Cycle Research at Columbia University rose in May, 1983 for the fourth consecutive month. Dr. Geoffrey Moore, Director of the Center, refers to this as an "early warning signal;" the index has in the past led rises in inflation by seven to twelve months.

24. The variable is computed on yet another, slightly different expected rate of inflation. Either of the variables of Figure Two, if used instead, would yield lower perceived real rates at the present time.

Figure Two

MEASURES OF ACTUAL AND EXPECTED INFLATION

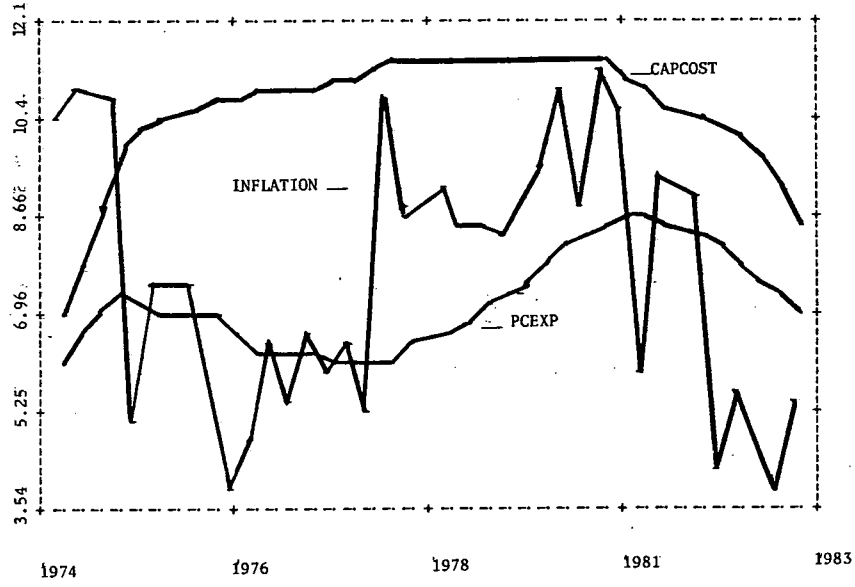
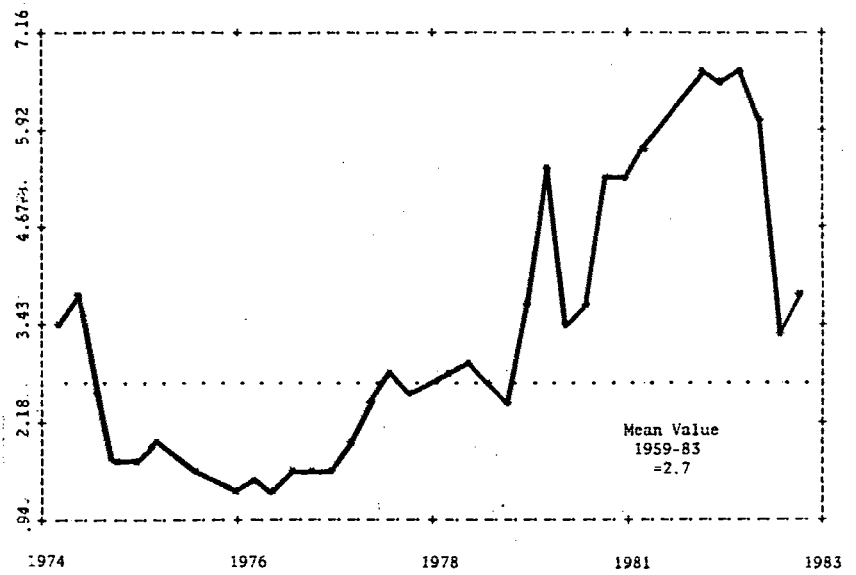


Figure Three

REAL INTEREST RATES AS CALCULATED BY DRI



expectations and perceived real interest rates. Without question, the Administration's long-range inflation forecast is below that of most private parties, partly because private inflation expectations are based on past history including the very high inflation rates up until 1981, which the Adminstration believes it has vanquished, and partly because private parties rightly do not see the consistency between continued growth and falling inflation after 1984.

That being so, real interest rates as perceived in the market are lower today than as perceived in the Administration. And it is market perceptions, not government statements, which govern private behavior with respect to housing, automobile purchases and business investment.

Ironically, the adjustment of market perceptions about inflation to reality may itself pose a grave threat to sustained economic expansion.

It is likely, for the time being, that inflation performance will continue to appear good. If so, private inflation expectations will continue to fall. If nominal interest rates do not also fall, perceived real interest rates, now temporarily low, will rise. As they rise, they will threaten to choke off the recoveries of housing, automobiles and investment which the temporary confluence of falling nominal rates and high inflation expectations made possible in early 1983[25].

This rise in real interest rates is already occurring, as Figure Three shows. To

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25. Lawrence Summers, in "The non-adjustment of nominal interest rates: a study of the Fisher effect," NBER working paper No. 836, January, 1982, points out that the failure of nominal interest rates to adjust to falling inflation, far from being abnormal, is the characteristic if perverse pattern of the entire history of this relationship. A proper drop in nominal rates to maintain real rates at a constant level, though desirable, would be an historical aberration.

prevent it from continuing, nominal interest rates must be brought down as inflation expectations continue to fall.

Feldstein's estimate of the short-term real interest rate relies on conventional interest rate theory, according to which long rates are equivalent to a sequence of expected short rates and short rates are determined by lenders' real required return and the current rate of inflation. Future expected inflation affects expected future short rates and current long rates, but plays no role in current short-term rates of interest. From this assumption, it follows that short-term real interest rates are now abnormally high.

This view of short-term rates, in which future expectations play no role, is incidentally inconsistent with the belief that future expected deficits are at fault for high present real interest rates. If theory requires that expected future inflation enter present interest rates only by twisting the term structure (and raising long rates relative to short), as Feldstein believes, then theory must also require that expected future deficits act in the same way. So, future deficits cannot influence current short-term real rates any more than future inflation can, and some independent explanation for high real short term rates must be found.

The conventional view of real short-term interest rates implicitly assumes that lenders to the Federal government share the government's expected rate of inflation, and that the government's preferred composition of the debt corresponds to the preferences of lenders[26]. If these assumptions do not hold, then the

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26. Technically, the assumption is that lenders' cross-price elasticity of demand for short-term and long-term debt instruments is zero.

assumed independence of expected future inflation and current nominal short-term rates may not hold either.

Suppose that the lender has in mind a rising future inflation rate while the government foresees a falling one. Suppose further that the Federal Reserve is not monetizing the debt or pegging the price of bonds, so that long interest yields are set to cover lenders' rising inflation expectations, not the government's falling inflation expectations (the current situation). The government may then wish to minimize future interest costs by issuing short-term paper, rather than pay inflation premia on long borrowing it considers too high. But lenders may want to lend long, partly because their inflation expectations are covered in such markets, partly to save on transactions costs, partly because the risk is there that future short rates will be lower than present ones, partly to enjoy possible speculative capital gains if the government is right and they are wrong. If insufficient long bonds are made available by the government, short bill yields must rise until lenders are prepared to take them instead. Under such circumstances, short paper will not sell unless it competes with long paper in borrowers' portfolios. The 90-day bill becomes nothing more than a renegotiable instrument of long-term borrowing, fully contaminated by the lenders' long-term inflation expectations. High future inflation expectations thus must be deducted from the current nominal rate of interest in computing the real rate, with the result again that the true real rate is lower than conventionally measured. There will be an apparently high real short term rate of interest. But it will be a mirage.

The conclusion reached previously applies again: Real short term interest rates are not as high as most people believe at the moment. But, as private inflation

expectations continue to fall, they will rise again in the months ahead unless policy changes. Easier monetary policy and lower nominal interest rates will be necessary, not to accelerate recovery, but simply to keep real interest rates stable.

4.3 Conclusion

This section has suggested that private inflation expectations are now higher, and perceived real interest rates lower, than official opinion admits. To the limited extent that this finding reflects a true inflation peril, it suggests that policy measures other than slow growth and restrictive monetary and fiscal policies must be found to cope with it. To the extent that the underlying perceptions are temporary and will be corrected as good inflation performance continues, it suggests that a prompt further lowering of nominal interest rates will be required to sustain economic expansion.

The next section discusses the effects of deficits on real and nominal interest rates, and the role that monetary policy should now play.

5 How Do Deficits Matter?

Feldstein writes[1]:

> The fundamental reason for the high level of real interest rates is the widespread expectation of large budget deficits for the remainder of the decade.

This view is widely shared in the economics profession and across the political spectrum. The argument of the previous section suggests that, temporarily, it is invalid, since real rates of interest have fallen. However, as the decline in inflation expectations proceeds, real interest rates may again rise, and it is necessary to ask whether this will be due to expected future deficits or some other cause.

The relationship of current deficits, or the level of debt, to current interest rates, nominal and real, is not a matter of dispute. That ordinary supply-and-demand relationship was shown to be significant at least as early as 1970 in a classic paper, "The fundamental determinants of the interest rate," by Martin Feldstein and Otto Eckstein[2]. Despite a recent Treasury Department study which states that there is "no discernible correlation between changes in

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1. Testimony, page 8.

2. Review of Economics and Statistics, November, 1970, pp. 363-375.

3. Office of the Assistant Secretary for Economic Policy, "Government deficit spending and its effect on prices of financial assets," May 1983, page 5. Incidentally, Rapping and Bennett share this view (op. cit., page 17).

government borrowing and changes in either interest or exchange rates[3]," both theory and common sense, in addition to past evidence, suggest that a relationship does exist. Interest rates would be lower at any given moment if, other things equal, government net borrowing were lower than it is.

Nor is there doubt that large future deficits may raise future nominal and real interest rates. What can happen today can happen tomorrow. However, the policy implications of this relationship are not urgent, since tomorrow's deficits can be reduced by action tomorrow — and such action is easier after elections than before them.

But is there a link between projected future deficits and current interest rates? The idea of such a link is a novel one. It does not figure prominently in the vast literature on the interest rate. It is not mentioned, for example, in the Feldstein/Eckstein paper[4]. Rather, it is a concept whose coinage appears to coincide with the advent of large projected future deficits themselves. These are brand-new, dating only from the August, 1981, enactment of the Reagan Administration tax program.

Second, if future deficits can influence current rates of interest, does the impact fall on nominal rates or real rates? And if if falls on the real rate of interest, what are the consequences for the economy?

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4. Nor does this idea appear in Feldstein and Chamberlain, "Multi-market expectations and the Rate of Interest," Journal of Money, Credit and Banking, November, 1973, pp. 874-901, or Feldstein and Summers, "Inflation, tax rules, and the long-term rate of interest," NBER Working Paper No. 232, 1978. Blanchard, cited below, confirms that the idea is a novel one.

Olivier J. Blanchard, in a new paper[5], distinguishes three separate issues concerning the effects of deficits:

- Whether they are sustainable, without inducing runaway inflation and collapse of the currency;

- Whether by raising real rates of interest they will distort patterns of private sector activity and so create conditions of unbalanced growth, in the context of continuing expansion;

- Whether by raising real rates of interest they are ipso facto contractionary.

Much of the controversy about the current track of fiscal policy turns on the third issue. Press reports speak of "crowding out," of future deficits "choking off" the recovery. A "negative multiplier" theory of inverse fiscal stimulus, in which increased future deficits depress current real activity, has been invented. However, it is difficult to find economists who share this view, or references in the economic literature to it.

The 1983 Economic Report of the President, for example, does not claim that deficit-induced crowding out is ipso facto contractionary. The Report is careful to confine its discussion of crowding out to the second issue. It[6] speaks only of the effects of deficits producing a "lopsided" recovery in which less investment in capital-intensive industries than desired occurs. It suggests that such a recovery

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5. "Current and anticipated deficits, interest rates and economic activity," Harvard Institute of Economic Research Discussion Paper No. 998, August, 1983

6. pages 27-28.

might be inherently more fragile than a balanced one. But it does not suggest that deficits actually slow growth rates in and of themselves.

It will be argued here that future deficits can only be contractionary in one situation of practical importance: when monetary policy deliberately reacts to expected future deficits by holding the economy below its potential for growth. In that one case, "crowding out" can be corrected, and high real interest rates reduced, by easing monetary policy. All other plausible effects of future deficits on current interest rates are either real-rate effects which are distortive but not contractionary, or inflation-expectation effects, the result of expected pressure of excess demand, which must be dealt with as part of a general strategy against inflation.

5.1 Real-rate Effects

Recent theoretical work does suggest that a stream of large future deficits can be expected to raise current real interest rates, particularly if that stream is expected to persist after the economy returns to full employment. Blanchard summarizes the situation in long-run equilibrium:

> ...a fiscal expansion leads initially to an increase in short real rates and output; over time, output goes back to normal and short real rates increase further. It is this increasing sequence of short rates which twists the term structure, increasing long rates over short rates. This leads to more crowding out than would be predicted by models which do not distinguish between short and long rates. It does not, however, lead to perverse effects of a fiscal expansion on output.

The two important points are: fiscal expansions do raise real rates at full

employment, and they do so by twisting the term structure. In these respects, theory poses a puzzle for some explanations of the future deficit to current interest rate link, since (1) we are far from full employment, and (2) short-term real rates are nearly as high as long-term real rates, yet theory can only explain the high level of long rates.

The kernel of truth underlying the attempt to distinguish "structural" from "cyclical" components of the deficit[7], lies in this proposition: at high levels of employment, excessive deficits will strain against limited real capital resources, and so raise real rates of interest. Future high structural deficits under such future conditions will exert some influence on long rates in the present. However, even high structural deficits cannot have this effect at low levels of resource use, since capital resources are not scarce. Since high resource use is far away, the effects of projected structural deficits at that supposititious time on interest rates in the present must be discounted heavily, for the time between now and then, and for the probability that actual high levels of employment and resource use may never arrive.

In a growing economy with idle resources initially and a positive rate of inflation, it is necessary to modify the theoretical conditions under which expected deficits raise current interest rates. To do so rigorously is beyond the scope of this paper, but the outlines of the correct answer are clear enough.

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7. See the appendix to this paper.

The key idea is that of portfolio balance. It is a well-established empirical proposition, thanks largely to the work of Benjamin Friedman, that the expansion of total outstanding debt, public and private, is closely and stably correlated to nominal GNP[8]. Under conditions of stable growth and a stable balance of public and private shares in output, it is plausible that private investors will wish to hold stable shares of public and private debt instruments, and to increase their total debt holdings only in direct proportion to gains in nominal GNP. Equivalently, they will wish to increase the real value of their debt holdings in proportion to gains in real GNP. (The effect of relaxing these assumptions is discussed briefly below.) If the government supplies more debt instruments than private investors wish to hold, the price of debt instruments must fall, and real rates of interest must rise.

It follows that, in a growing economy with no inflation and initial portfolio balance, the nominal (which equals the real) value of the government debt may rise (and be expected to rise) as fast as nominal GNP without raising real interest rates. Or (after a little arithmetic), the ratio of the deficit to nominal GNP may equal the rate of growth of nominal GNP, times the ratio of government debt outstanding to nominal GNP. This condition assures a constant ratio of private to public debt instruments in the private market and of total debt to GNP, which means constant interest rates under the assumptions of the previous paragraph.

So, without inflation, the effect on current real interest rates of an expected future deficit of a given dollar size at a given date depends on two factors: the rate of growth at that time, and the size of the then-outstanding public debt

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8. In 1983, the Federal Reserve acknowledged the importance of this relationship for the first time by establishing a target for the growth of total credit.

relative to GNP. The former determines how much total new debt private investors can absorb; the latter, how much of that can be government issue. A third factor is, of course, time: the further away any given expected future deficit, the less it can matter to the present.

Real interest rates will remain stable if:

$$[5.1] \quad \text{Deficit} = \text{dGNP} * \text{Debt}$$

where dGNP represents the rate of growth of nominal Gross National Product. Equivalently:

$$[5.2] \quad \text{Deficit/GNP} = \text{dGNP} * [\text{Debt/GNP}]$$

Real rates will rise if the left-hand side exceeds the right, and fall if the right exceeds the left.

This analysis can be applied. Suppose that in 1984 expected nominal GNP growth is 10 per cent (the DRI forecast). Gross public debt at that time is expected to equal about $1.4 trillion, or about .4 of expected nominal GNP ($3.6 trillion). The preceding paragraph implies that nominal 1984 deficits of up to 4 per cent of expected nominal GNP (10% * .4 = 4%), or $144 billion, will not raise today's real interest rates. By this calculation, only the last $60 billion or so of the expected $204 billion current policy deficit in that year can now be pushing real rates up, and this effect must be discounted, since $60 billion excess credit demand next year is not as serious for today's real interest rates as would be the same amount today. The effect would be even smaller, if either the House or Senate budget resolution's assumptions about policy are used instead of the current

policy projections.

The above is not quite right, however. If there is inflation, conventional deficit accounting, in which the nominal deficit is the simple difference between government spending and taxation, is defective. With inflation present, it is necessary to adjust the measurement of the nominal deficit so as to assure real-nominal and stock-flow consistency: that the nominal deficit can be deflated to calculate the real deficit and vice versa, and that the real and nominal deficits equal the changes, respectively, in the real and nominal values of the public debt.

The correction of the measured deficit for inflation has been presented for European countries by Cukierman and Mortenson[9]. Cukierman and Mortenson describe the bias in the conventional measurement of deficits:

> ...the conventionally measured budget deficit...includes net interest payments as an expense of the government but does not include the depreciation in the real value of the government debt as a source of income. As a result, the deficit in the government's budget is biased upward and the size of the bias becomes an increasing function of the rate of inflation and the size of the national debt.

The essence of the argument is that a dollar borrowed five years ago is no longer worth a dollar today; yet government accounts persist in adding the two together to get a government debt of two dollars. Inflation makes this a nonsense procedure.

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9. Alex Cukierman and Jorgen Mortenson, "Monetary assets and inflation induced distortions of the national income accounts - conceptual issues and correction of sectoral income flows in 5 EEC countries," Economic Papers No. 15, June 1983. See page 5 for the quote. For an analytical treatment of the entire issue, see Willem H. Buiter, "Deficits, crowding out and inflation: the simple analytics," NBER Working Paper No. 1078, 1983.

In other words, inflation distorts government financial accounting, creating illusory deficits where none in fact exist, and giving the impression that real debt burdens are rising when in fact they are not. The correction is to add to government income a revenue equal to the rate of inflation times the stock of outstanding nominal debt[10]. We have:

[5.3] True Deficit = Spending - Taxes - [Inflation * Debt]

which equals the deficits as conventionally measured only if there is no inflation.

A numerical example can help make this clear. Suppose the nominal value of GNP is $3 trillion, the stock of public debt is $1.4 trillion and the rate of rate of nominal GNP growth is 10 per cent, divided between 5 per cent real growth and 5 per cent inflation. Next year the nominal value of GNP will be $3.3 trillion. If the conventional deficit were set to raise the debt at the growth rate of nominal GNP, or $140 billion, the nominal debt next year will be $1.54 trillion. But the true value of the debt in today's prices will be only about 95.2 per cent of that, or 1.46 trillion, since the whole of the debt depreciates by 5 per cent with that much inflation. Thus the nominal value of the debt has only risen by about $.06 trillion or $60 billion, and that must be the correct measure of the nominal deficit for the purpose of evaluating effects on real interest rates. Now .06/3.0 equals a true deficit to current GNP ratio of only 2.0 per cent, much less than the 4.2 per cent which would be given by the formula required to keep the real debt burden constant, so real interest rates should fall.

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10. To be rigorous, all monetary liabilities of the government should be included, including the stock of high-powered money; this is not done here for the purposes of this illustration.

It is also helpful to assume that future dificits do not independently raise inflation expectations (which would nullify any effect on real rates). With these caveats, the inflation-adjusted deficit in any year may equal the growth rate of nominal GNP times the stock of government debt outstanding (ideally, valued at market prices), without the current deficit exerting upward pressure on current real interest rates.

For the moment, present and expected inflation rates are relatively low, so the effect of applying the Cukierman-Mortenson correction is not dramatic[11]. Nevertheless, it is enough to reverse the thrust of the real interest rate effect described above. If expected inflation in 1984 is 5 per cent, and the total debt outstanding at that time will be $1.4 trillion, the government will receive an uncounted revenue flow of $70 billion. Subtracting this from the current policy deficit leaves a bias-corrected expected deficit of $134 billion, under the worst policy assumptions. This is only 3.7 per cent of expected 1984 GNP, whereas it would take a deficit over 4 per cent of GNP to satisfy the condition of [5.2] above.

A deficit of this size will have a positive effect on real interest rates only under specific conditions. If, relaxing the fundamental assumption above, a sharp rise in the proportion of private debt to nominal GNP is necessary to keep expansion going, then even a constant share of public debt in GNP won't do. The public share must fall for the private share to rise. But while this is a typical

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11. Although at times in the past it would be, showing for instance the period of the late seventies to have been in surplus.

recovery pattern it is not an inevitable one. The ratio of total credit to GNP is not sacred. If real resources are not scarce, the power to make them available through the financial markets rests with the Federal Reserve.

Still, in any given situation, lower future deficits would mean lower current real interest rates, at least in the long-term markets, although this effect is lost if inflation expectations also fall. Also, the currently projected deficits are higher than projected deficits in the past, so that whatever the absolute effects of future deficits on real rates may be, the relative effects are greater today than before 1981. It may be that the past tendency of bracket creep to close expected future deficits quickly acted to depress current real interest rates, holding historic real rates down. If so this beneficial effect is no longer with us.

The out-year deficits currently forecast are larger in nominal terms, but not as a proportion of GNP, than for 1984. Whether they surpass the real-rate influence threshold depends on assumptions about the growth of nominal GNP, inflation, and private credit demand relative to GNP. If private market participants truly fear the current real rate consequences of future deficit levels as such, despite the higher inflation levels that they also expect, they are saying that only another massive, unstable run-up of private debt finance can sustain recovery over the next few years, and that the Federal Reserve will kill the recovery rather than let total credit rise more rapidly than GNP, even in the short run. If this were true it would be frightening.

To sum up the main points of this section:

- In theory, future expected deficits can raise real long interest rates today, but not short rates[12].

- The effect of future deficits on today's real rates must be discounted, and calculated using a measure of the deficit adjusted for changes in the real value of the debt. With this done, the influence of such future deficits on today's interest rates depends on the growth, the inflation, and the size of the public debt expected at that time.

- Currently projected deficits will raise real rates only if recovery requires a private debt market growing faster than nominal GNP and monetary policy refuses to let the two coexist; this is not an inevitable pattern.

- It is unlikely that today's expected future deficits, large as they are, are raising today's long interest rates. They hardly could be, since private expectations are still for rising inflation, yet the yield curve is not steep. But lower future deficits could contribute modestly to bringing current real rates down, so long as they do not also reduce inflation expectations.

There would be current real rate effects of changing future deficit levels. But if real interest rates are now high, or if they will shortly return to high levels as inflation expectations continue to recede, it is because of current demand, current supply — and current monetary policy. Any correction must begin with these

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12. Unless, parallel to the argument of the previous section respecting inflation, private deficit expectations diverge from public ones. But no case for such a systematic divergence today can be made.

factors.

Even if future deficits do influence current real interest rates, as the above analysis demonstrates is possible, the consequences are not adverse to growth and output. Rather, they imply a shift in the mix of output, toward government services, defense spending, and consumption and investment from current income, and away from private debt finance. Blanchard, in his review of theoretical cases, finds only one in which rising real deficits might be contractionary in and of themselves. If the current stimulus is small relative to the expected future stimulus, and agents respond only to financial market signals, not to expectations of higher income. This would require Pentagon contractors, for example, to look only at bond market conditions, not at projections of the Pentagon's own budget. And it would have a simple solution: accelerate the planned government spending so as to enjoy higher output in the present. This case is not a serious one in the real world.

5.2 Nominal Rate Effects

Expected future deficits certainly can influence expectations of future inflation. But if so, the effect is on nominal, not real rates, and the consequences of deficit reduction on growth are negative, not positive.

Blanchard's first issue, sustainability of deficits, is related to their inflation expectations effects. If deficits raise inflation expectations, they depress real interest rates. The value of the currency should fall. Pursued too hard for too

long, unsustainable deficits produce inflation and unacceptable falls in foreign exchange values.

Evidently, sustainability is not a pressing concern for the U.S. at the present time, although it may be for other countries. The worst about our future deficits is already known. Foreign exchange market and capital market transactors have made no secret of their awareness on this score. Yet, they are not "voting with their feet" against the dollar. Demand for dollars remains strong. Taken in the context of international economic events, including the debt crises of Latin America and Eastern Europe and the troubles of off-shore banking centers, U.S. deficits are, so far, a minor factor in international exchange rate relations[13].

Short of being unsustainable, deficits may still have effects on expected inflation, with consequences in the present.

If expected deficits are raising demand, growth, and inflation expectations, demand for credit should rise. Nominal interest rates should be unusually high relative to the level of activity in interest-sensitive sectors. This will be true for both long-term and short-term rates, since arbitrage in financial markets may induce some borrowers for long-term projects to finance short-term, as discussed above. It will be visible, however, in the short-term markets as high apparent short-term real rates, due to the tendency, which is fallacious when public and private inflation expectations diverge, to measure the short-term real rate by

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13. The alternative line of argument holds that the high dollar demonstrates that real interest rates are still high. But this argument, unlike the present one which relies on other explanations for the high dollar, cannot account for the failure of "high" real interest rates to suppress economic growth in interest-sensitive sectors.

taking the difference of the current nominal interest rate and the current rate of inflation.

At the present time, apparent short-term real interest rates are unusually high, despite an unexpectedly rapid recovery of housing, autos and other interest-sensitive sectors from the recession. So there is some evidence consistent with the hypothesis of deficits raising inflation expectations, although other explanations of high inflation expectations, such as lagged adjustment to actual falling inflation, may be more plausible. It is worth pausing to examine what, if true, such a finding would imply.

There would be something very wrong if future deficits are raising inflation expectations six months into recovery from the second deepest recession in forty years. Inflation is down, not up, and inflation expectations should be (and, by most measures, are) falling, not rising. By no measure of real potential output or employment is the economy nearing its potential. If future deficits are raising inflation expectations, it is because marketplace actors fear that conditions of excess effective demand and inflation will return in this recovery long before true high employment is reached, despite the failure of the Administration or the private econometric forecasters to predict it. Such fears may not be justified. But, if they are — the precise premise under which a crowding-out argument must be made — then we are in very deep trouble indeed.

The policy implications of such policy-based fears of inflation at present levels of employment and utilization would be dramatic. Reduction of future deficits by itself would be a totally inadequate solution. Cutting deficits would affect nominal interest rates only by reducing inflation expectations, and inflation expectations

only be reducing expectations of growth. Real effects would be negative. To frame the policy issue in these terms would forces a choice between public and private activities, both of which are needed, while unemployed resources to permit both to occur are still widely available. It would instead be urgently necessary to implement structural anti-inflation policies, including incomes policies, and supply-side price policies in all of the volatile sectors, so as to prevent rising inflation and permit a continued expansion of output and employment.

Fortunately, it is more likely that we are not yet there, that inflation expectations are still falling, and that, in line with past business cycle recoveries, we will enjoy several years to plan for the day when inflation will again become an intolerable problem. The first step is to make that period of remission as productive as possible. So, one should frame a policy mix which permits recovery to continue, as long as possible, as quickly as possible, with relatively high rates of new capital formation and productivity growth. This brings us to the role of monetary policy, and of the monetary/fiscal mix.

5.3 Implications for Monetary Policy

At least six times since the Depression, large direct fiscal stimulus, through deficits, has been used: World War II, the Korean war, the Kennedy-Johnson tax reductions, the Vietnam war, the Nixon re-election boom of 1971-72, and the Ford-Carter expansion of 1975-78. In each case, the response of the economy was strong growth, followed a little later by strong inflationary pressure.

In each instance, monetary policy adapted to national objectives as determined by the fiscal authorities — the Executive Branch and Congress. Except briefly in 1967, monetary policy did not attempt to "fight inflation" while fiscal stimulus was being applied. The periods of tight money, which came in 1969-70, 1973-74, and 1978-82, all came after long expansions had generated unacceptable inflation.

In the current situation, economic forecasters unanimously assume that monetary policy will continue tight in this expansion, and so depart from its past pattern of behavior. Lawrence Chimerine and Leon Taub of Chase Econometrics write[14]:

> It is becoming less likely that the Federal Reserve will loosen further in view of: (a) continued strong growth in M1; (b) the more firmly established economic recovery; (c) the modest increases in inflation that are now beginning; (d) the poor outlook for the Federal deficit; and (e) some easing, on balance, in the LDC financial situation, resulting from higher commodity prices, increased bank loans and rescheduling, and more IMF funding.

Beginning in May, 1983, the Federal Reserve began to follow the forecasters' scenario. Now, there are a few signs that the expansion is slowing down. The pertinent question is whether political forces will allow the Federal Reserve to continue a policy of slow growth and artificial crowding out, and under what conditions it would be appropriate to prevent such an outcome.

Under a tight money future, growth will slow. There will be little improvement of employment or capital utilization, and an increase of inflationary pressures which is slow only by virtue of the slow economic progress accompanying it. High real interest rates will prevent the revival of private investment activity that is

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14. "Executive Summary U.S. Macro" by Lawrence Chimerine and Leon Taub, Chase Econometrics, Inc., May 23, 1983.

necessary to sustain growth of total demand in the second and third years of recovery. There is a danger that a slow expansion may collapse, and a new recession follow, long before high rates of employment and investment have been achieved.

A slow growth monetary policy, if allowed to continue, would unmake the foundations of sustained economic growth that have been laid so far. From July of 1982 until mid-1983, the Administration and Federal Reserve had engineered a transformation of the economic climate. A psychology of growth replaced that of recession and collapse. Nominal interest rates came down, but because of higher growth/inflation expectations real interest rates came down more. Interest-sensitive sectors, like housing and autos, bounced back. A strengthening of investment, which should follow, depends in part on sustaining the belief in future growth, despite its concomitant inflation.

Is it appropriate to jeopardize this psychology, by casting doubt on the willingness of the monetary authorities to support it? The clear conclusion of the analysis of the early part of this paper is that it makes no sense whatever to do so.

Large future deficits contribute to a psychology of growth, and because of them fiscal policy appears committed to growth over the next several years. Currently scheduled tax cuts will not be reduced, nor will significant new taxes be raised before 1985 at the earliest. Despite the budget, large increases in military outlays will go forward. Despite the President, there will be few economically significant additional cuts in social spending. This may be regrettable, but it does not justify an offsetting tightening of money.

It has been suggested that the Federal Reserve may use monetary policy as a bargaining chip between itself, the Congress and the Administration, in a political negotiation designed to fight big deficits and move ultimately toward an easy-money, tight-budget shift in the fiscal/monetary mix. Such a shift is desirable, but the Federal Reserve cannot justify assuming the role of third party at the negotiations. For, if no compromise can be reached, then the Federal Reserve's punitive "incentive" leads, as in the prisoner's dilemma, to avoidable outcomes worse than anyone desires. When the tight-money threat is carried out, the resulting unemployment, foregone production and lost productivity are in the interest of no one.

The monetary course of the last months represents profoundly misguided behavior. In simplest terms, the monetary authorities propose to create an artificial scarcity of capital, by restricting finance, even though real capital resources are plentiful and cheap. There is no defensible reason to do this. Monetary policy should instead stick to a policy of growth until we are considerably closer to high employment than we are today. The responsibility to assure that growth is balanced, by reducing excessive future deficits, lies not with the Federal Reserve, but with the Administration and Congress.

5.4 Implications for the Policy Mix

It is a separate question, though equally important, whether there exists a different combination of monetary and fiscal policies which, if they could be

implemented, would yield even better economic results than could be achieved under the fiscal policies now in place.

Reliance on high future deficits to help sustain recovery does imply distortions in the private economy. Today, for example, government's spending priorities are directing investment into defense. If monetary policy resists the deficits, then high real interest rates will suppress the civilian interest-sensitive industries, and depress private risk-taking, new business formation, and the adoption of new technologies by private firms. If monetary policy accommodates, patterns of investment may still be distorted by government spending priorities, or toward inflation hedges, and away from long-term productive investments. Private sector civilian investment may be too low, and international competitiveness in important industries may suffer.

It would therefore be possible, and better, to achieve the same climate of expected growth through low interest rates and easy credit than through large future budget deficits. To do so would require erasing part of the projected future deficits through spending reductions and tax increases, while immediately acting to sustain demand through a further easing of money. Low real and nominal interest rates would stimulate small business, new busines formation, and risk-taking. A climate of cheap capital resources would foster investment — in human as well as physical capital. The result would be better for the long-term productivity of the private economy, and better for competitiveness, than either a boom sustained by deficit spending or one cut short by tight money.

A shift in the fiscal/monetary mix could be achieved through compromise on future budgets, combined with strong assertion by Congress, in the Budget

Resolution or independently, of its tutelary authority over the Federal Reserve. The form of such authority — whether statute or resolution, monetary target, credit target, or target for nominal or real GNP — matters less than the willingness of Congress to set clear criteria about the direction of policy, and the implicit willingness of Congress to oversee the execution of its directions. A simple resolution, directing that the Federal Reserve conduct monetary policy so as to accommodate rapid rates of real GNP expansion in the next several years, would be sufficient if backed by strong oversight in the Banking Committees, the Joint Economic Committee, and elsewhere. Due to the special link of dependency between the Federal Reserve and Congress, such language, though not statutory, is regarded officially by the Federal Reserve as binding, and, if meant seriously, would be seriously received.

In the absence of a shift of monetary policy, lowering future deficits alone would directly lower current expectations of future growth and inflation. Nominal interest rates would fall, but this would reflect lower growth and lower inflation expectations. Real rates would remain roughly constant. The most significant effect on real activity would be negative: the depressing consequence for investment of lower growth expectations. This is in sharp contrast to the view that lowering future deficits can somehow autonomously lower real interest rates and spur economic expansion.

A benign shift in the fiscal/monetary mix would not avert an eventual problem with inflation. It would provide for more investment, higher productivity growth, and greater accumulation of capital at lower cost before the next round of inflation sets in. Since eventual inflation cannot be avoided by any policy which

tolerates rising production and employment for a long enough time, such a mix would be unambiguously preferable to the slow growth alternatives, all of which promise higher unemployment indefinitely while merely delaying inflation's return.

So even if the budget compromisers succeed, and crown their efforts with a clear instruction to the Federal Reserve to use monetary policy to sustain demand, there will still come a choice, sooner or later, between renewed inflation and renewed recession. The pattern of a deteriorating inflation-unemployment trade-off has evidently not been reversed by the recent recession. Therefore, the choice will occur at levels of employment, utilization, investment and competitiveness that most would consider still intolerably low.

To escape this dilemma, ways must be found to extend the scope of non-inflationary real resource use. This is the function of "structural" anti-inflation policies, including incomes policy, and of cost-control policies in the areas of energy, food, health care, and housing.

Each of the six sustained expansions mentioned earlier saw the enactment of structural anti-inflation policies. On two occasions, during the Vietnam war and the expansion of the late 1970's, they failed. In World War II, Korea, the Kennedy-Johnson expansion of the early 1960's, and the Nixon boom, so long as they were kept in force, these policies successfully repressed inflation and permitted economic expansion to continue.

No one would claim that the design of pro-growth, anti-inflation policy is easy, or scientific. Nevertheless, it would appear that such policies must again be designed and applied, if we are to avoid eventually having to tolerate either

double-digit inflation, or double-digit unemployment, or a combination of both.

6 Conclusions

What the economy needs today, above all, is continued, unimpeded expansion. Both monetary and fiscal policies should contribute to this. There is an inflation threat in the future, but it cannot be avoided by a policy of slow growth.

Expansionary policies in the near-term would lead to a faster rate of growth, and more rapid return of the economy to tolerable levels of unemployment (and beyond). Higher growth of output at this stage of recovery would certainly generate even more robust productivity growth. Such policies would generate little additional inflation above that which is in any case in store. For these reasons, there is every economic justification as a matter of fiscal policy to enact fast-spending relief and recovery measures, such as expanded unemployment compensation, health insurance, fiscal assistance to state and local governments, and public service jobs.

More expansionary monetary policies and lower interest rates are needed promptly for a number of reasons:

- to accommodate demand for money as inflation continues low;
- to prevent real interest rates from rising as inflation expectations adjust downward;

- to allow continued flexibility to the banking sector to establish new relationships between measures of money and income in the wake of regulatory changes;

- to prevent artificial and avoidable crowding out while ample real resources remain idle; and, in general

- to foster investment and sustain demand in the second year of economic expansion.

The tight-money alternative has, we have seen, no economic justification. Nothing in the recent or immediately prospective behavior of economic growth, of inflation, of the money stock, of velocity or of interest rates suggests that there would be benefits to a return to high real interest rates. No bargaining-chip theory of tight-money justifies the cost if the bargain breaks down.

The practical problem today is to achieve policies which produce continued satisfactory economic growth, and the key short-term need is to secure the commitment of the Federal Reserve to this objective.

The present stalemate on the future deficit is harmful mainly because it makes this task difficult. It precludes the one course of policy which is unambiguously preferable to anything which can be achieved in a high-deficit environment. That would be to trade a sharp reduction in future deficits, whose effects on current economic behavior are secondary, for a sharp immediate further easing of monetary policy and reduction of interest rates, if necessary mandated by Congress.

Appendix A

Structural and Cyclical Deficits

The distinction between "cyclical" and "structural" deficits is the new terminological entry of this year's budget debate. This distinction was intended to clarify the issues and to distinguish economically desirable deficit-reducing action from the reverse. The purpose of this appendix is to demonstrate that, in fact, the distinction between structural and cyclical deficits cannot be used to separate policy choices from an analysis of budget economics, and to argue for a clearer understanding of what the ultimate objectives of budget policy should be.

Structural deficits are defined as those deficits which would remain under a given tax and expenditure policy if the economy were to achieve a specified level of employment and capacity utilization. Cyclical deficits are the residual, the difference between what the deficit would be at the specified employment level and the actual deficit.

A little algebra will be helpful in understanding what follows. Let:

Y_a = National income at actual employment levels;

Y_f = National income at 6 per cent unemployment;

t = The tax rate;

G = Government spending, assumed independent of Y.

These definitions then hold:

$$TD = G - (t^*Y_a) \text{ is the Total Deficit;}$$

$$SD = G - (t^*Y_f) \text{ is the Structural Deficit; and}$$

$$CD = TD - SD \text{ is the Cyclical Deficit.}$$

Substituting and simplifying, we have:

$$CD = t^*(Y_f - Y_a) = t^*Y_g$$

where Y_g is the gap between actual national income and national income at 6 per cent unemployment.

The following table gives the deficit figure for fiscal year 1982, and the projected deficits for fiscal years 1983-1988, each divided into structural and cyclical components as determined by the House Budget Committee. The structural deficit is stipulated to be the deficit that would remain were the unemployment rate 6 per cent. Two estimates are given, one assuming no change in policy, the other using the policy changes recommended by the House of Representatives in the First Concurrent Budget Resolution for fiscal year 1983.

TABLE A-1

FEDERAL DEFICIT
1982-1988
($ Billions)

	1983	1984	Projected 1985	1986	1987	1988
Current Policy						
Deficit	$195	204	216	239	274	303
Cyclical	122	104	85	71	61	50
Structural	73	100	131	168	213	253
Current Policy Deficit as Percent of GNP	6.1	5.8	5.7	5.8	6.1	6.3
House Budget						
Deficit	$209	174	147	136	135	121
Cyclical	122	104	85	71	61	50
Structural	87	70	62	65	74	71
House Budget Deficit as Percent of GNP	6.5	5.0	3.8	3.3	3.0	2.5
House Budget High-Growth Deficit	$206	160	114	93	77	51

Source: House Report #98-41, Part I: First Concurrent Resolution on the Budget - Fiscal Year 1984.

The intended point of this table is to show the relative merits of the Budget Resolution as voted by the House,[15] compared to a policy of fiscal inaction.

At the trough of a recession, the cyclical component of the deficit is high, the structural component is low. Accordingly, policy need not focus on budget restraint; indeed a higher structural component of the deficit may be desirable, since it will promote a higher rate of expansion. In the future, however, as the cyclical component of the deficit declines, large and increasing structural deficits appear under current policy. These are removed by the proposed House budget.

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15. The same point could equally well be made about the Administration's Budget Request and the Budget Resolution as enacted by the Senate.

The Budget Committee analysis is intended to compare two alternative fiscal policies under identical assumptions about the performance of the economy. In the table, this is indicated by the year-in, year-out equality of the cyclical deficits reported under either of the two policies. But, as shown by the elementary algebra above, the cyclical component of the deficit depends not only on the state of the economy, but also on policy. A higher tax rate means a higher cyclical deficit, since more revenues are being lost because of failure to achieve potential levels of output and income.[16] The comparative decomposition of the projected budgets under the two alternative policy assumptions is therefore invalid. If the cyclical deficit which appears in the table was computed from the current services estimate and transferred to the House budget estimate, the cyclical component of the House estimate is too low, and the structural component is too high.[17]

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16. Since the House budget also specifies modest increases in income-dependent spending functions, such as unemployment compensation, the same point applies to higher spending.

17. If the original computation of the cyclical deficit was based on the House policy, then the estimated structural component of the current services deficit is too low and the cyclical component is too high.

For example, a recession-fighting tax cut of $30 billion dollars increases the structural deficit by $30 billion if it takes the form of increased credits or a rebate, since in that case the reduction of revenues is independent of the rate of unemployment. On the other hand, a temporary reduction of income tax rates which is equivalent to $30 billion at current income levels may be worth more in dollar terms at the higher income levels corresponding to 6 per cent unemployment. If so, the contribution to the structural deficit is larger. Such a measure must therefore reduce the cyclical deficit, as measured[18], since the total deficit is unchanged. But to policy, the distinction between the two forms of stimulus is unimportant: both are worth $30 billion.

As a guide to stimulus, the cyclical/structural decomposition of the deficit is only useful if it accurately isolates changes in the economy from changes in policy. Once the cyclical component can be varied without changing economic conditions, the structural component loses its usefulness as a gauge of the direction of policy.

The decomposition of the budget deficit into structural and cyclical components does have a meaning. It remains useful as a measure of the strength of the "automatic stabilizers" — to show how much of a given deficit is due to economic conditions and how much would vanish without changes in current law should economic conditions improve. People do have preferences on this issue: liberals who favor generous unemployment compensation and un-indexed tax brackets are arguing for a high ratio of cyclical to structural components in any given deficit;

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18. By the difference between the revenue loss at 6 per cent unemployment and the actual revenue loss, $30 billion.

conservatives who favor tax indexing and oppose automatic relief and insurance programs are arguing for the reverse. As a issue, however, this is distinctly secondary to that of the degree of fiscal thrust.

Even without the distinction between cyclical and structural components, comparisons of the deficit consequences of alternative fiscal policies have a problem. Such comparative deficits are computed by applying the same economic growth, unemployment, interest rate and inflation assumptions to different fiscal policies. This is plausible enough for short periods into the future, for which economic conditions can reasonably be taken as given. It is not plausible over a longer period.

If the information presented in Table A-I is intended to imply that the same economic growth, inflation, interest rate and employment performance can be achieved over five years by two policy paths as different as those presented, why should we care which one is chosen? Is not economic performance the dog, and budget policy merely the tail? Surely we are indifferent between two policy paths which yield, in the end, identical measures of economic welfare.

Actually, alternative fiscal programs rarely yield the same economic outcome. And we are interested in analyzing which is likely to yield a better economic result. But an analysis contingent on given economic assumptions provides no guidance such an endeavor. It ignores the one important thing, namely the consequences for the economy of the choice between the two alternative policy paths.

What should be the immediate goals of fiscal and monetary policy? To

eliminate the future structural deficit over the planning horizon? To eliminate the current structural deficit, and to operate at constant "standardized employment" budget balance[19]. To balance the "structural budget" over the business cycle. To eliminate the future total deficit over the planning horizon? To balance the total budget over the business cycle? To eliminate the current total deficit, as proposed by the Balanced Budget Amendment to the Constitution?

There are many possible answers; only one, the simplest, makes sense. In a recovery, the objective is to recover. The only sensible medium term objective for fiscal and monetary policy under current conditions is to eliminate the cyclical deficit, and so achieve satisfactory economic performance in the shortest possible time. The structural deficit should simply be set at whatever level best contributes to this objective, which is to say as large as necessary, within the limits of public capacity.

The question of ultimate fiscal policy objectives is an issue for the long term. It is not at present a matter of urgency, since so long as basic economic performance is poor, recovery remains the compelling priority.

But suppose that satisfactory levels of performance were again achieved. The cyclical deficit would then by definition equal zero. What should the structural deficit be?

The answer depends on the composition of government spending, and on whether the private economy is stable at high levels of performance.

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19. This was for many years the policy recommendation of the Committee for Economic Development.

In the case where the private economy is stable at high levels of economic performance, and not subject to speculative booms, binges, or collapse, government policy should harmonize with the environment. In such a case, the government becomes like a corporation in its financial behavior. That is, it should borrow to cover its investments, and amortize those investments over their useful life. Taxation should be set to raise the interest necessary to service the debt incurred in making the investments[20]. Interest rates should be set to reimburse lenders at the rate of real return on the government's portfolio of investments, which is the rate of real economic growth per capita, plus any depreciation of financial capital due to inflation[21]. The total amount of investment should be calculated to sustain a constant share of government in all economic activity, so as not to disturb the parallel investment activities of the private business corporation. That leads to a quantitative rule: the share of the budget deficit in total government spending should equal the share of investment in total corporate spending, and the growth rate of each should equal the rate of real economic growth.

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20. And to cover all purely current expenditures, of course.

21. As discussed in Section 5.1, that depreciation should be counted as revenue to the government for the purpose of evaluating the financial and fiscal impact of any conventionally measured deficit.

In the real world, there is the complication of the endogenous private business cycle. Owing to the nature of the finance mechanism, the private investment sector is unstable. As has been argued extensively in hearings before the Joint Economic Committee,[22] there is an inherent tendency for private companies to build debt and interest obligations more rapidly than income, and so for the proportion of income paid as interest to rise. Ultimately, debt must be written down or repudiated, and that process periodically curtails the ability of the private sector to sustain credit-financed investment.

In such a disequilibrium world, the public deficit should fluctuate over the private debt cycle to sustain economic activity despite the difficulties private parties may be having. When debt burdens are low and new companies and new technologies abundant, the government should fund its activities by taxation and not compete in the private credit markets. When the private debt burden[23] is high, the government should deficit-finance, and so contribute to the cash flow of the business sector while at the same time sustaining total employment and output at a satisfactory level. At such times, the proportion of public debt to total debt in the economy, which has been declining in the United States since World War II, will rise. The private sector will emerge reliquefied, and ready to resume another generation of credit-financed economic expansion.

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22. See the testimony of Professor John Hotson and of Harvey D. Wilmeth, June 8, 1982, in The Future of Monetary Policy, Hearings Before the Joint Economic Committee, Congress of the United States, Ninety-Seventh Congress, Washington, GPO, 1982, pages 196-396.

23. Including dollar-denominated debt held abroad by foreign governments — significantly.

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