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CONTENTS

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The 1976 Economic Report and the Federal Budget: Towards a Long-Run Perspective

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IN late January, the Administration announced its economic strategy for 1976 and future years. An enunciation of macroeconomic goals along with a proposed course of policy actions to achieve them is found in three documents — the *Federal Budget for Fiscal Year 1977*, the *Economic Report of the President*, and the *Annual Report of the Council of Economic Advisers*. These three documents present (1) Federal budget plans for the remainder of the current fiscal year and the upcoming fiscal year which begins October 1, 1976, (2) economic forecasts for calendar 1976 and 1977, and (3) a set of economic and budget projections through 1981 which place the more immediate forecasts and policy proposals in a longer-run framework of economic objectives.

The shift of emphasis in macroeconomic analysis and policy to a long-run horizon of six years represents primarily a response to the provisions of the Congressional Budget and Impoundment Control Act of 1974. According to that Act, the beginning of the fiscal year was changed from July 1 to October 1, but more importantly, this Act required the Administration to make budget projections for a longer-run period than previously.[1] These budget projections are conditioned by the assumptions that are made about the course of economic activity. It is necessary, therefore, that the Administration's short-run forecasts and policy proposals be consistent with the long-run projections.

With an eye toward long-run economic targets, the Administration has forecast GNP growth of 12.3 percent in 1976, which is distributed as a 6.3 percent increase in real product and a 5.9 percent advance in prices. By comparison, GNP rose 6.5 percent in 1975, with real product declining 2 percent and prices rising 8.7 percent. Unemployment is projected to average 7.7 percent of the labor force in 1976, compared to an average of 8.5 percent in 1975.[2]

As a means of implementing the overall economic program, a budget plan is outlined with emphasis on the upcoming fiscal year 1977. As a part of that plan, Federal expenditures (national income accounts basis) are projected to rise 9.4 percent in calendar 1976 and 5.3 percent in 1977. Included among the budget proposals are a number of tax changes which require Congressional action, in addition to those scheduled under existing law. Scheduled and proposed tax changes include: (1) a reduction in tax rates on individual and corporate income on July 1, 1976, and (2) an increase in social security and unemployment trust fund taxes on January 1, 1977.[3]

The emphasis of the Administration's program is on the Federal budget, yet the CEA *Report* discusses at some length a course of monetary policy considered consistent with their overall economic program. For the immediate future, the Administration seems content with a monetary policy that stays near the midpoint of the Federal Reserve's then announced target range of 5 to 7½ percent growth (from third quarter 1975 to third quarter 1976) in the money stock (M_1).[4] What seems as important from the viewpoint of the Administration as the specific rate of increase of money is the extent of fluctuation about the target growth rate. The CEA makes a case for steadiness in monetary and fiscal policy as a means of promoting a sustainable recovery.[5]

The primary purpose of this article is to summarize and evaluate the economic program as presented in the 1976 *Economic Report* and the *Fiscal 1977 Budget*. The focus of the discussion is on the nature of the program as it relates to the achievement of full-employment with relative price stability. Many non-stabilization issues are also included in the economic program of the Administration, but they are not discussed here.

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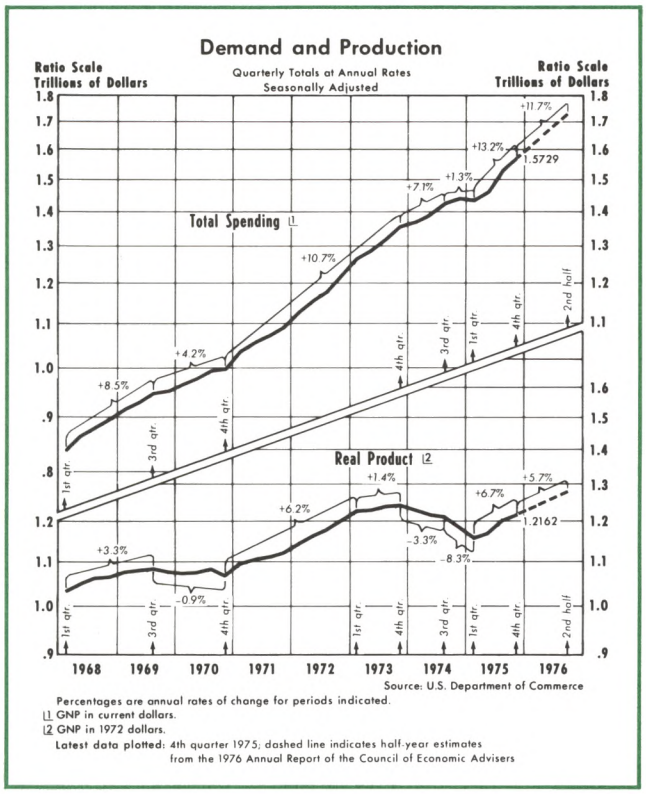
[1]Long-run projections were presented in last year's budget as a dry run, but fiscal 1977 is the first year that they are required under law.

[2]Employment developments since late January suggest that the economic expansion may be moving ahead of schedule. Unemployment in March was 7.5 percent of the labor force.

[3]A more complete listing of proposed tax changes is found in the section entitled "Proposals and Guidelines for Macroeconomic Policy."

[4]The target range for M_1 has subsequently been widened to 4½ to 7½ percent for the year ending fourth quarter 1976.

[5]1976 CEA *Report*, pp. 20-21.



A secondary purpose is to review the CEA's 1975 economic projections in light of the actual course of the economy last year. This review shows where and why the CEA projections went awry. The accuracy of past projections provides some basis for judging how accurate their most recent projections are likely to be.

1975 IN REVIEW

A year ago, when the CEA presented its forecast for calendar 1975, the economy was in the midst of a severe recession, with unemployment rising, output declining sharply, and the deficit in the Federal budget increasing. Furthermore, energy considerations were creating considerable uncertainty with regard to prospective economic conditions. Actually the recession had begun in late 1973, and the economy was showing signs of recovery during 1974, but then output was jolted downward again in late 1974. The CEA's forecast for 1975, which was very much in line with the consensus at that time, was a realistic one in the sense that it did not project a rosy picture for unemployment and prices.

Against the backdrop of recession and continuing inflation, the Administration presented a very ambitious program of fiscal action. This program consisted of a proposed 15.5 percent increase in expenditures and a number of tax changes which added up to a net tax cut of about $20 billion. The Administration also recommended that monetary policy provide "growth in money and credit . . . which . . . will encourage a freer flow of credit and lower interest rates. . ."[6]

1975 CEA Forecast in Retrospect

The 1975 CEA *Report* forecast an increase in GNP of 7.3 percent for the year. Preliminary data indicate that GNP actually rose 6.5 percent. Even though GNP growth was overestimated, the forecast was well within the range of error based on past CEA experience (see Table I).[7] More significantly the contours of the economic recovery in 1975 were accurately forecast by the CEA, with a recovery beginning before midyear. In fact, the recovery appears to have begun in April or May.

Table I

CEA PROJECTION ACCURACY OF GNP

	CEA Projected Change	Actual Change*	Error**
1962	9.4%	6.7%	2.7%
1963	4.4	5.4	—1.0
1964	6.5	6.6	—0.1
1965	6.1	7.5	—1.4
1966	6.9	8.6	—1.7
1967	6.4	5.6	0.8
1968	7.8	9.0	—1.2
1969	7.0	7.7	—0.7
1970	5.7	4.9	0.8
1971	9.0	7.5	1.5
1972	9.4	9.7	—0.3
1973	10.0	11.5	—1.5
1974	7.9	7.9	0.0
1975	7.3	6.5	0.8
Average Absolute Error			1.0%

*Based on data given in the CEA *Report* for the year following the forecast year.

**No adjustment is made for deviation of policy realizations from plans, or for major strikes.

Despite the fact that the CEA's GNP forecast was reasonably accurate, an analysis of the components of GNP indicates that the relative success of the forecast received a major boost from an offsetting error for one item — net exports (see Table II). The CEA overestimated the increase in GNP by $9 billion, but if they had not underestimated net exports, the forecast error for GNP would have been $25 billion. The forecast was made credible because domestic demand for

[6] 1975 CEA *Report*, p. 26.

[7] Planned and actual figures in Tables I - IV are not strictly comparable because of the extensive revisions of the national income accounts in early 1976.

Table II

PROJECTED AND ACTUAL CHANGES IN GNP AND COMPONENTS: 1974 TO 1975

(Billions of Dollars)

	CEA Projection*	Actual**	Error
Personal Consumption	$85.1	$77.3	$ 7.8
Business Fixed Investment	6.0	.8	5.2
Change in Inventories	−18.3	−23.9	5.6
Residential Construction	−2.3	−5.8	3.5
Federal Purchases	9.9	11.4	−1.5
State & Local Purchases	23.1	18.4	4.7
Net Exports	−2.3	13.8	−16.1
GNP	$101.3	$92.1	$ 9.2

*Estimated by this Bank and based on 1975 CEA *Report*.

**Based on preliminary data in 1976 CEA *Report*.

imports was overestimated resulting in an underestimation of net exports. Imports declined sharply while exports rose slightly.

Examination of the 1975 GNP forecast in terms of its distribution between output and prices reveals another set of offsetting errors (see Table III). The decline in output was actually overestimated with output decreasing 2 percent compared to a forecast decline of 3.3 percent. Similarly, on the inflation side the CEA was also overly pessimistic, projecting an advance of prices of 10.8 percent; prices actually rose 8.7 percent. It should be pointed out, however, that the CEA inflation forecast included projected effects of higher excise taxes on energy products; these proposed excise tax changes were not legislated by Congress.[8]

Table III

PROJECTED AND ACTUAL CHANGES IN ECONOMIC ACTIVITY: 1974 TO 1975

	CEA Projection	Actual	Error
GNP	7.3%	6.5%	0.8%
Output	−3.3	−2.0	−1.3
Prices	10.8	8.7	2.1
Unemployment Rate	8.1	8.5	−0.4

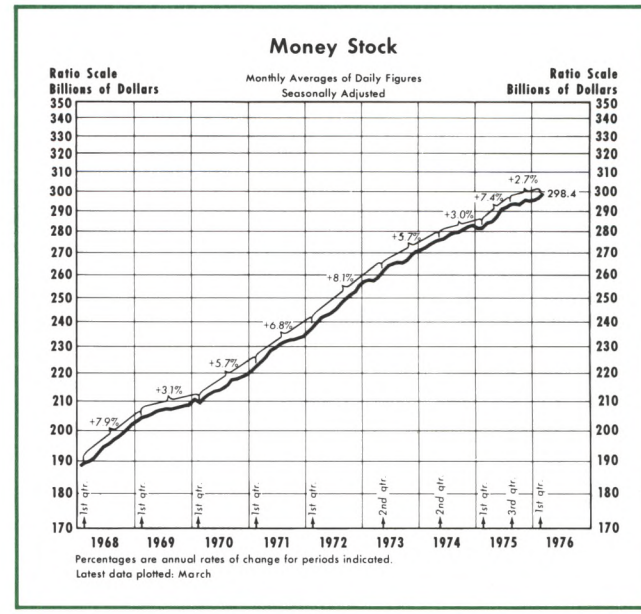
Stabilization Policy in 1975

A comparison of observed and forecast GNP is of little meaning in and of itself. In fairness to any forecaster, it is necessary to evaluate the accuracy of the assumptions that underlie the forecast. Of particular importance for any macroeconomic forecast are assumptions about monetary and fiscal variables. In the case of the 1975 CEA forecast, the planned course of fiscal actions was laid out in great detail, but there was considerable ambiguity as to the prescribed plan for monetary action.

Monetary Policy — The 1975 CEA report was especially vague with regard to its recommendations for monetary policy, and made only very general recommendations:

> Monetary policy must be conducted so as to encourage a near term recovery in the economy and a resumption of sustainable economic growth. Toward this end, reasonable growth in money and credit will be required — growth, which, one hopes, will encourage a freer flow of credit and lower interest rates in private credit markets.[9]

To assign meaning to this statement it is necessary to recall that monetary growth in the last half of 1974 was slow relative to the trend of the previous 2½ years. Although the money stock data have since been revised, at that time the Federal Reserve reported that M_1 had grown at only a 2.8 percent annual rate in the second half of 1974. In early 1975, most observers translated the CEA call for "reasonable growth" in money as an increase in M_1 in the 6 to 8 percent range.[10]



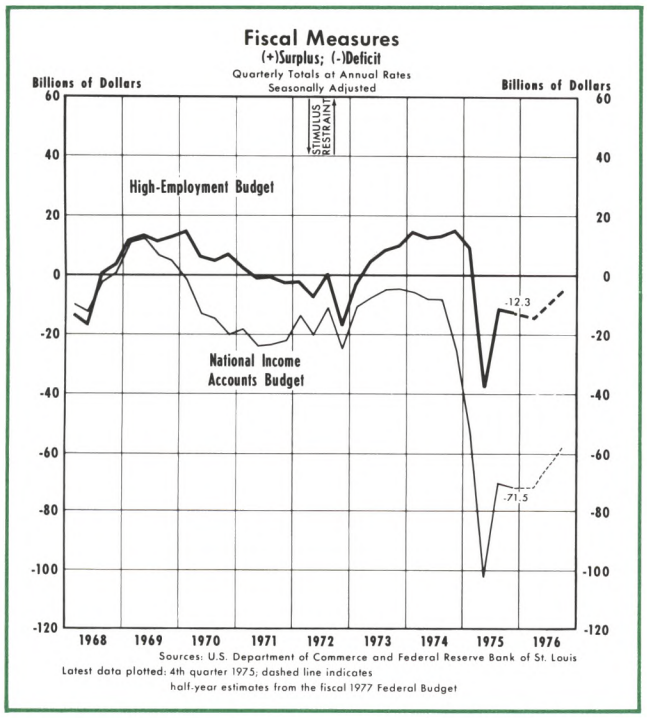
[8]Import fees on crude oil and petroleum products were imposed by Administrative action in 1975, but this action was a very small part of the total energy program that was proposed originally.

[9]1975 CEA *Report*, p. 26.

[10]See the testimony of David Rowe and Franco Modigliani in *The 1975 Economic Report of the President*, Hearings before the Joint Economic Committee, Part 2 (February 1975), and Keith M. Carlson, "The 1975 National Economic Program: Another Exercise in Fiscal Activism," this *Review* (March 1975), p. 10.

Recently revised money data indicate that M_1 grew 4.4 percent from fourth quarter 1974 to fourth quarter 1975. By this measure, there is little question that monetary actions were less stimulative than the CEA was implicitly assuming in its forecast. Furthermore, the path of monetary actions was an unsteady one; money declined slightly in the first quarter, followed by rapid growth in the second and third quarters, and then finished the year with very slow growth again in the fourth quarter.[11]

Fiscal Policy — In accordance with tradition, the policy emphasis in the 1975 *Report* was on fiscal actions. The fiscal plan for calendar 1975 was a very stimulative one, although the extent of net stimulus was overstated if one looked at the projected change in the NIA deficit (see Table IV). The CEA forecast of a large increase in the NIA deficit reflected partly the expected effects of weak economic activity on tax receipts and increased expenditures for unemployment compensation.



As a measure of fiscal plans, the high-employment budget serves a useful function in helping to isolate the active aspect of the fiscal policy process from the passive response to economic activity. In early 1975, the Administration was planning an increase of $40 billion in expenditures on a high-employment basis. Dominating this planned increase were transfer payments which included a one-time payment to social security beneficiaries. The actual increase in Federal spending in 1975 exceeded projections, however, as high-employment expenditures rose by over $49 billion, or 17 percent over 1974.

Table IV

PLANNED AND ACTUAL CHANGES IN THE FEDERAL BUDGET: 1974 TO 1975

(Billions of Dollars)

	Budget Plan	Actual	Error
NIA Receipts	$ —8.4	$ —4.9	$ —3.5
NIA Expenditures	46.3	56.8	—10.5
NIA Surplus or Deficit	$—54.7	$—61.7	$ 7.0
High-Employment Receipts	$ 27.6	$ 22.7	$ 4.9
High-Employment Expenditures	40.1	49.5	—9.4
High-Employment Surplus or Deficit	$—12.5	$—26.8	$ 14.3

On the receipts side, Table IV indicates that high-employment receipts increased less than planned in 1975.[12] The chief reason for this was that the CEA's high inflation forecast was not realized. The growth of high-employment receipts reflects not only changes in tax rates but is also sensitive to changes in the rate of inflation. Congress enacted tax cuts only slightly less in magnitude than those proposed by the Administration in early 1975. The composition of these tax changes, however, was substantially different from that proposed.

Policy Realizations and the 1975 CEA Forecast — As a result, with tax actions more stimulative than planned (as measured by the change in high-employment receipts), and with expenditures rising faster than anticipated, the net effect of fiscal actions in 1975 was more expansionary than planned. The high-employment budget moved from a $14 billion surplus in 1974 to a $13 billion deficit in 1975. This swing of $27 billion was about $14 billion more than planned. On the other hand, monetary actions were apparently less stimulative than expected. Thus to the extent that policy actions contributed to the overestimate of GNP growth, it appears that monetary actions were primarily responsible. Such a conclusion is highly tentative, however, because the CEA does not give the details of the economic framework that provides the basis for their forecasts.

[11]For a detailed summary of monetary developments in 1975, see Nancy Jianakoplos, "The FOMC in 1975: Announcing Monetary Targets," this *Review* (March 1976), pp. 8-22.

[12]The problem of comparability requires emphasis here, because of the national income accounts revisions by the Department of Commerce and revisions in the high-employment budget by this Bank.

1976 AND BEYOND

Economic Forecasts

The economic situation facing the CEA in early 1976 is very much different from what it was a year earlier. The economy is in the midst of a recovery, and the forces of inflation have moderated substantially. Against this backdrop of economic improvement, the CEA has forecast very strong economic growth for both 1976 and 1977. The focus of discussion in the CEA *Report* is on 1976; very few details are given regarding the 1977 forecast.[13]

A summary of the components of the 1976 GNP forecast reveals that the strength of economic activity is expected to be broadly based (see Table V). Both personal consumption and business fixed investment are projected to rise in the neighborhood of 11 percent. Residential construction is forecast to advance by almost 40 percent from a depressed level in 1975 and inventories are projected to swing from net liquidation in 1975 to accumulation in 1976. Net exports are expected to remain positive, but not at the extraordinarily high rate of 1975; this is mainly because economic expansion in the U.S. is expected to increase the demand for imports.

Table V

CHANGES IN GNP AND COMPONENTS: 1975 AND 1976

(Dollar Amounts in Billions)

	1975 Actual*		1976 Projected**	
Personal Consumption	$ 77.3	8.7%	$106.8	11.1%
Business Fixed Investment	.8	0.5	16.3	11.0
Change in Inventories	−23.9	—	25.2	—
Residential Construction	−5.8	−10.6	18.2	37.3
Federal Purchases	11.4	10.2	6.9	5.6
State and Local Purchases	18.4	9.7	17.2	8.3
Net Exports	13.8	—	−5.5	—
GNP	$ 92.1	6.5%	$185.0	12.3%

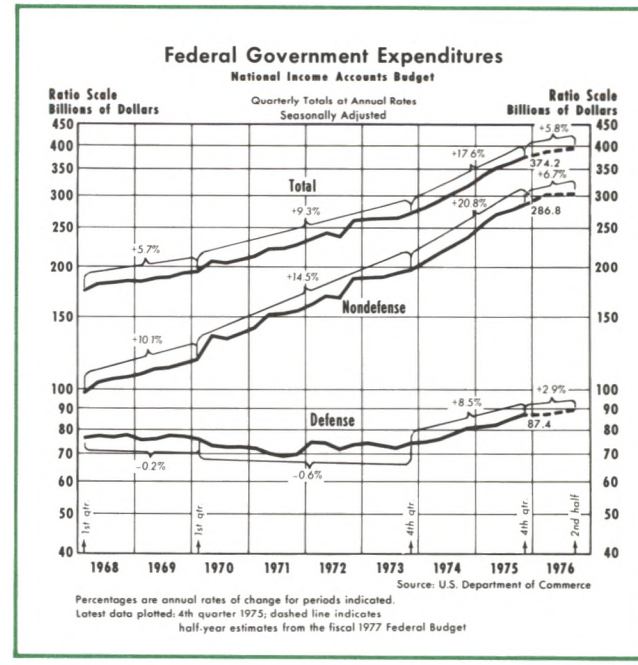
*Based on preliminary data in 1976 CEA *Report*.
**Estimated by this Bank and based on 1976 CEA *Report*.

Another facet of the 1976 forecast that stands in marked contrast to the actual experience in 1975 is the projected trend of government purchases of goods and services. Growth of Federal purchases is planned to slow relative to 1975, and once allowance is made for price increases, the 5.6 percent increase in nominal terms translates into little or no change in real terms. State and local purchases are also expected to increase less rapidly than in 1975, although the slowdown is less dramatic than for Federal spending.

Proposals and Guidelines for Macroeconomic Policy

The Administration's projection of considerable economic strength raises questions about the policy assumptions that underlie the forecasts. When viewed in conjunction with the strong economic projections, the Federal budget program becomes a matter of substantial interest because it reflects a proposed move toward *less* stimulus, at least according to conventional definitions.

Federal Expenditures — The budget program for calendar 1976 calls for an increase in expenditures (NIA basis) of $34 billion, or 9.4 percent (see Table VI). This projected increase contrasts with the 19 percent increase in 1975. Projections for calendar 1977 indicate further slowing in Federal spending, to a 5.3 percent rate of increase. This pattern of slower growth represents a conscious effort on the part of the Administration to arrest the growth of Government and seek an enlarged role for decision-making by the private sector.



Defense expenditures are projected to increase 5.2 percent in 1976 and 6.3 percent in 1977. These projected increases reflect planned purchases of sophis-

[13]The 1977 forecast is found in The *Budget of the United States Government, Fiscal Year 1977*, p. 25, and is not discussed in the CEA *Report*.

ticated military equipment and, given the inflation projections, would represent little change in real terms.

The nondefense category of Federal spending is planned to bear the brunt of Administration cutbacks. After rising at a 15 percent average annual rate from 1969 to 1974, and accelerating to a 23 percent increase in 1975, nondefense spending is being proposed to increase by a more moderate 11 percent in 1976. The projected rise for 1977 is 5 percent. Transfer payments are estimated to increase 9.5 percent in 1976 and 5 percent in 1977, rates substantially below the 27 percent advance in 1975 and the 23 percent increase in 1974.

Receipts — Reflecting an expectation of strong recovery, the Administration sees Federal receipts rising by $43.5 billion in 1976, or 15.4 percent. Receipts would rise even more with current tax schedules, but further tax cuts are being proposed. The Revenue Adjustment Act, which was passed in December 1975, extended the ongoing provisions of the Tax Reduction Act of 1975, but the extension is only through June 30, 1976.[14] The Administration is proposing that taxes be cut by even more than provided by the Revenue Adjustment Act. However, as emphasized in the President's budget message, these cuts are being proposed contingent upon favorable action on the expenditure program.

The tax changes proposed to be effective July 1, 1976 consist of the following: (1) an increase in the personal exemption from $750 to $1000; (2) substitution of a flat $2500 standard deduction for the current low income allowance and percentage standard deduction; (3) a reduction in marginal tax rates for the individual income tax; (4) a reduction in the maximum corporate tax rate from 48 to 46 percent; and (5) legislation to provide tax relief to electric utilities.[15] Also, the Administration proposes that the increase in the investment tax credit under the Revenue Adjustment Act be made permanent. The only tax increase for 1976, which is the result of past legislation, is an increase in the base for social security contributions from $14,100 to $15,300 effective January 1, 1976.

Table VI

PLANNED CHANGES IN FEDERAL (NIA) BUDGET 1975 TO 1976

(Billions of Dollars)

NIA Receipts			$43.5
Change Due to Growth		46.6	
Change Due to Cycle		4.7	
Change Due to Tax Rate Adjustments		—7.8	
NIA Expenditures			33.7
Change in Defense		4.4	
Change in Nondefense		29.3	
Due to Cycle	—1.3		
Due to Existing Programs and New Initiatives	30.6		
NIA Surplus or Deficit			9.8
High-Employment Receipts			38.8
High-Employment Expenditures			35.0
High-Employment Surplus or Deficit			3.8

Table VI shows that tax rate changes, as proposed by the Administration or due to past legislation, amount to about $7.8 billion in calendar 1976. This estimate reflects the dollar amount of tax changes relative to the rate structure that was in effect, on average, in 1975. Consequently, the $7.8 billion amount includes not only Administration proposals but the delayed effects of the Tax Reduction Act (for example, the tax credit per exemption) and the increase in the social security tax base on January 1, 1976.

Surplus/Deficit Position — Because of the forecast of strong economic activity and the proposed slowing in expenditure growth, the NIA deficit is expected to be reduced. The $9.8 billion decline in the NIA deficit (a decline in the deficit is shown as a positive number in Table VI) reflects a movement in the deficit from $74.2 billion in calendar 1975 to $64.4 billion in 1976. The effect of the overall budget program on the deficit becomes more substantial by 1977. Given the budget program and the assumptions about economic activity, the NIA deficit is projected to decline to $30.7 billion in calendar 1977.

With the budget being influenced in considerable measure by the strong recovery, the movement in the NIA budget gives a misleading picture of the extent of fiscal restraint. The high-employment budget adjusts the NIA budget for these feedbacks of economic activity on the surplus or deficit. As a result, as indicated by the $3.8 billion reduction in the high-employment deficit, (see Table VI), the economic impact of the budget program in 1976 is one of slight re-

[14]Most of the provisions (the major exception was the tax rebate) of the Tax Reduction Act were extended, although there were some changes. In particular, with respect to the individual income tax, the minimum standard deduction was raised and the tax credit per exemption was increased.

[15]There are several other proposed tax changes with a total revenue impact of about $1 billion on an annual rate basis: (1) a tax credit to encourage financial institutions to hold residential mortgages, (2) accelerated depreciation on plant and equipment investment in areas of high unemployment, (3) tax deferral for funds invested in stock purchase plans.

straint. The budget program is scheduled to show significant restraint in calendar 1977 when it is projected to move to a $16 billion surplus, or a swing of $25 billion toward restraint.

Monetary Policy — The CEA does not make a specific recommendation for monetary policy in 1976, but suggests some guidelines along with acceptance, in principle, of the Federal Reserve's target ranges for monetary aggregates.

> It is not possible to say with any assurance what growth rates of money are necessary to allow real GNP to grow by 6 - 6½ percent from 1975 to 1976. Setting an upper limit on the growth rate, however, should reduce the prospects for a rekindling of inflation. At the same time, the lower limit provides assurance of continued growth in the money supply if the recovery should turn out to be much weaker than expected.[16]

As general guidelines for future years, the CEA provides what appears to be a mixed view. On the one hand, they say "the targets must be administered with flexibility," but, on the other hand, they state that "what is called for . . . is a steadier course in macroeconomic policies than has been followed in the past."[17] Reconciliation of these two statements seems to imply a compromise between a monetary rule and fully discretionary policy. The CEA does get very specific, however, in stressing the dangers of moving to the top of the target range:

> . . . concern with the achievement of greater economic stability in future years suggests that any rate of growth in money which is at the upper limit of the tolerance range announced by the Federal Reserve (7½ percent for M_1, 10½ percent for M_2), could not be maintained indefinitely if progress toward lower inflation rates is to continue.[18]

EVALUATION OF THE ADMINISTRATION'S PROGRAM

The two primary objectives of the Administration's program are long-run in scope. The first objective is promoting a moderate and sustainable recovery, and the second is checking the expanding role of Government. Although it runs against Keynesian economic doctrine the Administration feels that these two objectives are compatible with one another. These two objectives provide the basis for an evaluation of the Administration's economic program over the six-year horizon, 1976-81.

Promoting a Sustainable Recovery

With the U.S. economy in an apparently strong state of recovery, the CEA is concerned with keeping it going, and keeping it going for a long period of time. The desirability of a sustainable expansion is indisputable, but two questions present themselves: (1) is the Administration's growth path for GNP consistent with the policies they propose, and (2) given the GNP growth path, is the price-output scenario likely?

Consistency of GNP Path with Policy Proposals — The Administration has presented projections of GNP showing an average annual rate of growth of 12.2 percent from 1975 to 1979, followed by a 10 percent average rate of increase in 1980 and 1981 (see the first column in Table VII). Along with this projection, a set of budget estimates are given — estimates based on the assumption that real Government services will be maintained at levels implied in the fiscal 1977 budget. In other words, the budget estimates do not represent a projection of prospective fiscal actions but show only an extrapolation of "current services." For this reason, the budget projections should not be interpreted as a set of fiscal actions designed to achieve the assumed path for GNP.

To gain possible insight into the means of achieving GNP growth of 12 percent through 1979, it is interesting to develop conjectures about the course of monetary actions. The Administration provides no information about the pattern of monetary action that they view as necessary to attain their GNP target. The closest they come to committing themselves on this question is their concern about the inflationary potential of sustaining a rate of M_1 growth at the top of the Federal Reserve's target range, that is, at 7.5 percent. Quite clearly then, a monetary growth rate of less than 7.5 percent underlies their long-term GNP projection.

Consider the implications of assuming that money grows at a steady 6 percent growth rate through 1981 (shown as Alternative A in Table VII). Given the Administration's GNP growth path, velocity would have to increase at a 6 percent average annual rate from 1975 to 1979 and a 4 percent rate in 1980 and 1981. Is such a pattern of velocity growth consistent with historical experience?

Examination of rates of change of velocity for the postwar period from 1947 to 1975 reveals that the highest 4-year growth of velocity is 7.4 percent, which occurred from 1947 to 1951. The second highest period

[16] 1976 CEA *Report*, p. 39.

[17] Ibid., pp. 21, 39.

[18] Ibid., pp. 21-22.

Table VII

MONEY, VELOCITY AND THE ADMINISTRATION'S GNP PROJECTIONS

(Annual Rates of Change)

		Alternative A*			Alternative B*		
	Projected GNP Growth	Assumed Money Growth	Implied Velocity Growth	Velocity Growth from 1975	Assumed Velocity Growth	Implied Money Growth	Money Growth from 1975
1976	12.4%	5.6%	6.4%	6.4%	5.0%	7.0%	7.0%
1977	12.2	6.0	5.9	6.1	4.0	7.9	7.5
1978	12.4	6.0	6.0	6.1	3.0	9.1	8.0
1979	11.9	6.0	5.5	6.0	3.0	8.6	8.2
1980	10.9	6.0	4.7	5.7	3.0	7.7	8.1
1981	9.1	6.0	3.3	5.2	3.0	6.0	7.7

*The Administration does not provide detail on the money and velocity assumptions underlying their projections. These two alternatives were prepared by this Bank. Alternative A assumes a steady growth in Money (M_1) of 6 percent from IV/1975, and shows the velocity path implied by the Administration GNP projections. Alternative B assumes an initial acceleration in velocity followed by a return to a 3 percent trend rate, and shows the money (M_1) path implied by the Administration projections.

for velocity growth (which overlaps the 1947-57 period) is 1949 to 1953 when it grew at a 5.3 percent average rate. Once we move away from these war-related periods the highest rate of growth is 3.9 percent from 1958 to 1962.

Another way of analyzing the GNP projection is to assume a path of velocity consistent with past experience, and calculate the implied money path. The result of such a calculation is shown as Alternative B in Table VII, and shows money growth of 8.2 percent from 1975 to 1981. Whether we focus on the 4-year period from 1975 to 1979 or the full 6-year period, the implied rate of money growth moves above the high end of the Federal Reserve's target range.

Historical experience does not provide an immutable law, but one is forced to question a set of projections that is so much at variance with historical experience. Does the CEA provide any explanation for this newly evolving phenomenon?

Although not directed at the long-term projections, the CEA does devote a section to the discussion of recent trends in velocity.[19] Listed are a set of factors that have recently come into play tending to increase velocity via downward shifts in the demand for money. Included are references to recent financial innovations and changing regulations relating to telephonic transfer of funds and corporate holdings of saving accounts at commercial banks. *Ceteris paribus*, there is little question that these innovations increase velocity. The relevant point for the long-run projections, however, is whether these financial changes imply a sustained change in the rate of change of velocity. For velocity growth to step up and be maintained at 6 percent suggests the continuing rapid development of financial innovations into the future. Indeed, such changes are occurring all the time, and the observed rise in velocity in the postwar period attests to the effects of such changes. Pointing to recent factors tending to increase velocity, however, does not imply that such factors will produce a sustained change in the rate of velocity growth.

Likelihood of Price-Output Scenairo — Despite the questionable possibility of achieving an average growth of GNP of 12 percent over the next four years, it is still of interest to examine the distribution of such growth between price and output change. The Administration's long-term projections show a 6 percent average rate of real growth from 1975 through 1981 (see Table VIII). Furthermore, this rapid advance of output is accompanied by a slowing of inflation from 6.5 percent in 1975 to 4 percent by 1981.

Table VIII provides a summary of the postwar period showing the growth of output and associated changes in the inflation rate. First of all, there is no period of sustained expansion as long and strong as the one projected by the Administration. Second, there is only one of the four periods of six-year economic expansion that inflation decelerated — the 1955 to 1961 period, which was one of real growth below trend. In general, the more rapid the rate of real growth the greater the acceleration of inflation. It is difficult to draw any definite conclusions with the sketchy data available, but what evidence there is suggests that 6 percent growth of output over a

[19] Ibid., pp. 35-39.

Table VIII

OUTPUT, GROWTH, AND INFLATION

	ANNUAL RATES OF CHANGE			
	Output	Inflation Rate Beginning of Period*	Inflation Rate End of Period*	Change In Inflation Rate
1949 to 1955	4.9%	—2.0%	2.7%	4.7%
1955 to 1961	2.4	2.7	0.9	—1.8
1961 to 1967	4.9	0.9	3.1	2.2
1967 to 1973	3.4	3.1	7.5	4.4
1975 to 1981**	5.9	6.5	4.0	—2.5

*Inflation rate for beginning of period calculated for four-quarter period ending in fourth quarter of initial year, and for end of period calculated for four-quarter period ending in fourth quarter of terminal year.

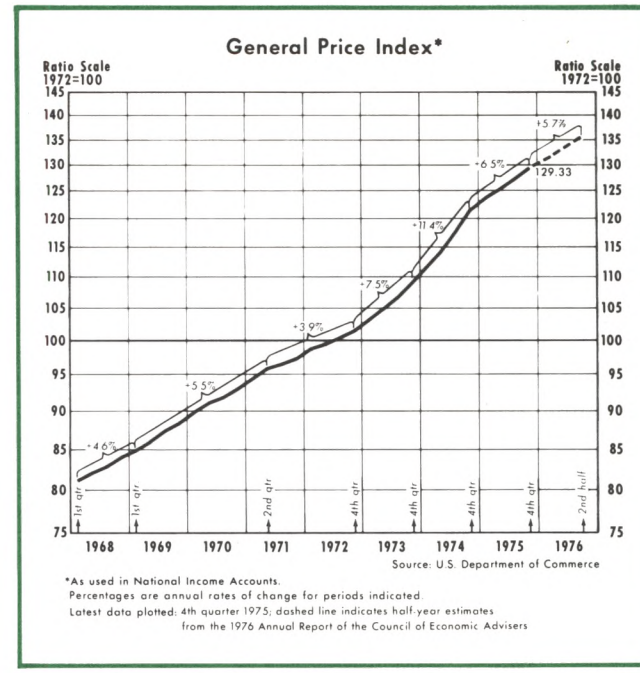
**Administration projection.

six-year period cannot be achieved without some acceleration of inflation.[20]

In summary, the prospects for sustained economic expansion are good, if monetary growth is held steady — a point which is emphasized by the CEA in their *Report*. But the growth of GNP is not likely to be as rapid as they indicate unless the rate of monetary expansion is accelerated. Furthermore, even if their path of GNP growth is achieved, there is some evidence from past experience questioning the likelihood of sustaining a rapid growth in output without accelerating the rate of inflation. The latter conclusion is grounded on a weaker foundation, however, because the current situation appears to be unique relative to past experience because of relatively large excess capacity. But when account is taken of the effect of Government regulations relating to product reliability, occupational and consumer safety, and environmental control, the amount of excess capacity currently is much less than a superficial reading of the numbers would suggest.

Checking the Growth of Federal Spending

The second major objective of the Administration's program is checking the growth of Federal spending. Questions might arise as to political feasibility, but



they will not be discussed here. Of concern are the implications of such a goal for the course of the economy in future years.

The CEA offers a challenge to conventional macroeconomics. Virtually all of the well-known econometric models suggest that increased Government spending is stimulative, but this is a feature which applies to the short run.[21] In particular, when the economy is operating below some so-called full employment level, an increase in Government spending stimulates output and employment, and once full employment is reached, any further increases in Federal spending puts upward pressures on prices. This is the message of Keynesian economics.

The Administration questions the assumption that the Federal government can promote economic expansion for a very long period. The focus in the *Report* is on the detrimental effects of rapidly rising Government spending on economic growth. The budget program is grounded on the hypothesis that the growth of productive potential will be greater if the size of the Government sector is reduced relative to the private sector.

The financing of Government programs has to come ultimately from incomes and profits generated by the private sector. If the growth of Government is allowed to continue unchecked, financing requirements will

[20]A more complete analysis of the price-output scenario should probably also take the growth of money into consideration. Research at this Bank indicates that a maintained growth in money of 6 percent would produce an inflation rate of between 5 and 6 percent by 1981. See Leonall C. Andersen and Denis S. Karnosky, "The Appropriate Time Frame for Controlling Monetary Aggregates: The St. Louis Evidence," *Controlling Monetary Aggregates II: The Implementation* (Proceedings of a Conference Held at Melvin Village, New Hampshire, sponsored by the Federal Reserve Bank of Boston, September 1972), pp. 147-177.

[21]See Gary Fromm and Lawrence Klein, "A Comparison of Eleven Econometric Models of the United States," *American Economic Review* (May 1973), pp. 385-93.

eventually work toward discouragement of incentives to work, produce and invest.[22] These are the ingredients that are vital to the growth process.

Even though the CEA does not develop statistical evidence in support of their position, their proposal is a refreshing one because it reflects a long-run perspective that has long been missing from the policy-making process. Recognition of short vs. long-run effects of expanding Government programs represents a significant departure from conventional thinking, which has been dominated by considerations of the short-run transitory effect of fiscal actions on economic activity.

SUMMARY

The Administration is in the position of being able to take a long-run perspective now that the recovery seems to be well underway. As a result, they have formulated a budget program that, if enacted, would reverse the trend of Government spending. Furthermore, such a reversal of trend is regarded by the Administration as being consistent with promoting a moderate and sustainable recovery.

The CEA forecasts for 1976 and 1977 are at the high end of the range of the consensus forecasts, indicating a relatively rapid advance of output and continuing inflation in the range of 5 to 6 percent. The scenario for the years following 1977 is somewhat of a mystery, however, as the CEA does not spell out its policy strategy. Furthermore, it is not clear how output could continue to advance rapidly and inflation could abate at the same time.

Evidence was presented indicating that the Administration's long-run GNP path is rather unlikely, given past relationships. In particular, even if a relatively rapid 6 percent rate of monetary expansion were assumed, the implied pattern of velocity change in the Administration's projections is so far from historical experience that it is difficult to accept. No evidence is developed in the CEA *Report* supporting a marked and sustained change in the rate of change of velocity.

One of the most interesting aspects of the *Report* is the recommendation for slowing the growth of Federal spending, and that the long-term interest of the economy will be best served by such a slowing. Despite the significance of the recommendation, the rhetoric is not backed by any quantitative evidence. The proposal is laudable, however, because the focus is shifted from short-run aggregate demand considerations to long-run effects on aggregate supply.

Contrary to many of the past CEA reports, short-run problems do not seem to be paramount. It is true that the ultimate economic goals have not been achieved nor is it likely that they will be reached in the next year or two. Yet, the foundation for their ultimate achievement rests on the development of policies that aim for steadiness in monetary growth and reducing the size of Government. Policymakers and the public seem to have accepted the fact that achievement of full employment with price stability is not possible within a short period of time, and any attempt to do so is self-defeating. Consequently, the time is ripe to take a long-run perspective and attempt to define a long-term policy strategy. The Administration has succeeded in shifting the emphasis, but the details of the scenario still need to be spelled out.

[22]For some discussion of this hypothesis, see Keith M. Carlson and Roger W. Spencer, "Crowding Out and Its Critics," this *Review* (December 1975), p. 16.

A Mortgage Futures Market: Its Development, Uses, Benefits, and Costs

NEIL A. STEVENS

AN inherent risk associated with dealings in commodities is the possibility of financial losses resulting from unexpected changes in the price of the commodity. One mechanism for reducing such risks is a futures market. Last fall a futures market in mortgages began operations on the Chicago Board of Trade.[1] In view of the volatility of mortgage interest rates in recent years, this new futures market will likely be useful to some mortgage market participants in reducing their risks from unexpected interest rate movements.

In principle, this mortgage futures market operates in the same way as the traditional commodity futures markets. In this new market, contracts based on GNMA pass-through securities are traded rather than contracts based on commodities, such as wheat, corn, or silver. This article examines the underlying conditions leading to the development of this market, the uses it can offer to some mortgage market participants, and the benefits and costs of such a market.

Note: Material particularly helpful in the preparation of this article include "Hedging in GNMA Mortgage Interest Rate Futures," Chicago Board of Trade (November 1975), and Richard L. Sandor, "Trading Mortgage Interest Rate Futures," *Federal Home Loan Bank Board Journal* (September 1975), pp. 2-9.

[1]Price quotes for this market are now published daily in the commodity section of the *Wall Street Journal*.

MARKET DEVELOPMENT

Futures contracts are standardized agreements to make or take delivery of a specified amount of a commodity at some future date.[2] Contracts specify the commodity, its exact grade and quantity, the maturity date of the contract, details concerning delivery, and a number of other technical specifications. Prices of these contracts are determined by trading activity on organized exchanges. In well-functioning futures markets, contracts are seldom allowed to mature; that is, delivery of the commodity is not usually made or taken. A futures market position can be offset before the maturity date of the contract by simply executing an opposite buy or sell transaction.

Commodities traded on futures markets must be well defined; thus the chief problem in the development of a mortgage futures market was finding a suitable trading unit of uniform quality. Mortgage documents are not uniform nor does there exist a widely accepted grading system for standardizing mortgages. Mortgage markets have traditionally been localized, and have only recently become national

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[2]In general, a futures contract differs from a forward contract in that the forward contract is not negotiable, the terms are not standardized, and delivery of the commodity is expected unless otherwise agreed upon by the parties involved in the transaction.

Table I

EFFECTIVE RATE ON NEWLY-BUILT CONVENTIONAL HOME MORTGAGES FOR SELECTED METROPOLITAN AREAS

(Averages for All Major Lenders)

Metropolitan Area	December 1975		December 1974	
Atlanta	8.90		9.17	
Baltimore	8.86		9.04	
Chicago — Northwestern Indiana	9.06		9.37	
Cleveland	8.80		9.70	
Dallas	8.98		9.80	
Denver	9.25		9.31	
Detroit	8.74		9.33	
Houston	9.09		9.19	
Los Angeles — Long Beach	9.15		9.57	
Miami	9.05		8.62	
New York — Northeastern New Jersey	8.61	(Low)	8.71	
Philadelphia	8.76		9.31	
St. Louis	8.77		8.38	(Low)
San Francisco — Oakland	9.47	(High)	9.86	(High)
Washington, D.C. — Maryland, and Virginia	9.14		9.09	

Source: Federal Home Loan Bank Board *News* (January 21, 1976).

in character. Consequently, effective interest rates on conventional mortgages vary substantially among cities.[3] For example, according to a survey by the Federal Home Loan Bank Board, the effective rate on conventional mortgages for newly-built homes in December 1975 varied from a low of 8.61 percent in the New York City area to 9.47 percent in the San Francisco Bay area (see Table I). Thus a futures contract based on conventional-type mortgages did not appear feasible in view of the diversity of these mortgages.

Two agencies have been given primary responsibility for improving the liquidity of mortgages. One, the Federal National Mortgage Association (FNMA and known in the trade as Fannie Mae) is a Government-sponsored corporation owned by private stockholders, but regulated by the Department of Housing and Urban Development.[4] Operations of FNMA are aimed at providing liquidity for mortgages insured by the Federal Housing Administration and Farmers Home Administration, mortgages guaranteed by the Administration of Veterans Affairs, and conventional mortgages. It performs this function by making purchase commitments or purchasing and selling such mortgages. Another agency, the Federal Home Loan Mortgage Corporation (FHLMC) whose capital stock is issued only to the twelve Federal Home Loan Banks, is authorized to purchase and sell residential mortgages. The primary purpose is to assist in the development of secondary markets for conventional mortgages.[5]

In addition to these Government-sponsored agencies, the Government National Mortgage Association (GNMA and known in the trade as Ginnie Mae), a Government-owned corporation under the Department of Housing and Urban Development, has among its operations the pass-through securities program. Under this program Ginnie Mae guarantees the timely payment of principal and interest on GNMA pass-through certificates. Such certificates are issued by private mortgage lenders against specified pools of mortgages insured by the Federal Housing Administration or guaranteed by the Administration of Veteran Affairs. Stated maturities on modified pass-through certificates are equal to those on the underlying mortgages (usually 30 years) and the minimum denomination of certificates is $25,000. Holders of these certificates receive regular monthly interest and principal payments as well as any prepayments of principal. Ginnie Mae guaranteed $4.8 billion of these securities in 1974 and another $7.4 billion in 1975.

A well-functioning secondary market for these securities currently exists among security brokers. Thus, the developers of the mortgage futures market viewed GNMA modified pass-through certificates as a suitable unit for basing mortgage futures contracts. As presently traded on the Chicago Board of Trade, the mortgage futures contract is specified as a GNMA modified pass-through certificate with a principal balance of $100,000 and a stated interest rate of 8 percent. GNMA pass-through certificates bearing other yields can be used for delivery, providing they yield an equivalent 8 percent when calculated at par and under the assumption of a 30-year certificate prepaid in the twelfth year. Prices of the GNMA futures contracts are quoted as a percentage of par; when market interest rates rise, the price of the futures contract falls and vice versa.

USES OF THE MORTGAGE FUTURES MARKET

The primary functions performed by residential mortgage lenders are origination of loans, interim and

[3]Conventional loans usually refer to mortgages made by private lenders without Government insurance or guarantees.

[4]Contributions to FNMA capital stock are required for most buyers and sellers using the FNMA mortgage market.

[5]Both FNMA and FHLMC are authorized to raise funds to purchase mortgages by issuing various types of securities in the capital market.

short-term financing, and permanent financing. These functions may be carried out by the same firm or by different firms. The major institutions which perform these functions, and thus some of the potential users of the mortgage futures market, include savings and loan associations, mutual savings banks, commercial banks, insurance companies, and mortgage banks. Mortgage banks perform primarily the function of loan origination by making initial contact with the builder and home buyer, arranging short-term financing for construction, and finding a permanent buyer of the mortgages originated. Savings and loan associations and mutual savings banks, as well as commercial banks, often perform all three functions, while insurance companies, trust funds, and pension funds most often perform the role of permanent investor.

Various opportunities arise for the use of a mortgage futures market as a hedging device when these participants in the mortgage market carry out the origination and permanent financing functions.[6] In essence hedging is for the purpose of protecting a *temporarily* uncovered cash market position, either expected or existing, from price changes.[7] Hedging is carried out by temporarily taking an equal and opposite position in the futures market from that taken in the cash market, that is, buy in one and sell in the other. The futures market position should be cancelled when the cash transactions have been completed so that there is no longer an uncovered position.

Two basic types of hedges are possible — a sell hedge and a buy hedge. The sell hedge (sell futures) can be used to temporarily protect a commitment to buy mortgages or an existing inventory of mortgages held. A buy hedge (buy futures) can be used to temporarily protect a commitment to sell mortgages or fix the price of an expected purchase of mortgages. In addition to these hedging possibilities, the futures market can be used to undertake speculative actions.

Hedging a Commitment to Buy Mortgages

The use of commitments in the mortgage lending process gives rise to one use of a mortgage futures market.[8] When commitments are made to builders and homebuyers at fixed interest rates, subsequent changes in mortgage interest rates can result in a substantial financial gain or loss to the lender.

To give some idea of the amount of this risk, commitments outstanding at all savings and loan associations on July 31, 1975, amounted to $16.1 billion, while yields on 8 percent Ginnie Mae securities in 1975 ranged from a low of 8.02 percent on February 12 to a high of 9.11 percent on September 17. With this range in yields, one GNMA contract ($100,000) would change approximately $7,500 in value. The magnitude of these commitments and the possible fluctuations in mortgage interest rates can lead to considerable uncertainty in profits, especially in the short run, and therefore give impetus to the use of a mortgage futures market.

Suppose, for example, a savings and loan association makes arrangements to finance new housing construction and makes a commitment to finance the permanent loans at a given rate. The association expects to form a mortgage pool from the mortgages obtained and sell GNMA securities to investors. The commitments are made at the current market rate; however, should interest rates increase before the GNMA securities are sold to investors, the savings and loan association would have to sell the mortgages at a discount, thereby suffering a financial loss.

The GNMA mortgage futures market provides a mechanism for the savings and loan association to protect loan origination and servicing profits from interest rate movements. For an illustration of how such an interest rate hedge could be carried out, suppose that in January a savings and loan association makes $1 million in permanent financing commitments to be consummated by June at 8½ percent, the going market yield of Ginnie Mae 8's at the time.[9] The institution plans to form a pool of mortgages and issue GNMA pass-through securities to be sold to other investors rather than hold the mortgages in their own portfolio. If the savings and loan association decides to protect these cash market transactions from interest rate movements, it will *sell* 10 June GNMA futures contracts ($100,000 each) at the time the commitments are made. For simplicity, assume that the

[6]Since interim and short-term loans often reflect short-term interest rate movements and yields on GNMA certificates reflect long-term interest rate movements, the GNMA futures market cannot be used to effectively hedge short-term financing operations. Such short-term loan commitments may be more effectively hedged in the new Treasury bill futures market. Federal-related agencies that buy and sell mortgages may also use this futures market to reduce their risks.

[7]An uncovered position is one which is subject to price level risk, that is, a position where changes in interest rates, subsequent to taking the cash position, leads to either financial losses or gains.

[8]Commitments as used here are defined as promises to buy or sell mortgages at a *fixed* price for future delivery, that is, forward contracts. Such commitments are considered here as a cash-type transaction. Also see footnote 2.

[9]The term "Ginnie Mae 8's" refers to GNMA pass-through certificates with a stated interest rate of 8 percent.

Illustration I

HEDGING A COMMITMENT TO BUY MORTGAGES OR AN INVENTORY OF MORTGAGES

Cash Transactions	Futures Transactions
January — Savings and loan association makes $1 million in residential mortgage commitments at the current yield on Ginnie Mae 8's of 8.5%.	January — Savings and loan association sells 10 June GNMA futures contracts.
Price of Ginnie Mae 8's — 96-03	Price — 96-03
	Yield — 8.50%
Total value of $1 million of Ginnie Mae 8's at this time — $960,937.50	Total value of 10 contracts — $960,937.50
June — Savings and loan association completes mortgage pool and sells $1 million of Ginnie Mae's 8's.	June — Savings and loan association buys 10 June GNMA futures contracts, cancelling out the above transaction.
Price — 92-22	Price — 92-22
Yield — 9.00%	Yield — 9.00%
Total value of Ginnie Mae 8's — $926,875.00	Total value of 10 contracts — $926,875.00
Loss $34,062.50	Gain $34,062.50

GNMA futures contract is priced at 96-03, or a yield of 8.5 percent.[10]

Assume interest rates have risen by June, so the $1 million of Ginnie Mae 8's are sold to investors at a price of 92-22, a yield of 9 percent. GNMA futures prices will have also fallen (yields risen) reflecting the changed market conditions, and should approximately equal the price of the 8 percent Ginnie Mae securities sold to private investors in the cash market.[11] The savings and loan association completes the hedge at the time the GNMA certificates are sold to investors by *buying* 10 June contracts, thereby offsetting the futures position taken earlier. From Illustration I, the cash transactions alone resulted in a loss of $34,000 to the savings and loan association while the futures transactions alone resulted in a gain of $34,000. Thus, the firm has successfully hedged its commitments from increases in interest rates.

If interest rates had fallen during the January-June period, the opposite situation would occur in each market. The cash transaction would result in a financial gain to the lender while the futures transactions would result in a loss. On balance, however, the gains and losses should approximately offset each other, thus preserving the profit from origination and servicing of the mortgage.

Hedging an Inventory of Mortgages

Originators of mortgages, especially mortgage banks, often make commitments simultaneously to both the investor and the borrower (builder or homeowner) at a specified rate, which effectively hedges the transaction. In other cases the originator may temporarily hold an inventory of mortgages without an agreed upon price.[12] If the loan originator follows the hedging procedure similar to that outlined in Illustration I, the GNMA futures market can be used as a means for avoiding large losses while the mortgages are held in inventory. These mortgages may be either Federally insured or conventional. The assumption necessary for a successful hedge, however, is that the price of the mortgages agreed upon between the originator and investor move in step with price movements in the GNMA futures market. This could be assured by agreeing beforehand that the price of the mortgages be pegged to movements in Ginnie Mae prices.

Hedging a Commitment to Sell Mortgages

A loan originator might have occasion to make commitments to sell mortgages to an investor at a specific price before all the mortgages have been originated. A loan originator, such as a mortgage banker, would normally avoid such situations for he bears the risks that market rates will decline, causing him to buy the mortgages at a higher price than expected. To protect himself in this situation, the bank can *buy* futures contracts at the time he makes the commitment to sell mortgages to the institutional investors. When the buying price of the mortgages is determined, the futures transaction is reversed by

[10] 96-03 is read 96 and 3/32. 93-03 is equivalent to a yield of 8.5 percent assuming a 30-year maturity and prepaid in the twelfth year.

[11] In practice, the futures price and the cash price for GNMA futures will differ somewhat depending on market conditions. In the delivery month of a contract, however, interest rates in both the GNMA cash market and the GNMA futures market should normally be very close. If the cash price is significantly above the futures price, those who bought futures contracts will take delivery and make a profit by selling in the cash market, thus bringing pressure for the gap to narrow between the two markets. If, on the other hand, the futures price is significantly above the cash price, a profit can be made by buying mortgages in the cash market, selling futures, and making delivery.

[12] Since the mortgage inventory is likely to have been financed by short-term financing, the spread between the financing interest rate and the mortgage interest rate is presumably favorable to the mortgage bank if such a procedure is followed. If the interest rate spread is not favorable, the mortgage bank may be speculating that mortgage interest rates will fall in the near future, thereby realizing a speculative profit. Of course, in the latter case, the firm would choose not to hedge.

selling futures. If this price closely reflects the GNMA pass-through market price, the firm will again succeed in protecting its profit from loan origination.

Forward Pricing of Cash Flows

Another use of the mortgage futures market is the forward pricing of expected cash inflows by financial intermediaries. For example, permanent investors, such as savings and loan associations, usually have relatively steady cash inflows, so that fairly accurate projections of these flows over, say, a six-month period, are possible. In addition, the offering rates for funds by these thrift institutions, that is, the rates paid on savings deposits, are relatively fixed over periods of time, which, in effect, results in a de facto commitment by these institutions. Since the price at which they sell these funds (buy mortgages) changes as market interest rates change, and thereby affect their short-run profits, they may wish to protect themselves from such risk. For these reasons, financial intermediaries may make commitments to buy mortgages at fixed prices several months in advance of their delivery. In so doing, the firm may lock-in the existing margin between its buying rate for funds and the selling rate (buying price of mortgages). Finding such arrangements in the cash market can be difficult. Therefore, the GNMA futures market offers a convenient alternative for locking-in a given yield on a cash flow before it is received.

Illustration II presents an example of this type of hedging. Suppose in June a financial intermediary, such as a savings and loan association, forecasts its net cash inflows over the next three months at $1.92 million and would like to invest these funds in GNMA securities which currently are yielding 8.514 percent. The buying rate for savings and time deposits is expected to average 6 percent and remain unchanged over the period. The savings and loan association views this current profit margin as satisfactory and thus decides to lock-in the 8.514 percent yield. This can be accomplished by *buying* September GNMA futures contracts. Suppose that by September current mortgage interest rates have fallen to 8 percent. The savings and loan buys Ginnie Mae 8's in the cash market for 99-21.[13] The firm completes the hedging transaction by *selling* 20 September GNMA futures contracts which are assumed to be also trading for

Illustration II

FORWARD PRICING A CASH FLOW BY A FINANCIAL INTERMEDIARY

Cash Transactions	Futures Transactions
June — Savings and loan association expects a cash flow of $1.92 million over the next three months. Plans to invest these funds in GNMA pass-through certificates. Current Ginnie Mae 8's Price — 96-00 Yield — 8.514%	June — Buys 20 September GNMA futures contracts Price — 96-00 Yield — 8.514% Total Value — $1,920,000
September — Buys $2 million principal balance of Ginnie Mae 8's securities. Price — 99-21 Yield — 8.00% Total Price — $1,993,125	September — Sells 20 September GNMA futures contracts Price — 99-21 Yield — 8.00% Total Value — $1,993,125
Increased Cost of Ginnie Mae Securities (Loss) — $73,125	Gain $73,125

99-21. The cash transactions result in the firm paying $73,125 more for the securities than it would have paid in June, while the futures market transactions yield a profit of a like amount. Thus, on balance, the firm will receive the 8.5 percent yield on the $1.92 million cash flow.

Although a financial intermediary can lock-in a given yield on a cash flow before it has actually been received, such a procedure cannot assure that such profitable opportunities will develop nor can it assure long-term investors that mortgages will be profitably held over their entire life. A problem of some intermediaries, such as savings and loan associations, is the different average length of maturities between its assets (mostly mortgages) and its liabilities (time and savings deposits). Savings and loan associations generally have a shorter average maturity structure in their liabilities than in their assets. Therefore, if interest rates rise unexpectedly over a prolonged period of time, long-term assets must be carried with higher cost funds, that is, higher rates on time and savings deposits, resulting in financial losses to these institutions.[14] This type of interest rate risk borne by permanent investors cannot be hedged effectively in the GNMA futures market since the movements of rates paid on time and savings deposits are not likely to be very close to movements in GNMA futures prices.

[13]Because of the GNMA 15-day interest-free servicing delay provision, an 8 percent GNMA yields 8 percent at a price of 99-21/32, assuming a 30-year mortgage prepaid in the twelfth year.

[14]Such rates are currently constrained by Government regulations, thus forcing a quantity adjustment (amount of funds held at these intermediaries) rather than a price adjustment when yields on alternative market instruments rise significantly above regulated rates.

Speculation

A futures market can be used both to hedge and to speculate. The hedging firm is one which in the normal course of business takes a cash position in a particular commodity, and wishes to protect its position from adverse price (yield) movements by taking an equal and opposite position in the futures market. The speculator, on the other hand, is willing to assume an open position either in the cash market or in the futures market. In other words, the speculator wishes to take the risk of price (yield) changes motivated by the expectation that price movements will yield him a profit.

Mortgage market participants themselves often have strongly held expectations about the course of future interest rate movements and may believe their projections of future interest rates are better than those implied in current market rates. Thus, participants in the mortgage market who normally take cash positions in mortgages may find the GNMA futures market a convenient tool to carry out speculative decisions.

For example, firms might follow what could be referred to as "selective hedging" strategy. Such a strategy would entail the use of the futures market to hedge transactions when interest rate movements are expected to benefit the firm while leaving its cash positions open (unhedged) when this is expected to benefit the firm. For example, a well-capitalized mortgage company may have an opportunity to originate $1 million in loans. The company is reasonably certain that interest rates will fall by the time the loans are closed and ready for delivery to an investor. Thus the company commits itself to make the loans at the current interest rate expecting that it can later sell the loan to a permanent investor at a profit. If, however, the company expected interest rates to rise rather than fall, it could cover that transaction in the futures market, as in Illustration I, avoiding either loss or gain.

Firms using speculative decisions based on forecasts of interest rate movements are likely to be major users of the futures market. They gain to the extent that their expectations are more accurate than those implied in market prices; they lose to the extent that their expectations are less accurate than those implied in the markets.

COSTS AND BENEFITS

Most of the previous examples illustrate the uses of the mortgage futures market as a means of minimizing the risks associated with interest rate changes. But futures trading involves costs as well as benefits, and these costs must be weighed in order to decide whether or not futures trading should be undertaken.

Private Costs

Some costs involved in futures trading to individual firms are obvious and some are hidden. The fee charged by brokers on a round of futures trading is a direct cost while the foregone income from the margin required by brokers is a less obvious cost. Margins are actually earnest money or a security deposit which futures traders must hold with their broker. Margins can be divided into two parts — initial margin, which all buyers and sellers of futures contracts must deposit with their broker — and variation or maintenance margin. This latter type of margin covers daily fluctuations in the value of the contract, thus additional margin will be required if the market value declines sufficiently. On the other hand, if the market value of the contract increases, such increases are credited to the customer's account and may be withdrawn by the customer. In some cases, the initial margin can be held in the form of Treasury bills such that the customer gains interest income, thus reducing the effective cost of futures trading.[15]

Although the hedger avoids interest rate risk with proper hedging, he becomes subject to a new risk, that of a changing relationship between the futures market and cash market yields. This relationship is often known as basis. In the simplified illustrations presented earlier no change in basis was assumed, thus gains and losses in the cash market were exactly offset by the results from futures market transactions. In practice, substantial changes in basis can occur, thus gains and losses in the two markets will not be exactly offsetting. Since the mortgage futures market is based on a specific trading instrument — namely, GNMA pass-through certificates — those markets in which interest rates closely parallel the GNMA market will offer the best possibilities for successful hedging. Changes in basis or spread between yields in the GNMA futures market and other markets must be carefully examined before GNMA futures are used to hedge transactions in other markets.[16] In practice,

[15]Noted by David R. Ganis in "GNMA Futures Market Has Advantages, But Not a Way to Make or Take Delivery," *Mortgage Banker* (January 1976), p. 20.

[16]See Kenneth M. Plant, "Playing the Futures Market Game," Federal Home Loan Bank Board *Journal* (November 1975), pp. 16-21, for a discussion of statistical correlations between various yield series and GNMA yields; also see "Hedging in GNMA Mortgage Interest Rate Futures," pp. 44-53, for graphs comparing several interest rate series to GNMA yields.

much of the time and expertise devoted to futures trading will be directed toward analysis of the basis between the GNMA market and the instruments being hedged.

The firmness of a commitment is another consideration in hedging. Commitments thought to be firm have been broken, leaving the hedger open to price level risks. Mortgage production that doesn't materialize as expected, leaves the hedging institution with only its futures position and thus subject to the gains or losses which an open position entails.

Private Benefits

The possible costs of futures trading must be weighed against the benefits which the firm perceives from hedging operations. The primary benefit from hedging operations is the reduction of risk from large losses resulting from major changes in mortgage interest rates. The degree of profit stability afforded by hedging will be evaluated differently by individual firms. Firms in a highly leveraged position may wish the protection offered by hedging certain transactions while other less leveraged firms may be more inclined to take the risks of an unhedged position.

Increased capital leverage is another possible benefit of hedging. Mortgage companies that operate primarily on borrowed funds would seem to benefit most from this aspect. To the extent that the mortgage company operations are hedged and risks reduced, lenders should be more willing to make larger loans, allowing for more intensive use of the company's capital.

The mortgage futures market also gives greater flexibility and reduces search time in carrying out hedging and speculative decisions. Existing practices, as noted earlier, already allow transactions to be hedged by various cash market transactions, but finding other buyers or sellers at the preferred time may be difficult and costly.

Social Benefits

According to some proponents, social benefits should result from a mortgage futures market, including somewhat lower average mortgage interest rates, slightly lower effective housing prices, and less volatility of mortgage interest rates. These proponents are referring to benefits normally expected from any well-functioning market.

A futures market, in general, can be thought of as one in which risk is being traded. In the case of the GNMA futures market, specialization occurs by separating the risk of changing interest rates from the mortgage lending function. In many respects such a separation of price level risk from other business risks is similar to the separation of theft or fire risks from other business risk. These risks are reduced through the purchase of theft and fire insurance. In the case of futures markets, the burden of price level risk is shifted to those who wish to assume such risks. Speculators are willing to assume the risk of losses from price level changes in anticipation of a profit. But in the aggregate the net gains to speculators over the long run is probably near zero, assuming they are no better at anticipating price level movements than hedgers.[17]

A market acts as a focal point where buyers and sellers can meet readily, reducing search costs, increasing market information, and thus increasing efficiency in resource use. A futures market in mortgages, along with the development of secondary mortgage markets, should lead to less segmentation in the mortgage market as local lending rates become more competitive with national rates, and thus result in more efficient allocation of mortgage funds throughout the country. In turn, as mortgage markets become more integrated, the futures market can be used more successfully to hedge risks since interest rates in various markets will tend to move together.

Social Costs

The futures market is not without social costs, for it consumes a portion, although a very small portion, of society's resources — buildings, equipment, paper, labor, etc. But in a free market setting it appears that such costs will be outweighed by the benefits accruing to society. Although the benefits may be sizable from society's viewpoint, individual homebuyers cannot expect to see a significant drop in housing costs.

CONCLUSION

The GNMA mortgage interest rate futures market offers participants a way to separate the risk of interest rate movements from other types of business risk. Institutions can use this market to hedge their cash positions, either actual or expected, against large

[17]Possibility below zero when commissions and the opportunity cost on margins are taken into account.

financial losses resulting from adverse movements in mortgage interest rates. Loan originators, such as mortgage banks or savings and loan associations acting as originators, can use this market to avoid interest rate risks when making commitments to either buy or sell mortgages. In so doing, institutions can protect profits accruing from loan origination and servicing. Permanent investors, such as savings and loan associations or insurance companies, can use this market to lock-in the current yield on a cash flow to be received in the future. In addition, this market allows speculative transactions on mortgage interest rates to be carried out in a convenient way.

This market will not solve all the problems of the housing industry. However, it is likely to offer significant benefits including increased market information, less search time, integration of markets and greater specialization of risk bearing. All these add up to greater efficiency in the use of resources, and thus should ultimately benefit home purchasers, savers, and the public at large.