

# FEDERAL RESERVE BANK OF ST. LOUIS



## June 1967

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# Review

Volume 49

Number 6

# Changing Structure of Interest Rates

**I**N RECENT MONTHS, fiscal and monetary actions have been very stimulative. Most recent data show few effects on spending and production, but expectations of expansion have risen. Reflecting these expectations, an unusually large volume of capital market issues has been marketed, and the yield curve on marketable securities has changed dramatically.

## Recent Governmental Stabilization Actions

Fiscal and monetary actions in recent months have been much more expansive than in late 1966. These developments have probably contributed to bolstering current and future demands for goods and services.

The deficit in the Government's high-employment budget was at an \$8 billion annual rate in the first quarter of 1967. This was a \$1.1 billion greater stimulus than during the first half of last year and \$15 billion larger than in the first half of 1965. Increased Government spending for Vietnam was the key factor causing the change from late 1966 to early 1967, but nondefense spending also rose. Budget stimulus continued during April and May.

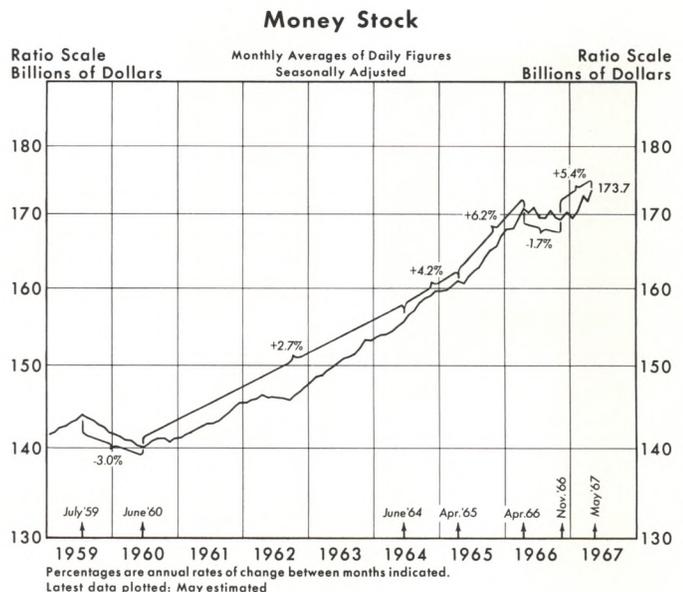
Key monetary magnitudes have been expanding rapidly. Federal Reserve credit, adjusted for the effect of reserve requirement changes has increased at a 15 per cent annual rate since February and at a 16 per cent rate since November.<sup>1</sup>

Total reserves of member banks, adjusted for the effect of reserve requirement changes, have increased at an 8 per cent annual rate since February and at an 11 per cent rate since November. A chief source of reserves has been net Federal Reserve purchases of securities. In addition, reserve requirements on savings and certain other time deposits were lowered in March,

freeing about \$850 million of reserves.

Some of the additional reserves have been needed to support a rapid increase in savings and other time deposits. Reserves available for private demand deposits have risen at an 8 per cent rate since February and at a 5 per cent rate since November. These reserves grew at an average rate of 2 per cent from 1960 to 1966. Changes in private demand deposits, the chief component of money, are closely related to this measure. Changes in total deposits and in bank credit (loans and investments) are more closely related to changes in total reserves.

Money supply, defined as demand deposits and currency in the hands of the public, has grown at an 8 per cent annual rate since February. The latest figures may be exaggerated by a shifting seasonal pattern, which limits the effectiveness of adjusting the data. Money has risen at a 5.4 per cent rate since last November. From 1960 to 1966 money rose at an average 3.2 per



<sup>1</sup> See this Bank's release "U.S. Financial Data"—Week ending May 31, 1967.

cent annual rate. The productive capacity of the economy is estimated to grow about 4 per cent a year.

The demand deposit component of money has risen at a 10 per cent rate since February and at a 5 per cent rate since November. Currency, the other component of the money stock, has risen at a more steady 6 per cent rate since November. From 1960 to 1966, demand deposits grew at a 2.8 per cent rate and currency at a 4.4 per cent rate.

### Recent Business Developments

Spending and production have recently remained rather steady at a very high level. Through early May they had shown no clear response to the more expansionary fiscal and monetary actions, but such actions typically have their main impact on the economy after a few months lag. Total retail sales have changed little on balance since last summer. From 1960 to 1966 these sales trended upward at a 5.6 per cent annual rate.

Construction expenditures for the first quarter of 1967 were at a seasonally adjusted annual rate of \$73 billion, up from the fourth quarter of 1966 but 7 per cent below the first quarter last year. Industrial production declined at about a 5 per cent annual rate from the end of 1966 to April.

Unemployment has remained at 3.7 per cent of the labor force since last September, but demands for manpower have eased. Total employment has been about unchanged since December, after increasing 2.5 per cent last year. Payroll employment rose at a 2 per cent annual rate from December to April following a 5 per cent increase during 1966. By comparison, population of labor force age (18 to 64) has recently been rising at an estimated 1.6 per cent rate.

Price increases have continued to be more moderate in recent months than in early 1966. Consumer prices rose at a 1.4 per cent annual rate from last October to April, compared with a 4 per cent rate earlier in 1966. Industrial wholesale prices increased at a 1 per cent annual rate from last July to April, after rising at a 3 per cent rate in the first half of 1966. This index has been influenced by fluctuations of world-wide commodity prices. Quotations on farm products and on processed foods and feeds have declined since last fall to their late 1965 level.

Basic inflationary forces appear to have continued to prevail as final sales have increased at a rate of about 8 per cent a year since the fourth quarter, about twice the rate of increase of productive potential. The most general measure of price trends in the United States, as developed in the national income accounts, has been rising at a rate of about 3 per cent a year.

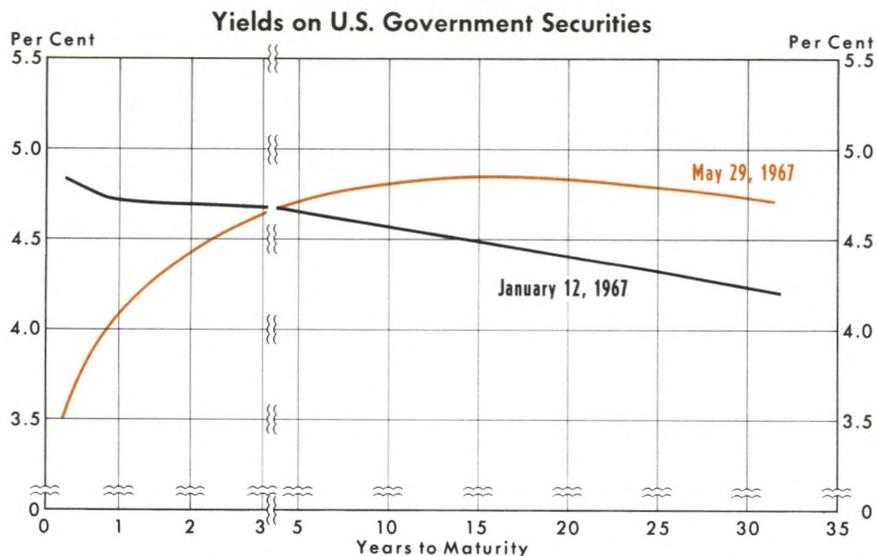


### Credit Markets

Demands for credit have been strong this year. The supply of new funds has also been great, reflecting both a large amount of saving and a marked monetary expansion. As a result, a substantial volume of funds has flowed through the money and capital markets. Estimates indicate that total borrowing amounted to a \$70 billion annual rate in the first quarter of 1967, up \$16 billion from the previous quarter. Interest rates, the prices which equate the demands for and supplies of credit, have continued to decline in most short-term markets, but have risen on most long-term securities since the end of January.

Corporate demands for credit have been large. Estimated long-term corporate security offerings and placements were at a \$22.5 billion annual rate during the first four months of 1967, and the calendar of new offerings was heavy for May and June. By comparison, such offerings and placements were at a \$19.6 billion rate in the first four months last year and at an \$11.7 billion rate in the corresponding period of 1965. Business loans at commercial banks rose at a \$9 billion annual rate from December to April, or at a 12 per cent rate. According to reports from large banks, expansion slowed in May. The growth trend in business loans from 1956 to 1964 was 7 per cent per year; from 1964 to 1966 these loans jumped at a 17 per cent rate.

Municipal financing has also been large. From December to April estimated long-term security offerings and placements by state and local governments were at a \$15 billion annual rate. Rates for comparable periods of 1966 and 1965 were \$12 billion, and \$10 billion, respectively.



The Federal Government has also provided a strong upward influence on interest rates. The high-employment budget deficit was estimated at an \$8 billion annual rate in the first quarter of 1967, and there are indications that the deficit is remaining near this level in the second quarter. By contrast, this budget showed a surplus at a \$2 billion rate in the first half of 1966, at a \$7 billion rate in the first half of 1965, and at a \$12 billion rate in the three years of 1961-1963.

### Structure of Interest Rates

Interest rates have changed quite diversely since January. Long-term rates had declined late last year and early this year. In the past few months these rates have risen, reflecting current needs for new long-term funds and anticipations of higher rates to come. Short-term rates, on the other hand, have continued to decline. Bank credit expansion—by the Federal Reserve System purchasing securities thereby enabling commercial bank lending and investing—has made more short-term funds available. In addition, some of the funds raised in the capital markets have been temporarily invested in short-term market instruments, tending to lower their yields.

The recent developments are consistent with the proposition that financial markets in the short run are largely segmented; that is that short-term rates are the result of demand and supply conditions in the short-term markets, while long-term rates reflect conditions in capital markets, and the various lenders and borrowers have a limited degree of flexibility in moving from one maturity sector to another.<sup>2</sup>

<sup>2</sup> See John Culbertson, "The Term Structure of Interest Rates," *Quarterly Journal of Economics*, November 1957, pp. 485-517.

The recent developments are also consistent with another view of yield structures which holds that lenders and borrowers have a relatively high degree of mobility, at least at the margin, in selecting maturities. This view explains the various yield structures in terms of expectations of lenders and investors, particularly those engaged in arbitrage operations.<sup>3</sup>

The yield curve in mid-January was downward sloping; short-term rates on Government securities were over half of one percentage point higher than the longest term rates. Such a relationship is consistent with market expectations of an approaching decline in

interest rates, possibly accompanying a slowdown in economic activity with lower demands for credit and expansionary monetary actions.

By late May, the slope of the yield curve had been reversed. Short-term interest rates on Government securities were  $1\frac{1}{4}$  percentage points lower than long-term rates. Investors and borrowers may be anticipating a general rise of interest rates. Rates generally tend to be pushed up by an acceleration of investment and expansion of economic activity and by large Government demands for credit. Borrowers who believe that yields will rise in the future are currently willing to pay more for long-term funds than for short-term funds. Lenders will accept lower rates on short loans than on long ones since they anticipate being able to relend the funds at higher rates in the near future.

Yield curves have taken various shapes in the past.<sup>4</sup> For example, a year ago the curve had a marked hump in the intermediate-term range. Short-term yields were slightly above long-term rates but about one-half of a percentage point below the yield on 2-year issues. At that time, economic activity and demands for credit were rising rapidly, and market participants were expecting restrictive monetary actions in response to the excessive spending and inflationary pressures. Under these conditions lenders and borrowers might have

<sup>3</sup> David Meiselman, *Term Structure of Interest Rates*, (Englewood Cliffs: Prentice-Hall, 1962).

<sup>4</sup> See Sidney Homer, *A History of Interest Rates*, 1963, pp. 380-381 for a three-dimensional diagram presentation of successive yield curves on corporate securities beginning with the year 1900. An updating of these diagrams of changing yield curves to 1965 was presented in the book *Term Structure of Interest Rates, Expectations, and Behavior Patterns* by Burton Malkiel in 1966 on pp. 8-9.

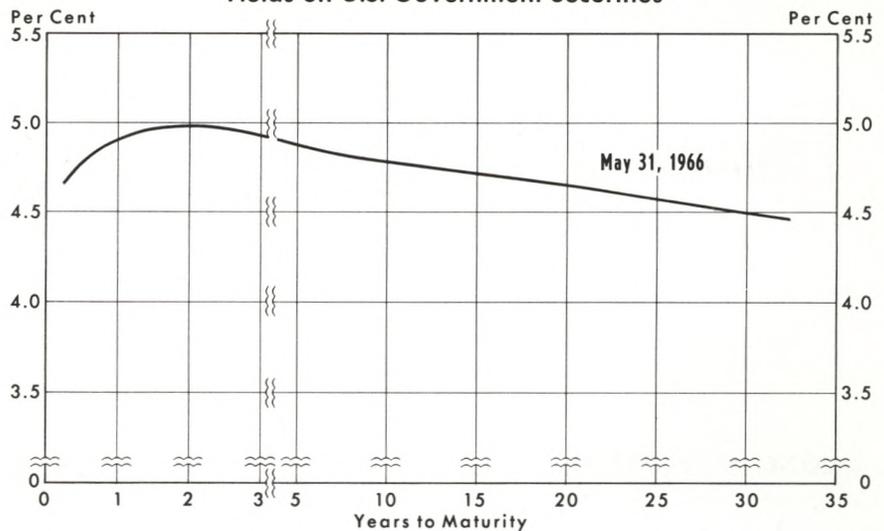
expected short-term rates to rise further in the near future. At the same time, they might have believed that short-term rates over a somewhat longer period would most probably average below their current level. Such expectations are consistent with the humped yield curve.

The late spring of 1967 has been similar in some respects to 1963. In both periods the economy had recently been on a plateau, but there were evidences of a strengthening in the demand for goods and services combined with optimistic outlooks. The shape of the yield curve in late May 1967 was nearly the same as in May 1963.

However, the current level of interest rates is one-half percentage point higher than four years ago.

The recent higher yields reflect several factors. The present demand for credit is stronger than it was in early 1963. The Federal Government is a much heavier net borrower. Private demands for funds may also be greater since the economy is operating closer to capac-

Yields on U.S. Government Securities



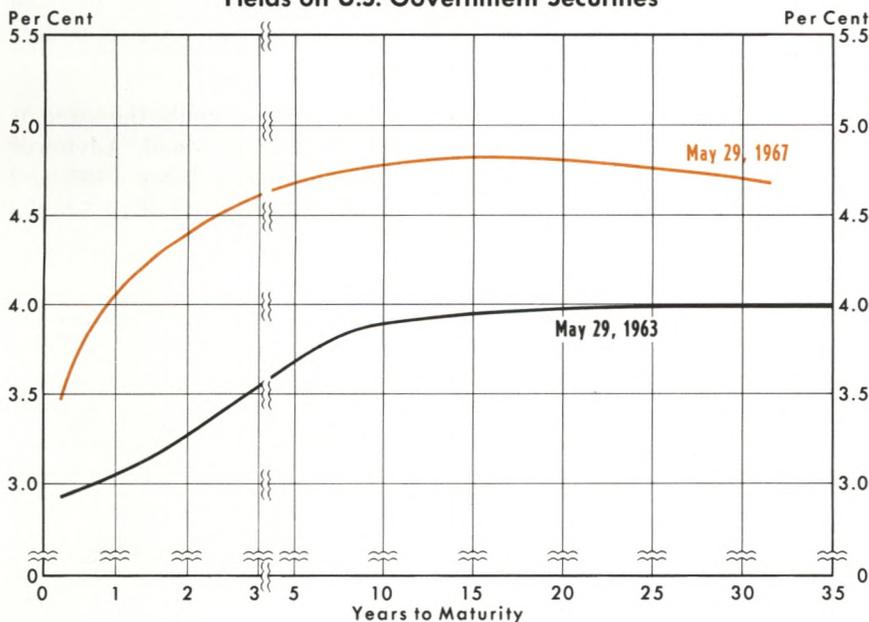
ity. Unemployment has amounted to 3.7 per cent of the labor force in recent months compared with 5.7 per cent in the spring of 1963.

Borrowers and lenders probably have greater expectations of price increases now than they did in early 1963. From late 1965 to early 1967 over-all prices rose at a 3.4 per cent annual rate compared with a 1.3 per cent rate from late 1961 to early 1963. Inflation makes the quoted market rate higher than the real rate of interest. Borrowers repay in cheaper dollars, and lenders lose purchasing power.

If it is true, as some recent studies indicate, that expectations largely determine yield structures,<sup>5</sup> official actions designed to change an existing structure, referred to as "operation twist," may accomplish little. Other suppliers of funds would tend to lend for shorter periods, and borrowers would tend to lengthen their debt maturities.

<sup>5</sup>Franco Modigliani and Richard Sutch, "Innovations in Interest Rate Policy," *American Economic Review*, May 1966, pp. 178-197.

Yields on U.S. Government Securities



# Estimates of the High-Employment Budget: 1947-1967

**T**AXING AND SPENDING actions of the Federal Government are generally believed to have a significant effect on spending, production, employment, and prices. Among the various measures of Government fiscal actions, the high-employment budget is one of the best single measures of the net effect of these actions on economic activity.

The high-employment budget is an estimate of the national income accounts budget at some arbitrarily defined high-employment level of economic activity.<sup>1</sup> Like other major budget measures, the high-employment budget is a statistical summary of Government spending and taxing activities.<sup>2</sup> Its purpose is somewhat different, however. As a tool of economic analysis, the primary purpose of the high-employment budget is to serve as a measure of fiscal actions and to assist in the planning and formulation of stabilization policy.

The concept of a high-employment budget originated in the mid-1940's but its most recent emphasis dates from the 1962 *Annual Report of the Council*

*of Economic Advisers.*<sup>3</sup> Originally the high-employment budget was developed in terms of a target for Government fiscal operations, i.e., it was suggested that budget policy be formulated in such a way as to produce a balanced national income accounts budget at high employment. More recently, the high-employment budget concept has served as a general tool of economic analysis, providing (1) a measure of fiscal action, and (2) a measure of the impact of the budget on the economy.<sup>4</sup>

The purpose of this article is to present quarterly estimates of the high-employment budget for the period 1947 through early 1967. Estimation procedures are summarized, and the reliability, meaning, and economic significance of the high-employment budget concept are discussed.

The estimation procedure is essentially the same as that developed by the Council of Economic Advisers.<sup>5</sup> Their figures were last published in April 1966, and covered the period from the third quarter of 1955 to the

<sup>1</sup>Probably the most comprehensive discussion of the high-employment budget, including both theoretical and statistical aspects, is found in Michael E. Levy, *Fiscal Policy, Cycles and Growth*, National Industrial Conference Board, Studies in Business Economics, Number 81 (New York: The Conference Board, 1963). For an article stressing the use and interpretation of the high-employment budget concept, see Robert Solomon, "A Note on the Full Employment Budget Surplus," *Review of Economics and Statistics*, XLVI (February, 1964), 105-108. For a description of techniques and procedures for calculating high-employment budget estimates, much of which is repeated here, see Nancy H. Teeters, "Estimates of the Full-Employment Surplus, 1955-1964," *Review of Economics and Statistics*, XLVII (August, 1965), 309-321. Another article providing alternate estimates of the high-employment budget, along with an analysis of the appropriateness of budget policy, is Edward M. Gramlich, "The Behavior and Adequacy of the United States Federal Budget, 1952-1964," *Yale Economic Essays*, vol. 6 (Spring, 1966), pp. 99-159.

<sup>2</sup>Reference is made to the administrative, cash, and national income accounts budgets. For a summary of the relations among these budget measures, see the February 1967 issue of this *Review*, pp. 11-12.

<sup>3</sup>This was the first *Annual Report* by the Council which assumed duties in January 1961. The views of this Council, whose members were Walter Heller, Kermit Gordon, and James Tobin, were first printed in the *Hearings on the January 1961 Economic Report of the President and the Economic Situation and Outlook* (Washington: U.S. Government Printing Office, 1961). The exact origin of the high-employment budget concept is not clear. Apparently Professor Milton Friedman and the Committee for Economic Development first discussed budget policy in these terms at about the same time. Friedman's article, however, makes a reference to *Fiscal and Monetary Policy*, National Planning Pamphlet No. 35 (July, 1944), by Beardsley Ruml and H. Chr. Sonne, which supposedly is the first to discuss budget policy in high-employment terms. See Milton Friedman, "A Monetary and Fiscal Framework for Economic Stability," *American Economic Review*, XXXVIII (June 1948), 245-264, and *Taxes and the Budget: A Program for Prosperity in a Free Economy*, a statement on national policy by the Research and Policy Committee of the Committee for Economic Development (November, 1947).

<sup>4</sup>See Appendix, "Analytical Use of the High-Employment Budget."

<sup>5</sup>See Teeters, *op. cit.*

fourth quarter of 1965.<sup>6</sup> This article presents estimates for the period from the first quarter of 1947 to the second quarter of 1955, following as closely as possible the Council's procedures.<sup>7</sup> In addition, the estimates for the period from the third quarter of 1955 to the fourth quarter of 1965 are revised to maintain consistency in the overall series and also to reflect subsequent revisions (since April 1966) in the national income accounts data.<sup>8</sup> The estimates are also extended through the first quarter of 1967.

The Council's method of estimating the high-employment budget consists of several steps. Estimates of high-employment receipts involve the following:

(1) Defining high employment and calculating a high-employment level GNP (in money terms) consistent with it;

(2) Estimating the major relevant income components of GNP at high employment, i.e., personal income, corporate profits, and wages and salaries;

(3) Applying high-employment tax rates to the derived income components, which serve as proxies for actual tax bases.

Estimates of high-employment expenditures are quite straightforward. All expenditures, except for unemployment compensation, are considered invariant with the level of economic activity. Consequently, unemployment benefits at high employment are calculated and actual unemployment payments are adjusted for deviations from the high-employment norm.<sup>9</sup>

### High-Employment GNP

The definition of high employment is quite arbitrary. The particular choice is not crucial in the estimation of the high-employment budget for purposes

of measuring fiscal actions. For this purpose, the high-employment budget standardizes the budget on some constant level of economic activity, and whether high employment is defined as 2 per cent, 4 per cent, or 6 per cent unemployment is essentially irrelevant. The general effect of varying the high-employment definition is to displace the entire series up or down without substantially altering the quarter-to-quarter or year-to-year movements in the series.

For the purpose of estimating fiscal impact, i.e., a measure of "restrictiveness" or "stimulativeness," high employment should be defined in terms of a high-employment target. The estimate of the budget at this high-employment level provides a standardized measure (i.e., abstracts from the built-in-stabilizer effects) of the net contribution of the budget to the income stream of the economy.<sup>10</sup>

To estimate high-employment receipts it is necessary to estimate a GNP figure in money terms that is consistent with the definition of high employment that is chosen. The method used by the Council is the growth rate extrapolation method, which is a simplification and smoothing of "Okun's Law."<sup>11</sup> Implicit in this method is the assumption that real high-employment GNP grows at a constant rate over extended periods of time. Once this rate is determined, and a base year representing full-resource utilization is selected, real high-employment GNP can be calculated for the entire relevant period. This series is converted into money terms by multiplying by the implicit price deflator for GNP.<sup>12</sup>

The base period selected by the Council was mid-1955; i.e., actual and high-employment GNP were assumed to be the same at that time. A 3.5 per cent growth rate was applied to this base period to derive

<sup>6</sup>See the Hearings on the January 1966 *Economic Report of the President*, p. 102.

<sup>7</sup>It is believed that this is the first time that this has been done. Levy, *op. cit.*, pp. 26, 104, 108, provides half-year estimates for 1947 to 1962, but his procedure differs substantially from the Council's. Another set of Alternate estimates (for the period 1952:I to 1964 IV) is found in Gramlich, *op. cit.*, pp. 137-139. Despite the difference in estimation procedure, the results presented here do not appear to differ markedly from either Levy's or Gramlich's, after subsequent revisions in the national income accounts are taken into account.

<sup>8</sup>Since it is difficult to duplicate exactly someone else's procedures, it was deemed advisable to formulate independent estimates for the 1955 to 1965 period in order to preserve comparability with estimates for earlier and later periods.

<sup>9</sup>For a fuller discussion of the problems underlying the treatment of unemployment insurance, see Teeters, *op. cit.*, pp. 309-310.

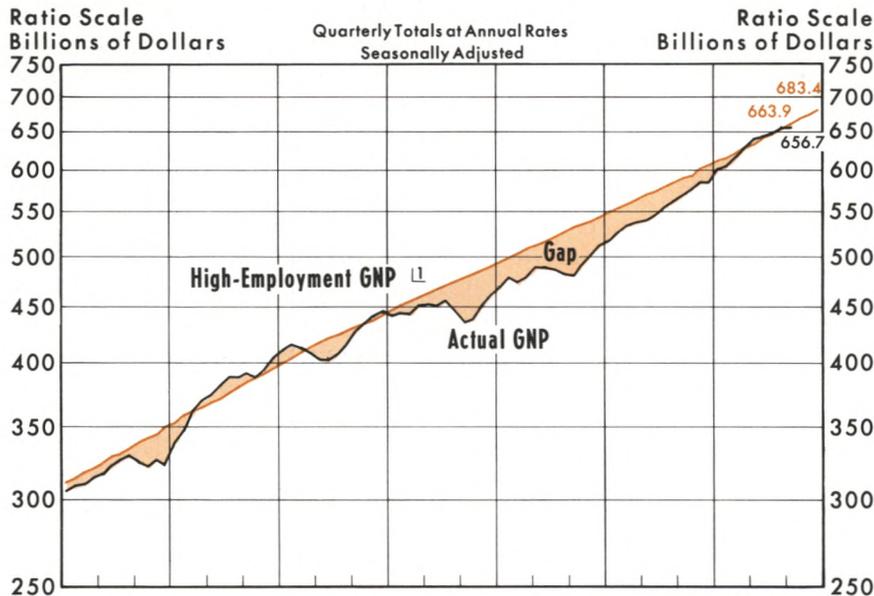
<sup>10</sup>See Appendix.

<sup>11</sup>Okun's Law relates total output to labor-force utilization and productivity. See Arthur Okun, "Potential GNP: Its Measurement and Significance," *Papers and Proceedings of the Business and Economic Statistics Section of the American Statistical Association* (1962), pp. 98-104. A discussion of more recent research on the rate of high-employment growth is found in Lester C. Thurow and L. D. Taylor, "The Interaction Between the Actual and the Potential Rates of Growth," *Review of Economics and Statistics*, XLVIII (November, 1966), 351-60.

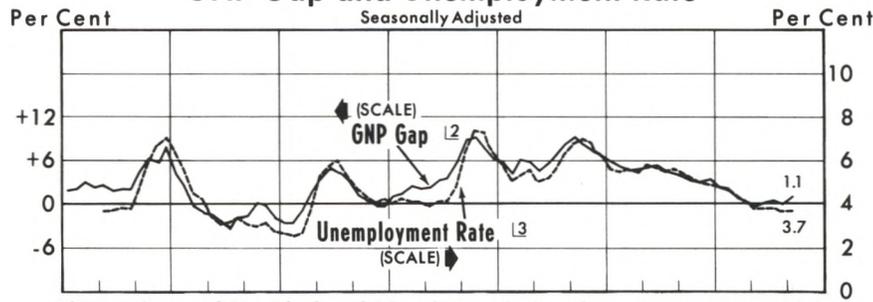
<sup>12</sup>This procedure biases the estimates of high-employment GNP in money terms. If the economy were at high employment, prices would certainly be changing differently than when the economy is above or below high employment. Allowing for this complication introduces difficulties in the use of the high-employment budget for planning stabilization policy. A price level assumption consistent with continuous high employment, independent of short-run deviations therefrom, seems to conflict with the very purpose of short-run stabilization policy.

# Utilization of Economic Resources

## High-Employment GNP and Actual GNP in 1958 Prices



## GNP Gap and Unemployment Rate



1 Base period is mid-1955. Rate of growth from 1st quarter 1947 to 4th quarter 1953 is 4.3%, 4th quarter 1953 to 4th quarter 1962 is 3.5%, 4th quarter 1962 to 4th quarter 1965 is 3.75%, and 4th quarter 1965 to 4th quarter 1967 is 4.0%.

2 GNP gap as a per cent of high-employment GNP.

3 Unemployment rate as a per cent of civilian labor force.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Council of Economic Advisers, and Federal Reserve Bank of St. Louis

Latest data plotted: High-Employment GNP estimated for last three quarters 1967; All other data for 1st quarter 1967 is preliminary

the constant dollar high-employment GNP series for 1954 through 1962. A 4.3 per cent rate of growth was applied to 1947-1953; 3.75 per cent to 1962-1965; and 4.0 per cent to 1966 and thereafter.<sup>13</sup> Such growth rates in real output are roughly consistent with a 4 per cent level of unemployment.

<sup>13</sup> See the January 1967 Annual Report of *The Council of Economic Advisers*, pp. 42-44. The 4.3 per cent estimated rate of growth for the 1947-53 period has not appeared in the Council's annual reports. However, this rate was suggested at the *Hearings on the January 1961 Economic Report of the President and the Economic Situation and Outlook*, p. 376.

## Proxies for Tax Base

Once high-employment GNP has been defined and calculated, the basis for estimating the relevant tax bases is provided. Assumptions are made about the proportions of high-employment GNP going to personal income, corporate profits, and wages and salaries.

These GNP components do not conform exactly with the way the tax bases are defined according to the tax laws. The need to use proxies is dictated by the availability of data; the national income accounts data appear to provide as reasonable a proxy as any for the major sources of tax revenue.

The particular proportions used are based on actual relationships between various income measures and GNP. High-employment points provide useful benchmarks to ascertain long-term trends in these relationships. No formal theory of income distribution is used as a foundation for their calculation.<sup>14</sup>

## Tax Rates and Expenditures

**Tax Rates.** To calculate high-employment receipts for a particular tax requires an estimate of the tax rate in addition to the relevant income component as defined above. The general procedure for estimating the rate is to examine actual rates, (i.e. as computed

from the national income accounts) and in particular note those points in time when tax laws are changed.<sup>15</sup> For those taxes that are responsive to variations in income, actual rates move with income, which makes it necessary to determine the tax rates for high-employ-

<sup>14</sup> For a discussion of the movement of income shares in the post-World War II period, see Edwin Kuh, "Income Distribution and Employment over the Business Cycle," in J. S. Duesenberry, G. Fromm, L. R. Klein and E. Kuh (Eds.), *The Brookings Quarterly Econometric Model of the United States* (Chicago: Rand McNally, 1965), pp. 228-278.

<sup>15</sup> Such information is obtained from the various issues of the *Annual Report of the Secretary of the Treasury on the State of the Finances*.

ment levels of activity. This consideration is especially important for personal income taxes.

Actual computed rates tend to fluctuate, even in the absence of changes in the tax laws. Such fluctuations reflect, in part, random errors in the process of computing the estimates in the national income accounts. Errors may stem from either errors in estimating receipts or errors in estimating income, which provides the basis for the tax. Additional variation in actual computed tax rates is explained by changing distribution of income in the case of personal income and corporate profits, and changing composition of expenditures for taxable items in the case of excise taxes.

**Expenditures.** The problem of estimating Government expenditures at high employment reduces to the determination of what unemployment benefits would be at high employment. Once this has been determined, actual benefits paid can be adjusted accordingly. The procedure used here to estimate high-employment unemployment benefits is to select such points of high activity over the 1947-1967 period and connect them with a straight line. Such benefits trended smoothly upward for the period.

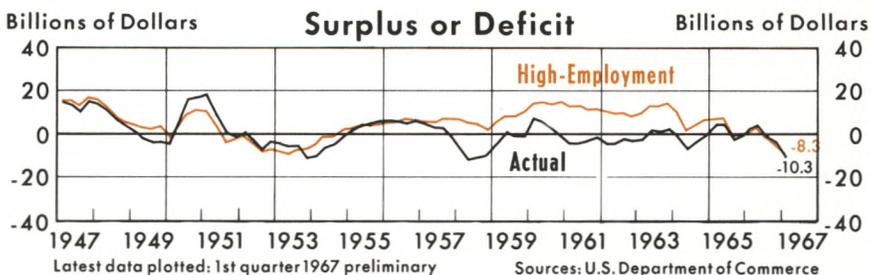
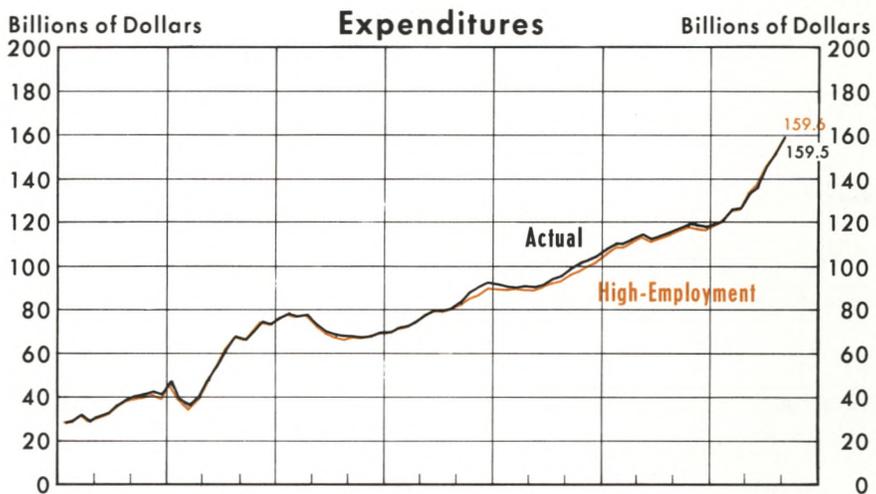
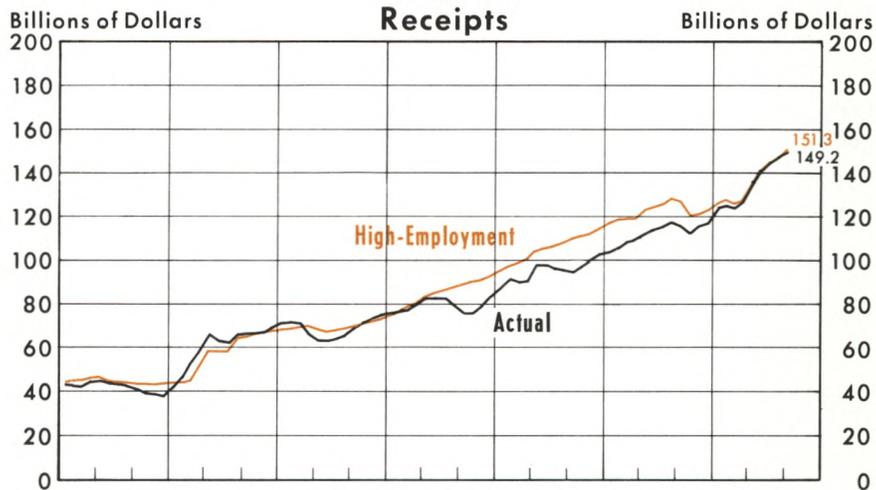
### High-Employment Budget Estimates

The estimates of the high-employment budget are shown in the accompanying chart and table.

The interpretation of these data is that the difference between the national income accounts budget and the high-employment budget are caused by two factors—cyclical and random. Generally, the emphasis underlying the interpretation of the high-employment budget is that theoretically it does not reflect cyclical variations in receipts. Consequently, the high-employment budget reflects discretionary fiscal actions (changes in expend-

## High-Employment and Actual National Income Accounts Budget

Quarterly Totals at Annual Rates  
Seasonally Adjusted



Latest data plotted: 1st quarter 1967 preliminary

Sources: U.S. Department of Commerce and Federal Reserve Bank of St. Louis

itures and changes in tax rates) and the effects of economic growth on tax receipts and on expenditures for unemployment insurance.

Hence, the high-employment budget can be expected to increase over time without changes in tax rates, provided that Government expenditures are constant. If one allows for trend growth in expenditures,

# NATIONAL INCOME ACCOUNTS BUDGET

Seasonally Adjusted Annual Rates

(Billions of Dollars)

	Quarter	Receipts		Expenditures		Surplus or Deficit	
		Actual	High Employment	Actual	High Employment	Actual	High Employment
1947	I	43.5	44.2	28.7	28.5	14.8	15.7
	II	42.8	44.6	29.2	28.9	13.6	15.7
	III	42.1	45.2	32.2	32.0	10.0	13.2
	IV	44.5	46.3	29.3	29.2	15.2	17.1
1948	I	44.7	46.9	31.0	30.9	13.7	16.0
	II	43.5	44.8	32.9	32.7	10.6	12.1
	III	42.6	44.2	36.7	36.6	5.9	7.6
	IV	42.4	44.0	39.0	38.8	3.4	5.2
1949	I	40.8	43.7	40.0	39.5	.8	4.2
	II	38.8	43.5	41.7	40.7	— 2.9	2.8
	III	38.5	43.3	42.4	41.1	— 3.9	2.2
	IV	37.5	43.4	41.4	39.7	— 3.9	3.7
1950	I	42.4	44.0	47.2	46.0	— 4.8	— 2.0
	II	46.6	44.4	39.0	38.2	7.6	6.2
	III	52.9	45.6	36.4	36.1	16.4	9.5
	IV	57.5	51.5	40.4	40.4	17.1	11.1
1951	I	65.6	58.6	47.6	47.7	18.0	10.9
	II	62.7	58.3	54.5	54.7	8.2	3.6
	III	62.0	58.4	61.9	62.0	.1	— 3.6
	IV	65.9	64.7	67.2	67.2	— 1.3	— 2.5
1952	I	66.2	65.1	66.1	66.1	.1	— 1.0
	II	66.3	66.2	70.1	70.1	— 3.8	— 3.9
	III	66.8	67.0	74.4	74.3	— 7.6	— 7.3
	IV	69.8	67.5	73.5	73.8	— 3.7	— 6.3
1953	I	71.7	68.3	76.2	76.4	— 4.5	— 8.1
	II	71.9	68.9	78.0	78.3	— 6.2	— 9.4
	III	70.7	69.5	76.5	76.8	— 5.7	— 7.3
	IV	65.6	70.4	77.3	77.2	— 11.7	— 6.8
1954	I	62.9	68.3	73.4	72.8	— 10.5	— 4.5
	II	62.9	67.9	69.5	68.5	— 6.6	— .6
	III	63.6	68.3	68.6	67.6	— 5.0	.7
	IV	65.7	69.4	67.6	66.7	— 1.8	2.7
1955	I	69.2	70.2	67.9	67.6	1.3	2.6
	II	71.1	71.5	67.1	67.1	4.0	4.4
	III	73.3	72.4	68.3	68.4	5.0	4.0
	IV	75.0	73.8	69.0	69.1	6.0	4.7
1956	I	75.6	75.7	69.3	69.3	6.3	6.4
	II	77.2	77.3	71.8	71.8	5.5	5.5
	III	77.2	79.0	72.3	72.2	4.9	6.8
	IV	80.1	80.6	74.1	74.0	6.0	6.6
1957	I	82.4	83.6	78.1	77.9	4.3	5.7
	II	82.2	85.3	79.7	79.5	2.5	5.8
	III	82.3	86.6	79.7	79.4	2.6	7.2
	IV	79.4	87.9	80.9	80.9	— 1.5	7.0
1958	I	76.0	89.1	84.1	82.4	— 8.1	6.7
	II	75.9	90.5	88.3	85.4	— 12.4	5.1
	III	79.5	91.4	90.3	87.1	— 10.8	4.3
	IV	83.1	93.0	92.9	90.6	— 9.8	2.4
1959	I	87.5	96.2	91.7	90.2	— 4.2	6.0
	II	91.2	97.8	90.4	89.7	.8	8.1
	III	89.9	99.0	90.9	90.3	— 1.0	8.7
	IV	90.3	100.3	91.0	89.8	— .6	10.5
1960	I	97.5	104.1	90.4	89.5	7.1	14.6
	II	97.6	106.0	92.0	91.0	5.6	15.0
	III	95.7	106.9	94.2	92.7	1.5	14.2
	IV	95.1	108.8	95.7	93.7	— .6	15.1
1961	I	94.4	110.2	99.3	97.1	— 4.9	13.1
	II	97.1	111.8	101.6	98.5	— 4.5	13.3
	III	99.1	112.4	102.9	100.5	— 3.8	11.9
	IV	102.4	114.5	104.3	102.4	— 1.9	12.1

	Quarter	Receipts		Expenditures		Surplus or Deficit	
		Actual	High Employment	Actual	High Employment	Actual	High Employment
1962	I	103.4	117.7	108.4	106.8	— 5.0	10.9
	II	105.6	119.1	110.2	109.2	— 4.5	9.9
	III	107.6	119.2	110.2	109.2	— 2.6	10.0
	IV	109.2	119.6	112.4	111.3	— 3.2	8.3
1963	I	112.0	123.3	114.4	113.2	— 2.4	10.1
	II	113.9	124.8	112.1	111.1	1.8	13.7
	III	115.0	126.2	113.8	112.9	1.2	13.3
	IV	117.2	128.6	115.1	114.3	2.1	14.3
1964	I	115.3	127.0	117.2	116.4	— 1.9	10.6
	II	112.3	120.4	119.1	118.4	— 6.7	2.0
	III	115.4	121.8	118.4	117.8	— 3.0	4.0
	IV	117.2	124.0	117.7	117.2	— .5	6.8
1965	I	124.0	126.4	119.6	119.1	4.5	7.3
	II	125.0	127.8	120.6	120.4	4.4	7.4
	III	123.8	125.9	126.3	126.1	— 2.5	— .2
	IV	126.9	127.6	127.0	127.0	— .2	.6
1966	I	136.0	134.9	133.7	133.8	2.3	1.1
	II	141.0	141.1	137.1	137.6	3.8	3.5
	III	145.3	145.7	145.8	146.1	— .5	— .4
	IV	147.9	148.0	151.5	151.9	— 3.6	— 3.9
1967	I p	149.2	151.3	159.5	159.6	—10.3	— 8.3
	II						
	III						
	IV						

p— preliminary

Sources: U.S. Department of Commerce and Federal Reserve Bank of St. Louis.

say at the same rate as high-employment GNP, the net of receipts and expenditures comes close to reflecting changes in tax rates and/or changes in government expenditures above or below trend growth.<sup>16</sup>

An examination of the chart showing surpluses or deficits in the high-employment budget indicates that the 20-year period 1947-1966 can be divided into three subperiods. The period from 1947-1954 was one of frequent changes in tax rates and frequent changes in the rate of growth in Government expenditures. Most of the variation in the high-employment budget during that period reflects war or the aftermath of war. Personal income taxes were reduced in 1948, and vir-

<sup>16</sup>Even with such an assumption of trend growth in expenditure, the high-employment budget will tend to increase without tax rate changes. With a progressive tax structure, trend growth in receipts exceeds the rate of growth in high-employment GNP. For an extensive discussion of these effects, along with quantitative measures, see Levy, *op. cit.*, pp. 85-88. This point provided the basis for a speech by James Duesenberry, a member of the Council of Economic Advisers, before the National Machine Tool Builders Association on May 12, 1967:

“When government expenditures rise by more than the normal growth of full employment revenues, we ought to raise taxes, unless the economy is operating below full employment or private demand shows weakness.

“Conversely, when government expenditures grow by less than the normal growth of full employment revenues, we ought to reduce taxes unless demand is already excessively strong or private demand is growing unusually fast.”

tually all taxes were raised in 1950 and again in 1951. The years 1953 and 1954 saw the expiration of the excess profits tax and a reduction in personal income taxes.

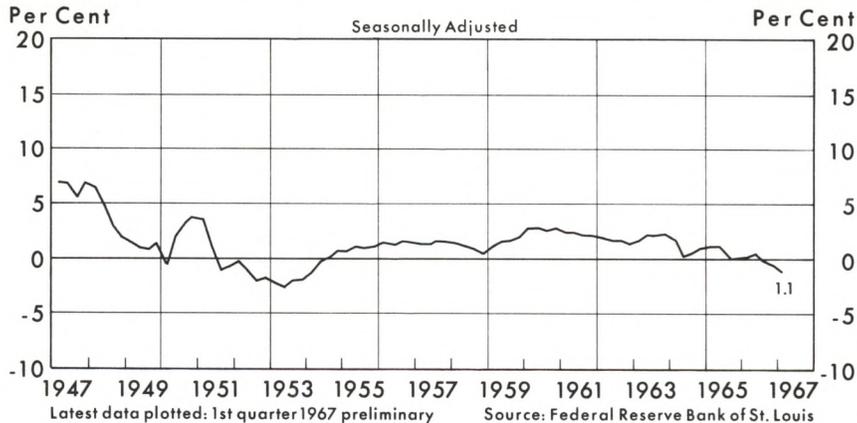
The period from 1955-1962 was marked almost solely by variations in expenditures rather than by changing tax rates. Expenditures varied widely over the period while the structure of corporate and personal income tax rates was essentially unchanged. There were periodic changes in social security taxes and occasional changes in excise tax rates, but their magnitudes were relatively small.

The most recent period, 1962-1966, marked a resumption of active and frequent changes in tax policy. The investment tax credit, along with a revised and liberalized schedule of depreciation allowances, was introduced in 1962. The personal and corporate income tax reduction in 1964 was followed by a reduction in excise taxes in mid-1965. An additional tax action was taken in September of 1966 when the provisions of the Revenue Act of 1962 were temporarily rescinded.

### *Use and Interpretation of Estimates*

**Measure of Fiscal Action.** One interpretation of the high-employment budget is that it serves as a measure

## High-Employment Budget Surplus or Deficit as a Per Cent of High-Employment GNP



of discretionary fiscal action. Such an interpretation is not precisely correct because of the upward trend in tax receipts as the economy grows over time. If a trend assumption is made with regard to expenditures, this interpretation tends to be more valid. A change in the high-employment surplus or deficit from one quarter to the next is an approximate measure of the extent that fiscal actions have tended to more than compensate, or less than compensate, as the case may be, for the trend effect of both expenditures and receipts.

**Measure of Fiscal Impact.** Another use of the high-employment budget, aside from a measure of fiscal action, is to interpret the surplus or deficit as a variable to be manipulated to achieve high employment.<sup>17</sup> A surplus in this budget, for example, indicates that private investment plans must exceed private saving plans by that amount in order for high employment to be realized; if the discrepancy between high-employment investment and saving differs from that amount, the surplus must be altered accordingly to achieve high employment.

In this way the high-employment budget serves as a powerful tool of economic analysis that assists in the planning of appropriate monetary or fiscal action so as to achieve high employment with relatively stable prices. The process however, involves difficult problems in estimating what planned private saving and investment would be at some target level of high employment, as well as allowing for time lags in the effect of monetary and fiscal actions.

When considering the impact of the budget on the economy over the years, it is important to keep in

mind that the economy is growing. Thus the impact of a \$10 billion surplus has a greater impact on a \$500 billion economy than on a \$700 billion economy. Thus the relative high-employment budget, i. e., the surplus or deficit expressed as a per cent of high-employment GNP, might be more meaningful as a measure of economic impact.<sup>18</sup> This measure might provide a partial explanation of the slowdown in economic activity in early 1967 in the face of stimulative (by historical standards) budget developments in late 1966 and early 1967. The relative

high-employment budget is charted above.

**Pitfalls in Usage.** One of the problems in interpreting the high employment budget is the extent to which small changes in the surplus or deficit can be taken seriously. The calculation is relatively crude and approximate with several underlying assumptions.

The *level* of the surplus or deficit is, therefore, of questionable reliability. The level depends on the particular choice of the definition of high employment. Furthermore, the estimates of high-employment values of the relevant income components and tax rates are imperfect. *Changes* in the surplus or deficit, however, might be considered as approximate indicators of the direction in which budget actions are moving.<sup>19</sup>

In the assessment of the economic impact of the budget, the composition of expenditures and the structure of taxes are also relevant. Consequently, little or no change in the surplus or deficit is ambiguous and does not necessarily imply no change in fiscal actions or impact if the composition of expenditures and/or the structure of taxes has changed significantly.<sup>20</sup>

<sup>18</sup> See Levy, *op. cit.*, pp. 87-88.

<sup>19</sup> No specific guidelines can be offered, but modest changes in the surplus or deficit should not be considered significant.

<sup>20</sup> In the same vein, it should also be pointed out that the high-employment budget, as calculated here, makes no allowance for the so-called "balanced budget multiplier." According to this theory a dollar of increased expenditure has a greater economic effect than a dollar decline in tax receipts (because taxes tend to come out of saving as well as consumption). Thus an equal increase in both expenditures and receipts (no change in the surplus or deficit) will still have a positive economic impact. For an attempt to allow for such effects (calculating a weighted high-employment budget), see Gramlich, *op. cit.* See also R. A. Musgrave, "On Measuring Fiscal Performance," *Review of Economics and Statistics*, XLVI (May, 1964), 213-20.

<sup>17</sup> See Appendix.

The high-employment budget is not meant to be a substitute for more conventional budget concepts. Rather, it should be used in conjunction with other budgets, and be considered simply as an addition to the kit of tools that economic analysts can use in the interpretation and understanding of economic events

and policy actions.<sup>21</sup>

<sup>21</sup>With a view toward promoting a better understanding of the Federal budget, a Presidential Commission has recently been formed to review traditional budgetary concepts and recommend changes in the way the budget is presented to the public.

KEITH CARLSON

## APPENDIX

### Analytical Use of the High-Employment Budget<sup>1</sup>

The usefulness of the high-employment budget in the analysis of economic stabilization policies can be demonstrated with the modern theory of the determination of the level of economic activity.

According to economic theory, the level of economic activity is determined by the saving and spending propensities of households, businesses, governments, and foreigners.<sup>2</sup> The most comprehensive measure of economic activity is gross national product (GNP) — the total value of final goods and services produced in a given time period. GNP can be measured by summing all expenditures or by summing all incomes. All production can be thought of as being bought; thus, the total product can be measured by gross national expenditure (GNE) on this product. Similarly, all production has income charges against it equal in value to what is produced; thus the total product can be measured by gross national income (GNY). This definitional relationship between total product, total expenditure, and total income can be expressed as follows (where triple bar,  $\equiv$ , means “identically equals”):

$$(1) \text{GNP} \equiv \text{GNE} \equiv \text{GNY} .$$

Gross national expenditure (GNE) can be divided into its major components — consumption (C), investment (I), and government purchases (G). Gross national income (GNY) must be allocated to consumption (C), saving (S), and taxes (T). Equation (1) can be rewritten,

expressing GNE and GNY as the sum of their components:

$$(2) C + I + G \equiv C + S + T$$

where C = personal consumption expenditures;

I = gross private investment;

G = government purchases of goods and services;

S = gross private saving;

T = net government receipts.

Both GNE and GNY contain consumption (C). As a part of GNE, consumption is spending on consumer goods and services. As an allocation of GNY, consumption is that portion of income spent on consumer goods and services. Both statements refer to the same magnitude. For convenience, consumption (C) can be ignored, and attention focused on the remainder of GNE, i.e., (I + G), and the remainder of GNY, i.e., (S + T). Dropping consumption (C) from both sides of equation (2) leaves:

$$(3) I + G \equiv S + T .$$

Government expenditures (G) can be netted against receipts (T), yielding government saving (T-G), the Federal budget surplus or deficit. The result of such a rearrangement shows that investment (I) is identically equal to total saving S + (T-G):

$$(4) I \equiv S + (T-G) .$$

In an accounting sense, saving and investment are always equal, regardless of the level of GNP. However, accounting definitions of saving and investment do not themselves provide an explanation of the dynamic forces that cause GNP to be what it is. Nevertheless, the concepts are useful in developing a framework for understanding what determines GNP.

Although *measured* saving and investment are always equal, *planned* saving and investment are not. Saving and investment are performed largely by different groups; each group is motivated by its own set of considerations. An attempt by businesses to invest more than is willingly saved by households, businesses, and governments sets

<sup>1</sup>This appendix is essentially the same as the analytical framework summarized in the April 1966 issue of this *Review*, pp. 9-11. This, in turn, was based primarily on Solomon, *op. cit.*

<sup>2</sup>All terms are defined so as to be roughly consistent with the national income accounts framework. Investment is defined to include gross private domestic investment and net foreign investment; private saving includes personal and business saving, and state and local government saving; government purchases are for the Federal Government; and net Federal Government receipts are essentially taxes net of transfer payments.

in motion forces causing GNP to increase. Under such circumstances injections of investment expenditures into the income-expenditure stream exceed the leakages of private and government saving from it. An excess of injections over leakages leads to an increase in GNP. The rise in GNP continues to a level where planned saving and investment are brought into balance.

Whether an economy achieves high employment with stable prices (i.e., an optimal GNP)<sup>3</sup> depends on the relation between planned saving and investment at that specified target level of economic activity. If investment falls short of planned saving at high employment, GNP will fall short of its optimal level and unemployment will result. On the other hand, if planned investment exceeds planned saving at high employment, GNP will exceed its optimal level and prices will rise. In terms of equation (4) these conclusions may be summarized as follows (where the subscript H denotes "high-employment value"):

Relation between planned saving and investment at high employment	Result
$I_H$ less than $S_H + (T_H - G_H)$	GNP falls short of its optimal level
$I_H$ equals $S_H + (T_H - G_H)$	GNP achieves its optimal level
$I_H$ greater than $S_H + (T_H - G_H)$	GNP exceeds its optimal level

<sup>3</sup>This discussion ignores possible inconsistencies between high employment and stable prices. Choice of an optimal GNP probably involves a "trade-off" between an increase in employment and a rise in the general level of prices.

Understanding why GNP exceeds or falls short of its optimal level is crucial to the policy formulation process. Within the analytical framework discussed here, the problem reduces to an analysis of the discrepancy between high-employment values of saving and investment. If a discrepancy exists, policy measures can be instituted which will restore GNP to its optimal level.

In particular, (1) the appropriate magnitude of the high-employment budget ( $T_H - G_H$ ) needed to achieve optimal GNP, given the relation between planned high-employment values of private saving, i.e., ( $I_H - S_H$ ), may be stated, or (2) the amount of investment needed to close the high-employment saving-investment gap ( $I_H - S_H$ ), given the magnitude of the high-employment budget ( $T_H - G_H$ ), may be specified. The first interpretation indicates the fiscal actions required to achieve optimal GNP, given monetary actions; the latter specifies the required monetary actions as they influence investment, given fiscal actions.

These interpretations of the saving-investment framework can be summarized as follows:

$$(5) I_H - S_H = T_H - G_H .$$

The left-hand side of equation (5) indicates the private sector of the economy, the right-hand side, the government sector. The larger is the high-employment budget surplus, ( $T_H - G_H$ ), the more investment ( $I_H$ ) must exceed saving ( $S_H$ ) if high employment with stable prices is to be achieved. Alternatively, the more investment ( $I_H$ ) exceeds saving ( $S_H$ ), the larger must be the high-employment budget surplus, ( $T_H - G_H$ ), if optimal GNP is to be achieved.

Subsequent revisions and current estimates of the high-employment budget will be provided in this Bank's quarterly release, "Federal Budget Trends." Also available is an appendix to this article which describes in detail the assumptions that underlie the estimates presented here. These items are available on request from the Research Department, Federal Reserve Bank of St. Louis, P.O. Box 442, St. Louis, Missouri 63166.

# Automated Check Processing

September 1, 1967 Deadline Approaching

**C**HECKS CLEARED through any Federal Reserve Bank after September 1, 1967 must have the routing symbol-transit number of the bank on which it is drawn imprinted with E-13B characters in magnetic ink. This is MICR (Magnetic Ink Character Recognition) encoding. This routing number is that set of odd-looking numbers printed along the lower edge on the left side of the check. If a check does not meet this requirement after September 1, 1967, it will no longer be handled by the Federal Reserve Bank as a check. Such checks will suffer delays in collection and could result in collection charges.

Since its introduction in 1956 by the American Bankers Association, the MICR program has revised and revitalized the entire check collection system. The MICR program is the most practical and efficient means devised thus far to handle the swelling volume of checks. Not only does it benefit the banking industry, but more importantly, it improves the checking service that banks provide for their customers.

When automated check handling first came to banking, the Federal Reserve System issued regulations that specified certain requirements a check would have to meet in order to be effectively handled on high-speed equipment as a cash item. A cash item, or conforming item, is capable of talking a common machine language and experiences a shorter collection time than a non-cash item.

After September 1, if the bank's routing symbol-transit number does not appear in magnetic ink on the check prior to receipt by the Fed, it will be treated as a noncash item. Noncash items are not processed as quickly because special handling is required. Also, the sending bank does not receive credit for it until the Federal Reserve Bank receives payment from the bank on which it is drawn, which means a longer collection time.

Items sent to the Federal Reserve Bank for collection, fully encoded with magnetic ink, can now be processed at a speed of 60,000 items per hour. If these items do

not conform to the computer's specifications, they are then processed by low-speed equipment at an approximate rate of only 1,500 items per hour, or sorted by hand at an even slower rate which lengthens processing time considerably.

For the past few years, the American Bankers Association, check-clearing correspondent commercial banks, and the Federal Reserve System have been urging that all checks bear the home bank's MICR routing symbol-transit number. A survey made during January 1967 disclosed that on a nationwide basis, almost 3 per cent of all items received by the Federal Reserve System did not bear the routing symbol-transit number in magnetic ink. In the St. Louis District, over 8 per cent of the checks did not conform. A survey in April (table) showed some improvement; nationwide, only 2 per cent of all items reviewed did not conform, compared with 6.4 per cent in the St. Louis District.

## Items Not Bearing MICR Routing Symbol

	Per Cent of Total
<b>Within St. Louis District</b>	
St. Louis .....	7.22
Little Rock .....	8.33
Louisville .....	2.71
Memphis .....	7.09
St. Louis Average .....	6.42
<b>All Districts</b>	
Boston .....	.55
New York .....	.61
Philadelphia .....	.55
Cleveland .....	1.89
Richmond .....	2.89
Atlanta .....	2.92
Chicago .....	1.70
St. Louis .....	6.42
Minneapolis .....	1.24
Kansas City .....	3.49
Dallas .....	4.89
San Francisco .....	1.09
System Average .....	2.01

Source: Federal Reserve System survey — April, 1967.

Personal and corporate checks accounted for almost two-thirds of the items reviewed that did not contain the MICR routing designation. Other checks which are also considered "headache" items and present problems for automatic handling are universal checks. These are checks on which the name of the bank has not been printed. They are usually made available by stores and other businesses for their forgetful customers. The customer fills out the check and writes in the name of the bank upon which it is drawn. Eventually customers who use a universal check may be charged a substantial fee.

The largest "headache" item for the computer is the so-called scratched check, on which the name of the bank is printed but scratched out and the name of another bank written in. When the computer scans the check it will read the MICR routing number of the bank scratched out and sort the check to that bank and not to the bank that was written in. This causes considerable missending, increases costs, and effects

delays in collection.

The banking and business communities have cooperated in making an effort to eliminate non-conforming items prior to the September 1 deadline. Intermittently since April this year, the Federal Reserve Bank of St. Louis has been attaching labels to checks which will no longer be handled as checks after September 1, 1967. In addition, placards have been provided for display in banks, retail stores, shopping centers, and other locations where large numbers of personal checks are cashed. Articles and advertisements have appeared in various publications and news media. Speeches have been given at meetings of businessmen and bankers.

The purpose of all this promotion is to make the millions of check users aware of the September 1 deadline and what it means to them. The banking industry is on the threshold of a new era. The MICR program is the beginning of automated check handling and deposit accounting.



*SUBSCRIPTIONS to this bank's REVIEW are available to the public without charge, including bulk mailings to banks, business organizations, educational institutions, and others. For information write: Research Department, Federal Reserve Bank of St. Louis, P. O. Box 442, St. Louis, Missouri 63166.*