

FEDERAL RESERVE BANK OF ST. LOUIS

MARCH 1969



REVIEW



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Reprint Series

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Restraining Inflation

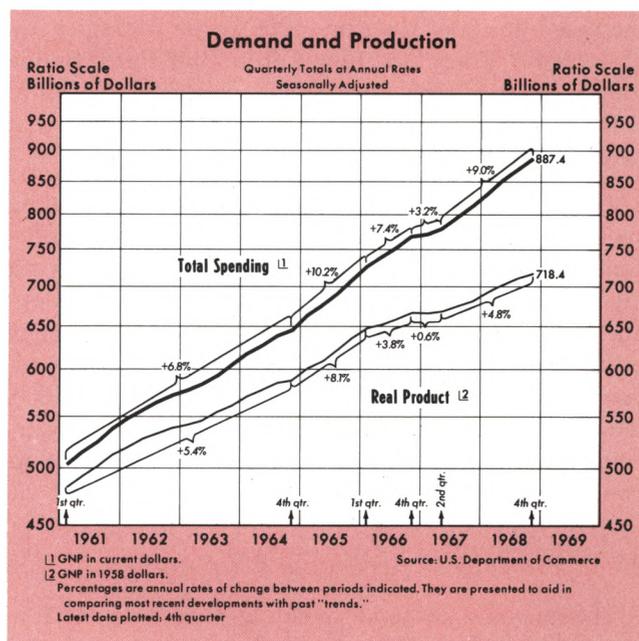
INFLATION continues to be a major concern of consumers, producers and stabilization policymakers. The strong desire to reduce the rate of inflation is apparently tempered by an equally strong desire to avoid a sharp reduction in the growth of real product and employment. Economic analysts are looking for signs that restraint is being effectively pursued by monetary and fiscal means and that the growth of total demand is moderating. At the same time we are cautioned that too rapid a slowdown in the growth of total spending could have serious repercussions on the rate of growth of production and employment.

Total Spending

Total demand for goods and services has continued to rise at a pace exceeding the growth of the productive capability of the economy, despite some slowing in the growth of total spending since mid-1968. From the third to the fourth quarter last year total spending, as measured by Gross National Product, increased at a 7.8 per cent annual rate, less than the 9.5 per cent growth in the previous four quarters, but the same as the average rate for the previous three inflationary years.

The rapid 9 per cent rate of advance of total spending in 1968 characterized all major spending groups in the economy, although the relative importance of spending groups shifted from quarter to quarter. Quarterly changes in the components of total spending are summarized in Table I.

The course of consumer spending and of business spending for inventories shifted in an alternating pattern during 1968. In the first and third quarters consumer expenditures accounted for the largest portion of increases in spending, while spending for business inventories declined. In the second and fourth quar-



ters, when consumption spending was rising at a reduced rate, spending for business inventories increased markedly. The fourth quarter slowing in consumer spending has been attributed partly to the flu epidemic and to fewer shopping days between Thanksgiving and Christmas than usual.

The level of retail sales increased only slightly on balance from September to February, after increasing \$1.9 billion from January 1968 to September, or at a 10.5 per cent annual rate. A slowing in the rate of increase of income may have been a factor in the leveling of consumer spending in the past six months. From last September to January, personal income rose at a 6.8 per cent annual rate, compared with a 9.8 per cent rate in the previous year. From December to January, personal income increased at less than a 3 per cent annual rate because of the in-

Table I

CHANGES IN COMPONENTS OF TOTAL SPENDING, 1968¹
(annual rates of change in parentheses)

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Consumption	17.2 (14.4)	8.5 (6.7)	13.2 (10.4)	5.7 (4.3)
Fixed Investment	4.1 (15.3)	-1.1 (-3.7)	3.1 (11.1)	6.4 (23.2)
Changes in Business Inventories	-6.2	8.7	-3.3	3.1
Gov't. Spending	7.0 (16.2)	5.2 (11.4)	3.9 (8.2)	3.4 (7.0)
Net Exports	-1.9	.5	1.3	-2.3
Total Spending²	20.2 (10.4)	21.7 (10.9)	18.1 (8.8)	16.4 (7.8)

¹In billions of dollars

²Components may not sum to totals because of rounding.

crease in social security taxes and other special factors such as strikes in the shipping and petroleum industries. However, in February personal income probably increased at about the same rate as the average rates of increase since last July. From the third to the fourth quarter 1968, disposable income increased at a 6.7 per cent rate, compared with a 7.8 per cent average increase in the previous four quarters.

The rate of increase of fixed investment, including spending for plant and equipment and residential construction, rose sharply from the third to the fourth quarter of 1968, and the economy continues to operate at a high level of labor and other resource utilization. Even so, production has continued to advance rapidly. From September 1968 to January 1969, industrial production increased at an 8 per cent rate, compared with a 5.3 per cent rate in the previous twelve months.

Real Product, Prices and Employment

The increase in total spending from late 1967 to late 1968 was manifested in a 5.4 per cent increase in real output and a 3.9 per cent increase in the average level of prices. In the fourth quarter, growth

per year for very long, because of limitations on resources such as labor, productive facilities, and technology. The very large increases in real product in the first two quarters of last year were possible because the economy was able to bring additional resources into production at higher costs.

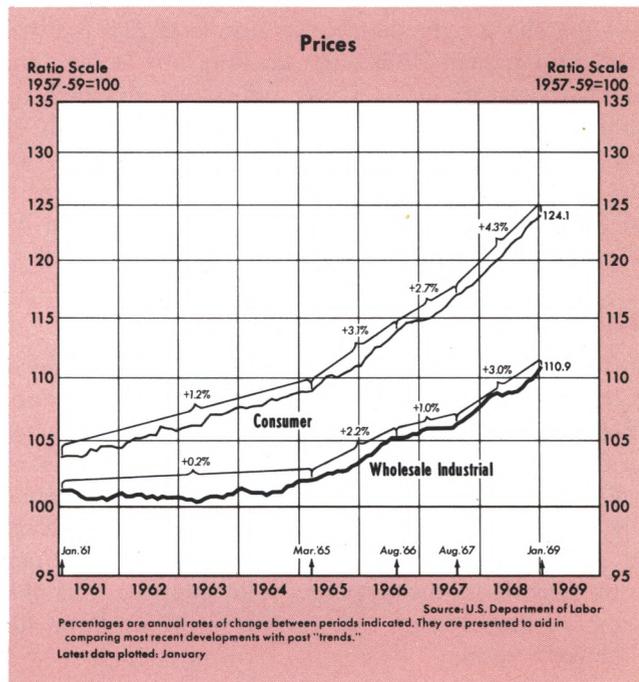


Table II

QUARTERLY CHANGES IN GNP, PRODUCTION AND PRICES — 1968

(Billions of Dollars)

Quarter	Nominal GNP	Real Product	Prices*
I	20.2	10.9	9.3
II	21.7	10.7	11.0
III	18.1	8.9	9.2
IV	16.4	6.1	10.3

(Percentage Changes From Preceding Quarter)

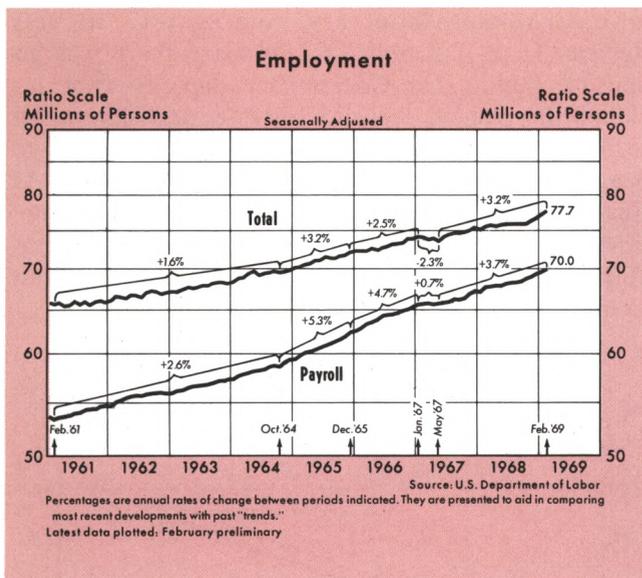
Quarter	Nominal GNP	Real Product	Prices
I	10.0%	6.4%	3.6%
II	10.5	6.2	4.3
III	8.5	5.0	3.5
IV	7.5	3.4	4.1

*Change in nominal (total) GNP minus the change in real product (GNP in constant dollars)

of real product slowed to a 3.5 per cent annual rate, while prices continued to rise at a 4 per cent rate. The distribution of changes in total spending between prices and real product in each of the four quarters of 1968 is shown in Table II. Most of the slower growth of total spending in the second half of 1968 was manifested in reductions in the growth of real product. It is unlikely that the growth of real product could be maintained at rates much above 4 per cent

The rapid rate of price increases has continued into 1969. The consumer price index has continued to rise rapidly early this year, after accelerating from about a 4 per cent average rate in the second half of 1967 to nearly a 5 per cent average rate in the second half of 1968. Wholesale prices of industrial commodities went up at an 8 per cent rate in January after rising about 2.6 per cent in the previous year. Wholesale prices of farm products also increased at a very rapid rate in January and, as a result, wholesale prices of all commodities increased at a 10.3 per cent annual rate from December to January.

Total civilian employment increased at a rapid 7 per cent annual rate from October 1968 to February, representing an increase of almost 1¼ million persons. The unemployment rate remained at 3.3 per cent of the labor force in January and February, matching December's 15-year low. Unemployment among married men was 1.4 per cent in the first two months of this quarter, compared with 2.4 per cent in 1965. Employment as a percentage of population of working age also indicated an increase in the intensity of manpower usage last year. In 1968, 73 per cent of those between the ages of 20 and 64 were employed.



At the peak of the Korean War (1953) this ratio was 68 per cent, and when economic activity was at a high level in 1957, 1959, and 1965, the figures were 69 per cent, 69 per cent and 71.4 per cent, respectively.

Real product growth would be expected to slow to its full-employment potential rate (probably about 4 per cent) when the economy moves beyond an efficient level of resource use. This full-employment growth rate of real product can be exceeded only temporarily due to stimulative actions which attract larger amounts of resources into production, but at the cost of acceleration of inflation. Since the slowing of total spending in the third and fourth quarters of last year was matched by an unavoidable slowing of real product growth to its full employment potential, it may be inferred that the economy was subjected to a similar amount of excessive inflationary stimulus throughout last year.

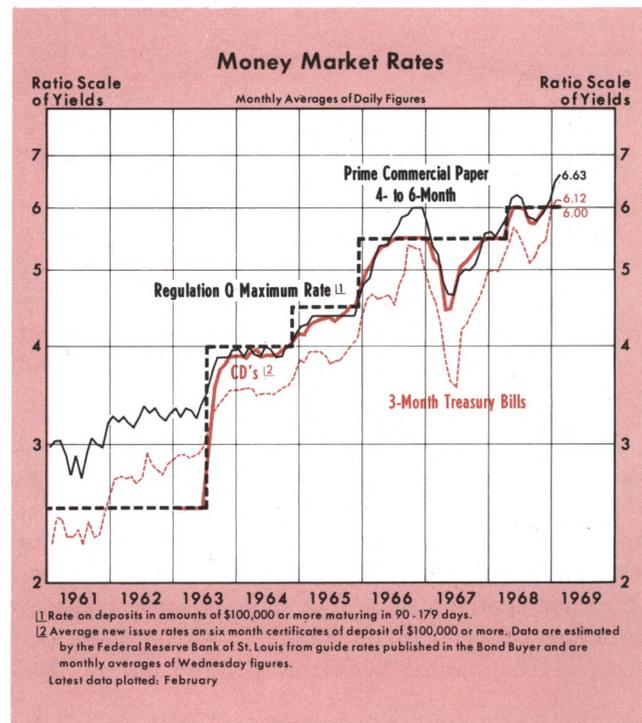
Credit Demand and Interest Rates

The demand for loans has been very strong during early 1969. Business loans at large commercial banks have increased at an 18 per cent annual rate in the past three months, almost twice the 9.6 per cent trend rate from 1960 to 1968. Banks have liquidated some securities in meeting the rising demand for loans. In recent months the loan portion of bank credit has risen sharply, while the investment portion of bank credit has declined.

Most market interest rates rose slightly in January and February after rising sharply from October to record high levels in late December. Interest rates on four- to six-month commercial paper averaged 6.75

per cent in late February, compared with 6.25 per cent in late December and 5.8 per cent in October. Yields on three-month Treasury bills declined seasonally to an average of 6.1 per cent in late February, compared with 6.2 per cent in late December and 5.35 per cent in October.

Interest rates on long-term securities have moved in a similar pattern. Yields on long-term Government bonds rose from 5.24 per cent during October to 5.82 per cent in late December. The average yield on corporate Aaa bonds rose from 6.09 per cent in Oc-

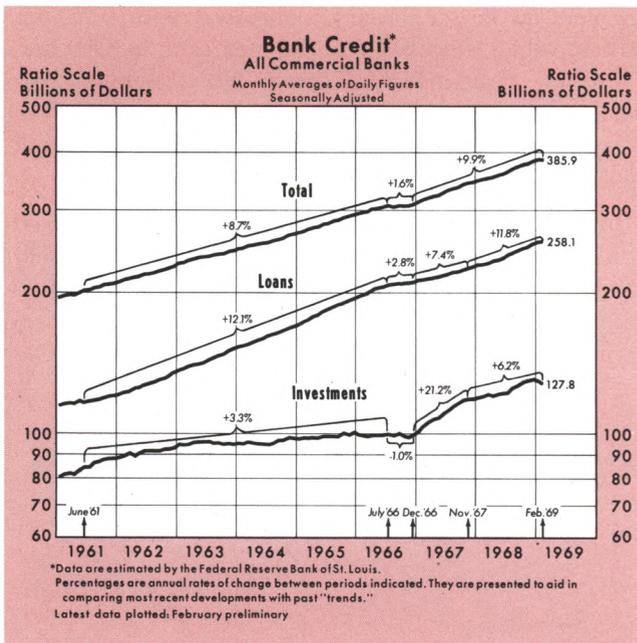


tober to 6.53 per cent in late December. During February the yields on these securities averaged 5.86 and 6.66 per cent, respectively.

The high levels of interest rates suggest to many analysts that "money has been very tight." However, if nominal interest rates are adjusted for inflationary expectations, interest rates do not indicate such a degree of tightness. Recent and anticipated inflation have altered the portfolio preferences of asset holders away from financial assets with fixed nominal yields, while encouraging spending financed through borrowing.

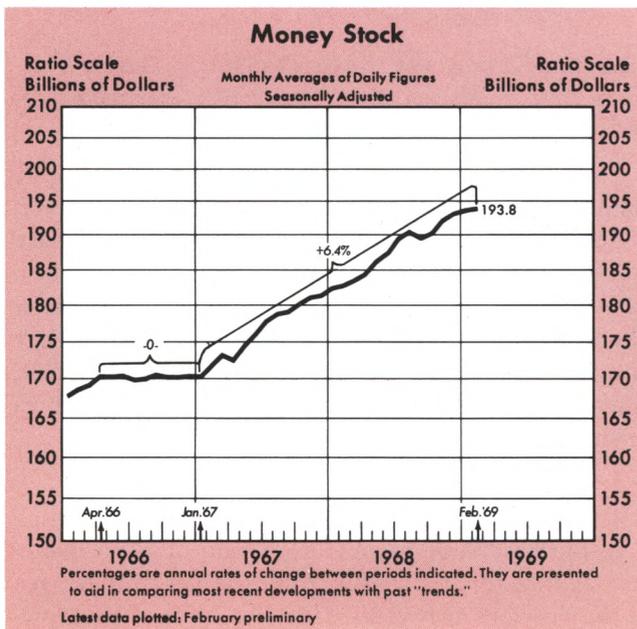
The Money Stock and the Monetary Base

In the past three months expansion of some monetary aggregates has slowed from the very rapid pace of the previous two years. However, part of the slow-

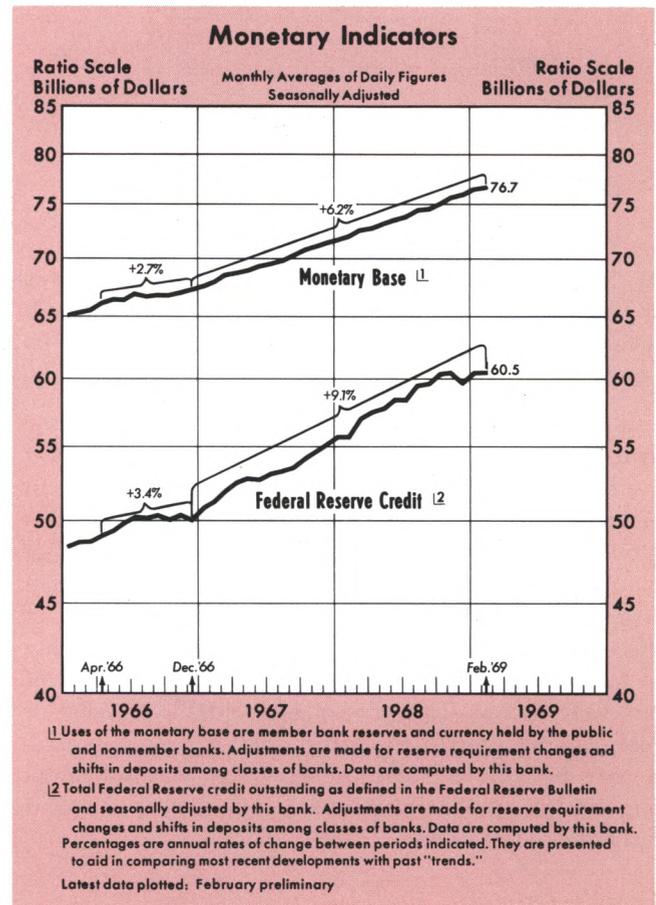


ing can be explained by special circumstances, requiring more careful interpretation of the apparent signs of restraint in some indicators, as discussed below.

The money stock, consisting of private demand deposits and currency in the hands of the public, increased at only a 4 per cent annual rate in the past three months, slower than the 6.4 per cent rate of the past two years. Analysis of the growth of money for very short periods of a few months must consider the influence of fluctuations of U. S. Government deposits at commercial banks, as pointed out in "Re-



lations Among Monetary Aggregates" in this Review. From December to February there was an unusual buildup in Government deposits (not included in money) causing private deposits to be correspondingly less than they would otherwise have been for the same amounts of the monetary base. As Government deposits at commercial banks decline, private demand deposits and the money stock probably will rise rapidly if the monetary base continues to increase at the recent rapid rate.



The monetary base, the total credit supplied by the Treasury and Federal Reserve to the private sector of the economy,¹ has risen at a 5.4 per cent annual rate in the last three months, compared with the rapid 6.2 per cent rate of the past two years, and above the 3.6 per cent trend rate from 1957 to 1968. The growth of the monetary base dominates the trend growth of the money stock over time.

Disintermediation

Growth rates of the money stock plus time deposits and of total credit at commercial banks have slowed

¹See "The Monetary Base - Explanation and Analytical Use," in the August 1968 issue of this Review.

markedly since December. The broad measure of money decreased at a 3.9 per cent annual rate from December to February, compared with an 8.5 per cent rate of increase during the past two years. Bank credit has increased at a 2.4 per cent rate since December, compared with a 10 per cent rate of increase since late 1966.

The slowing in the growth of these two measures, money plus time deposits and bank credit, is largely the result of the disintermediation of bank time deposits caused by market interest rates rising relative to rates banks are permitted to pay on time deposits. New issue interest rates on large negotiable certificates of deposit (\$100,000 or more) at commercial banks reached the maximums permitted under Regulation Q in late November 1968, while rates on commercial paper and other market instruments continued to rise. Large certificates of deposit at large commercial banks declined from \$24.3 billion in early December to \$19.6 billion on March 5. Total time deposits at commercial banks have declined at a 9 per cent annual rate since December.

The contraction of CD's and resulting slowing in the growth of total bank deposits and bank credit have been cited by some observers as signs of significant tightening of monetary actions. Although the decline of time deposits does restrict the growth of total bank deposits and bank credit, it does not necessarily limit growth of total liquid assets or total credit in the economy. As time deposits at commercial banks decline, funds are made available in the market through other credit instruments. Total deposits and, therefore, total assets of commercial banks decline, but the restriction of bank credit growth caused by the interest rate ceilings on time deposits is probably not any greater than the offsetting increased growth of credit in nonregulated markets.

As discussed in "Relations Among Monetary Aggregates" in this *Review*, the falling demand for time deposits, caused by high market interest rates relative to Regulation Q ceilings, is the cause of the decline in the growth of money plus time deposits and bank credit. Therefore, the observed slower growth of these two aggregates is not sufficient information to indicate that monetary actions have become less stimulative since November.

The rise in the volume of net borrowed reserves has also been cited as an indication of monetary restraint. Borrowings from Federal Reserve Banks averaged \$820 million during February, up from \$570 million in November. Other sources of funds to banks

have been relatively expensive, as interest rates on Federal Funds and short-term assets remain high compared to the discount rate, and banks continue to lose large CD's. During February, the three-month Treasury bill rate averaged 60 basis points above the discount rate. On average since 1961, the bill rate has been slightly below the discount rate. The increased borrowing probably reflects a decline in banks' liquidity, and has contributed to bank reserves and continued money creation.

Summary

Total demand for goods and services remains excessive; therefore, upward pressures on prices continue to be intense. The major short-run domestic economic objective is to reduce the excessive total spending, and hence inflationary pressures, without causing an undue interruption in the growth of production. While the slight reduction in the growth rate of total spending from the second to fourth quarters in 1968 was manifested in a deceleration of the growth in real product, employment and production in early 1969 continue to show exceptional strength. The general level of prices rose at a 4 per cent rate throughout last year, and the increases in consumer and wholesale prices have continued into early 1969.

Monetary authorities recently have announced intentions to impose monetary restraints on economic activity in order to reduce the intensity of the inflation. Since monetary actions affect spending with a delayed effect over time, monetary actions must be judged by proximate measures. The measures commonly used, if not properly interpreted, currently give contradictory signals. Recent slower growth rates of money, money plus time deposits, and bank credit, or high market rates of interest and a large volume of net borrowed reserves, have led some observers to conclude that monetary actions in recent months have been highly restrictive. However, others note that the monetary base has continued to increase rapidly, that the slower growth of money was chiefly the result of a large and temporary buildup of U.S. Government deposits at commercial banks, and that the slower growth of both money plus time deposits and bank credit was the result of Regulation Q interest rate ceilings and does not indicate any reduction in total credit flows. Thus interpreted, available data seem to indicate that lasting monetary restraint may not yet have been exercised. The observed slower rates of monetary expansion will only be effective if they are maintained over the next few months.

Relations Among Monetary Aggregates

IN RECENT YEARS greater attention has been given to the growth rates of various monetary aggregates as measures of the influence of stabilization actions on economic activity. Four of the most frequently discussed aggregates are the money stock (private demand deposits plus currency held by the public), money plus time deposits, bank credit (total loans and investments of commercial banks), and the monetary base¹. This note discusses briefly the principal factors influencing the growth of these aggregates over time and cites special considerations analysts must keep in mind in deriving conclusions from observed changes in the growth of these aggregates.

Expansion of the monetary base over periods of several months is dominated by the growth of Federal Reserve Credit and, therefore, is determined principally by changes in the Federal Reserve's holdings of U.S. Government Securities. It is generally agreed that, among the four major monetary aggregates, the Federal Reserve, through its open market operations, can exercise closest control over the monetary base.

The money stock, money plus time deposits, and bank credit can all be related to the monetary base through "monetary multipliers."² These multipliers summarize all of the economic and institutional factors which link changes in the monetary base to changes in the other three aggregates. For the past two years the monetary base has grown at a rather steady 6 per cent annual rate. During the same period, money, money plus time deposits, and bank credit each have grown, for short periods of a few months, slower than the monetary base, while in other periods they have grown much faster than the base.

In recent years, changes in the growth rate of bank credit have been more highly correlated with changes

in the growth of money plus time deposits than with changes in the growth of the money stock, because of the effects of Regulation Q ceilings on the interest rates banks are permitted to pay on time deposits. The following discussion will illustrate how changes in the money stock, in money plus time deposits, and in bank credit are influenced by factors other than the monetary base.

In recent years, there have been two principal factors influencing the growth rates of money, money plus time deposits, and bank credit relative to each other and relative to the base. These are fluctuations in U.S. Government deposits at commercial banks and the growth of time deposits relative to demand deposits.

U.S. Government Deposits

U.S. Government deposits are a direct substitute (in an accounting sense as a liability of commercial banks) for private demand deposits. Banks which are members of the Federal Reserve System are required to hold the same minimum reserve balances against U.S. Government deposits as against private demand deposits.

As individuals and corporations pay taxes (including withheld taxes) or purchase newly issued Treasury securities, their demand deposit (checking account) balances decrease and U.S. Government deposits increase. Then as the Government spends, its balances decrease and private balances increase. Since U.S. Government deposits are not defined as part of the money stock, private money decreases as Government balances are built up, and increases as Government balances are run down, other things equal. In recent years, the Government's balances at commercial banks have ranged from as low as \$3 billion to as high as \$9 billion within a few months time.

On average over the past twenty years, the money stock has increased a little more than \$2.5 billion for every \$1 billion increase in the monetary base. In the last two years the base has been increasing about \$1 billion every three months, or at about a 6 per cent annual rate. However, there have been several instances in recent years when money increased very little for a few months while Govern-

¹See "The Monetary Base - Explanation and Analytical Use," in the August 1968 issue of the *Review*.

²For a thorough presentation of one theoretical model relating money, money plus time deposits, and bank credit to the monetary base, see A. E. Burger, "A Summary of the Brunner-Meltzer Non-Linear Money Supply Hypothesis," *Working Paper No. 7*, Federal Reserve Bank of St. Louis, January 1969.

ment balances were being built up, even though the monetary base was continuing to grow rapidly. In subsequent months, as Government balances were reduced, the growth of money accelerated to rates much faster than the growth rate of the base. Over the period as a whole, the growth rate of money averaged very close to the growth rate of the base.

Time Deposits

Changes in time deposits at commercial banks also cause an offsetting change in private demand deposits, but not on a one to one basis. Banks are required to hold reserve balances against both time and demand deposits, but the reserve requirement percentages are much lower for time deposits than for demand deposits. A dollar of reserves can "support" a much larger volume of time deposits than demand deposits. If the growth of time deposits accelerates relative to the growth of total reserves, the growth of total demand deposits will decrease (assuming excess reserves are constant). That is, a larger proportion of total reserves becomes "required" behind the increased time deposits, so there are less "reserves available" to support demand deposits.

In the 1960's time deposits at commercial banks have grown much faster on average than demand deposits. Therefore, an increasing proportion of total reserves have been required behind time deposits, leaving a diminishing proportion of total reserves available for demand deposits. This upward trend of time deposits has altered the multiplier relationship between the monetary base and money, and between the base and money plus time deposits. Since 1960 the multiplier relation between the base and money has trended downward, resulting in a somewhat slower average growth rate for money than for the base. At the same time, the multiplier between the base and money plus time deposits has trended upwards, resulting in a faster average growth rate for money plus time deposits than for the base.

There have been at least three distinct instances in the past three years in which the growth rate of time deposits has declined sharply relative to the growth rate of demand deposits.³ As the growth of time deposits declined, reserves which otherwise would have been held as required reserves behind time deposits were "released" and became "available"

³Specifically, in the fall of 1966, spring of 1968, and from December 1968 to the present, the growth of time deposits slowed significantly relative to the growth of demand deposits.

for demand deposits. Consequently, the sum of private and Government demand deposits was able to increase at rates faster than the growth rates of reserves and base money. (However, *total* deposits declined in these instances). In each of these cases the declining growth rate of time deposits (an absolute decline of time deposits in two of the instances) was directly attributable to rapid increases in market interest rates relative to the Regulation Q ceiling interest rates banks are permitted to pay on time deposits.

The demand for time deposits by individuals and businesses is positively related to the yield on time deposits and negatively related to the yield on substitute earning assets, such as savings and loan shares, mutual savings bank deposits, Treasury bills, and commercial paper. When banks are offering to pay the ceiling rates permitted by Regulation Q and are prevented from offering higher yields even though the yields on substitute assets are continuing to rise, the *demand* for time deposits declines as does the outstanding volume (or growth rate) of time deposits. In such circumstances, the growth of time deposits is determined by changes in the demand for them, since banks are willing to accept all deposits at the ceiling rates. Consequently, the decreasing growth rates of money plus time deposits, which occurred in the three above-mentioned instances when banks' offering rates on time deposits were constrained by the ceiling rates, were paralleled by falling *demand* for money plus time deposits.

Summary

Prediction of the effects of changes in the growth rate of a monetary aggregate on economic activity requires knowledge regarding the relative movements in the supply of and demand for the asset. Thus, when an analyst concludes that an acceleration in the growth rate of money will have expansionary effects on total spending in the economy, he is indicating that the supply of money is increasing relative to the demand for money to hold.

In the above-mentioned cases, the behavior of interest rates is evidence that a decline in the *demand* for money plus time deposits accompanied the observed reduction in the growth of the *quantity* of money plus time deposits. Under such circumstances, it should *not* be concluded that the observed slower growth rate of money plus time deposits will have a contractionary effect on total spending, since there is no evidence indicating that the supply of money plus time deposits is decreasing *relative* to the demand.

JERRY L. JORDAN

A Program of Budget Restraint

THE FEDERAL BUDGET and the Economic Report of the President were presented to Congress in mid-January. These two documents represent the former Administration's evaluation of current economic conditions and the 1969 national economic plan, and have been adopted without substantial change by the present Administration.¹ The Federal budget calls for a spending increase of 5.5 per cent from fourth quarter 1968 to fourth quarter 1969, and Congress was asked to extend the 10 per cent surcharge to mid-1970. In the context of these proposals, GNP is projected to increase about 6 per cent in the year ending fourth quarter 1969.

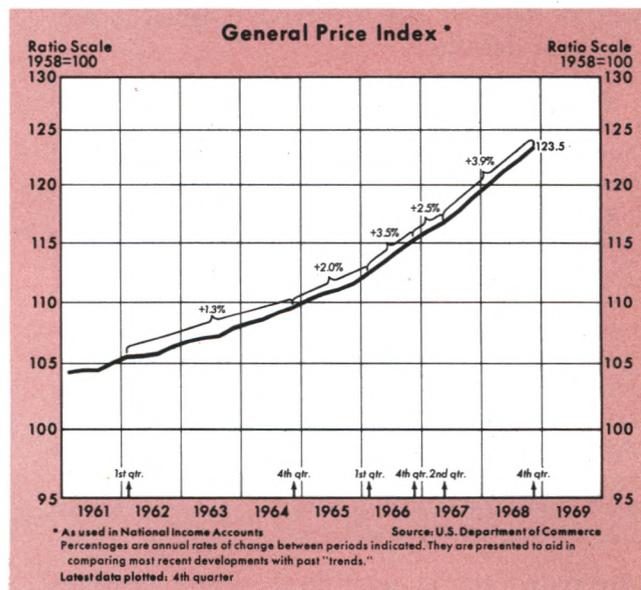
The 1969 Economic Report and the appended Annual Report of the Council of Economic Advisers (CEA) focus on the problem of inflation. According to the CEA Report, "With inflationary pressures still strong, economic policy should continue to exert restraint in 1969. Total demand must be brought into better balance with the nation's productive capacity to permit a slowing of price and cost increases." To achieve these objectives, the outgoing Administration outlined a fiscal program which would shift the Federal budget, on a national income accounts (NIA) basis, from near balance in late 1968 to a surplus of \$3 billion in late 1969. With respect to monetary policy, the CEA Report suggests that such policy should generally reinforce the intent of fiscal restraint in 1969.

Appraising the 1969 economic plan is complicated by the change of administrations. Apparently the new Administration has adopted the plan of the outgoing Administration with regard to the selection of targets, but there may be some differences as to the means of achieving them. The objective of this article is to determine what insights can be gained from recent experience that may be of help in the formulation of current and future stabilization policy.

¹See the statement of the Council of Economic Advisers prepared for the Joint Economic Committee, February 17, 1969.

Stabilization Actions and Economic Activity in 1968

The nation's major economic problem in 1968 was inflation, generated by an excessive demand for goods and services.² Prices rose about 4 per cent during the year, compared with a 3 per cent annual rate of increase from 1965 to 1967, and a 1.5 per cent average rate from 1961 to 1965. Excessive total demand was fostered by expansionary fiscal conditions to mid-year and rapid monetary expansion through the year.

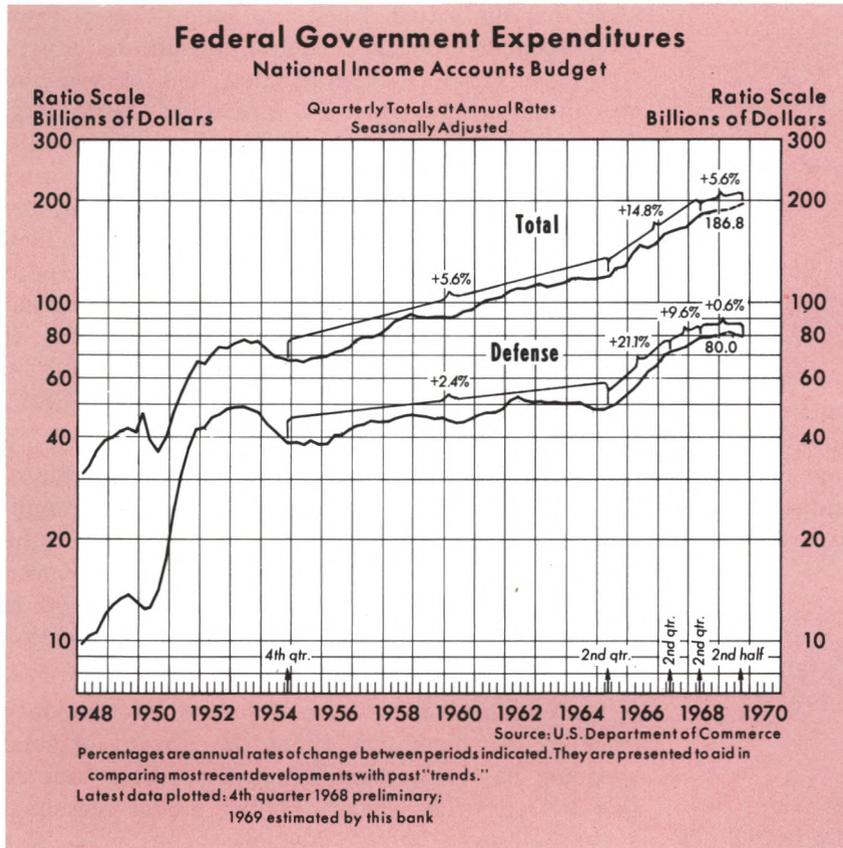


Total spending rose 9.5 per cent from late 1967 to late 1968, compared with a trend rate of 7.2 per cent from 1961 to 1967. The 1968 rise in spending was manifested in a 5.5 per cent increase in real output and a 3.9 per cent advance in prices.

Fiscal and Monetary Actions

The Government's fiscal condition was stimulative in the first half of 1968, but became much less expansionary after mid-year, following passage

²See "1968 - Year of Inflation," in the December 1968 issue of this Review.



to 1967 and at a 5 per cent rate from 1961 to 1965. Defense spending rose at a 2.5 per cent annual rate during the second half of 1968, compared with a 12.1 per cent rate of advance in the first half and a 20.2 per cent average rate from 1965 to 1967. Nondefense spending rose in the second half of 1968 at a 7.7 per cent rate, compared with a 19.8 per cent rate in the first half and an 11.5 per cent rate in the 1965 to 1967 period.

Enactment of the 10 per cent surcharge and continued rapid advances of nominal incomes boosted the Government's tax revenues sharply during the year. Receipts (NIA basis) rose by \$31 billion from late 1967 to late 1968, \$18 billion of which resulted from increased tax rates. The remaining \$13 billion reflected the rapid advance of incomes and profits.

As Federal spending growth slowed during the year and receipts rose very rapidly, the high-employment budget

in late June of the Revenue and Expenditure Control Act of 1968. The high-employment budget shifted from a very high rate of deficit in the first half to a small surplus in the fourth quarter.

Federal spending (NIA basis) rose at a 16.4 per cent annual rate during the first half and a 5.5 per cent rate in the second half. In comparison, Federal spending rose at a 15 per cent average rate from 1965

moved from a very large deficit (\$16.1 billion annual rate) in the second quarter 1968 to a small surplus (\$0.6 billion annual rate) in late 1968. The delay in the passage of the Revenue and Expenditure Control Act contributed to the over-all growth of revenue to the extent that inflation was allowed to intensify before action was taken, thereby adding to Government tax receipts.

Monetary expansion was very rapid in 1968. The nation's money stock rose 6.5 per cent from December 1967 to December 1968, about the same as the previous year, compared with a trend rate of 3.5 per cent from 1961 to 1967. The monetary base increased 6.4 per cent in 1968, about the same as the previous year but greater than the 4.5 per cent average annual rate from 1961 to 1967.

Evaluation of the 1968 Economic Plan

The 1968 CEA Report projected a 7.8 per cent advance of total spending for calendar 1968; the actual increase was 9 per cent. The CEA anticipated a rapid advance in the first half followed by a more moderate expansion in the second half. In fact, spending grew faster than anticipated in both halves of the year.

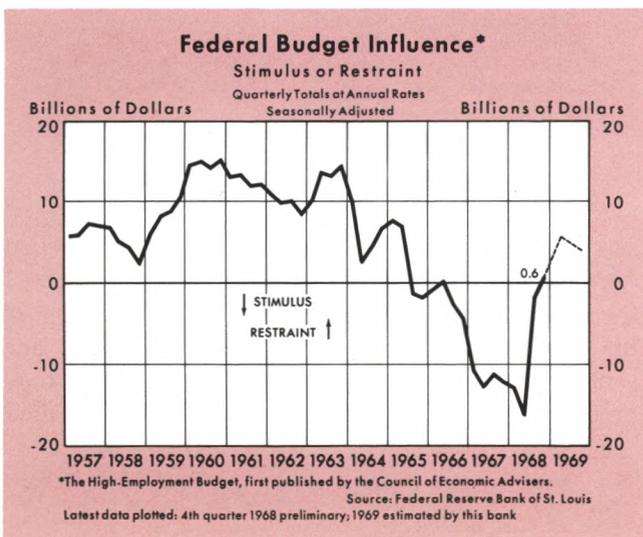


Table I

PROJECTED AND ACTUAL CHANGES IN GNP
AND COMPONENTS — 1967 TO 1968
(Billions of Dollars)

	CEA Projection	Actual	Error
Personal consumption	33.8	41.6	-7.8
Business fixed investment	4.7	6.4	-1.7
Business inventories	3.3	1.6	1.7
Residential construction	5.4	5.3	0.1
Federal purchases	6.2	9.4	-3.2
State and local purchases	8.5	9.4	-0.9
Net exports	-0.4	-2.8	2.4
GNP	61.4	70.9	-9.5

The CEA error of \$9.5 billion for the year consisted primarily of underestimates of consumption and Federal purchases. With final spending on domestic goods and services much greater than projected, inventory accumulation and net exports (exports minus imports) were overestimated.

Table II

PROJECTED AND ACTUAL CHANGES IN SPENDING,
OUTPUT AND PRICES — 1967 TO 1968
(Per Cent)

	CEA Projection	Actual	Error
Total spending (GNP) ¹	7.8	9.0	-1.2
Real product ²	4.3	5.0	-0.7
Prices ³	3.4	3.8	-0.4

¹GNP in current dollars.

²GNP in 1958 dollars.

³GNP deflator.

The GNP projected for 1968 can also be evaluated in terms of anticipated growth of real product and advance of prices. Real product was forecast to increase 4.3 per cent and actually rose 5 per cent. Price advances were similarly underestimated. Prices were projected to rise 3.4 per cent and actually increased 3.8 per cent.

To determine the underlying source of error, fiscal and monetary plans are compared with actions. The CEA has indicated that its error in projecting economic activity was traceable in large part to delayed passage of the tax surcharge. However, an examination of the national income accounts budget re-

Table III

PLANNED AND ACTUAL CHANGES IN
NIA BUDGET — 1967 TO 1968
(Billions of Dollars)

	Budget Plan	Actual	Error
Receipts	22.6	25.7	-3.1
Expenditures	14.9	18.6	-3.7
Surplus or deficit	7.7	7.1	0.6

veals that the actual deficit was little different from the anticipated deficit. Federal expenditure growth was more rapid than anticipated, but so was the growth of receipts. Such a comparison is misleading, however, because receipts reflected the rapid advance of incomes, which is a reflection of inflation rather than fiscal restraint. This underestimation of income growth may account for the bulk of the \$3.1 billion error in the receipts estimation. Taking into account this effect, the error in the estimate of the NIA deficit may have been, more accurately, \$3 to \$4 billion. It seems unlikely, however, that this error would be sufficient to explain the \$9.5 billion error in the CEA's estimate of GNP for 1968.

The second possible source of error was in estimating the effect of monetary actions. An explicit assumption about monetary actions was not specified in the 1968 Economic Report. If it were assumed, however, that the CEA anticipated about a 4 per cent growth in the money stock, their forecast went awry because the realized growth in money stock was 6.5 per cent.

The empirical importance of the growth of money stock in the determination of the growth of total spending has been suggested in a previous issue of this *Review*.³ The policy-oriented model presented

Table IV

PROJECTED CHANGES IN GNP — 1967 TO 1968

	Billions of Dollars	Per cent Increase
CEA projection (2-1-68)	61.4	7.8%
Actual	70.9	9.0
Policy-oriented model ¹		
1) with changes in money and government spending based on CEA assumptions	68.6	8.7
2) with changes in government spending perfectly anticipated but not changes in money	69.9	8.9
3) with changes in money perfectly anticipated but not changes in government spending	75.5	9.6
4) with changes in money and government spending perfectly anticipated	76.9	9.8

¹This policy-oriented model was described in the November issue of this *Review*.

there, given the information available at the time of the preparation of the 1968 Economic Report and assuming a 4 per cent growth in money, would have predicted an 8.7 per cent increase in GNP for 1968.

³See "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization" in the November 1968 issue of this *Review*.

As it turned out, that model, too, would have underestimated growth in total spending because it underestimated growth in money. Its error would have been \$2.3 billion, compared with the CEA error of \$9.5 billion. When the actual growth of money is inserted in the forecasting equation, the predicted increase would have been \$75.5 billion, or \$4.6 billion more than realized. In other words, the policy-oriented model would have predicted a 9.6 per cent increase in GNP, compared with an actual increase of 9 per cent.

In short, the CEA's forecast for 1968 was too low, an error which is particularly costly in an inflationary situation. There are two key reasons for this error. First, the growth of Federal expenditures was underestimated and the surtax was passed later than planned. Second, the effect of monetary actions was evidently underestimated. The effect of a given change in money apparently was not properly taken into account, and the rate of growth of money was underestimated. Based on the 1968 experience, however, the policy-oriented model which was used for comparative purposes slightly overestimated the effect of monetary actions.

Policy and the Economic Outlook for 1969

Budget plans for the 18-month period ending June 30, 1970 are formulated with the view that fiscal restraint is necessary to reduce inflationary pressures, and that there is merit in stabilizing the high-employment budget in balance or slight surplus. Given this budget program, the CEA expects total spending to slow in 1969. Whether such a slowing will occur depends largely on the fiscal program ultimately adopted by Congress and the new Administration, and the forthcoming rate of monetary expansion.

Federal Budget Program for 1969

The proposed budget of the Federal Government for calendar 1969 results in a budget surplus of \$3.8 billion on a NIA basis. Budget plans include provisions to increase expenditures 5.5 per cent during 1969 and to extend the 10 per cent tax surcharge through June 1970.

Expenditures — The budget plan of a 5.5 per cent rise in spending during 1969 is down sharply from the 10.8 per cent increase during the previous year. Federal spending rose at a 15.1 per cent average annual rate from 1965 to 1967 and a 4.9 per cent average rate from 1961 to 1965.

Defense spending is projected to change little in 1969, following a 7.2 per cent increase in 1968. The average rate of advance from 1965 to 1967 was 20.2 per cent. Estimates of defense spending for 1969 reflect a planned decline in expenditures for support of Vietnam operations.

Federal spending on civilian programs, i.e., non-defense spending, is budgeted to rise 8.1 per cent during 1969. This rate of increase is less than the 13.6 per cent rate of advance during 1968 and the 11.5 per cent rate from 1965 to 1967. Nondefense spending rose at a 7.8 per cent rate from 1961 to 1965. The increase in domestic spending in 1969 reflects a pay increase for government employees effective July 1.

Receipts — Federal receipts are expected to rise commensurate with the increase in spending. Extension of the 10 per cent tax surcharge is required to keep the budget in surplus in 1969. The increase in receipts during 1969 consists of \$3 billion from changes in tax rates and \$10 billion expected to be produced by growth in the economy.

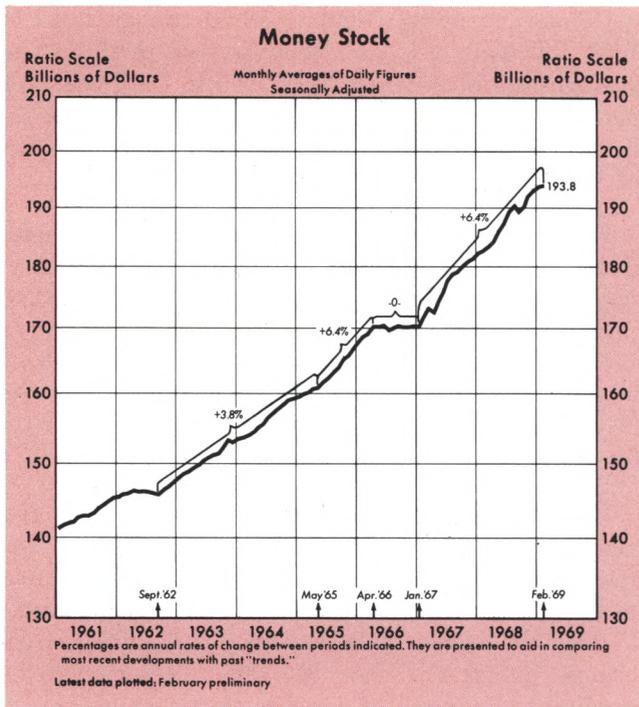
CEA Projection for 1969

The fiscal program proposed by the outgoing Administration, and apparently adopted by the present Administration, is supposedly consistent with a 7 per cent growth of total spending in 1969. The former CEA projected a slowing of total spending in the first half of 1969, followed by acceleration in the second half. The present CEA indicated in their statement to the Joint Economic Committee that the slowing in the first half may not be so pronounced, and that the anticipated acceleration in the second half should be checked by monetary actions.

The present Council has further judged that the 7 per cent growth in total spending would be manifested in a 3.4 per cent growth in real product and a 3.5 per cent advance in prices. This evaluation, however, runs contrary to recent experience in the United States. In the period from 1954 to present, all major slowdowns in the growth of total demand have been accompanied by simultaneous deceleration of real output growth, followed three or four quarters later by a slowing in the rate of price increase.⁴

In view of the former CEA's forecasting errors in 1968, the estimates for 1969 should be subjected to careful review. No specific recommendations are made

⁴See "Stabilization Policy and Inflation" in the February 1969 issue of this *Review*.



in either the CEA Report or in the CEA statement before the Joint Committee about monetary actions other than that they should be appropriate. In view of the tone of restraint in the Report and the present Council's

statement before the Joint Economic Committee, it might be assumed that a 4 per cent growth in money in 1969 would represent a policy of moderate monetary restraint without being so restrictive as to drive the economy into recession.

To gain some understanding of the alternatives that seem to be forthcoming, the policy-oriented forecasting model of this bank may be examined. This model would yield an increase in total spending similar to the CEA's projection if money grew at about a 3 per cent rate. A steady 4 per cent growth in money would yield a 7.4 per cent growth in total spending. These estimates are quite close to the CEA forecast, and indicate that the CEA forecast may be achievable if money is slowed to about a 3 or 4 per cent rate of advance. Even if a slowing in the rate of monetary expansion were apparent by spring 1969, little should be expected in the way of reduction in the rate of price advance before late 1969.

Summary

The former and present Councils have appropriately outlined a program of fiscal restraint for 1969. As in the past, however, little emphasis has been placed on the crucial role of monetary actions in the determination of the growth of total demand. There is some indication, however, that the present CEA is aware of the influence of monetary actions, though the case was not strongly presented in the Joint Committee statement.

The economic program for 1969, which calls for some moderation in demand growth, presents objectives which may be achievable if accompanied by a reduction in the growth of monetary aggregates from the rapid rates of increase in 1968. If the rate of monetary expansion is not reduced to these slower rates, given the proposed budget plan, the projection would probably prove low, as in 1968. On the other hand, if monetary expansion should be replaced by no growth or contraction, and the fiscal program is implemented as planned, the projection of spending growth is likely to be high.

Table V

PROJECTED CHANGES IN GNP — 1968 TO 1969

	Billions of Dollars	Per Cent Increase
CEA projection (1-16-69)	60.3	7.0
Policy-oriented model ¹		
1) with 0 per cent change in money and government spending based on CEA assumptions	49.5	5.8
2) with 2 per cent change in money and government spending based on CEA assumptions	56.5	6.6
3) with 4 per cent change in money and government spending based on CEA assumptions	63.6	7.4
4) with 6 per cent change in money and government spending based on CEA assumptions	70.7	8.2

¹This policy-oriented model was described in the November issue of this Review.

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KEITH M. CARLSON

The Relation Between Prices and Employment: Two Views

MONETARY and fiscal authorities are currently confronted with the task of simultaneously slowing price increases and maintaining employment growth. Policies directed toward the achievement of both objectives are affected by the policymakers' understanding of the underlying factors influencing prices and employment (or unemployment). Two principal views on this issue have emerged in the past decade. One stresses the short-run "trade-off" between prices and unemployment, and the other emphasizes the absence of a stable long-run relationship between varying rates of anticipated price changes and the level of unemployment. The short-run, for purposes of this analysis, is a period in which the relevant economic factors do not fully adjust to expectations, while the long-run is a period in which the values of actual and anticipated variables coincide.

This article discusses these two views of the relation between prices and employment without delving excessively into the theoretical complexities of the relation. For expositional purposes, the two views are discussed separately, because the literature tends to be divided into these two groups. The purpose of the article, however, is to demonstrate that the differences between the two views stem primarily from the emphasis on short-run vs. long-run considerations rather than from diametrically opposing theories or models. Whether the short run or the long run is emphasized has substantially different implications for stabilization policy. These different implications are discussed in the concluding section of the article.

The Short-Run Trade-Off View

High levels of unemployment in this country have generally been associated with slowly changing price levels, while low levels of unemployment have usually been accompanied by rapidly rising prices. These observed relationships have prompted attempts to explain price variations through changes in unemployment relative to the labor force. The Trade-Off View does not focus on unemployment as a determinant of prices directly, however. It holds that unemployment

and the rate of change of unemployment influence money wages, and wage changes, in turn, bring about changes in the level of prices.

A. W. Phillips' study of the relation between wages and unemployment in England is generally considered the point of departure for most recent investigations into the trade-off controversy.¹ Phillips constructed a "trade-off curve" between the unemployment rate and wage changes, which indicated that wages in Great Britain rose rapidly when unemployment was declining and slowly when unemployment was rising. The "Phillips curve" was drawn to reflect a relationship between wages and unemployment, but other analysts have maintained that a similar relationship holds between prices and unemployment.² They have assumed or observed that the factors which influence wages similarly influence other prices, or that wages are a principal independent determinant of prices.

Those analysts who follow Phillips in stressing a trade-off between wages or other prices and unemployment have found several factors besides employment pressures which apparently determine wage changes. Factors most often included in this group are profits, productivity, and the cost-of-living. Employment pressures, however, remain the primary explanatory variable.

Factors Influencing Wage-Price Changes

The unemployment rate reflects the state of the demand for labor, a demand which is derived from the demand for goods and services. In a period of rising labor demand, employers attempt to attract workers from one another, thus bidding up wage rates. Additional labor may be obtained by attracting,

¹A. W. Phillips, "The Relationship Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957," *Economica*, Vol. XXV (November 1958), pp. 283-299.

²See, for example, George L. Perry, *Unemployment, Money Wage Rates, and Inflation* (Cambridge: The M.I.T. Press, 1966), p. 107. Perry states that "the factors affecting wage changes have been analyzed on the assumption that the wage relation is central to an understanding of the inflation problem."

through higher pay, such "secondary" or "reserve" workers as housewives, students, retired persons, or those already holding one job. The ability of workers to obtain large wage gains may be increased in periods of rising demand for goods and services when employers are especially anxious to avoid strikes. Profits are usually higher and inventories are often at lower levels when demand is high; consequently, employers probably exhibit less resistance to wage demands at such times.

A state of falling demand for goods and services and labor is reflected in a higher unemployment rate. According to Phillips, ". . . it appears that workers are reluctant to offer their services at less than the prevailing rates when the demand for labour is low and unemployment is high so that wage rates fall only very slowly."³

Changes in both profits and consumer prices are positively associated with changes in wages in the Trade-Off View. Workers often use high earnings reports and cost-of-living advances to improve their bargaining position. Some labor groups have cost-of-living escalator clauses written into their wage contracts.

No general agreement relating productivity and wage changes can be found among those who favor the Trade-Off View. Statistical studies have produced conflicting results.⁴ Analysts have found insignificant, significantly positive, and significantly negative relationships between productivity and wage changes. Consequently, for purposes of analysis, productivity is generally assumed to increase at some constant rate. Analysts then can focus on the effects of changes in other variables, particularly unemployment, on wage rates.

Most observers who emphasize the Trade-Off View relate money (nominal) wage changes to the above explanatory variables through regression analysis. If all but one of the explanatory factors are held constant, a relationship between one variable — usually the unemployment rate — and wages can be depicted graphically. The resulting curve slopes downward from left to right, and is usually shaped similar to the rounded "L" determined by Phillips. (See Figures 1 and 2). The non-linear shape suggests the existence of a critical high-employment range. According to Levy,

"That price inflation, rather than reduced unemployment, is the main result of any expansionary policy after the economy has reached a *critical* high employment range, is a basic inference from traditional economics which is rarely questioned."⁵

The critical high-employment range may be defined as that range in which the number of employment vacancies are approximately equal to the number of workers seeking employment.⁶ By this definition, excess demand in the labor market exists when the number of vacancies exceeds the number of job seekers, and there is an excess supply of labor when the number of workers seeking employment exceeds the number of vacancies. Excess demand causes wage rates to rise rapidly in the former case, and excess supply in the latter case tends to slow the rate of wage increase. Labor demand and supply factors may vary from sector to sector, but there is some evidence that a close tie exists between the ". . . aggregate unemployment rate and unemployment among various subgroups in the population."⁷

The Stability of the Phillips Curve

An issue of particular importance to policymakers is the stability of the prices (wages)-employment relationship. Most Trade-Off View studies, by holding constant those factors other than unemployment which determine wages, do not stress fluctuations within a Phillips curve, shifts of the curve itself, or changes in the critical high-employment range. These studies, which rely heavily on regression analysis, often imply that the economy is operating on a single curve, and stabilization actions directed toward guiding the economy to some point off the curve may prove unsuccessful. Such studies, strictly interpreted, indicate that the Phillips curve is a stable relationship.⁸ This implication is refuted by Michael Levy, who found that "during the post-war years, the basic (Phillips curve) relationship for the U.S. economy between wage rate advances on the one hand, and

⁵Michael E. Levy, "Full Employment Without Inflation," *The Conference Board Record*, Vol. IV (November 1967), p. 36.

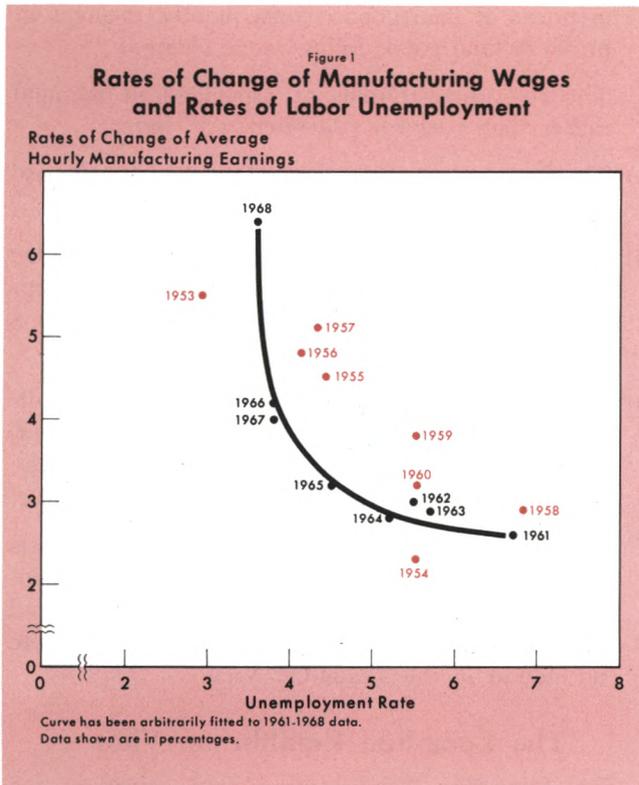
⁶Edmund S. Phelps points out that labor union behavior and the existence of "unemployables" may partially account for the fact that excess demand in the labor market seldom appears to exist, that is, ". . . vacancies almost never exceed unemployment." See "Money-Wage Dynamics and Labor-Market Equilibrium," *The Journal of Political Economy*, Vol. LXXVI (July/August 1968), p. 686.

⁷Perry, p. 25.

⁸Stability exists, technically, when the parameters computed for various time periods appear to be drawn from the same underlying population.

³Phillips, p. 283.

⁴See Ronald G. Bodkin, *The Wage-Price-Productivity Nexus*, (Philadelphia: University of Pennsylvania Press, 1966), pp. 143-151, for a discussion of such studies as well as Bodkin's own regression results.

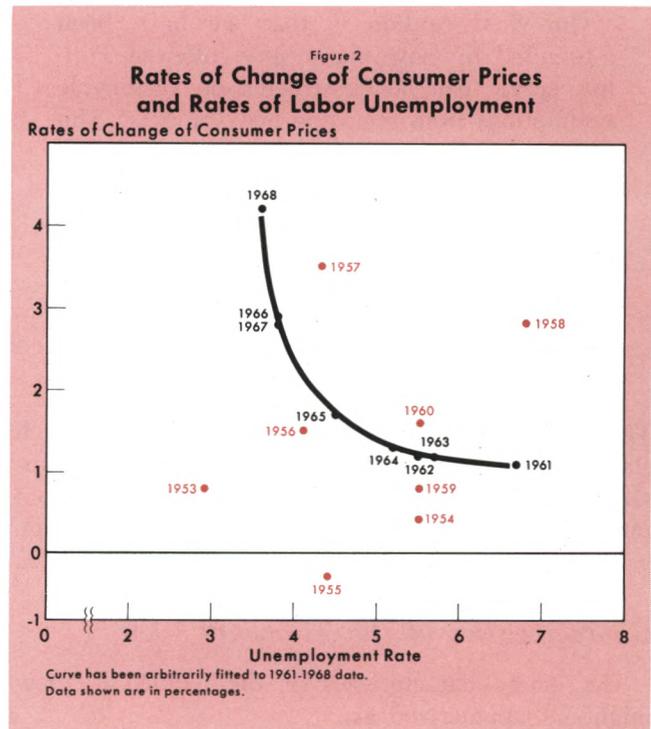


the unemployment rate, the corporate profit rate, and cost-of-living increases on the other, has been highly unstable.”⁹ [Italics omitted]

Although the relationship may be technically unstable, a plotting of the wage and price changes and the unemployment rate reveals that Phillips’ hypothesis — regarding the association of declining unemployment with rapidly rising wages (prices), and rising unemployment with slowly changing wages (prices) — has been generally observable over the past sixteen years. A simple correlation between two variables, as given here by a plotting of points on a two-dimensional graph, does not demonstrate causality, however. The relationship between the rate of change of manufacturing wages and the unemployment rate for the 1953-1968 period is plotted in Figure 1. The curve, which is similar in shape to the curve determined by Phillips, has been arbitrarily drawn to fit the data from 1961 to 1968, a period of uninterrupted economic expansion.¹⁰ The shape of the curve would be altered to some extent if fitted to the

1953-1960 period. For the sixteen-year period, the curve would be shifted slightly to the right.

Graphical trade-off analysis usually focuses on the wages-unemployment relationship, but it has also been extended to the prices-unemployment relationship as has been done in Figure 2. The overall fit for the sixteen-year period would not be as satisfactory as in the previous chart, but there is a close parallel for the past eight years. In some earlier years, sharp price increases occurred at varying rates of unemployment. Unemployment averaged slightly above 4 per cent of the labor force in the 1955 to 1957 period, more than 5 per cent from 1959 to 1960, and a little less than 4 per cent in the 1965 to 1968 period. This evidence suggests that the critical high-employment range has varied, perhaps reflecting the changing nature of the labor force in particular and the economy in general.



⁹Levy, p. 37. Levy’s conclusion is based on a statistical technique (“the Chow test”) designed to test the degree of stability among relationships.

¹⁰The 1961 to 1968 curve for the United States mirrors more closely the relationship found by Phillips than do other possible subsets of the sixteen observations. Moreover, the fitting of the curve to the last eight years emphasizes the

present position on the “low unemployment-rising wages” portion of the curve. Annual data were used in keeping with Phillips’ original work. The problems inherent in using annual data in the Phillips curve relationship are well known. “...we regard the construction of a plausible Phillips curve from annual data for a long period as a tour de force somewhat comparable to writing the Lord’s Prayer on the head of a pin, rather than as a guide to policy. This is because it is highly probable that the relationship has changed during the period...and because of the large changes in some of the variables that take place during the course of a calendar year and are blurred in the annual data.” Albert Rees and Mary T. Hamilton, “The Wage-Price-Productivity Perplex,” *Journal of Political Economy*, Vol. LXXV (February 1967), p. 70.

Phillips curves derived from regression analysis are based on rather specific assumptions, and the shape can vary substantially when minor modifications of the behavioral assumptions are made, as illustrated by the two following examples. A basic curve derived by George Perry relating consumer prices and unemployment was constructed from an equation in which prices were allowed to respond freely to market pressures. By assuming instead that half of the price increases were autonomous, Perry found that the curve, fairly steeply sloped in the first instance, became relatively flat. In fact, the slope of the curve was less than half of that calculated originally.¹¹

Ronald Bodkin¹² determined a near-horizontal linear relation between wages and unemployment. Rees and Hamilton,¹³ utilizing the same data and nearly the same assumptions as Bodkin, found a much steeper curve. Their results precipitated the remark:

Our final caution is that we have been astounded by how many very different Phillips curves can be constructed on reasonable assumptions from the same body of data. The nature of the relationship between wage changes and unemployment is highly sensitive to the exact choice of the other variables that enter the regression and to the forms of all the variables. For this reason, the authors of Phillips curves would do well to label them conspicuously "*Unstable. Apply with extreme care.*"

This conclusion implies that the usefulness of such statements as ". . . 4 percent unemployment is consistent with a 2 percent rate of inflation if profit rates are at 11.6 per cent . . ." is limited by the validity of the assumptions which underlie the model.

Characteristics of the Trade-Off View

The chief characteristics of the Trade-Off View might be summarized as:

- 1) The relation between money wages and unemployment is stressed, rather than the prices-unemployment relation.
- 2) Money wage changes are assumed to be a primary, if not the primary, determinant of changes

in prices of final goods; consequently, changes in prices of final goods follow wage changes.

- 3) The relevant variables are specified in nominal rather than real (or price-deflated) terms.
- 4) The basic relationships are established by the use of regression analysis using observed data.
- 5) The relation between rates of wage or price changes and the unemployment rate may be represented by a line which curves downward on a graph from left to right.
- 6) The rationale behind movements along the Phillips curve, rather than shifts of the curve itself, is stressed. The policymakers attempt to attain the point on the curve which seems least undesirable.
- 7) The time units and period covered by the analysis are specified in terms of months, quarters, or years. Phrases such as "the length of time required for the factors to reach their long-run values" are not found in the Trade-Off View.

The Long-Run Equilibrium View

The Long-Run Equilibrium View considers the trade-offs between wages or prices and unemployment as transitory phenomena, and that no such trade-off exists after factors have completely adjusted to the trend of spending growth. In the short-run there can be a discrepancy between expectations and actual price or wage changes, but not in the long-run. After the discrepancies between expected and actual values have worked themselves out, the only relevant magnitudes are "real," or price-deflated ones.

To illustrate the view, consider the following hypothesized sequence of events in the upswing of a business cycle, beginning with an initial condition of significant unemployment. Monetary or fiscal actions may start an upturn of business activity. Spending occurs in anticipation of a continuation of the price levels which had prevailed in the downswing. Employers begin actively seeking workers to accommodate the rising demand, but wages increase only moderately since a large number of unemployed are seeking jobs. Output and employment rise more rapidly than wages or prices. The remainder of the scenario is outlined by Milton Friedman:

Because selling prices of products typically respond to an unanticipated rise in nominal demand faster than prices of factors of production, real wages received have gone down — though real wages anticipated by employees

¹¹Perry, p. 68.

¹²Bodkin, p. 279.

¹³Rees and Hamilton, p. 70.

¹⁴Perry, pp. 108-109.

went up, since employees implicitly evaluated the wages offered at the earlier price level. Indeed, the simultaneous fall *ex post* in real wages to employers and rise *ex ante* in real wages to employees is what enabled employment to increase. [The non-technical reader may wish to substitute "anticipated" for "*ex ante*" and "actual" for "*ex post*."] But the decline *ex post* in real wages will soon come to affect anticipations. Employees will start to reckon on rising prices of the things they buy and to demand higher nominal wages for the future. "Market" unemployment is below the "natural" level. There is an excess demand for labor so real wages will tend to rise toward their initial level.¹⁵

As real wages approach their original level, employers are no longer motivated to hire workers as rapidly or bid up wages so much as in the earlier portion of the upswing. Moreover, rising wages may encourage employers to utilize more labor-saving equipment and relatively fewer workers. As the growth of demand for labor slows, the unemployment rate declines to its "natural" level. Economic units come to anticipate the rate of inflation, and are no longer misled by increases in money income — the so-called "money illusion." The unexpected price increases which accompanied the original expansion of total demand and production caused a temporary reduction of unemployment below the long-run equilibrium level. Only accelerating inflation — a situation in which actual price rises continue to exceed anticipated rises — can keep the actual unemployment rate below the "natural" rate.¹⁶

Inflation has not been allowed to rise uncontrolled for sustained periods in this country, so little empirical evidence can be amassed to support the contentions that no permanent trade-off exists. In other countries such as Brazil, however, it has been found that sustained inflation does not generate continuous employment gains; in fact, recessions and high unemployment rates have occurred as secular inflation continued. Unanticipated price increases have, in those countries as well as in the United States, generated increased

temporary employment, just as unanticipated declines in the rate of price increase have caused temporary rises in unemployment. But if inflation is "fully and instantaneously discounted, the Phillips curve becomes a vertical line over the point of 'equilibrium unemployment.' This is the rate of unemployment where wage increases equal productivity gains plus changes in income shares. The unemployment-price stability trade-off is gone."¹⁷ In other words, there is no particular rate of price change related to a particular rate of unemployment when the price changes are fully anticipated. Unemployment shifts to its equilibrium value and is consistent with any rate of change of prices. A low rate of unemployment can no longer be "traded-off" against rapidly rising prices, nor can a high unemployment rate be "traded-off" against slowly changing prices.

Costs of Information

A modified version of the Long-Run Equilibrium View is framed in terms of costs of obtaining information about job opportunities. When the demand for labor is low, the costs to a worker of discovering the state of labor demand are relatively high because employers are not actively seeking workers by publicizing extensive lists of vacancies. Employers are not as likely to absorb job training and transfer costs as they are when aggregate demand is rising. When labor demand rises and employers begin bidding up wage rates to attract additional labor, the costs of information, training and transferring are lowered to employees. The lower costs mean that employees will not have to search as long for acceptable employment, and the shorter the search time, the lower the rate of unemployment. Rising wages are accompanied by a declining unemployment rate.¹⁸

A reversal of stimulative policies will generate declining demand for labor. Some workers will accept smaller wage increases or reduced wages, but others will prefer to leave their jobs to seek employment at their former money wage rates. They expect prices

¹⁵Milton Friedman, "The Role of Monetary Policy," *The American Economic Review*, Vol. LVIII, (March 1968), p. 10.

¹⁶Phelps, pp. 682-683, provides a comprehensive listing of several authors and their variations of the "anticipated inflation" thesis. Also, see: Charles C. Holt, "Improving the Labor Market Tradeoff Between Inflation and Unemployment" (Working Paper P-69-1, The Urban Institute, Washington, D. C., February 20, 1969).

¹⁷Henry C. Wallich, "The American Council of Economic Advisers and the German *Sachverstaendigenrat*: A Study in the Economics of Advice," *The Quarterly Journal of Economics*, August 1968, pp. 356-357.

¹⁸The cost of information analysis is derived from studies by George J. Stigler, "Information in the Labor Market," *Journal of Political Economy*, Vol. LXX (Supplement: October 1962), pp. 94-105; and Armen A. Alchian and William R. Allen, *University Economics*, 2nd ed., Chapter 25 (Belmont, Calif.: Wadsworth Publishing Company, Inc., 1967). Also see Armen A. Alchian, "Information Costs, Pricing, and Resource Unemployment" in a forthcoming issue of the *Western Economic Journal*.

and wages will remain at their earlier, higher levels. Prices and output will have fallen, however, and the high real wage rate will have stimulated employers to lower the quantity of labor demanded, thereby raising search costs to those workers who leave their jobs to seek employment elsewhere.¹⁹ Higher search costs and lower money wage rates will be accompanied by rising unemployment. When workers realize that demand and price increases have slowed, they will be willing to accept the lower money wage rates and unemployment will stabilize at the "natural" level. For the stabilization to occur, however, no money illusion can exist. Anticipated wage (or price) changes must equal actual wage (or price) changes.

The costs-of-information approach combines the two factors determining the equilibrium rate of unemployment—the structure of real wage rates as determined by labor demand and supply, and "imperfections" within the labor market.²⁰ Bottlenecks, labor and product market monopolies, positive costs of information, training and transfers create "imperfections" in the labor market. In other words, all markets are not cleared instantaneously and without cost. At any point in time the degree of the so-called "imperfection" within the labor market will vary, depending on transactions and information costs; correspondingly, the "natural" rate of unemployment will vary.

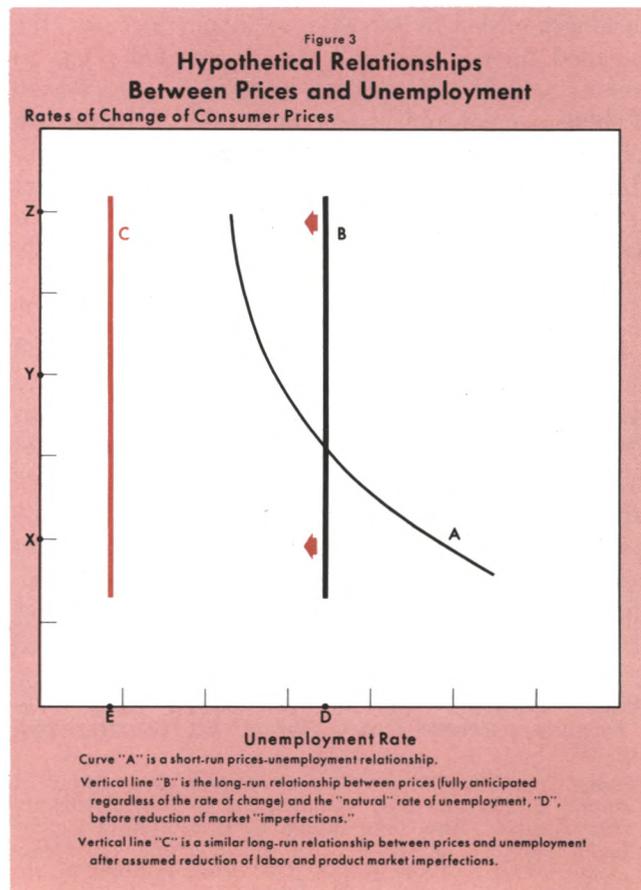
Enactment of policies oriented toward eliminating or reducing market imperfections (adjustment costs) will cause the short-run Phillips curve to shift to the left and down. Policies which increase these costs move the short-run Phillips curve upward and to the right. Different forces are at work at different times, causing the curve to shift frequently. Expectations

of higher prices will cause the curve to shift upward, and expectations of lower prices move the curve in the opposite direction. The optimal stabilization policies, therefore, would be those which would reduce market adjustment costs and expectations of higher prices. Enactment of such policies would at first move the short-run Phillips curve to the left and downward, and in time, as expectations are fully realized, cause the curve to become a vertical line over the "natural" rate of unemployment.

A hypothetical, long-run relationship between prices and unemployment is presented in Figure 3. Point D represents the "natural," or equilibrium rate of unemployment before market imperfections or adjustment costs are reduced. Curve A represents one of many possible short-run Phillips curves that exist before price changes are fully anticipated. After the rate of inflation becomes fully discounted, the unemployment rate will shift from some point beneath curve A to point D, regardless of whether prices are rising at some slow rate, X, or a rapid rate, Z. The shift may occur along any of an infinite number of Phillips curves. The vertical line above point D indicates that no economic units—workers or employers, sellers or

¹⁹The Committee for Economic Development points out that "slow adjustment to unexpected price increases may increase employment as prices accelerate, but this slow adjustment may also cause an increase in unemployment as the rate of price inflation slows. The temporary trade-off is a double-edged sword." *Fiscal and Monetary Policies for Steady Economic Growth*, a statement on National Policy by the Research and Policy Committee of the Committee for Economic Development, January 1969, p. 40.

²⁰The Equilibrium View maintains no monopoly over discussions of the relevance of labor market structure; indeed, Lipsey's rigorous reformulation of Phillips' original view was predicated to a large extent on the importance of unemployment among different sectors of the economy. See R. G. Lipsey, "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1862-1957: A Further Analysis," *Economica*, Vol. XXVII (February 1960), pp. 1-31. On the whole, however, it seems that the Equilibrium View, which stresses the reasons for the changing nature of the short-run Phillips curves—varying expectations and cost-of-information—is the view in which structural considerations should be discussed.



consumers, borrowers or lenders – are surprised by price changes. If programs to reduce labor and product market imperfections are implemented, vertical line B will shift, after a transitory period, to the left. Vertical line C represents the new long-run relationship between prices and employment above point E.

Characteristics of the Long-Run Equilibrium View

The principal characteristics of the Long-Run Equilibrium View might be summarized as:

- 1) The relationship between all prices and unemployment is emphasized, rather than the wages-unemployment relation.
- 2) Changes in selling prices usually precede changes in the prices of productive agents.
- 3) The relevant economic factors are specified in real rather than nominal terms.
- 4) Because of the lack of data on accelerating inflations, expectations of price changes, and the “natural” rate of unemployment, the analysis is generally accomplished through abstract reasoning rather than empirical testing.
- 5) The relation between the long-run rate of price or wage changes and the unemployment rate is a vertical line over the equilibrium rate of unemployment.
- 6) The long-run relationship and reasons for observed shifts of the Phillips curve are stressed. The authorities do not have to choose as a target some fixed relationship between prices and unemployment on a Phillips curve, but can attempt to move the economy off a short-run curve. In the long-run, they can seek any trend in prices desired without a sacrifice in terms of foregone employment or production.
- 7) The time period of the analysis is not specified. In the long-run, the actual values of the relevant economic variables equal the expected values, while in the short-run, they do not.

Policy Implications of the Two Views

Unemployment declined from 5.2 per cent of the labor force in 1964 to 3.5 per cent in 1968. The annual rate of increase in consumer prices rose from 1.3 per cent to 4.2 per cent for corresponding years. These

data indicate, according to the Trade-Off View, that stabilization authorities must decide to accept either high rates of price increases in order to maintain low unemployment rates, or adopt deflationary measures and accept relatively high levels of unemployment. Only significant reductions of imperfections within the product and labor markets could prevent employment declines in the face of deflationary policies.

Proponents of the Long-Run Equilibrium View point out that even in the absence of structural improvements, monetary and fiscal policies need not be limited by a short-run trade-off between prices and employment. Continuation of expansionary developments will generate either (1) a high, steady rate of inflation which will eventually become fully anticipated and confer no net additional employment benefits (unemployment will gradually return to its “natural” rate), or (2) an accelerating rate of inflation which will permit unemployment to remain below the “natural” rate. Neither expansionary policy alternative appears economically or politically desirable. Deflationary actions would produce increased unemployment (as expectations of price changes are slowly revised) but only temporarily, according to the Equilibrium View. As soon as a new price trend becomes stabilized and fully anticipated, nominal and real wages will coincide, and unemployment will fall to its “natural” rate. An inflationary policy is neither a necessary nor a sufficient condition for the attainment of high levels of employment. Since price expectations seem to change only slowly, actions to reduce the rate of inflation should probably be applied gradually to minimize the transition cost in terms of reduced output and increased unemployment.

Both views recognize the merits of structural measures in complementing monetary and fiscal actions. Policies which reduce the costs of obtaining employment information, improve labor mobility and skills, and eliminate product and labor market monopolies will lower the optimal level of unemployment. Adoption of such policies would improve the short-run dilemma faced by monetary and fiscal authorities and enable them to shift their long-run unemployment target to a lower level.

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Farm Income Prospects¹

NET FARM INCOME in 1969 will be somewhat less than the \$14.9 billion of 1968, according to the United States Department of Agriculture. Gross farm receipts may rise, as larger supplies of farm products and little change in average prices are in prospect. Larger cash receipts from farm product sales, combined with an increase in government payments, are expected to push gross farm income to a record \$52 billion, about \$1 billion above the 1968 total. Production expenses are expected to rise more than a billion dollars, however, resulting in slightly less realized net income.

With the number of farms declining, net income per farm may remain at about the 1968 level, and per capita disposable income of farm population from all sources will probably continue its upward trend.

Supply and Price

The higher cash receipts in 1969 are contingent on the estimates of somewhat larger supplies of livestock products and crops, and little change in average prices from 1968 levels. A growing demand for food products, especially meat, will probably again offset the impact on prices of the larger livestock supplies, resulting in producer prices about the same as in

1968. Crop supplies in the 1968-69 marketing year are also larger than a year earlier. Little change is expected in the government price support and crop control programs for the current year, and crop prices will probably remain relatively unchanged.

Livestock Products

In the livestock sector, beef production is expected to continue its upward trend of recent years. The growth rates of the beef cow herd may be somewhat reduced, but cattle slaughter will likely continue upward. The number of cattle in feedlots on January 1, 1969 was 10 per cent more than a year earlier when fed cattle marketings of 23 million head during the year were the largest on record. Fed cattle slaughter should be well above 1968 levels, while little change in cow slaughter is anticipated. Despite the increase in beef output, prices are expected to hold at about the 1968 levels, due to the rising demand for meat.

The expansion of pig production which began in 1966 has been continuing, pointing to another increase in pork output in 1969. The gain this year may be a little larger than the 4 per cent increase last year and is not expected to be offset by an accelerating demand. Thus hog prices may average somewhat lower than a year earlier.

The downtrend of recent years in lamb slaughter (7 per cent less in 1968 than a year earlier) is ex-

¹A summary of information presented by U.S. Department of Agriculture representatives at the National Agricultural Outlook Conference, Washington, D. C., February 17 to 20, 1969.

pected to continue. The livestock inventory of January 1, 1969 indicated a further reduction in sheep and lambs on farms.

Sizable gains over year-earlier levels are predicted for both broiler and turkey production. Broiler production was up one per cent in 1968, the smallest year-to-year increase on record. Late in the year, however, production was 4 to 5 per cent above levels for the same months a year earlier, and this higher rate is expected to continue during the spring months in response to higher broiler prices and lower production costs during 1968. With the higher output in prospect, broiler prices are likely to fall below year-earlier levels and remain lower through the rest of the year.

The favorable cost/price relationship for turkeys in 1968 is also expected to cause an increase in turkey production. The number of turkeys produced in 1968 was down 16 per cent from a year earlier, but supplies were augmented by a large carry-over. Growers surveyed in January of this year intend to produce 3 per cent more turkeys than a year earlier. These indications point to a turkey output somewhat above the 1968 level but well below the record output of 1967. In view of this increase in production, turkey prices are not expected to average above the 1968 level.

Lower egg and milk production prospects point to somewhat higher prices for these commodities. Egg production may trail the 1968 level until the end of summer when a larger number of replacements will be moving into the laying flock. Thus prices to producers will probably remain well above year-earlier levels until late in the year when the replacement layers begin to produce. The price margin may then disappear. The number of dairy cows is expected to continue downward with a further increase in production per cow. Total milk production, however, is expected to be less, and smaller quantities will be purchased by the government through price support operations. Milk prices are likely to be somewhat higher than in 1968, reflecting the higher average government price supports and the anticipated decline in production.

Crops

The generally larger crop production in 1968, coupled with sizable carry-over stocks, provides larger crop supplies during the current marketing season than a year earlier. Expanding demand and the gov-

ernment support program for major crops, however, point to little change in prices to producers.

The supply and use of feed grains are expected to be in closer balance in the current marketing year than in most recent years. Production was in excess of use during most of the 1950's, and carry-over stocks held primarily by the government rose to excessive levels. During most of the 1960's, however, production has been less than use, and carry-over stocks have declined. Production of 168 million tons in 1968 may be exceeded slightly by domestic use plus exports, which are likely to total about 148 and 22 million tons, respectively. Thus another slight reduction in carry-over stocks is in prospect. Corn prices have advanced about 12 cents per bushel since the seasonal low last October, but with the large supplies subject to redemption under the loan program, and carry-over stocks of all feed grains expected to equal one-fourth annual use, prices of corn are not likely to rise much above the loan level.

The 1969 feed grain program is essentially the same as in 1968. The acreage diversion program was extended to include barley. Also, some further reduction in carry-over stocks for all feed grains is planned.

The record 1968 wheat crop of 1,570 million bushels raised the supply in the current marketing year to 2,108 million bushels, the largest supply since the 1965-66 marketing year. Domestic use plus exports may total about 1,350 million bushels, leaving about 750 million bushels in carry-over stocks at the end of the marketing season, the largest carry-over since 1964. Prices during the current marketing year are not expected to average above the support rate of \$1.25 per bushel.

Rice supplies (1968 production plus carry-over) total 111 million hundredweight (cwt.), 15 million cwt. more than in the previous season and 32 million cwt. above the 1963-67 average. In recent years total rice usage has increased rapidly — about 10 million cwt. per year — and relatively small carry-over stocks have accumulated under the government price support program. Rice prices generally rose during the last marketing season because of the large export demand. With the larger supplies this year, prices may remain nearer the support level of \$4.65 per cwt., which was raised \$0.05 per cwt. from the 1968 level.

The record 1968 crop of soybeans plus the 167 million bushel carry-over last September provides a supply of soybeans totaling 1,246 million bushels, well in excess of estimated utilization during the current market season. Soybean use is expected to rise mod-

erately, but carry-over stocks will probably total more than 300 million bushels next September. With these excessive stocks, producer prices are likely to average near the support rate during the remainder of the 1968-69 marketing season. The price support level was \$2.50 per bushel for the 1968 crop. Price supports for 1969 had not been announced at the time of this writing.

The outlook for United States cotton continues to be highlighted by competition from both synthetic fibers and foreign-produced cotton in the export market. Cotton's share of the domestic fiber market fell to 44 per cent in 1968 from 49 per cent in 1967, the sharpest decline on record. Cotton production abroad has been increasing faster than consumption for a number of years, and the gap is expected to narrow to 1.5 million bales this year. Pricing policies, which have ignored basic economic tenets by maintaining prices above the free market level, were a major factor in the development and growth of this competition.

Domestic use plus exports of cotton in the 1968-69 marketing season are expected to total about 11.5 million bales, or 1.5 million bales less than last year. Exports may decline about one million bales and domestic use about one-half million.

The relatively small cotton crops of the past two years (9.6 million bales in 1966 and 7.4 million bales in 1967) permitted a reduction in stocks of about 10 million bales. The 1968 crop was larger (10.8 million bales), but a further small reduction of 0.5 million bales in stocks is forecast for next August, which will bring carry-over down to 6 million bales. This will be the smallest carry-over during the 1960 decade, but in view of the decline in cotton use, this level is still excessive for most types of cotton. Cotton prices are expected to remain near the government loan level during the remainder of the marketing season, and the government program for 1969 is designed to encourage a somewhat larger crop.

Tobacco supplies in the 1968-69 marketing year are about 5 per cent below levels of a year earlier. The 1968 crop was 13 per cent less and carry-over was down somewhat. Burley-type supplies are 2 per cent below last season and 7 per cent below the 1964-65 peak.

Table 1

PER CAPITA MEAT CONSUMPTION¹
(pounds)

	Beef	Veal	Lamb and Mutton		Pork	Poultry	Total
1950	63.4	8.0	4.0		69.2	24.7	169.3
1955	82.0	9.4	4.6		66.8	26.3	189.1
1960	85.0	6.1	4.8		64.9	34.1	194.9
1965	99.3	5.2	3.7		58.5	40.8	207.5
1968	109.0	3.5	3.7		65.4	44.3	225.9

¹U. S. Department of Agriculture, *Livestock and Meat Situation and Poultry and Egg Situation*.

Use of major tobacco types in 1967-68 continued the slow downward trend of recent years, and little improvement from the producers' point of view is anticipated this year. Burley tobacco use in 1967 totaled 594 million pounds, down from 600 million pounds the previous year and 616 million pounds in 1964. Flue-cured tobacco use in 1967 totaled 1.22 billion pounds, down from 1.27 billion pounds in 1966 and 1.28 billion pounds in 1955. Based on the formula required by law, the 1969 price supports for tobacco, which usually determine the price to farmers, will be about 4 per cent above the 1968 level.

Food Prices

Of major significance to the nation's welfare has been the growth in supplies of farm products, which has tended to meet a rising demand at relatively stable prices. For example, prices received for meat animals have increased only 2 per cent since 1950, and average prices received for poultry and eggs have declined. Output and consumption of these commodities have risen at a high rate. Meat production rose more than 50 per cent and poultry output rose about 2.5 times during the period. This rapid growth in output at relatively constant prices is the result of major gains in farming efficiency. These gains from new technology have increased the supplies of farm products with each increase in demand. A major beneficiary has been the consuming sector, as rising quantities of high-quality food have moved into the marketing channels at relatively constant prices. The rising consumption of meat per capita is an example of consumer gains (Table 1). Most of the food price increases that have been experienced in recent years have reflected rising processing and marketing costs rather than changes in prices received by farmers.

These trends of rising efficiency in farm commodity production, relatively stable farm commodity prices, and rising food costs are expected to continue in 1969.