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Recent Developments In Banking Structure and Monetary Policy*

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Since I last spoke at this annual luncheon, monetary policy and banking structure have undergone a number of important changes, and many further changes have been proposed. Significant banking changes have been taking place here in New Jersey, for much has been happening to New Jersey banking law. I should like to take a few minutes to say briefly how my associates and I in the Federal Reserve Bank of New York look upon some of the opportunities—and some of the pitfalls—with which you New Jersey bankers are faced as you adjust to these sharply altered rules of the game.

The 1969 revisions in New Jersey's banking law have provided an excellent opportunity for banks to grow through branching and through mergers and acquisitions. As you know, the revised law permits branching and merging across county lines within three banking districts and allows, for the first time, the formation of statewide bank holding companies. Many banks have already taken advantage of these new powers. About two hundred new branches, representing about one fifth of the number of offices in existence at the end of 1968, have been approved by state and Federal regulatory authorities since last July. Most of these new offices could not have been opened under the old branching laws. In addition, about thirty mergers have been announced or consummated during this period and about a half dozen banks have formed or announced their intentions to form multidistrict holding companies.

The prospective benefits to the people of the state of increased competition, improved services, and more efficient flows of funds could be quickly lost if a few banks were allowed to dominate the state's major banking markets. Both New Jersey bankers and the bank supervisory authorities have an important responsibility to see that the structure of banking evolves in a way that will produce the maximum benefits to businesses and residents of the state.

The public interest in the field of banking is best served by well-managed, diversified banking organizations, provided there are sufficient banking alternatives in each market to assure effective competition among banks within those markets. In our view, every proposed combination of banks in New Jersey should be judged within the framework of maintaining or improving, if possible, the competitive environment and performance in each of the state's banking markets.

On a statewide basis, concentration of bank deposits in New Jersey is not excessive. The ten largest banks hold about 35 percent of the state's total deposits—a proportion which is much lower than in most states. However, statewide data for New Jersey are quite misleading. Most individual banking markets are fairly concentrated and are dominated by relatively few banks.

New Jersey bankers contemplating taking advantage of the new leeway provided by the revised branching, merging, and holding company laws would be well advised to consider the antitrust decisions of the courts, the opinions of the Justice Department, and the rulings of the Federal Reserve Board with respect to bank mergers and holding company formations and acquisitions. I do not agree with all these conclusions. However, I think you will recognize that they provide some realistic guidance in formulating expansion plans.

From these decisions, it appears that any bank which is regarded as a significant competitor within a market would be limited in the size of other banks it could acquire within that market. The determination of the likely anti-

*An address before the sixty-seventh annual convention of the New Jersey Bankers Association, Atlantic City, New Jersey, May 21, 1970.

competitive effects resulting from a merger between two banks in the same market would depend upon the absolute size and market shares of the banks involved, the number of other competitors, the degree of deposit concentration, and the possibility for *de novo* branching. The chances for a New Jersey bank to acquire a bank outside its own markets would seem to be much greater. This would be particularly so in the case of "out-of-district" acquisitions by bank holding companies.

There are perhaps a dozen or so large banks in the state that appear to have the management and financial resources to form statewide holding company systems. They are experienced in all areas of commercial banking and provide correspondent services to other banks in the state. These leading banks should be the nucleus from which competitive forces are transmitted throughout the state. Just how many will ultimately strive to market their services throughout the state is, of course, unknown. One thing does seem fairly certain, however—at this juncture affiliation or merger of any of these institutions with each other, whether in the same or a different market, is likely to meet regulatory resistance.

To date, New Jersey bankers have by and large acted prudently with their newly won powers to branch, merge, and form holding companies. Branching and merging activity beyond county lines and into previously protected communities has permitted greater geographic diversification of banking in the state and has often introduced more competition, with its benefits of more and better services.

Perhaps the best advice I could offer to bankers contemplating expansion is to come into the Reserve Banks and discuss their plans with officers close to the New Jersey situation. While none of us can give any kind of formal or informal commitment about decisions to be reached by the Federal Reserve, we can certainly give you some feel for the competitive issues involved in specific proposals and offer guidance in the development of your expansion plans.

Let me turn now to a subject which I believe is very much on the minds of most bankers, as it is on the minds of all of us in the Federal Reserve System, namely, the role of monetary policy in the economy. Early in the year I delivered an address entitled "Inflation: A Test of Stabilization Policy", in which I expressed my view that fiscal policy and monetary policy would be up against a very severe testing in the year 1970. The test would determine whether these generalized impersonal policies would succeed in coping with inflation, or whether this nation would have to fall back on other—and to my mind less desirable—remedies to meet the situation.

Four months later it seems to me that the answer is still up in the air. Certainly, aggregate spending has slowed markedly, and there has been a pronounced business slowdown. These developments should set the stage for the moderation of inflationary pressures. So far, however, despite a few encouraging signs, it is difficult to find any conclusive indications of a slackening in price advances. It is encouraging that excess demand has been practically eliminated, but cost-push is still a problem. And it is certainly not correct to conclude, as some have, that entirely different methods are now required to cure inflation. Prime reliance must still be placed on the traditional tools of fiscal and monetary policy. Even if we were prepared to go over to direct wage and price controls, and I am not, these alone would be altogether useless, unless the traditional tools were used in an appropriate manner. The rejection of direct wage and price controls does not mean, however, that the Government should refrain from supplementing fiscal and monetary policy with the help that might be obtained by focusing public attention on the basic relationships of wages, productivity, and prices and on glaring deviations from sound observance of these relationships. I might add that I feel much sympathy with Chairman Burns' comments the other day on this general subject.

I have continued to feel that the current slowdown is unlikely to accelerate and become a full-fledged recession. For a time early this year there were rather widespread fears of recession; then, for a while, these tended to fade in view of the stronger business outlook. Very recently a shadow has been cast by rising unemployment, stock market declines, developments in Indochina, and sharply diminished liquidity in some sectors of the economy. On balance, however, it seems to me that the outlook is for a modest increase in economic activity over the rest of the year. Inflation, even if somewhat diminished in force later in the year, will continue to be an extremely serious problem.

It is a problem not only in terms of the domestic economy. Our inflation has tended to worsen the competitive position of the dollar and the United States balance of payments. Success in the fight against inflation is vital to the development of international flows of trade and payments that will improve our serious balance-of-payments situation. Given the weight of the United States economy in the world, our success is important, not only to us, but to others as well. This is especially true today, when the battle against inflation is common to virtually all the major industrial countries.

Monetary policy has shifted moderately since the beginning of this year and is no longer highly restrictive as it was through most of 1969. In my view, recent fiscal

policy has not been restrictive enough. As I have said before, I believe we would be far better off if the 10 percent income tax surcharge had been left untouched. It is true that those in charge of the budget are making strenuous efforts to preserve its restrictive character, and I wish them every success.

Meanwhile the burden on monetary policy is greater than it should be, thus making it difficult to avoid inflationary pressures and excessive strains in money and capital markets. In this connection, a good case could be made for retaining the 5 percent income tax surcharge. Moreover, the rise in Federal agency spending, which has in recent years been removed from the budget, and in private spending for urgent social purposes, such as housing, education, antipollution, and urban renewal, means that additional financing will be required. I would therefore strongly endorse the view that large budget surpluses may be necessary in the seventies to help generate the savings required to meet pressing social and economic needs. And I urge you to support tax and spending decisions that would serve this objective.

During the past year or so we have seen some interesting developments in both the theory and the practice of monetary policy. There has been increased emphasis on the growth rates of major monetary aggregates, such as the money supply and bank credit. This change of emphasis found official expression in the Federal Open Market Committee's policy actions in early 1970. I would like to point out, however, that the change was evolutionary and not revolutionary. For years the FOMC directive had included a proviso requiring the Manager to modify his operations if specified aggregates moved in ways substantially different from those foreseen at the FOMC meeting in question. Long before that, and in fact throughout the System's history of open market operations, developments with respect to the growth of money and credit had been watched closely, along with other factors bearing on policy decisions. No doubt the recent formal change reflected to some extent, however, a widespread feeling in the System that the aggregates had not received enough attention by comparison with the traditional measures of money market conditions.

This sense of dissatisfaction received a strong boost after the experience in the second half of 1968, when fairly tight money market conditions were accompanied by what was, at least in retrospect, a clearly excessive expansion of money and credit. I might add that many of those who complained after the fact about the excessive monetary expansion of late 1968 were, nonetheless, so fearful of "overkill" at the time that they were quite unwilling to countenance the firmer money market conditions that would have been needed to slow this expansion.

More recent experience has reinforced the view that the aggregates deserved more attention. In the second half of 1969, tight money market conditions were accompanied by a virtual stagnation of the major aggregates. Slow, or even no, growth in the aggregates was acceptable enough for a time, particularly in the light of the strong performance earlier and the continued rapid advance in prices. However, the persistence of this sluggishness became increasingly disturbing.

I believe we have moved in the right direction in placing greater stress on the aggregates. But I confess I have been troubled by the tendency of journalists and persons operating in the money market to overplay the extent of this modification in techniques. Of course by its nature it implies some greater willingness of the authorities to see interest rates and other money market indicators swing a bit more widely than before if this is necessary to come closer to the intermediate goal in terms of money and credit growth. But it certainly does not mean that henceforth the System is going to ignore everything as a policy criterion except these aggregate growth rates. We are not nearly sure enough of the relationships of the aggregates to the real economy, which is our ultimate concern. We know that the statistics themselves are subject to random movements, particularly in the short run. I can assure you that the System still cares about the condition of the money and capital markets and about interest rate movements. We are not "abandoning" the markets, as some seem to have feared in recent weeks; nor have we lost interest in the principle of avoiding actions at the time of a major Treasury financing operation that could prove to be destabilizing to the market by constituting or suggesting a significant change in monetary policy.

Another point I would like to make in connection with this change of emphasis is that it is entirely possible to place greater stress on the money and credit aggregates without becoming a "monetarist". I am applying that term to those who believe in a virtually assured mechanical relationship of a causal character between the money supply and economic activity, and who therefore tend to favor a very steady increase in the money supply and a minimum resort to discretionary policy by the central bank. I fail to see any convincing evidence of this reliable mechanical relationship, and I see every likelihood that varying growth rates for money and credit should be deliberately sought by the System from time to time in the light of a host of other factors affecting the course of real growth, prices, and wages, etc.

Another question concerning monetary policy has been getting increased attention in the last few months: Should

the Federal Reserve explore new techniques with the avowed purpose of exercising more direct influence on the channeling of credit to specific sectors of the economy? Now there is no denying that there is some logical basis for at least raising the question. A restrictive monetary policy does have an uneven impact (as does an easy policy as well), but let's not forget that the major task of monetary and fiscal policy—and a task difficult enough to absorb the bulk of our effort—is to keep aggregate demand within a reasonable range in relation to available resources. When total demand is excessive, someone and some activity should be forced out of the demand side of the equation. If the elected representatives of the people in the Congress feel that the result of broad impersonal policy moves is an undue upsetting of social and economic priorities, remedies are at hand in the form of legislation with respect to taxes, subsidies, and other measures to channel funds into areas of the greatest need. This appears to me greatly preferable to asking the central bank to compound its difficulties by trying to exercise this social judgment. Personally I am not attracted to recent suggestions that a new technique of differential reserve requirements against various types of bank assets be developed to enable the Federal Reserve to play just such a role. I would also stress that this has been a suggestion of a few individuals and that no official position has been taken on the issue by the Federal Reserve System.

By the same token I have never been attracted to the thesis that Regulation Q, as applied to large certificates of deposit, has been a useful method of putting special pressure on borrowing and spending by large corporations, by making it harder for the larger banks to raise funds to finance such corporations. This would seem to me contrary to a desirable Federal Reserve goal of concentrating on aggregate demand. Moreover, the futility of attempting such selective pressure has been pretty well demonstrated during the past year or two, when the larger banks succeeded in developing many alternative sources of funds and when most major corporations were able, through issuance of commercial paper, through resort to the capital markets or, by other means, to obtain whatever funds they needed from nonbank sources when bank funds became scarce.

While recognizing that cautious business lending by the large banks may not necessarily curtail decisively the funds available to our leading corporations, there is nevertheless much to be said for a more prudent policy on the part of the banks with respect to entering into future commitments to business, as Chairman Burns pointed out in his recent speech to the Reserve City Bankers Association. During the present period of tight credit conditions, the banks have been very uncomfortable at times because of heavy commitments, entered into when money was easier, at rates having little relation to the current cost of acquiring funds to lend. The resulting tighter liquidity positions of our leading banks have not created the most favorable atmosphere for preserving market confidence in a time of great economic uncertainty.

As for the justification of Regulation Q (and related interest rate ceilings) as a way to protect the thrift institutions from disastrous losses of funds, it seems to me only a stopgap, involving a real handicap to monetary policy. A much better approach to this problem would be, I believe, to give thrift institutions a somewhat wider range of lending and borrowing powers, provided other changes are made to provide equitable treatment for all financial institutions. Consideration might also be given to making mortgages a more flexible credit instrument. Such changes should make the thrift institutions much less vulnerable to swings in interest rates, but it is obvious that they cannot be accomplished overnight. Finally, I even doubt the validity of the argument that active use of Regulation Q tended to produce a lower general level of interest rates than would otherwise have prevailed. All in all, the time is close when it would be well for the System to start moving away from the imposition of interest rate ceilings on deposits and related liabilities. I would hope that the role of interest rate limitations in relation to financial structure might be a major subject for review by the newly organized Presidential commission on financial structure and regulation.

The appointment of this commission seems to me highly appropriate, in view of the many changes that have occurred in banking practices and structure since the last full-scale review of this kind. The efforts of leading banks through one-bank holding companies to seek relief from the complex network of regulations have brought to the forefront the activities of banks and other financial institutions and what their role should be in the decades ahead. I trust that the scope of the study would encompass the entire range of issues pertinent to the role of banks and other financial institutions within the economy and the problem of Federal and state supervision.

As for the specific question of one-bank holding companies, it would appear that the matter may—and, in my judgment, should—be acted upon by the Congress before the commission completes its study. Of the many proposals discussed before the Congress, I favor legislation that would permit banks to offer a broad range of financially related services, with the services to be defined under administrative regulations rather than in a "laundry list" frozen into a Federal statute. In general, the services

would be of the type referred to in Chairman Burns' recent testimony before the Senate Banking and Currency Committee. I also agree with the views expressed by Chairman Burns that the regulatory responsibility for bank holding companies should be assigned to a single Federal agency, and that the agency should be the Federal Reserve, which already has regulatory responsibility for multibank holding companies.

In its study, the commission would presumably consider questions of structure, competition, services, investment powers, reserve requirements, interest rate limitations, supervision, and examination, all as they relate not only to banks but to other financial institutions as well. I think you will all agree that these are important matters requiring penetrating analysis. Although the study will not be concerned with monetary policy *per se,* it is obvious that some of the matters covered—such as interest rate limitations and reserve requirements—have a direct bearing on the effectiveness of monetary policy.

Let me thank you for giving me this opportunity to talk to you. These are extremely difficult times, and my associates and I look forward to working closely with the banking community in trying to reach reasonable solutions to these many perplexing issues.

The Business Situation

Most recent business indicators have suggested some further easing of economic activity, but the depressing effects of several major strikes have made the numbers difficult to interpret. Strikes were a major factor in April declines in payroll employment, private wage and salary incomes, and industrial production. Housing starts also declined in April, but the decrease in this often volatile series followed unexpected rises in the two previous months. Moreover, residential building permits rose in April, raising the possibility that the longer term downtrend in housing may be approaching an end.

Despite the indications of further business declines in April and the sharp drop in stock prices—partly reversed after the May 26 low—there is no evidence that the slowdown in economic activity is intensifying. Industrial production, for example, has been about flat on balance in the first four months of 1970 in contrast to a distinct downtrend in the last half of 1969. As to the future, prospects for some resumption of real growth during the last half of the year still seem good. While the declines in stock prices may have some adverse effect on the outlook for consumer spending, personal incomes have received a powerful boost from higher social security payments and the Federal pay increase. The scheduled elimination of the remaining 5 percent tax surcharge will further add to disposable incomes beginning in July. Corporate profits declined sharply in the first quarter, and manufacturers have marked down their plant and equipment spending plans. Nonetheless, capital spending plans of manufacturing and nonmanufacturing firms as a whole are still scheduled to rise over the rest of the year. Spending by state and local governments will almost certainly be another plus item. The two major areas of weakness so far this year have been residential construction and inventory spending. Even a flattening-out in these sectors would represent an important contribution to revived real growth in the overall economy. In the meanwhile, inflation remains a major concern, since recent price and wage trends have as yet shown little response to the slowdown in economic activity.

PRODUCTION, SHIPMENTS, AND INVENTORIES

Activity in the industrial sector was sluggish in April, although the situation was accentuated by the strikes and lockouts in the trucking industry that reduced supplies of component parts used in production lines. Following two months of increase, the Federal Reserve Board's index of industrial production slipped 0.4 percent on a seasonally adjusted basis and fell back to the January low of 170.4 percent of the 1957-59 average. Thus, in contrast to the 2.0 percent slide in the production index between the July peak and last December, the index has basically moved sideways so far this year. The April decline was centered in the equipment category, where output of both business and defense industries fell. Defense output has been moving down since mid-1968 and is currently running at a rate that is more than 20 percent below its high. The materials index was a bit lower in April, despite an increase in iron and steel output. Steel ingot production—which accounts for about half the iron and steel index—was up 4 percent in that month, but preliminary data indicate steel production in May fell off by about the same amount. Consumer goods output was about unchanged in April, but the number of passenger cars produced eased to a seasonally adjusted annual rate of 7 million units. The dip in passenger car output was temporary, and auto assemblies in May rose 15 percent to a seasonally adjusted annual rate of 8 million units. Production schedules point to a further small rise in June. Although it appears that the recent slump in automobile sales bottomed in January (see Chart I), car buying has remained depressed relative to the levels of recent years. In March, April, and May, sales averaged a seasonally adjusted annual rate of about 7½ million units, compared with last September's peak of 9 million units and a low of 6¾ million units reached in January.

The flow of new orders received by manufacturers of durable goods rose slightly in April after falling sharply the month before. For the first four months of the year,

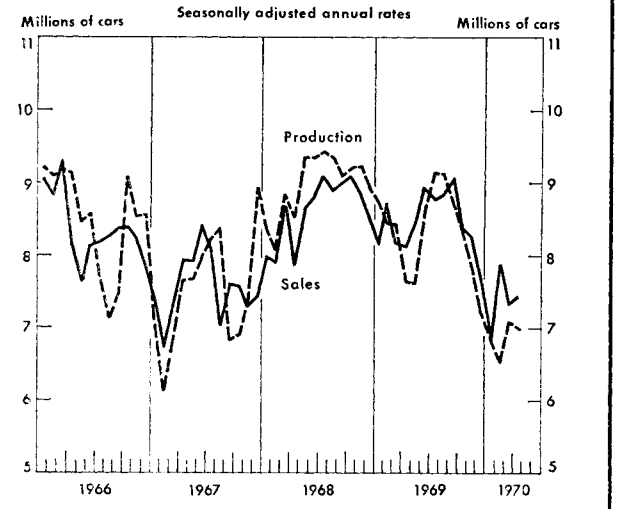
durables orders averaged $29.0 billion, $2.1 billion below the fourth-quarter average. The continuing weakness in durables orders has resulted in a decline in the backlog of unfilled orders, which in April reached the lowest level in seventeen months.

The backlog has fallen because the pace of durables sales has outstripped the flow of orders, even though the sales rate has been declining. In April, sales by durables manufacturers were the slowest in a year. Shipments of nondurables producers also eased in that month, so that total manufacturers' sales fell substantially. At the same time both durables and nondurables inventories jumped, and the combination of a sales decline and inventory increase again boosted the inventory-sales ratio for manufacturers. Although the ratio stood at the highest level in three years, the problem of excess stocks was concentrated in durables manufacturing, where imbalances were widespread and where the inventory-sales ratio was the highest since early 1961.

In March, durables shipments had slumped by $700 million, accounting for all the drop in manufacturers' shipments. Trade sales had also moved lower, and the fall in total business sales amounted to about $1 billion. Total business inventories, however, rose by $300 million in March.[1]

Chart I

DOMESTIC AUTO PRODUCTION AND SALES



Source: Ward's Automotive Reports, seasonally adjusted at the Federal Reserve Bank of New York.

RESIDENTIAL CONSTRUCTION AND CAPITAL SPENDING

Recent data on residential construction suggest some firming in home-building activity in contrast to last year's marked downtrend. Residential housing starts were surprisingly strong in February and March, but dipped back in April. The volume of building permits issued by local authorities rose sharply in April and, although movements in this series are sometimes erratic, this strength suggests the possibility that housing starts may be leveling out.

Business spending on plant and equipment has been considerably stronger than investment in residential construction. Recent developments, however, suggest that businesses have trimmed plans for a big increase in capital spending this year. Surveys of business plans for plant and equipment spending, taken last fall and winter by the Department of Commerce and the Securities and Exchange Commission, had pointed to a rise of about 10 percent in 1970. The latest Commerce-SEC survey, however, taken in April and May, pointed to an overall gain of less than 8 percent. Manufacturing industries accounted for almost all the cutback from earlier plans. Total manufacturers' outlays on plant and equipment are now scheduled to rise by 4 percent this year, compared with a 10 percent advance anticipated earlier. Durables producers scaled down their plans from a 10 percent increase to 3 percent. Some evidence that manufacturers were reducing investment plans had been seen in first-quarter data on capital appropriations by the nation's 1,000 largest manufacturers. Net new appropriations declined sharply, and closing backlogs fell for the first time in al-

[1] The Department of Commerce has reduced its first-quarter estimate of the inventory spending component of GNP by $2.1 billion, bringing total inventory investment for the quarter down to a rate of $0.8 billion. The Department also revised its estimate of Federal Government spending up by $2.1 billion to allow for the retroactive portion of the Federal pay raise, which was approved in April. Other small revisions were made which, when cumulated, subtracted $0.8 billion from the preliminary GNP estimate. (The preliminary GNP figures were discussed in the May issue of this *Review*.) GNP is now reported to have risen by $7.4 billion in the first three months of the year to a seasonally adjusted annual rate of $959.6 billion. Although the pay raise offset the downward revision in inventory accumulation in terms of current-dollar GNP, it added nothing to the real value of goods and services purchased. Thus, real GNP fell by $5.5 billion, $2.6 billion more than in the preliminary numbers. By the same reasoning, the Government spent more to obtain the same services, and consequently the deflator rose at a 6.3 percent compound annual rate, compared with 5.0 percent in the preliminary estimate. Although the Commerce Department allocated the retroactive portion of the pay raise to first-quarter GNP, the raise was not disbursed until April. Thus, in the national income accounts all the pay raise will be reflected in the second-quarter wage and salary figures.

most two years. Major factors underlying the cutbacks and postponements in manufacturing have included relatively low factory operating rates, the drop in stock market prices, and the continuation of tight credit conditions. Another important factor has been a substantial decline in corporate profits which in the first quarter fell by $2.9 billion, after taxes, to a $46.1 billion annual rate, the lowest since the first quarter of 1967. In contrast to the drop in manufacturers' investment plans, nonmanufacturing firms—which are generally less sensitive to cyclical changes—have not significantly revised their spending schedules. Nonmanufacturers now anticipate capital spending to run 11 percent above last year.

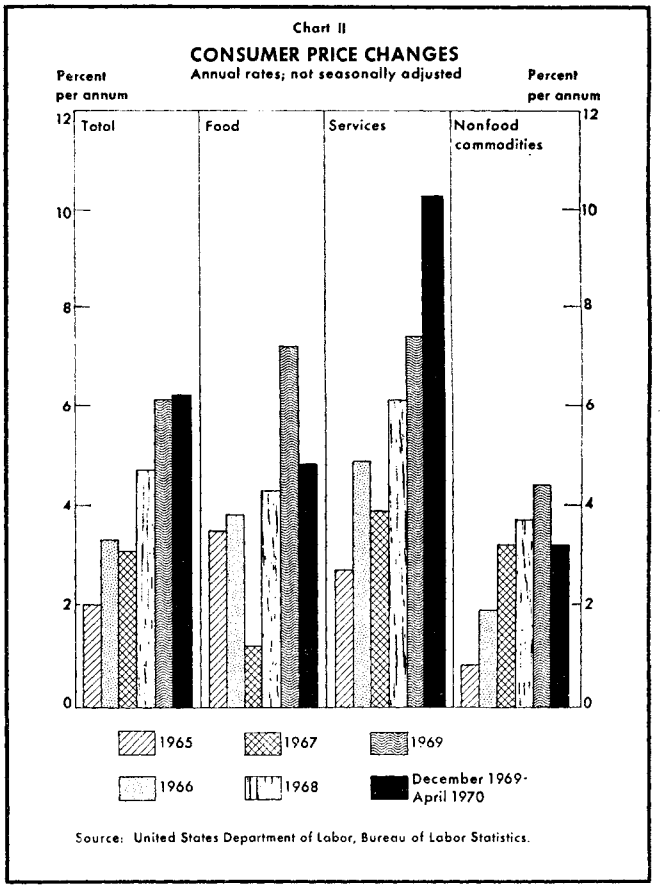
EMPLOYMENT, INCOME, AND CONSUMER DEMAND

Conditions in the labor market continued to ease in April, as the unemployment rate shot up 0.4 percentage point to 4.8 percent, the highest in five years. Employment dropped substantially in the month, and the labor force rose modestly. The April increase in the labor force was centered among adult men, while the employment decline took place in the adult men and teen-age categories. There was little change in either the employment or labor force participation of adult women.

The number of persons reported on the payrolls of nonagricultural firms declined by 88,000 in April, compared with an average monthly rise of 150,000 last year. While there were small gains in the finance and service categories and a substantial rise in government employment, reflecting Federal Government hiring of 80,000 for the decennial census, all other components recorded declines. The Bureau of Labor Statistics attributes the April drop to greater strike activity. Major stoppages included several strikes in the construction industry, the Los Angeles teachers' strike, and the strikes and lockouts in the trucking industry. Manufacturing payrolls dropped by 144,000, with most of that decline occurring in durables manufacturing. Layoffs were substantial in the automobile, aircraft, electrical equipment, primary metals, and fabricated metals industries. In manufacturing, shortages of component parts stemming from the trucking strike apparently resulted in a reduced workweek in some industries, and the overall factory workweek of production workers declined in April, falling 0.2 hour to 40.0 hours. This was the lowest since July 1964 and was 0.7 hour below the December level.

Reflecting the reductions in employment and in the workweek, private wage and salary incomes in April fell by $1.6 billion, the first decrease in over five years. The decline was partly attributable to the effects of the strikes in the construction and trucking industries. Half the April drop was in manufacturing. In contrast, total personal income soared by a record $17.8 billion to a seasonally adjusted annual rate of $801.1 billion. The 15 percent increase in social security benefits and the 6 percent pay raise for Federal Government employees, both of which were retroactive to January, boosted personal incomes by $12.5 billion and $6.3 billion, respectively.

The large rise in total personal incomes in April was presumably an important factor in the preliminary estimate of a sizable increase in retail sales. Consumer spending will presumably receive another boost at the end of this month with the expiration of the income tax surcharge. Aside from the impact of these special, large increases in income, retail sales have been generally sluggish since last fall. While some of this weakness has reflected the slump in automobile purchases, retail sales excluding spending at automotive outlets have not shown much growth since the autumn. The outlook for a pickup in sales is clouded by



the unknown impact of the current uncertainties over the Indochina situation and the decline in stock market prices.

THE PRICE SITUATION

Inflationary price increases at both the consumer and industrial wholesale levels have continued unabated, and there is as yet no significant evidence of cooling (see Chart II). The consumer price index rose at a 7.2 percent annual rate in April, or 6.3 percent on a seasonally adjusted basis. This brought the climb so far this year to a 6.2 percent annual rate on both an adjusted and unadjusted basis, not much different from last year's 6.1 percent gain. In April, prices of nonfood commodities as well as services rose sharply while food prices moved up at a relatively moderate rate. Higher costs of medical care, automobile insurance, and residential property taxes led the rise in service prices. For the first four months of the year, service prices have climbed at an annual rate even more sharp than last year's. In contrast, there apparently has been some slowing this year in hikes of nonfood commodity prices, although these took a big jump in April. At the wholesale level, prices of industrial commodities rose at a 4.1 percent annual rate in April. In the first four months of this year, industrial prices have advanced at a 4.2 percent rate, compared with a 4.0 percent increase in 1969. The April rise was led by higher prices for fuels, metals, lumber, and hides. Wholesale agricultural prices fell in April, offsetting the increase in the index of industrial commodities, and the total wholesale price index was unchanged. The preliminary estimate of wholesale prices in May indicates that industrial prices moved up at a 4.1 percent annual rate again last month. The estimate also indicated another decline in agricultural prices.

The Money and Bond Markets in May

A deepening gloom settled over financial markets during most of May, but the darkest clouds appeared to be lifting as the month closed. Corporate stock prices first sagged and then tumbled, setting off shock waves that were felt in all sectors of the bond market. The malaise affecting the markets appeared to reflect the concern of market participants about Cambodian developments and their implications for peace, the Federal budget, and domestic tranquility. There was also anxiety about continued inflation and strong wage demands even while the economy was slowing down and corporate profits were falling.

Against this background of uncertainty, the Dow-Jones industrial index of stock prices fell by almost 105 points during the month to 631.16 on May 26, the lowest level since late 1962, before rebounding to 700.44 at the close of the month. New issues of corporate and municipal securities were floated at ever-increasing yields throughout most of May. Corporate bond yields rose above the record levels set last December, even though the successful completion of the mammoth $1.6 billion American Telephone and Telegraph Company financing lessened the pressure. At midmonth, *The Weekly Bond Buyer's* index of tax-exempt securities reached a record level and continued to climb.

Effective May 6, the Board of Governors of the Federal Reserve System reduced the margin requirements on purchasing or carrying stocks from 80 percent to 65 percent and on purchasing or carrying convertible bonds from 60 percent to 50 percent. The Board cited the sharp reduction in the use of credit for stock purchases. This was the first change in these requirements since June 1968, when they were raised from 70 percent to 80 percent for stocks and from 50 percent to 60 percent for convertible bonds.

In the Treasury securities market, attention focused on the Treasury's $3.5 billion offering of 7¾ percent eighteen-month notes to the public for cash and the offering of the reopened 7¾'s of 1973 and 8's of 1977 in exchange for the issues maturing May 15, of which $4.9 billion was in the hands of the public. In the great uncertainty engendered by events in Cambodia the cash offering was successfully completed, but with 100 percent allotments to all subscribers—well above the expectations of some observers. The exchange offering was quite well received, involving public exchanges of $2.1 billion into the 7¾'s and $1.2 billion into the 8's. The combined operation raised $2 billion for the Treasury. Prices rallied for a time after the offering, but later wilted in the general market atmosphere. Many intermediate- and long-term issues fell to new record lows before rebounding near the month's end. Treasury bill rates fluctuated during the month in the nervous market.

BANK RESERVES AND THE MONEY MARKET

The money market was comparatively steady during May in contrast to the turbulence in the securities market. Federal Reserve open market operations allowed the Federal funds rate to recede to around 8 percent from the 8 to 8½ percent range that had prevailed in the second half of April. Member banks as a whole remained under pressure, with their borrowings from the Federal Reserve Banks averaging $925 million (see Table I) as compared with $866 million in April.

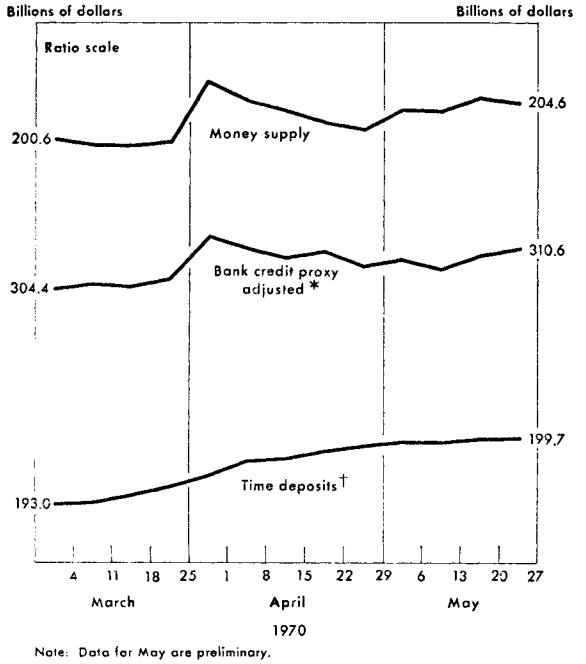
The slightly less firm money market conditions in May reflected in part some ebbing of the unusual reserve pressure that had weighed on the major money market banks in April. The average basic deficit of the forty-six large reserve city banks declined by $1,105 million to a level of $5,183 million in the four weeks ended on May 27 (see Table II), compared with the average of the preceding five weeks. In April the large financing demands of Government securities dealers had contributed to the record basic deficit of $8.0 billion at these banks after the mid-April tax date. In May, a major factor in the improved position of these banks was a sharp decline in bank lending to Government securities dealers resulting from the reduction in dealer portfolios.

The seasonally adjusted money supply on a daily average basis was higher in May than in April, although the adjusted bank credit proxy was slightly lower. Ac-

Chart I

CREDIT AND MONETARY AGGREGATES

Seasonally adjusted weekly averages



Note: Data for May are preliminary.

* Total member bank deposits subject to reserve requirements plus nondeposit liabilities, such as Euro-dollar borrowings and commercial paper issued by bank holding companies or other affiliates.

† At all commercial banks.

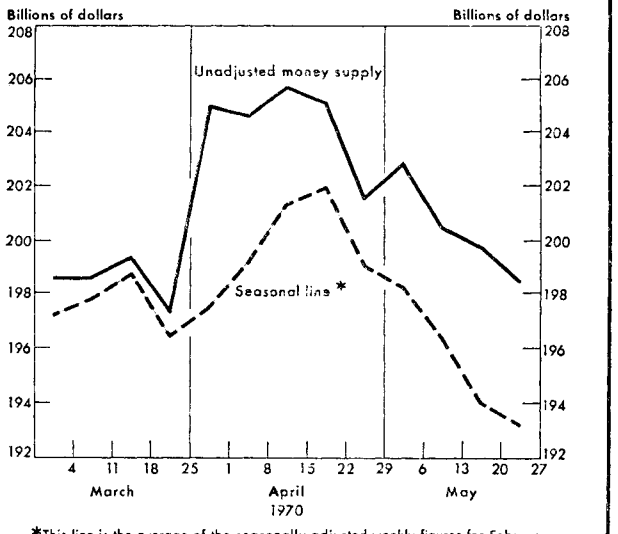
cording to preliminary data, over the month the money supply grew at a 6½ percent annual rate. To some extent, market uncertainties may have augmented demands for cash in May. The growth rate in May represented a tapering-off from the 10¾ percent rate of the preceding month, which had been influenced by an unusual increase in the first week of April (see Chart I).[1] So far this year the money supply has grown at a 5½ percent annual rate. The adjusted bank credit proxy, on the other hand, experienced over a 1 percent annual rate of decline in May, according to preliminary figures. This compares with the 13¾ percent rate of gain posted in April and brings the five-month growth rate for this aggregate to 2¾ percent.

Much of the divergent movement in the money supply and the adjusted bank credit proxy during May is explained by the sharp drop in United States Government demand deposits. Movements in Government demand deposits are often inversely related to movements in private demand deposits, as changes in Government deposits frequently reflect the flow of funds between the public and private sectors. The decline of Government deposits in May was associated with a strengthening in private demand deposits during the month, which raised the growth of the money supply. The bank credit proxy, on the other hand, includes both Government and private demand deposits, and thus turned in a much weaker performance.

The money supply spurted unseasonably in the first week of May (see Chart II). While this event coincided with large System purchases of Treasury bills, which were undertaken in part to relieve unusual market pressures during the period the books were open for the Treasury's financing, the bulge in the money supply probably bore little relation to the System's action at that time. Erratic moves in the weekly data for seasonally adjusted money supply are not at all uncommon. Not only is there some question about whether the seasonal factors now in use accurately reflect current patterns of deposit flows, but also even with all seasonality removed there would apparently remain a considerable amount of unexplained week-to-week variation.

Chart II

THE MONEY SUPPLY AND SEASONAL EFFECTS



*This line is the average of the seasonally adjusted weekly figures for February multiplied by seasonal factors for March, April, and May, beginning with the week of March 4. It indicates what the unadjusted money supply would have been if just the influence of the seasonal factors — which are drawn from the behavior of the money supply during comparable weeks of previous years — had been operative.

[1] For a discussion, see this *Review* (May 1970), pages 98-99 and 104-5.

Table I

FACTORS TENDING TO INCREASE OR DECREASE MEMBER BANK RESERVES, MAY 1970

In millions of dollars; (+) denotes increase (—) decrease in excess reserves

Factors	Changes in daily averages—week ended on				Net changes
	May 6	May 13	May 20	May 27	
"Market" factors					
Member bank required reserves	— 222	+ 508	— 181	+ 634	+ 739
Operating transactions (subtotal)	— 552	— 834	+ 330	+ 180	— 876
Federal Reserve float	— 83	— 142	+ 237	— 346	— 334
Treasury operations*	— 109	— 191	+ 307	+ 176	+ 183
Gold and foreign account	— 34	— 55	+ 44	+ 84	+ 39
Currency outside banks	— 202	— 403	— 413	+ 289	— 729
Other Federal Reserve liabilities and capital	— 124	— 44	+ 155	— 17	— 30
Total "market" factors	— 774	— 326	+ 149	+ 814	— 138
Direct Federal Reserve credit transactions					
Open market operations (subtotal)	+1,167	+ 95	+ 143	— 418	+ 987
Outright holdings:					
Government securities	+1,154	+ 397	— 56	— 221	+1,280
Bankers' acceptances	— 2	— 3	— 1	— 3	— 9
Repurchase agreements:					
Government securities	— 36	— 202	+ 138	— 138	— 238
Bankers' acceptances	+ 8	— 35	+ 20	— 20	— 27
Federal agency obligations	+ 43	— 62	+ 36	— 36	— 19
Member bank borrowings	— 120	+ 40	+ 369	— 251	+ 38
Other Federal Reserve assets†	— 39	— 130	— 509	— 295	— 973
Total	+1,008	+ 4	+ 3	— 963	+ 52
Excess reserves	+ 234	— 322	+ 152	— 143	— 79

	Daily average levels				Monthly averages
Member bank:					
Total reserves, including vault cash	28,582	27,752	28,084	27,300	27,930‡
Required reserves	28,237	27,729	27,910	27,276	27,788‡
Excess reserves	345	23	175	32	144‡
Borrowings	773	813	1,182	931	925‡
Free, or net borrowed (—), reserves	— 428	— 790	—1,007	— 899	— 781‡
Nonborrowed reserves	27,809	26,939	26,902	26,369	27,005‡
Net carry-over, excess or deficit (—)§	75	209	78	154	129‡

	Changes in Wednesday levels				Net changes
System Account holdings of Government securities maturing in:					
Less than one year	+1,772	— 672	—9,338	— 255	—8,493
More than one year	—	—	+9,523	—	+9,523
Total	+1,772	— 672	+ 185	— 255	+1,030

Note: Because of rounding, figures do not necessarily add to totals.

* Includes changes in Treasury currency and cash.

† Includes assets denominated in foreign currencies.

‡ Average for four weeks ended on May 27.

§ Not reflected in data above.

TABLE II

RESERVE POSITIONS OF MAJOR RESERVE CITY BANKS MAY 1970

In millions of dollars

Factors affecting basic reserve positions	Daily averages—week ended on				Averages of four weeks ended on May 27
	May 6	May 13	May 20	May 27	
Eight banks in New York City					
Reserve excess or deficiency (—)*	105	— 79	73	— 51	12
Less borrowings from Reserve Banks	93	150	332	86	165
Less net interbank Federal funds purchases or sales (—)	1,253	1,858	1,654	1,158	1,481
Gross purchases	2,308	2,727	2,789	2,134	2,490
Gross sales	1,055	869	1,136	976	1,009
Equals net basic reserve surplus or deficit (—)	—1,241	—2,088	—1,913	—1,295	—1,634
Net loans to Government securities dealers	563	339	336	417	414
Net carry-over, excess or deficit (—)†	7	71	— 15	53	29
Thirty-eight banks outside New York City					
Reserve excess or deficiency (—)*	75	— 20	3	28	22
Less borrowings from Reserve Banks	248	254	310	148	240
Less net interbank Federal funds purchases or sales (—)	3,403	3,729	3,238	2,952	3,331
Gross purchases	5,319	5,918	5,486	5,091	5,454
Gross sales	1,916	2,188	2,248	2,138	2,123
Equals net basic reserve surplus or deficit (—)	—3,576	—4,004	—3,545	—3,072	—3,549
Net loans to Government securities dealers	333	219	186	219	239
Net carry-over, excess or deficit (—)†	12	51	24	30	29

Note: Because of rounding, figures do not necessarily add to totals.

* Reserves held after all adjustments applicable to the reporting period less required reserves.

† Not reflected in data above.

TABLE III

AVERAGE ISSUING RATES* AT REGULAR TREASURY BILL AUCTIONS

In percent

Maturities	Weekly auction dates—May 1970			
	May 4	May 11	May 18	May 25
Three-month	7.184	6.994	6.828	7.133
Six-month	7.493	7.202	6.996	7.355
	Monthly auction dates—March-May 1970			
	March 24	April 23		May 26
Nine-month	6.100	6.844		7.352
One-year	6.132	6.814		7.277

* Interest rates on bills are quoted in terms of a 360-day year, with the discounts from par as the return on the face amount of the bills payable at maturity. Bond yield equivalents, related to the amount actually invested, would be slightly higher.

THE GOVERNMENT SECURITIES MARKET

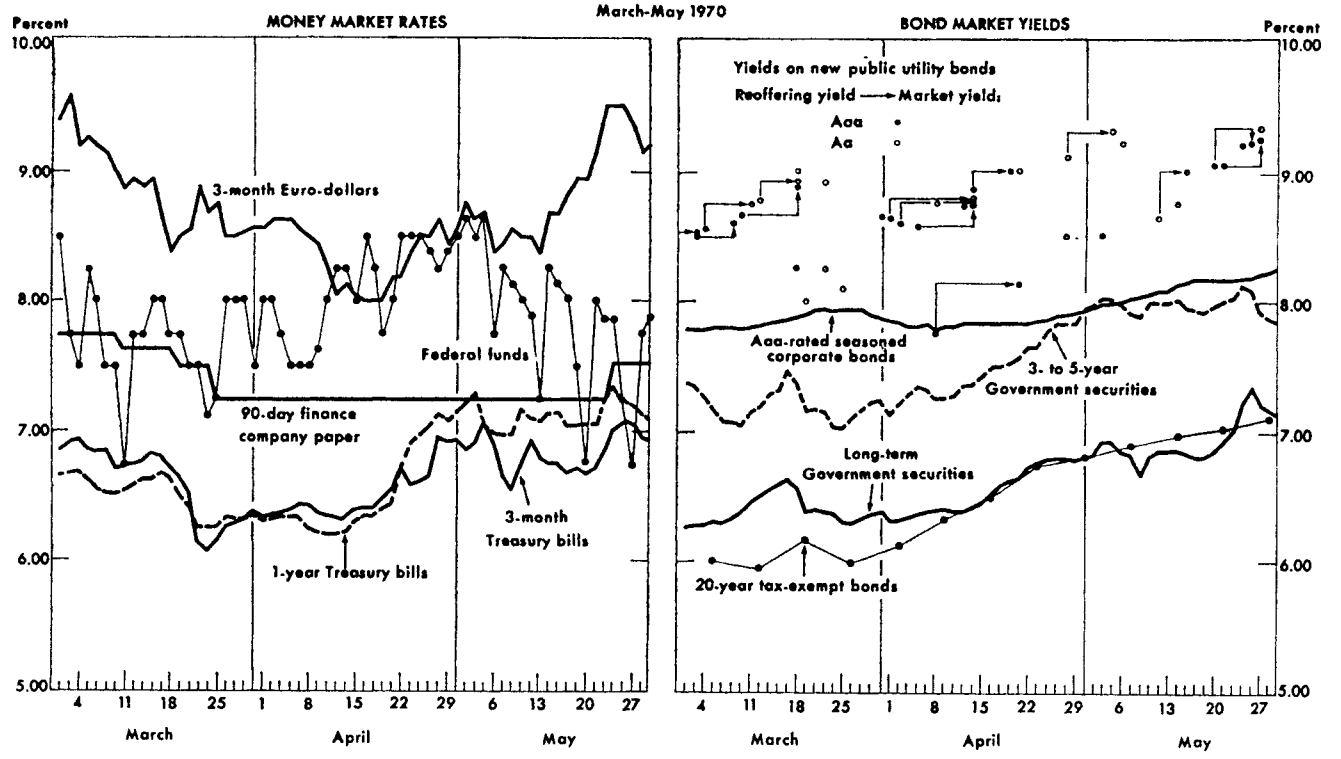
During much of May the Government securities market remained under strong pressures, and yields on many Government issues rose (see Chart III). In large part, these pressures reflected market reaction to President Nixon's decision to send United States troops into Cambodia, and its diplomatic, economic, and social ramifications. Toward the end of the period, however, investor demand and confidence appeared to strengthen somewhat and technical conditions improved, following the completion of the Treasury and AT&T financings. Over the period as a whole, yields on Treasury bills and short- and intermediate-term coupon issues showed little net change but considerable fluctuation, while yields on longer term Government securities rose sharply.

There were some anxious moments for the Treasury in the wake of the President's announcement of the Cambodia action, after the terms of the May financing had been set. In a rather strained atmosphere, the public's subscriptions for the new 7¾ percent eighteen-month note totaled about $3.6 billion, only $100 million more than the amount originally offered by the Treasury, and they were allotted in full for the first time in such an offering in recent years. Normally, such offerings are heavily oversubscribed and allotments are only a fraction of the amounts subscribed for. On this occasion, a relatively high allotment was anticipated, but many investors looked for perhaps 50-60 percent rather than the 100 percent that developed. The exchange offering, on the other hand,

Chart III

SELECTED INTEREST RATES

March-May 1970



Note: Data are shown for business days only.

MONEY MARKET RATES QUOTED: Bid rates for three-month Euro-dollars in London; offering rates for directly placed finance company paper; the effective rate on Federal funds (the rate most representative of the transactions executed); closing bid rates (quoted in terms of rate of discount) on newest outstanding three-month and one-year Treasury bills.

BOND MARKET YIELDS QUOTED: Yields on new Aaa- and Aa-rated public utility bonds (arrows point from underwriting syndicate reoffering yield on a given issue to market yield on the same issue immediately after it has been released from syndicate restrictions); daily averages of yields on seasoned Aaa-rated corporate bonds; daily averages of yields on long-term Government securities (bonds due or callable in ten years or more) and on Government securities due in three to five years, computed on the basis of closing bid prices; Thursday averages of yields on twenty seasoned twenty-year tax-exempt bonds (carrying Moody's ratings of Aaa, Aa, A, and Baa).

Sources: Federal Reserve Bank of New York, Board of Governors of the Federal Reserve System, Moody's Investors Service, and The Weekly Bond Buyer.

was quite well received. Of the approximately $4.9 billion of maturing notes held by the public, about $3.3 billion was exchanged during the subscription period for the reopened 7¾ percent notes due in May 1973 and the 8 percent notes due in February 1977. The proportion of maturing notes redeemed for cash was surprisingly low in view of the simultaneous $3.6 billion cash financing which in effect took the place of an "anchor issue" in the exchange offering.

At the beginning of the month, prices of intermediate-term Treasury securities showed some weakness, but they rose somewhat during the middle of the subscription week. Selling again drove prices lower in the early part of the following week, as dealers attempted to unload excess holdings of the when-issued notes. Prices then fluctuated narrowly until the last day of the week, when a stock market rally and news of a decline in the Federal Reserve Board's index of industrial production led to an improvement in market sentiment. During the third week of the month, prices again fell sharply in response to another major stock market decline, to announcements of projected Federal budget deficits for the current and following fiscal years, and to a substantial increase in the consumer price index during April. Prices continued to decline until the final days of the month, when improved market sentiment led to some gains.

Due in part to large System purchases and reduced dealer inventories, rates on Treasury bills declined during the subscription period and continued to move lower for a short time thereafter. However, persisting domestic and international tensions as well as market concern over possible resale of securities by the System tended to push rates somewhat higher during the second week in May. After midmonth, rates stayed within a narrow range in quiet trading, while activity picked up in the market for intermediate-term securities. Over the month as a whole, bill rates were generally 18 basis points lower to 8 basis points higher than those at the end of April. (For issuing rates on newly auctioned Treasury bills, see Table III).

Activity in the market for Federal agency securities was highlighted by the initial offerings of bonds backed by the Government National Mortgage Association. These securities, which were issued by the Federal National Mortgage Association, consisted of a two-part offering of $150 million of 8⅛ percent issues due in one year and $250 million of 8⅜ percent issues due in five years. The bonds met an excellent reception and quickly rose to a premium on a when-issued basis.

OTHER SECURITIES MARKETS

Prices of corporate and tax-exempt securities moved lower in May under the impact of many of the same developments which influenced the markets for United States Government securities. As a result, yields on some new issues were pushed to record levels, and by the end of May *The Weekly Bond Buyer's* index of yields on twenty municipal bonds rose to 7.12 percent, the highest level in the history of the index. AT&T successfully completed its massive financing by midmonth and announced on May 18 that subscriptions for the new debentures had amounted to an estimated 98 percent of the $1.57 billion offered.

Deteriorating market conditions early in the month led to the postponement of a number of new debt flotations in both the corporate and municipal sectors, and several recent issues were released from price restrictions with subsequent upward yield adjustments of as much as 75 basis points. In the weak market atmosphere, record yields were required on new issues to attract favorable receptions.

Prices of outstanding corporate and tax-exempt securities showed narrow price declines over the last two weeks of May. Although the volume of new securities remaining in underwriters' syndicates had been substantially reduced by midmonth, the market tone remained fundamentally weak. New-issue yields on corporate securities continued to rise, reflecting a heavy schedule of financing activity. For example, $30 million of Aaa-rated electric utility bonds was offered late in the month at a record yield of 9.20 percent, or 15 basis points higher than a comparable issue marketed only four days earlier. Developments in the tax-exempt sector were similar, although new-issue activity was moderate. Yields on securities in this sector also moved near, or above, previous records, as evidenced by a $20 million Aa-rated offering by the state of Delaware. Included in this offering were eighteen- to twenty-year bonds which, when reoffered to investors, were priced to yield a record 7.10 percent when held to maturity. In the final week of the month, the prolonged decline in the stock market was reversed, and conditions in the bond market showed some improvement.

The Measurement and Importance of Fiscal Policy Changes

By E. GERALD CORRIGAN*

During the last several years the debate over how monetary and/or fiscal policies can be most appropriately measured has intensified. For the most part, this debate has arisen in the context of attempts to estimate the impact of changes in policy on the level of economic activity. The difficulty in estimating such impacts arises because many of the widely used policy indicators reflect the effect of changes in economic activity as well as changes in policy. As a result, these relationships are often clouded by the feedback from economic activity to the policy measure. With respect to fiscal policy, for example, it is generally agreed that the national income account (NIA) budget surplus (or deficit) is not a good indicator of fiscal policy because the NIA budget position is quite sensitive to changes in the level of economic activity.

In an effort to avoid the feedback problem, the full employment surplus (FES) is often used to measure changes in fiscal policy. This measure is constructed in a way which eliminates at least some of the effects of changes in the economy on the budget position. In this paper an alternative measure of changes in fiscal policy —the initial stimulus (IS)—is presented, and it is argued that the IS has distinct advantages over both the FES and the NIA budget as a measure of the impact of fiscal policy changes on the economy.

The first section of the paper consists of an examination of the theoretical structure of the FES and the IS as well as a comparison of the procedures used to construct these measures. On the basis of this discussion, it is argued that the IS is a more useful indicator of short-run changes in discretionary fiscal policy. Then, in the second section, the FES and IS measures are empirically tested in order to determine which provides a better statistical explanation of changes in gross national product (GNP). This analysis indicates that the association between changes in GNP and changes in fiscal policy as measured by the IS is consistently greater than is the case with the FES. The last part of the study reexamines the question of the relative importance of monetary and fiscal policy in the determination of GNP. This investigation suggests that some recent studies on this subject appear to have overstated the case against fiscal policy, since the results presented here show that fiscal policy as measured by the IS does exert significant influence, in the expected direction, on GNP.

A COMPARISON OF FISCAL POLICY INDICATORS

As noted above, it is generally agreed that the NIA budget is not a reliable indicator of changes in fiscal policy because of the impact of variations in the level of economic activity on the budget position and, in particular, on budget receipts. To illustrate this, consider a period in which expenditures and tax rates are unchanged but the level of economic activity decreases, thereby inducing a reduction in tax revenues. Under such conditions, the NIA budget surplus would decrease (or the deficit would increase), thereby suggesting a more expansionary fiscal policy. Clearly, it would be misleading to interpret such a move in the budget position as a shift in Government policy toward a more stimulative budget

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position.[1] The FES measure[2] was originally designed to circumvent problems arising from the influence of changes in economic activity on the budget position by estimating budget receipts and expenditures independently of current changes in the level of economic activity. Consequently, the FES measure can be viewed as a superior indicator of changes in discretionary fiscal policy. However, it will be argued in this paper that the FES does not in fact eliminate the problems of endogenous dependence and, as a consequence, does not provide a good measure of fiscal impact. To shed light on the origins of the shortcomings in the FES, and at the same time point out the advantages of the IS, both measures are described in detail below.

THE FULL EMPLOYMENT SURPLUS. The FES is an estimate of the overall NIA budget at some arbitrarily defined full employment level of economic activity. By estimating the level and/or change in budget receipts and expenditures at an income level consistent with full employment, the FES seeks to eliminate the effects of current variations in income levels on the budget position and thereby to provide a measure of the direction and magnitude of discretionary fiscal policy changes.[3]

Since the FES data are designed to reflect only discretionary Federal expenditures and receipts, the actual budget data must be adjusted in order to remove the effects of current changes in income levels. On the expenditures side, the necessary adjustment is small since virtually all Federal outlays are assumed to be discretionary. The one exception is Federal unemployment compensation benefit payments, which are adjusted to eliminate changes in these payments arising from any deviations in actual employment from "full employment".[4] As a consequence, during periods of substantial unemployment such as 1961, the level of full employment outlays may be less than "actual" expenditures by as much as $2 billion to $3 billion. Usually, however, the FES expenditures data and the "actual" data on Federal outlays, particularly when measured as quarterly changes, are quite similar.

In sharp contrast to the expenditures data, the computation of FES receipts represents a significant departure from "actual" receipts data. Full employment receipts measure the level of tax receipts over time on the assumption that full employment was constantly maintained. This is done by selecting a base year representing full resource utilization and projecting a trend growth in real output from that base. The resultant levels of real GNP are then restated in current dollars by inflating them with actual values of the GNP deflator. Given these levels of nominal full employment GNP, the next step in the process is the allocation of this income total among the full employment income shares as they appear in the national income accounts. These shares include personal income, its wages and salaries component, and corporate profits. The shares are assumed to be subject only to secular change, and their estimated magnitudes are based on observed values in years of actual high employment. (This assumed pattern of income distribution is one of the more questionable elements in the estimation of the FES.) The assumed income shares are multiplied by the estimated full employment GNP to yield quarterly levels of full employment personal income, wages and salaries, and corporate profits.

The final step in the computation of full employment receipts is the application of average tax rates for social security, personal income, and corporate profits to these income figures. The tax rates are based on actual NIA tax payments relative to the three income shares noted above in high employment periods. These tax rates are adjusted when autonomous changes in tax rates occur, and it is through these adjustments that the effects of autonomous tax rate change enter into full employment receipts.

The products of the tax rates and the full employment income shares determine full employment tax receipts based on personal income, social security, and corporate

[1] Such a swing in the budget position is, of course, indicative of the automatic stabilization features of the budget. However, such movements are not the subject of this analysis.

[2] The concept of the FES was originally developed at the Council of Economic Advisers in the early 1960's. For more recent studies of this measure, see Keith M. Carlson, "Estimates of the High Employment Budget: 1947-1967", *Review* (Federal Reserve Bank of St. Louis, June 1967), pages 6-14, and Arthur M. Okun and Nancy H. Teeters, "The Full Employment Budget Surplus Revisited", paper delivered at the First Conference of the Brookings Panel on Economic Activity, April 17, 1970, Washington, D.C.

[3] In addition, many writers have used the FES as an analytical tool in setting targets for planned fiscal actions. Under this reasoning, the size of the FES relative to private savings and investment provides an approximation of what the actual budget position must be if full employment is to be attained. See Keith M. Carlson, "Estimates of High Employment Budget: 1947-1967", *op. cit.*, page 12, and William H. Oakland, "Budgetary Measures of Fiscal Performance", *Southern Economic Journal* (April 1969), page 348.

[4] See Nancy H. Teeters, "Estimates of the Full Employment Surplus, 1955-1964", *Review of Economics and Statistics* (August 1965), pages 309-10. Also, using a calculation procedure different from that described above, a more detailed treatment of the problems and implications associated with the assumption that Federal expenditures are discretionary is provided in Michael E. Levy, *Fiscal Policy, Cycles and Growth*, Studies in Business Economics #81 (New York: National Industrial Conference Board, 1963), pages 91-92.

incomes. The sum of these items plus indirect tax receipts, which are projected on the basis of a trend adjusted for rate changes, is defined as total full employment budget receipts, and FES is the difference between full employment receipts and expenditures.

Despite its superiority over the NIA budget, the FES has some serious defects. In the first place, this measure is clearly very difficult to estimate and construct since the computational procedures involve several necessarily tenuous assumptions about the growth of real and nominal income as well as the pattern of income distribution. Moreover, it seems preferable to measure the impact of tax rate changes at prevailing income levels rather than at full employment, since the revenue effects of a given tax rate change would be overstated on the full employment basis if the economy were operating at less than full employment at the time of the rate change.

However, the most serious defect of the FES is the upward trend in full employment receipts resulting from their relation to the full employment growth in nominal incomes. Given the trend growth in full employment receipts the FES would register an increase even in periods when tax policies and expenditures were unchanged. Clearly this increase in the surplus would not reflect a change in discretionary fiscal policy.[5] Thus, the FES data have an upward bias—a bias tending to overstate the degree of restraint—which is particularly evident in periods of inflation.[6] That is, the size of the bias will vary with the size of the GNP deflator, since real full employment GNP is inflated by the magnitude of the GNP deflator. Moreover, because the behavior of the deflator is irregular, the pattern of impact on budget receipts arising from this source also tends to be irregular.[7] In any case, since the deflator is clearly dependent on developments within the economy, its use in the computation of full employment revenues introduces a large and volatile element of endogenous dependence into the FES data. An insight into the quantitative significance of this bias can be gained by comparing the growth in full employment receipts during the fourth quarters of 1967 and 1968. Since in both of these periods there were no autonomous or discretionary changes in tax rates, the change in full employment receipts reflects only the growth in budget revenues resulting from the rise in nominal full employment income. Yet in the first period (1967-IV) full employment receipts rose by $3.1 billion (annual rate), while in 1968-IV the growth in revenues was $4.5 billion. For the most part, the difference between these magnitudes is attributable to the fact that the deflator was increasing at a more rapid rate in the latter period.

THE INITIAL STIMULUS MEASURE. Due to the shortcomings in the FES, an alternate measure of fiscal impact—the IS—was developed at this Bank about five years ago.[8] This earlier work, with some modifications, is the basis for this present study. Unlike the FES, the IS does not depend on an estimate of some overall budget based on calculated levels of full employment. Rather, this measure merely seeks to identify and quantify those elements in the Federal budget that represent changes in discretionary fiscal policy. The IS (or restraint) is simply the algebraic sum of the initial effects of changes in Federal expenditures and the initial effects of changes in Federal tax policies on an accounting basis which is generally similar to the NIA budget.[9]

The expenditures component of the IS is the quarter-to-quarter change in total Federal outlays as recorded in the NIA budget. Thus, the expenditures variable implicitly assumes that all Federal outlays are discretionary—that is, they are not influenced by changes in the level of economic activity. This assumption is similar to that made in the computation of the full employment expenditures. However, the IS expenditures data do not attempt to

[5] The rise in full employment receipts which occurs as a result of the growth of full employment income is, of course, quite important over time in that it may provide a measure of the "fiscal dividend" arising from economic growth. Thus, within the framework of longer term budget planning the FES may indeed be a useful tool of analysis since it does allow for this element.

[6] On this point, see Frank de Leeuw and John Kalchbrenner, "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization—Comment", *Review* (Federal Reserve Bank of St. Louis, April 1969), pages 6-8. Also for a more detailed comparison of the IS and the FES which also provides further insight into the upward bias question, see E. G. Corrigan, "Budgetary Measures of Fiscal Performance—A Comment", *Southern Economic Journal* (April 1970), pages 470-73.

[7] In their recent paper, Okun and Teeters (see footnote 2) have suggested a technique for minimizing this source of disturbance by inflating full employment real GNP by a measure of "potential price change" rather than with the actual values of the GNP deflator.

[8] "The Initial Effects of Federal Budgetary Changes on Aggregate Spending", *Monthly Review* (Federal Reserve Bank of New York, July 1965), pages 141-49. More recently a similar measure has been developed by William H. Oakland, "Budgetary Measures of Fiscal Performance", *Southern Economic Journal* (April 1969), pages 348-58.

[9] This measure may, of course, be constructed on the basis of the unified cash budget as well as the NIA budget. However, differences in budget coverage and in the timing of various expenditures and receipts items will result in some disparities between the two measures.

eliminate changes in Federal unemployment compensation payments arising from deviations in actual employment from full employment, an adjustment which is made in calculating the full employment expenditures data. Thus, the expenditures components of the FES and the IS differ only to the extent that they treat Federal payments for unemployment compensation differently. Subsequent analysis reported in this paper suggests that this difference is not significant enough to warrant the additional computational problems involved in making the adjustment required to remove this element of endogenous dependence in the IS data.

On the revenue side, the IS and the FES measures are distinctly different. The IS receipt component measures the initial dollar impact of discretionary changes in individual, corporate, social security, and indirect tax rates and/or bases. In general, the amount of this impact is based on the effect of the tax change on NIA budget receipts, at the prevailing income level. However, in some instances, the timing of this impact is modified to reflect judgments about when the effect of the tax change actually took place rather than when the initial impact was recorded in the NIA budget. For example, since corporate taxes in the NIA budget are measured on an accrual-liability basis, the corporate tax receipts attributable to the 10 percent surtax are first recorded in this budget in 1968-I because of the retroactive features of the tax. However, since the legislation was not passed until June, nor were any payments made until 1968-III, the initial impact of this tax change was not recorded until the third quarter of 1968 in the IS data. In short, the value of the change in the tax component of the IS is equal to zero except in quarters when a tax is introduced, modified, suspended, or eliminated.

The calculation of the tax component of the IS provides two distinct advantages over the computation of full employment receipts. First, the IS tax component can be computed with relative ease since the "initial effects" of tax rate changes are published in several sources at the time tax changes take effect.[10] Thus, the IS eliminates the tenuous process of constructing a tax measure on the basis of assumed full employment levels of income and assumed patterns of distribution at those income levels. More importantly, however, the IS eliminates the trend growth in revenues arising from the growth in real full employment GNP and the change in revenues resulting from changes in the rate of inflation. In short, the IS receipts data go beyond the FES data in removing the effects of the economy on budget receipts.

For a particular period, the net change in the IS (or restraint) is the sum of the change in expenditures and the revenue effect of the change in taxes. The tax data are assigned algebraic signs according to their effects on the economy rather than their effects on budget receipts—i.e., a tax decrease is given a positive sign and a tax increase a negative sign. Thus, changes in fiscal stimulus or restraint are stated in terms of the initial impact of expenditures changes and the initial effect of tax policy changes.

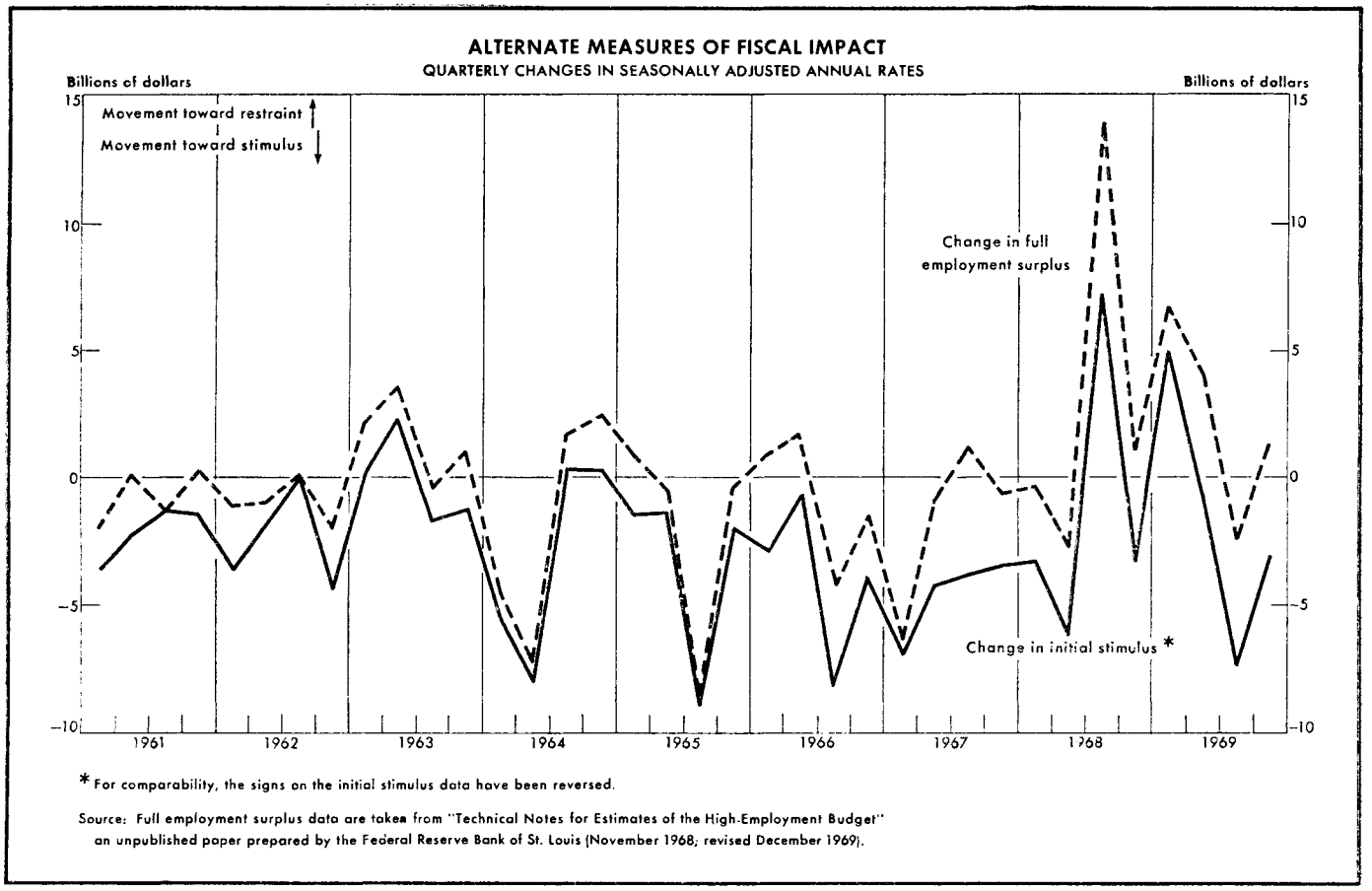
Despite the fact that the IS and the FES are designed to indicate the direction and magnitude of discretionary fiscal policy changes, they often give significantly different views of budgetary impact. To illustrate these differences, quarterly changes in the IS and the FES are shown in the chart for 1961-69.[11] An examination of these data indicates that the IS and the FES often give quite different estimates of fiscal impact, not only in terms of the amount of the impact but often in terms of the direction of change as well. For example, ten of the thirty-six observations of fiscal impact shown in this chart have different signs and eleven of the remaining cases differ in quantitative terms by more than $2.0 billion.

EMPIRICAL TESTS OF FISCAL IMPACT MEASURES

The prior analysis has suggested that the FES data contain a large and irregular growth in receipts resulting from the trend growth in real full employment GNP and the inflation of these magnitudes with actual values of the GNP deflator. Thus, it was argued that the IS should be a more useful indicator of short-run changes in discretionary fiscal policy. In testing this hypothesis, a number

[10] These sources include the *Annual Report of the Secretary of the Treasury*, the *Federal Budget*, the *Survey of Current Business*, and the *Congressional Record*. Thus, even in the case of the recently legislated tax reform bill, detailed estimates of the "initial affects" of the various provisions were published in the *Congressional Record*, Senate, December 22, 1969, pages 17590-97. It should be noted that, since the tax data are based on the dollar impact of changes in tax policies at prevailing income levels, forecasts of this dollar impact for tax changes which may be staged over long periods have to be adjusted for the prevailing income level at the time each stage takes effect.

[11] In all cases, these data are shown as quarter-to-quarter changes in budget or fiscal impact positions because it is the change in budget position rather than the level that is of significance when considering the impact of fiscal policy on the size and direction of change in the economy.



of multiple regressions were estimated to determine which set of fiscal variables suggested the closer association between changes in fiscal policy and changes in GNP. The statistical analysis consisted of multiple regression equations relating quarterly changes in current-dollar GNP to current and lagged quarterly changes in the IS and the FES. In most of the work, the receipts and expenditures components of the two fiscal impact variables were separated, but it was also found that consistent, though poorer, results were obtained when the tax and expenditures components were combined into net measures of fiscal impact.

In order to pursue this analysis, attention had first to be directed at the length of the lags to be allowed for in estimating the influence of the fiscal variables on GNP. To make this judgment, experiments with the tax and expenditures components of the IS were made in an effort to determine which lag structure would maximize the explanatory power (R^2) of these variables.[12] These experiments showed that, in general, a lag structure incorporating the current and seven prior quarters on the expenditures variable and the current and six prior quarters on the tax variable was optimal. Accordingly,

[12] This involved varying the length of the distributed lag on one variable—say G—holding the length of the lag on the second variable—T—constant. This test was originally made for all combinations of lags from four to ten quarters in duration prior to the 1969 summer revisions of the NIA. However, spot checks with the revised data suggest that these data revisions have not affected the results cited above. A similar test with the FES data was made to determine whether they maximize the R^2 with a different lag structure from the one found best with the IS. While some very slight differences in lag patterns were present, the general pattern suggests that the optimal lag structures are not significantly different from those cited above and in no way influence the general conclusions reached in this analysis.

an equation using this lag structure and relating changes in GNP to current and lagged values of the expenditures and tax[13] components of the IS was fitted to data for the period 1952-I to 1968-IV. This is shown as equation (1) in Table I. A similar equation using the FES data[14] was also fitted to data for the same time period —equation (2)—and both sets of data were then tested for a number of other time periods in order to evaluate the stability of the relationship depicted in equations (1) and (2). Summary statistics for these time periods are shown in Table II.

An examination of the data in Tables I and II provides strong support for the hypothesis that the IS is a better indicator of the effects of fiscal policy on GNP, since in all cases the association between changes in fiscal policy as measured by the IS is higher than is the case with the FES.[15] Similar results were also obtained when the expenditures and tax components of these measures were combined and entered on the right side of the equations as single measures of net fiscal impact.[16] Notwithstanding this point, a further examination of equations (1) and (2) and the summary statistics in Table II indicates that both measures behave similarly in several important ways. For example, when the period of fit is shortened to include only the 1950's or early 1960's, the R^2's are marked by a sharp decline. Indeed, there is virtually no correlation between changes in GNP and changes in the FES data during the fifties. In general, this behavior appears to reflect the relatively greater emphasis on the balanced budget fiscal policy that characterized that period.[17] However, despite the poorer fit for these earlier periods, the magnitudes of the respective multipliers (the sum of the regression coefficients) remain reasonably constant. It should also be noted that both the FES and IS measures show that the maximum response to receipts and/or tax rate changes does not occur until the fourth or fifth quarter after the change, while the peak response to

Table I

CHANGES IN GNP REGRESSED ON ALTERNATIVE FISCAL VARIABLES

Lag period	Initial stimulus (IS) data Period of fit 1952-I to 1968-IV (1) $R^2/\bar{R}^2$ = .4866/.4540 SE = $4.8 billion DW = 1.3		Full employment data Period of fit 1952-I to 1968-IV (2) $R^2/\bar{R}^2$ = .3433/.3016 SE = $5.5 billion DW = 1.1	
	Lag weights		Lag weights	
	ΔG	ΔT	ΔFEE	ΔFER
t	.3904* (2.3)	—.2280 (0.9)	.5400* (2.7)	.5479* (2.6)
t-1	.4123* (3.9)	.3621* (2.1)	.4792* (3.6)	.0317 (0.2)
t-2	.4179* (5.9)	.7918* (5.1)	.4185* (4.3)	—.3564* (2.3)
t-3	.4071* (6.1)	1.0610* (6.2)	.3581* (3.9)	—.6186* (3.2)
t-4	.3800* (4.9)	1.1698* (6.4)	.2979* (2.9)	—.7492* (3.6)
t-5	.3367* (3.9)	1.1180* (6.4)	.2379* (2.2)	—.7538* (3.7)
t-6	.2770* (3.3)	.9058* (6.3)	.1781 (1.7)	—.6304* (3.8)
t-7	.2009* (2.9)	.5331* (6.2)	.1185 (1.4)	—.3791* (3.8)
t-8	.1086* (2.6)		.0591 (1.2)	
Σ	2.9314	5.7139	2.6878	—2.9063

R^2 = Coefficient of determination.
$\bar{R}^2$ = Coefficient of determination (adjusted for degrees of freedom).
SE = Standard error of the estimate.
DW = Durbin-Watson statistic.
ΔG = Change in the Government spending component of the IS.
ΔT = Change in the tax component of the IS.
ΔFEE = Change in full employment expenditures.
ΔFER = Change in full employment receipts.
Σ = Summation of regression coefficients.
* Coefficients significant at 5 percent level.

[13] In this and in subsequent regressions using the tax component of the IS, tax decreases are given a positive sign. Thus, the positive signs of the regression coefficients for the tax variable are reasonable.

[14] FES data were taken from "Technical Notes for Estimates of the High-Employment Budget", an unpublished paper prepared by the Federal Reserve Bank of St. Louis (November 1968; revised December 1969).

[15] In these tests using the FES, the lag structure was selected to maintain comparability with the IS which in turn was selected on the basis of maximum R^2. Testing alternate lag structures with the FES data showed a slightly higher R^2 for a lag pattern using six quarters on expenditures and taxes (.35 versus .34). However, this difference does not alter the conclusions cited in the text.

[16] For example, when △GNP was regressed on △FES for the 1952-I to 1968-IV period, using an eight-quarter lag, the R^2 was approximately .10 and the sum of the regression coefficients, i.e., the multiplier, was —1.8. In contrast, the same equation with the IS entered on the right side yielded an R^2 of .25 and the sum of the regression coefficients was 2.4. Moreover, the "t" statistics for the regression coefficients of △IS were consistently higher than was the case with △FES.

[17] The clearest incident of this type occurred in 1954 when many of the Korean war taxes expired. This loss of revenue was accompanied by sharp expenditures reductions in order to preserve the budget position despite the concurrent recession.

spending changes occurs with a shorter lag. At the same time, however, the relative size of the tax and expenditures multipliers derived from these equations does not conform to theoretical expectations. That is, the balanced budget multiplier theorem suggests that the absolute value of the spending multiplier should be greater than the tax multiplier, a condition which is not realized in these estimates.

Given the similarity in the expenditures components of the IS and the FES, the weaker association between GNP and FES as compared with that between GNP and the IS is primarily due to differences in the receipts or tax components of the two measures. However, there is also a modest difference in their expenditures components in that full employment expenditures exclude endogenous changes in Federal unemployment compensation. To test the significance of this data adjustment, and at the same time provide further evidence in support of the view that the poorer performance of the FES is related to its receipts component, regressions were estimated using full employment expenditures and the tax components of the IS as the independent variables. These results (Table II) show little difference from those obtained using the direct expenditures series ($\triangle G$) and the IS tax variable ($\triangle T$). Thus the data in Table II suggest two significant conclusions: (a) the bias in the unadjusted expenditures series ($\triangle G$) is not serious and (b) the lower value of R^2's in equations using FES rather than IS data is indeed largely the result of the shortcomings of the full employment receipts data.

TESTS OF THE RELATIVE IMPORTANCE OF MONETARY AND FISCAL POLICY

The preceding analysis suggests that the IS is a superior indicator of the direction and magnitude of short-run changes in discretionary fiscal policy. To shed light on the question of the relative importance of monetary and fiscal policy, monetary policy variables were introduced on the right side of the equations described previously. The results of this experimentation have a significant bearing on the debate resulting from the conclusions reached by Andersen and Jordan in their examination of the relative impact of monetary and fiscal policy.[18]

Using distributed lag multiple regression equations which related quarterly changes in GNP to quarterly changes in monetary and fiscal policy variables, Andersen and Jordan concluded that the response of economic activity to monetary actions relative to fiscal actions is (1) larger, (2) more predictable, and (3) faster. From a quantitative point of view, the Andersen-Jordan results were startling to many in two ways. First, their estimates of the degree of association between changes in GNP and changes in the monetary aggregate (usually the narrow

[18] Leonall C. Andersen and Jerry L. Jordan, "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization", *Review* (Federal Reserve Bank of St. Louis, November 1968), pages 11-23.

Table II

CHANGES IN GNP REGRESSED ON ALTERNATIVE FISCAL VARIABLES FOR SELECTED TIME PERIODS

Lag period	Initial stimulus (IS)				Full employment surplus				Full employment expenditures and initial stimulus taxes			
	$\bar{R}^2$	SE	Multipliers*		$\bar{R}^2$	SE	Multipliers*		$\bar{R}^2$	SE	Multipliers*	
			ΔG	ΔT			ΔFEE	ΔFER			ΔFEE	ΔT
1952-I – 1968-IV	.4540	4.8	2.9	5.7	.3016	5.5	2.7	—2.9	.4536	4.8	2.9	5.6
1952-I – 1969-II	.3605	5.2	2.6	3.9	.2414	5.7	1.7	—0.7	.3574	5.3	2.5	3.8
1952-I – 1960-IV	.1966	5.0	2.6	4.8	.1019	5.2	2.6	—3.5	.1880	5.0	3.0	5.8
1961-I – 1968-IV	.3838	4.0	2.6	4.3	.2873	4.3	2.8	—2.8	.3562	4.1	2.5	4.0
1952-I – 1963-IV	.1815	4.8	2.7	5.3	.0927	5.1	2.3	—3.1	.1712	4.9	2.7	5.6
1952-I – 1966-IV	.3956	4.7	2.4	5.3	.3361	4.9	2.4	—4.5	.4075	4.6	2.3	5.1
1953-I – 1963-IV	.1844	4.9	2.4	5.6	.0932	5.1	1.8	—2.5	.1789	4.9	2.3	5.6

* The multipliers are the sum of the regression coefficients for the respective variables.

$\bar{R}^2$ = Coefficient of determination (adjusted for degrees of freedom).
SE = Standard error of the estimate.
ΔG = Change in the Government spending component of the IS.
ΔT = Change in the tax component of the IS.
ΔFEE = Change in full employment expenditures.
ΔFER = Change in full employment receipts.

money supply), as indicated by the R^2 in the reduced-form equations, often exceed .50—suggesting that more than 50 percent of the variance of changes in GNP is associated with changes in the monetary aggregate. Even to many who agree that money is important, these estimates seemed surprisingly high. A second and perhaps more disturbing quantitative aspect of these results was that fiscal policy had virtually no net impact on changes in GNP. Indeed, according to Andersen and Jordan, "either the commonly used measures of fiscal influence do not correctly indicate the degree and direction of such influence or there was no measurable net fiscal influence on total spending in the test period".[19] Moreover, the Andersen-Jordan results have persistently shown that changes in tax policies (as measured by high employment receipts) are of such little importance that tax policy is not even included among the policy instruments in the more recent work published by the St. Louis Reserve Bank.[20]

As a consequence of these conclusions, the Andersen-Jordan technique and results have been subjected to careful scrutiny in an attempt to clarify the issues raised by their analysis. For example, it has been argued that the surprisingly high association between money and GNP is, at least in part, a reflection of common trends in GNP and the monetary aggregates, particularly during the 1960's.[21] However, the bulk of the criticism levied against the Andersen-Jordan technique focuses on the appropriateness of the monetary and fiscal policy variables used in their equations. It has been argued that these policy variables are influenced by feedbacks from the economy as well as by changes in policy.[22] Thus, several alternative forms of the Andersen-Jordan equations have been estimated using monetary and/or fiscal variables which are said to be more independent of the level of economic activity than the variables utilized in the Andersen-Jordan study. While the results of these studies have shown that fiscal policy was more important than suggested by Andersen-Jordan, the best results (in terms of the performance of the fiscal variables) were obtained in equations using nonborrowed reserves (NBR) as the monetary variable. However, to the extent that NBR is more responsive to changes in economic activity than are other monetary indicators, these results must be discounted. In this regard, recent work by Hamburger[23] has suggested that NBR is more responsive to changes in the economy than any of the other monetary aggregates. Thus, if NBR is not the most appropriate monetary variable to be used in these reduced-form equations, the Andersen-Jordan results regarding fiscal policy have not been seriously undermined by their critics.

The analysis and results in the following pages present some new evidence regarding the importance of fiscal policy, particularly tax changes. It will be demonstrated, using the IS data, that tax changes do in fact have a significant influence on total spending and that Andersen and Jordan appear to have overstated the case against fiscal policy in general. These results do not, however, detract from the basic Andersen-Jordan position that money is of considerable importance in explaining changes in current income.

The general technique used in this analysis closely parallels that followed by Andersen-Jordan in their published work. The monetary variables used are the money supply and total reserves, the period of study is confined to 1952-I to 1968-IV, and distributed lag multiple regressions are used.[24] Alternate forms of the equations were also tested, using bank credit and NBR as the monetary variables, and some modifications of the Government spending variable were experimented with. The major differences in this study are the use of fiscal variables based on the IS rather than the FES, and the testing of lag structures with the presupposition that the fiscal and monetary impacts on GNP need not be of equal duration.

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[19] *Ibid.*, page 22.

[20] See Leonall C. Andersen and Keith M. Carlson, "A Monetarist Model for Economic Stabilization", *Review* (Federal Reserve Bank of St. Louis, April 1970), page 11.

[21] On this point, see Richard G. Davis, "How Much Does Money Matter? A Look at Some Recent Evidence", *Monthly Review* (Federal Reserve Bank of New York, June 1969), page 123.

[22] In particular, see Frank de Leeuw and John Kalchbrenner, "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization—Comment", *Review* (Federal Reserve Bank of St. Louis, April 1969), pages 6-8; also Lyle E. Gramley, "Guidelines for Monetary Policy—The Case Against Simple Rules", February 1969. This paper has been reprinted in *Readings in Money; National Income and Stabilization Policy*, eds. Warren L. Smith and Ronald L. Teigen (Homewood, Illinois: Irwin Inc., 1970), pages 488-95.

[23] Michael J. Hamburger, "Indicators of Monetary Policy: The Arguments and the Evidence", paper delivered at the annual meetings of the American Economic Association, New York, December 1969 (forthcoming in *American Economic Review*, Papers and Proceedings, May 1970). It should be emphasized, however, that the issue of which monetary indicator is the most appropriate—i.e., the most exogenous—is by no means settled. For example, the behavior of the currency component of the narrow money supply, which most would classify as dependent on developments within the economy, may have a sizable influence on the association between GNP and the money supply.

[24] Due to program limitations, a second-degree Almon-type polynomial is used in fitting the distributed lag pattern, whereas the Andersen-Jordan results were based on a fourth-degree polynomial. However, prior investigations have shown that this difference has little or no effect on the results obtained.

TESTS OF MONETARY AND FISCAL IMPACTS USING TOTAL RESERVES AS THE MONETARY VARIABLE. In the analysis which follows, quarterly changes in current-dollar GNP are regressed on current and lagged values of first differences in total reserves[25] and the expenditures and tax components of the IS. Initially, an equation was estimated using current and seven-quarter lagged values of the monetary and fiscal variables, the same structure used by Andersen and Jordan in their April "Reply".[26] When fitted to the 1952-I to 1968-IV period, the R^2 for this equation was .60. In contrast to the Andersen-Jordan results, this equation suggests some reaction in GNP to changes in the fiscal variables, particularly tax changes ($\triangle$T). (The tax multiplier—the sum of the regression coefficients for $\triangle$T—was 2.6.) Prior work with the monetary and fiscal variables suggested that the lag structure incorporated in this equation was not optimal, i.e., that the R^2 could be improved by using some other structure.[27] Experimentation with various lag structures up to eight quarters in duration for the period 1952-I to 1968-IV indicated that the maximum R^2 occurred in equation (3) shown in Table III.[28] This table also presents summary statistics for alternative lag structures using the same equation specification.

A review of the coefficients in equation (3) and the summary statistics for equations (3) through (6) indicates that, when the monetary and fiscal variables are specified to have different lag lengths and when the components of the IS are substituted for the components of the FES, the conclusions reached by Andersen-Jordan concerning the importance of fiscal policy, and particularly tax changes, are considerably weakened. For example, the Andersen-Jordan results, as in equation (6) in Table III, have consistently shown that tax changes have no significant influence on GNP changes. Clearly this contention is not supported by the coefficients of the $\triangle$T variable in (3). Similarly, the $\triangle$G variable in equation (3) shows changes in Government expenditures having an impact on GNP in the expected direction and the coefficients of $\triangle$G at t-1

Table III

CHANGES IN GNP REGRESSED ON CURRENT AND LAGGED VALUES OF CHANGES IN TR, G, AND T

1952-I to 1968-IV

(3) R^2 = .6971
SE = $3.8 billion
DW = 1.6

Lag period	Distributed lag weights		
	ΔTR	ΔG	ΔT
t	−1.0 (0.5)	0.1 (0.7)	0.1 (0.4)
t-1	5.7* (5.5)	0.4* (2.8)	0.3* (2.0)
t-2	9.2* (7.4)	0.4* (2.1)	0.4* (3.4)
t-3	9.4* (6.8)		0.5* (3.7)
t-4	6.3* (6.3)		0.5* (3.6)
t-5			0.4* (3.4)
t-6			0.4* (3.3)
t-7			0.2* (3.1)
Σ	29.6	0.9	2.7

Alternative specifications	Summary statistics for alternative lag structures							
	Lag† on			R^2	SE	Multipliers		
	ΔTR	ΔG	ΔT			ΔTR	ΔG	ΔT
(3)	5	3	8	.6971	3.8	29.6	0.9	2.7
(4)	8	8	8	.5985	4.3	38.5	0.5	2.6
(5)	5	6	8	.6948	3.8	36.1	0.2	1.2
(6)‡	8	8	8	.6200	3.8	43.8	0.6	−0.6

R^2 = Coefficient of determination.
SE = Standard error of the estimate.
DW = Durbin-Watson statistic.
ΔTR = Change in the quarterly average level of total member bank reserves.
ΔG = Change in the Government spending component of the initial stimulus (IS).
ΔT = Change in the tax component of the IS.
Σ = Summation of regression of coefficients. Because of rounding, components do not necessarily add to totals.
* Coefficients significant at 5 percent level.
† Lag lengths include current quarter values of respective variables.
‡ Andersen-Jordan.

[25] Due to the change in reserve requirements in April 1969, and the subsequent change in Regulation D which placed a marginal reserve requirement on Euro-dollars, the total reserves series was substantially revised in 1969. Since these data were revised only back through 1959, there is a break in the series used in this analysis which occurs between 1958 and 1959.

[26] Leonall C. Andersen and Jerry L. Jordan, "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization—Reply", *Review* (Federal Reserve Bank of St. Louis, April 1969), page 15.

[27] In their published work, Andersen and Jordan have not tested the possibility that monetary influence has a lag different from that for fiscal influence. See Leonall C. Andersen, "An Evaluation of the Impact of Monetary and Fiscal Policy on Economic Activity", paper delivered at the meeting of the American Statistical Association (August 1969), footnote 9.

[28] Much of this testing of lag structures was originally done prior to the availability of the revised GNP data for 1966 through 1968 and prior to the revision in the total reserves data. Only selected lag structures were reestimated using the revised data. However, there was no indication of inconsistencies resulting from the new data.

and t-2 are significant at the 5 percent level.[29] However, as in earlier work, the size of the $\triangle G$ multiplier relative to the $\triangle T$ multiplier does not conform to expectations.

Aside from the relative sizes of the tax and expenditures multipliers, the other disturbing aspect of these results is the marked differences in outcomes associated with only small changes in the lag structures. For example, a comparison of the summary statistics for equations (3) and (5) indicates that extending the lag on $\triangle G$ from three to six quarters yields virtually the same R^2 reported in equation (3). However, the impact on the multipliers is considerably more dramatic and virtually eliminates the net impact of the fiscal variables.[30] In part, this is a reflection of the interaction among the independent variables at different lag structures, but more importantly it dramatically points up the specification difficulties associated with a single reduced-form equation "model" of the aggregate economy.

Summarizing the results presented thus far, the analysis has demonstrated that fiscal policy does exhibit a significant influence on GNP when the IS data are used as fiscal policy variables, total reserves as the monetary policy variable, and lag structures are selected to maximize R^2. Quantitatively, this influence manifests itself in an increase in the R^2 from .6190, when equation (3) is fitted with only total reserves included, to .6971 with both monetary and fiscal variables included.[31] However, changes in GNP regressed on the fiscal variables alone yield an R^2 of approximately .50, and the behavior of $\triangle G$ in particular is considerably stronger in formulations using only the fiscal variables. This suggests that when the fiscal and monetary variables are used together part of the fiscal impact, particularly of $\triangle G$, is being captured by the monetary variable or that the monetary and fiscal variables are not wholly independent of each other.

TESTS OF THE MONETARY-FISCAL INFLUENCE ON GNP USING THE NARROW MONEY SUPPLY. In order to test further the results cited in the preceding section, a parallel set of equations was estimated using the narrow money supply instead of total reserves as the monetary policy variable. The same procedure was used in testing alternative lag structures to determine which combination of lags maximizes the R^2. The results of this experimentation indicated that the best "fit" was obtained using a distributed lag of four quarters on the money supply, three quarters on Government expenditures, and eight quarters on the tax variable. (All lag periods include the current quarter.) This equation and its coefficients (with "t" values) are given in Table IV. Summary statistics for alternative lag structures are also reported in this table.

An examination of the coefficients in equation (7) indicates that these results support the conclusions cited in the previous section in every regard.[32] The $\triangle G$ and $\triangle T$ multipliers from equation (7) are actually somewhat higher than those from equation (3), and the "t" statistics for the tax variable ($\triangle T$) in equation (7) are consistently larger than those in equation (3). One interesting aspect of these equations is the timing of the impact of tax changes suggested by the coefficients of $\triangle T$—particularly in light of the recent experience with the surtax. The tax coefficients indicate that, "on average", about two thirds of the total impact of tax changes is felt in the period from the fourth through the seventh quarters after the change. Thus, these coefficients suggest that the cumulative impact of the surtax would not have been very large before 1969-III and that the impact in 1968-III and 1968-IV would have been virtually nil. This is not to suggest, of course, that equations of this type could anticipate, and allow for, any role that price expectations may have played in dampening the impact of the surtax.

In short, the results of this section, like those in the preceding section, suggest that Andersen-Jordan appear to have overstated the case against fiscal policy, particularly with regard to the impact of tax changes on GNP. At the same time, however, the results obtained using the money supply as the exogenous monetary variable exhibit the same anomalies noted earlier in conjunction with the results using total reserves: the relative sizes of the expenditures and tax multipliers do not conform to expectations

[29] When this equation is fitted to data through 1969-IV, the general pattern suggested in equation (1) is unchanged although the R^2 declines slightly and the sum of the coefficients for $\triangle T$ is reduced to 1.7. The latter is primarily a reflection of the 1968 surtax experience. This shift in multiplier size and the similar changes in multipliers referred to in the text are quite disturbing, since they suggest that these relationships are not very stable. This point will be pursued later in the text.

[30] In fact, when this equation is fitted to data through 1969-IV using a six-quarter lag on $\triangle G$, the R^2 is slightly higher than is the case with a three-quarter lag on $\triangle G$.

[31] An "F" test designed to indicate the significance of the improvement in the R^2 relative to the loss of degrees of freedom was conducted for these coefficients. The calculated value of "F" was 2.49 which was greater than the critical value of "F" (2.26 at the 1 percent level for 6 and 58 degrees of freedom).

[32] In this equation, the improvement in the R^2 attributable to the fiscal variables was .1184 (from .5180 to .6364). The calculated value of "F" in this instance was 3.14, well above the 1 percent tabular value of 2.26.

and small changes in the lag structures accompanied by small changes in the R^2 are, in some instances, associated with substantial changes in the multipliers, e.g., equations (7) and (9).

It is interesting to note that, when the equation is fitted using the FES data in place of the IS fiscal variables, this problem becomes even more serious. For example, tests of selective lag structure in an equation which regresses $\triangle$GNP on $\triangle M_1$, change in full employment expenditures ($\triangle$FEE) and change in full employment receipts ($\triangle$FER) indicate that the R^2 is maximized when lags of four, five, and eight quarters, respectively, are used on these variables. Rounded to two decimal places, the coefficient of determination in this equation is the same as that reported in equation (7). However, in the equation using the FES data, there is virtually no net fiscal influence, and the lagged coefficients of the expenditures variable show the negative signs which have been consistently reported in the St. Louis results.[33] Given these differences in results, and the extremely small differences in R^2's, it would appear that alternate forms of these equations provide the user the opportunity of selecting the equation which fits his own theoretical point of view. Clearly, this is not the most ideal of circumstances.

Table IV

CHANGES IN GNP REGRESSED ON CURRENT AND LAGGED CHANGES IN M_1, G, AND T

1952-I to 1968-IV

(7) R^2 = .6364
SE = $4.1 billion
DW = 1.5

Lag period	Distributed lag weights		
	ΔM_1	ΔG	ΔT
t	1.1* (2.2)	0.3 (1.2)	0.0 (0.2)
t-1	1.2* (6.0)	0.4* (2.7)	0.3 (1.9)
t-2	1.1* (3.7)	0.4 (1.8)	0.4* (3.6)
t-3	0.7* (2.6)		0.5* (4.0)
t-4			0.6* (4.0)
t-5			0.5* (3.8)
t-6			0.4* (3.7)
t-7			0.2* (3.6)
Σ	4.1	1.1	3.1

Alternative specifications	Summary statistics for alternative lag structures							
	Lag† on			R^2	SE	Multipliers		
	ΔM_1	ΔG	ΔT			ΔM_1	ΔG	ΔT
(8)	8	8	8	.6124	4.3	3.7	0.9	2.9
(9)	4	5	8	.6360	4.1	4.9	0.5	1.8
(10)	5	3	8	.6297	4.2	4.3	1.0	3.0
(11)	4	4	4	.5808	4.4	5.2	0.5	0.8

R^2 = Coefficient of determination.
SE = Standard error of the estimate.
DW = Durbin-Watson statistic.
ΔM_1 = Change in the quarterly average level of the narrow money supply.
ΔG = Change in the Government spending component of the initial stimulus (IS).
ΔT = Change in the tax component of the IS.
Σ = Summation of regression coefficients. Because of rounding, components do not necessarily add to totals.
* Coefficients significant at 5 percent level.
† Lag lengths include current quarter values of respective variables.

ALTERNATE SPECIFICATIONS OF THE MONETARY-FISCAL EQUATIONS. To shed additional light on some of the more disturbing aspects of these reduced-form equations, several alternates were experimented with. In the first of these modifications, the performance of other monetary aggregates was tested. That is, NBR and total bank credit were substituted for M_1 in equation (7). As expected, the use of NBR yielded the strongest performance of the fiscal variables, but also resulted in the lowest R^2's for the overall equation. For bank credit, the R^2's were generally comparable, and in some cases slightly higher than those attained with M_1. The tax variable continued to show significant effects, in the expected direction, of changes in taxes on changes in GNP. However, in the equation using bank credit as the monetary variable, the performance of the Government spending variable ($\triangle$G) was weaker than when M_1 was used as the monetary indicator. In fact, the performance of $\triangle$G was not impressive in any of these equations either in terms of the magnitude of its coefficients or in terms of its "t" statistics. Tests were then undertaken to provide some additional insight into the behavior of the Government spend-

[33] Andersen and Jordan explain the negative signs on full employment expenditures by asserting that rises in Federal spending may "crowd out" private spending, thereby inducing a fall in GNP. Presumably this crowding out would result from higher Government spending leading to higher interest rates which, in turn, would lead to a reduction in private spending. Thus, within this framework, Federal spending is a major determinant of interest rates.

ing variable.[34]

In one such modification, the series on total Government expenditures was disaggregated into its "goods and services" and "transfer" components[35] and each was entered into the regression equation as a separate independent variable. Coefficients are shown in Table V for equation (12), relating GNP to the narrow money supply (M_1), Federal expenditures for goods and services (G_{g+s}), Federal transfer payments (G_{tr}), and autonomous tax changes (T).

Comparison of equation (12) with equation (7) indicates that disaggregation of Federal outlays (G) into its goods and services and transfer components adds to the explanatory power of expenditures. In addition, the multiplier of the transfer variable is 1.9 and its coefficients at t-1 and t-2 are easily significant at the 5 percent level. Nevertheless, the goods and services variable taken by itself is weak. In part, the poor performance of the goods and services variables and/or the total outlay series ($\triangle G$) may reflect serious distortions in the series resulting from the defense timing adjustments. However, alternate specifications of the same general equation form, particularly those using NBR as the monetary variable, tend to produce substantially better results for the expenditures variable. This suggests that the shortcomings of the expenditures series itself are not the only, nor even the major, factor influencing the behavior of $\triangle G$ in the reduced-form equation.

A more plausible and perhaps more important factor in this regard relates to the manner in which Government outlays are financed. That is, the effects of changes in Federal spending may differ depending on whether they are financed by higher taxes or by debt operations which often involve monetary expansion. To the extent that this is a valid argument, an examination of the simple correlation coefficients between the variables on the right side of these equations should provide some insight into the quantitative significance of the monetary effects of changes in Government spending. For example, it might be expected that the strong performance of the transfer variable in equation (12) is a reflection of the fact that these outlays, particularly for social security, are typically financed by higher taxes and are not likely to induce debt operations and monetary expansion. On the other hand, goods and services outlays, notably for defense, are more likely to produce these effects. However, the simple correlation coefficients between M_1 and G_{g+s} and between M_1 and G_{tr} do not provide impressive support for this view. For example, the coefficient of correlation between $\triangle M_{1t}$ and $\triangle G_{g+st}$ is .27, while the coefficient between $\triangle M_{1t}$ and $\triangle G_{trt}$ is .23. Certainly the behavior of G_{tr} relative to that of G_{g+s} cannot be explained on the basis of this difference in correlation coefficients. In the final analysis the relative behavior of G_{g+s} may be a reflection of nothing more than its relatively small variance. Nevertheless, it is interesting to note that, in testing the monetary-fiscal influence using various monetary aggregates, the Government spending

Table V

CHANGES IN GNP REGRESSED ON CURRENT AND LAGGED CHANGES IN M_1, G_{g+s}, G_{tr}, AND T

1952-I to 1968-IV

(12) R^2 = .6679
SE = $4.0 billion
DW = 1.7

Lag period	Distributed lag weights			
	ΔM_1	ΔG_{g+s}	ΔG_{tr}	ΔT
t	0.9* (1.8)	0.6 (1.6)	−0.3 (0.5)	0.1 (0.6)
t-1	1.3* (6.3)	0.1 (0.6)	1.0* (2.8)	0.3 (1.9)
t-2	1.3* (4.2)	0.0 (0.2)	1.1* (2.9)	0.4* (2.9)
t-3	0.9* (3.2)			0.4* (3.0)
t-4				0.4* (2.8)
t-5				0.4* (2.6)
t-6				0.3* (2.5)
t-7				0.2* (2.4)
Σ	4.4	0.7	1.9	2.5

R^2 = Coefficient of determination.
SE = Standard error of the estimate.
DW = Durbin-Watson statistic.
ΔM_1 = Change in the quarterly average level of the narrow money supply.
ΔG_{g+s} = Change in Federal expenditures for goods and services.
ΔG_{tr} = Change in Federal transfer payments.
ΔT = Change in the tax component of the initial stimulus (IS).
Σ = Summation of regression coefficients. Because of rounding, components do not necessarily add to totals.
* Coefficients significant at 5 percent level.

[34] One such test utilized leads of one to four quarters on the expenditures variable. This alternate was designed to test the possible significance of the timing adjustment made in the NIA defense expenditures data. This adjustment is necessary because defense purchases in the NIA budget are recorded at the time of delivery. Thus, in the case of long-lead durable defense goods, much of the income effect precedes the delivery date and the corresponding entry in the NIA. In general, the performance of the $\triangle G$ variable was not significantly improved by this modification.

[35] In this context, transfers are broadly defined to include all nongoods and services expenditures.

variable tended to perform better in the instances where the intercorrelation between the money and the $\triangle G$ variable was minimized. For example, in the case of NBR, where the performance of $\triangle G$ is the strongest, the simple correlation between $\triangle NBR_t$ and $\triangle G_t$ is .14,[36] and in the case of bank credit, where the performance of $\triangle G$ is very weak, the simple "r" between $\triangle BC_t$ and $\triangle G_t$ is .43. These results suggest that the behavioral relationship between Federal sector spending and financing activities and the monetary aggregates warrants more careful scrutiny in order to broaden our understanding of the relationships implied by these reduced-form equations.

SUMMARY

The primary concern of this paper is the hypothesis that the IS is a more useful indicator of short-run changes in discretionary fiscal policy than the FES. This superiority is largely a reflection of the fact that the FES has a large and unsystematic bias toward restraint resulting from the estimation procedures used to calculate full employment budget receipts. The empirical results presented in this paper tend to give convincing evidence of this superiority of the IS. Moreover, within the broader perspective of monetary and fiscal impacts on the economy, the results presented in this paper suggest that fiscal policy, particularly tax rate changes, does indeed play a significant role in determining changes in GNP. Beyond this, however, the results of this examination are, in many ways, more negative than positive. For example, the large changes in the net monetary and/or fiscal influence which accompany very small changes in time periods or lag structures are most disturbing, since a small change in the lag structure may result in substantially different estimates of the impact of a given policy change on the economy. Similarly, alternate specifications of the same equations yield similar results in terms of R^2 and standard errors, but quite dissimilar results in terms of the impacts of monetary and fiscal policy. These differences cannot be dismissed lightly. Rather, the linkages between changes in monetary and fiscal policy must be more carefully examined in order to provide some meaningful insight into these inconsistencies.

[36] The low correlation between $\triangle NBR_t$ and $\triangle G_t$ is somewhat surprising since System even-keel operations which concur with Treasury borrowing operations are conducted through open market operations which, of course, directly influence the volume of NBR. Thus, it might be expected that the correlation between these two variables would be higher than would be the case with the other aggregates.

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