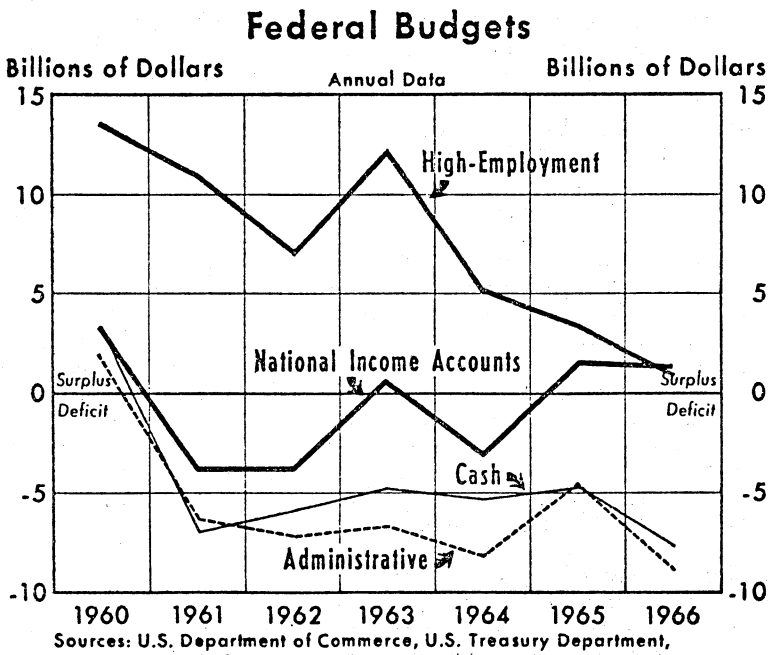


Sources: U.S. Department of Commerce, U.S. Treasury Department, Council of Economic Advisers, and Federal Reserve Bank of St. Louis

Latest data plotted: 1966 estimated by this bank

On an *administrative budget* basis, the deficit rose from $4.6 billion in calendar 1965 to an estimated $8.9 billion in 1966. (See table on p. 548.) This budget is the basic planning document of the Government but has serious shortcomings as a measure of impact on the economy (as noted below in the discussion of other budgets). Expenditures are estimated at $119 billion in 1966, up 17 percent from $101 billion in 1965. Spending for national defense, reflecting the acceleration of war in Vietnam, rose from about $53 billion in 1965 to an estimated $65 billion in 1966. Other outlays increased from $49 billion to roughly $54 billion, reflecting pay increases to Government employees and other price increases and new welfare programs. Net budget receipts increased from $97 billion in 1965 to an estimated $110 billion in 1966, or 14 percent, as incomes and profits rose, excise tax rates were increased, and tax collections were accelerated in a move toward a pay-as-you-go system.

The *consolidated cash budget* also indicated a greater net Government deficit in 1966 than in 1965, rising from $4.5 billion to an estimated $7.5 billion. The cash budget, which includes the activities of Government trust funds, provides a broader measure than the administrative budget of the cash flow between the Government and other sectors of the economy. Cash receipts of the Government rose from $123 billion in 1965 to an estimated $145 billion in 1966, 17 percent. Higher social security tax rates were a factor causing the greater rise in receipts on a cash basis than on an administrative basis. Cash payments to the public went up 19 percent, from $128 billion in 1965 to an estimated $152 billion in 1966. Medicare payments and more

liberal social security benefits as well as the greater outlays included in the administrative budget were chief causes of the increase.

The *national income accounts budget* is a broad measure relating the Federal Government sector to the consumer, business, state and local government, and international sectors of the national income and product accounts. It reflects the impact of current changes in tax rates and provisions for expenditure by the Government as well as the built-in stabilizing effects of existing laws as applied to changing economic developments.[2]

On the national income accounts basis, the budget has shown a surplus at an average annual rate of about $0.4 billion during the past 18 months. This was less stimulative than in the period 1961–64, when the deficit averaged a rate of $2.5 billion. This measure of Government action, which indicates about the same stance in 1966 as in 1965, is generally thought to be a better indication of the relationship of the Government to total spending than either the administrative or cash budget. The national income accounts budget is designed to include only factors which have a direct impact on the flow of current income. This is accomplished by such devices as excluding transactions in existing assets and accruing tax receipts. The somewhat greater restriction indicated by this budget for 1965 and 1966 than for the preceding 4-year period resulted in large part from the impact on Government tax receipts of the rise in economic activity and incomes—the chief automatic stabilizer. In view of the high level of economic activity and the excessive rate of increase in total spending, the budget appropriately should have registered a large surplus in the last 18 months if it were the act as a restraining force on total spending.

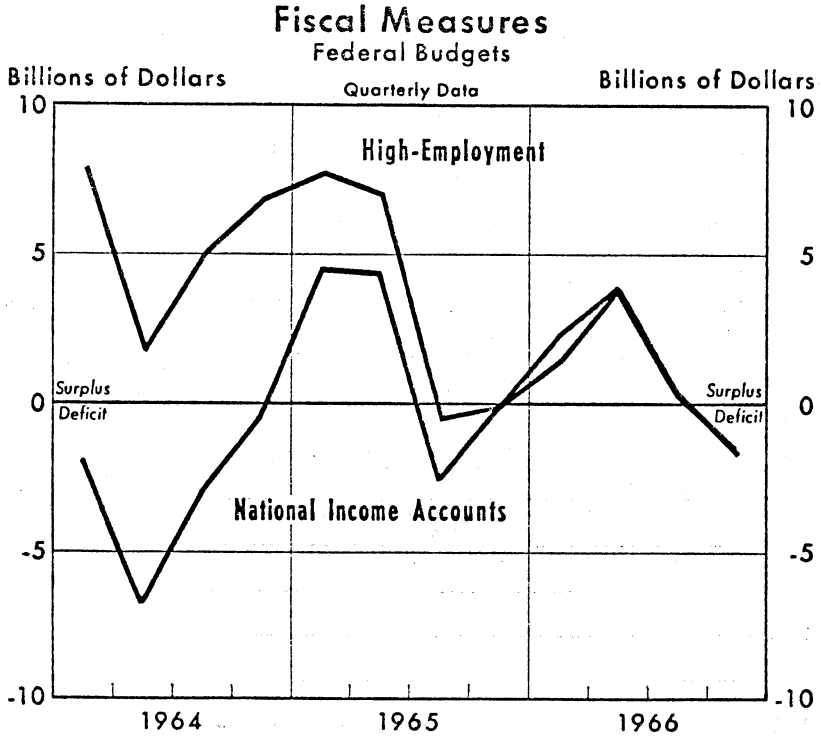
The *high-employment budget* indicates the influence of changes in tax rates and in provisions for Government expenditures upon the national income accounts budget and abstracts from the major built-in stabilizer effects. It is thus a better measure of changes in fiscal policy.

On a high-employment budget basis the Government operated at a surplus of about $0.5 billion annual rate in the 18 months from mid-1965 to the end of 1966. This was the smallest surplus, and therefore the most stimulative, in over a decade. Figures presented in this budget are hypothetical, but relative levels are believed to provide the best single measure of the relative impact on the economy of current Government fiscal actions. The high-employment budget differs from the national income accounts budget primarily by eliminating the effect of changes in economic activity on Government receipts. It measures the impact of changes in tax laws and legal provision for expenditure, at an assumed rate of use of resources, rather than actual tax receipts and expenditures.

Government tax and expenditure policies as measured by the high-employment budget were a substantial drag on total spending in 1960, were moderately and on the whole increasingly stimulative

[2] Differences of opinion exist as to whether it is better to include or exclude the effect of automatic stabilizers in analyzing fiscal policy. There is an extensive literature on the value of the automatic stabilizers. However, since the impact of these stabilizers is chiefly determined by developments in the private sectors, others believe that these movements may be misleading. The differences of opinion are similar to those of deciding whether to use interest rates and free reserves (which are influenced by both the monetary authorities and demands for credit in the rest of the economy) or to use aggregate reserves and money (which are controlled by the monetary authorities) in measuring monetary actions.

from early 1961 to early 1965, and became very stimulative in late 1965. The marked shift in the posture of the Government since 1906 resulted from the investment tax credit and liberalized depreciation guidelines in 1962, tax cuts in 1964 and 1965, increasing expenditures for the Vietnam conflict, and greater outlays on welfare programs.



Sources: U.S. Department of Commerce, U.S. Treasury Department, Council of Economic Advisers, and Federal Reserve Bank of St. Louis
Latest data plotted: 4th quarter estimated by this bank

Government actions were probably even more stimulative in late 1965 and early 1966 than indicated by the high-employment budget. Government outlays are recorded in this budget when goods are delivered; yet the economic impact begins soon after orders are placed. The defense buildup was accelerating rapidly because of the war in Vietnam. Contracts were let in great volume, production increased markedly, and employment rose, but deliveries of goods were relatively small in the early months of the buildup.[3]

Government debt-management operations were also expansionary during 1966. Because of the legal maximum interest rate of 4¼ percent on new issues with maturities of over five years, the Treasury was forced to finance with relatively short-term issues, adding to the liquid assets of the public. Average maturity of the publicly held Federal debt declined from 63 months in 1965 to less than 59 months in the January-October 1966 period.

[3] A detailed analysis of this effect was presented by Murray Wiedenbaum in a paper entitled "The Federal Budget and the Outlook for Defense Spending" at the University of Michigan Economic Outlook Conference on Nov. 18, 1966.

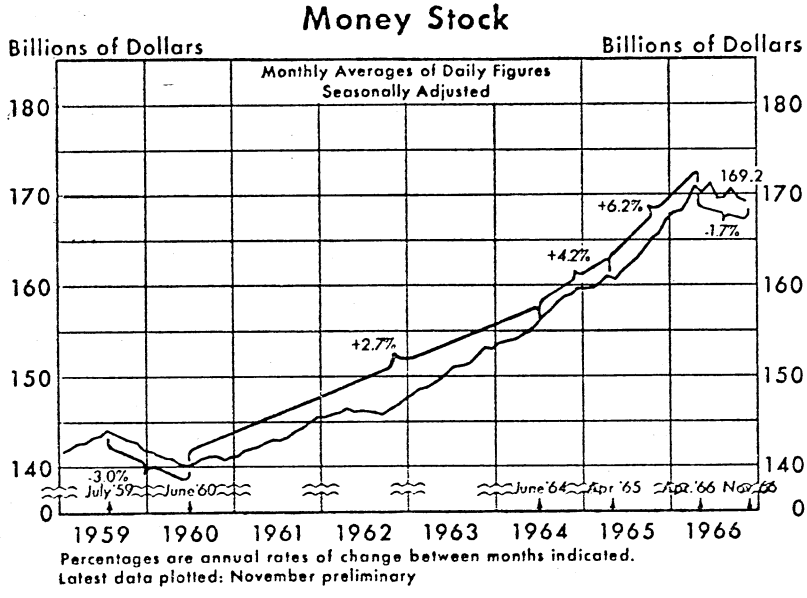
Economic analysis during the past two or three decades has generally indicated that fiscal policy is the major public policy influence on total demand. Judged by this view, public policy has been extremely stimulative during the past 18 months. Recent economic analysis has put increasing emphasis on monetary policy as a major determinant of total demand.

MONETARY DEVELOPMENTS

Monetary expansion was rapid from mid-1964 to the spring of 1966 and then came to an end. Both member bank reserves and the money stock, which had been rising sharply, showed net declines from April to November. Typically, changes in these monetary variables have had their greatest impact on economic activity after a brief timelag.

Monetary developments are measured variously by changes in the stock of money, interest rates, bank credit, and other measures. For the sake of simplicity and because it is a widely used policy indicator, particular attention is given here to changes in the stock of money.

The money stock (demand deposits and currency) has decreased at an annual rate of 1.5 percent since last spring after increasing 6 percent in the preceding year and at a 4-percent rate from mid-1964 to April 1965. From mid-1960 to mid-1964 money rose at a 3-percent rate, and in the 1950's, at a 2-percent rate.



"A Note on Interpreting Monetary Variables"

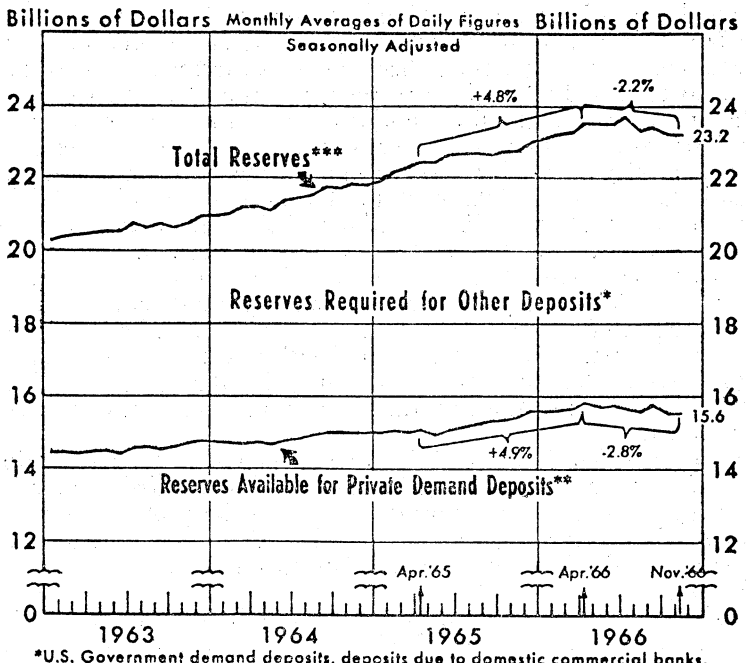
As the Nation's central bank, the Federal Reserve System has responsibility for managing the monetary system in a way that helps achieve the broad goals of economic policy. While the general nature of the role of the Federal Reserve in monetary management is not difficult to explain, it is difficult to explain the specifics of how that role should be performed: for example, how monetary policy should be designed, how the variables to be influenced should be selected, and how the results should be measured. One fundamental and practical problem involved is the presentation, use, and measurement of basic statistical information.

The sharp expansion in the money stock from mid-1964 to early 1966 was probably a significant factor in the rapid rise of spending

during 1965 and early 1966. To the extent that actual cash balances exceed desired cash balances, upward pressures are placed on spending. Evidence indicates that changes in the rate of spending have usually followed marked and sustained changes in the rate of growth of the money stock after a few months' lag.[4] The decline in money since April has probably exerted a restraining influence on aggregate demand in late 1966.

The demand deposit component of money has declined at a 3-percent annual rate since spring following a 5-percent rate rise from mid-1964 to spring 1966. By contrast, the currency component has increased at a 4-percent rate since spring compared with a 6-percent rate in the preceding period. The amount of currency held is probably related to the volume of transactions which typically utilize currency. Changes in the rate of growth of currency have tended to coincide with movements in total spending or to lag slightly behind them. Rates of growth of demand deposits have been related to changes in member bank reserves available for private demand deposits. Marked and sustained changes in the growth rates of demand deposits have usually preceded changes in economic activity.[5]

Changes in the money stock have reflected in large measure changes in member bank reserves. Member bank reserves (adjusted for



*U.S. Government demand deposits, deposits due to domestic commercial banks, and time and savings deposits.

**Deposits of member banks included in the usual definition of the money supply.

***Adjusted for estimated effect of reserve requirement changes.

Percentages are annual rates of change between months indicated.
Latest data plotted: November preliminary

[4] See "Money Supply and Time Deposits, 1914–1964," in the September 1964 issue of this *Review*.
[5] See "Currency and Demand Deposits," in this *Review*, March 1965.

changes in reserve requirements) declined at about a 2-percent annual rate from April to November this year. Reserves, which are composed of deposits with Reserve banks and cash in bank vaults, are the major determinant of the level of demand deposits. From April 1965 to April 1966 bank reserves rose about 5 percent. By comparison, reserves increased at a 4-percent rate from 1960 to 1965 and at an average rate of about 2 percent per year in the 1950's.

The rapid expansion of reserves from mid-1964 to the spring of 1966 resulted from Federal Reserve System net purchases of Government securities totaling $6 billion and an increase of $400 million in member bank borrowing from Reserve banks. Partially offsetting factors were a movement of currency into circulation and net sales of gold by the U.S. Treasury. The decline in effective reserves since last spring has reflected both a rise in reserve requirements on time deposits and a slower rate of net purchase of Government securities by the System.

Reserves available to support private demand deposits (total reserves less reserves required for deposits not counted as part of the money supply) have decreased at a 3-percent rate since spring after increasing 5 percent in the preceding year. These reserves rose at a 1.5-percent rate from 1960 to 1965, about the same as in the 1950's. Movements in private demand deposits and the money stock are usually more closely associated with these reserves than with total reserves.

Time deposits in commercial banks rose at a 10-percent annual rate from November 1965 to August this year and since have shown little net change. By comparison, these deposits increased at a 15-prcent rate from 1960 to 1965 and a 7-percent rate from 1951 to 1960.

Growth of each of the three major components of commercial bank time deposits has followed a different course in 1966. Recent trends are most exactly known for the large banks which report weekly. These banks hold about $88 billion of total time deposits of $157 billion. Divergence of trends of different kinds of time deposits has probably been greater at these large banks than at other banks.

At these large banks passbook savings deposits, which now amount to about $47 billion, have declined at an 8 percent annual rate since last December after rising 11 percent during 1965. The chief cause of the changed trend was that with higher interest rates on competing instruments banks found more difficulty in attracting and holding passbook accounts at the Federal Reserve's Regulation Q rate ceiling of 4 percent.

Large CD's (certificates of deposit), which rose 12 percent in the year ended in August and had increased about a third each year for several earlier years, have since declined at a sharp 50-percent rate to about $15 billion in early December. The Regulation Q maximum of 5½ percent on these funds has made it increasingly difficult for banks to hold them.

Smaller, consumer-type CD's at the large banks have risen 51 percent since a year ago compared with a 20-percent rate earlier in 1965. Recently these deposits have amounted to about $26 billion. The recent rapid growth rate of these deposits reflected increased bank agressiveness in seeking these funds for which regulations permitted payment of effectively competitive interest rates. Since September of this year, when the maximum rate on these CD's was lowered from 5½ to 5 percent, the amount outstanding has changed little on balance.

Money stock plus time deposits at all commercial banks declined somewhat from September to November after growing at a 4-percent rate from June to September, at a 9-percent rate from March 1965 to June 1966, and at an 8-percent rate from 1961 to 1965. In the 1950's this broader measure of money went up at an average 3.4-percent rate.

A particular net stimulative or restrictive effect on the economy may be obtained with various mixes of monetary and fiscal policies. During most of 1966 the particular combination of policies prevailing was one of relatively expansive fiscal developments and relatively restrictive monetary actions. This mix required larger borrowing by the Federal Government and a lesser growth in money than a mix with more restrictive fiscal action and less restrictive monetary action and tended to place upward pressure on interest rates. The higher rates were of some benefit in keeping the country's balance of payments from deteriorating since they reduced the incentive to seek higher rates abroad. On the other hand, higher interest rates adversely affect some sectors of the economy, such as housing.

Federal Reserve System Actions During 1966

Federal Reserve credit [1]

	Annual rates of change	
	December 1965–April 1966	April 1966–November 1966
	Percent	*Percent*
Federal Reserve credit [2]	+9.3	+3.2
Federal Reserve holdings of U.S. Government securities	+8.0	+3.4
Total reserves of member banks	+6.9	−2.3
Reserves available for private demand deposits	+4.1	−3.1

[1] Adjusted for reserve requirement changes.
[2] Federal reserve credit excluding float and a few minor items.

Discount rate

	Percent
In effect Jan. 1, 1966	4½
In effect Dec. 20, 1966	4½

Reserve requirements

	Percent of deposits				
	Demand deposits		Time deposits, all member banks		
				Other time deposits	
	Reserve city banks	All other member banks	Savings deposits	Up to $5,000,000	In excess of $5,000,000
In effect Jan. 1, 1966	16½	12	4	4	4
July 14,[1] 21,[2] 1966					5
Sept. 8,[1] 15,[2] 1966					6
In effect Dec. 20, 1966	16½	12	4	4	6

[1] Effective date for reserve city banks.
[2] Effective date for all other member banks.

Margin requirements on stocks

	Percent
In effect Jan. 1, 1966	70
In effect Dec. 20, 1966	70

Maximum interest rates payable on time and savings deposits

	Savings deposits	Other time deposits, 30 days or more maturity	
		Under $100,000	$100,000 or more
	Percent	Percent	Percent
In effect Jan. 1, 1966	4	5½	5½
Sept. 26, 1966	4	5	5½
In effect Dec. 20, 1966	4	5	5½

Loan Policy

On September 1, 1966, the presidents of the Federal Reserve banks sent a letter to all member banks regarding growth in overall bank credit, the increase in business loans, and administration of Federal Reserve credit assistance to member banks through the System's discount facilities. Excerpts from the letter are as follows:

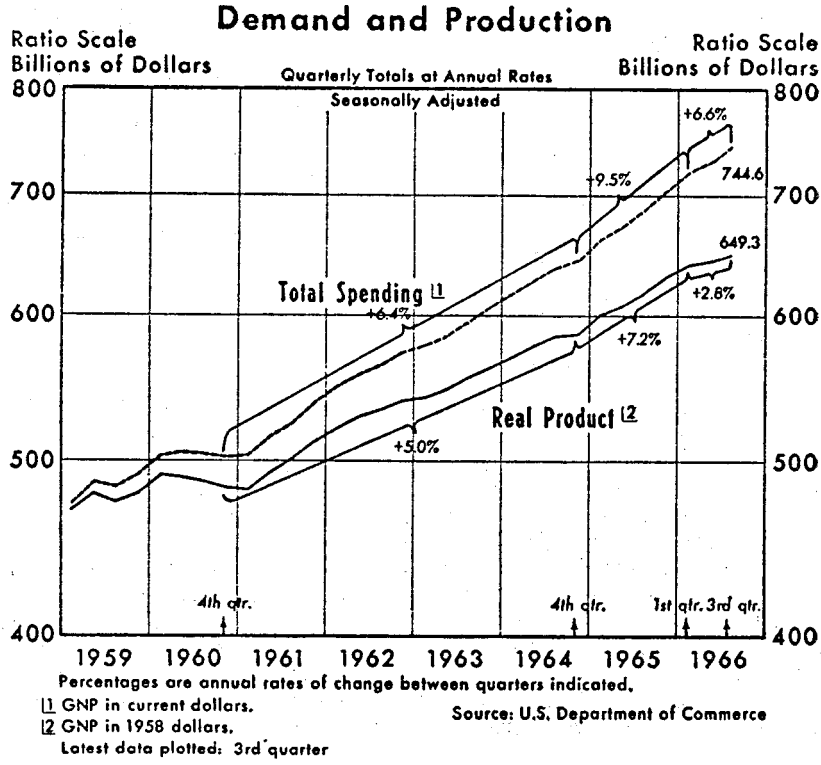
"* * * credit financed business spending has tended towards unsustainable levels and has added appreciably to current inflationary pressures * * * [This] expansion is being financed in part by liquidation of other banking assets and by curtailment of other lending in ways that could contribute to disorderly conditions in other credit markets * * * Member banks will be expected to cooperate in the System's efforts to hold down the rate of business loan expansion * * * and to use the discount facilities of the Reserve Banks in a manner consistent with these efforts. * * *"

Demand, Production, and Prices

DEMAND

The demand for goods and services was very strong in 1966, although it declined moderately from the exceptionally high 1965 rate. Total dollar spending, which had risen at a very rapid 9-percent annual rate from late 1964 to early 1966, grew at a somewhat more moderate 7-percent rate from the first to the third quarter of 1966. These rates of increase in spending were substantially above the estimated 4-percent rate of growth of productive potential. The stimulative fiscal actions during 1965 and 1966 and the rapid monetary expansion from the summer of 1964 to the spring of 1966 contributed to the large demand for goods and services of the past 2 years.

The growth pattern of spending changed markedly during 1966. Private investment, which had risen at a 15 percent annual rate from the third quarter of 1964 to the second quarter of 1966, declined in the third quarter of 1966. Outlays on housing declined from $27.8 billion in 1965 to an annual rate of $24.8 billion in the third quarter of 1966. Since housing is consumed over a relatively long period, current spending on new construction can be curtailed without greatly reducing the amount of housing services available. Since interest cost is usually a major portion of the total expense of owning a home, higher interest rates increase the effective price of house services more than the price of consumer goods in general. Consequently, the amount of housing demanded declines greatly.



Inventory buying continued large in the first half of 1966 but added little to increased total demand. Net purchases of business inventories during the first half of 1966 ($10.6 billion rate) remained close to the fourth quarter 1965 rate ($10.4 billion). Inventory purchases rose rapidly in 1965 from $4.7 billion in 1964, reflecting both the greater flow of goods in the private economy and the buildup of war goods for Vietnam. In the third quarter of 1966 inventory buying declined slightly, to a $9.9 billion rate. Factors in the slowdown may have been the higher costs of credit, unavailability of some items, and the greater delivery of war goods to the Defense Department relative to production of these items.

Business spending on plant and equipment, in contrast to inventory investment, continued to rise during 1966. These outlays increased at an estimated 15-percent rate in the first three quarters of 1966 compared with an average 9-percent rate in the previous 5 years. Profit anticipations were optimistic, and demands for defense goods were great. Interest costs, although up nominally, did not impose much restraint on demand since growing inflationary pressures led to expectations that repayments would be made in cheaper dollars.

Government expenditures jumped at an average 14 percent annual rate during the first three quarters of 1966 compared with growth at about a 9-percent rate from late 1964 to late 1965 and a 5-percent rate from 1962 to 1964. Defense outlays accounted for most of the

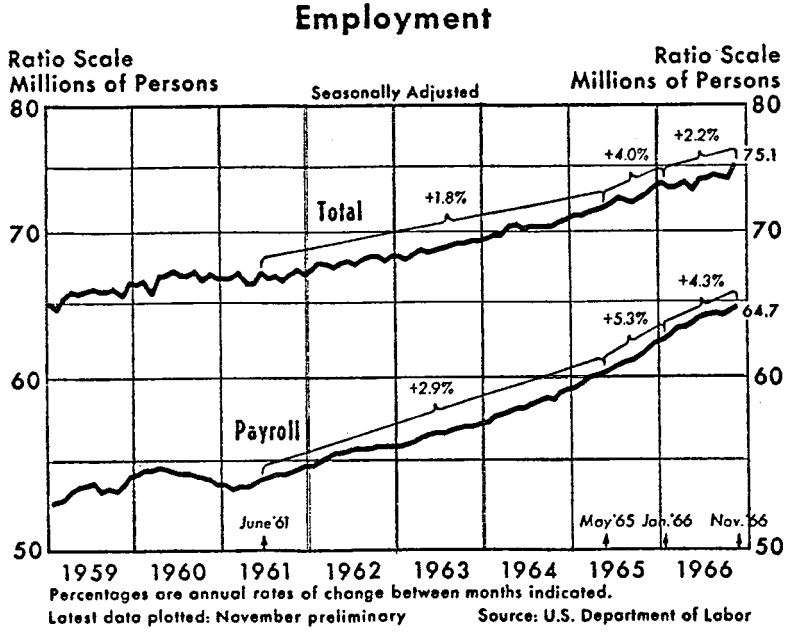
gain, but welfare programs of the Federal Government and spending by State and local governments continued to rise.

Consumer outlays, which rose at about a 9-percent rate from late 1964 to early 1966, increased at a 6.4-percent rate in the second and third quarters of 1966. The slower rate was caused primarily by a decline in durable goods purchased during the second quarter as automobile sales decreased, reflecting higher excise taxes, greater withholdings for personal income taxes, and discussions of automobile safety. Nevertheless, personal income, a measure of purchasing power, has continued to rise at about an 8-percent rate in 1966.

PRODUCTION AND EMPLOYMENT

Growth in real output of the economy slowed in 1966, trending downward from a 7-percent growth during 1965 to a 6-percent rate in the first quarter of 1966 and a 3-percent rate in the second and third quarters. By comparison, output rose at an average rate of 5 percent from late 1960 to late 1964. Productive potential is estimated to increase about 4 percent a year.

The reduced rate of growth in production during 1966 resulted in large part from resource limitations and from problems of readjustment as the economy ran into bottlenecks and shifted to greater military effort. Total demands for goods and services were strong, and spending rose about twice as fast as production, causing prices to rise. Many plants were at virtual capacity, and shortages of skilled workers were widespread. When a high rate of resource use is achieved in the economy, the rate of increase of total real product necessarily falls back to about the rate of growth of productive potential.



Total employment, after growing at about a 4-percent annual rate in the last half of 1965, rose at about a 2-percent rate in the first 11 months of 1966. This shift is accounted for by the exhaustion of the supply of employable labor and the flow of manpower into the armed forces. From 1961 to 1965 the 2-percent rate of increase of employment was much greater than the 1.3-percent rate of growth of population of working-force age (18 to 64 years). In 1966 the gain in employment approximated the 1.6-percent growth of this population group. Since the number of men in the labor force has recently increased little, growth of employment has been dependent in large measure on entrance of women into the labor force.

Unemployment was at a relatively low level during the year. Over 98 percent of the married men looking for work had jobs in the first 11 months of 1966 compared with 97.6 percent in 1965 and 95.4 percent in 1961. A large portion of married men out of work in 1966 could be accounted for by seasonal unemployment, those changing jobs, and those without skills or aptitudes marketable at prevailing wage rates.

Total unemployment was about 4 percent of the labor force in the first 11 months of 1966 compared with 4.6 percent in 1965 and 6.7 percent in 1961. The paradox of about one in 25 of those wanting a job being idle at a time of strong labor demand may be partially explained by minimum wage laws. Unemployment was greatest among those without skills or experience and with little education, particularly those in the 14 to 18 age group. The value of the product of many of these workers is less than the legal minimum wage, and incentives are great for firms to avoid engaging in activities for which these workers are fitted or to replace such workers through automation.

PRICES

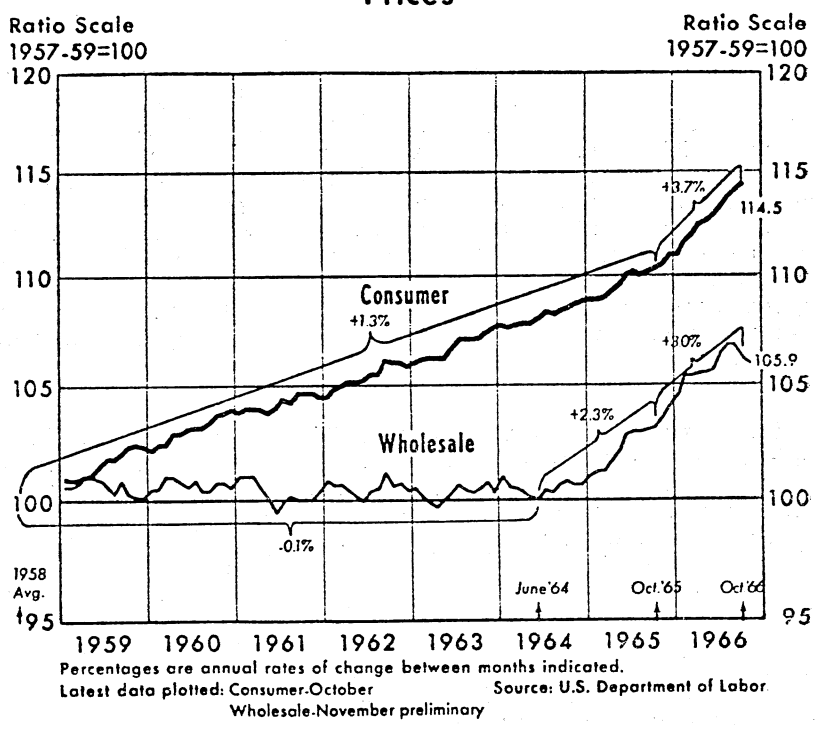
Inflationary pressures erupted during 1966. More than half of the rise in total spending was translated into higher prices and less than half was matched by increases in goods and services. By comparison, in the previous year about 20 percent of the rise in spending resulted in higher prices, and 80 percent was matched by additional output.

Higher prices reflected primarily demands for goods and services exceeding the economy's ability to produce with the given supply of land, labor, capital, and technology. Price rises tended to be sharpest in areas where goods and services were in shortest supply relative to demand. The transfer of resources from private production to build war supplies in late 1965 and in 1966 was accomplished primarily by bidding up wages and other prices.

Prices of consumer goods moved up sharply. From late 1965 to October 1966 average consumer prices rose at a 3.7-percent annual rate after going up at a 1.3-percent rate from 1958 to the fall of 1965. The acceleration of price increases may have been even greater than implied by these figures. In the earlier period, quality improvements may not have been taken adequately into account, and the fixed market-basket approach did not allow for gains to consumers from substitute commodities. More recently, with strong demands for goods and with shortages developing, discounts have been eliminated, and there have been deteriorations in quality which may not have been recognized in computing the index.

Prices of most consumer items rose. Food prices went up at a sharp 5.4-percent rate in the first 10 months of 1966. Fees and charges for consumer services (excluding rent) also increased at a 5.4-percent rate. Rent and prices of nondurable goods other than food increased less rapidly. Prices of durable goods crept up slightly.

Wholesale quotations rose 3 percent from the fall of 1965 to the fall of 1966. By comparison, these prices increased at a 2.3-percent annual rate from mid-1964 to the fall of 1965 after being stable from 1958 to mid-1964. Wholesale prices of farm products and processed foods rose about 5 percent from the fall of 1965 to the fall of 1966, reflecting limitations of production, exhaustion of stocks, large demands for shipment abroad, and high personal incomes. Industrial prices rose 2.3 percent.



Credit and Interest Rates

Accompanying the strong demand for goods and services, a substantial volume of credit was extended in 1966. With incomes high and rising during 1965 and 1966, the amount of private savings was large, and monetary expansion was very rapid during much of this period. The demand for funds was even stronger in response to optimistic business expectations and requirements of governments. The demand for credit apparently decreased somewhat after early September, and the flow of funds contracted.

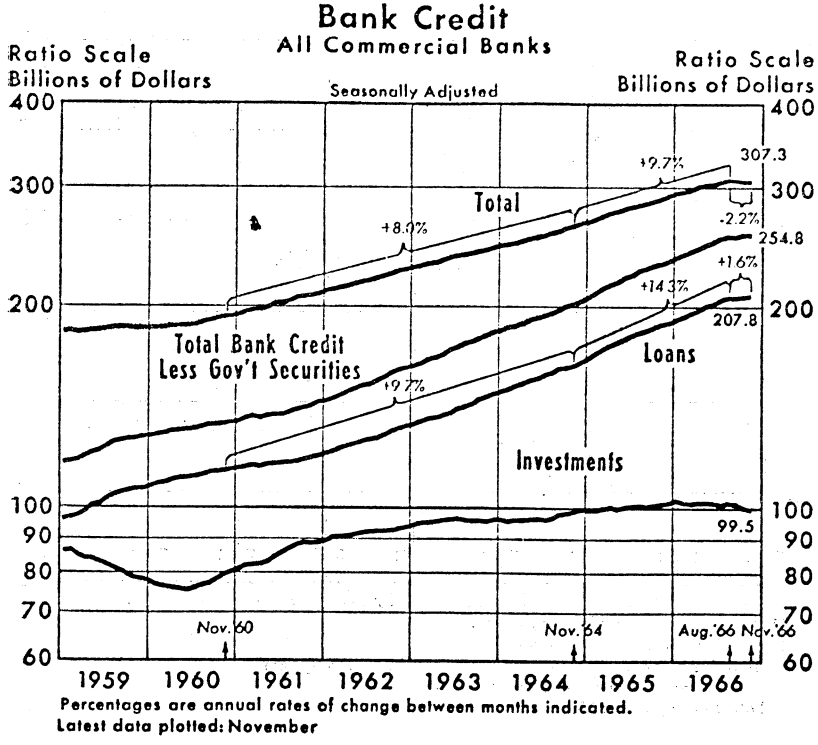
Commercial bank credit rose at a 10-percent annual rate from November 1964 to August 1966 compared with an 8-percent rate in

the economic upswing from late 1960 to late 1964 and a 4-percent average rate in the late 1950's. From August to November this year such credit declined at a 2-percent rate.

Strength centered particularly in business loans, which increased 18 percent from August 1965 to August 1966. From August to November these loans increased at only a 7-percent annual rate. Banks purchased municipal securities at a 12-percent rate from September 1965 to June 1966; from June to November these holdings were reduced at a 1-percent rate. Bank real estate loans increased at a 13-percent rate from January 1965 to March 1966 and then at a reduced 8-percent rate from March to November. The rate of increase of bank loans to consumers declined from 14 percent in the year ending in April 1966 to 8 percent in the April–September period and then to 4 percent from September to November.

The rate of increase of consumer instalment credit outstanding both at commercial banks and elsewhere has declined significantly since a year ago. After increasing at a rate of 12 or 13 percent a year in 1964 and 1965, this credit grew at an 11-percent rate from December 1965 to March 1966, at a 10-percent rate from March to August, and at a 7-percent rate from August to October.

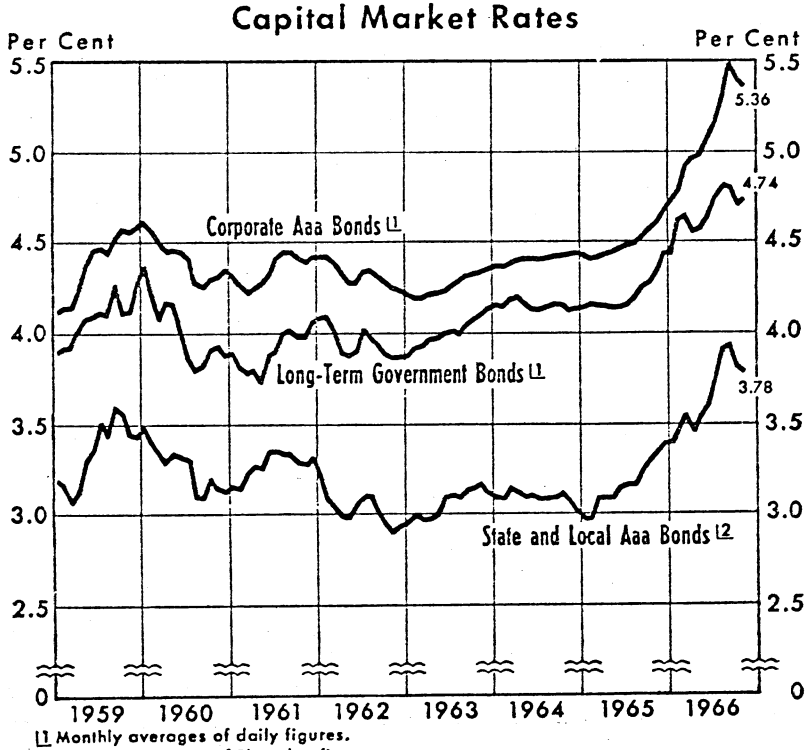
The decline in the rate of increase of total installment credit reflected primarily a considerably more marked decline in the rate of increase of automobile credit. After growing about 12 percent in 1964 and 15 percent in 1965, this credit expanded at a 10-percent annual rate from December 1965 to March 1966, at a 7-percent rate from March to September, and at a 5-percent rate from September to October.



Interest rates rose markedly during the last half of 1965 and the first 4 months of 1966. After April the rate of increase accelerated, and by early fall most rates reached their highest levels since the 1920's. The rise reflected a sharper increase in the demand for credit than in the available supplies from saving and bank credit creation. The sharp upward movement in interest rates from April to September accompanied the initial period of monetary contraction.

From September 1966 to early December interest rates declined moderately. The decline in rates after September may reflect a decline in the fundamental demand schedule for loan funds. Alternatively, some of the rapid increase of the summer may have been primarily speculative because of inordinate expectations of still higher rates, and the October declines may have been of a technical nature. Responding to the high level of rates in the fall compared with the first half of the year, the declines of credit extentions may have reflected a decline in the amount of funds demanded rather than in the demand schedule.

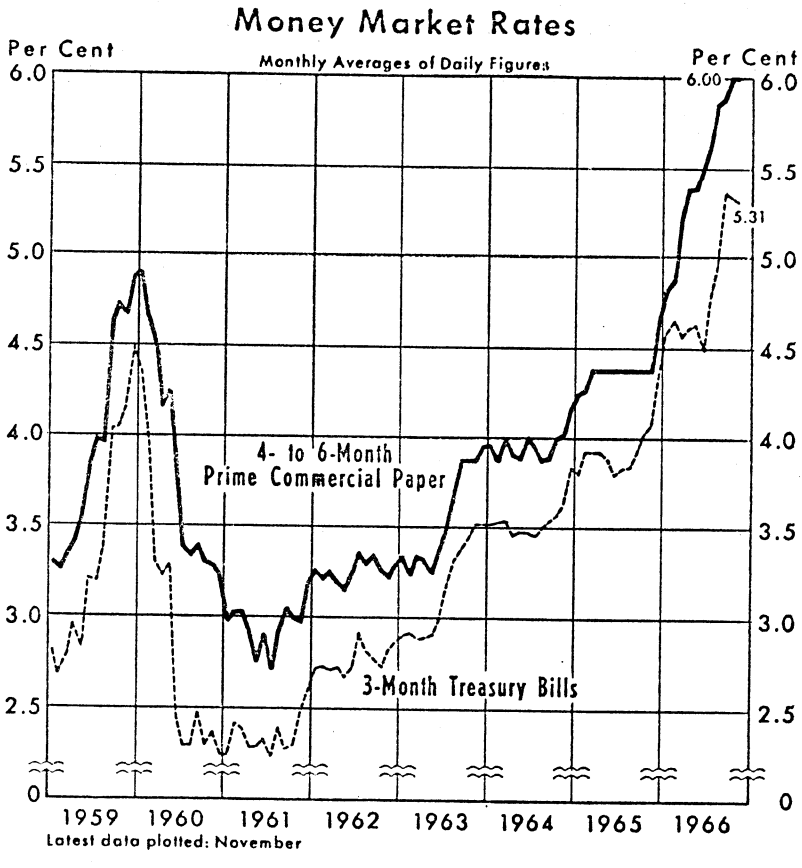
Yields on highest grade corporate bonds, which had averaged 4.35 percent in the 1961–64 period and had risen to 4.50 percent by mid-1965, rose to 4.96 percent in April this year and then to 5.49 percent in September. Rates on Government bonds and on high-grade municipal bonds moved in a roughly parallel fashion.



In the short-term market, yields on 3-month Treasury bills worked up from 2.35 percent in 1961 to 3.80 percent in June 1965, to 4.61 in April 1966, and to 5.36 percent in September. Quotations on prime 4- to 6-month commercial paper followed a similar course.

The higher interest rates were reflected in price declines for many capital assets. A rise in rates means lower prices on existing bonds and preferred stocks. A rise in rates also tends to push down the present value of a given expected return from real estate and common stocks.

Interest rates on market instruments rose more rapidly in 1965 and 1966 than did rates paid by financial intermediaries. Market yields quickly reflect changed demand and supply conditions, while rates paid by commercial banks on time deposits and dividends paid on savings and loan shares are much more rigid. Frequent moves in the latter rates are practically impossible. Since reduction of institutional rates offends customers, there is a reluctance to raise rates until it becomes clear that the higher level might be maintained for a period. Financial intermediaries have a further reluctance to increase their interest costs because new rates apply to previously obtained funds as well as to new funds and resources of an intermediary are invested in previously purchased lower yielding assets.



Supervisory authorities have used their influence to resist higher rates on funds supplied to intermediaries, fearing deterioration of lending and investing standards or responding to a public opinion that increases in such rates encourage higher general market interest rates. Maximum rates which commercial banks have been permitted to pay under Regulation Q have exercised a restraint on aggressive banks. In early September Regulation Q controls were tightened, limitations on rates paid by savings and loan associations were formalized while liberalized, and more formal restraints were placed on mutual savings banks.

An exceptionally small share of the total flow of funds went through financial intermediaries in 1966. In 1964 and 1965, 44 percent of the net sources of credit in the economy flowed through time and savings accounts of deposit-type financial institutions. In the first quarter of 1966 these institutions received 30 percent of available funds, and in the second and third quarters they received 26 percent. With market rates higher than interest rates paid by banks, savings and loan associations, and other intermediaries, there was an incentive for suppliers of funds to place them in stocks, bonds, commercial paper, and direct loans. This diversion tended to favor the larger suppliers of funds and the large borrowers, notably the U.S. Government, large State and municipal borrowers, and major businesses, which obtain funds in a national market. Smaller savers generally received lower rates than large suppliers, while less well-known borrowers, who must usually rely on local financial institutions, had fewer funds for which to compete.

Federal Government Budgets, seasonally adjusted annual rates

[Billions of dollars]

Quarters	Receipts				Expenditures				Surplus (+) or deficit (−)			
	Administrative budget [1]	Cash budget	National income accounts budget	High-employment budget	Administrative budget [1]	Cash budget	National income accounts budget	High-employment budget	Administrative budget [1]	Cash budget	National income accounts budget	High-employment budget
1964:												
1	96.4	117.2	115.3	124.5	95.6	122.4	117.2	116.6	+0.8	−5.2	−1.9	+7.9
2	100.0	114.4	112.3	120.3	99.6	119.2	119.1	118.5	+0.4	−4.8	−6.7	+1.8
3	80.8	113.6	115.4	122.9	95.6	120.0	118.4	118.0	−14.8	−6.4	−3.0	+4.9
4	77.6	115.2	117.2	124.1	96.8	119.2	117.7	117.3	−19.2	−4.0	−0.5	+6.8
1965:												
1	97.2	118.9	124.0	126.9	91.6	120.7	119.6	119.2	+5.6	−1.8	+4.5	+7.7
2	117.2	130.6	125.0	127.3	102.0	129.6	120.6	120.3	+15.2	+1.0	+4.4	+7.0
3	88.8	122.4	123.8	125.6	102.8	128.4	126.3	126.1	−14.0	−6.0	−2.5	−0.5
4	84.0	122.8	126.9	126.9	109.2	132.4	127.0	127.0	−25.2	−9.6	−0.2	−0.1
1966:												
1	104.4	134.8	136.0	135.2	108.8	147.6	133.7	133.8	−4.4	−12.8	+2.3	+1.4
2	141.6	158.4	141.0	140.9	107.2	143.2	137.1	137.1	+34.4	+15.2	+3.9	+3.8
3	101.6	145.3	145.4	145.4	132.8	160.2	145.1	145.1	−31.2	−14.8	+.3	+.3
4 [2]	92.8	141.1	148.5	148.5	127.2	158.5	150.0	150.0	−34.4	−17.4	−1.5	−1.5
Calendar years:												
1964	88.7	115.0	115.1	123.0	96.9	120.3	118.1	117.6	−8.2	−5.2	−3.0	+5.4
1965	96.8	123.4	124.9	126.7	101.4	127.9	123.4	123.2	−4.6	−4.5	+1.6	+3.5
1966 [2]	110.1	144.9	142.7	142.5	119.0	152.4	141.5	141.5	−8.9	−7.5	+1.3	+1.0
Fiscal years (ended June 30):												
1964	89.5	115.5	115.5	124.8	97.7	120.3	116.9	115.7	−8.2	−4.8	−1.4	+9.1
1965	93.1	119.7	120.6	125.3	96.5	122.4	118.3	118.7	−3.4	−2.7	+2.3	+6.6
1966	104.6	134.4	131.9	132.2	106.9	137.6	131.0	131.0	−2.3	−3.2	+.9	+1.2

[1] Not seasonally adjusted.
[2] Estimated.

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

Economic Trends Late in the Year

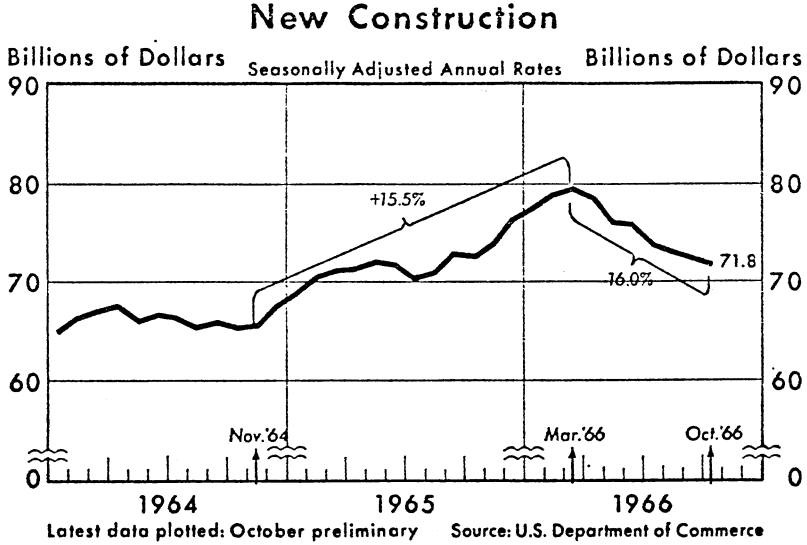
DEMAND

Available evidence indicates that the demand for goods and services may have moderated during the summer and fall. Total spending rose from the first to the third quarter at a 6.6-percent annual rate, down from the 9.5-percent rate of the preceding five quarters. (See chart, p. 8.) Whether, in view of resource bottlenecks and problems of shifting to more military production, there has been adequate reduction in the excessive demand of late 1965 and early 1966 remains to be seen.

Growth of several elements of total demand for goods and services has slackened considerably. The rate of growth of retail sales has declined from 13 percent in the last half of 1965 to 5 percent during the first half of 1966 and has since shown little net change. The increase in net business outlays for inventories, which was at a $12 billion annual rate from the first to the second quarter, slowed to a $10 billion rate from the second to the third quarter. Expenditures on new homes, which were about unchanged from the first to the second quarter, fell at an annual rate of $5 billion from the second quarter to October. Large offsets to these declines have been provided by increasing Government outlays and by more business spending on equipment. Personal income, a measure of purchasing power, has been rising at about an 8-percent rate in recent months.

REAL OUTPUT

The rate of growth in real output has also declined. Total output, measured in constant dollars, increased 7 percent in 1965, at a 6-percent annual rate in the first quarter of 1966, and at a 3-percent rate from the first to the third quarter. Industrial production, which



had risen at an 11-percent rate from September 1965 to June 1966 and at a 7-percent rate from June to August, increased very slowly in the autumn. Achievement of essentially full employment, development of bottlenecks, and problems of substantial shifts from civilian to military production have necessitated some reduction in the rate of real growth. A softening of demand also may have developed. Steel was produced at a slightly slower pace in the July-October period than in the previous 4 months. Construction put in place, after reaching a peak during the first 4 months of the year, has since fallen significantly.

PRICES

The slowing in the pace of spending also may have been reflected in price developments, though inflationary pressures remain. Since August wholesale prices have declined, after rising at about a 4-percent rate earlier in the year. The industrial price component has risen only slightly since July, after rising at a 3.4-percent rate during the previous seven months. Prices of farm products and processed foods fell from August to November but remained about 3 percent higher than a year earlier. Consumer prices have continued to rise at the disturbing 4-percent pace which has prevailed since the fall of 1965.

OTHER DEVELOPMENTS

The amounts of credit demanded and possibly the fundamental demands have lessened since early fall. Extensions of loans and net purchases of securities by financial intermediaries have slowed. In part this has reflected the lack of success of deposit-type institutions in attracting savings and the inability of banks to expand credit, caused by the decline in reserves. Since early fall there are indications that direct financing also has been less.

Some interest rates, after rising to peak levels in early September, declined moderately during the fall despite a lack of monetary expansion in the period. Yields on highest grade corporate bonds declined from 5.49 percent in September to 5.37 percent in early December. Three-month Treasury bill rates decreased from 5.36 to 5.10 percent during the same period.

CAUSAL FACTORS

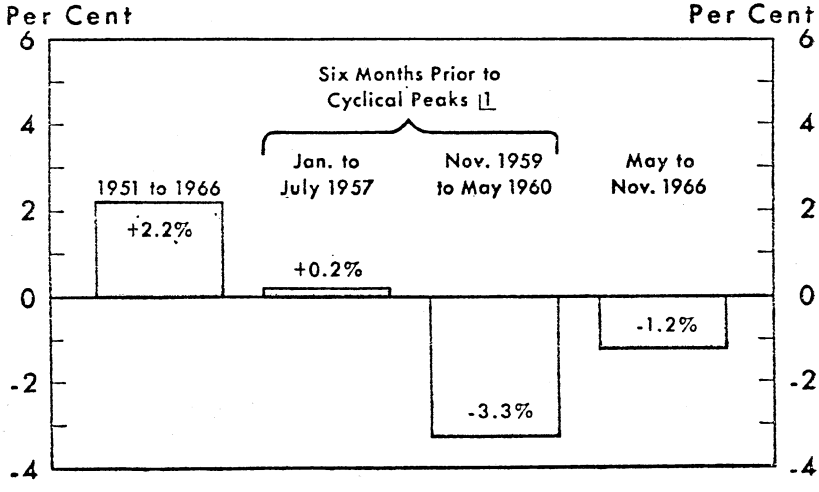
The pronounced shift in monetary trends beginning last spring may have exercised some restraint on the excessive demands for goods and services. Both bank reserves and money, which had been rising before April at the fastest rate in over a decade, have since been contracting. Usually such a marked and sustained change in the course of bank reserves and money has been followed after a brief lag by a significant slowing in spending.

Federal fiscal influence, on the other hand, has evidently continued to be expansive in late 1966. Total Government outlays have been expanding significantly, and both the national income accounts measure of total fiscal impact and the high-employment measure of current Government actions have continued to indicate stimulation.

There were some evidences, however, supplementing the formal budget measures, that the Government may have been a little less stimulative in late 1966 than in the previous year. New orders for war materials were probably not rising so rapidly relative to deliveries as in the earlier period. Late in the year the 7-percent investment tax credit and accelerated depreciation benefits were withdrawn, making private investment somewhat less attractive. In November the Treasury replaced maturing securities with 5-year obligations, reducing somewhat the liquidity of the public. At the beginning of 1967 another increase in social security tax rates is scheduled.

The nature of our productive process may have contributed to a slowing of aggregate demands for goods late in the year. During 1965 and early 1966, as demands for goods of the producers of final products expanded, derived demands on the suppliers of these concerns rose even more sharply. The suppliers not only had to produce materials for the products which were ultimately sold but also to provide the final producers with inventories and other investment goods to expand. When many final producers reached capacity operations in 1966, they had to slow their rate of expansion even though final demand continued in excess of capacity. The slower growth in real output of final producers meant an actual reduction in both dollar and effective demands for materials from some suppliers.

Changes in Money Stock
for Selected Periods



[1] As defined by National Bureau of Economic Research.
Percentages are annual rates.

OUTLOOK

At the beginning of 1966 economic stabilization required containing excessive demands for goods and services, thereby moderating inflationary pressures. In the early months of the year, the problem was aggravated by rising contracts and expenditures for the Vietnam conflict and a reluctance either to reduce social programs or to increase tax rates. Monetary actions also were stimulative, partly because the huge demands for funds caused rapid expansion of commercial bank demand deposits even at rising levels of interest rates.

In the fourth quarter of the year the major task may have shifted from one directed primarily to restraining exuberance to one of maintaining an optimum growth in total demand. By late 1966 total demand had lost some of its strength, and concern was being expressed over whether adequate expansion of total demand and of real product would be continued in 1967.

The problem of achieving appropriate total demand in 1967 is complicated by cost-push inflationary pressures which are strong at the end of 1966 and which could be easily reinforced by excessively expansive fiscal add monetary actions. Even if total demand is one which in the long run might be considered optimal, many prices are likely to increase seriously in 1967 because of the excessive total demand and price increases for the past year. Prices do not always rise immediately in response to demand-pull forces; some have been held back because or guideposts, and others have been restrained because of contracts (including wage contracts). Many wage rates and other prices are expected to be marked up in 1967 because of the excesses or 1966 (these increases will place cost-push pressures on other prices, and it is unlikely that there will be enough offsetting price declines to prevent undesirable general price increases.

At year-end it appears that the combination of monetary and fiscal developments may not have to be so restrictive in the coming year as it has been since the spring of 1966. Total demands for goods and services have probably slowed, and a further reduction might cause an unwarranted contraction of employment and real product.

The mix of policy actions must also be selected. If lower interest rates are judged desirable in order to stimulate areas such as housing and other private investment and to foster real growth in the private economy, emphasis might be placed on a combination of restrictive fiscal policies with expansive monetary actions. If large declines in interest rates are believed undesirable because of a likelihood of increased outflows of funds from the country, reliance might be placed on a policy mix with relatively stimulative fiscal actions and quite limited monetary expansion.

STRAINS AND RESTRAINT IN A SURGING ECONOMY*

The major theme of recent economic developments is the continuation of progress. But there is also a secondary theme of problems and inbalances, many of which can be traced back to mid-1965, when the sudden increase in defense requirements for Vietnam led to a marketed acceleration in economic activity. By the time measures of fiscal and monetary restraint took hold and slowed down the economy, significant problems had developed—an interruption of price stability, a deterioration in international trade performance, acute pressures in financial markets, and sharply divergent movements among the various sectors of the economy.

The Economy in Mid-1965

As of mid-1965, the economy was advancing steadily and healthily toward full employment. GNP had risen by $11 billion a quarter, on the average, for the preceding 2 years; the annual rate of real growth over that period had been 5½ percent. Unemployment was down to 4½ percent of the civilian labor force, and the average operating fate of manufacturing capacity was up to 89 percent. The price record showed few blemishes: average consumer prices in July 1965 were only 6 percent higher than they had been in early 1961, and prices of nonfood commodities had risen by only 3 percent. Prices of manufactured finished products at wholesale had advanced by 1 percent in 5 years.

Expansionary fiscal policy had contributed actively to the record of 52 months of advance. The reform of depreciation rules and the investment tax credit, both initiated in 1962, encouraged business to expand and modernize plant and equipment. Furthermore, as a result of these measures and the much larger tax reductions granted by the Revenue Act of 1964, both corporate and individual income recipients were enjoying an average reduction of one-fifth in their tax liabilities. Monetary policy continued to meet the credit needs of a brisk expansion and thereby contributed to the relative stability of long-term interest rates that was unusual for a period of rapid economic advance. Meanwhile, Federal spending on goods and services was essentially level after mid-1962. As a share of the growing GNP, defense purchases fell steadily from 9.2 percent in 1962 to a post-Korean low of 7.3 percent by mid-1965. Defense spending was clearly not the fuel that was propelling the economy toward full employment. But neither was the decline in the defense share permitted to retard the growth of total demand; some economic stimulus was provided by spending on new Federal civilian programs, and major reductions in taxes encouraged private spending.

New stimulative policies were being prepared in the spring of 1965 to complete the advance to full employment. Congress enacted a major phased reduction of excise taxes, in line with the President's proposals,

*Excerpted from Annual Report of the Council of Economic Advisers, January 1967, pp. 45–52.

and its first stage took effect in June 1965, cutting taxes by $1¾ billion (annual rate). A liberalization of social insurance benefits, designed to help the aged, was enacted to take effect retroactively. The larger benefits were to be financed by a payroll tax increase at the beginning of 1966. Meanwhile the liberalization of benefits was expected to give the economy a significant stimulus in the fall of 1965 when an anticipated liquidation of steel inventories might otherwise have threatened a slowdown. The retroactive portion, which was disbursed in September, amounted to $900 million. Thereafter annual benefits were raised by about $2 billion.

Spurt in Economic Activity

The economic environment was significantly changed by the expansion of defense requirements. On July 28, 1965, the President requested additional funds for defense and indicated that further increases would be required in January. Military outlays, at an annual rate, rose by nearly $2 billion a quarter in late 1965 and early 1966 (table 3). Defense orders expanded very rapidly, spurring demands for labor and inventories by contractors.

Yet the defense buildup itself was not enough to account directly for the acceleration in the overall economic advance. Rather, it reinforced the previously planned fiscal stimuli and the forward momentum of a strong economy close to full employment. Furthermore, the expansion of defense spending contributed to a significant change in the climate of opinion. The Vietnam buildup virtually assured American businessmen that no economic reverse would occur in the near future. The impact on business attitudes was intensified by unwarranted fears that the Vietnam conflict might have consequences like those of the Korean conflict: direct controls, excess profits taxes, and a huge jump in prices of raw materials.

Table 3.—*Changes in gross national product during 2 periods since mid-1965*

[Billions of dollars, seasonally adjusted annual rates]

Expenditure category	Change	
	1965 II to 1966 I	1966 I to 1966 IV [1]
Gross national product	48.3	37.9
Personal consumption expenditures	28.8	18.8
Durable goods	5.9	−.2
Nondurable goods	12.5	6.8
Services	10.4	12.2
Gross private domestic investment	10.8	3.5
Fixed investment	9.6	−2.0
Business fixed investment [2]	9.1	4.7
Residential structures	.5	−6.7
Change in business inventories	1.3	5.5
Net exports of goods and services	−2.2	−1.2
Government purchases of goods and services	10.7	16.9
Federal	6.3	10.6
National defense	5.5	10.9
Other	.9	−.4
State and local	4.4	6.3

[1] Preliminary.
[2] Nonresidential structures and producers' durable equipment.

Note.—Detail will not necessarily add to total because of rounding.

Sources: Department of Commerce and Council of Economic Advisers.

The increase in defense spending swelled an already strongly rising tide of business investment expenditures. From the second quarter of 1965 to the first quarter of 1966, business spending for new structures and equipment rose by $9 billion. Defense, investment, and social security liberalization, in combination, speeded the growth of disposable income. Consumer spending responded strongly, growing by $29 billion over this three-quarter interval. All in all, GNP advanced at an average of $16 billion a quarter. Real output grew at a phenomenal annual rate of 7.2 percent, and industrial production rose at an annual rate of 9.7 percent.

Unemployment fell from 4.7 to 3.8 percent of the civilian labor force during this period. New orders for durable manufactured goods rose marked by (12 percent), with orders for electrical machinery (20 percent) and defense products (19 percent) increasing especially rapidly.

The surge in demand for goods and labor created pressures on prices in many areas. From October 1965 to July 1966, the annual rate of advance for industrial wholesale prices stepped-up to 3 percent. Prices of industrial crude materials moved sharply upward—at an annual rate of 8 percent from October to April. At the consumer level, demand pressures raised prices of services and nonfood commodities and combined with special supply factors in agriculture to push up food prices. These price movements and their consequences are discussed in detail in chapter 2. All in all, the economy exceeded reasonable speed limits in the period from mid-1965 through the first quarter of 1966.

Moderation in the Pace of Advance

After years of providing stimulus to the economy, policy changed directon at the turn of the year. Monetary policy accounted for a major share of the restraint during most of 1966. As described in detail below, the Federal Reserve restrained the growth of credit supply in the face of extremely strong demands for borrowing by business. With intense competition for funds, interest rates rose sharply. Institutions which supply mortgage funds to the home-building industry lost deposits both to the commercial banks and to the market for new corporate securities. As a result, residential construction was starved for funds, and the sharp decline in this sector was one of the principal moderating influences during the second half of 1966.

Fiscal policy also responded effectively. Although the special defense costs necessarily swelled Federal outlays and were highly stimulative, restrictive actions were taken in other areas. Increases in nondefense purchases were held to $300 million from 1965 to 1966. Several restrictive tax measures were proposed in January 1966, and were enacted in mid-March. These included a reinstatement of some of the earlier excise tax reduction, restoring about $1 billion to the annual rate of Federal revenues; and a system of graduated withholding for individual income taxes that drew off $1½ billion (annual rate) from disposable income beginning in May. These new measures followed the $6 billion increase in payroll taxes that took effect at the start of 1966. In addition, revenues were increased in the spring by unusually large payments on 1965 income tax liabilities.

The national income accounts budget for the Federal sector shifted from a deficit at an annual rate of $1½ billion in the second half of 1965 to a surplus at an annual rate of $3 billion in the first half of 1966. (As explained in the appendix to this chapter, Federal fiscal policy is discussed throughout this Report in terms of the national income accounts budget.)

These monetary and fiscal actions helped to bring the rate of overall economic expansion in line with the growth of capacity. After the first quarter of 1966, gains in GNP slowed to an average of $12½ billion a quarter, no longer outstripping the growth of potential GNP. The unemployment rate leveled off, as employment gains essentially matched the growth of the labor force. Manufacturing output actually rose less than the growth of manufacturing capacity, and average operating rates at year-end were below the 91 percent that had been reached in the first quarter.

The change of pace was first clearly noticeable in the spring. Fiscal restraint appreciably slowed the growth of disposable income in the second quarter and contributed to a marked slowdown in consumer spending. During the summer, consumer demand perked up again. But homebuilding, which had declined moderately in the second quarter, was hit hard by the shortage of mortgage financing and took a sharp plunge, holding down the increase in economic activity.

Business demand for capital goods, on the other hand, continued to expand rapidly during the spring and summer. Although tight money, rising costs of machinery and construction, declining prices of common stock, and appeals for voluntary restraint had moderating effects in particular firms and industries, total business investment forged ahead. In August, both the Commerce-SEC anticipations survey and the National Industrial Conference Board appropriations survey confirmed the vigor of the capital boom. Commercial construction was the only type of business investment that showed weakness; it was restrained by the shortage of mortgage funds.

The capital boom, in fact, was proving too vigorous. In view of the growing backlogs of orders, shortages of certain types of skilled labor, rising prices in capital goods industries, and acute pressures of business credit demands on financial markets, there was a clear need to moderate investment demand. On September 8, the President asked Congress to suspend, until January 1, 1968, the 7-percent tax credit on investment in machinery and equipment and accelerated depreciation provisions on new buildings. At the same time, he initiated a program to reduce nondefense spending.

The Commerce-SEC survey in November showed that only moderate further increases in plant and equipment spending were planned through the second quarter of 1967. It also revealed that the actual increase in capital outlays in the third quarter was somewhat smaller than the planned advance reported in August; this was the first downward revision of plans in 3 years. The results of the survey no doubt reflected several factors, including the moderation of economic expansion, the financial pressures on business, and the suspension of the investment tax incentives. Even though orders for machinery and equipment continued to outrun shipments through December, there were favorable prospects that the pressures of excess demand on capital goods industries would be lessened in the months ahead.

78–516—67—vol. 2——15

RETROSPECT

Despite the moderation after the first quarter, expansion for 1966 was more rapid than virtually anyone expected at the outset. At the time it was presented last January, the Council's forecast that GNP in 1966 would rise strongly by $46½ billion was somewhat above the typical forcast of private economists. Yet it turned out to be $12 billion too low. In part, the underestimate reflected the difference between the predicted real growth of nearly 5 percent and the actual rate of 5½ percent. In addition, the overall price deflator rose by 3 percent—about 1 percentage point more than projected.

The primary sources of the underestimate were in Federal defense purchases and business fixed investment. While both had been expected to be key sources of strength they were even stronger than anticipated. As the prospective duration of Vietnam hostilities and the intensity of our military commitment exceeded those assumed in the budget, Federal spending for defense in the calendar year ran above last January's estimate by $4 billion. Spurred in part by defense outlays, expenditures on plant and equipment topped the Council's expectations by $2 billion to $3 billion. State and local purchases and inventory investment also were above the projections, while homebuilding and net exports fell below the estimates.

As it became clear that public and private demand was exceeding expectations, the desirability of further increases in taxes came under public discussion. Continuing and careful consideration of this issue within the administration, sharpened by the increasing strain on financial markets, led to the fiscal program of September 8. In retrospect it is clear that, after March, monetary and fiscal policy in combination provided adequate total restraint. It may be debated whether a better balance of demands and policies would have been achieved if a program of additional fiscal restraint had been undertaken earlier in order to relieve the pressure on monetary policy. It may also be argued that the capital boom could have been cooled off sooner if the investment tax credit had been suspended earlier in the year. The question of whether a different timing or different magnitude of fiscal actions might have produced a more favorable balance in 1966 will long interest and challenge analysts of economic policy. But the main lesson is clear from the record: economic policy was used effectively to restrain the economy during 1966, much as it had been used during the preceding 5 years to stimulate demand.

THE PATTERN OF OUTPUT

In contrast to the reassuring balance of the expansion from 1961 to 1965, the advance in 1966 was uncomfortably uneven among sectors. The nature of these imbalances is illustrated by chart 2, which shows the shares of GNP absorbed by various types of expenditures since 1954.

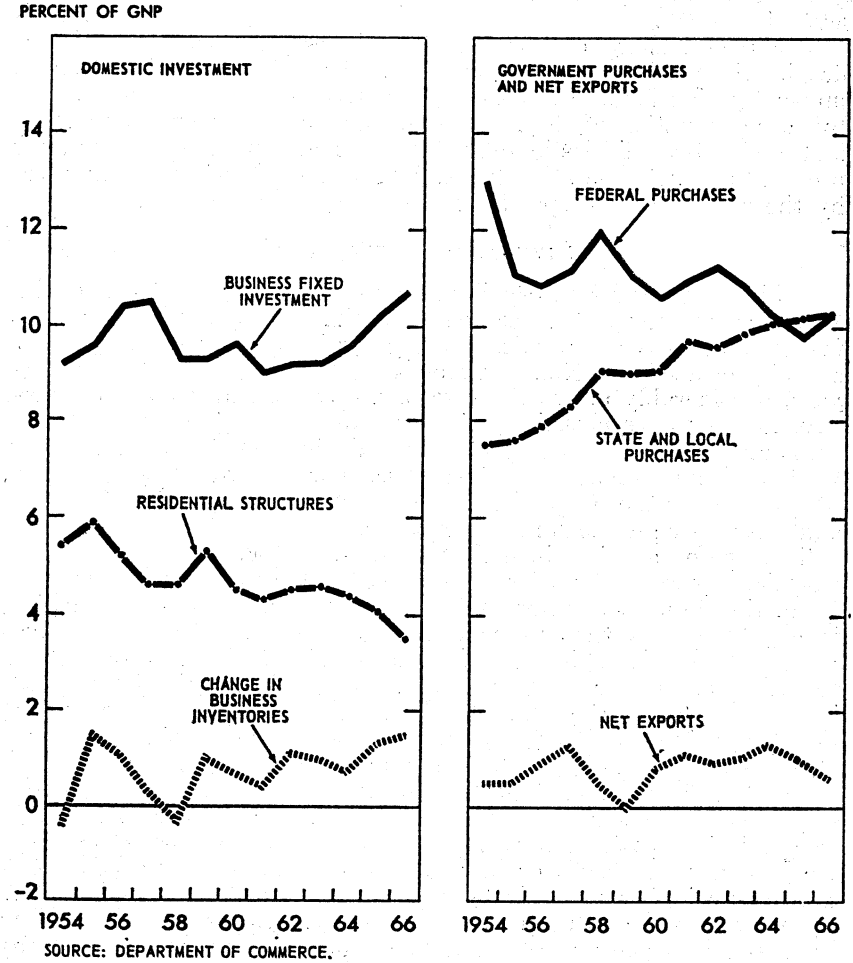
It is striking that the portion of GNP devoted to Federal purchases in 1966 was much the same as in earlier years. Indeed, despite the sharp growth of defense outlays, Federal expenditures represented a smaller share of national product than in any other post-Korean year

except 1964 and 1965. The share of defense purchases was 8.1 percent, also lower than in any year from 1954 to 1963. State and local government purchases continued their secular rise as a share of GNP.

The share of private domestic and foreign investment in 1966, 16 percent of GNP, was quite typical for a full-employment year. Private investment exceeded private saving at full employment, leaving room for moderate surpluses in government budgets (national income accounts basis).

Chart 2

Selected Shares of Gross National Product



SOURCE: DEPARTMENT OF COMMERCE.

Uneven Shares in Investment

Although the share of investment in GNP was normal, the pattern of the major investment components was unusual when compared with other post-Korean years. Business fixed investment was at a record high of 10.7 percent of GNP, surpassing its previous peak of 10.5 percent in 1957 and considerably above its post-Korean average of 9.8 percent. Because of the scarcity of mortgage funds, housing starts fell steadily from an average of 1.5 million units in the first quarter of the year to 1 million in the fourth; at 3.5 percent, the share of residential construction was at a post-Korean low. Inventory investment, at 1.5 percent, matched its previous post-Korean high of 1955. Excess demand at home generated a spurt in demand for goods from abroad, pulling down the share of net exports to the lowest level since 1959.

The record share of business fixed investment in 1966 occurred despite the need for a much greater volume of external financing at unusually high borrowing costs. Incentives to invest were provided by a continuation of the forces that had spurred business to expand and modernize facilities in 1964 and 1965: growing sales, orders, and profits, and high operating rates. These were further strengthened by the rise in defense spending.

Inventory Investment

A high rate of inventory investment in relation to GNP during 1966 reflected many of the same factors that stimulated business fixed investment. Inventory-sales ratios generally crept up after years of stability or decline. Nonfarm stocks expanded by 8 percent over the year, considerably above the rate of growth of real output or sales. Inventories rose especially rapidly in durable goods manufacturing; these stocks grew by nearly $7 billion during the first 11 months of 1966. Within durables, goods-in-process inventories rose by about $4 billion over the period, reflecting, in part, the buildup of defense and business equipment in the pipeline.

The long production times that are essential for many durable goods were largely responsible for the growth of stocks of goods-in-process. From the time a company begins to build an airplane or a machine, it may take 6 months or a year to produce a finished good and complete a shipment. While the piece of equipment is being fabricated, the value of the completed portion shows up in inventories of goods in process. Thus, if orders rise sharply for items with long production times, inventories grow; the ration of inventories to shipments also tends to increase until shipments can catch up.

In late 1965 and in 1966, orders for business equipment and defense hard-goods rose sharply, and shipments did not keep pace. The economic impact of this stepup in orders was not fully reflected in Government purchases or in business fixed investment; some of it showed up as inventory investment. The impact of defense orders on inventories cannot be quantified precisely. But it can be estimated by two approaches: one uses data on progress payments made by the Department of Defense, and the other rests mainly on the statistics of defense-oriented industries. Both approaches suggest that, from the beginning of the fourth quarter of 1965 through the third quarter of 1966, defense contractors and their suppliers added about $2 billion to their stocks as a result of defense orders.

THE FEDERAL BUDGET AND ECONOMIC STABILIZATION

The President's Council of Economic Advisers forecasts 1967 gross national product at $787 billion in current prices, an increase of about 6.5 percent over 1966. This increase consists of an advance of nearly 4 percent in real output and an increase of slightly more than 2.5 percent in prices.[1]

The Council's forecast, or plan, is constructed in large measure on a Federal budget program that produces in calendar 1967 about a $4 billion deficit on a national income accounts basis.[2] A 14.3-percent increase in Federal spending and an 11.3-percent rise in revenues underlie this projected deficit. The expected increase in revenues will result from several factors, including continued advance in total income and a proposed 6-percent surcharge on personal and corporate income taxes effective July 1.

The Federal budget program and the Annual Report of the Council of Economic Advisers (CEA) together can be viewed as a national economic plan in the spirit of the Employment Act of 1946. The presentation of the CEA is based, in considerable measure, on the popular theory that Federal budget policy to a major degree can control total demand and thereby exert a primary influence on changes in real output and prices. Budget policy is presumbaly designed to achieve an optimum level of demand compatible with the goals of high employment, real growth, relative price stability, and equilibrium in the nation's balance of payments.

In contrast with the fiscal policy theory of economic stabilization there is an alternative school of thought which places primary emphasis on control of monetary variables as a vehicle for influencing total spending. It is the belief of this school that monetary factors play a dominant role in the determination of total demand.[3]

The theory implicit in the following presentation is that the combination of stabilization policies, rather than fiscal or monetary policy alone, in large part determines total demand. Consequently, this discussion of the Federal budget alludes frequently to the role of monetary policy in national economic developments. The purpose of this article is to summarize the proposed Federal budget program for calendar 1967 and to examine its implications as a part of total stabilization policy.

Although the Federal budget receives considerable attention at this particular time of year, it seems that in the interest of a dynamic and effective stabilization policy, or even of a neutral policy, the budget program should be reviewed continuously throughout the year. Evaluations are made privately on a continuous basis, but an official

[1] *Annual Report of the Council of Economic Advisers* (January 1967), pp. 62–63.

[2] The national income accounts budget summarizes the receipts and expenditures of the Federal Government sector as an integrated part of the recorded activities of all sectors of the economy. For expanded discussion of this and other fiscal measures, see the appendix, "Budget Concepts and Definitions," p. 597.

[3] The 1967 report pays considerable homage to the role that monetary policy played in restraining total demand in 1966. The appearance of such an acknowledgment distinguishes the 1967 report from previous ones, in which monetary policy was seemingly considered supportive (for fiscal policy) rather than active in affecting total demand.

midyear budget review (with revised projections) was not released to the public in 1966. To assure a free and fully informed discussion and interchange of ideas both inside and outside of Government, it would be desirable to have official revised projections frequently, possibly on a quarterly basis.[4] A midyear review in July or August after Congress has made most of its decisions would seem more reliable for the ensuing year than the 12-month forecast made in January. The CEA report focuses primarily on the immediate 12 months, while the budget concentrates on the 12-month period beginning next July 1.[5]

To form a basis for a discussion of budget policy in future months, this article summarizes and evaluates economic developments, budget conditions, and monetary developments in calendar 1966. The budget program through June 1968 is then summarized and analyzed within a framework emphasizing total stabilization policy. An appendix is provided that discusses alternative budget measures.

Budget Policy and Economic and Monetary Conditions in 1966

Real economic activity advanced rapidly in 1966, but advances were constrained by the size of the labor force and limitations on plant capacity. Employment, production, and income all increased, though less rapidly than in 1965 when some economic slack remained.[6] As a result of total demand pressing on available resources, prices rose significantly, particularly early in the year. In an attempt to limit excessive total demand and price increases, monetary expansion was restricted beginning in the spring. Intense demands for credit produced rising interest rates early in the year, while limitations on credit expansion accelerated the rise during the summer.

The Federal budget, on balance, was a strong force underlying the buoyant economic situation in 1966. Government expenditures grew rapidly as spending for defense and health, education, and welfare programs rose sharply. Federal revenues also increased rapidly, partly in response to rising money incomes but also in some measure because of increases in tax rates.

Resource Transfers in 1966

Total income and output showed advances substantial enough to keep the economy at high employment during 1966. Real output (GNP in constant dollars) rose 4.1 percent in the year ended in the fourth quarter of 1966, with the advance most rapid in the first quarter.

The year 1966 was marked by the necessity to allocate resources to military use more rapidly than total available resources were growing. Such a transfer of resources is facilitated if there is a considerable quantity of unused resources in the economy, as was the case at the outbreak of the Korean conflict. The Vietnam war was escalated at a time when there was very little slack in the economy.

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[4] A similar recommendation has recently been made by the Joint Economic Committee of Congress. Although revised budget projections are not made available, data on realized expenditures and revenue, are readily available. See, e.g., the *Survey of Current Business*. For a brief quarterly analysis of these datas see "Federal Budget Trends," a release of the Federal Reserve Bank of St. Louis.

[5] Since there is some evidence to support the view that the budget affects economic activity with some lag, see, e.g., Albert Ando and E. Cary Brown, "Lags in Fiscal Policy," *Stabilization Policies*, research studies prepared for the Commission on Money and Credit (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963), it would seem that the budget for fiscal 1968 (year ending June 30, 1968) must afford a basis for an economic plan for a year beginning in, say, October 1967 or January 1968. If the primary concern of the Economic Report is the state of the economy in calendar 1967, it would seem that the budget for the year ending June 30, 1967, is more relevant than the budget for the year ending June 30, 1968.

[6] For an extended discussion of economic developments in 1966, see the December 1966 issue of this *Review*.

At times of high employment and near-capacity levels of output, a resource transfer from civilian use to military use is normally effected by either tax increases or a system of Government controls. Neither route was followed with respect to the Vietnam build-up in late 1965 and 1966. Instead, the price mechanism was utilized to effect the resource transfer, i.e., the Federal Government bid away goods and services from civilian use for the war effort.

Selected expenditures as a percent of GNP

Quarter	National defense	Consumer durable goods	Residential structures
1964:			
1	8.1	9.3	4.6
2	8.2	9.5	4.4
3	7.8	9.6	4.3
4	7.5	9.1	4.1
1965:			
1	7.3	9.9	4.2
2	7.3	9.6	4.2
3	7.4	9.7	4.0
4	7.5	9.7	3.9
1966:			
1	7.6	9.7	4.0
2	7.8	9.2	3.8
3	8.3	9.4	3.3
4	8.6	9.2	2.9

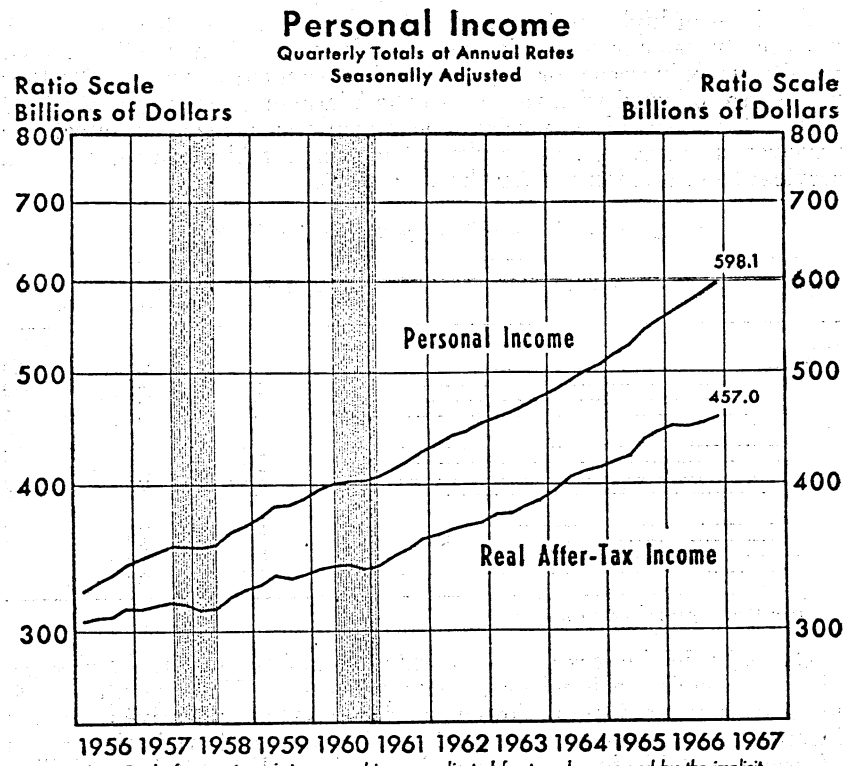
Source: U.S. Department of Commerce.

Overall price increases thus operated as a silent tax in the absence of more restrictive fiscal or monetary actions. The growth of real after-tax personal income slowed as prices rose faster relative to money incomes than previously. Associated with the slowdown in the growth of real spendable income was a decline in real demand for civilian goods, in particular for automobiles and housing.

In response to excessive dollar demand for goods and services, and thereby for loan funds, and to some extent to restriction on monetary expansion beginning in the spring of 1966, interest rates rose. This increase in the price of credit helped to effect the transfer of resources by discouraging demand for those goods where capital and interest are important elements of total cost, e.g., housing and commercial and industrial buildings.

The resultant rise in interest rates affected housing more than if the resource transfer had been effected by taxes. Housing probably would have been affected if incomes had been reduced by tax increases, but the extent would probably have been less. Interest rates would not have risen so rapidly, and the cost of new housing services would not have increased as much if a more restrictive course of fiscal action had been followed.

Any transfer of resources in a high-employment economy involves a cost, and some groups gain at the expense of others. However, transfer by tax increases permits the effects to be planned and regulated while maintaining the advantages of free markets. The price inflation mechanism causes inequities that are often unpredictable



Note: Real after-tax income is personal income adjusted for tax changes and by the implicit price deflator for personal consumption expenditures.

Source: U.S. Department of Commerce

Shaded areas represent periods of business recession as defined by the National Bureau of Economic Research.

Latest data plotted: 4th quarter preliminary

and creates distortions that may be in conflict with national goals of efficient resource allocation and equilibrium in the balance of payments.

STABILIZATION POLICY IN 1966

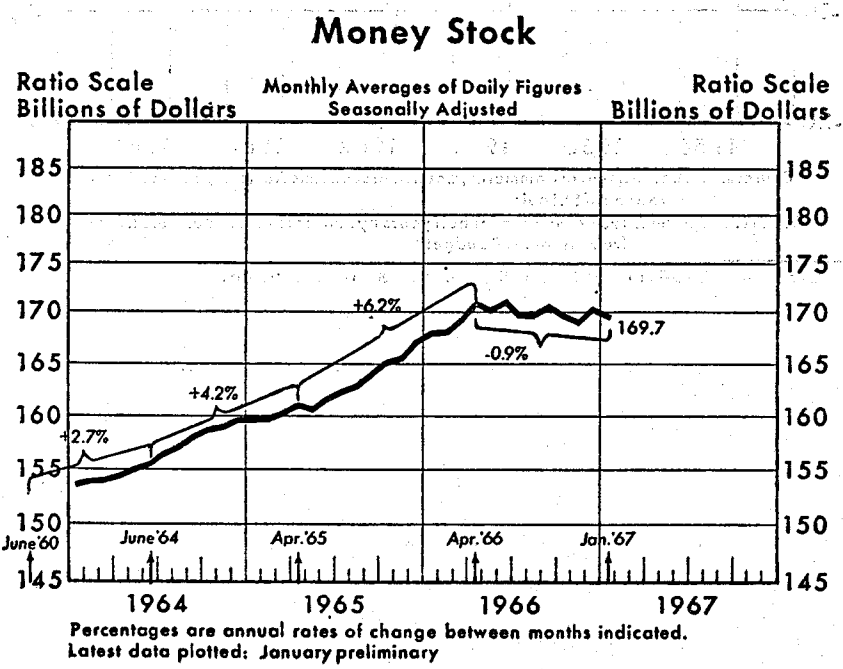
The fiscal actions that were supposed to restrain demand in 1966—social security tax increases, speedup in the collection of individual and corporate income taxes, and rescission of scheduled excise tax cuts—came too late to thwart the inflationary pressures of the first quarter.[7] In fact, there is some question whether the 1966 first quarter experience could have been avoided (or offset) by budget actions as late as January and February of that year. Because of lags in the effect of stabilization policies, the stage may have been set for an inflationary period by a very stimulative fiscal situation in late 1965 supplemented by rapid monetary expansion in late 1965 and early 1966. The Vietnam buildup in the last half of 1965 was accompanied by excise tax reductions and a large retroactive increase in

[7] Normally a change in collection procedures is not viewed a restrictive action because individuals and firms supposedly react to changes in liabilities rather than collections. The speedup is mentioned here, however, because the 1966 CEA Report listed this action as restrictive in its effect on total demand. See pp. 53–54.

social security benefits. The money stock expanded at a 6-percent annual rate from April 1965 to April 1966. Other key monetary variables, such as commercial bank credit and member bank reserves, also increased very rapidly during the year ending in April 1966. This combination of monetary and fiscal forces may have been sufficient to cause the first quarter 1966 excesses and the carryover with respect to prices in the second quarter (even though the advance of GNP slowed substantially in that quarter).

The restrictive budget measures that were effected—increased social security taxes, accelerated tax collections, and rescinded excise taxes—may have helped to slow the economy after the unsustainable advance in the last half of 1965 and the first quarter of 1966. These fiscal actions represented restraining factors in addition to the April turnaround in monetary growth and the implicit tax increase through inflation. Although Government expenditures rose substantially in the first half of 1966, these increases were more than offset by the increase in tax revenues, and the national income accounts (NIA) budget showed a surplus of $3.1 billion compared with a $1.4 billion deficit in the last half of 1965.

During the second half of 1966 Federal expenditure increases outpaced the growth in receipts, resulting in a $2.7 billion deficit in the NIA budget. Expenditures for the Vietnam war continued to rise, and some domestic nondefense expenditures also rose, particularly those related to the medicare program. No direct tax increases became effective in the second half, although in October the investment tax credit was rescinded and depreciation allowances for tax purposes were tightened. These measures probably had little effect on tax revenues in 1966, although they may have affected total demand via investment decisions.



For the year 1966 the NIA budget ran a small $0.2 billion surplus, and since the economy was at full employment the high-employment budget showed the same result.[8] On this high-employment basis, this small budget surplus in 1966 indicated the most stimulative budget in more than a decade. The high-employment budget ran about an $8 billion average surplus from 1961 to 1965.

The stimulative budget situation in 1966 was accompanied by very restrictive monetary actions after April. The money stock showed little change from then to late fall. With loan demand fueled by rapid growth in total demand for goods and services, interest rates rose rapidly until September.

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

Latest data plotted: 1967 estimated for half years by Federal Reserve Bank of St. Louis from Fiscal 1968 Budget

[8] For further discussion of the high-employment budget, see the appendix.

Budget Program for Fiscal 1967–68

The economic outlook for 1967 depends in large measure on the course of recent, present, and future monetary and fiscal developments. Such developments in turn are influenced by the unfolding of economic events. A forecast of economic conditions and policy must take into account this simultaneity. Presumably the Council's forecast is based on this simultaneous interaction. This section discusses in some detail the budget program for the 18-month period ending June 20, 1968, and examines budget policy in light of expected economic and monetary conditions.

THE BUDGET PROGRAM: A FACTUAL SUMMARY

Budget plans for the next 18 months indicate a larger average deficit than in calendar 1966. This conclusion obtains for the national income accounts budget, considered to be the most complete and reliable measure of the Federal Government's activities and their economic impact.

The following summary of the fiscal program for the remainder of fiscal 1967 and fiscal 1968 is presented as general background and centers on the NIA budget. Fiscal year figures are given because the budget document is presented on that basis.

New obligational authority. Obligational authority on a cash budget basis, i.e., authority provided by Congress to obligate the Federal Government to pay out money, increases to an estimated $194.2 billion in fiscal 1968 from $190.4 billion in fiscal 1967. This fiscal measure is considered by some to be a key variable in any analysis of the Federal budget.[9] The reason for this is that expenditures must be preceded by granting of obligational authority by Congress.

The $3.8 billion increase in obligational authority planned for fiscal 1968 compares with an increase of $27.3 billion in the previous fiscal year. Last year's January budget plan (i.e., for fiscal 1967) called for a $3.5 billion increase in new obligational authority. These plans went awry, partly because of supplemental appropriations requested in January 1967 for Vietnam, but also because of larger-than-expected appropriations for housing, community development, health, education, and welfare.

Expenditures. Federal NIA expenditures in fiscal 1968 are estimated to increase 10.2 percent over fiscal 1967, which in turn is expected to be 16.1 percent above fiscal 1966. Fiscal 1967 expenditures are estimated at $153.6 billion, 7.6 percent above the figure projected a year ago for the fiscal 1967 period.

[9] See the writings of Murray L. Weidenbaum, e.g., "The Timing of the Economic Impact of Government Spending," *National Tax Journal* (March 1959), pp. 79–85.

Changes in obligational authority, cash budget

	Fiscal 1966 to fiscal 1967		Fiscal 1967 to fiscal 1968	
	Billions of dollars	Percent	Billions of dollars	Percent
Defense	8.6	12.5	2.2	2.8
International and space	−1.1	−10.1	0.3	3.1
Domestic	19.8	23.7	1.3	1.3
Health, labor, and welfare	10.8	27.9	3.7	7.5
Education, housing and community development, national resources, commerce, and transportation	6.6	36.1	−3.0	−12.1
Interest on public debt	1.4	11.6	0.7	5.2
Other [1]	1.1	7.7	−0.2	−1.3
Total	27.3	16.7	3.8	2.0

[1] Agriculture, veterans' benefits and services, general government, civilian and military pay increases.
Source: The Budget of the United States Government for the Fiscal Year Ending June 30, 1968, p. 44.

Changes in Federal spending, national income accounts budget

	Fiscal 1966 to fiscal 1967		Fiscal 1967 to fiscal 1968	
	Billions of dollars	Percent	Billions of dollars	Percent
Defense	11.8	20.9	5.8	8.5
International and space			−0.2	−2.3
	9.5	14.2	10.0	13.1
Domestic:				
Health, labor, and welfare	6.2	18.8	7.2	18.4
Education, housing and community development, natural resources, commerce, and transportation	2.0	16.7	0.9	6.4
Interest on public debt	0.9	9.2	0.2	1.9
Other [1]	0.4	3.3	1.8	14.3
Total	21.3	16.1	15.6	10.2

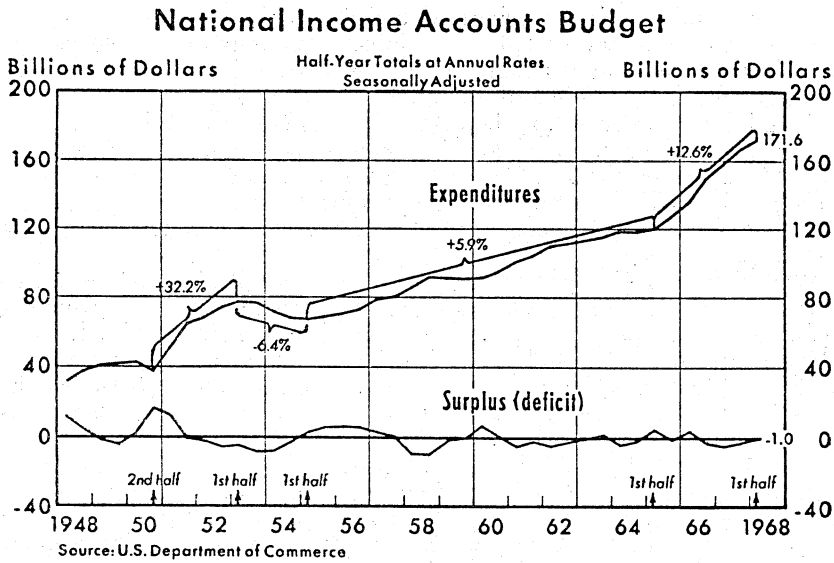
[1] Agriculture, veterans' benefits and services, general government, civilian and military pay increases.
Source: The Budget of the United States Government for the Fiscal Year Ending June 30, 1968, p. 43.

Changes in Federal receipts, National Income Accounts Budget

	Fiscal 1966 to fiscal 1967		Fiscal 1967 to fiscal 1968	
	Billions of dollars	Percent of 1966 receipts	Billions of dollars	Percent of 1967 receipts
Changes due to changes in tax law	7.0	5.3	5.8	3.9
Personal income	1.2	0.9	3.4	2.2
Corporate income			1.9	1.3
Excise and other			−.5	−.3
Social security	5.8	4.4	1.0	0.7
Changes due to growth in economy	10.2	7.7	11.5	7.7
Total	17.2	13.0	17.3	11.6

Source: Estimated by Federal Reserve Bank of St. Louis from The Budget of the United States Government for the Fiscal Year Ending June 30, 1968.

Fiscal 1968 expenditures include increases over presently estimated 1967 expenditures of $5.8 billion or 8.5 percent for defense and $9.8 billion or 11.5 percent for nondefense spending including expanded social security benefits. The increases in fiscal 1967 over fiscal 1966 are 20.9 percent for defense and 12.5 percent for nondefense programs.



Source: U.S. Department of Commerce
Percentages are annual rates of change between periods indicated.
Latest data plotted: 1967 and first half 1968 estimated by Federal Reserve Bank of St. Louis from Fiscal 1968 Budget.

Receipts. Federal NIA receipts are expected to rise less rapidly than expenditures from fiscal 1967 to fiscal 1968, thereby increasing the deficit. Increases in receipts were large in fiscal 1966 and even larger in fiscal 1967. Such increases have resulted primarily because this was a period of rapidly expanding money incomes and inflation. Receipts were also accelerated however, by faster collections and increases in social security tax rates during this period.

NIA receipts are anticipated to increase by $17.3 billion or 11.6 percent in fiscal 1968 over the previous fiscal year. Growth in receipts will result mainly from continued economic expansion but will also reflect the proposed 6-percent surcharge on personal and corporate income effective July 1, 1967, and a scheduled increase in social security tax rates on January 1, 1968.

BUDGET POLICY IN ITS ECONOMIC SETTING

Budget plans for calendar 1967 are predicated on a forecast of sluggish growth in private demand in the first half of the year with a resumption of more rapid growth in the second half. The purpose of this section is to examine Federal budget plans within the economic setting expected in calendar 1967.

An evaluation of the Federal budget plan at this particular time is replete with problems. The Council of Economic Advisers probably has access to more information than anyone else at the time of the budget's preparation. Consequently, this examination of the budget centers more on assumptions than on the internal consistency of the proposed total economic plan.

The economic plan, as presented in the fiscal 1968 budget and the CEA report, is to keep the economy on a full-employment growth path with relative price stability. The budget is presumably designed to provide just the right amount of fiscal stimulus or restraint at the appropriate time. The success of the proposed budget program de-

pends on the vagaries of private demand and the response of private demand to monetary and fiscal actions. Fundamental to success is whether budget policy is sufficiently flexible to move in accordance with changing economic and monetary conditions.

The budget program for the first half of calendar 1967 is essentially determined. Forces governing the course of expenditures and receipts are already in motion. The CEA indicates that the sizable stimulus of a $5 billion NIA deficit will be appropriate in its timing and magnitude of impact on an economy characterized by weakening private demand.

Included in the budget program for the second half of 1967 is a proposed surtax which is supposed to provide restraint on strengthening private demand at that time. Such plans provide flexibility in that the surtax proposal could be dropped if economic conditions do not warrant fiscal restraint. Furthermore, if inflationary pressures intensify, the surtax rate could be increased above that which is proposed.

The 1966 experience suggests that budget policy was not sufficiently flexible to counter movements in private demand. During the first quarter of 1966, when it was quite obvious that further monetary or fiscal restraint was required, budget policy fell short as an instrument of stabilization. Fiscal restraint was not forthcoming because of the slow and cumbersome nature of the budget machinery. It was not possible to implement a tax increase because of the slowness of the Congressional process. Furthermore, most Government spending programs are of the type than cannot be slowed or speeded in accordance with the desire of the policymaker. Because of the relative inflexibility of fiscal policy, it was necessary for monetary policy to carry the burden of stabilization in 1966.

Taking these considerations into account, it appears that monetary policy may again be assigned a critical role in the total of stabilization policy in 1967. Monetary policy is flexible in its implementation, though there is a question about flexibility in its impact. Incomplete knowledge of the magnitude and timing of monetary actions on economic activity indicates that it should be used carefully as a tool of stabilization policy.[10]

Uncertainty about the length and variability of time lags in the implementation and effect of monetary and fiscal policy suggests that stimulus or restraint be applied in moderate doses when the economy is at high employment. Large adjustments in policy variables may cause instability, which is precisely what policymakers are trying to avoid.

The economic situation in early 1967 is believed to dictate a need for more stimulative economic policy. An indication that the fourth quarter 1966 increase in GNP contained some involuntary accumulation of inventory portends further slowing of production and attempts to reduce inventory. Since fiscal and monetary policies tend to affect total demand with lags, excessive stimulation in the next months might be too late to avert a slowdown in the first half of 1967 but might create serious inflationary problems in the second half. On the other hand, insufficient stimulation might cause the slowdown to continue well into the second half.

KEITH M. CARLSON.

[10] Some evidence has recently been presented to support the view that monetary actions may affect total demand quite quickly via portfolio behavior of holders of liquid assets. See Donald P. Tucker, "Dynamic Income Adjustment to Money Supply Changes," *American Economic Review* (June 1966), pp. 433–449.

APPENDIX

Budget Concepts and Definitions

The fiscal activities of the Federal Government can be summarized in several ways. Some alternative budget concepts and the relationships between them are discussed in this appendix. A table reconciling these budget concepts is given, with data for fiscal 1966–68 used for illustration.

ADMINISTRATIVE BUDGET

The administrative budget is the basic planning document of the Federal Government, covering receipts and expenditures of funds that it owns. Its main purpose is to serve as a guide to executive and legislative program planning, review, and enactment. The administrative budget is in fact the only Federal "budget" in the sense of a financial plan. All other "budgets" discussed here are summary statements of receipts and expenditures classified in various ways for purposes other than administrative planning.

Those agencies for which Congress makes regular appropriations are included in the administrative budget. Public enterprises [1] are included while trust funds [2] and Government-sponsored agencies [3] are not.

Expenditures and receipts are generally recorded on a cash basis, i.e., on the date of actual receipt or payment. Interest expense is on an accrual basis.

CASH BUDGET

The consolidated cash budget is a summary statement of cash flow between the Federal Government and other sectors of the economy. Included are activities of the regular Government agencies found in the administrative budget plus the activities of trust funds and Government-sponsored agencies. Because activities of some agencies (e.g., the post office) are recorded on a net basis, the full magnitude of cash flows between the Federal Government and other sectors of the economy is not measured by the cash budget.

The cash surplus or deficit serves as a measure of the direct impact of Federal Government spending and taxation on the financial assets of the private sector of the economy (including state and local governments). Surpluses or deficits in this budget indicate changes in the public debt and/or changes in the Treasury's cash balance.

NATIONAL INCOME ACCOUNTS BUDGET

The national income accounts budget summarizes the receipts and expenditures of the Federal Government sector as an integrated part of the recorded activities (i.e., the national income accounts) of all

[1] Commodity Credit Corporation, Federal National Mortgage Association, Export-Import Bank, etc.
[2] Federal old-age and survivors insurance, unemployment trust fund, highway trust fund, etc.
[3] Federal home loan banks, Federal land banks, Federal intermediate credit banks, and banks for cooperatives.

sectors of the economy. Primary differences between the cash budget and the national income accounts budget are (1) on the expenditure side, spending is recorded when delivery is made to the Government, and purchases and sales of existing real and financial assets are excluded, and (2) on the receipts side, taxes are in large measure recorded when the tax liability is incurred.

HIGH-EMPLOYMENT BUDGET

The high-employment budget is an estimate of expenditures and revenues in the Federal sector of the national income accounts for a level of high employment.[4] It is an attempt to correct the distortion introduced by the impact of the economy itself (through the effect of changing levels of economic activity on Government expenditures and tax receipts) on the realized surplus or deficit. The smaller the surplus or greater the deficit in this budget, the more stimulative is the impact of Federal fiscal activities and the less is the dependence on private demand to maintain high employment.

NEW OBLIGATIONAL AUTHORITY

Another measure of particular importance in evaluating the impact of the Federal Government on the economy is "new obligational authority." This is legislation by Congress permitting a Government agency or department to commit or obligate the Government to certain expenditures. Congress does not vote on expenditures; it determines new obligational authority. Before funds can be spent, an agency must submit and have approved by the Bureau of the Budget an apportionment request. This determines the rate at which obligational authority can be used. An agency usually incurs obligations, i.e., commits itself to pay out money, after apportionment by the Bureau of the Budget.

[4] The President's Council of Economic Advisers defines a high-employment level of economic activity as that level associated with a 4-percent unemployment rate. The high-employment budget could be computed for other budget concepts, but, for an analysis of the economic impact of the budget, the national income accounts basis seems most appropriate. For a description of techniques and procedures for calculating high-employment budget estimates, see Nancy H. Teeters, "Estimates of the Full-Employment Surplus, 1955-1964", *The Review of Economics and Statistics*, XLVII (August 1965), pp. 309-321.

Incurring obligations does not necessarily mean immediate cash expenditures. When the Government buys goods and services produced by the private sector, the lag of expenditures behind obligations may be substantial. In the case of items not usually kept in inventory, like military hardware, it usually takes time for private producers to draw plans, negotiate subcontracts, produce, and deliver the product.

Reconciliation of various measures of Federal receipts and expenditures

[Billions of dollars]

	Fiscal year		
	1966 actual	1967 estimate	1968 estimate
RECEIPTS			
Administrative budget receipts	104.7	117.0	126.9
Plus trust fund receipts	34.9	44.9	48.1
Less intragovernmental transactions	4.5	6.2	6.5
Receipts from exercise of monetary authority	.6	1.1	.5
Equals Federal receipts from the public	134.5	154.7	168.1
Less Cash transactions excluded from Federal receipts account (District of Columbia, financial transactions, etc.)	1.3	1.8	2.0
Plus Items added to Federal sector account but not in cash receipts (netting differences, timing differences, etc.)	−.6	−3.1	1.0
Equals Federal receipts, national income accounts	132.6	149.8	167.1
Plus adjustment for tax receipts because of deviation of economy from high employment	.3	.2	0
Equals high-employment receipts	132.9	150.0	167.1
EXPENDITURES			
Administrative budget expenditures	107.0	126.7	135.0
Plus trust fund expenditures	34.9	40.9	44.5
Less intragovernmental transactions	4.5	6.2	6.5
Debt issuance in lieu of checks and other adjustments	−.4	.6	.7
Equals Federal payments to the public	137.8	160.9	172.4
Less cash transactions excluded from Federal expenditures account (District of Columbia, financial transactions, etc.)	7.3	8.7	5.0
Plus items added to Federal sector account but not in cash payments (netting differences, timing differences, etc.)	1.8	1.5	1.8
Equals Federal expenditures, national income accounts	132.3	153.6	169.2
Plus adjustment for expenditures because of deviation of economy from high employment	0	0	0
Equals high-employment expenditures	132.3	153.6	169.2
SURPLUS OR DEFICIT			
Administrative budget	−2.3	−9.7	−8.1
Cash budget	−3.3	−6.2	−4.3
National income accounts budget	+.3	−3.8	−2.1
High-employment budget	+.6	−3.6	−2.1

Sources: The Budget of the United States Government for the Fiscal Year ending June 30, 1968 and Federal Reserve Bank of St. Louis.

Part III

MILITARY IMPACT ON THE GENERAL ECONOMY

This section consists of studies analyzing in detail the timing of the economic impact of government, and especially military spending. The leads and lags in government procurement impacts are particularly significant for the current period.

The paper, "Employment Impacts of Defense Expenditures and Obligations," is scheduled for publication in a forthcoming issue of the *Review of Economics and Statistics* and is made available through the courtesy of that journal.

THE ECONOMIC IMPACT OF THE GOVERNMENT SPENDING PROCESS*

BY

MURRAY L. WEIDENBAUM

CONTENTS

SUMMARY

An examination of the major phases of the Federal Government spending process reveals that the economic impact of government spending may occur during any of the phases of the process, but often prior to the actual governmental disbursements.

These phases are (1) granting of financial authorizations by the Congress; (2) placing of contracts with business firms; (3) production of goods and services; and (4) delivery of the items to the Government and payment therefore.

Under certain circumstances, the effects of the announcement of newly granted obligational authority may cause an increase in private spending in advance of the placement of contracts or of the expenditure of funds. More usually, economic activity will be affected soon after contracts or orders are let with private producers. The private contractor undertaking to fill the order will, at the time the order is placed (or perhaps even before, if intent to place the order has been expressed to him), begin to acquire the resources needed for its completion. It is, therefore, at the order stage that the governmental procurement action will have its initial and often major impact on the markets for labor, raw materials, and financial resources; a stage often several years before the procurement transaction is recorded as a government purchase or payment.

*Reprinted from *The Business Review*, The University of Houston, vol. 8, spring, 1960.

This study is based on a doctoral dissertation prepared at Princeton University. Portions have appeared in the following journals and the editors have kindly consented to the use of some of the material: *Accounting Review*, *American Journal of Economics and Sociology*, *Federal Accountant*, *National Tax Journal*, and *Public Finance*.

The writer wishes to express his deep appreciation to Profs. Paul J. Strayer and Lester V. Chandler of the Department of Economics of Princeton University for their advice and guidance in the course of the study. The writer is also indebted to his former colleagues at the U.S. Bureau of the Budget for encouragement and much necessary information.

This production on Government order will be recorded in the national income accounts as increases in gross private domestic investment (change in business inventories). This private production on Government account does not appear in any of the generally used measures of Government spending.

Only as production is completed and as finished items are delivered to the Government will the transaction appear as a Government purchase. The delivery will be treated simultaneously as a decrease in gross private domestic investment; no net effect will occur in the level of gross national product at this point. The contribution will have been made earlier, during the production period prior to the actual government expenditures. Indeed, the governmental expenditure may coincide in time with a reduction in governmental impact on total demand.

However, the mere granting of appropriations and the placement of contracts may have little effect on the level of production when resources are fully employed. Also, to the extent that government orders can be filled out of existing inventories, the effect on production may not occur until the depleted inventories are restocked. Despite these and other complications, the primary impact of government procurement on the level of economic activity usually occurs in advance of the actual government expenditure.

Government spending for other than the acquisition of goods and services may approximate more closely, or even lead, the economic impact. This ordinarily would be true for transfer and interest payments and grants to State and local governments where the contribution to economic output would be made as the funds are respent. This would also hold for lending programs, except where production is begun on the basis of the Government's commitment to lend at a later date. Purchases of existing assets merely add to the liquidity of the recipients, unless the proceeds are used to purchase or finance current output.

The generally used measures of Federal spending cover only the completion phase of the spending process, represented by disbursements or by deliveries. Measures of some of the other stages of the process can be obtained or prepared. Data on budget authorizations granted by the Congress can be secured annually from the budget document. Information on contracts led and other "obligations" incurred by Federal agencies is gathered for internal budgetary purposes. There are no current data of production on government account since reports on inventories do not reveal the amounts relating to government orders.

Measures of the early stages of the government spending process can be used for many purposes of economic analysis. They are lead series which quickly register changes in demand and indicate future trends in governmental disbursements. They can also be used to evaluate developments in the economy during periods when changes in government purchasing exercise an important role.

The possibility of economic effects occurring during the various phases of the government spending process necessitates taking measurements of the spending stream at earlier points than merely at the completion stage. What is needed is not a single measure of Federal spending but a tool kit of series, each of which is useful for certain purposes.

Introduction

The impact of government spending on the economy is generally measured at the point at which disbursements are made. However, depending on the nature of the program and the state of the economy, the economic impact may occur significantly earlier than the actual expenditures. This study analyzes the many important circumstances under which the economic impact occurs during the earlier stages of the government spending process. Because of the length of time involved in carrying out many government procurement programs, it is important to know if economic effects occur at the point where expenditures are made or if they occur also, or instead, at some other place in the process. Except for some limited treatment made with reference to other matters, this is a question which has not been dealt with in the literature.[1]

The outlays of the Federal Government in recent years have constituted by far the greater part of total government spending in the United States. The Federal Government has also become a major consumer of the Nation's economic output. Moreover during this time, fluctuations in the level of government spending have often exercised a dominant influence on the course of aggregate economic activity.

The concern with the government spending process and its measurement specifically arises in connection with these fluctuations and their ramifications. For many purposes of public policy and of fiscal administration, it is essential to have accurate instruments to record present movements and to understand their relationship to future trends. An inappropriate indicator of government spending may show an upturn when, in reality, the basic force of government spending is operating in quite the reverse fashion. An insensitive indicator may show little movement when in fact a great fluctuation is taking place. A lagging indicator may only show movement with considerable delay.

As will be indicated, adequate information on the government spending process together with an understanding of its operation can be important in the formulation and administration of governmental economic policy and in the analysis of economic developments.

The increased extent to which Federal expenditures are being made to acquire privately produced goods and services has complicated the analysis even of the direct effects on the economy of governmental outlays. The public and the private sectors have become intertwined. No longer does the greater part of Federal expenditures go directly to consumers in the form of wages and of salaries of government employees, of interest payments to holders of Treasury securities, or of transfer payments to the recipients of social welfare benefits. The Federal Government is buying an increasing proportion of goods produced in the private sector, mainly in the form of armaments and of other security-related objects such as atomic energy installations and as strategic and critical materials. The payments to the factors of production for these goods are being made by the government contractors and not, as in the case of other government spending programs, by the Government itself. Such purchases of goods and services from

[1] *Cf.* Morris A. Copeland, "The Defense Effort and the National Income Response Pattern," *Journal of Political Economy*, June 1942, pp. 415-426; C. Lowell Harriss, "Government Expenditure: Significant Issues of Definition," *Journal of Finance*, December 1954, pp. 351-364.

the private sector have risen from 31 percent of total Federal purchases in 1929 to 61 percent in 1959.

Economic literature abounds with references to government spending and its effects. Yet a full understanding of the governmental spending *process* often appears to be lacking. For example, Samuelson, in a knowledgeable article on fiscal policy, explains that the Congress does not legislate revenues, but tax rates. He then goes on to state that the Congress "legislates government expenditures." [2] As will be pointed out, Federal agencies and private business firms, rather than the Congress, exercise the controlling influence over the rate of government expenditures in a given period. The congressional action merely makes available funds which can be spent over an extended period.

Villard, in his important work on the contribution of government activity to income, decried as too lagging a definition of government expenditures which "would not count funds as 'spent' by the Government until the funds had been received as income by the factors of production involved in making the output bought by the Government." [3] As will be demonstrated, these payments to factors usually *precede* rather than *follow* the actual government expenditures. Such a series would be a leading, rather than a lagging, indicator.

This study is rooted in an examination, theoretical as well as historical, of the entire Federal spending process and of the effects on the economy of the different phases of this process under varying circumstances. Such examination reveals the possibility of important economic impact during each of the phases of the process. It is also demonstrated that the timing and magnitude of the economic impact may vary according to the type of government outlay and the state of the private sectors of the economy.

A subsequent examination of the generally used measures of government spending reveals that they do not cover the economic impact of all of the major phases of the process, but only one—the completion stage represented by disbursements or deliveries. The study goes on to examine the potential availability of measures of other major phases of the government spending process and finds the most important and remediable shortcoming to be in the commitment stage. An attempt is made to construct a series on Federal commitments. The concluding section of the study is devoted to a discussion of the importance to economic analysis of the understanding of the operations of the government spending process generally and of the uses and limitations of this new series on spending specifically.

Because this study gives primary attention to developments and practices during the last two decades, military spending often dominates the discussion.[4]

Defense preparation and war periods have usually been the time when the Government exercises a strategic if not the dominant role in influencing the course of economic activity. It is at such times that there are large and abrupt changes in the rates of government spending. Moreover, armament programs particularly generate Govern-

[2] Paul A. Samuelson, "The Simple Mathematics of Income Determination" (In *Income, Employment and Public Policy*, essays in honor of Alvin H. Hansen, New York, W. W. Norton, 1948), p. 143.

[3] "According to this definition, the Government would not have 'spent' all the money used to buy a battleship until part of the sum involved had been received by the iron miners who dug the ore from which was made the steel from which the battleship was built." Henry H. Villard, *Deficit Spending and the National Income*, New York, Farrar & Rinehart, 1941, p. 201.

[4] "* * * spending for national security * * * except for brief interludes; has been the dominant type of Federal spending throughout our history." James A. Maxwell, *Fiscal Policy, Its Techniques and Institutional Setting*, New York, Henry Holt, 1955, p. 106. *Cf.* U.S. Department of Commerce, *Historical Statistics of the United States*, Washington, GPO, 1949, pp. 299-301.

ment orders for goods produced in the private sector and involve substantial buildup of production in the private sector prior to delivery of completed items to the Government. This latter feature will attract much of our attention in analyzing the economic impact of the various phases of the Federal spending process. However, neither the analysis nor its applicatons are limited to military spending and various sections deal with questions relating to nonmilitary programs.

In its attention to the need for new measurements of government spending this study is not intended to disparage the usefulness of the currently used measures but to add to the existing stock of valuable indicators which has been developed through the years. In some way, this study is written in the spirit of the following "call" issued by C. Lowell Harriss:

> The call for greater clarity which this paper tries to make is by no means a call for either a single or a simple concept. Needs are so varied that no single concept of government spending can be best for all purposes.[5]

The Federal Government Spending Process

Much of this study is devoted to analyzing the economic impact of the government spending process. This chapter describes the lengthy and intricate process through which Federal Government expenditures are made.

BASIC AUTHORIZING LEGISLATION

The first step in the process is the enactment of basic legislation authorizing a given agency, program, or activity. Some statute, such as the permanent authorization for the Council of Economic Advisers or the annual authorization for the mutual security program, must be on the books before an appropriation can be enacted to provide funds for the agency or program involved. This is the result of Congressional procedure rather than statutory requirement.[6] Basic authorizing legislation of this nature does not ordinarily contain *financial* authorization enabling an agency to obligate government funds or to make expenditures. The request for funds is usually the next step in the spending process.

There are a number of exceptions. Some basic authorizing statutes do simultaneously grant Federal agencies financial authority of various types. The Federal-Aid Highway Act, for example, both authorizes the program of aid to the States and enables the Bureau of Public Roads to commit the Federal Government to make specific grants for highway construction.[7] The annual appropriation request is merely to "liquidate" the obligations previously incurred.

Many government corporations and other business-type enterprises, particularly those operating lending programs, are authorized by basic legislation to spend the receipts from their operations without securing annual appropriations from the Congress.[8]

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[5] Harriss, *op. cit.*, p. 353.

[6] The House rule provides that "no appropriation shall be reported in any general appropriation bill, or be in order as an amendment thereto, for any expenditure not previously authorized by law * * *." The Senate rule is generally similar. *Constitution, Jefferson's Manual, and Rules of the House of Representatives*, H. Doc. No. 766, 80th Cong., 2d sess., Washington, Government Printing Office, 1949, rule 21, clause 2; *Senate Manual Containing the Standing Rules, Orders, Laws and Resolutions Affecting the Business of the United States Senate*, S. Doc. No. 11, 81st Cong., 1st sess., Washington, Government Printing Office, 1949, rule XVI, clause 2.

[7] Public Law 627, 84th Cong.

[8] Budget and Accounting Act of 1921 (31 U.S.C. 11-16); Budget and Accounting Procedures Act of 1950 (Public Law 784, 81st Cong.).

On the other hand, the conduct of the military establishment has been sanctioned by the Constitution, and no general authorizing legislation is necessary; only appropriations enacted by the Congress are needed to enable it to spend government money for its operations.

It is important to consider the increment of legislation which is proposed each fiscal year—the extension of expiring legislation, the enactment of new legislation, and the modification or repeal of existing statutes—for this is the birth stage of new governmental spending programs.

REQUESTS FOR NEW FUNDS

In January of each year the President transmits to the Congress the budget for the coming fiscal year, the 12-month period beginning the following July 1. The budget contains the President's estimates of the Federal Government's needs for new appropriations in the coming fiscal year.

From time to time exigencies arise which were not foreseen in the preparation of the budget, and which require the President to make further requests to the Congress. The enactment of legislation not included in the budget or the necessity of unanticipated commitments of the United States in international conflicts have resulted in such supplemental requests.

CONGRESSIONAL ENACTMENT

Within the next 6 months, and sometimes over a longer period, the Congress reviews and modifies the President's recommendations and enacts the appropriation bills for the coming year.[9] The total of financial authorizations made available to the Federal agencies for a given year is composed of a number of types of enactments.

The most prevalent type is the ordinary appropriation, which empowers Federal agencies (1) to place orders, enter into contracts, or otherwise commit or "obligate" the Government to make expenditures in the future, and (2) to make the expenditures required by such obligations. In the fiscal year 1960, 97 percent of the total amount of financial authorizations were of this type.[10]

Another type of financial grant is the contract authorization. This empowers the agencies only to incur obligations. In these cases, the agency has to make a later request for an appropriation to pay for or "liquidate" the obligation. Such appropriations are *pro forma* and are usually only given perfunctory review by the Congress.

Authorizations to expend from debt receipts are often used to finance lending and other government enterprises where proceeds from operations may repay the initial advances from the Treasury. These authorizations to make expenditures from borrowed money may take the following forms: (*a*) authorization for the Treasury to make public debt receipts available to a given enterprise, often in exchange for notes of the enterprise; (*b*) authorizations for a government enterprise to borrow directly from the public; and (*c*) cancellation of notes issued by a government enterprise to the Treasury, where the

[9] The Constitution provides that "No money shall be drawn from the Treasury, but in consequence of appropriations made by law" (art. I, sec. 9(7)).

[10] *Budget of the United States Government for the Fiscal Year Ending June 30, 1962*, Washington, Government Printing Office, 1961 (hereafter referred to as *1962 Budget*), pp. 14–15. A number of appropriations are "permanent"; that is, they do not require annual enactment by the Congress. Most trust funds operate under this form of obligational authority.

cancellation has the effect of permitting further expenditures to be made (through restoring previously used authority to borrow from the Treasury.)

The availability of obligational and expenditure authority is the same as that of ordinary appropriations. However, authorizations to expend from debt receipts need not go through the appropriations committees and are not included in the congressional tally of appropriations enacted.

Most financial authorizations are enacted for a 1- or 2-year period and expire if not obligated during that time. Because of the lags in Federal procurement, there are often requests to extent such authorizations beyond the original period of enactment. The effect of reauthorizations is generally the same as if new authorizations were voted in their place.

The total of appropriations and other financial authorizations made available to the agencies for a given year is called "new obligational authority." Table 1 shows the various types of new obligational authority which were enacted for the fiscal year 1960. Their common characteristic is that they empower the agencies to obligate the Government to make expenditures in the future.

TABLE I.—*Types of new obligational authority, fiscal year 1960*

[In millions]

Appropriations [1]	$76, 829
Authorizations to expend from debt receipts	1, 801
Contract authorizations	760
Reappropriations	184
Total	79, 574

[1] Excludes appropriations to liquidate contract authorizations totaling $505 million.

Source: *1962 Budget, op. cit.*, pp. 14-15.

These authorizations are termed new obligational authority because they exclude the unobligated balances of prior-year obligational authority which are still available for current obligation. The total of funds available for obligation, which is of importance for budgetary control, includes both new obligational authority and the unobligated balances.

The granting of new obligational authority is a major control point over Federal spending. Given the grant of new obligational authority, the usual functioning of governmental operations will result in a subsequent flow of expenditures.

APPORTIONMENT OF FUNDS

After the Congress has voted funds, the control of expenditures shifts back to the executive branch. The rates at which appropriations are obligated and expenditures are made are determined by the departments and agencies, subject to the control of the Bureau of the Budget.

The Bureau of the Budget apportions to the agencies each quarter the funds appropriated to them. The apportionment power arises from the desire to prevent agencies from spending their appropriations early in the year and returning for deficiency appropriations.[11]

[11] Executive order 6166, dated June 10, 1933, gave the Bureau of the Budget the authority for making, waiving, and modifying apportionments of the appropriations of the various agencies. Previously this authority had been vested in the heads of the agencies.

The apportionment process does not cover the operations of trust funds or privately owned government-sponsored enterprises.[12]

The apportionment power has been used to keep the amount of government spending for a particular item below the full limit of funds granted for it by the Congress. This use has been defended on a number of grounds, including the need to make Federal spending patterns conform to changes in circumstances and needs arising after the congressional enactment of funds.[13] The General Appropriation Act of 1951 affirmed the legal authority of the President and the Bureau of the Budget to take such actions. The Act provided that:

> In apportioning any appropriation, reserves may be established to provide for contingencies, or to effect savings whenever savings are made possible by or through changes in requirements, greater efficiency of operations, or other developments subsequent to the date on which such appropriation was made available.[14]

Following the making of apportionments, which is a centrally administered control, allotments are made by agency heads to administrative units within the agencies. Allotments may be made on a monthly or quarterly basis and may limit the use of obligational authority in terms of objects to be purchased, activities, or organizational units.

Gerhard Colm believes that the system of allotments and reserves could be developed into "an important instrument of fiscal policy." [15] It has been used for that purpose only in rare instances. Examples of such action would be "impounding" funds during inflationary periods and freeing them for expenditure during recessionary periods.

INCURRING OBLIGATIONS

Within the limits of the apportionment of funds made available to them, the Federal agencies place orders, award contracts, buy goods and services, and take other similar actions which obligate their apportioned funds.[16] This is the stage of the Federal spending process which is measured by "obligations incurred." To the extent that the goods and services needed by the Government are ordered from and produced in the private sector, this is the first stage of the process where government procurement activity directly involves private industry. It is also the last clearly discretionary step in the process which will ultimately involve government payment of funds.

Some instruments of contract are not considered as part of the total of obligations incurred. Letters of intent, interim devices by which the contractor is authorized to proceed with production before detailed contract terms are agreed upon, are no longer treated as budget obligations.

"Obligations" may be incurred for a wide variety of objects, in addition to the purchase of bonds and services from the private sector. Purchases of goods and services from the public sector itself, transfer, interest, and subsidy payments, grants to State and local governments, and purely financial transactions are also included.

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[12] U.S. Bureau of the Budget, *Circular No. A-34*, Washington, 1952.

[13] J. D. Williams, *The Impounding of Funds by the Bureau of the Budget*, Inter-University Case Program, No. 28, University, Ala., University of Alabama Press, 1955.

[14] General Appropriation Act, 151 (64 Stat. 595).

[15] Gerhard Colm, *Essays in Public Finance and Fiscal Policy*, New York, Oxford University Press, 1955, p. 190.

[16] The law provides that "no contract for purchase is to be made except under an adequate appropriation" (41 U.S.C. 11). There are a number of specific instances where a Federal agency may place an order in advance of an appropriation (25 U.S.C. 99).

PRODUCING GOVERNMENT-ORDERED GOODS

Pursuant to the contracts and orders placed, the suppliers of government goods and services, in both the public and private sectors, produce or otherwise obtain and then deliver the items previously obligated for. Government contracts usually contain delivery schedules. In the case of heavy equipment, however, production delays and delivery date extensions are commonplace and the amount of control by the Government over the speed of work on the contract depends on the ability of the procurement officer as well as the cooperation of the contractor.[17]

To the extent that production is carried on in the private sector, this stage of the Federal spending process is not usually reflected in the Federal financial accounts. The fact that disbursements to factors by government contractors do not appear in the government accounts at this stage but in the private accounts will be of considerable significance in the subsequent analysis of the economic effects of the governmental spending process.

In the case of production carried on by a government agency, the actual disbursements to factors in the course of production are reflected as expenditures in the Federal accounts. In the case of expenditures which are not for currently produced goods and services, such as transfer payments, interest payments, and the acquisition of land, the lag between obligations and expenditures is usually nonexistent or at a minimum, depending upon the nature of the individual program involved. Moreover, such expenditures do not involve the long production lead times that are characteristic of hard goods procurement.

MAKING PAYMENTS: THE CONCLUDING STEP

In accordance with private business practice, the Federal Government generally pays for the items it orders after they have been delivered, inspected, and approved. A number of agencies are authorized to make advance and progress payments.[18] These are usually confined to large orders for heavy equipment in the production of which the supplier requires considerable additions to his normal working capital.

Progress payments can usually be made up to 70 percent of the costs incurred or 85 percent of direct labor and material alone.[19] No interest is charged the contractor on such payments.

Advance payments are made, prior to the performance, under a contract and are expected to be liquidated from payments due the contractor as a result of performance. Unlike progress payments, advance payments are made under restrictive and selective conditions.

Only $47 million worth of advance payments by the Department of Defense were outstanding as of December 1959. In contrast, $2.6 billion of progress payments were outstanding on that date.[20] Such

[17] U.S. Commission on Organization of Executive Branch of the Government, *Task Force Report on Military Procurement*, Washington, Government Printing Office, 1955, p. 34.
[18] Armed Services Procurement Act of 1947, as amended, First War Powers Act, 1941, as amended.
[19] Department of Defense, *Armed Services Procurement Regulation*, 1960 edition, Washington, Government Printing Office, 1960, p. E49.
[20] U.S. Congress, Joint Economic Committee, *January 1959 Economic Report of the President*, Washington, Government Printing Office, 1959, p. 703.

payments have been concentrated in heavy procurement where production time and hence the lag between obligations and deliveries is the longest.

THE LAGS IN THE PROCESS

As a result of the number of steps involved in the Federal spending process and because of the length of time often required by suppliers to produce the goods ordered by the Government, there is, in aggregate, a substantial lag between the time expenditures are authorized and the time they are made.

The lags in the early stages of the process are primarily administrative. It takes time for the agencies to prepare and obtain approval of their apportionment requests, for specifications to be drawn up for individual orders, and for contracts to be awarded. The length of this period has been attributed to "the time-consuming nature of planning." [21]

The lag may depend in part on the newness of the program and the necessity for establishing new procedures. The average lag of about a year between granting of new obligational authority and the placement of contracts in the 1933 Public Works Administration program was reduced to 100 days for the 1938 program.[22]

A later and more important lag is technological, the lag between the letting of contracts and the beginning of quantity production. This is a period of "make ready," which may range from a few weeks to more than a year. In the typical case of a complex new military item, hundreds of additional engineers are hired and trained; hundreds and sometimes thousands of detail drawings are made; production lines are laid out; material requirements are computed; schedules are prepared for deliveries of material and components to be procured; and subcontracts are negotiated.[23]

Table 2 shows an estimate of the numbers of years which may elapse between contract negotiation and quantity production for typical military items. This stage varies from approximately one-half year in the case of military uniforms to over two years for bombers and jet fighters. Following quantity production, there is the delay between delivery to the Government and payment for the goods delivered. This includes the time needed for inspection, processing vouchers, and making disbursements.

TABLE 2.—*The lag between ordering and producing typical military items*

Illustrative items:	*Number of years* [1]
Military uniform	½
Medium tank	1¼
Recoilless 57 mm. rifle	2
Destroyer DD 692	2
Transport plane	2
Bomber	2¼
Jet fighter	2¼

[1] The time shown for each item represents the span from the end of contract negotiation until the first unit comes off the production line set to deliver at the scheduled rate.

Source: Based on materials contained in *Defense Production Record*, May 15, 1952, p. 1.

[21] Federal Reserve Bank of New York, *Selected Economic Indicators*, 1954, p. 73.
[22] John Kenneth Galbraith, assisted by G. G. Johnson, Jr., *The Economic Effects of the Federal Public Works Expenditures, 1933-1938*, National Resources Planning Board, Washington, Government Printing Office, 1940, p. 28.
[23] Drawn from materials in U.S. Director of Defense Mobilization, *Second Quarterly Report to the President*, Washington, Government Printing Office, July 1, 1951, pp. 7-8.

A study of experience of the Air Force casts some light on the total lag in the Federal spending process. The Air Force is crucial in this connection because it accounts for so much of the "hard goods" purchased by the Government, the heavy equipment with long production time. Of the total new obligational authority granted to the Air Force for the fiscal year 1951, only 25 percent was spent in that year. Forty percent was spent during the following year and 28 percent was spent during the third year. The remaining seven percent was allocated between the fourth and fifth years. (See table 3.)

TABLE 3.—*Relationship of expenditures to new, obligational authority, United States Air Force, fiscal years 1951–53*

[Percent expended]

New obligational authority	1st year	2d year	3d year	4th year	5th year
1951	25	40	28	6	1
1952	23	36	30	9	2
1953	29	35	25	8	3
Average	26	37	27	8	2

Source: U.S. Senate, Committee on Appropriations, Hearings on Department of Defense Appropriations for 1953, Washington, GPO, 1952, p. 607. (Chart inserted by Secretary of the Air Force Thomas K. Finletter.)

As would be expected, purchases of "soft goods" and services do not evidence such a time-consuming lag. The Bureau of Labor Statistics examined reports on almost all Federal contracts for commodities for the calendar year 1947 distributed by both delivery date and date of award. In addition, several agencies made available to the Bureau their listings of expenses in terms of both obligations and expenditures.

As a result of analyzing this data, it was concluded that the lag between obligations and expenditures was negligible for soft goods, although often substantial for hard goods.[24] The Bureau of the Budget has reported a similar general finding:

> In the case of salaries and wages, travel, and like items, the lag between obligations and expenditures is usually no more than a few weeks or a few months.[25]

There are certain legal limits to the lags in the Federal spending process. Most forms of new obligational authority are available for obligation for either 1 or 2 years and are available for expenditures for no more than 2 years beyond that. Within these legal limits, the lag between the Government's embarking on a program and its execution is largely determined by private decision making. Military procurement, however, is financed largely from "no-year" appropriations, which are available until spent; most lending programs are likewise financed primarily from authorizations without specified expiration dates.

It was estimated that 68 percent of the new obligational authority requested for fiscal year 1962 would be spent in that year with the remainder (except for minor amounts of lapsing appropriations) being spent in future years. Also coincidently, only 68 percent of the expenditures in that year would be made out of the authority granted

[24] Irving H. Licht, "Government," Conference on Research in Income and Wealth, *Input-Output Analysis*, Technical Supplement, New York, National Bureau of Economic Research, 1954, pp. 2–13.

[25] *1962 Budget, op. cit.*, p. 10. In 1957, the Bureau estimated the lag for personal services, printing, travel, and transportation expenses at from 15 to 140 days. Michael S. March, "A Comment on Budgetary Improvement in the National Government," *National Tax Journal*, June 1952, p. 173.

in the year. The remaining expenditures would come from authority granted in prior years.[26]

The nature of the lag between new obligational authority and expenditures makes for a changing relationship during the different stages of a buildup; new obligational authority (and obligations incurred) run sharply ahead of expenditures as orders are being placed and initial production gets underway. As the bulk of the spending program is put on order, the gap between new obligational authority and expenditures narrows. Finally, as quantity production is completed and deliveries are made, expenditures continue rising and exceed new obligational authority.

From time to time, attempts have been made to reduce the lag in the Federal spending process. Improved procurement procedures and organization are helpful. More important are steps which have been taken to reduce the technological lag. A number of states have adopted procedures which lessen the lags between authorization and expenditure. The system of "preadvertisement" of bids permits potential government contractors to get their orders to the mills well in advance of actual construction. In the case of the New York Thruway, the State called for superstructure bids for a new Hudson River crossing near Albany several months in advance of the actual letting of contracts for substructure.[27]

REDUCING GOVERNMENTAL SPENDING

The actions which can be taken to curtail expenditures would operate in somewhat the same fashion as the actions involved in making expenditures. A reduction in government spending can be initiated at various stages in the spending process. The effects of the actions taken at each stage can be cumulative in their effects on the total of expenditures during any given period.

For example, the Congress may decide to eliminate or to reduce the scope of a particular program by changing its basic statutory authorization, or by eliminating or reducing the amount of funds authorized for it during a given period. These actions can be implemented either through eliminations or through reductions in the amount of new obligational authority being considered or in the recision of existing obligational authority.

Independently of congressional action, the President may decide that a given agency should not spend all of its available obligational authority. This decision can be implemented by reducing its quarterly apportionment of funds and placing a portion of the appropriation "in reserve."

The individual agency can reduce the amount spent for a program by slowing down the rate at which it obligates its funds, by obtaining a slowdown in the rate at which the partiuclar goods or service contracted for are produced and made available to the agency, or by rescinding contracts and other commitments it had previously entered into.

Most government contracts provide for their cancellation in the interests of the Government.[28] There are important obstacles to the reductions in expenditures which can be made through recisions of

[26] *Federal Budget in Brief, 1962*, Washington, Government Printing Office, 1961, p. 58.
[27] *Engineering News-Record*, July 5, 1956, p. 26.
[28] Department of Defense, *Armed Services Procurement Regulation*, *op. cit.*, p. 851.

outstanding contracts, such as the payment of damages to the contractor for the unrecoverable costs which he has incurred, or the loss of interest on the part of business firms in bidding on future government contracts. This factor is a limitation both at the legislative and agency levels. In the case of such activities as public works projects, the desire to protect the government investment already made may be decisive in continuing expenditures on a going project in the face of a general effort towards curtailment of government spending. Most supply and construction contracts permit the contracting officer to order certain changes in the performance of the contract. The order of the contracting officer, so long as it is within the scope of the changes clause involved, does not require the consent of the contractor.[29]

SUMMARY

The Federal Government spending process can be viewed as a continuous stream of activity. Four major stages may be highlighted because of their importance in terms of the impact of government spending on the economy: (1) the granting of congressional authorizations to let contracts and make expenditures; (2) the placing of contracts by government agencies; (3) production of the goods and services ordered by the Government; and (4) delivery of the finished product and the government payment.

The granting of financial authorizations by the Congress and the letting of contracts by the agencies are basic control points over the amount and rate of spending; the actual production generates the direct effect on the level of output in the economy (in those cases involving government purchases of goods and services). The flow of expenditures has important financial effects, including the use of Federal tax or debt receipts and the increase in the liquidity of the private sectors of the economy; it also measures the completion of the government spending program.

Subsequent chapters will explore the impact on the economy of each of these stages under varying circumstances and for different types of governmental spending programs.

Effects on the Economy of an Increase in Government Spending

In this chapter four phases of the Federal Government spending process are highlighted: (1) enactment of appropriations, (2) placement of government contracts with the private sector, (3) production in the private sector to meet these contracts, and (4) delivery to and payment by the public sector.

A number of simplifying assumptions are made so that the effects on the economy arising directly from an increase in governmental spending can be more readily examined. More complicated situations are dealt with in the following chapter.

An increase in government spending is assumed which consists entirely of expenditures for goods and services currently produced in the private sector of the economy. It is assumed that these expenditures are financed by borrowing idle funds.

It is also assumed that there are sufficient idle resources and mobility in the economy to produce the goods and services ordered by the

[29] *Ibid.*, . 70pl.

Government without new fixed business investment or price or wage increases and without displacing any private demand. Also postulated is the availability of adequate financing for the government contractors by the private credit market. It is further assumed that this increase in government spending will generate no indirect psychological effects on consumer or business expectations nor any changes in other government programs.

PHASE I. APPROPRIATION OF FUNDS

It is assumed that the President transmits to the Congress a supplemental appropriation request which it enacts after due deliberation. Under the assumed conditions, there is no immediate effect on the economy as measured by any indicators of economic activity, such as GNP or the index of industrial production or any of the lead series, such as the volume of new orders. Neither is there yet any change registered in any of the measures of government spending.[30] This stage may take one to two quarters of a year, on the average.

PHASE II. PLACEMENT OF CONTACTS

The government agency to which the appropriation is made negotiates and places contracts with business firms in the private sector of the economy. The following are some of the events that would flow from the receipt of a government order by a manufacturer.

He finds that he cannot fill the order out of inventory or from existing production lines. He determines that this additional volume of production can be obtained through more intensive utilization of existing capacity, but that it will require substantial increases in inventories of materials and increased working capital which will have to be obtained outside of the firm.

On the basis of the company's past performance and the government order, the contractor obtains a working capital loan from his bank. He begins to place orders for materials, to hire additional workers, and to subcontract parts of the order to other firms. These suppliers or subcontractors will be going through a similar process at this time, in some cases involving another tier of suppliers or subcontractors.

The first effect on the volume of economic activity will now be taking place. As deliveries begin to be made on raw materials, and as wages are earned by the first of the newlyhired workers who are tooling-up, the contractor will be drawing upon his loan authorization and making small amounts of payments to the various factors of production. An increase will be registered in the outstanding loans of the commercial banks and, *cet. par.*, in the total money supply of the economy. Also, an increase will occur in gross private domestic investment. This latter item is the component of GNP which contains the inventory accumulation resulting from the increased amounts of goods in process.

The economic activity represented by contract placements is not reflected in any of the generally used measures of government spending. These contracts are included, but not identified separately, in the monthly reports by the Department of Commerce on new orders received by business firms.

[30] As is pointed out in ch. V, the series on budget expenditures, cash payments, and government purchases all measure essentially the payment stage of the spending process (phase IV).

That the placement of government orders ("obligations incurred" by the Federal agencies) is the phase of the government spending process which energizes private production on government account has been noted by a number of observers:

> The initial stimulus to production is provided by government contracts for procurements.[31]
>
> * * * it is the placing of a contract, or its anticipation, which leads industry to plan its acquisition of materials and labor and to schedule its production.[32]
>
> The initial impact of Government purchases results when new orders are placed * * * New orders initiate a demand for raw materials, working capital, and labor required in manufacturing the products. The flow of new orders has had an important influence on inventory policy and rate of production in certain durable goods and industries such as transportation equipment and primary metals, where defense orders represent an important part of their total business.[33]

It is in the stimulus to productive activity rather than in the minor amounts of initial "make ready" production that the contract placement stage exercises an important effect on economic activity.

PHASE III. PRODUCTION OF GOODS

As quantity production gets under way on the government order, payments are made by the government contractor for wages to the employees engaged in the work, materials delivered, and the interest due on the working capital loan. He will also be accruing profits on the order.[34] The costs incurred by the contractor during the entire production period, i.e., the "value added," should total the amount of the order.

The outlays of government contractors are not reflected in government purchases of goods and services nor in any other government expenditures series at the time they are made. These outlays will currently show up in GNP—in the change in inventory segment of gross private domestic investment.

Inventories, as measured in the national income accounts, include the following kinds of goods: (1) all types of raw materials and supplies that must be kept in stock if production is to flow smoothly; (2) a certain quantity of goods in semifinished state, so-called work in process; and (3) stocks of finished goods. Accordingly, government-ordered production in the private sector will show up in GNP (on a value-added basis) as it goes through the above three stages prior to its receipt by the Government and its recording as a government expenditure.

The *Survey of Current Business* has explained the phenomenon quite clearly:

> After work starts on government contracts, there is a considerable period, depending upon the type of goods in question, during which such production is recorded as private investment—specifically, as a component of the change in business inventories. It is only upon delivery of finished goods that government expenditures are affected.[35]

The amount of production on government orders remaining in business inventories during a given period cannot be identified in the

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[31] Melvin Anshen and Francis D. Wormuth, *Private Enterprise and Public Policy*, New York, Macmillan, 1954, p. 530.

[32] John Perry Miller, *Pricing of Military Procurements*, New Haven, Yale University Press, 1949, pp. 24-25.

[33] Federal Reserve Bank of Philadelphia, "The Budget for 1956," *Business Review*, February 1955, p. 11

[34] "It is * * * a generally accepted accounting procedure to accrue revenues under certain types of contracts and thereby recognize profits, on the basis of partial performance * * * Particularly where the performance of a contract requires a substantial period of time from inception to completion * * *" American Institute of Accountants, *Restatement and Revision of Accounting Research Bulletins*, New York, 1953, p. 95.

[35] *Survey of Current Business*, November 1950, p. 8.

available statistics and, hence, the amount of production carried on in the private sector on government account cannot be measured. Only a general idea can be obtained from series on contracts placed and deliveries made.

On the income side, increases will be registered in compensation of employees, corporate profits, rental income and, perhaps, earnings of unincorporated enterprises. Increases in consumer expenditures also occur as a result of these income payments.

This stage may last from one quarter up to two years or more depending on the production time involved.

PHASE IV. PAYMENT FOR GOODS

During phase IV the contractor delivers the Government the goods which have been produced during phase III. Following inspection and other processing activities, payment is made by the Government. Several economic effects of this activity can be discerned.

The delivery of the equipment shows up in the national income accounts as a decline in business inventories and, hence, in gross private domestic investment. It also is recorded as a government purchase of goods and services. These two movements tend to cancel each other out with no net effect on GNP. The government purchases do not represent payments to the factors of production but are more in the nature of intersectoral transfers—reimbursements to the government contractor for his outlays during the previous period.[36]

Following the payment by the Government, the contractor would repay the working capital loan. These actions tend to reduce the amount of private credit, reduce the Government's cash balances, and increase the cash position of the firm doing business with the Government. The contractor can now disburse dividends, or set aside funds for tax payments, future expansions or merely an improved cash position. The necessary public debt securities will be marketed during this time.

This is the period during which the government purchase shows up as a budget expenditure and a cash payment to the public.

RECAPITUALTION

Table 4 is an illustrative version of the relationship through time between the four major stages of the Federal spending process and aggregate economic activity. It is assumed that in stage 1, the Congress authorizes a Federal spending program of 50, with no immediate effect on GNP. During stage 2, contracts are let with private firms which begin necessary tooling up operations. The relatively minor production activity involved is reflected in GNP. During state 3, quantity production is carried on in the private sector on government account and this is the period during which the significant effect on GNP occurs. As yet, no government expenditures have been made.

[36] *Cf.* Samuelson and Hagen on theWorld War I experience: "The producer borrowed money or used his own funds to finance production; later, when the goods were delivered, the Government payment replaced the funds. The contribution to purchasing power had occurred earlier." Paul A. Samuelson and Everett E. Hagen, *After the War—1918-1920, Military and Economic Demobilization of the United States*, National Resources Planning Board Pamphlet, Washington, Government Printing Office, 1943, p. 23.

TABLE 4.—*Illustrative impact of the major stages of the Government spending process*

State of spending process	Business inventory accumulation	Government purchases	All other	GNP
1. Authorization				
2. Contract placement [1]	+5			+5
3. Production	+45			+45
4. Payment	−50	+50		

[1] Includes tooling-up expenses incurred prior to quantity production getting underway.

NOTES:
1. Assumes a hypothetical 1-shot Government spending program of 50.
2. Amounts shown are changes from the levels obtaining in period "O."
3. Only direct and primary effects are shown in the table.
4. Fluctuations in economic activity likely to arise from other causes are not shown here or in subsequent amplifications.

During stage 4, the government-ordered goods are completed and delivered. This is the period when government payments are made. However, while the total of government purchases of goods and services rises to reflect the payment, there is an equivalent reduction in business inventory accumulation. Hence, there is no net effect on GNP during this period.

In practice, the sequence is not always as simple as outlined above. While the Congress is considering a new appropriation for military procurement, the affected industry may be conducting preliminary discussions with the government agencies involved and may also be tooling up. Stage II may be quickened and an expansion in inventories begun as soon as the contracts are negotiated.[37] Also, after the initial lag between production and deliveries, there may be a steady stream of production in the private sector and deliveries to the public sector. This would result in no further need for inventory accumulation and the increases in GNP resulting from this government program would then show up in government purchases of goods and services, rather than in gross private domestic investment, as postulated above,

However, given the simplifying assumptions which have been made, the following is the sequence in which the various stages of the governmental spending process ordinarily enter into the movements of total economic activity.

1. The enactment of an appropriation indicates the size of a government spending program (for the period for which the funds are appropriated), but is not reflected in any measure of current economic activity.

2. The placing of government contracts with the private sector gives rise to the begining of production and, hence, furnishes a measure of the early and potential impact of government spending (i.e., procurement) on the economy.

3. The actual production in the private sector on government account shows up in GNP as additions to business inventories. This is the stage when government contractors actually make disbursements for wages and materials. However, because of the lack of available statistics, we cannot measure the magnitude of these disbursements, which represent the amount of private production on government account. Increases in consumer spending also occur during this period as a result of the payments to factors.

[37] Gardner Ackley, "The Multiplier Time Period: Money, Inventories and Flexibility", *American Economic Review*, June 1951, p. 357.

4. The completion of production of the goods and services ordered results in deliveries from the private sector to the Government. This is the stage where the government spending program shows up as government purchases of goods and services. With the simultaneous decline in private inventories of a corresponding amount, there results no net effect on GNP during this period. However, this is the point at which the Government generally makes its expenditures for the goods and services delivered to it—when this activity is recorded as a budget expenditure and a cash payment.

OTHER TYPES OF GOVERNMENT SPENDING PROGRAMS AND PROCEDURES

Without relaxing many of the simplifying assumptions made earlier, other payment and production procedures and other types of government expenditures can be examined.

Other payment arrangements. Many government contracts provide for partial payments as the work is progressing. This is frequently done on heavy equipment orders such as aircraft, where the production time may take several years and where privately obtained working capital is not normally sufficient during this period to cover the payments to factors.

Advance and progress payments reduce the contractors' need for outside financing. To the extent that some of the benefit of these payments is passed on to the subcontractors or suppliers, their need for additional financing is diminished. Government cash balances would be drawn upon during the production period rather than after delivery of the equipment, as would occur under more usual payment arrangements. Hence, a stream of borrowing from the public might be necessary instead of a single funding effort at the final payment stage (or similar adjustments in scheduled repayment of government borrowing).

Progress and advance payments show up as budget expenditures and cash payments to the public at the time they are made. In the case of the income and product accounts, such payments in theory are included in private inventory accumulation rather than in government purchases. The customary practice, however, of the business firms which receive progress payments against partially completed work is to list the goods in process as receivables from the Government rather than as inventory.[38]

The Department of Commerce attempts to adjust for this divergence, but does not have the necessary data in all cases. To the extent that the adjustment is made when necessary, production will be currently reported as increases in business investment; advance and progress payments, as well as completion payments, will show up as government purchases of goods and services at the time the delivery of the completed item is made.

Other production arrangements. A substantial segment of government purchases of goods and services is made directly from the public sector. Conventionally, this gross product of the public sector is taken as the compensation of general government employees.[39]

[38] "Unbilled costs and fees under such (Government) contracts are ordinarily receivables rather than advances or inventory * * *" American Institute of Accountants, *op. cit.*, p. 93.
[39] "1954 National Income Supplement," *Survey of Current Business*, p. 53.

Where a Federal agency, to enable it to increase its staff, is granted a supplemental appropriation, or a regular appropriation larger than it received for the previous year, it can begin to hire new personnel as soon as it receives an apportionment of funds. Funds are obligated as the personal services are rendered. Limited by an initial administrative lag, usually of one to two weeks, the funds are expended as biweekly payments for services as they are rendered. Hence, the lag between obligations and expenditures is at a minimum. From the viewpoint of economic activity, the payments to factors (government employees) are recorded as government purchases of goods and services when the services are rendered and when payments are made. There is no time lag involved for intersector transfers as is the case for goods and services which the Government buys from private business firms.

However, even Government programs which are basically administrative in nature involve the purchase of supplies and other goods and transportation and other services from the private sector. The actual purchasing patterns of Federal Government agencies are characteristic of this "mixed" case. It is essentially a question of degree. In the case of the General Accounting Office, about 97 percent of the outlays for a given year were wage payments to government employees. The General Services Administration, in contrast, spent about 80 percent of its funds on supplies and materials produced in the private sector and only seven percent on wage payments to its own employees. Most government agencies fall somewhere between these two extremes.[40]

In the important case of government programs involving the procurement of heavy equipment, the bulk of the production is usually carried on in the private sector. Moreover, it is precisely these programs which involve long production load times and the consequent buildup of private inventories on government account. Military and foreign aid programs are the most important representatives of this group and it is in these areas where abrupt and large shifts in magnitude and timing are most common.

Other types of government spending programs. Many government spending programs are not for current output and do not directly enter into gross national product, although they may be part of other national income accounts. In addition to purchases of goods and services, government spending may go for the following: transfer, interest, and subsidy payments which do not constitute a government demand for output but are income to the receivers; grants-in-aid to State and local governments which primarily affect economic activity as they are utilized by the non-Federal governmental units and then would be included as purchases of goods and services, transfer payments, etc.; intragovernmental transactions which are purely internal transfers of funds and do not directly affect the public or the economy generally; and purchases of "used" assets such as land and second-hand equipment and loans to private recipients, which are on capital account for both the spender and the receiver.

The timing of the economic effects of these types of government spending programs, may differ from that of purchases of goods and services.

[40] U.S. Bureau of the Budget, *Summary of Obligations by Object*, 1954.

Normally, transfer and interest payments only affect the level of output after a lag and indirectly, as they are respent by the recipients. This is the reverse of the situation obtaining in the case of government purchases where the effect on output levels normally precedes the government expenditure. Anticipatory effects could take place under certain circumstances, such as newly unemployed workers maintaining a certain level of spending in anticipation of the future receipt of unemployment compensation.

The accruals of interest can have some economic effect in advance of the actual payment. Some bondholders report interest on an accrual basis for tax purposes. Also, the knowledge that their net worth position is growing stronger may also influence the spending decisions of some investors.

Subsidy payments, to the extent that they have favorable repercussions on the expectations of producers, may evoke a positive effect in advance of the government expenditure. The prospect of a subsidy could encourage farmers to increase production. In some cases, such as where the Government is a major purchaser of the commodity, the subsidy may be an alternative to a price rise and the total level of government spending may be reduced. There might not be any change in real output, but a rise might be averted in its monetary value. This has been experienced in wartime in conjunction with the operation of a system of price controls.[41]

Grants-in-aid to State and local governments normally affect economic activity as they are utilized by the non-Federal governmental units. State and local purchases of goods and services with the Federal funds would have similar results as direct Federal purchases. Likewise, State and local transfer payments financed by Federal funds would have similar results as Federal transfers. However, circumstances can arise under which the very act of the Federal Government in embarking on a new or expanded grant-in-aid program, or even its anticipation, can evoke an important stimulus in private or State and local activities in advance of any specific payment or even pledge of funds to a State.

The expansion in 1956 of the program of Federal grants for highway construction furnishes such an example. In advance of the congressional authorization of a $38 billion program over a 16-year period, potential suppliers such as cement producers and manufacturers of road building equipment began to plan for expansions of capacity and markets. The States undertook advanced planning of highway projects with the result that every State had some qualifying projects either "well into the design stage or ready to go."[42]

As soon as the program was enacted into law, the Federal Government acted to achieve the expansive effects. The Secretary of Commerce immediately announced, "We are starting the greatest public works program in the history of the world. * * * Its favorable impact on the economy is already felt."[43]

The Commerce Department followed with a release claiming that 118,000 additional workers would be engaged in highway construction

[41] Office of Price Administration, *Problems in Price Control: Stabilization Subsidies*, Washington, Government Printing Office, 1947, pp. 18–22.

[42] "Can the States Meet the Challenge?" *Engineering News-Record*, July 5, 1956, p. 23. *Cf.* also issue of June 7, 1956 prior to passage of the bill, "Many States and cities have had their sights set on the expanded Federal highway program for the last 18 months. Speedup of existing programs will follow quickly upon enactment of the legislation" (p. 26).

[43] "Federal Highway Spending Termed a Quick Shot in Arm to Economy," *Wall Street Journal*, July 2, 1956, p. 4.

within 5 years and that the demand for steel for highway construction during that period would expand by 86 percent, that for cement by 79 percent, and that for explosives by 60 percent.[44]

The reaction in the supplying firms was similarly optimistic. The Associated General Contractors of America stated that the program would generate $200 million of additional highway construction during the first 2 months following its passage and an additional $200 million during the following 4 months.[45]

Federal loan programs provide a number of variations in the timing of the economic impact of government spending. The main effect of the government loan would normally rise from the subsequent purchases made by the recipient of the loan. For example, housing loans can be used to finance new private residential construction; production loans can be made to business firms and to farmers for inventory accumulation and, ultimately, for sales to consumers, to governments or to other private businesses; and loans can be made abroad for net foreign investment.

In some cases the Government may merely take over existing loans and increase the liquidity of private firms or individuals. The secondary mortgage operations of the Federal National Mortgage Association are of this nature. However, in assuring commercial lenders that there will be a standby secondary market, FNMA undoubtedly has encouraged commercial lending for housing mortgage purposes. Also, through the device of advance commitments, FNMA has at times functioned virtually as a primary lender.[46]

In some circumstances, the expansive effect of governmental lending would precede the government disbursement. This would be true if private firms order goods and services, hire additional employees, and begin production on the basis of the Government's commitment to make the loan at a later date. In many instances, private production may take place soon after the making of the loan by the Government. In the case of agricultural production, the loans would be used to acquire implements, feed, and other items needed before production could get under way. Here the expansive effect on economic activity would normally follow the making of the loan by the Government.

Government purchases of land and other existing assets merely add to the liquidity of the recipients. Only to the extent that the proceeds are used to purchase current output rather than other existing assets will there be any resultant increase in the level of economic activity.

Effects on the Economy of a Change in Government Spending: Relaxing the Simplifying Assumptions

Some of the possible effects on the economy of the operation of the various phases of the governmental spending process are examined under more complicated circumstances than in the previous chapter.

ANTICIPATORY EFFECTS

In the simplified situation it was assumed that the new government spending program would be neutral in its effects on consumer and

[44] Department of Commerce, Bureau of Public Roads, release dated July 25, 1956.
[45] *Wall Street Journal*, July 2, 1956, p. 4.
[46] Leo Grebler, *The Role of Federal Credit Aids in Residential Construction*, National Bureau of Economic Research, 1953, Occasional Paper 39, pp. 36-49.

business expectations. Consumers may not foresee any adverse repercussions on the availability or price of commodities, or they may believe that their stocks of hoardable commodities are adequate to meet any temporary shortages that may occur. Also, their purchasing power, including the availability of credit, may be severely limited. All of these circumstances would dampen any advance wave of consumer buying.

Businessmen may also believe that there is no need to alter their plans. The magnitude of the government program may not be very great, the duration may be limited, or the government program may be a part of a large stabilization policy. Under these circumstances, there may be no significant change in expectations, although in the absence of the governmental stabilizing action business expectations might have become less optimistic.

The Government's act of embarking on a large new program can have a positive "announcement" effect on consumer and business expectations. Such was the case in the early stages of the Korean mobilization program when memories of World War II price rises and shortages set off a wave of private ordering and buying in advance of government purchasing.

TABLE 5.—*A new Government spending program, giving rise to favorable private expectations*

Stage of spending process	Consumer expenditures	Business inventory accumulation	Government purchases	All other	GNP
1. Authorization	+10	+10			+20
2. Contract placement		+5			+5
3. Production	+35	+45			+80
4. Payment	+5	−50	+50		+5

NOTE.—Amounts shown are changes from the levels obtaining in period O and are based generally on table 4.

Table 5 shows, in an idealized fashion, how favorable expectations on the part of business and consumers resulting from the Government embarking upon a spending program can be superimposed on the direct effects of such a program. The present case includes an "announcement" effect of the government authorizations on consumer spending and business inventory accumulation. The subsequent developments are similar to those in table 4, except that the "second round" effect on consumer spending is specifically indicated here.

Private business investment may sharply accelerate in advance of any large increases in government ordering. If the Government embarks on a program to alleviate recessionary conditions, businessmen's hopes for an upturn may be raised. As Hamberg points out, under these circumstances:

> * * * the marginal efficiency of capital may rise sufficiently to provide an increase in private investment independent of the immediate effects of rising current spending (public and private). The extent of this upward shift in the investment *schedule* would depend on the confidence that businessmen had in the success of the government's efforts.[47]

The reaction of businessmen to this new government spending program may be negative. They may fear that such activities are a

[47] D. Hamberg, *Business Cycles*, New York, Macmillan, 1951, p. 357.

prelude to government interference and competiton with private enterprise.[48] The announcement effect of government spending is too diffuse and elusive to be measurable. We simply do not know what the actions of businessmen and consumers in a given period would have been in the absence of the anticipatory effect of government activity.

Measures of the magnitude of the new government spending programs may prove helpful in gauging the anticipatory reactions of the private sector. Although there is no precise relationship between the granting of new obligational authority and anticipatory reactions, sharp and sizeable changes in the magnitude of this measure can throw light on some of the early reactions to changes in government programs.[49]

AVAILABILITY OF RESOURCES

In the examination of the simplified situation in the preceding chapter, it was assumed that the placing of contracts by the Government would, in effect, start the wheels of industry turning. Resources, however, may not always be present. Substantial amounts of new investment may be necessary before production commences.

In this case, the production by private business would include additions to private plant and to equipment needed to produce the government-ordered goods as well as including actual production on the goods destined for government use.

There are several important distinctions between these two activities. Although both groups of expenditures would show up initially in gross private domestic investment, the capital expenditures would be included as additions to plant and equipment and would remain in the stock of private business assets. The production on government account, on the other hand, would initially show up as business inventory accumulation but, as the production is completed, would be transferred from this segment of business investment to government purchases of goods and services and the items produced would become part of the stock of government assets. Table 6 shows the operation of these two different types of production activities arising from government orders.

TABLE 6.—*A new Government spending program requiring additional private investment*

Stage of spending process	Consumer expenditures	Private fixed investment	Business inventory accumulation	Government purchases	GNP
1. Authorization					
2. Contract Placement					
3a. Investment		+10	+5		+15
3b. Production	+35		+45		+80
4. Payment	+10		−50	+50	+10

Note: Amounts shown are changes from the levels obtaining in period 0 and are generally based on Table 4.

Under a situation of relatively full utilization of resources, the letting of additional government contracts may simply result in accumulations of backlogs and unfilled orders. Given the limitation of resources, this problem cannot be remedied by additional investment

[48] *Cf.* Hayes' statement on the 1937 recession, "* * * who could tell where the experimenters would turn next?" Douglas A. Hayes, *Business Confidence and Business Activity: A Case Study of the Recession of 1937*, Ann Arbor, University of Michigan Press, 1951, p. 120.

[49] See ch. VII for details of recent experience along these lines.

in productive facilities. Placement of contracts by the Government would not immediately affect private production. Attempts by the Government to bid away resources from private uses could result in rises in prices. However, there would not be any real increase in the total production of the economy, except that resulting from changes in the product mix.

Where the Government resorts to material controls and allocation systems to obtain the output it needs, the backlogs may accumulate in the private sector rather than in the work on government contracts.

Table 7 illustrates the full employment situation in which the Government utilizes direct economic controls to draw resources away from private uses. As full utilization of resources is postulated, there would be no effect on the aggregate level of economic activity during any part of the government spending program. The authorization of the new spending program could not give rise to any changes in consumer and business outlays (resulting from changes in expectations) nor could the contract letting lead to any expansion in the volume of production. As a result, when production of the government-ordered goods is completed, there would be an increase in government purchases and an equivalent decline in consumer expenditure and/or business fixed investment depending on which private demands were displaced.

TABLE 7.—*A new Government spending program requiring compulsory transfer of resources*

Stage of spending process	Consumer expenditures	Private fixed investment	Business inventory accumulation	Government purchases	GNP
1. Authorization					
2. Contract placement			(1)		
3. Production			(1)		
4. Payment	−40	−10		+50	

[1] Although the total level of inventories would be unaffected by the new Government spending program, the portion devoted to Government-ordered production would be increased during these periods (and decreased in the subsequent period).

NOTE.—Amounts shown are changes from the levels obtaining in period 0.

There is also the special case where the government contractor can fill the order out of existing inventory. Here production would not commence until the firm hires labor and other factors to replace the depleted inventory. The government payments in this case would initially add to the supplier's working capital and would constitute income only with a lag—when they are paid out to the factors of production for replacement of the depleted inventory.

As could be seen in the above cases, the usefulness of the measures of the early phases of the government spending process in analyzing current economic developments varies with the surrounding circumstances. The volume of government orders affords an insight into the Government's demand for current private production and future production. However, the relation between new orders and the ensuing production depends on the availability of resources. Here, unliquidated obligations (unfilled government contracts) are an indicator of future production on government account.

FINANCING PRIVATE PRODUCTION

It was assumed earlier that the government contractor can obtain financing and thus, once facilities and materials are available, can effectively carry on government-ordered production.

In a report to the Hoover Commission it was observed that the need for short- or long-term borrowing to finance current operations becomes much greater when a firm takes on government contracts:

> Capital borrowings in the performance of Government contracts are frequently made necessary because of common delays in obtaining payment such as the slow processing of invoices, delays encountered in obtaining definitive contractual instruments authorizing payment, Government revisions of delivery schedules which delay or stretch out deliveries over a longer period, thereby prolonging investments in inventories, and other Government action * * *[50]

Retained earnings are often a firm's prime internal source of working capital while bank credit is a major external source. Here can be seen the possible ramifications and interrelations of fiscal and monetary policies. A liberal money market would tend to quicken and ease the expansion of business credit while a tight one might tend to have an adverse effect. In this connection, taxation which impinges on savings and thus reduces the supply of loanable funds would tend to have a tightening effect on the availability of external business financing. Also, such fiscal measures as changes in the level of corporate taxation and in the treatment of undistributed profits could strongly affect the extent of internal financing.

The liberalization of advance and progress payments tends to ease the financing problems of government contractors. Other governmental devices to ease the demand of government contractors for working capital are the delivery of government-owned raw materials and of semifabricated items for processing or for assembly and the utilization of government-owned inventories. All of these methods result in increasing the current assets controlled by business firms working under government contracts. To the extent, consequently, that these financial arrangements are carried on, business concerns do not have to rely solely on their own resources to find the capital and the credit necessary to support current production.

In the absence of governmental assistance, there may be financial as well as technological limits to expansion of production on government orders. As can be seen by the large array of governmental devices designed to ease the financing problems of government contractors and by the performance of the American economy during wartime, these financial limitations have generally not been controlling.

FINANCING THE GOVERNMENT EXPENDITURES

In the simple situation examined in the previous chapter, it was assumed that the government payments to contractors would be financed by borrowing idle funds. It would be more usual for the Government to finance a large increase in the level of expenditures through raising the level of taxation or through borrowing active investment funds or by means of a combination of the two. In the short run, some increases in expenditures could be financed by drawing down the government's cash balances.

[50] National Security Industrial Association, *Report to Commission on Organization of the Executive Branch of the Government Regarding Military Procurement*, Washington, 1954, p. 57.

The economic effects of expenditures are not generally independent of the means of financing them. For example, increasing individual income taxes tends to offset the increased consumer incomes (and subsequent expenditures) resulting from the payments to the factors of production made by the government contractors. Similarly, raising the corporate income tax reduces the funds available for the payment of dividends and for internal financing. Government borrowing operations may compete with private uses of funds.

There would also be a reciprocal effect on the public sector due to the government-induced expansion in the private sector. Unemployment compensation payments tend to decrease in periods when increased production, including government-ordered production, results in a lower level of unemployment. Also, increases in consumer and business incomes tend automatically to result in greater Federal revenues, especially with the existence of a progressive tax structure.

REDUCING GOVERNMENT SPENDING

In general, the effects on the economy of a reduction in spending are the reverse of the ones traced for the expansion of government expenditures. A curtailment of new obligational authority leads to a reduction in the volume of orders placed which in turn leads to a reduction in private production on government account. The end result is a reduction in government expenditures.

In practice, complicating factors will arise analogous to the ones examined in the preceding discussion of expansion in government spending. The very act of embarking upon a contraction of government activity can have an "announcement" effect on business and consumer anticipations. The exact nature of this response will vary with the surrounding circumstances.

Under circumstances of a large pent-up private demand for goods and services the curtailment of government demand may evoke waves of private buying of both consumption and investment goods. In other circumstances, the heralded decline in government purchasing may lead to a reduction in the total demand for the goods and services produced in the economy. Under such circumstances, announced reductions in government spending (as indicated by lower annual amounts of new obligational authority) will have a dampening effect on the private sectors of the economy in the absence of any large amounts of unsatisfied nongovermental demand.

Declines in new government orders and cutbacks and recisions of existing contracts have an immediate repercussion on business firms heavily dependent on government demand. Ackley has shown that in the case of a contraction in demand for production the crucial factor may be the length of irrevocable commitments to suppliers and to the factors of production.[51] However, if a seller has inventories which exceed what he feels to be the necessary minimum under the new circumstances, he can contract his production prior to the completion of his contracts (subcontracts from the Government's point of view) and can fill the balance out of inventory. Prompt settlement of contracts terminated by the Government helps to free working capital, to clear plants of special inventories and equipment, and to permit business to attain normal production patterns.

[51] Ackley, *op. cit.*, p. 361.

A complicating factor in the analysis is the role of unexpended balances of authorizations available to Federal agencies.[52] Unless these balances are rescinded or put in reserve, the agencies can continue to use the unobligated portions of these balances to place new orders and let contracts in the absence of any current grant of new obligational authority. Approximately 52 percent of the balances carried into the fiscal year 1962 were unobligated, primarily representing available authorizations to expend from debt receipts.[53]

CHANGES IN RATES AND LEVELS

There are a number of situations in which the placement of new orders *per se* may not have any significant effect on economic activity or an effect different from that postulated above.

"Followon" orders, extending and maintaining existing production levels, tend to result in continued stability rather than in any net increment in total demand.

In these instances, we may be approaching some variant of the acceleration principle. The placing of additional government orders with business firms and the subsequent production and delivery to the Government may not have a particularly stimulating effect on business investment or on the economy generally when the net result is to maintain a fairly constant level of government procurement.

TABLE 8.—*Illustration of achieving a higher level of Government spending*

	Stage of spending process	Consumer expenditures	Business inventory accumulation	Government purchases	GNP
Period 1	Authorization of program A	+10	+5		+15
	Contracts for program A		+5		
Period 2	Authorization of program B	+10	+5		+20
	Production A	+35	+45		
Period 3	Contracts B		+5		+100
	Authorization C	+10	+5		
	Payment A	+10	−50	+50	
	Production B	+35	+45		
Period 4	Contracts C		+5		+110
	Authorization D	+10	+5		
	Payment B	+10	−50	+50	
	Production C	+35	+45		
Period 5, etc	Contracts D		+5		+110
	Authorization E	+10	+5		

NOTE.—In this illustration, once the new level of Government spending has been achieved, payments (expenditures) are an adequate indicator of the impact of Government spending.

Table 8 shows a typical four-stage reaction to a new government spending program, with favorable advance repercussions, necessary private investment, and indirect effects on consumer expenditure. To this extent, it is consistent with the earlier discussions, such as that relating to table 5. However, it is assumed that "followon" orders are placed which maintain the level of private production achieved with the original orders. The levels achieved during period 4 (when payment is made on the first series of contracts) are merely maintained in period 5 and beyond.

Finally, the permanency of the change in the amount of government procurement is important. When businessmen and consumers believe

[52] *Cf.* Gilbert and Paradiso, on the private sector: "* * * The significance of an increase or decline in new orders depends largely upon the condition of unfilled order backlogs * * *" Milton Gilbert and Louis Paradiso, "National Income and other Business Indicators" (in Philip M. Hauser and William R. Leonard, *Government Statistics for Business Use*, New York, John Wiley & Sons, 1946) p. 45.

[53] *1962 Budget, op. cit.*, p. 17.

than an increase in government spending will be lasting, they may react, particularly in investment decisions, far more fully than if they regard such increases as merely transitory. In this relationship, Wallich concludes that:

> * * * one probably cannot assume that an increase in government orders will induce the same amount of private investment that might be called forth by higher private demand. This will be true, at any rate as long as government demand is regarded as less permanent than private demand.[54]

SUMMARY

The magnitude of changes in the various phases of the Federal spending process can have important economic effects under many circumstances; an awareness of these surrounding circumstances is essential to an adequate analysis of the changes in government spending patterns.

The very act of announcing and authorizing a new or increased spending program—the granting of new obligational authority—can sometimes give rise, by affecting expectations, to positive or even to negative changes in business and in consumer spending in advance of the actual letting of contracts or of the disbursement of government funds.

The act of placing contracts and incurring other obligations may not always signal the onset of production. The needed production facilities may not be readily available or backlogs of orders may first have to be worked off. Also additional working capital may be required. On the other hand, the government order may be filled out of inventory and no effect on economic activity would take place until some time later.

In addition to the direct effects of the government expenditure there will be the accompanying effects of the financing of this outlay. Automatic increases in personal and corporate tax collections may offset in part the effects of the rise in government expenditures, including the spendings out of the earnings from government orders. Government borrowing, likewise, may compete with private demands. Reductions in the level of government spending also work their effects through the economy in an analogous four-step process.

Although all of these complications may modify the effect on the economy of a program of government procurement from private industry, the basic relationships generally hold: The primary effect on productive activity (to the extent there is any) occurs in advance of the actual government expenditures. Under most of the circumstances that have been examined, the placing of orders induces (either immediately or after a delay) private production on government account, and such production remains in the private sector and does not show up as government expenditures until after it is completed and the goods involved delivered to the public sector.

The Generally Used Measures of Government Spending

This chapter examines the measures of government spending which are generally available and currently used. The three most widely-known measures are (1) budget expenditures, based on the Federal administrative budget, (2) Federal Government payments to the

[54] Henry C. Wallich "Income-Generating Effects of a Balanced Budget," *Quarterly Journal of Economics*, November 1944, p. 89.

public, prepared on a consolidated-cash basis, and (3) Federal purchases of goods and services, computed as a part of the national income and product accounts.

BUDGET EXPENDITURES

The conventional measure of Federal spending, budget expenditures, is the central series in the annual budget document.

Coverage. This total of spending generally includes all expenditures of the Federal departments and agencies plus the net outlays of the enterprises which are wholly owned by the Federal Government. It excludes the transactions of government-sponsored enterprises and trust funds and payments for retiring, purchasing, or redeeming the Government's debt. This treatment is similar to that of many business firms, whose budgets usually exclude the company pension funds and the operations of firms in which they have only a partial interest.

For the government enterprises which are included, usually only the net expenditures—the difference between gross disbursements and gross receipts—are reported in the total of budget expenditures.

A number of exceptions exist to this "net" treatment of government enterprises. Some government agencies which are not financially organized as business-type enterprises, notably Interior Department deposit the proceeds from their operations directly into the Treasury. In such cases, these receipts do not offset budget expenditures but increase the totals of budget receipts. Either treatment has the same effect on the budget surplus or deficit.[55]

Basis of measurement. Budget expenditures are generally recorded at the time checks are issued by governmental disbursing officers. A major exception is interest payments on the public debt, which are reflected on an accrual basis. Other exceptions include cases where direct or guaranteed obligations are issued to discharge certain liabilities. These include the issuance of armed forces leave bonds to veterans and of guaranteed debentures to lenders holding defaulted FHA mortgages.

Budget expenditures include, in addition to disbursements directly from the Treasury of the United States, checks issued by government enterprises, such as the Panama Canal Company, from their checking accounts with commercial banks.[56] The logic of including both types of payments is apparent with the growth of Treasury tax and loans accounts with commercial banks, for in either case government funds are carried by a private bank. In the former case, the account is in the name of a government agency and, in the other, in the name of the Treasurer of the United States. The effect on the recipient of the government disbursement from these accounts is the same.

Changes in concepts. Through the years, the items included in the budget totals have varied considerably. Although this paper is based on the classification current during the time of writing, the more important changes in recent years are mentioned as an indication of the possibilities for future changes and improvements in the concepts and measurement of Federal finance.

A number of items previously included on both the income and outgo sides have been gradually excluded, such as payments to the Treasury

[55] Some departments receive revenues from services rendered to the public, such as performing special research studies. Their expenditure totals are reported net of such reimbursements.

[56] *Treasury Bulletin*, April 1954, p. A-2.

by wholly owned government corporations for retirement of capital stock and amounts refunded by the Government, principally for overpayment of taxes. The exclusion of these items from both the receipt and expenditure totals has no effect on the budget surplus or deficit.

Types of payments included. Because budget expenditures cover such a wide variety of government agencies, many different types of payments are contained. These include purchases of currently produced goods and services, transfer payments, interest payments, grants-in-aid to State and local government, subsidies, purchases of land and other existing assets, loans and other financial exchanges, and transfers of funds between government agencies.

The budget document does not contain a tabulation showing which expenditures fall in each of these categories; however, the supplementary material in the document has been expanded to present details on some of the categories, such as interest payments, grants-in-aid, and loans.[57]

Role of the conventional measure. The series on budget expenditures is generally used for purposes of political and administrative budgetary control. This series also forms the basis of other series on government spending which are more useful for economic analysis; it is the only one that is "built from the ground up," appropriation account by appropriation account. The other measures consist solely of additions to and subtractions from the total of budget expenditures. Note in this connection the description of the derivation of government expenditures for the national income accounts:

> The method, in general, is to start with the budgetary totals drawn from broad fiscal reports, then to make various additions to and deductions from these totals so as to achieve as residuals the desired purchase series.[58]

The reporting of budget expenditures is a method of keeping track of outlays of government-owned funds over time. Many students of public finance believe that this series, compared to the other available measures, gives a better device for aiding in the management of government use of resources, especially for the long view.[59] In studying the costs of government programs, it is not often material whether wages are paid in full or retirement deductions are made or whether interest on the public debt is paid to the public or to government trust funds.

Gerhard Colm, on the other hand, states that "Adding up these administrative accounts does not necessarily give any meaningful totals." [60] Colm may be correct from the viewpoint of economic analysis. However, the series on budget expenditures contains the transactions of the governmental programs which are amenable to control through the appropriations process and hence, it is of value for budgetary review purposes.

From a purely fiscal standpoint, it is the budget surplus or deficit, based on budget expenditures and its counterpart series, budget re-

[57] *1962 Budget, op. cit.*, Special Analysis D, pp. 997–1007.
[58] "1954 National Income Supplement," *op. cit.*, p. 146.
[59] C. Lowell Harriss, "Government Expenditure: Significant Issues of Definition," *Journal of Finance*, December 1954, p. 354.
[60] Gerhard Colm, "Fiscal Policy and the Federal Budget," (in Max F. Millikan, ed. *Income Stabilization for a Developing Democracy*, New Haven, Yale University Press, 1953) p. 209.

ceipts, which causes changes in the total of the public debt and in the Government's cash balances. Trust account surpluses or deficits, on the other hand, merely alter the proportion of the public debt held by these accounts.[61] All expenditure series, including the conventional budget measure, exclude the effects of such important fiscal actions as guarantees of private loans, and commitments or contracts to make either future payments of benefits or to purchase goods and services.

FEDERAL GOVERNMENT PAYMENTS TO THE PUBLIC

The series on Federal payments to the public is often termed the "consolidated-cash" budget because it combines budget expenditures with the expenditures of other funds and eliminates transactions not involving the flow of cash from the Government. However, this series and its counterpart, Federal receipts from the public, do not comprise a budget but are a financial statement in the budget document and are generally based on the materials available in the detail of the budget.[62]

Coverage. The government transactions in this series include, in addition to those of government-owned agencies and enterprises (which are included in budget expenditures), the funds which the Government holds in trust [63] and the operations of government-sponsored enterprises (except the Federal Reserve and Postal Savings Systems).

The major funds for which the Federal Government acts as trustee are the old-age and survivors' insurance fund; the railroad retirement fund; the veterans life insurance funds; and the civilian government employees retirement funds. The disbursements of these funds are primarily transfer payments to individuals covered under the various social insurance systems.[64]

The government-sponsored enterprises include those in which the Federal Government has had a share of ownership from time to time: the banks for cooperatives, the Federal home loan banks, the Federal land banks, and the Federal Deposit Insurance Corporation.

Basic of measurement. Unlike the budget expenditure series which is on a "checks issued" basis, the cash payments series is on a "checks paid" basis. This transition is accomplished through adding in the total for the clearing account for outstanding checks, which adjusts for the checks which have been issued but not yet cashed.

In determining the cash totals, the total of budget expenditures is added to trust expenditures, and a number of adjustments are made. Table 9 shows the major adjustments, including deduction of intra-governmental transfers and non-cash transactions, which must be made in arriving at the cash total.

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[61] Certain other factors affect changes in the public debt and cash balances, such as direct borrowing from the public by Government enterprises and changes in the trust funds uninvested working balances.

[62] *1962 Budget, op. cit.*, "Special Analysis A," pp. 979-982.

[63] Note the comment of the Committee for Economic Development: "* * * if we want to weigh the effects of the budget upon private purchasing power, total demand, employment and prices, the budget must include these important collections and payments." *Taxes and the Budget*, New York, CED, 1947, p. 18.

[64] The Federal-aid Highway Act of 1956 established a highway trust fund to which receipts from designated highway-related excises are deposited and from which grants to the States are made. The extent to which these funds are not government-owned but are held in trust is rather questionable. The operation of this trust fund is closer to that of programs financed by earmarking budget receipts.

TABLE 9.—*Derivation of Federal Government payments to the Public, fiscal year 1960*

[In billions]

Description	*Amount*
Budget expenditures	$76.5
Trust fund expenditures	21.8
Expenditures of government-sponsored enterprises	.5
Less:	
Intragovernmental transactions	4.1
Non-cash debt transactions (net)	.4
Federal Government payments to the public	94.3

Source: *1962 Budget, op. cit.*, p. 981.

Major intragovernmental transfers which are eliminated are budget and trust payments to Treasury, such as interest paid by government corporations; budget payments to trust funds, such as the interest paid on United States securities held by trust funds; and trust payments to other trust funds, such as the payment made by the District of Columbia to the civil service retirement fund.

Accrued budget expenditures in the form of increases in public debt are also eliminated. The most important such adjustment results from the savings bond program where semiannual increases in redemption value occur during the life of the bonds and are currently reflected in budget expenditures. A single cash payment of interest is made when the bond is redeemed, involving no additional budget expenditures. A cash payment, however, is then recorded for all of the interest earned.

Changes in concepts. No major conceptual revisions have been made in this series since 1947. A few changes have been made to reflect similar changes which have been made in the concept of budget expenditures such as in the method of handling refunds of receipts.

A companion series prepared by the Treasury Department, cash income and outgo, has undergone extensive revision. Prior to the 1954 change in Federal reporting, cash outgo was identical with cash payments, and cash income differed from Federal receipts from the public only by seigniorage on silver, which is cash income from the viewpoint of the U.S. Treasury but is not a receipt from the public.

Since the change, the Treasury cash series has been titled "Cash Deposits and Withdrawals" and is computed from the viewpoint of the Treasurer of the United States. Under this concept a transfer of funds from the Treasurer's account to the account of a government corporation with a commercial bank is recorded as a cash withdrawal. A payment by a government corporation to a private individual or to a business firm from such "outside" checking account is not included in cash withdrawals. In contrast the Budget Bureau series refers to payments to the public regardless of whether these transactions are carried on through accounts of the U.S. Treasury or through government agency accounts with commercial banks. The net difference between these two series is slight. Payments to the public in 1960 were $94.3 billion compared to cash withdrawals of $93.5 billion.[65]

Types of payments included. Despite the various adjustments made in converting from the conventional to the cash basis, the measure of payments to the public is still essentially just as heterogeneous in coverage. From the viewpoint of gauging economic effects, the

[65] *1962 Budget, op. cit.*, p. 982.

two main improvements over the conventional series are the elimination of intragovernmental and non-cash transactions and a more complete coverage of transfer payments through inclusion of the trust funds.

Role of the cash series. It is generally agreed that the series of Federal payments to the public is the most useful available measure of the total flow of money, excluding borrowing, from the Government to the public. Harriss concludes that "For studying the effects of fiscal action on the economy in the short run, the cash figures are most significant." [66]

The difference between the Government's cash position and its budgetary position varies from year to year, the cash position usually appearing more favorable. The gap between the two methods arises largely from the operations of the trust funds. The largest trust funds are social insurance accounts which are currently accumulating reserves to meet future benefit payments and are expected to do so for many years.

The value of the cash payments series in analyzing economic impact is subject to similar limitations as budget expenditures, as pointed out in the official explanation of the cash statement:

> * * * many Government activities besides receipts and expenditures have a bearing on the economy. For example, a rapid expansion in new appropriations and in Government orders could stimulate a rise in business activity long before the authorized funds were paid to the public. Federal guaranties and insurance of private loans may also affect activity in the economy, even though they normally entail relatively small Government expenditures.[67]

FEDERAL PURCHASES OF GOODS AND SERVICES

The Federal Government component of the gross national product is Federal purchases of goods and services.

Coverage. The various agencies of the Federal Government are included in this measure, to the extent that their expenditures are for the acquisition of current output. The current accounts of government enterprises, however, are included in the business sector, and are shown as a deduction from GNP in computing national income.

Only the capital formation of government enterprises is included in government purchases of goods and services. The main reason for this treatment is to avoid classifying current business-type expenses of the Government as final purchases. It is admitted that this is "not more than a convenient means" of disposing of this conceptually indefinite but quantitatively small item in the income accounts. An indication of basic dissatisfaction with this *ad hoc* solution is the Commerce Department's conclusion that if government enterprise operations were to assume greater importance in the United States economy, "it is entirely possible that some modification of their treatment in the national income accounts would be called for." [68]

The definition of government enterprises in the income accounts differs from that used in the other series that have been discussed. Included here as government enterprises are business-type activities whose expenditures are reported gross in the budget document and whose receipts from operations are included on the receipts side. On

[66] Harriss, *op. cit.*, p. 354.
[67] *1962 Budget, op. cit.*, p. 982.
[68] "1954 National Income Supplement," *op. cit.*, p. 49.

the other hand, the Federal land banks are excluded because the Federal Government no longer has any financial interest in the banks.

Basis of measurement. Except for the treatment of government enterprises considered above, all purchases of currently produced goods and services by government agencies are considered to be final products and hence enter into the final output of the economy. The reasoning rests mainly on the fact that the general government is an ultimate buyer in the sense that it does not buy for resale in the market and, accordingly, its purchases are not elements of cost in the value of other output produced for the market.[69]

This rationale omits any reference to the extent to which government goods and services actually do enter into the final product which business firms produce. According to Hicks, some part of the government output is not final product but "plays its part in production by facilitating the production of other goods (maintenance of law and order, roads used for business purposes, and so on). To reckon this as well as the goods whose output is facilitated would involve double counting." [70]

To report government transactions consistent with the corresponding payments and receipts recorded for the business sector an adjustment is made to an accrual basis to reflect generally the time of delivery rather than the time of payment. This adjustment represents the net increase in accounts payable to business, less the net increase in outstanding advances and prepayments by the Federal Government, as computed from a number of sources including the surveys of corporate working capital by the Securities and Exchange Commission.

Charges in concepts. Until 1946, both government and private interest payments on debt were considered to be income according to the concepts underlying the official national income statistics of the United States. In that year, Federal interest payments on the public debt were excluded from government purchases of goods and services and treated as transfers.

The reasoning behind this change was that the Federal debt has come into existence primarily in connection with the financing of wars and the interest payments therefore do not reflect the acquisition of current output. The earlier treatment considered these payments as return to government bondholders for the use of their money, paralleling the treatment of interest on private indebtedness.[71]

A number of students of public finance have questioned the change. Earl Rolph states that it is "not obvious" that the differences between government debt and private debt are such that they justify such a radically different treatment of interest payments.[72] Rolph shows that there is an inconsistency between treating government interest expenditures as transfers and the usual definition of what constitutes a transfer payment:

> The crucial negative feature of the definition—that transfer income is not in return for services or products—appears to be generally held, whether the definition is stated as "no contribution to social product", "no specific quid for the specific quo rendered", or a failure to "enhance the production of economic values".[73]

[69] Milton Gilbert and others, "Objectives of National Income Measurement: A Reply to Professor Kuznets," *Review of Economic Statistics*, August 1948, p. 183.
[70] J. R. Hicks, "The Valuation of the Social Income," *Economica*, May 1940, p. 118.
[71] Gilbert and others, *op. cit.*, pp. 192-193.
[72] Earl R. Rolph, *The Theory of Fiscal Economics*, Berkeley and Los Angeles, University of California Press, 1954, p. 59.
[73] *Ibid*, p. 58.

Proponents of the change claim the practical value of not increasing the Federal component of GNP simply because the government borrows funds to finance its operations and, in the opposite instance, of not decreasing Federal purchases of goods and services whenever the Government retires debt (and hence reduces the volume of its interest payments).[74]

Types of payments included. Federal purchases of goods and services consist of the output of the Federal Government sector and that part of the output of the private sectors that is purchased by the Government. The output of the government sector is measured by the wages and salaries of general government employees plus certain supplements paid by the Government as employer. The category of general government employees includes both military and civilian personnel but excludes the employees of government enterprises, whose current transactions are covered in the business sector. Supplements to wages and salaries cover such items as the Government's contributions to the retirement funds for its employees.

A number of significant types of government spending are not included in Federal purchases of goods and services. Some of them, however, are included in other parts of the national income accounts. For example, grants-in-aid to State and local governments are included with the outlays of those lesser jurisdictions; transfer and interest payments are included in personal income; and subsidies (including the current deficit of government enterprises) is an adjustment item used in computing national income from GNP. A total of Federal expenditures "on income and product account" can be built up using all of these components of government spending. (See table 10.) Although such a tabulation may be helpful for certain limited purposes, it is not as generally used a measure of government spending as are Federal purchases of goods and services.

TABLE 10.—*Federal expenditures on income and product account, fiscal year 1960*

[In billions]

Description	*Amount*
Purchases of goods and services	$54.0
Transfer payments	21.9
Interest	6.1
Subsidies plus the current deficit of government enterprises	3.5
Grants-in-aid to state and local governments	6.5
Federal expenditures	92.0

Source: U.S. Congress, Joint Economic Committee, *Hearings on January 1959 Economic Report of the President*, Washington, Government Printing Office, 1959, p. 148.

There are other types of Federal spending which do not appear in any of the income accounts, such as transfers of funds between different government agencies, financial exchanges, and purchases of existing assets. An exception to this treatment is the price support loans made by the Commodity Credit Corporation. These are counted as purchases for inventory under the assumption that the loans are a preliminary step to the subsequent purchase.

Role of the series on Federal purchases of goods and services. The value of this series is derived primarily from its being a component of GNP. As used in analyses showing what constitutes the composition of demand for the final output of the economy, Federal purchases

[74] Gilbert and others, *op. cit.*, pp. 192–193.

of goods and services indicate the portion taken up by the Federal government. This is similar to personal consumption expenditures which represent the proportion of final product (other than housing) going to consumers and gross private domestic investment which represents the amount going to the business sector.

THE RELATIONSHIPS AMONG THE THREE SERIES

Table 11 shows the interrelationships among the series on budget expenditures, Federal payments to the public, and Federal purchases of goods and services. As can be seen, purchases by general government agencies of currently produced goods and services are included in all three series. The bases of measurement differ somewhat. The budget series is essentially on a checks-issued basis, the cash series on a checks-paid basis, and the purchases on a delivery basis.

TABLE 11.—*Types of Federal Government spending included in 3 currently used series*

Type of spending	Series in which included		
	Budget expenditures	Cash payments	Purchases of goods and services
Purchases of goods and services by general Government agencies	X	X	X.
Wholly-owned Government enterprises:			
Capital outlays	X	X	X.
Current outlays	X	X	
Transfer payments (including interest):			
From budget accounts	X	X	
From trust accounts		X	
Grants-in-aid	X	X	
Subsidies	X	X	
Purchases of existing assets	X	X	
Financial exchanges	X	X	
Intragovernmental transfers and noncash transcations	X		
Expenditures of government-sponsored enterprises:			
Federal land banks		X	
FHLB's, FCID, banks for cooperatives		X	X.

The following categories are included in both the budget and cash measures but excluded from the Federal component of GNP; transfer payments from budget accounts, grants-in-aid to State and local governments, subsidies, current outlays of wholly owned government enterprises, purchases of existing assets, and financial exchanges, such as loans.

Transfer payments from trust accounts and the expenses of the Federal land banks are only included in the cash series. Intragovernmental and noncash transactions are only included in budget expenditures.

Common shortcomings of the three series. Despite the differences in the scope of transactions covered, all of the three series are closely connected. They are all variations of budget expenditures and generally measure the flow of the government spending process at its completion, when production is finished and delivery or payment is made.

Contrasted to this general uniformity of measurement, Federal spending is, as has been demonstrated in earlier chapters, a process, a flow of financial activity; "expenditures" or "payments" or "purchases" represent just one point among many in an often lengthy

series of actions. Under some circumstances, attention should be focused on the earlier phases of the spending process in order to adequately gauge or understand the economic impact of a government spending program, particularly one involving goods and services produced in the private sector.

Aside from the availability, one of the main reasons why the three "expenditure" measures can be so generally employed is that during a period of stability or little change in government operations, they are quite satisfactory. When the composition and level of government programs are stable, the length and complexity of the Federal spending process can usually be safely ignored. The current levels of authorizations granted, contracts let, production performed on government account and Federal expenditures incurred are all approximately the same for a given procurement program and any expenditure series is generally adequate to measure the impact on the economy.

As noted earlier, none of the measures of the early stages of the Federal spending process—such as the granting of spending authority or the making of commitments to spend—are among the economic series or indicators in current usage. It is the thesis of this study that such measures are of distinct importance to economic analysis and that their current absence is a gap in our knowledge. The following chapter is devoted to methods of preparing such series.

Measures of the Various Phases of the Government Spending Process

It is the purpose of this chapter to examine the availability of series on the government spending process and on the problems involved in filling existing gaps.

NEW OBLIGATIONAL AUTHORITY

The annual budget document shows new obligational authority for 3 years: the fiscal year most recently completed, the current fiscal year, and the following fiscal year. The latter two figures are, by their very nature, *ex ante* estimates. No estimates are prepared on a monthly or quarterly basis.

The absence of monthly or quarterly totals of new obligational authority may not be very important ordinarily due to the annuality of the appropriation cycle. The bulk of the funds for a given year are appropriated within a period of a few months around the beginning of the fiscal year and, hence, it is the differences in the annual totals for consecutive years or between the amount requested and the amount approved which are significant. In case of sudden and large changes in government spending programs, however, the timing of specific grants of authority may be important, particularly in gaging the impact on business and consumer anticipations.

The reported figures on new obligational authority exclude the operations of the trust funds and the government-sponsored corporations, whose transactions are not included in budget expenditures. However, they include all major changes in government spending programs affecting current output. The trust funds primarily disburse transfer payments and the sponsored enterprises primarily engage in banking and in insurance activities. These activities do not require annual congressional grants of new obligational authority, and they give rise to little anticipatory effects on the economy.

OBLIGATIONS INCURRED

There is no currently available, regularly issued series on the total obligations being incurred by Federal agencies. Since January 1958, this information has been made available annually in the budget document. The reporting lag is quite serious. Actual figures for a given year are not available until more than 6 months after the close of the year. Also, no monthly or quarterly breakdowns are prepared.

Annual series. Table 12 contains the figures for this series, as well as the series on new obligational authority and expenditures. Not all the obligations incurred will result at a later date in budget expenditures. The obligations of business-type enterprises such as the Post Office, which are reported "gross," are offset in good measure by the receipts from the sale of postage stamps, etc.; only a portion of the obligations actually result in net expenditures.

TABLE 12.—*Measures of the Government spending process*

[In billions of dollars]

Fiscal year	New obligational authority	Obligations incurred	Expenditures
1950	49.3	44.1	39.5
1951	82.9	83.1	44.0
1952	91.4	104.6	65.3
1953	80.3	85.6	74.1
1954	62.8	65.7	67.5
1955	57.1	74.7	64.4
1956	63.2	80.3	66.2
1957	70.2	69.0	69.0
1958	76.3	73.9	71.4
1959	81.4	80.6	80.3
1960	79.6	75.3	76.5

Source: 1962 Budget and earlier budget documents, and U.S. Bureau of the Budget, tabulations of obligations by object.

Although the relationship is not precise, it can be seen that often increases in the amount of new obligational authority granted by the Congress from one year to the next may lead to significant increases in the level of obligations incurred in that year or the next year and in actual expenditures in the following year. The experience during the period 1950–53 is a case in point which will be elaborated in the following chapter.

Quarterly series. Federal agencies furnish reports, generally at monthly intervals, showing the cumulative amount of obligations incurred under each appropriation account since the beginning of the fiscal year. These reports are received by the Bureau of the Budget on an individual appropriation account basis, No attempt currently is made to review this measure of the progress of government programs on an aggregate rather than a piecemeal basis. In earlier years, the Treasury Department issued monthly report, popularly known as the "White Book,"[75] showing the total amount of obligations incurred by Federal agencies. This publication was discontinued after the June 30, 1949, issue.

On the basis of a number of available sources, the writer has prepared a rudimentary series showing Federal Government obligations incurred, by quarters. This series is presented essentially for illustative purposes, More exact series could be prepared by the Govern-

[75] U.S. Treasury Department, *Financial Statements Relating to the United States Government, Obligations, Expenditures, and Balances under Appropriations and Contract Authorizations*, Washington.

ment, provided that the agencies involved are directed to do so. The derivation of the quarterly obligations series is as follows:

1. *Department of Defense (military functions) and foreign military assistance.* The obligaton figures for this category were obtained from the Department of Defense release, *Monthly Report on Status of Funds.* Although the concept of "obligations" used in the *Status of Funds* report is not precisely the same as that in the budget document, the annual totals are fairly close and the conceptual differences are relatively minor.[76] This report covers almost half of the total annual obligations to the Federal Government in recent years.

2. *Interest.* The figures for this category were obtained by using the data on budget expenditures for interest reported in the monthly *Treasury Bulletin.* This could be done because interest payments on the public debt are recorded both as budget expenditures and as obligations when the payable interest accrues rather than when cash actually is paid. This category covers approximately 10 percent of the total annual obligations at the present time.

3. *All other programs.* For historical periods, the annual obligations figures (other than interest and defense) can be converted to quarterly estimates by reference to the seasonal patterns which Federal procurement activities have generally followed through the years.

There is usually a high rate of obligating during the first few months of the fiscal year as the agency commits its new funds for the programs which it has already planned. A downturn in ordering usually takes place in the fall and carries through until the spring. A sharp increase in obligations occurs in the closing months of the fiscal year, due in part to the desire of agency officials to fully obligate their funds by the close of the fiscal year to avoid "losing" unobligated funds. Ordinary prudence would dictate to an administrative official that he maintain, in effect, an emergency fund for unforeseen contingencies by holding up until the end of the fiscal year outlays for certain desirable but postponable items.

This assumed seasonal pattern of Federal purchasing has been affirmed by the limited studies which have been made on the subject. An analysis of government purchasing for the Temporary National Economic Committee noted the concentration of government purchase orders in the latter part of the fiscal year 1938.[77]

In his study of military procurement during World War II, John Perry Miller noted the tendency for the award of contracts to be "heavy" in the second quarter of each calendar year (the last 3 months of the fiscal year). He states that this was clearly a reflection of the desire of the agencies to commit funds before the end of the fiscal year to avoid the lapse of unobligated amounts.[78]

The monthly obligation series for the last several fiscal years reported by the Treasury *White Book* also generally support the hypothesis. An analysis of the *White Book* renders the following

[76] For example, the *Status of Funds* report list obligations incurred by the Department of Defense (military functions) in the fiscal year 1954 as $30 billion, while Budget Bureau worksheets incidate $32 billion for the same period.

[77] Clem C. Linnenberg and Dana M. Barbour, *Government Purchasing—An Economic Commentary* Temporary National Economic Committee, Monograph No. 19, Washington, Government Printing Office, pp. 144-145.

[78] Miller, *op. cit.*, p. 25.

quarterly distribution of the non-defense, non-interest obligations of the Federal Government.[79]

	Percent
1st quarter	28
2d quarter	18
3d quarter	25
4th quarter	29
Total	100

The above percentages have been applied in order to obtain a quarterly distribution of non-defense, non-interest obligations for the fiscal years 1951–1956. The results are contained in Table 13.

TABLE 13.—*Obligations incurred by the Federal Government, by quarters*

[Fiscal years; in billions of dollars]

Year and quarter	Defense	Interest	Other	Total
1951:				
1st	8.6	1.1	7.8	17.5
2d	8.7	1.3	5.0	15.0
3d	16.1	1.2	7.0	24.3
4th	16.3	2.0	8.1	26.3
Total	49.6	5.6	27.9	83.1
1952:				
1st	13.0	1.1	10.3	24.4
2d	13.0	1.7	6.6	21.3
3d	15.3	1.1	9.2	25.6
4th	20.6	2.0	10.7	33.3
Total	61.9	5.9	36.8	104.6
1953:				
1st	16.8	1.1	9.1	27.0
2d	10.4	1.9	5.9	18.2
3d	10.8	1.1	8.2	20.1
4th	8.5	2.4	9.4	20.3
Total	46.5	6.5	32.6	85.6
1954:				
1st	6.5	1.0	8.2	15.7
2d	6.0	1.8	5.3	13.1
3d	6.9	1.2	7.4	15.5
4th	10.5	2.4	8.5	21.4
Total	29.9	6.4	29.4	65.7
1955:				
1st	8.0	1.1	9.2	18.3
2d	8.7	1.9	5.9	16.5
3d	8.5	1.1	8.3	17.9
4th	10.1	2.3	9.6	22.0
Total	35.3	6.4	33.0	74.7
1956:				
1st	6.4	1.7	9.2	17.3
2d	9.4	1.7	5.9	17.0
3d	10.7	1.8	8.2	20.7
4th	14.0	1.7	9.6	25.3
Total	40.5	6.9	32.9	80.3

Source: Table 12; Office of the Comptroller of the Department of Defense, table dated August 26, 1953; Monthly Report on Status of Funds by Budget Category, June 30, 1956, p. 33; Treasury Bulletin, August issues, 1951–1956, p. 3.

Although different assumptions as to the precise quarterly distributions would have yielded different figures, the orders of magnitude and the direction of movement would be essentially similar. However, the important movements—both expansions and contractions—

[79] U.S. Treasury Department, *op. cit.*, issues for June 30, 1946–June 30, 1949.

during this period were taking place in the defense programs. In future periods, movements in non-defense programs may be the dominant feature in Federal spending patterns, and the rough approximations used here might not suffice so readily.

PRODUCTION ON GOVERNMENT ACCOUNT

In order to measure the production in the private sector on government account, a breakdown is needed in the current reports on business inventories showing how much relates to private orders and how much to government orders. Such information is not now available.

It would be difficult to obtain a breakdown of inventories between "government account" and others. Large amounts of equipment ordered by the Government are made in the same plants as producers' equipment and often from similar parts or materials. Many goods purchased by the Government are similar to or identical with civilian goods and are often made alongside them, with orders sometimes filled with common stocks. Problems would also be encountered in connection with subcontractors who are not always aware of the nature or destination of the final products into which their output is incorporated.

A limited attempt at measuring the amount of government-ordered production can be made through the use of the quarterly reports on the financial position of American corporations, which are jointly prepared by the Federal Trade Commission and the Securities and Exchange Commission. These reports, in presenting a consolidated balance sheet of corporations, show the amounts receivable by business from government and the amounts advanced by government, usually in the form of progress payments. These figures can be taken as a rough indication of the amount of production which has been completed and not yet paid for.

A number of companies do not list receivables from the Federal Government separately in their report.[80] Second, the receivable items measure a later stage of the process than is desired. They represent the completion of a certain amount of productive effort from the accountant's viewpoint of liability while the ideal measure would be the actual amount of production being carried on and the actual amounts being paid to the factors of production. Finally, in the case of continuing or "followon' orders, the levels of inventories add receivables remain fairly constant over an extended period, although considerable amounts of production are carried on and completed.

Nevertheless, this series provided a helpful indication of the amount of production currently being performed on government account in World War II. For example, at the outset of the defense program in December 1939, receivables from the Federal Government of 1,228 registered corporations were only $21 million. On December 1941, the time of the attack on Pearl Harbor, these receivables were only $525 million. However, by December 1943, the peak period of war production, they had risen to $4.1 billion. As of December 1944, these receivables totalled $3.8 billion and by June 1945 they had declined to $3.3 billion.[81]

[80] Many companies have complained that they have difficulty in obtaining reports from the Government as to what their receivables are (accounts payable on the Government's books). Carman G. Blough, "Confirmation of Government Receivables," *Journal of Accountancy*. October 1955, p. 69.

[81] Securities and Exchange Commission, *Working Capital of 1228 Registered Corporations*, released dated Dec. 5, 1945, Washington.

The fluctuations in this series in recent years have been on a smaller scale. For example, this series shows, to a limited extent, the buildup of private work on government orders during the Korean mobilization. Net receivables from the Federal Government increased by $800 million during the fiscal year 1952 and by an additional $300 million during the following year. In the fiscal year 1954, the trend was reversed and those receivables declined $300 million. An additional decline of $300 million was registered during the following year.[82] These movements correspond to the general sequence of the Korean military procurement cycle, but the amplitude of the fluctuations registered are so small as to make the series of very restricted usefulness.

PAYMENTS FOR GOVERNMENT GOODS AND SERVICES

The measures of the final stage gf the government spending process are the most highly developed and most frequently employed. The series on budget expenditures is reported in the *Monthly Statement of Receipts and Expenditures,* issued by the Treasury Department. Estimates, on a fiscal year basis, are contained in budget documents and midyear budget reviews. Historical data are contained in the budget document and in the monthly *Treasury Bulletin.*

The Treasury version of the cash-consolidated statement appears each working day in the *Daily Statement of the United States Government.* The Budget Bureau series, Federal payments to the public, appears monthly in the *Treasury Bulletin.* Estimates on a fiscal year basis are contained in the budget document and in the midyear review of the budget. Historical data are contained in the *Statistical Abstract of the United States* for the Budget Bureau series and in the *Treasury Bulletin* for the Treasury series.

Federal purchases of goods and services are reported quarterly by the Department of Commerce. The more inclusive measure, Federal expenditures on income and product account, appears in the annual national income number of the *Survey of Current Business.* Historical data for these series are contained in the "1954 National Income Supplement" and the national income numbers of the *Survey.*

Compared to the indicators of the earlier stages of the government spending process, the various measures of government payments are readily available and, hence, widely used and analyzed. Although there undoubtedly are a number of refinements which would be helpful to the analyst, these measures have been used over a comparatively long period of time and many of the "bugs" have been worked out and the uses and limitations identified as reasonably as could be expected. Accordingly, the present study has focused on filling the major gaps in the measures of the government spending process, rather than on developing minor improvements in the "expenditure" series.

An Analysis of Historical Experience, 1950–1954

The defense mobilization program upon which the United States embarked at the outbreak of fighting in Korea in 1950 furnishes an excellent example of how the responses to the various phases of a new government spending program work themselves out through the economy.

The Korean incident began in June 1950, as the American economy was recovering from the recession of 1949. An indication of the

[82] U.S. Securities and Exchange Commission, releases on working capital of U.S. corporations.

outlook immediately prior to the Korean outbreak is furnished by a contemporary analysis:

> Expansion in economic activity continues to be reflected in the major economic series, with rising production requirements tending to advance prices of many important industrial raw materials in recent weeks. Employment has continued to move ahead in response to the basic trend of business * * *. The fundamental characteristic of the current uptrend in the business cycle continues to be the sharp expansion in investment.[83]

RAPIDLY EXPANDING ECONOMIC ACTIVITY: FISCAL YEAR 1951

The first year of the Korean effort—the fiscal year 1951—proved to be a period dominated by anticipatory actions of consumers and businessmen, engendered by a military campaign whose ultimate scope they could only dimly guess. On the military production front itself, this was a period of formulating strategy and plans, making ready, and tooling up.

In the first phase of transition to the defense program, a sharp and abrupt shift upward in business and consumer expectations began concurrently with the international developments which gave rise to the change of military policy. "* * * the public reacted very much as if in expectation of a World War III." [84] Consumers bought most heavily commodities which had suffered quality deterioration in World War II. The larger volume of consumer buying contributed to increased demand all along the line.

Distributors' orders mounted as they attempted to maintain or build up stocks. Manufacturers' orders for raw and semifinished materials also rose substantially. Because there was little slack in the economy at the time, the effect upon prices and retail trade was prompt and vigorous. The Bureau of Labor Statistics wholesale price index jumped from 100.2 in June 1950 to 103.2 in July, and to 107.1 in September. Similarly, the consumers' price index rose from 101.8 to 104.4 during this period.[85]

With the exception of the decontrol period following the close of World War II, this was described as "the most rapid and the most widely pervasive inflationary movement" in recent American history.[86] The general inflationary movement which gripped the economy during the quarters immediately following the Korean outbreak was unaccompanied by any significant increase in the volume of actual production on defense orders. Although near capacity operations were maintained in industries producing raw and semifinished materials, "on the whole defense output continues to represent a small fraction of the volume of total production." [87]

In July 1950, the President requested supplemental defense appropriations of $10.5 billion.[88] The figure was increased by early August to more than $15 billion to provide for heavier expenditures under the Mutual Defense Assistance Program and for additional naval aircraft. There was much speculation at the time as to the ultimate levels of defense spending. The following is an example of the more restrained reaction:

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[83] *Survey of Current Business*, June 1950, p. 1.
[84] J. Frederick Dewhurst and Associates, *America's Needs and Resources: A New Survey*, New York, Twentieth Century Fund, 1955, p. 15.
[85] "1955 Statistical Supplement," *Survey of Current Business*, pp. 26–27 (base of 1947–49=100).
[86] U.S. Congress, Joint Committee on the Economic Report, *Inflation Still a Danger*, Washington, Government Printing Office, 1951, pp. 12–13.
[87] *Survey of Current Business*, November 1950, p. 3.
[88] Message to the Congress of July 19, 1950.

(The rate at which we rearm) will obviously be greater than the $31 billion that, as of mid-August, the administration has asked for fiscal 1951. Would it come to $50 billion? Probably * * * In any case, a rearmament program of much greater proportions than the President had announced by the middle of August was clearly needed and is probably coming.[89]

The *Harvard Business Review* contained a guess of "$50 billion or $60 billion" as the ultimate rate for military expenditures.[90]

In September, supplemental military appropriations of $17.8 billion were enacted and, on the same day, the Revenue Act of 1950 was passed, forecasted to yield an additional $5.8 billion in Federal receipts at calendar year 1951 income levels.[91] Also in September the Congress approved the Defense Production Act which authorized a broad program of production and stabilization controls.

A contemporary report illuminated the impact on the economy of government action during this period:

Since the Korean attack, the stepped-up defense program has been the basic influence in the expansion of business activity. For the most part the principal effects have been anticipatory, growing out of the projected expansion in Government spending in the year ahead.[92]

Federal expenditures remained fairly stable during the fiscal year 1951. The automatic stabilizers tended to have the immediate effect of reducing nonmilitary Federal spending. Also, receipts increased substantially as a result of higher incomes and tax rates. The administrative budget yielded a $3.5 billion surplus in 1951 while on a cash basis the surplus was $7.6 billion. In contrast, the total amount of new obligational authority granted for the fiscal year 1951 increased 68 percent, rising from $49.3 billion in 1950 to $82.9 billion.[93]

The amount of military orders and contracts let was virtually unchanged until the third quarter when it almost doubled, rising to $16.1 billion. Contract letting was maintained at that rate for the final quarter of the year. The total amount of contracts let and other obligations entered into by the Federal agencies almost doubled in the first year of the Korean mobilization program, rising from $44.1 billion in 1950 to $83.1 billion.

The interplay during fiscal 1951 of the opposing tendencies of the various phases of the Federal spending process was clearly brought out in the following comment on this period by the Joint Committee on the Economic Report:

The ineffectiveness of the governmental cash surplus, normally a deflationary force, was, in large part, atrributable to anticipatory forces on the inflationary side arising from the current or expected placement of orders for future deliveries.[94]

GNP rose each quarter of fiscal 1951, for a total increase of 19 percent over 1950. Consumer expenditures declined in the second quarter, subsequent to American victories against the North Koreans. Consumer spending rose again in the third quarter during the buying spree following the adverse turn of events in Korea in December 1950 when the Chinese Communists entered the conflict. Inventory accumulation continued through the year while total private fixed

[89] *Fortune*, September 1950, pp. 69–70.
[90] Ernest A. Tupper, "Guideposts to Industrial Mobilization," *Harvard Business Review*, November 1950, p. 41.
[91] U.S. Secretary of the Treasury, *Annual Report on the State of the Finances for the Fiscal Year Ended June 30, 1951*, Washington, Government Printing Office, 1952, pp. 44–45.
[92] *Survey of Current Business*, November 1950, p. 1.
[93] *Budget of the United States Government for the Fiscal Year Ending June 30, 1954*, Washington, Government Printing Office, 1953, p. M6. (Hereafter referred to as *1954 Budget*.)
[94] U.S. Congress, Joint Committee on the Economic Report, *National Defense and the Economic Outlook for the Fiscal year 1953*, Washington, Government Printing Office, 1952, p. 49.

investment remained steady. After a slow start, Government purchases also began moving upward.

The fiscal year 1951 furnishes an example of the possible economic importance of the early steps in the Federal spending process. In the face of a budgetary surplus, the announcement of and authorizations and contracting for the Korean mobilization program set off the tremendous expansions in the economy that occurred during the year. As will be shown, the following year—the period of the actual major increase in Federal defense expenditures—was one of comparative stability in the American economy. By the time the peak in expenditures actually occurred, the necessary production facilities had already largely been put in place and had produced much of the output contracted for. The long awaited boom in Federal spending was in good measure discounted in advance—mainly in the fiscal year 1951.

RISING MILITARY PRODUCTION: FISCAL YEAR 1952

The second year of the Korean war—the fiscal year 1952—was a time of rapid increase in defense outlays. This was the period when the newly built production lines began to turn out completed military items in significant quantities. However, as the military situation in Korea greatly improved, consumers soon realized that the supply and price situation was not worsening either as much or as rapidly as they had originally feared. It was apparent that world war III was not in the offing.

Personal saving rose to 9 percent of disposable income in the first half of the year from a low of 2.7 percent in the first quarter of fiscal 1951. Retail sales slackened off appreciably. Continued expansion in defense outlays tended to be offset in part by declines in private investment.

Gross national product continued its quarterly rise, although at a slower pace than the previous year. The net expansion was primarily in the defense sector, as civilian output (GNP excluding defense purchases of goods and services) fluctuated between $290 billion and $293 billion a quarter at seasonally adjusted annual rates. Defense purchases increased almost 20 percent from the first to the fourth quarter of the year.

New obligational authority granted by the Congress for major national security programs totaled $72.7 billion in 1952, an increase of 14 percent over the previous year.[95] Also the peak in contract letting and other forms of obligating defense funds was reached in 1952. Although the military obligation rate was lower in the first three quarters of the year than in the record second half of fiscal 1951, the yearly total of $61.9 billion was the high for the entire Korean effort.

The beginning of fiscal year 1952 saw the industrial economy emerging from the "tooling up" stage on many military items and crossing the threshold of the period of volume production of hard goods. At the end of the first quarter, the Director of Defense Mobilization declared:

> Military production is entering a new stage—a period when, on many of the new weapons, assemblyline production is beginning and the major problems will be in finding and breaking the bottlenecks that may be holding up the flow of arms off the lines.[96]

[95] *1954 Budget, op. cit.*, p. 1090.

[96] U.S. Director of Defense Mobilization, *Third Quarterly Report to the President*, Washington, Government Printing Office, Oct. 1, 1951, p. 1.

In general, the period following the Federal-Reserve-Treasury accord of March 1951 was one of credit restraint and price stability. On the fiscal side, the budget surplus in 1951 was converted into a budget deficit of $4 billion in 1952. The provisions of the Revenue Act of 1951 were in effect during the last 8 months of fiscal 1952. Although the rise in personal income leveled off after the first quarter of the year, tax receipts in each of the first three quarters were about $3 billion higher than the corresponding period in 1951. The increase in military deliveries was even greater. As a result, Federal expenditures rose each quarter, reaching the height of $18.4 billion in the fourth quarter of the year.[97]

The total of new obligational authority enacted for the year increased 10 percent over the 1951 figure, compared to a 68 percent rise the previous year. The total for 1952, $91 billion, was the high point for the Korean mobilization. A similar dampening occurred in the obligations rate. Contrasted to an increase of 92 percent in the previous year, total obligations incurred by Federal agencies in the fiscal year 1952 rose 25 percent over the 1951 total to a record height of $105 billion.

The governmental trust funds continued to accumulate reserves and, on a cash basis, Federal receipts from the public in 1952 were in approximate balance with Federal payments to the public. According to this measure, the financial operations of the Federal Government for the year tended to have a neutral effect on the economy.

Gerhard Colm points out that most of the rise in national security spending during this period occurred after prices had roughly stabilized.[98] That is, the actual higher level of Federal spending followed the strong expansion in the economy rather than accompanying it. However, the rapid rise in defense expenditure may at least have supported the increased level of prices.

According to an analysis prepared in the spring of 1952:

> "It could be argued * * * that the direct effects of defense production now being felt are not nearly so upsetting to the economy as were the anticipatory effects a year or so ago * * * The shortages failed to appear, prices declined, and inventory congestion plagued industry throughout most of the past year. In part, this reversal * * * stemmed from widespread misapprehensions about the impact and timing of the defense program." [99]

This misapprehension may be a serious indictment of the data available to the Government and private analysts for gauging the economic impact of government spending and also of the lack of ability to interpret properly the data that were available.

PEAK LEVELS OF OUTPUT: FISCAL YEAR 1953

The fiscal year 1953, the third year after the outbreak of hostilities in Korea, was the peak period of the Korean cycle. All sectors of the economy reached record highs.

GNP for the year was $358 billion, an increase of $21 billion over fiscal year 1952. The level of consumer prices held extremely steady during the year, rising to 114.5 in June, only four-tenths of a point higher than at the start of the year. After declining 2.2 points in the

[97] *Treasury Bulletin*, August 1952, pp. 1, 7.
[98] Gerhard Colm with Marilyn Young, *Can We Afford Additional Programs for National Security?* Washington, National Planning Association, 1953. p. 9.
[99] "Production in a Defense Economy," *Monthly Review of the Feueral Reserve Bank of New York*, March 1952, p. 39.

first half of the year, the wholesale price index was fairly constant in the last 6 months of 1953, fluctuating within a range of six-tenths of a point.[100]

In transmitting the budget for the fiscal year 1953, President Truman pointed out that "the smaller amount of new obligational authority which I am recommending indicates the substantial portion of the financial requirements of our military buildup that has been met in the appropriations already made by the Congress." [101]

The 1953 total of $80 billion in new obligational authority was $11 billion or 12 percent less than the peak year of 1952. Similarly, the total amount of obligations incurred by Federal agencies was $86 billion, a 6 percent decline from the previous year. Budget expenditures for the year, on the other hand, reached their Korean peak at $74 billion—the largest total annual outlay by the U.S. Government since 1945.

The rise in military production and deliveries and, hence, expenditures leveled off during the year. Budget expenditures increased $7 billion over the previous year compared with the rise from $20 billion to $40 billion from the 1951 to 1952 fiscal years. In his October 1952 report, the Director of the Defense Mobilization pointed out the causes for this trend:

> The rise in total production will be gradual because it will be selective. Each item in the military program has its own productive curve—a period of acceleration, a period of level sustained production, and a period of decline prior to terminating production. * * * or a large proportion of the items in the program, the sustaining rate has been reached.[102]

Revenues reached a high of $64.8 billion in the fiscal year 1953, reflecting the full impact of the higher Korean rates. Nevertheless, the Federal Government had a cash deficit for the first time since the beginning of the Korean fighting. This resulted from the fact that the primary impact of the Korean program on government expenditures was being experienced at the time.

DECLINE IN ECONOMIC ACTIVITY: FISCAL YEAR 1954

Reductions in inventory accumulation and in defense outlays in the fiscal year 1954 resulted in the first significant quarterly declines in GNP since 1949. The reductions in new obligational authority and obligations that occurred in 1953 were translated into reduced Federal expenditures in 1954.

The slackening rate of military production was apparent in the decline of deliveries for security programs and, hence, expenditures, in every quarter of the fiscal year 1954. Total deliveries declined by approximately $7 billion at annual rates from the last quarter of fiscal 1953 to the last quarter of the 1954 fiscal year.[103]

The decline in obligations incurred by the Defense Department, which began in the previous fiscal year, continued through the first half of fiscal 1954. The obligation rate stayed at a low level for the rest of the year. Some military contracts were canceled after the Korean truce, which was signed in July, 1953, the beginning of the

[100] "1953 Statisatiel Supplement," *op. cit.*, pp. 26–27.
[101] *Budget of the United States Government for the Fiscal Year Ending June 30, 1953*, Washington, Government Printing Office, 1952, p. M6.
[102] U.S. Director of Defense Mobilization, *Eighth Quarterly Report to the President*, Washington, Government Printing Office, January 1, 1953, p. 10.
[103] "Treasury Financing in Fiscal 1954," *Monthly Review of the Federal Reserve Bank of New York*, August 1954, p. 108.

fiscal period. Obligations for hard goods procurement averaged $500 million a quarter for the first 9 months of the year, compared to expenditures on these programs at the rate of $4.2 billion a quarter.

Reductions in Federal tax rates, continued operation of the "automatic stabilizers," increases in State and local outlays, and high levels of business investment all served to cushion the decline. At the year's end, there were indications that the downturn would be a limited one. Continued low levels of new obligational authority and obligations, however, presaged no significant rise in Federal spending in the near-term future, barring an abrupt shift in the international situation.

By June 1954, the economy had generally adjusted to the impact of the military and economic mobilization program that the Nation had embarked upon 4 years previously. The Korean cycle had to a large extent worked itself out. From a comparatively "normal" position in the 1950 fiscal year, the economy had been in an expansive stage in 1951 and 1952. After reaching peak levels in 1953, economic activity declined in fiscal year 1954. Toward the end of 1954, there were indications that the bottom of the recession had been reached and an optimistic mood prevailed in business and government circles generally.

SUMMARY

Table 14 shows the relationships of the major phases of the Federal spending process to the overall trend in the American economy during the Korean mobilization period. It should be noted that the primary volatile component of all of the measures of Government activity was the national defense program.

TABLE 14.—*Relationship of measures of Federal spending to changes in economic activity*

[Percent changes from previous period]

Fiscal year	GNP	New obligational authority	Obligations incurred	Budget expenditures
1951	+19	+68	+92	+11
1952	+18	+10	+25	+15
1953	+4	−12	−6	+14
1954	+1	−24	−23	−9

Source: Table 12; Survey of Current Business, "1954 National Income Supplement," pp. 222-223; July 1956, pp. 26-27.

As can be seen, the large, initial increases in new obligational authority and in obligations were accompanied by a sharp rise in GNP, but there was a much smaller change in the government expenditure level at that time. In the absence of any other important developments, the rapid expansion in economic activity was based largely on anticipations arising from the early stages of the new government spending program.

As the expansions in new obligational authority and in obligations incurred slowed down, a similar reaction occurred in GNP. On the other hand, the expenditure rate accelerated somewhat akin to the increases in the other series during the earlier period.

Economic activity, as measured by GNP and other indicators, reached a peak in the third year of the Korean mobilization program,

although the rate of increase was slower than during the earlier periods. Actual decreases were recorded in the annual totals of new obligational authority and obligations. Expenditures reached their peak during this period, although they were rising at a reduced rate.

GNP and other indicators of economic activity were declining through most of the fourth year of the Korean mobilization program. However, the annual total of GNP was approximately the same as that of the previous year, indicating that GNP fell in the fiscal year 1954 at about the same rate as it was rising during 1953. Heavy declines in new obligational authority and in obligations were recorded at this time, together with a slight reduction in Federal expenditures.

Several interesting points emerged from this examination of the Korean mobilization program:

1. The major expansion in economic activity occurred at approximately the same time as the announcement and authorization of the program, and while many of the defense orders were being placed.
2. The expansion in economic activity slowed down at about the same time that the rise in new obligational authority slowed down.
3. The declines in new obligational authority and in obligations occurred prior to the declines in economic activity and in government spending.
4. The major rise in government expenditures occurred after the major expansion in new obligational authority and after substantial defense ordering had taken place.
5. The major expansion in economic activity occurred prior to the major rise in government expenditures.

The reader should be cautioned against generalizing simply on the basis of the Korean experience. The events during the Korean mobilization period did show that the main expansive effect of this new program of purchases of privately produced goods and services occurred at the early stages of the spending process rather than at the terminal stages when the government disbursements are made.

A number of situations have occurred where the responses to a new governmental spending program are quite different than was the case during the Korean mobilization program. The Government's embarking on a new spending program could have, as during the 1930's, a negative effect on business confidence. Also, the level of economic activity might have risen instead of declining when the tempo of military spending was slowed. This was the response during the reconversion following World War II.

The unavailability of resources would have prevented the rapid translation of government contracts into business investment in expanded capacity and production on government account. Finally, different types of government spending programs—such as transfer or interest payments—may have had a more subdued effect on the economy generally.

The following special factors contributed to the exact timing and extent of the economic effects of the Korean mobilization program:

1. The American participation in the conflict and the initial defeats, which engendered the fears of a World War III.
2. The recent experience of a global war, with the attendant inflation and shortages of materials.

3. The partial rather than total mobilization of the economy, so that there was generally an ample supply of civilian goods and services.
4. The strong financial position of American consumers and businessmen so that they could make effective the resultant demands.
5. The excess capacity in the economy, so that much of the military demands could be added to rather than supplant civilian demands.
6. The slowing of the tempo of hostilities and, subsequently, the signing of an armistice, so that declines in military production were made possible.
7. The fact that nondefense government programs were not sharply increased when the declines occurred in military spending.
8. The lack of understanding of the timing of the economic effects of the mobilization, so that while experiencing the peak effects of the program the public (if not the Government, too) believed that the worst was yet to come.

Evaluation and Conclusion

In general, the application of this study for purposes of economic analysis and governmental administration are twofold: (1) a proper understanding of the operation of the Federal spending process is important in analyzing economic developments and government activity during periods of fluctuations in government purchasing, and (2) the measures of the early stages of the spending process are lead series which often quickly register changes in governmental demand and indicate future trends in actual governmental disbursements.

Analysis of Economic Conditions

Because the early stages of the government spending process often show up in the private sector rather than in the public sector, it is a temptation, during periods characterized by sharp increases in government purchasing, to conclude that private rather than government demand is contributing the inflationary pressures. The following is an example of this shortcoming which often mars otherwise cogent analyses. The author is discussing the first year of the Korean mobilization program.

> This great increase in private demand took place at a time when the federal budget was running at a surplus, and when the direct increase in expenditure for security programs was quite small. Thus most of the inflation in the year after Korea can be said to have been caused by the large volume of private spending * * * *The important point is that Federal fiscal policy cannot be held directly responsible for the inflation* * * * A major part of the remedy must be found in more effective monetary policy to curb private credit spending through curtailing money and credit creation.[104]

It is not meant to single out the author of the above statement, because similar analyses were made by A. J. Brown and others.[105]

Maintaining that Federal fiscal policy was not inflationary during a year when the rate of military orders was doubled and only a comparatively minor tax increase was enacted ignores the operations of the Federal spending process. To go on and state that the remedy

[104] W. Glenn Campbell and others, *Economics of Mobilization and War*, Homewood, Ill., Richard D. Irwin, 1952, p. 75.
[105] A. J. Brown, *The Great Inflation: 1939–1951*, London, Oxford University Press, 1955; U.S. Congress, Joint Committee on the Economic Report, *National Defense and the Economic Outlook for the Fiscal year 1953*, Washington, Government Printing Office, 1952.

simply exists in curbing private spending and credit creation ignores the very reason for a good share (the nonspeculative share) of the expansions in economic activity. It was government policy of the time to encourage private spending for and financing of the production on government account and the necessary supporting investment.[106] General credit curtailment might have seriously interfered with the needed expansion in private production and investment. To be sure, the inflationary effects of consumer and business spending not directly related to the defense production program should not be ignored, nor need the pegging of the government bond market be defended.

An understanding of the operation of the Federal spending process can be useful in business cycle analysis, interpretation of current economic conditions, and evaluation of future economic developments, especially where changes in governmental activities play a dominant role in the period being covered.

In a more specific way, lead series on the government spending process can be used in a way similar to the lead series which have been developed for private economic activity. The lead series in the Federal spending process are new obligational authority and obligations incurred while series on expenditures are lagging, or at best, coincident measures. There is an intimate functional relationship between these series:

> Expenditures are merely the inevitable result of incurring obligations in the form of contracts and other commitments which are based on the appropriations and other authorizations granted by the Congress.[107]

This relationship seems quite clearly to meet the test of lags in economic developments—when certain developments are related to other developments as cause and effect, but the effect follows the cause with some time delay. Thus, the lead series are a form of "exceptational" statistics. Their similarity in use to statistics on business plant and equipment expectations can be seen in a study of the latter field by a group headed by George Terborgh:

> The importance of measuring plans and expectations, as distinguished from expenditures themselves, arises from the lead time involved. Capital goods have a long production cycle, especially buildings and structures * * * Here the lag of actual expenditures behind the commitments to undertake the project * * * must average several months * * * It follows that figures on expenditures run far behind the flow of commitments.[108]

This similarity between "expectational" statistics on private and government spending can also be seen in an analysis of the uses of the series on private new orders:

> * * * changes in new orders reflect directly or indirectly fluctuations in demand from producers and consumers. Long before a change in business activity, new orders will reflect the changed demands and will point to coming developments.[109]

The lead series on government spending may be of special value in forecasting the general levels of economic activity at times when

[106] *Cf.* Director of Defense Mobilization, *First Quarterly Report to the President*, Washington, Government Printing Office, 1951, p. 5.

[107] A statement by "a representative" of the Bureau of the Budget U.S. House of Representatives, Committee on Government Operations, *Limitation of Federal Expeditures, Report to Accompany H.R. 2*, Washington, Government Printing Office, 1953, p. 3.

[108] Committee on Business Plant and Equipment Expenditure Expectations, *Statistics on Business Plant and Equipment Expenditure Expectations*, Washington, Board of Governors of the Federal Reserve System, 1955, p. 2.

[109] Gibert and Paradiso, *op. cit.*, p. 43. "In any given business organization, the current and future business prospects are judged on a much broader base than production statistics. Order backlogs, incoming orders, and market opportunities which will produce a continuing flow of such orders receive much attention; the company's own production figures are given scant attention." Herbert V. Prochnow, editor, *Determining the Business Outlook*, New York, Harper & Bros. 1954, pp. 152–153.

changes in governmental spending patterns are the decisive factors in the economy. Gerhard Colm, who has prepared many studies and forecasts of economic conditions, has pointed out that economic forecasting is safest to the extent that it can be based on decisions which have already been made and that studies of "what is in store" in the government sector can be among the most important building blocks for constructing an economic forecast.[110]

Series on new obligational authority and obligations incurred might well be added to the "leading" series of statistical indicators used by the National Bureau of Economic Research. It has been pointed out that the existing National Bureau series, limited to measures of the private sector, can be misleading when the important developments in the economy are in the government sector. Lempert has demonstrated that the National Bureau's lead series indicated a slowing in the rate of economic activity throughout the calendar year 1950, despite the tremendous expansive influence of the Korean mobilization during the second half of the year.[111]

The obligation series may also be helpful in preparing interindustry models where obligations for long leadtime programs are taken into account in the calculation of the "bills of goods" for consumer expenditures, private producers' durables, and business inventories.[112]

FORMULATING AND EVALUATING GOVERNMENTAL ECONOMIC POLICIES

Attention to the early phases of the government spending process can be useful in formulating public policy by indicating the initial effects on the economy of governmental action and where that action would lead over time. Kenneth Roose, in his analysis of the 1937–38 cycle, claimed that because such knowledge was not available most policy makers and economists were not aware that the net effect of governmental action throughout 1937 was deflationary.

Roose points out that "Thus there must be a continual awareness of the extent to which the government is acting in its role of tax collector and public disburser to depress or to stimulate the level of income and production." [113]

Expenditure policy. The knowledge of the lags in and the nature of the government spending process is of particular importance in gauging a proposed spending program for countercyclical purposes. For example, if a $5 billion decline in GNP (annual rate) has been experienced in period 1 and a $10 billion decline is being assumed in period 2, it may be of little avail (aside from effects on expectations) in countering the immediate recessionary tendencies to embark upon a large construction program for which contracts could not be let until period 3 and production gotten underway until period 4. In such case, recourse to actions which involve shorter "leadtime" may be more appropriate. A step up could be ordered in the rate of production of equipment previously contracted for. With programs of military defense, foreign aid, stockpiling, and atomic development

[110] Gerhard Colm, *The Economic Outlook for 1955*, abstract of an address before the Conference on the Economic Outlook, University of Michigan, Ann Arbor, Nov. 12, 1954, p. 2.
[111] Leonard H. Lempert, "Current Implications of the 21 Statistical Indicators," *Illinois Business Review*, December 1956, p. 6.
[112] Irving H. Licht, "Government" (in conference on Research in Income and Wealth, *Input-Output Analysis, Technical Supplement*, New York, National Bureau of Economic Research, 1954), p. 2–13.
[113] Kenneth D. Roose, *The Economics of Recession and Revival, an Interpretation of 1937–1938*, New Haven, Yale University Press, 1954, p. 257.

totaling many tens of billions of dollars a year, an actual acceleration of $2½ billion in a quarter ($10 billion at an annual rate) in deliveries might be more effective.

The literature seems to have emphasized almost exclusively possibilities of embarking on new programs to the neglect of the ready possibilities of altering the obligation, production, and delivery rates on existing programs.

In these latter instances, there are not the problems of getting advance Congressional authorizations and appropriations such as occur in the traditional anticyclical program—new public works. Moreover, the danger of overcompensating is not as great. Particularly if the economy were heading up again as the combined result of monetary and other government action, a slowdown could then be instituted in the obligation, production, and delivery rates to keep the activity within the overall level programed for the year or longer period involved. The apportionment, reserve, and allotment techniques described in chapter II could be utilized in this connection.

An example of the administrative stepup in government spending to counter deflationary tendencies occurred in the third quarter of 1954. Secretary of Commerce Weeks announced a policy of speeding up government purchasing within the limits of the budget to give "the economy a little nudge." He cited the distribution of highway grants to the States 6 months earlier than normal, a fast start on procurement of new army uniforms, and a policy of pushing aid to airport construction within the limits of the funds appropriated by the Congress.[114]

No study has yet been made of the effectiveness of the 1954 speedup, nor could one be adequately made without access to the procurement plans and records of the major spending agencies. Some insight may be obtained from a similar experience in the 1937–38 recession. In November 1937, the President requested the various government agencies to accelerate procurement orders wherever possible so that government demand might serve as a partial offset to the then current sharp decline in private demand. A study of this period concluded:

> Existing records are not definitive, but it does not appear that the President's request resulted in any considerable volume of advance procurement.[115]

A number of explanations were offered: (1) inadequate information as to current purchases and future requirements, especially among departments with decentralized procurement systems; (2) insufficient funds to make large advance purchases, particularly in the case of agencies which were uncertain as to whether they would obtain deficiency appropriations; (3) insufficient storage space; (4) administrative difficulties on the part of purchasing officers in concentrating the year's work; and (5) contractual obligations already entered into, particularly on construction projects calling for delivery throughout the remainder of the fiscal year.[116]

A more recent study of the attempted administrative speed up in government procurement in 1958 yielded similarly disappointing results and somewhat similar explanations. Long-term commitments, lack of storage space, and insufficient time were listed as reasons for

[114] "Weeks Outlines U.S. Policy to Boost Economy, Speed in Spending Planned to Bring Upswing," *Philadelphia Inquirer*, July 30, 1954, p. 2.
[115] Linnenberg and Barbour, *op. cit.*, p. 118.
[116] *Ibid.*, p. 119.

the inability to achieve a significant speed up in procurement to combat the recessionary conditions in 1958.[117]

The Bureau of the Budget concluded that the governmental actions that have the largest and promptest economic impact are transfer payments such as unemployment compensation that constitute outright additions to private purchasing power, rather than programs tied to construction or the production of goods.[118]

Tax Policy. Understanding the time sequences in the Federal spending process is also important in formulating tax policy. The administration leaders were in a difficult position in the fiscal year 1951. The inflationary pressures that had been rampant in the economy since the Korean outbreak were unaccompanied by any immediate Federal deficit. Under the principles of "sound finance" and balancing of receipts and expenditures, there was no need for added taxation during the year. However, the administration was partially successful in coupling the need for increased revenue with recently enacted appropriations and the high levels of procurement—rather than with the low contemporaneous level of expenditures. This resulted in sufficient additional revenues to yield a surplus in 1951, although not in the later years when the high projected expenditures materialized.

The following statement made by the then Secretary of the Treasury John Snyder to the House Ways and Means Committee clearly illustrates the importance for fiscal policy of taking account of the economic impact of the early stages of the Federal spending process.

> In considering the additional revenue required, we should not be misled by the fact that, temporarily, the budget deficit is moderate. Since an important part of defense preparation entails production operations extending over two, three, or even more years it is inevitable that obligations incurred now will be fully reflected in expenditures only at some time in the future. * * *
>
> Under present conditions, expenditures for defense exert an inflationary pressure on the economy substantially in advance of the actual disbursement of funds. Demands for materials, labor, and capital outlays occur very soon after the Government contracts are let, well in advance of the time when the Government pays for that production. This explains in part why scarcities and inflationary pressures have developed even though a large portion of the increased defense funds appropriated by the Congress after Korea have not yet been reflected in Government expenditures.[119]

A comparable policy might be adopted toward tax reduction when a decline in government purchasing occurs. In fact, such action took place after the hump in the Korean mobilization program had been passed. The sizable decline in obligations which occurred in the fiscal year 1954 was accompanied by reductions in individual income taxes, by the elimination of the excess profits tax on corporation income, and by other modifications in the tax structure which resulted in immediate losses in revenue. These tax reductions may not have been directly motivated by the concurrent declines in government orders. However, the administration policy at the time was to reduce government demands, both on output and income, so as to allow increased private demand and personal disposable income.

Direct controls. The inflationary (or deflationary) effects of changes in the early phases of the Federal spending process are of importance in the administration of price, wage, and materials controls. Anshen

[117] U.S. Bureau of the Budget, *Federal Fiscal Behavior During the Recession of 1957–58*, Washington, 1961, p. 18.
[118] *Ibid.*, p. 21.
[119] U.S. Secretary of the Treasury, *Annual Report on the State of the Finances for the Fiscal Year Ended June 30, 1951*, Washington, 1952, p. 406.

and Wormuth, in their discussion of World War II controls, conclude that, because of the failure to properly take into account the leadtime factors in Federal procurement, controls are likely to be applied later than an "objective and imaginative analysis" of the facts would dictate. Also, these controls are likely to be more limited in scope than is required to deal promptly and effectively with the necessary adjustment of the economy's resources. They point out that the economic setting increased the natural disposition to ignore the lag between the making of defense production plans and the actual output of munitions and related items at mass production levels.[120]

Although beyond the general scope of this study, it would appear that the general phenomena of inflation and deflation need to be explored, not only in terms ot the two poles of psychological expectations and actual cash flows, but also the intermediary stages during which plans are formulated and decisions are made.[121] What may appear to be actions based merely on anticipations (such as buying sprees in advance of heavy war expenditures) can be really the early stages of the war expenditures themselves—such as necessary tooling up and business inventory accumulation.

ADMINISTRATIVE GOVERNMENTAL USE

The measurements of the early stages of the Federal spending process lend themselves to administrative use in forecasting future levels of expenditures, in gauging the progress made in the execution of Federal programs, and in controlling expenditures.

Forecasting expenditures. Forecasts of government expenditures can be prepared by making assumptions as to the availability of funds (new obligational authority and unused obligational authority granted in prior years), the extent to which they will be committed during the period under study, and expected delivery or expenditure rates resulting therefrom.

Algebraically, the relationship can be described in terms of a difference equation as follows:

$$X(t)=aA(t)+bA(t)\text{–}1) \quad cA(t\text{–}2 \ . \ . \ . \ nA(t\text{–}n),$$

where

$X(t)$=expenditures for a given year (from current as well as prior year appropriations).

$A(t)$=appropriations and other new obligational authority granted for a given year.

$A(t\text{–}1)$=appropriations for the previous year, etc.

a=the proportion of appropriations for year (t) to be spent in year (t).

b=proportion of appropriations for year $(t\text{–}1)$ to be spent in year (t), etc.

As the Government prepares estimates of appropriations for future periods, the major question involved is the extent to which the lead time coefficients—a, b, c, . . . n—remain constant over a period of time. Unfortunately, lead times vary for different types of programs and under different economic conditions. Hence, in the absence of a general degree of stability in government spending patterns, expenditures in a future period cannot be predicted simply by examining the total of new obligational authority.

[120] Anshen and Wormuth, *op. cit.*, p. 526.

[121] *Cf.* Brown, *op. cit.*, "* * * the expenditure approach to the phenomena of inflation, so enlightening in most circumstances, turns out to be sadly inadequate during the period under review" (p. 71).

Leadtimes will vary as the product mix of governmental purchasing fluctuates with changing needs and conditions. Studies of interindustry economics have revealed that even technological leadtimes in specific industries are not invarient over time or with respect to changes in the level of activity. More distant sources of materials, the employment of less efficient labor, and variations in the precise nature or quality of the product may tend to increase the leadtimes.[122]

Egle states that the so-called output lag is relevant in this connection (the lag of output behind a change in the volume of orders). He concludes that, for purposes of fiscal policy, this output lag will probably always defy reliable measurement because of the problem of determining the length of the lag with variable governmental outlays in goods.[123]

The Navy Department has found that, in recent years, expenditure rates for the major categories of long-range procurement have many characteristics of the normal growth pattern—the logistics or S curve. By knowing or estimating the availability of funds for a given program and the expenditure rates experienced on similar programs in recent years, expenditure forecasts can be made for the next several years.[124]

The rationale for the S curve is that production on long lead-time items is slow in getting started, then hits its stride with quantity production, and finally tapers off as the order nears completion. Such a method is more useful for procurement categories for which there is experience, rather than for such new items as missiles and space vehicles.

In a more general way, changes in the level of new authorizations and/or new commitments can be used to gauge the future course of expenditures in a somewhat similar manner that fluctuations in new orders are used by business analysts to estimate future sales trends. This is brought out in the following discussion of private orders.

> When new orders have been received for several months at a rate exceeding sales, the indications are strong that sales will rise in the future. If, on the other hand, new business has been running below sales, a downward sales trend is indicated, except when backlogs are unusually high in relation to sales. Of course, in this case also sales must ultimately drop unless demand is stimulated, but with many months of unfilled orders on hand, a cut in output can be deferred for a considerable period. Finally, when incoming orders are about in line with sales and backlogs are normal, it is likely that sales will not be altered much for several months.[125]

Similarly, when the current level of new obligational authority and/or obligations incurred exceeds the level of expenditures the, indications are strong that expenditures will rise in the future and that if the lead series are lower than the level of payments, future expenditures will be lower. Unexpended balances play a role analogous to that of unfilled orders, because even during a cutback in new

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[122] Leadtime in input-output analysis covers only the time necessary to transform the input of an industry to an output. Leadtime in government spending refers to the entire period from ordering an object to delivery and payment. Jean Bronfenbrenner, *Lead Times in Interindustry Models: Concepts and Computations*, Washington, Department of Commerce, 1952, p. 3.

[123] Walter P. Egle, *Economic Stabilization: Objectives, Rules and Mechanisms*, Princeton, Princeton University Press, 1952, p. 193.

[124] For example, about 85 percent of the funds available for naval aircraft procurement in any one year will be spent over the next five years. U.S. Department of the Navy, *Statistical Approach to Forecasting Expenditures*, NAVEXOS P-1571, undated, pp. 2-3.

[125] Jacobs and Wimsatt, *op. cit.*, p. 20. "When a change in the trend of defense expenditures takes place, it nearly always results from a prior change in the same direction in appropriations and contracts. As was to be expected after the outbreak of the Korean conflict, appropriations and contract-letting initially expanded more rapidly than expenditures." Federal Reserve Bank of New York, *Selected Economic Indicators*, 1954, pp. 72-73.

authorizations and new commitments, it is possible for expenditures to hold steady or even rise if they are made out of preexisting balances.

Evaluating progress. It is the belief of the writer that the failure to aggregate the current information on obligations is an important shortcoming of the budgetary process. It is an indication of the concentration on the minutia of detailed accounting rather than on the major trends and developments. Current reports on total government obligations incurred during a given period and amounts of outstanding obligations at the end of a period would provide a valuable indicator of the total progress being made on government programs.

The aggregation and publication of the detailed obligation data could also have an important "feedback" effect on the reliability of the data supplied for internal budgetary control purposes. Comparisons and analyses of the data supplied by the various agencies should reveal, to a greater extent than is possible under current procedures, any inconsistencies in interpreting what is an obligation or in reporting the status of the various kinds of accounts. Moreover, the requirement of publication ought to have a favorable effect on the quality of data presented as, hitherto, agency officials have known that the information they reported would not be made public.

Controlling expenditures. Many groups, private as well as governmental, have wrestled with the problem of how to control Federal spending effectively, with the particular view of reducing it. Unfortunately, most of the discussion has centered on expenditures *per se.* For example, the second Hoover Commission has urged emphasizing costs rather than obligations in order to better control government spending.[126] Expenditures are merely the completion of the spending process. If adequate controls are to be exercised over government spending, attention must be given to the early stages where expenditures are authorized and committed, rather than merely to the payments for goods and services already ordered and produced.

In a more general and philosophical discussion of what he terms "the structure of commitments," John Norton describes the perennial dilemma of the "budget cutter":

> Some past commitments project into, and limit, the present and future; of these some are irrevocable but others may be modified at a cost. Today's events are almost completely predetermined by choices made yesterday and before; nevertheless, a small area of free choice remains. As of any day, the opportunity for the exercise of free choice increases as we include more and more of the future within the compass of our decision making.[127]

An improved understanding of the operations of the Federal spending process on the part of those interested in curtailing government spending is necessary for the preparation of effective proposals to change the course of government spending. Mere exhortation, however well-intended, to reduce expenditures in a given year, may prove fruitless. Naive exponents of economy tend to be quickly dismissed by members of the Congress if they show themselves ignorant of governmental budget matters.

CONCLUDING REMARKS

It is a fundamental finding of this study that the variations in timing and impact of the various stages of the governmental spending

[126] U.S. Commission on Organization of the Executive Branch of the Government, *Budget and Accounting,* Washington, Government Printing Office, 1955, pp. 17–25.

[127] John D. Norton, "Research Required for the Application of Interindustry Economics" (in Conference on Research in Income of Wealth, vol. 18, Princeton, Princeton University Press, 1955), p. 210.

process necessitate taking measurements of the governmental spending stream at earlier phases than merely at the completion stage represented by deliveries or payments.

It may well be that different kinds of measures are needed at different periods in the development of government programs and for various types of governmental programs.

When the Government is about to embark upon a new program, often the most useful indicator of the scope of this new activity will be the amount appropriated for it by the Congress. A series on new obligational authority would furnish the needed information in this case and would furnish also some insight to any "announcement" effects.

A more direct indication of the current effect on the economy can be the aggregate of the orders placed and contracts let. A series on Federal obligations incurred would provide the necessary information in this instance and, in general, the most convenient measure of the progress being made on a government program.

Changes in the size of government programs often show up in the new obligational authority and obligations incurred series significantly earlier than in the expenditure series. This is especially the case where a long production period is involved between the time commodities are ordered by the Government and the time they are produced. Moreover, such production typically takes place in the private sector of the economy and only appears in the public sector when the delivery and payments are made. Hence, the two "lead" series on governmental spending would, in these instances, help to indicate the extent to which developments in the private sector arose in response to changes in the public sector and were mainly part of the governmental procurement process.

Where the increase in government activity consists mainly of payments made directly to the public, such as veterans' pensions or relief, a series on expenditures would be of particular value. Except for a comparatively minor amount of advance and progress payments usually made to contractors on large production or construction orders, the expenditure of public money represents the completion of the program concerned rather than the dynamic period of its development.

The use of any of these measures need not be mutually exclusive and their contribution may be additive. What is needed is not a single standard measure of Federal spending but a tool kit of series, each of which is adapted to special analytical purposes. The addition of economic series measuring the early stages of the Federal spending process to the conventional series which emphasize the terminal stages may help better to meet the needs of the various situations that can occur.

This specific recommendations that arise from this study are that series on new obligational authority granted by the Congress and obligations incurred by government agencies be computed regularly by the Federal Government and that they should be published in the standard compendia of economic statistics. They should be supplemented from time to time by reports on unobligated balances and on unpaid commitments outstanding.

Such series would be useful and complementary additions to the sections on government finance in such publications as the *Treasury Bulletin*, the *Economic Indicators*, the *Federal Reserve Bulletin*, and the *Survey of Current Business*. Subsequent efforts might be made to explore the value of such series for state and local governments and the possibilities of their preparation.

Likewise, a better understanding of the workings of the Federal spending process will assist in the use of these tools for purposes of economic analysis and policy formulation. It is hoped that the work done for this study will prove suggestive to others concerned with related questions of fiscal policy to the end that economic analysis will make a more intelligent and knowledgeable contribution in the formulation of governmental economic policy.

EMPLOYMENT IMPACTS OF DEFENSE EXPENDITURES AND OBLIGATIONS

(Reprint from Review of Economics and Statistics)

By EDWARD GREENBERG*

I. INTRODUCTION

The importance of specifying accurately the impacts of military procurement in models of the economy is apparent. One of the potentially most important applications of such models is to generate the responses of the economy to changes in procurement activity and to evaluate the effects of alternative courses of government action designed to reduce the economic hardships associated with large and rapid changes in military procurement. An inaccurate specification of equations describing the impacts of government actions may seriously mislead planners who are devising appropriate offsetting policies. For example, if the major changes in defense employment occur at the order-letting stage, rather than the expenditure or final delivery stage, as several models suggest, necessary modifications in fiscal and monetary policy may be delayed by about a year.

From another point of view the empirical work contained in this paper is an attempt to include instrumental variables, variables which can be directly controlled by policy makers, in models designed to describe the behavior of the economy, as stressed by Orcutt, [15]. It will be pointed out that several of the existing models of the economy do not include the appropriate instrumental variables, making it difficult to consider alternative courses of action. In fact, the whole area of effects of government spending has not been studied extensively.[1]

For the purpose of analyzing the employment impacts of military expenditures and obligations, the paper proceeds as follows: (1) A brief review of the process by which a procurement action moves from the budget stage to the delivery and final payments stage is presented. Based on this process, implications are drawn about the appropriate variables to be entered into equations describing the impacts on employment of procurement actions. (2) Several existing models of the economy—those with fairly well-developed government sectors—are examined in the light of (1) to see if they reflect the process accurately. (3) Empirical work is presented which attempts

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[1] The following comments makes the point well:
"When we began our work we expected that our main job would be to study very closely the detailed timing relations implicit in already established quantitative measures of the effectiveness of monetary and fiscal policy. We soon realized that no such foundation of established quantitative knowledge existed about (1) the working of the money and credit mechanism or (2) a large portion of the mechanism through which fiscal policy works. We found ourselves in the trying position of searching for a needle in a haystack, when no evidence had ever been produced that the haystack contained a needle in the first place" [1, p. 1].

to estimate the employment impacts of the process in two important defense industries. A concluding section summarizes the paper and points out some important data and research needs.

II. The Military Procurement Process and Some Implications

The discussion which follows briefly reviews the military procurement process and indicates the implications of this process for empirical research designed to estimate the economic effects of procurement actions.[2]

The process normally begins with the submission of the President's budget in January, on which congressional hearings are held. Later in the year, appropriations bills are passed, providing the Department of Defense with authority to spend. During the year the Defense Department incurs obligations. In the case of procurement, these are generally in the form of contracts with private industry. To complete the process, expenditures are made as the finished products are delivered.

Which stages in the procurement process are crucial for measuring impacts on output or employment? Subject to several qualifications discussed below it appears that the contract-letting, or obligations, stage is most significant. At this stage, the contractor adjusts employment and output as he takes steps to fill the order. As production is undertaken, inventories are increased. This is reflected in GNP.[3] Eventually, the product is completed and payment is received by the firm. An important implication of this description, for the case in which production and delivery requires rather a long time, is that the employment and income effects are felt prior to the expenditure—in some cases many months prior.

As indications that these leadtimes are significant, it might be noted that 27.8 percent of the 1960 total of procurement and research, development, test, and evaluation was negotiated in the category: "Technical or specialized supplier requiring substantial initial investment or extended period of preparation for manufacture" [20, p. 23]. Other evidence is reported by Weidenbaum [23, p. 11], who points out that the lag between ordering and production for rifles, destroyers, transport planes, bombers, and jet planes is two or more years. Empirical work of Ando and Brown [2] supports the view that obligations affect output. Their contribution will be discussed more fully below.

Several additional features of the defense industry and the procurement process complicate the above description. First, defense firms often submit proposals to the Defense Department describing projects which might be of interest to the Department. While a certain amount of this type of work is likely to be going on all the time, greater activity may take place in response to information from the Department of Defense regarding its view on national security needs. Information is made available to the defense industries in various ways,

[2] More detailed analysis of this process may be found in [5], [10], [16], [22], and [23].

[3] Conceptually, for national income accounting purposes, work in progress, on which progress payments have or have not been paid, should be included in inventories. Unfortunately, company accounting practices make it difficult for the national income accountants to do this since funds expended on such inventories are often reflected in accounts receivable, rather than in inventories. On the government side of the accounting, however, the amount called "government purchases of goods and services" is on a delivery basis. Progress payments paid during production do not appear as purchases until final delivery is made, at which time the total expended on the contract is recorded as purchases. The foregoing refers to equipment contracts; construction contracts are treated somewhat differently.

including speeches by officials of the Department and amounts requested in the Budget message. Though the former source of information is fairly difficult to quantify, the budget is readily available. Also, to the extent that the Department has unobligated appropriations in various accounts, information on the possibility of future obligations is passed on to the industry. Second, if off-the-shelf items are supplied, the effect of the government orders depends on firms' inventory policies and positions. If they were overstocked, for example, there may be few effects on employment and output until inventories are further reduced. In specialized defense firms this is probably not very important. Third, in many contracts the typical procedure is for the firm to bill the government as production takes place. These progress payments are made although no delivery takes place. In the past several years changes in progress payments have occurred which are of some importance. The percentage of costs paid monthly has been changed from 100 to 80 percent and then back to 100 percent. Peck and Scherer suggest that the ability of defense firms to operate is affected by their access to working capital, so that amounts received from the government might have an independent effect [16, p. 162–163]. Fourth, it is likely that firms do not respond completely to new contracts on a month to month basis, due perhaps to the high costs of rapid employment change.

These considerations suggest that a model designed to predict the impacts of changes in government procurement actions on employment should include among the independent variables:

(1) "Announcement" effects—specifically, budget plans and unobligated appropriations. The budget variable is equal to the budget amount from January until the month in which the appropriations bill is passed, after which, it is equal to zero until the following January. This formulation is intended to reflect the hypothesis that budget plans are the main source of information from January until the appropriation bill is passed. Unobligated appropriations constitute a backlog item, consisting of the balance in the appropriation account after currently incurred obligations are deducted and new appropriations are added. At any point in time, these unobligated balances of appropriations represent the amount available to make additional contract awards.

(2) Expenditures—to allow for the importance of working capital.

(3) Obligations—to measure the direct impact of contract letting. Several lags will be incorporated to capture the possibility that firms do not respond fully on a month-to-month basis.

Additional variables are needed to capture the effects of two other factors: price changes and changes in the amount of subcontracting. Since the empirical work will relate money amounts of expenditures and obligations to employment, changes in the price level will weaken the relationship. In a period of rising prices, for example, the same amount of obligations would lead to a smaller amount of employment.

Changes in the amount of subcontracting are important because the Department of Defense budget categories and the SIC employment categories do not cover the same industries. This problem is described more fully in the appendix. Briefly, Department of Defense budget categories are concerned with end items, such as aircraft or ships, while the SIC data are keyed to the major product class of individual establishments. The tendency for more electronics equipment to be included in ships is reflected in the Department of Defense data in the "ships" account, while in the employment data, it is reflected in the electronics category. This factor should operate negatively on employment, that is, a given amount of dollars obligated for ships will

lead to less employment in shipbuilding establishments, the more electronic equipment is included in the ship.[4] An attempt is made to allow for these effects by including another variable:

(4) Polynomial in time—to allow for trends in subcontracting and price changes.

The use of a trend variable will, of course, pick up other smoothly changing omitted variables. In the present study, changes in the amount of procurement purchased from foreign sources may be one such variable.

Finally, although I suspect that much of the seasonal variation in the monthly employment series is due to the seasonality in the obligations series, conventional holiday periods and climatic conditions may be significant. These are allowed for by a set of variables:

(5) Set of seasonal dummy variables, with January omitted.

Employment will be measured by (1) total number of workers, (2) number production workers, and (3) number of production workers times average weekly hours worked. These all reflect different types of adjustments. It is anticipted that the man-hours variable will be most sensitive to changes in obligations, since adjusting the length of the work week is generally the fastest way to increase output. The number of production workers should be more sensitive to obligations than total workers, since the latter includes a large component of managerial and research people, who may be more insulated from changes in production. To the extent, however, that research personnel are involved, the "announcement" variables may exert a greater impact on total workers than on production workers.

III. Review of Previous Empirical Work

The discussion of the previous section leads to the conclusion that the structure of the government procurement process is such that the primary effects on employment and output will be felt some time after the order or obligations stage, with secondary effects operating through expenditures and announcements. With that in mind, some empirical work in which government purchases of goods plays an important role will be examined. This work includes four large scale models of the economy and two papers which emphasize the importance of obligations.[5]

Two other models were examined, but will not be reported upon in detail since their government sectors are not greatly elaborated. These include the Wharton School Quarterly Economic Model [Klein, 8], and T. C. Liu's Quarterly Model [11]. In the Klein model, government purchases appear only in the identity for GNP. Other possible routes through which defense procurement could flow are through new orders and unfilled orders. New orders, however, are a function of recent sales and price changes, which do not explicitly allow for a change in government procurement action. New orders, along with the rate of capacity operations, determine unfilled orders. Again, there is little scope for changes in defense spending.

[4] The effects of price changes and changes in subcontracting are discussed by Hitch in [7, p. 694].

[5] Several other large-scale models of the economy are currently being constructed. The Brookings-Social Science Research Council model, [9], is close to completion, although important revisions are still being undertaken at this time. Two others, Wisconsin's Social Systems Research Institute [14] and the National Planning Association's Program Analysis for Resource Management, [13] have not, to my knowledge, elaborated a government expenditures sector.

In Liu's model, the relevant variable, government purchases of goods and services, appears (after eliminating an identity) in the equation determining the change in nonfarm business inventories. Its coefficient is positive, but not significant. The description of the government spending process suggests that the coefficients should be negative, since purchases would tend to decrease inventories. However, since service items, which may have fairly short lags between order and delivery, are included, and since there are problems in estimating inventories, the relationship may have been obscured.

I next consider four large-scale models and two other studies which are directly concerned with the impacts of the procurement process.

A. UNIVERSITY OF MICHIGAN RESEARCH SEMINAR IN QUANTITATIVE ECONOMICS ECONOMETRIC MODEL

One of the few econometric models to take into account institutional factors of the government procurement process is the model, based on annual data, developed at the University of Michigan [17]. The equation explaining the change in durable goods inventory is a function of the difference between Federal military purchases in the following and the current year, $(\Delta M+1)$ as well as other variables. $\Delta M+1$ enters positively and significantly into the equation. The rationale for including this variable is that production of this component of inventory "* * * appears in the national accounts as goods in process, and exerts a strong impact on the economy long before delivery of the finished product materializes as government expenditure" [17, p. 115].

This model is thus seen to have recognized the importance of accurately specifying lead and lag structure. It is, however, inadequate from other viewpoints: (1) The level of aggregation is quite high, making it impossible to obtain impacts on specific industries; (2) the use of annual data makes it impossible to study intra-yearly movements which may be of some interest; and (3) the use of Federal military purchases from private industry includes purchases of items which are not classified in the durable goods industry. Nevertheless, the importance of this variable in the inventory equation is an indication of the gains to be realized from an appropriate specification of the lead and lag structure of the process.

B. DUESENBERRY-ECKSTEIN-FROMM: MODEL OF THE U.S. ECONOMY DURING RECESSION

In their very interesting paper [4], Professors Duesenberry, Eckstein, and Fromm recognize the importance of the order effect, particularly in the explanation of inventory changes. In constructing the order series, however, they assume that the lag between orders and purchases is one quarter. They nevertheless are able to state that the "* * * stimulus of government actions worked through orders as much as through actual expenditures." It would be interesting to explore the consequences of a more realistic specification of the lag between obligations and purchases.

C. FROMM: "INVENTORIES, BUSINESS CYCLES, AND STABILIZATION"

In a paper prepared for the Joint Economic Committee, Gary Fromm states, "* * * fluctuations in government orders and expend-

itures coupled with their resulting impact on, and the independent variation of, private business investment appear to be the principal responsibility for recent stability difficulties in the U.S. economy" [6, p. 37].

Although he presents some data to support this view, government orders do not explicitly appear in the econometric model of the economy presented in a later section of the paper. They are included, however, in the change in unfilled orders variable, which enters the inventory change equation. There would appear to be some difficulty, though, since the unfilled orders variable is essentially determined by lagged values of itself and current and lagged final sales of goods. Thus, government orders are present only to the extent that they appear as initial conditions in the unfilled orders equation, and to the extent that they appear in the final sales of goods, which enters with a lag of two periods. The following is the inventory equation:

$$\begin{aligned}\Delta I_t = & -29.4345 + .4601\, S_t^G - .7314\, I_{t-1} \\ & + .1658\,[111.3945 - .3878\, S_{t-1}^G \\ & + .5229\, \Delta S_{t-2}^G - .5545\, O_{t-2} + .8099\, O_{t-2}]\end{aligned}$$

where I is inventories, S is final sales of goods, and O is unfilled orders. The term in brackets is the equation for O_{t-1} [6, pp. 71 and 73].

Change in inventories is thus determined by current sales and sales lagged one, two, and three periods. In the case of government purchases, we would expect inventories to be related to sales with a lead, as in the Michigan model.

D. LOVELL: FACTORS DETERMINING MANUFACTURING INVENTORY INVESTMENT

A paper which explicitly considers government obligations is that of Michael Lovell. Using quarterly data from 1954 through 1960, he obtains the following inventory change equation:

$$\begin{aligned}\Delta H_t = & -4.01 - .0683\, H_t - +.184\, X_t + .0298 \\ & \Delta X_t - .0158\, \Delta U_t + .0112\, U_t - .295\, E_t - .124 O_{bt}\end{aligned}$$

where H is inventories of durable goods, X is sales of durable goods, U is unfilled orders, E is defense expenditures, and O_b is defense obligations [12, p. 132]. Defense obligations are seen to enter positively; they are also statistically significant. Unfortunately, Lovell did not report on longer lags.

E. ANDO-BROWN: COMMISSION ON MONEY AND CREDIT STUDY

The study most closely related to the present is the paper by Ando and Brown for the Commission on Money and Credit. They report that "the relationship between expenditures on aircrafts and current output is small. The current and two preceding months of expenditure did have coefficients that were statistically significant, and there may be some evidence that advance payments to contractors are of some significance to aircraft output" [2, p. 144]. The relationship between lagged obligations and output, on a quarterly basis, resulted in the following equation:

$$\begin{aligned}P_t = & .0063\, O_t + .0002\, O_{t=1} + .0107\, O_{t-2} \\ & \quad (.0077) \qquad (.0076) \qquad (.0068) \\ & + .0130\, O_{t-3} \\ & \quad (.0067)\end{aligned}$$

where P_t=quarterly average of Federal Reserve Board Index of Production in period t, and O_t=quarterly obligations in period t (2, p. 144). The second and third quarters preceding that for which output is to be explained were considered significant, so that a lag of nearly a year between obligations and output existed. Further experiments on longer lags were not very satisfactory.

The Ando-Brown paper thus presents important evidence on two of the effects which might be considered important for the discussion of the government spending process and the nature of the defense industries. It is concluded that lagged obligations explain output better than do expenditures, but that recent expenditures have some effect on output, pointing to the possible importance of the industry's dependence on the government for working capital. Their conclusions are summarized in the following statement:

> Even variations in rates of procurement of defense items take a considerable period before they register themselves in output. Output appears to be more sensitive to contract awards than to actual expenditure in the aircraft component of defense expenditure, the only one we examined. Aircraft contracts, for example, change output by only 20 percent of the contract by the end of 6 months, 55 percent by the end of three quarters, and are nearly fully reflected in output change by the end of a year. This particular case, however, can be attributed to excess capacity in the industry. New products could be initiated only after lengthy periods of research and would be expected to have lags of considerably greater length [2, p. 11].

The main differences between Ando-Brown and the statistical results to be reported upon in the following section are the following:

(1) The absence of variables representing "announcement" effects in the Ando-Brown paper. These may significantly affect the timing of changes in output and employment.

(2) The use of output rather than employment as the dependent variable. Since the Federal Reserve Board reports [3, p. S–9] that the monthly output series for the aircraft industry is based on man-hours, with an adjustment for output per man-hour in the case of aircraft parts, this particular difference is probably not crucial. I prefer to work with the employment data directly, leaving the polynomial trend to capture changes in output per man-hour, because neither the source nor the quality of the Federal Reserve Board's adjustment is known to me.

(3) The correspondence between Department of Defense budget categories and SIC categories. Ando and Brown relate budget aircraft to SIC aircraft, while the present study, because of the fact that much of the country's missile production takes place in establishments classified as aircraft, attempts to adjust for this.

(4) Ando and Brown work with the period 1954–1959, while the present study incorporates 1955–1963.

G. SUMMARY

The preceding discussion of several large-scale models of the U.S. economy indicated that, by and large, these models do not appear to have portrayed the government sector accurately with respect to purchases of military goods. In general, the equations developed to explain inventories, orders, and unfilled orders are better suited for industries in which sales are made from inventories, and the adjustment mechanism operates through attempts to control inventories.

This is not the case for large amounts of military procurement, however. Many of these items are made to order, and a long lag occurs between orders and purchases. If military procurement were a small or unchanging portion of government purchases, inaccurate equations would perhaps not be crucial. But some of the important uses of these models have to do with the time path of the economy as changes in these procurement actions occur. An accurate description of the process is thus especially necessary if econometric models are to be helpful in evaluating alternative courses of action which would tend to offset major changes in procurement.

The discussion also showed that when obligations were explicitly included they emerged as an important explanatory variable. The empirical work discussed in the following sections bears this out for the aerospace industry expenditures and presents some new evidence on the importance of the "announcement" effect.

IV. Statistical Results

The previous sections have argued that models designed to analyze the effects on employment of military procurement should incorporate announcement variables and new orders to obtain more accurate predictions of the time path of employment. It has also been pointed out that many of the existing large-scale econometric models of the economy have not done so, and that the small amount of empirical work which has recognized the role of new orders has discovered it to be an important variable. In this section empirical work for two groups of budget categories will be discussed. Specifically, expenditures and obligations for the aircraft-missiles-astronautics budget categories (hereafter aerospace group), will be related to employment in SIC categories 372 and 19, aircraft and parts, and ordnance and accessories, respectively, and budget category "ships" will be associated with SIC category 3731, shipbuilding and repairing. A more detailed description of the data may be found in the appendix.

Tables 1, 2, and 3 contain the results for the aerospace industry of multiple regression analyses for three dependent variables: total employment, production worker employment, and number of production workers times average weekly hours worked. Employment figures are in thousands of employees, man-hours are in thousands, and all dollar amounts are in millions. The results are broadly similar and are discussed in the following paragraphs.

(1) Seasonal and time variables: Generally, the seasonal variables are not significant individually, which lends support to the hypothesis that observed seasonality in the employment series is better explained by the seasonality in the obligations series than a constant seasonal pattern. An F test performed on the group of seasonal dummy variables for the total worker regression proved to be insignificant at the 5 percent level. Both time and time squared are highly significant. The coefficient of time is negative and that of time squared, positive. Over the range of t in this study, however, the negative effect predominates and the net effect of time is negative, although at a decreasing rate. In view of the earlier discussion of the likely effects of price changes and subcontracting patterns, this negative effect was expected.

TABLE 1.—*Aerospace Industries—Regression analysis*

[Dependent variable: Total workers] [1]

Independent variable [2]	Coefficient	Standard error	Beta	Partial correlation
Seasonal dummies:				
February	0.6556	25.84	0.0031	0.0030
March	21.1127	27.28	.1006	.0909
April	10.0475	21.25	.0178	.0556
May	11.8130	27.41	.0563	.0507
June	43.2230	31.50	.2058	.1596
July	24.1764	26.11	.1215	.1085
August	35.9255	33.91	.1804	.1239
September	60.3828	33.88	.3034	.2056
October	62.7813	33.69	.3154	.2145
November	65.4592	39.51	.3289	.1916
December	[3] 88.8696	41.55	.4465	.2444
t	[3] 8.9091	.9671	−4.6461	−.7355
t^2	[3] .0459	.0061	2.8220	.6611
Current expenditures	.0054	.0112	.1114	.0573
Obligations, current	−.0037	.0103	−.0836	−.0452
1-month lag	[3] .0323	.0104	.3253	.3434
2-month lag	[3] .0275	.0104	.2794	.2985
3-month lag	[3] .0210	.0107	.2111	.2262
4-month lag	[3] .0271	.0108	.2730	.2850
5-month lag	[3] .0303	.0108	.3076	.3148
6-month lag	[3] .0305	.0106	.3144	.3221
7-month lag	.0159	.0106	.1608	.1752
8-month lag	.0185	.0106	.1876	.2019
9-month lag	[3] .0223	.0103	.2262	.2466
10-month lag	[3] .0306	.0104	.3096	.3264
11-month lag	[3] .0348	.0105	.3529	.3649
12-month lag	.0168	.0091	.1759	.2120
Unobligated appropriations	[3] .0071	.0029	.5031	.2775
Budget	[3] .0981	.0029	.9044	.3091
Intercept	805.8519			
R^2	.7347			
Standard error of estimate	34.6737			
Degrees of freedom	72			
Durbin-Watson statistic	.3068			

[1] In thousands.
[2] All money amounts are in millions of dollars.
[3] Significant at the 5-percent level.

TABLE 2.—*Aerospace Industries—Regression Analysis*

[Dependent variable: Production workers] [1]

Independent variable [2]	Coefficient	Standard error	Beta	Partial correlation
Seasonal dummies:				
February	−0.2856	18.93	−0.0100	−0.0178
March	.1060	19.98	.0369	.0624
April	.2955	15.56	.0103	.0224
May	.1698	20.07	.0059	.0100
June	.2422	23.07	.0844	.1228
July	.6452	19.12	.0237	.0397
August	.1562	24.83	.0574	.0739
September	.3679	24.81	.1352	.1722
October	.4207	24.67	.1546	.1770
November	.4307	28.94	.1583	.1728
December	.6097	30.43	.2241	.2208
t	[3] −8.2397	.7083	−3.1437	−.8079
t^2	[3] .0346	.0045	1.5590	.6725
Current expenditures	.0040	.0082	.0600	.0575
Obligations, current	−.0023	.0075	−.0379	−.0360
1-month lag	[3] .0240	.0076	.1769	.3479
2-month lag	[3] .0205	.0076	.1525	.3036
3-month lag	.0149	.0078	.1097	.2197
4-month lag	[3] .0191	.0079	.1409	.2754
5-month lag	[3] .0218	.0079	.5119	.3098
6-month lag	[3] .0213	.0077	.1605	.3084
7-month lag	.0094	.0077	.0696	.1423
8-month lag	.0019	.0078	.0880	.1776
9-month lag	[3] .0158	.0076	.1175	.2394
10-month lag	[3] .0222	.0076	.1643	.3235
11-month lag	[3] .0267	.0077	.1978	.3794
12-month lag	[3] .0131	.0067	.1005	.2254
Unobligated appropriations	[3] .0046	.0021	.2416	.2506
Budget	[3] .0056	.0022	.4572	.2932
Intercept	568.0707			
R^2	.9238			
Standard error of estimate	25.3485			
Degrees of freedom	72			
Durbin-Watson statistic	.3501			

[1] In thousands.
[2] All money amounts are in millions of dollars.
[3] Significant at the 5-percent level.

TABLE 3.—*Aerospace industries—Regression analysis*

[Dependent variable: Production worker monthly man-hours] [1]

Independent variable [2]	Coefficient	Standard error	Beta	Partial correlation
Seasonal dummies:				
February	−117.4075	780.3	−0.0097	−0.0177
March	167.2887	823.7	.0138	.0239
April	−256.6500	641.7	−.0212	−.0471
May	−347.5373	827.5	−.0287	−.0494
June	147.2898	951.2	.0122	.0182
July	−797.1213	788.5	−.0695	−.1183
August	−127.6783	1024.0	−.0111	−.0147
September	687.8603	1023.0	.0600	.0790
October	807.6806	1017.0	.0704	.0932
November	894.8415	1193.0	.0780	.0881
December	153.0373	1254.0	.1334	.1423
t	[3] −356.9214	29.2	−3.2292	−.8215
t^2	[3] 1.6258	.1852	1.7354	.7190
Current expenditures	−.0001	.3378	−.0389	−.0382
Obligations, current	.0002	.3100	.0601	.0583
1-month lag	[3] 1.0772	.3140	.1884	.3748
2-month lag	[3] .9303	.3134	.1637	.3302
3-month lag	[3] .6327	.3220	.1103	.2256
4-month lag	[3] .7840	.3245	.1369	.2739
5-month lag	[3] .8744	.3248	.1541	.3024
6-month lag	[3] .9448	.3193	.1688	.3293
7-month lag	.5929	.3190	.1037	.2140
8-month lag	[3] .6790	.3197	.1193	.2429
9-month lag	[3] .7571	.3122	.1331	.2748
10-month lag	[3] .8686	.3148	.1527	.3092
11-month lag	[3] .9021	.3161	.1586	.3188
12-month lag	.4546	.2760	.0824	.1905
Unobligated appropriations	.0845	.0872	.1043	.1135
Budget	.1353	.0889	.2615	.1766
Intercept	25,279.4280			
R^2	.9272			
Standard error of estimate	1,045.1086			
Degrees of freedom	72			
Durbin-Watson statistic	.3708			

[1] In thousands.
[2] All money amounts are in millions of dollars.
[3] Significant at the 5-percent level.

(2) Expenditures and obligations: The three sets of regression coefficients reveal that current expenditures and obligations are not significant explanatory variables of employment, but that lagged obligations are all positive, all greater than their standard errors, and nine out of 12 coefficients in each regression are statistically significant. The fact that expenditures were not significant casts some doubt on the hypothesis that the industry is dependent upon the government for its working capital needs, but the importance of obligations is strongly reinforced. Contrary to the findings of Ando and Brown, the effects of obligations are felt almost immediately (the first lagged value is significant) and effects are fairly well spread out over the year, with a rather sharp drop between the 11th and 12th coefficient.

(3) Announcement effects: The coefficients of the unobligated appropriations and the budget variables are statistically significant in two of the three regressions, and positive, though not significant, in the third. These variables appear to exert more effect on total workers than on production workers, both in terms of the magnitude of regression coefficients and standardized regression coefficients (B's). Since total workers include managerial and research people whose employment may depend less on actual production contracts than on the preparation of proposals to the defense department based on expectations about the amount of subsequent production contracts, this result is consistent with a priori expectations.

The R^2s are quite high, ranging from .73 to .93, and are highest for the production workers and the production man-hours equations. The Durbin-Watson statistic appears to indicate some degree of positive serial correlation of the residuals, although the published tables do not contain entries for the number of independent variables used in these regressions.

Several other sets of regressions were tried with lack of success. The first used outstanding obligation, lagged up to 6 months, as independent variables. They were not statistically significant and yielded low R^2s. Another set of regressions used the data for the shipbuilding industry to estimate models similar to those reported above. The results were quite disappointing, with statistically insignificant coefficients and low R^2s. Much of the trouble is no doubt due to the large and changing civilian component in employment.[6]

The importance of considering the effects of announcement and obligations variables on employment is illustrated in table 4. Three different models are used to generate the employment effects of the following postulated series of events: $1 billion are added to the budget and included in an appropriations bill passed in August, a contract for that amount is let in September, and delivery takes place the following September. Model I utilizes the coefficients recorded in table 1. It includes both announcement effects and obligations. Model II is based on a similar regression with the announcement variables omitted. Model III assumes that the entire employment effect takes place at the time of delivery as assumed in several of the econometric models discussed above.

Model I accounts for a greater total of employment than model II and displays a rather different time pattern.[7] By September, when the obligation is assumed to occur, the announcement variables have already generated 17 percent of the total employment. The percentage of employment accounted for by model I remains above that accounted for by model II for the whole period. Both models I and II, of course, predict a time rather different from that suggested by model III.

V. Conclusions

It will be convenient to consider the main conclusions of this study in four parts: an empirical description of the military procurement process, the implications for econometric models, data needs and availability, and directions for further research.

A. Empirical Description of the Military Procurement Process

Based on the description of the government spending process and the regressions for the aerospace industry, it is clear that an important role is played by the obligations variables. Beginning with a 1-month lag they exert an important influence for a year. In addition, evidence has been presented to indicate that two proxies for announcement

[6] According to (18, p. 23), the 1958 portion of military output (according to value of output) for the shipbuilding and repairing industry was 61 percent. Further, Survey of Manufactures data reveal that the proportion of military shipbuilding has fluctuated from about 30 percent to over 50 percent.

[7] A referee notes that employment drops following the new appropriation and the new obligation in model I. The former occurs because the coefficient for unobligated appropriations (.0071) is smaller than the coefficient for the budget variable (.0081). Perhaps this is because much of the preliminary planning and development is done in response to the announcement of the budget in January and is virtually completed by the time of the enactment of the appropriations in August. The drop in employment at the time of the hypothetical obligation in September is due to the negative, but insignificant, coefficient of current obligations (−.0037). I did not think it necessary to recompute the equation without this variable.

effects—budget and unobligated appropriations—have substantial impacts on employment.

TABLE 4.—*Employment resulting from a $1,000,000,000 increase in budget, included in August appropriation bill, obligation incurred in September, and delivery made in following September*

Month	Model I			Model II			Model III, cumulative percentage of total employment
	Employment [1]	Cumulative employment [1]	Cumulative percentage of total employment	Employment [1]	Cumulative employment [1]	Cumulative percentage of total employment	
January	8,100	8,100	2.16	0	0	0.00	0
February	8,100	16,200	4.32	0	0	0.00	0
March	8,100	24,300	6.48	0	0	0.00	0
April	8,100	32,400	8.64	0	0	0.00	0
May	8,100	40,500	10.81	0	0	0.00	0
June	8,100	48,600	12.97	0	0	0.00	0
July	8,100	56,700	15.13	0	0	0.00	0
August	7,100	63,800	17.02	0	0	0.00	0
September	3,400	67,200	17.93	4,900	4,900	1.67	0
October	32,300	99,500	26.55	30,900	35,800	12.17	0
November	27,500	127,000	33.88	21,600	57,400	19.51	0
December	21,000	148,000	39.49	14,900	72,300	24.58	0
January	27,100	175,100	46.72	20,400	92,700	31.51	0
February	30,300	205,400	54.80	27,600	120,300	40.89	0
March	30,500	235,900	62.94	31,200	151,500	51.50	0
April	15,900	251,800	67.18	21,000	172,500	58.63	0
May	18,500	270,300	72.12	22,100	194,600	66.15	0
June	22,300	292,600	78.07	22,400	217,000	73.76	0
July	30,600	323,200	86.23	29,100	246,100	83.65	0
August	34,800	358,000	95.52	33,100	279,200	94.90	0
September	16,800	374,800	100.00	15,000	294,200	100.00	100.0
Total	374,800			294,200			

[1] Number of employees.

Time trend variables, acting as proxies for factors such as changes in the amount of employment in the SIC employment category associated with the corresponding budget category, proved to be highly significant. Seasonal dummies, however, were not significant. Expenditures were not a significant explanatory variable, in contrast to the findings of Ando and Brown. Whether this was due to differences in industry correspondence, time period covered, or estimation of expenditures was not investigated.

Unfortunately, similar regressions for the ship industry resulted in unsatisfactory coefficients and low R^2s. This result was attributed to the significant and varying nonmilitary demand in the industry. However, the fact that different results were obtained with the two industries also suggests that some degree of industry disaggregation should be employed to obtain more accurate estimates of employment impacts.

B. IMPLICATIONS FOR ECONOMETRIC MODELS

The implications for existing and planned econometric models are clear. There are apparently important employment (and income) effects associated with announcements and obligations. Variables representing these effects should be included among the exogenous variables. Further, models which incorporate series on new or unfilled orders should recognize that part of these series—especially orders for military procurement—are exogenous to the system. They are under the control of the government, and should enter the model in such a way as to facilitate study of their impact on variables of interest.

C. DATA NEEDS

A few changes would seem fairly inexpensive and quite useful. These include breaking up the "ordnance, vehicles and related equipment" category into individual categories and publishing expenditures data on a gross basis. The former modification would permit a closer correspondence between employment and budget categories and the latter would provide a better estimate of amounts paid to business. It would also be desirable for other agencies of the government, particularly GSA, NASA, and AEC to release similar information on monthly obligations, with care being taken that these obligations are not also counted in the Department of Defense series when contracts are placed through the latter.

While on the subject of data, it might be noted that a study for the Joint Economic Committee entitled "A Federal Statistics Program for the 1960's" [19] does not include an improved series covering government obligations on its list of directions for improvement.

D. FURTHER RESEARCH

Given the present data availability, I do not think that the procedure followed in this paper can be applied to other industries. If appropriate data should become available, such studies would be quite valuable. Another direction for research would be to complete the description of the spending process by constructing models which relate expenditures and government purchases to lagged obligations and other variables.

An important area for research, not touched upon in this paper, is the question of economic impacts on particular regions. It is hoped that the present study has contributed to this research by pointing out the stage at which impacts are likely to occur. Again in the direction of disaggregation, more detail on the occupational mix of employment might be investigated. As noted above, there appear to be differences in the behavior of total employment and production worker employment. As longer series on research and development obligations become available, these differences might be useful for studying the dynamics of the demand for engineers and scientists.

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APPENDIX

The purpose of this appendix is to provide the sources of the data and the various adjustments made.

(1) INDUSTRY CORRESPONDENCE [8]

The following correspondence was established between the budget categories used by the Department of Defense and the Standard Industrial Classification used for the employment data:

[8] This correspondence was established with the aid of Prof. M. L. Weidenbaum, and is based on Census work sheets for industry classification.

TABLE A1.—*Category correspondence*

Industry name	Budget categories [1]	Standard industrial classification
Aircraft-missiles	Aircraft	Aircraft and parts (372).
	Missiles	Ordnance and accessories (19).
Ships	Ships	Shipbuilding and repairing (3731).

[1] These budget categories are the titles used in the most recent issues of the "Monthly Report on Status of Funds by Functional Title." Earlier years titles were somewhat different.

Work on missiles is divided between the aircraft and parts industry and the ordnance and accessories industry. It was not possible to include the entire ordnance budget classification, since in most recent years ordnance has been part of "ordnance, vehicles, and related equipment." Using this category would make it necessary to include the motor vehicles and parts industry employment category to pick up the vehicles component of the budget category, but this would involve including the civilian component of the industry as well. In this case, of course, the civilian component would dominate the data.

(2) EMPLOYMENT, HOURS, AND EARNINGS

These data were obtained from "Employment and Earnings, 1909–1961" [21] and current issues of the same publication. The variables are not seasonally adjusted.

(3) BUDGET

The budget amounts are taken from the U.S. budget for various years. Generally, the correspondence between the Department of Defense categories used in this study and the budget categories is easily established. An exception is the case of the Army budget, which for several years used the category "Ammunition and Guided Missiles." The portion included in missiles was taken to be the percentage of obligations for missiles and ammunition going to missiles for the year in question applied to the total budgeted amount for missiles and ammunition.

(4) EXPENDITURES, OBLIGATIONS, UNOBLIGATED BALANCES AND UNPAID OBLIGATIONS

The main source for these variables is the Department of Defense monthly release, "Monthly Report on Status of Funds by Functional Title." Amounts taken are those for "Military Functions."

(A) The amounts shown for expenditures are net of receipts from other government agencies (Mutual Defense, NASA, etc.) for whose account the Defense Department placed contracts.[9] In an effort to arrive at a gross expenditures amount, which more accurately reflects payments to industry, a correction was added to expenditures. This correction was obtained by taking, for each year, outstanding obligations at the beginning of the year plus current obligations minus net expenditures. The resulting figure is compared with outstanding obligations at the beginning of the next year, and the difference is assumed to be the amount by which gross expenditures have been misstated. One-twelfth of the difference is added to each month. This correction was not possible for procurement in 1954 and research and development in 1960.

(B) Obligations data are taken directly as published from the Status of Funds Report.

(C) Status of Funds reports unobligated balances at the beginning of the year. This is diminished monthly by current obligations and then replenished by the annual appropriations. This latter amount is added in the month that the appropriations bill is reported out of the Joint Conference.[10] Appropriations are derived by deducting end-of-fiscal-year uncommitted obligations from uncommitted obligations for the beginning of the next fiscal year. These estimates will include some minor accounting adjustments in addition to appropriations.

[9] Thanks to Mr. Sheldon Taylor of the Department of Defense for explaining the intricacies of their account procedures.

[10] Although the appropriations bills do not become law until signed by the President, I assume that the "announcement" effect operates at the time the bill is reported out of the Joint Conference for two reasons: first, the signing of the bill follows by a few days, so that it does not make very much difference; second, it is extremely unlikely that the bill will be vetoed, so that the bill's being reported out of the Joint Conference is tantamount to approval of the appropriations.

THE RELATIONSHIP OF NEW ORDERS TO SHIPMENTS OF DEFENSE PRODUCTS

By Maw Lin Lee*

Introduction

In recent discussions about how an econometric model can be effectively used to evaluate the impacts of government operations, it has been pointed out that the development of a realistic model of the government sector is a prerequisite [6]. There are two aspects to this problem: (i) An econometric model should include appropriate instrumental variables—variables that can be controlled by policy makers [11], and (ii) the model should properly capture the impacts of the government actions [1, 2, 4, 13]. The research presented here is in one sense an exploratory work to fill out knowledge about these two aspects of the problem.

Since defense procurement accounts for approximately 10 percent of GNP, a question which naturally arises is: Can defense procurement be manipulated by the government to help stabilize economic activity or to offset cyclical fluctuations? It is to be expected that the timing of defense procurement is determined primarily by non-economic considerations. In peace time, however, a certain degree of flexibility is presumed to exist in the scheduling of defense procurement. For this reason, defense procurement can be considered a candidate for instrumental variables to be included in econometric models.

In entering defense procurement as a candidate for instrumental variable, the next question being raised is: What stage in the defense procurement process is most important from the viewpoint of measuring its impact on economic activity? In a limited way in which defense procurement was considered in major econometric models, econometricians tend to measure its impacts at the expenditure, stage [3, 5, 7, 8, 9, 10, 12]. Except for progress payments, expenditure however, is made after final product is completed and delivered. Because of the nature of defense products, little or no inventories are accumulated by the defense industries in anticipation of order or contracts. In fact, most defense procurement involves direct negotiations between the Department of Defense and defense industries. It can therefore be assumed that the production process begins after the defense industries accept an order and sign a contract with the Defense Department. As the industries take steps to fill the order, employment, output, and income payments are affected. What this implies is that the impacts of defense procurement on GNP (through employment, income, output, and inventories) are felt prior to the

*The author, who is assistant professor of economics at Washington University, St. Louis, Mo., wishes to express his gratitude to Prof. M. L. Weidenbaum for sharing his knowledge of the military procurement process and data sources and for helpful comments on an earlier draft of this paper. Prof. Edward Greenberg also contributed valuable ideas on econometric models of the government sector. Thanks are due to Norbert Budde and Robert Keller for assistance. The project was supported by NASA through its grant NsG-342 to Washington University.

expenditure stage. In fact, expenditure and delivery of shipment usually signals the end of the impacts of a given defense procurement. Because of this, it is not the sales or the expenditure, but the letting of new orders that should be investigated to measure the impacts of defense procurement on economic activity.

A study of the nature of structural lags between new orders and shipments will not directly reveal the impacts of defense procurements on economic activity. But on the assumption that the placement of new orders signal the beginning and shipments signal the end of the impacts of defense procurements, a study of the nature of structural lags does indicate the duration of such impacts. On the one hand, this knowledge is useful for model building in econometrics. On the other, it will be useful for the timing of fiscal and monetary policies to coincide with or offset any changes in defense procurement.

The Nature of Orders-Shipments Relationship

Defense products, as defined by the Bureau of Census,[1] include communication equipment, complete aircraft, aircraft parts, and ordnance. These products vary in characteristics. The length of time required for the production of some of these products may be quite short. However, for products such as complete aircraft and missiles, 2 years or so may be elapsed before an order results in shipments.

From a technical viewpoint, it can be assumed that new orders placed during a given period, O_t, will not result in shipments during the same period. It is also assumed that a proportion, α_{t+1}, of O_t results in shipments in $(t+1)$; and a proportion, α_{t+2}, of O_t results in shipments in $(t+2)$, etc. As a first approximation, we assume that all or nearly all of the new orders placed during t, O_t, are filled within a period of 2 years (eight quarters). This order-shipment relationship can be restated as that the current shipments, S_t, are derived from new orders placed during the preceding eight quarters, O_{t-1}, O_{t-2}, . . . O_{t-8}.

The length of time required for an order to be filled can be said to depend on (1) state of technology, (2) the nature of product, and (3) the extent of capacity utilization. Technological condition and the nature of product can be regarded as long run factors which affect the nature of structural lags or the order-shipment relationship through α's. The rate of capacity utilization, on the other hand, may be regarded as a shortrun factor the effect of which on the order-shipment relationship may be assumed to be additive. That is, the fuller the capacity is utilized, the smaller the size of S_t will be, and vice versa.

On the assumption that technology and the nature of products remain constant over the sample period, we postulate that:

$$S_t=\alpha_o+\alpha_1 O_{t+1}+\alpha_2 O_{t-2}+\ldots+\alpha_8 O_{t-8}+\alpha_9 R_t+U_t$$

Where α's represent the proportions of new orders placed during each of the periods $t-1$, $t-2$, . . . , $t-8$, that result in current shipment, S_t. α_0 is introduced to take care of systematic deviations from the hypothesis and α_9 shows the effect of the rate of capacity utilization R_t on S_t. U_t is introduced to account for any random disturbances.

[1] See Bureau of Census publication: "Manufacturers' Shipments, Inventories, and Orders: 1947-63 Revised."

The assumption that technology and the nature of products remain unchanged is not entirely realistic however. In fact, the advancement in military tecnhology and changes in the nature of products during the past 15 years were unprecedented in history. From the viewpoint of individual products, technological progress will improve the quality of product and/or the methods of production. An improvement in production methods may shorten the length of time required for the production of a given product. In other words it may shorten the structural lags between new orders and shipments of the product in question. However, a more apparent result of technological progress is the introduction of new products. As new products are introduced, the product mix changes.[2] This is evident in that the proportion of defense procurement devoted to missiles and electronic equipment, which have high technology content, has been increasing since the early 1950's.

A change in product mix undoubtedly will alter the nature of structural lags between new orders and shipments of defense products. Because of this, the assumption that the nature of structural lags remains unchanged throughout the sample period will have to be relaxed. In other words, instead of assuming the fixed values of α's as in equation (1), we assume that α's are a function of product mix. That is to say, the nature of structural lags as indicated by α's changes with a change in product mix.

There is no precise measurement of how product mix changes. However, as noted above, the growing importance of missiles and electronic equipment may be a good indicator and is used as proxy for changes in product mix. This variable is quantified by taking the ratio of the obligations on missiles and electronic equipment to the obligations on the total defense procurement. This ratio ranges from a low of .07 to a high of .43 over the sample period.

On the assumption that the nature of structural lags is a function of product mix P_t, we write:

$$\alpha_{1t}=\alpha_{10}+\alpha_{11}P_{t-1} \tag{2}$$

$$\alpha_{2t}=\alpha_{20}+\alpha_{21}P_{t-2} \tag{3}$$

$$\alpha_{3t}=\alpha_{30}+\alpha_{31}P_{t-3} \tag{4}$$

$$\cdots\cdots\cdots$$

$$\alpha_{8t}=\alpha_{80}+\alpha_{81}P_{t-8} \tag{8}$$

Substituting equation (2) through (8) in equation (1), we obtained:

$$\begin{aligned}S_t=\alpha_0&+(\alpha_{10}+\alpha_{11}P_{t-1})O_{t-1}+(\alpha_{20}+\alpha_{21}P_{t-2})O_{t-2}+\\&(\alpha_{30}+\alpha_{31}P_{t-3})O_{t-3}+\cdots+\\&(\alpha_{80}+\alpha_{81}P_{t-8})O_{t-8}+\alpha_9R_t+U_t\end{aligned} \tag{9}$$

Rewriting (9), we have:

$$\begin{aligned}S_t=\alpha_0&+\alpha_{10}O_{t-1}+\alpha_{20}O_{t-2}+\cdots+\alpha_{80}O_{t-8}+\alpha_{11}(PO)_{t-1}+\\&\alpha_{21}(PO)_{t-2}+\cdots+\alpha_{81}(PO)_{t-8}+\alpha_9R_t+U_t\end{aligned} \tag{10}$$

[2] This study is concerned with the relationship of new orders to shipments of defense products in aggregate term. The order-shipment relationships of individual products are not within the scope of this investigation.

In order to preserve as many degrees of freedom as possible, it is assumed that:

$$\alpha_{11}=\alpha_{21}=\beta_{10}$$

$$\alpha_{31}=\alpha_{41}=\beta_{11}$$

$$\alpha_{51}=\alpha_{61}=\beta_{12}$$

$$\alpha_{71}=\alpha_{81}=\beta_{13}$$

and denote:

$$\alpha_0=\beta_0$$

$$\alpha_{10}=\beta_1$$

$$\cdots\cdots$$

$$\alpha_{80}=\beta_8$$

$$\alpha_9=\beta_9$$

Equation (10) is then rewritten as:

$$S_t=\beta_0+\beta_1 O_{t-1}+\beta_2 O_{t-2}+\cdots+\beta_8 O_{t-8}+\beta_9 R_t+\beta_{10}\{(PO)_{t-1}+(PO)_{t-2}\}+\beta_{11}\{(PO)_{t-3}+(PO)_{t-4}\}+\beta_{12}\{(PO)_{t-5}+(PO)_{t-6}\}+\beta_{13}\{(PO)_{t-7}+(PO)_{t-8}\}+U_t \qquad (11)$$

Equation (11) shows that S_t is dependent on previous new orders, the interaction of new orders with product mix, and the rate of capacity utilization.

3. Data and Statistical Results

Data on the new orders, shipments, unfilled orders, and inventories of defense products are published by the Bureau of Census as monthly series in "Manufacturers' Sales, Inventories, and Orders." To avoid the necessity of including an excessive number of lagged variables in the equation, the data are aggregated to obtain a quarterly series. This aggregation reduced the size of observations to a smaller number. But it also resulted in some loss of precision. Seasonally adjusted data are used in this investigation.

The rates of capacity utilization are those of the Federal Reserve Board series. The ratios of the obligations on missiles and electronic equipment to the obligations on total procurement are calculated from various issues of *Monthly Report on Status of Funds* published by the Department of Defense.

The statistical estimates of equation (1) are summarized in table 1.

Table 1

Variables	Coefficients	Standard errors	Variables	Coefficients	Standard errors
Constant	438.21		O_{t-6}	0.1142	0.0693
O_{t-1}	.1366	0.0631	O_{t-7}	.0190	.0636
O_{t-2}	.1464	.0665	O_{t-8}	.0024	.0548
O_{t-3}	.1707	.0680	R_t	−.0413	.0140
O_{t-4}	.1640	.0707	R^2=.8189	*d.f.*=30	
O_{t-5}	.1189	.0745	Se=33.24	*d*=.6697	

An interesting aspect of the above estimates is that the effects of new orders, O, on shipments, S, first increases then decreases with the increase in lags. The coefficients for O_{t-3} and O_{t-4} indicate that the largest proportions of new orders placed during a given period result in shipments three and four quarters later. The coefficients for O_{t-7} and O_{t-8} are respectively .0190 and .0024 suggesting that current shipments are derived from a very small proportion of new orders placed more than seven or eight quarters ago. In other words, most of the new orders placed in a given period were filled within a period of six quarters. From another viewpoint, the results indicate that the duration of the impacts of a given order for defense products is approximately a year and 6 months.

As expected, the extent of capacity utilization is inversely related to shipments: The fuller the capacity is utilized, the smaller the size of shipments will be and vice versa.

The estimates for equation (11) are summarized in table 2.

TABLE 2

Variables	Coefficients and standard errors	Variables	Coefficients and standard errors
Constant	26.2834	O_{t-6}	.0889+.1277 P_{t-6}
O_{t-1}	.0490+0001 P_{t-1} (.0566)(.0422)		(.0564)(.1114)
O_{t-2}	.0642+.0301 P_{t-2} (.0626)(.0422)	O_{t-7}	.0278+.2335 P_{t-7} (.0514)(.0906)
O_{t-3}	.0903−.0452 P_{t-3} (.0569)(.0931)	O_{t-8}	−.0088+.2335 P_{t-8} (.0451)(.0906)
O_{t-4}	.0708−.0452 P_{t-4} (.0642)(.0931)	R_t	−1.4559 (1.2900)
O_{t-5}	.0573+.1277 P_{t-5} (.0608)(.1114)	R^2=.9019	df=26
		S_e=26.28	d=1.025

The addition of product mix P_t as an explanatory variable raises the R^2 from .8189 (table 1) to .9019 (table 2). This change in the R^2 of .0830 is highly significant statistically.

The estimated value of α's are illustrated for P_t=.05, .10, .15, .20, .25, .30, .35, .40, and .45 in table 3.

TABLE 3

P	O_{t-1}	O_{t-2}	O_{t-3}	O_{t-4}	O_{t-5}	O_{t-6}	O_{t-7}	O_{t-8}
0.05	0.0490	0.0642	0.0880	0.0685	0.0637	0.0953	0.0395	0.0029
.10	.0490	.0642	.0858	.0663	.0701	.1017	.0512	.0146
.15	.0490	.0642	.0835	.0640	.0765	.1081	.0628	.0262
.20	.0490	.0642	.0813	.0618	.0828	.1144	.0745	.0379
.25	.0490	.0642	.0790	.0595	.0892	.1208	.0862	.0496
.30	.0490	.0642	.0767	.0572	.0956	.1272	.0979	.0613
.35	.0490	.0642	.0745	.0550	.1020	.1336	.1095	.0729
.40	.0490	.0642	.0722	.0527	.1084	.1400	.1212	.0846
.45	.0490	.0642	.0700	.0505	.1148	.1464	.1329	.0963

Tables 2 and 3 show that the changes in product mix as indicated by P_t does not have any effect on the relationship of O_{t-1} and O_{t-2} to S_t. Most of the new orders that result in shipments within a short period, say 6 months, are those for component parts of defense products. It is reasonable to assume that change in product mix will have little effects on the relationship between new orders and shipment of these products.

Changes in product mix, however, have effects on the relationships of O_{t-3}, O_{t-4}, . . . , O_{t-8}, to S_t. The magnitude of coefficients for

O_{t-3} and O_{t-4} is inversely related to P_t, while that for O_{t-5}, O_{t-6}, O_{t-7}, O_{t-8} varies with the value of P_t. A change in product mix over the sample period indicates a shift from conventional defense products which have relatively lower technology content to missiles and electronic equipment which have relatively higher technology content. The time required for the production of conventional defense products is shorter than that required for the production of missiles and electronic equipment. As the proportion of defense procurement going to missiles and electronic equipment increases, the proportion of new orders that is filled within three or four quarters decreases while the proportion that is filled between five and eight quarters increases.

The nature of structural lags between new orders and shipments varies with the change in product mix. This also implies that the duration of defense procurement impact on economic activity increases as the proportion of expenditure going to products with high technology content, such as missiles and electronic equipment, increases.

4. Concluding Remarks

The statistical estimates of the structural lags between new orders and shipments implied that the impacts of defense procurement on economic activity are spread over a period of approximately a year and a half. The duration of these impacts, however, is dependent on product mix. The larger the proportion of defense procurement going to products with high technological content, the longer the duration will be. In considering the implications for fiscal and monetary policies to meet any change in defense procurement, the duration of such impacts needs to be taken into account.

It is beyond doubt that the appropriate stage of defense procurement should be introduced as an instrumental variable in the government sector of econometric models. The study presented here does not directly investigate the impacts of defense procurement on such activities as production, employment, and income. Nor does this study investigate orders that are generated by subcontracting. These need to be investigated directly.

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Part IV

REGIONAL AND INDUSTRIAL IMPACTS

Frequently asked questions are those inquiring about Defense expenditure impacts on a firm, an industry, a community, or on an economic region. This part's papers attempt to illuminate these areas of inquiry.

THE ECONOMIC IMPACT—INDUSTRIAL AND REGIONAL—OF AN ARMS CUT*

By Wassily Leontief, Alison Morgan, Karen Polenske, David Simpson, Edward Tower

I. The Problem and Its Analytical Formulation

1. The object of the computations described in this paper was to determine what effect a hypothetical reduction in military accompanied by a compensating increase in nonmilitary demand would have on the industrial composition and regional distribution of employment in the continental United States. By compensation is meant the maintenance of the total level of employment in the economy.

In a paper published 4 years ago,[1] input-output analysis was used to estimate the effect of such a change in the structure of final demand on the industrial distribution of the labor force for the country as a whole. The present study carries that inquiry one step further. The impact of the hypothetical shift from military to civilian demand is projected here not only in interindustrial, but also in interregional terms. Specifically, the territory of the continental United States has been subdivided into 19 distinct regions, and the shift in the industrial composition of output and employment was assessed for each one of them.

Had we attempted to study each region separately and then simply to add the results to arrive at corresponding aggregates for the country as a whole, the total national output figures and the corresponding total input figures for each distinct category of goods and services could not have been expected to match. In other words, the results of such isolated regional studies would not comprise a consistent picture of the national economy as a whole. The simple scheme of multiregional analysis on which the present computations are based provides for simultaneous balancing of all input-output flows from the point of view of each individual region, as well as for the U.S. economy as a whole.

For some goods—let them be called local—a balance between production and consumption tends to be established separately within each region; for other goods—let them be identified as national—such a balance typically is achieved only for the country as a whole. Within each region the output of a national good might exceed or fall short of its total input, the deficit or surplus being evened out by exports to or imports from other regions. Retail trade and auto repair services are characteristically local industries while coal mining and aircraft manufacturing are typically national. The difference

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[1] Wassily Leontief and Marvin Hoffenberg, "The Economic Effect of Disarmament," *Scientific American*, April 1961.

between the two obviously should be explained in terms of the relative mobility or transportability of their output.

To separate national industries from the local, all sectors were arranged in order of the increasing magnitude of interregional, as compared with the intraregional, trade of their respective products. Then, an admittedly somewhat arbitrary cut was made across that array, setting apart the local industries, serving mainly users located within the region in which production occurs, from the national industries, supplying the entire national or even international market, whose products typically are being shipped for this reason in comparatively large amounts across regional lines.[2]

2. The multiregional input-output computation itself can be visualized best as being performed in three distinct, successive rounds. The first consists of a conventional input-output calculation designed to determine the direct and indirect effects of the given shift from military to nonmilitary final demands on the total output of all—that of local as well as of national—goods for the country as a whole. The regional distribution of these total figures is determined in the second and the third rounds. All basic information on the input structure of each local or national industry used again and again throughout these computations stems from the same large input-output table of the American economy. This common source of structural data ensures the internal consistency of all the final results.

For national industries the regional apportionment of the increase or the reduction in the total U.S. output is based in each instance on a simple, but in the first approximation, well-justified assumption of a uniform percentage change. For example, if the first stage computation indicates that as a result of curtailed military purchases and a simultaneous expansion of deliveries serving various types of final civilian demand, the total U.S. output of electronic equipment will fall by 5 percent, then in the second stage that aggregate cut is allocated among the different regions on the assumption of an equal 5 percent cut applied across the board. That presupposes, of course, knowledge of the actual output and employment levels maintained by the national industries in each region before the shift occurs.

The third and last step determines the geographic distribution of changes in the level of activities of local industries producing goods for which the balance between supply and demand tends to be maintained within each region with relatively limited recourse to interregional trade. The input requirements that must be covered in each region by the output of its local industries comprise: (*a*) deliveries to final military and civilian users located in the same region; (*b*) input requirements of the national industries operating in it; and (*c*) the input requirements of the local industries themselves.

Thus, the calculation of regional outputs of local industries requires not only a knowledge of final demand for the United States as a whole, but also a breakdown of military and nonmilitary final demand by regions. While changes in the level of final deliveries of steel, chemicals, and other national goods need be specified only for the country as a whole, the given shifts in military procurement and civilian purchases of electric power, gas and water, office supplies, and other local goods have to be specified separately for each region before the analysis of their regional impact can begin. The amounts of local

[2] The concluding observations at the end of this article describe a possible refinement of this approach which introduces a graduated distinction between national, regional, and subregional industries and goods.

goods absorbed in each particular region by national industries operating in it can be ascertained easily by applying appropriate sets of technical input coefficients to the regional output figures derived for all national industries in the previous, second round of computations.

The regional output levels of local industries, finally, can be derived through separate input-output computations in which the deliveries of local goods to final users located in each region and to national industries operating within it play the role of a given bill of goods.

3. In this last stage of the multiregional analysis, households is treated as one of the local industries—the largest one in fact. The out put of that industry consists of labor services of various types. In contrast to previous computations of this kind, *for reasons of practical convenience the quantities of labor services are measured in this study not in man years but rather in terms of the total wage and salary payments received for them.*

The inputs of the household sector are consumer goods purchased by it. Its input structure, like the input structure of any other industry, can be described accordingly by an array of consumption coefficients, each of which represents the amount of one particular type of good absorbed by the household sector per unit of its own output, *i.e.*, per dollar of salaries and wages received by it.

That means, of course, that in the third stage of the multiregional input-output computations, the given regional bill of goods is redefined so as to include all military and non-military governmental purchases and private investment expenditure, but not the private consumption expenditures. Since households is treated at this stage of the computations as one of the local industries, all goods absorbed by it appear not as final deliveries, but rather as components of that part of all output of each sector that serves indirect demand.

The internal consistency of the entire procedure is demonstrated by the fact that, if separated from deliveries to other local and all the national industries and summed for the country as a whole, these regional inputs into households will match exactly the private consumption column of the final bill of goods introduced into the computation in its very first stage.

4. That bill of goods itself, of course, must reflect the anticipated effect of a hypothetical reduction of military and a corresponding increase in civilian expenditures. For purposes of the present analysis, such a shift has been assumed to have occurred in the year 1958, which at the present time is the latest year for which a detailed input-output table of the U.S. economy has been compiled. The final bill of goods is represented by three components: Military purchases, private household consumption, and nonhousehold civilian final demand.[3] The latter demand "contains" non-military deliveries to the Federal, State, and local governments, private and public gross investment, and net exports.

The hypothetical cut in military expenditure is visualized to take the form of a 20-percent, across-the-board reduction in each kind of military purchase. With the total 1958 defense expenditure included in the military vector amounting to $31.3 billion, that means reducing

[3] Morris R. Goldman, Martin L. Marimont, and Beatrice N. Vaccara, "The Interindustry Structure of the United States, a report on the 1958 Input-Output Study," *Survey of Current Business*, U.S. Department of Commerce, November 1964, Washington, D.C. A detailed description of the definitions and composition of the final demand vectors used in this study is given in sec. IV. The vectors only include estimates of final purchases from endogenous industries, *e.g.*, the military vector does *not* include purchases from new construction since this is exogenous in this study. Thus, the sum of the elements included in the vectors does not represent all final demand. See footnotes to table A-3.

it by $6.3 to $25 billion.[3] The compensating rise in nonmilitary demand was assumed, on the other hand, to be represented by a proportional across-the-board increase in all kinds of nonmilitary final deliveries. Its total magnitude is chosen deliberately with the view of maintaining the total level of employment, or rather the combined wage and salary bill of all industries, at its original—that is, the actually observed—1958 level.

Had the military shopping list contained the same goods and in the same proportions as the civilian, each million dollars' worth of additional nonmilitary demand could reemploy the same number of hands and heads—commanding the same amount of wages and salaries—as would have been released by each million dollars' worth of military budget cut. However, the military product mix is very different from the civilian. A comparison of the results of two auxiliary input-output computations has shown that in 1958 the total wages and salaries paid for all the labor engaged directly and indirectly in production of one million dollars' worth of goods and services combined in the proportion demanded by the military are some 21 percent larger than wages and salaries paid for labor inputs required for production of $1 million worth of outputs delivered in amounts reflecting the average product mix of all nonmilitary final users.

Thus, it would take $7.6 billion of additional civilian demand to compensate the cancellation of $6.3 billion worth of military spending. Nonmilitary final demand, as defined for this study, amounted in 1958 to $418 billion.[3] Stated in percentage terms, the shift in the economic impact as described below combines a 20-percent cut in military purchases with a 1.8 percent increase in the amount of goods and services absorbed by each of the two categories of final civilian users.

With the total labor input and wage bill remaining constant, a 1.8 percent increase in the amount of all goods and services allocated to private consumption can be described as a proportional increase in all consumption coefficients. Accordingly, the column of technical coefficients used in the last stage of the multiregional input-output computations to describe the input requirements of households was obtained by raising by 1.8 percent the consumption coefficients derived from the 1958 U.S. input-output table.

A translation of the theoretical scheme described above into concise mathematical language is presented below. A reader not interested in details of computational procedure can skip part II and proceed directly to part III containing a summary of the principal conclusions of this study.

II. Mathematical Formulation of a Linear Multiregional Input-Output System [4]

1. NOTATION

The multiregional economy described below consists of (n) national and $(l-1)$ local industries. When households is treated as an endogenous sector the total number of local sectors is (l). The locational distribution of all inputs and outputs is specified in terms of (r) distinct regions.

[4] The first—materially different, but formally similar to the present—version of that system was presented in Wassily Leontief (Ed.), *Studies in the Structure of the American Economy*, (Oxford University Press: New York, 1953), ch. 4.

The quantities of all goods, including the labor services, are measured in physical units defined in each instance as "the amount purchasable for $1, at 1958 prices."

Captial letters are used to designate rectangular and square matrices, lower case Latin letters to describe column and row vectors, and Greek letters to define scaler magnitudes, except matrix dimensions, which are in parentheses:

A—square, $(n+l-1)$ by $(n+l-1)$, matrix of input coefficients of all national and local industries, excluding households.

A^*—$\left[\begin{array}{c|c} A^*_{NN} & A^*_{NL} \\ \hline A^*_{LN} & A^*_{LL} \end{array}\right]$ augmented square, $(n+l)$ by $(n+l)$, matrix of input coefficients of all sectors including households, partitioned into:

A^*_{NN}—square $(n\times n)$ submatrix of input coefficients describing flows from national to national industries.

A^*_{NL}—rectangular $(n\times l)$ submatrix of input coefficients describing flows from national to local sectors, including households.

A^*_{LN}—rectangular $(l\times n)$ submatrix of input coefficients describing flows from local industries, including households, to national industries.

A^*_{LL}—square $(l\times l)$ submatrix of input coefficients describing flows from local to local industries, including households.

w'—row vector of $(n+l-1)$ labor input coefficients of all national and local industries, excluding households.

c^*_0—column vector of the original $(n+l)$ consumption coefficients, *i.e.*, the input coefficients of households, including the coefficients describing inputs from from households to households.

c^*_1—column vector of $(n+l)$ consumption coefficients, including the input from households to households, adjusted to the change in the level of living which has resulted from the shift in final demand.

x—column vector of $(n+l-1)$ total outputs of national and local industries, excluding households.

x^*—$\left[\begin{array}{c} x_N \\ \hline x^*_L \end{array}\right]$ column vector of $(n+l)$ total outputs of all sectors partitioned into:
x_N column vector of (n) total outputs of national industries, and
x^*_L column vector of (l) total outputs of local industries, including households.

$\hat{X}_N$—diagonal matrix with the total outputs of national industries entered on its principal diagonal in the same order in which they are shown in x_N.

m, h, q—three column vectors of $(n+l-1)$ quantities, measured in 1958 dollars, of national and local goods, excluding labor, representing respectively the military, the household and the nonhousehold civilian component of the original, total final bill of goods.

m^*, q^*—two column vectors of $(n+l)$ quantities of military and nonhousehold civilian final demand, including labor.

ν_M, ν_H, ν_Q—three amounts of labor directly entering respectively into the military, the household and the nonhousehold civilian demand components of the original, total final bill of goods.

$\hat{M}^*_L$ $\hat{Q}^*_L$ —two diagonal $(l\times l)$ matrices of quantities of local goods, including labor, representing respectively the military and the nonhousehold civilian component of the original, total final bill of goods.

X^R_N—rectangular $(n\times r)$ matrix each column of which shows the output levels of all national industries in one particular region.

P_N—rectangular $(n\times r)$ matrix each column of which shows what fractions of the total output of each of the national industries are produced in one particular region.

D^*_MP, D^*_Q—rectangular $(l\times r)$ matrices the columns of which represent respectively proportions of the total military and of nonhousehold civilian final demand for the products of different local industries, including households, absorbed in one particular region.

α—the ratio of the magnitude of each element of total final military demand after the shift from military to nonmilitary expenditure to its magnitude before the shift.

β—the ratio of the magnitude of each element of the household and of the nonhousehold civilian componens of total final demand after the shift from military to nonmilitary expenditures to its magnitude before the shift.

2. DERIVATION OF COMPUTATIONAL FORMULAE

Basic relationship between the total final bill of goods—comprising deliveries to household, nonhousehold civilian, and military final demand—and the total outputs of the national and local industries, excluding households:

$$x=(I-A)^{-1}[h+q+m]. \tag{1}$$

Corresponding relationship between the original, total level of employment and the combined labor inputs indirectly absorbed by all national and local industries plus those directly entering final demand:

$$v=w'x+v_H+v_Q+v_M. \tag{2}$$

Relationship between the new final bill of goods and the new total level of employment that—by assumption—equals the original level of employment:

$$v=w'(I-A)^{-1}[\beta(h+q)+\alpha m]+\alpha v_M+\beta(v_H+v_Q). \tag{3}$$

Solution of the equation (3) above for β, with all other magnitudes appearing on the right-hand side considered as given:

$$\beta=\frac{v-\alpha[w'(I-A)^{-1}m+v_M]}{w'(I-A)^{-1}(h+q)+v_H+v_Q}. \tag{4}$$

Derivation of the new vector of the input coefficients of the household sector through adjustment of the original vector to the shift in the level of living:

$$c_0^*=c_0^*\cdot\beta. \tag{5}$$

Derivation of the new [5] total output levels of national and local industries, including households:

$$x^*=(I-A^*)^{-1}[\beta q^*+\alpha m^*]. \tag{6}$$

Derivation of the new regional outputs of national industries from their new total outputs:

$$X_N^R=\hat{X}_N P_N. \tag{7}$$

Derivation of the new regional outputs of local industries, including households:

$$X^{*R}_L=(I-A^*_{LL})^{-1}[A^*_{LN}\cdot X^R_N+(\beta\hat{Q}^*_L\cdot D^*_Q+\alpha\hat{M}^*_L D^*_M)]. \tag{8}$$

The sum of the last two terms is a rectangular $(l\times r)$ matrix each column of which represents the new combined military and nonhousehold civilian final demand for the products of local industries—including households—in one particular region. The multiplication of $\beta\hat{Q}^*_L$ by D^*_Q and $\alpha\hat{M}^*_L$ by D^*_M are analogous to that performed on the right-hand side of (7); it involves application of given sets of

[5] Strictly speaking, a subscript should be used to distinguish old and new outputs.

regional distribution coefficients to previously obtained total figures of final military and nonhousehold civilian deliveries of each kind of local good. Any other method of determining the amounts of local goods absorbed by military and nonhousehold civilian final demand in each region would be equally acceptable, provided the regional figures add up to the corresponding elements of the diagonal matrix $(\beta\hat{Q}^*_L + \alpha\hat{M}^*_L)$; *i.e.*, provided the sum of all regional deliveries of each local good equals the corresponding total amount of military and nonhousehold civilian deliveries for the country as a whole.

One of the l rows of the rectangular matrix X^{*R}_L on the left-hand side of (8) describes the new regional outputs of the household sector, that is the level of employment attained in each region after the hypothetical shift in the relative magnitude of the military and of the nonmilitary components of final demand.

The formulae presented above describe the computations of regional output and employment figures after the shift from military to nonmilitary expenditures. If the proportionality factors α and β are set equal to 1, the formulae describe the state of the economy and, in particular, the level and regional distribution of output and employment before the shift.

III. Summary of the Principal Findings

1. When the numerical conclusions presented are based on a straightforward application of a systematically developed theoretical theme, the results need little additional explanation. In the present instance most of the explaining was done when the procedure was described by which the primary factual information fed into an analytical machine is transformed into final figures describing the results of the entire computation. They appear in the form of tables which describe in great detail changes in the interindustrial and the interregional distribution of output and employment that would be brought about by a hypothetical 20 percent reduction in the military bill of goods, combined with a compensating proportional increase in the nonmilitary components of the final bill of goods. This nonmilitary demand comprises consumption by private households, total investment, which includes new construction, and nonmilitary governmental expenditures.

A detailed explanation of sources and methods used to obtain the basic matrix of input-output coefficients of all national and local industries, to ascertain the actual composition of the military and nomilitary vectors of the final bill of goods for the year 1958 and last, but not least, to determine the regional distribution of the outputs of national industries and of the final military and nonmilitary demand for locally produced goods will be found in section IV below.

The number of industries in terms of which the productive apparatus of the American economy is described is 58, and the number of regions into which the territory of the continental United States was subdivided for purposes of this description is 19; thus, the total number of output and employment figures resulting from this multiregional input-output computation could exceed 1,000; in fact, since not all industries are present in all regions, the detailed tables reproduced in the appendix contain a certain number of empty cells.

Since the hypothetical shift in the composition of final demand was balanced so as to leave the overall level of employment for the country as a whole the same as it was before, its economic impact takes the form of shifts in the labor force among different industries and among different regions.

The magnitudes of changes in output and employment that we are about to examine are—when expressed in relative terms—at most of the order of a few percentage points up or a few percentage points down; in most instances, they are even smaller. Considering, however, that an unemployment rate of 5.5 percent commonly is interpreted as a sign of serious malfunctioning of our economic system and that an eventual reduction of that figure to 4 percent has been recognized as one of the major goals of national economic policies, even a one-half of 1 percent change in employment level in one region or another must be taken to represent a noteworthy shift. The percentages to be examined may not meet that degree of accuracy, but they should indicate the direction of change in regional employment levels.

TABLE 1.—*Percentage changes* [1] *in output and employment* [2] *by industries, after a compensated* [3] *20 percent cut in armament expenditures* [4]

Sector number [5]	Industry	Percentage change	Sector number [5]	Industry	Percentage change
36N	Aircraft	−16.05	13N	Wood containers	1.05
40N	Ordnance	−15.42	27N	Stone and clay	1.10
41N	Research and development	−13.26	1L	Printing, publishing	1.12
34N	Electronics equipment	−5.40	10L	Business services	1.14
29N	Nonferrous metals	−2.21	8N	Fabrics, yarn	1.19
38N	Instruments	−1.59	15N	Office furniture	1.19
32N	Electrical apparatus	−0.92	20N	Drugs	1.21
37N	Other transportation equipment	−0.23	35N	Motor vehicles	1.21
28N	Iron and steel	−0.04	39N	Miscellaneous manufacturing	1.23
31N	Nonelectrical machinery	−0.03	2L	Electricity, gas, water	1.24
18N	Chemicals	0.15	12N	Lumber, wood products	1.26
13L	Maintenance construction	0.20	5L	Communications	1.26
24N	Rubber, plastics	0.30	14N	Household furniture	1.27
33N	Appliances, lighting	0.34	12L	Medical, educational services	1.31
22N	Oil fields	0.38	3N	Forestry, fisheries	1.33
23N	Petroleum products	0.45	4L	Trade	1.40
3L	Transportation	0.48	6L	Finance, insurance	1.48
21N	Paint	0.48	9L	Auto repair services	1.48
30N	Fabricated metals	0.54	8L	Personal services	1.56
11N	Miscellaneous fabricated textiles	0.54	25N	Leather	1.57
19N	Plastics synthetics	0.59	7L	Real estate, rentals	1.57
26N	Glass	0.81	2N	Other agriculture	1.65
16N	Paper	0.83	11L	Amusements	1.66
17N	Paperboard containers	0.93	10N	Apparel	1.66
9N	Miscellaneous textiles, rugs	0.97	6N	Food and kindred products	1.66
14L	Government enterprises	0.98	1N	Livestock	1.67
5N	Coal mining	0.98	7N	Tobacco	1.76
			17L	Households [6]	1.81
			4N	Agricultural services	2.14

[1] Each figure represents the change in output and employment in each industry as a percentage of total output and employment in that industry before the arms cut.
[2] Employment and its regional distribution is measured in each industry by labor earnings.
[3] Compensation is assumed to consist of a uniform proportional increase in all components of nonmilitary final demand sufficiently large to maintain the aggregate employment in all sectors (consequently in all regions) taken together unchanged.
[4] Source of data: Appendix tables A–6 and A–7.
[5] Note that the local sectors which are dummy industries have been omitted from this ranking. N refers to National industry number, L to Local industry number.
[6] Note that this percentage reflects the 1.81 percent increase in all consumption coefficients. It represents the change in employment of employees in households such as domestic help or babysitters.

2. Table 1 describes the impact of a postulated demilitarization of the final demand in terms of individual industries. The percentage figures show that of the 56 sectors listed,[6] only 10 will experience a

[6] Two local dummy sectors, 15L office supplies and 16L business travel and entertainment, are not included in this tabulation.

reduction in total output and employment; aircraft, ordnance, and, significantly, research and development will take large cuts of over 13 percent, while electronic equipment, nonferrous metals, and instruments will drop between 1.59 and 5.40 percent. Among the four other industries registering losses rather than gains is iron and steel, which with its token 0.04 percent cut barely maintains the traditional standing as an armament industry. Positive changes are on the other hand distributed more evenly and among a much larger number of industries.

Food products, other soft consumer goods, and services gain most, basic industries such as chemicals, petroleum products, and paper, least, printing and publishing, motor vehicles, and other branches of processing show intermediate gains a few points above and below 1 percent. The skewness of the entire distribution, specifically the bunched negative and widespread positive shifts reflect, of course, the contrast between the specialized nature of military demand and the broad product mix of the civilian.

3. The regional projection of the economic impact of disarmament is summarized in table 2. As can be seen from the percentage entries in 10 of the 19 regions employment can be expected to contract while in the other nine it will expand. The largest loss, −1.85 percent, will be experienced in California, the biggest gain, +1.54 percent, in the midwestern region comprising Minnesota and the two Dakotas.

TABLE 2.—*Percentage change in output and employment by region after a compensated 20-percent cut in armament expenditures*

Region number	Region	Total net change (percent) (1)	Total gross increase (percent) (2)	Total gross decrease (percent) (3)
19	California	−1.85	0.54	2.39
16	Colorado, New Mexico	−1.40	0.67	2.07
17	Arizona, Nevada, Utah	−1.35	0.69	2.04
9	Maryland, Virginia, Delaware, West Virginia, District of Columbia	−1.36	0.66	2.02
14	Texas	−1.00	0.73	1.73
18	Oregon, Washington	−0.81	0.91	1.72
12	Mississippi, Alabama	−0.73	0.89	1.62
8	Georgia, North and South Carolina	−0.57	1.02	1.59
10	Florida	−0.43	1.12	1.55
1	New England	−0.06	1.05	1.11
13	Arkansas, Louisiana, Oklahoma	0.21	1.26	1.05
7	Kansas, Iowa, Nebraska, Missouri	0.44	1.46	1.02
11	Kentucky, Tennessee	0.37	1.31	0.94
2	New York	0.66	1.44	0.78
3	New Jersey, Pennsylvania	0.53	1.26	0.73
15	Idaho, Montana, Wyoming	1.28	1.83	0.55
4	Michigan, Ohio	0.89	1.43	0.54
5	Indiana, Illinois, Wisconsin	0.93	1.46	0.53
6	Minnesota, North and South Dakota	1.54	1.96	0.42
	Total United States		1.16	1.16

Neither the shift from one industry to another, nor the move from one region to another, considered separately, measures the total magnitude of readjustments that will be required of the members of each regional labor force. Such a measure must take both into account, simultaneously. What is needed is a figure which shows what proportion of all men and women initially employed in all the different industries operating in a given region will lose their jobs and will have to look for new jobs in a different industry in the same region or

in another region; in the latter case, the jobs they find in another region might or might not be in the same industry in which they worked before.

The figures entered in column 3 of table 2, accordingly, show what proportion of all the wage and salary earners will receive discharge notices and will have to look for new jobs. To emphasize the importance of these figures, the sequence in which the 19 regions are listed on the table reflects the order of decreasing magnitude of these "gross displacement" rates.

California, again, is at the head of the procession with the highest rate of 2.39 percent, and Minnesota with North and South Dakota ranks lowest with only 0.42 percent. A comparison of entries in column 1 with those of column 3 reveal that one region can experience a larger expansion in the total level of employment than another, but at the same time be subject to a greater stress as measured by the gross displacement figure. According to the computations the New York State region, for example, would expand its total employed labor force by 0.66 percent while the corresponding figure for the Kentucky-Tennessee region is 0.37 percent. At the same time 0.78 percent of the original jobholders in New York would have to change their jobs as against 0.94 percent in Kentucky-Tennessee.

Employment agencies might be interested in the total number of new jobs created in a particular region, *i.e.*, in the sum total of the increases in employment figures of those industries expected to expand in each region. Expressed as percentages of total labor force initially employed in the region, these "gross job gains" figures are entered in column 2. Strictly speaking, they do not present us with any new information since by definition they can be obtained simply by adding pairwise the corresponding entries in column 1 and column 3.

The regional impacts of disarmament as summarized in table 2 are described graphically on chart 1. Each set of bars depicts the impact of the same hypothetical shift from military to non-military demand on the employment situation in one of the 19 regions. The total length of the bar extended downward from the horizontal baseline measures the gross job loss (described in col. 3 in table 2). The total length of a bar extended upward represents the corresponding gross gain in jobs (described in col. 2 of table 2). The solidly shaded section of the longer of the two bars shows the difference between their length; in other words, it measures the change in the total level of employment in a particular region. That change is negative when the solid bar extends below the horizontal line, and it is positive when it is above.

The geographic picture confirms the well-known fact that most of the resources serving directly or indirectly final military demand come from the western, southwestern and southeastern regions, while the Midwest, the Great Lakes region and the North Atlantic and New England States depend to a large extent on civilian demand. A cut in military expenditures, accompanied by an expansion of the nonmilitary bill of goods, thus will create more serious readjustment problems in the first than in the second group of regions.

IV. Data and Methods of Computation

1. The basic concern of this study was to determine the regional, combined with the industrial, effects of a reduction in armaments.

Table A–1 gives the industrial classification used. The aggregation of states into 19 regions was chosen to make the data collection and the computations of a manageable size, while maintaining sufficient detail to detect regional differences.

The "A" matrix consisted of a domestic-base 1958 80-order interindustry coefficient matrix made available by the Office of Business Economics in November 1964 and aggregated to 60 sectors at the Harvard economic research project.[7] New construction coefficients were removed from the endogenous sectors to form a final demand column. Row distributions of final demand were used to derive the final demand columns other than new construction and military.[8]

The next step was to estimate vector (m) of military final demands shown in table A–3. Since more specific data for the military final demand vector was unobtainable at the time this study was begun, the estimates for military final demand were developed working with adjusted control totals [9] given for various sectors in military prime contracts [10] and with the 1958 Federal Government vector itself. The military final demand vector was made so that military purchases from any industry did not exceed Federal Government spending for products of that industry. Whenever a degree of arbitrariness entered into the determination of components of military final demand the estimate was biased toward the metal industries.

All sectors with zero Federal Government final demand were assigned zero military final demand.[11] In the case of aircraft (36N) and ordnance (40N), the entire Federal Government final demand was put in the military final demand vector. For the remaining sectors, each item in military prime contracts which served as a control total for military purchases from a particular group of industries was distributed in the proportion the sectors were to one another in the total Federal Government bill of goods, or in the proportion that the Department of Defense payrolls were to other Federal Government payrolls.[12]

The three vectors of final demand are shown in tables A–2 and A–3.[13] The next step (represented earlier as equation 3) was to establish the control total, μ, the aggregate level of direct and indirect labor earnings in 1958, which was to remain constant throughout the computations. This total included direct earnings in household, military, and nonhousehold civilian final demand categories, as well as the direct and indirect earnings received from the endogenous sectors. Earnings were defined to include wages and salaries and

[7] The 60-sector classification is given in table A–1 distinguishing between national and local industries. A column of import coefficients also was obtained from the Department of Commerce for use in the calculations.

[8] The row distributions are given in "The Interindustry Structure of the United States," *Survey of Current Business*, November 1964, table I, p. 21. The calculation of Household final demand is designated as vector (h), while the final demands of the Federal Government (other than military), State and local government, net inventory change gross private capital formation competitive imports exports, and new construction are referred to as a group called nonhousehold civilian vector (g). Refer to footnotes on table A–3.

[9] The fiscal year was adjusted to a calendar year base; also, "Actions of less than $10,000" were distributed proportionately over prime military contract figures. These adjusted figures were used as control totals in determining how much military spending there was within groups of industries.

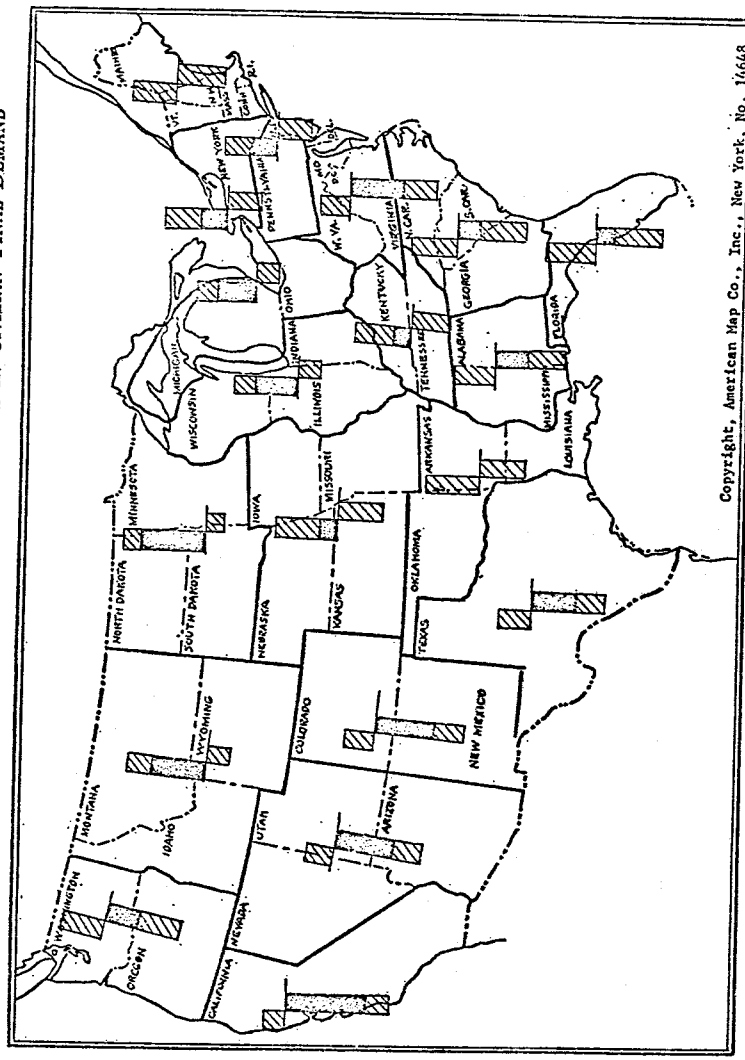
[10] *Military Prime Contract Awards and Subcontract Payments*, July 1962–June 1963, Office of the Secretary of Defense, tables 6 and 7.

[11] These include: Livestock (1N), coal mining (5N), tobacco (7N), oilfields (22N), finance (5L). Forestry and fisheries (3N) and lumber (12N) had negative Federal Government final demands, but were assigned zero military final demand since it appeared that the military would not provide inputs to these industries. Crops (2N) also was assigned zero military final demand since the large entry for this sector in the total Federal Government vector represented operations of the Commodity Credit Corporation. Since sectors (1N), (2N), and (3N) now had zero elements in the military vector, agricultural services (4N) also was assumed to have zero military final demand.

[12] When it could be assumed that military and nonmilitary expenditures would parallel closely the number of workers in each sector.

[13] Households was separated from the other final demands, because in the later calculations this sector would become endogenous.

CHART 1.—PERCENTAGE CHANGE IN OUTPUT AND EMPLOYMENT RESULTING FROM A HYPOTHETICAL 20 PER CENT CUT IN MILITARY SPENDING AND A COMPENSATING RISE IN CIVILIAN FINAL DEMAND



income of unincorporated enterprises, with a fixed markup of 20 percent in all but a few sectors to account for consumer expenditures by those with incomes from sources other than employment. Such an even markup does not affect the role of earnings as a measure of labor input.

Since v was to remain constant, the drop in total labor earnings caused by the decrease in military spending had to be offset by an increase in the other components of final demand which would produce a compensating increase in labor earnings. The postulated value for α was 0.8; then using equation (4), β was determined to be approximately 1.02.[14] Earlier, the output and labor earnings generated by the three components of final demand were calculated to determine what the requirements actually were in 1958 (referred to as before the shift); now, the new requirements associated with the new final demands (referred to as after the shift) were estimated. The next step was to calculate the regional distribution of labor earnings both before and after the shift.

By including households as an endogenous sector in the subsequent computations, the repercussion effect of household incomes and expenditures on the rest of the industries could be taken into account. Matrix A^* had to be constructed separately for the base year 1958 and for the situation after the level of living was increased by 1.81 percent as part of the compensation for the arms cut. In both cases, it was formed by adding a row of labor coefficients and a column of consumption coefficients.

The labor coefficients were obtained by dividing wages and salaries plus income of unincorporated enterprises, inflated by 20 percent, for each industry by output in that industry.[15] The column of consumption coefficients for 1958 was obtained by dividing the deliveries from each industry to households (h) by the total amount of labor earnings for the country as a whole (v).[16] The elements of this column of consumption coefficients were multiplied by 1.81 to obtain the adjusted column. The new diagonal element of the labor coefficient row and the consumption coefficient column was obtained by dividing direct earnings in households, (v_H), by the figure v.

Then, the two new A^* matrices—one matrix containing the original consumption coefficients, the other the adjusted consumption coefficients—were partitioned into four submatrices by dividing all industries into two categories: National and local.[17] In the classification used, there were 41 national industries and 17 local industries, including households.[18]

[14] Therefore, a reduction of 20 percent in military expenditures was compensated by an approximate 2 percent increase in the household and nonhousehold civilian components of final demand.

[15] See table A–2, col. 2. Sources for labor earnings are given in table A–10.

[16] See table A–2, col. 1. Consumption coefficients after the shift can be obtained by multiplying each element of this column by 101.8 percent.

[17] The division was based upon the data given in charts 17 and 19, pp. 144 and 146, of Wassily Leontief (Ed.), *Ibid.*, showing the proportion of the output of different industries which is consumed within a region and that which is exported for two types of regions: States and census divisions. A diagram of the partition is shown in sec. II.

[18] See table A–1. Since business travel and entertainment and the office supply sectors are "dummy" sectors, their assignment to local industries is arbitrary.

2. The regional distribution of the output of national industries, X_N^R, was obtained by directly allocating the share of national output to a region in proportion to that region's share in the productive capacity of a particular industry.[19] The change in labor earnings by region for national industries was determined by subtracting the regional distribution of outputs before the shift from the distribution of outputs after the shift and multiplying by the labor coefficients.[20]

The first step in establishing the level of output of each ocal industry in each region was to distribute the final demand for local industries by regions. Military demand was distributed according to Department of Defense payrolls in each region. Nonhousehold civilian final demand was subdivided into its seven component bills of goods, each one was distributed according to a factor representing the importance of that final demand in a particular region, and the seven resulting matrices were added.[21]

Then, the output in each local industry in each region was obtained by inserting the appropriate matrices and vectors on the righthand side of equation (8). Outputs of local industries before the shift were subtracted from the outputs after the shift and the result was multiplied by the labor coefficients to give the change in labor earnings in local industries.[22] The total change in labor earnings by regions, finally, was obtained by adding the change occurring in local industries in a region to that occurring in national industries and to that originating within the military and nonhousehold civilian sectors of the economy.[23]

[19] The sources for the P_N matrix, the distribution factors for national industries, are given in table A–11. The actual distribution factors used are shown in table A–5.

[20] See table A–6 which includes the change in dollar and in percentage terms. Only one column is needed to represent the percentage changes for national industries since total U.S. demand for the industry's product determines the output within a particular region.

[21] The sources for the D_Q and D_M matrices, the distribution factors for local industries, are given in table A–12. Table A–4 contains the regionally distributed final demands.

[22] See table A–7 for dollar and for percentage changes in local industries.

[23] See table A–9.

V. Concluding Observations on Further Research

The same analytical scheme that permitted us to assess the economic implications of a hypothetical step toward disarmament, implemented by the same body of factual data, also can be used for evaluating the probable effect of specific measures of economic policies intended to mitigate the stresses of the transitional period. Such measures are usually designed to modify directly or indirectly the level, the composition and the regional distribution of the new civilian bill of goods. To assess their effect on the interindustrial and interregional distribution of outputs and employment, it will be necessary only to repeat the sequence of computations described above with these readjusted versions or the final bill of goods. Whenever information on specific military budget cuts becomes available, this information can replace the hypothetical assumption of the proportional 20-percent cut in military spending and the compensating 2-percent increase in civilian purchases.

The following two refinements can be introduced into the procedure described above without changing the analytical basis of the general approach. The admittedly rigid assumption that whenever the total output of a national good goes up or down, it increases or decreases in the same proportion in all regions can be relaxed. After completion of the three-stage computation described above, the new regional distribution of consumption of each national good can be determined and then compared with the old. Some regions will turn out to be increasing their relative shares at the expense of the others. Accordingly, the geographic distribution of the output can be expected to be affected by this, at least to some extent. If the demand for steel were to contract in a western but to expand in the eastern regions, the share of the latter in the total output of steel might be expected to increase somewhat and the share or the western mills to fall. To take account of this, a second round of multiregional input-output computations can be undertaken in which the set of the regional distribution coefficients applied to each of the national industries would be revised in the light of the numerical results of the first round.

The second refinement of the original procedure consists in breaking the regions into subregions.[24] The region, for example, which in the present computation includes Illinois, Indiana, and Wisconsin can be subdivided into two parts, one comprising Illinois and Indiana and the other—Wisconsin. The percentage figures describing the participation of these three States in the total production of each national good would have to be split into two separate figures. The output of the industries originally classified as local can be treated in two different ways. The regional outputs of some local goods might balance the demand not only for the three States together, but also separately, in each of the two subregions. That might be true of automobile repair services and retail trade. Other local goods, while not moving in sufficiently large amounts across the borders of the three-State region, still might be traded freely between its two parts. For such goods the distribution of the total regional output between the two subregions might be described better by a set of constant subregional coefficients. On the lower subregional level, these empirically determined coefficients would play a role analogous to that assigned to regional coefficients in determining the interregional distribution of the total output of each national good. Without elaborating the technical details of such a complicated analytical scheme, involving not one but several layers of regional breakdowns, it suffices to observe that while the successive rounds of such computations can be introduced one by one without modifying the results of the higher rounds, the overall results always will be internally consistent at every stage.

Finally, an entirely different nonlinear, multiregional input-output scheme was proposed several years ago.[25] It is being tested now in the United States, in Latin America, and also in Europe. All of these interregional input-output schemes require detailed regional information which is not always available.

Thus, highest priority should be assigned to improvement of the basic data. For statistics which are collected on a national level, a systematic, regional breakdown becomes more and more important. On the other hand, most data collected by local and State organizations—often in connection with various programs of regional economic development—are limited in their usefulness because of lack of comparability with other regional and national statistics. This needs to be remedied by agreement on and compliance with certain common classifications and standards.

[24] See Wassily Leontief (Ed.), *Ibid.*, ch. 4.
[25] Wassily Leontief and Alan Strout, "Multiregional and Input-Output Analysis," Tibor Barna (Ed.) *Structural Interdependence and Economic Development*, (Macmillan: London, 1963), ch. 7.

APPENDIX TABLES

TABLE A–1.—*Industrial classification scheme*

PART I

National industry	Office of Business Economics 80-order sector [1]	National industries
1N	1	Livestock.
2N	2	Other agriculture.
3N	3	Forestry and fisheries.
4N	4	Agricultural services.
5N	7	Coal mining.
6N	14	Food.
7N	15	Tobacco.
8N	16	Fabrics, yarn.
9N	17	Rugs, miscellaneous textiles.
10N	18	Apparel.
11N	19	Miscellaneous fabricated textile products.
12N	20	Lumber and wood products.
13N	21	Wooden containers.
14N	22	Household furniture.
15N	23	Office furniture.
16N	24	Paper.
17N	25	Paperboard containers.
18N	10, 27	Chemicals.
19N	28	Plastics, synthetics.
20N	29	Drugs.
21N	30	Paint.
22N	8	Oil fields.
23N	31	Petroleum products.
24N	32	Rubber.
25N	33, 34	Leather.
26N	35	Glass.
27N	9, 36	Stone and clay.
28N	5, 37	Iron and steel.
29N	6, 38	Nonferrous metals.
30N	39–42	Fabricated metals.
31N	43–52	Nonelectrical machinery.
32N	53, 58	Electrical apparatus.
33N	54, 55	Appliances and lighting equipment.
34N	56, 57	Communications and electronic equipment.
35N	59	Motor vehicles
36N	60	Aircraft.
37N	61	Other transportation equipment.
38N	62, 63	Instruments.
39N	64	Miscellaneous manufacturing.
40N	13	Ordnance.
41N	74	Research and development.

PART II

Local industry	Office of Business Economics 80-order sector [1]	Local industries
1L	26	Printing and publishing.
2L	68	Electricity, gas, water.
3L	65	Transportation, warehousing.
4L	69	Trade.
5L	66, 67	Communications.
6L	70	Finance, insurance.
7L	71	Real estate and rentals.
8L	72	Personal and repair services, hotels.
9L	75	Auto repair services.
10L	73	Business services.
11L	76	Amusements.
12L	77	Medical and educational services.
13L	12	Maintenance construction.
14L	78, 79	Government enterprises.
15L	82	Office supplies.
16L	81	Business travel, entertainment.
17L	----------	Households.

[1] Classification for Office of Business Economics 80-Order Sector is taken from: "The Interindustry Structure of the United States," *Survey of Current Business*, November 1964.

TABLE A–2.—*Consumption and labor coefficients for national industries*

PART I

National industry	Classification	Consumption coefficient [1]	Labor coefficient [2]
1N	Livestock	0.0065	*.3050
2N	Other agriculture	.0076	0.2926
3N	Forestry and fisheries	.0009	*.3437
4N	Agricultural services		*.3115
5N	Coal mining	.0008	.4405
6N	Food	.1423	.1562
7N	Tobacco	.0133	.0691
8N	Fabrics, yarn	.0022	.2221
9N	Rugs, miscellaneous textiles	.0024	.2252
10N	Apparel	.0347	.3441
11N	Miscellaneous fabricated textile products	.0035	.2266
12N	Lumber and wood products	.0005	.3211
13N	Wooden containers		.3358
14N	Household furniture	.0075	.3511
15N	Office furniture	.0004	.4101
16N	Paper	.0027	.2609
17N	Paperboard containers	.0001	.2928
18N	Chemicals	.0007	.2484
19N	Plastics, synthetics	.0000	.2270
20N	Drugs	.0116	.2043
21N	Paint	.0001	.2427
22N	Oil fields		.2122
23N	Petroleum products	.0226	.1142
24N	Rubber	.0040	.3142
25N	Leather	.0081	.3648
26N	Glass	.0004	.4028
27N	Stone and clay	.0007	.3454
28N	Iron and steel	.0001	.3128
29N	Nonferrous metals	.0000	.2300
30N	Fabricated metals	.0022	.3490
31N	Nonelectrical machinery	.0015	.3902
32N	Electrical apparatus	.0009	.3877
33N	Appliances and lighting equipment	.0086	.2903
34N	Communications and electronic equipment	.0047	.3699
35N	Motor vehicles	.0286	.1865
36N	Aircraft	.0001	*.4136
37N	Other transportation equipment	.0023	.3868
38N	Instruments	.0025	.3928
39N	Miscellaneous manufacturing	.0079	.3447
40N	Ordnance	.0005	*.2972
41N	Research and development		.0568

PART II—LOCAL INDUSTRIES

Local industry	Classification	Coefficient [1] consumption	Labor coefficient [2]
1L	Printing and publishing	0.0076	0.4624
2L	Electricity, gas, water	.0251	.1979
3L	Transportation, warehousing	.0262	.5181
4L	Trade	.1900	.6152
5L	Communications	.0134	.4315
6L	Finance, insurance	.0365	.4891
7L	Real estate and rentals	.1242	.0516
8L	Personal and repair services, hotels	.0294	.6003
9L	Auto repair services	.0136	.1966
10L	Business services	.0058	.3975
11L	Amusements	.0102	.3590
12L	Medical and educational services	.0634	*.6131
13L	Maintenance construction		.3049
14L	Government enterprises	.0029	*.4488
15L	Office supplies		
16L	Business travel, entertainment		
17L	Households	.0108	*.0108

[1] Column vector of personal consumption expenditure coefficients which became endogenous for the last part of computations. Consumption coefficients obtained from row distribution of final demands: "The Interindustry Structure of the United States," Survery of Current Business, November 1964, Table I, p. 21.

[2] Row vector of labor input coefficients after adjusting for interest and dividends. Those marked with * were not adjusted for interest and dividends. Those marked ** had special calculations made for interest and dividends. Labor coefficients: sources used to obtain uninflated coefficients are given in Table A–10.

TABLE A–3.—*Final demands for National industries*

PART I

National industry No.	National industries	Military [1] (millions of dollars)	Non-household civilian [2] (millions of dollars)
1N	Livestock		396.4
2N	Other agriculture		3,170.3
3N	Forestry and fisheries		−393.0
4N	Agricultural services		367.0
5N	Coal mining		389.9
6N	Food	132.2	383.7
7N	Tobacco		−147.7
8N	Fabrics, yarn	54.3	−259.4
9N	Rugs, miscellaneous textiles	5.0	66.4
10N	Apparel	42.8	10.6
11N	Miscellaneous fabricated textile products	103.7	2,919.5
12N	Lumber and wood products		−11.3
13N	Wooden containers	1.2	493.3
14N	Household furniture	17.7	1,161.4
15N	Office furniture	15.1	−378.5
16N	Paper	43.6	15.6
17N	Paperboard containers	2.1	1,353.3
18N	Chemicals	294.0	256.8
19N	Plastics, synthetics	2.8	559.1
20N	Drugs	90.4	218.6
21N	Paint	1.7	−1,208.0
22N	Oil fields		1,222.5
23N	Petroleum	664.9	621.2
24N	Rubber	78.8	51.2
25N	Leather	21.7	86.5
26N	Glass	1.9	4,618.4
27N	Stone and clay	15.2	1,950.4
28N	Iron and steel	46.8	237.0
29N	Nonferrous metals	213.6	7,396.6
30N	Fabricated metals	89.5	12,975.5
31N	Nonelectrical machinery	421.9	2,314.3
32N	Electrical apparatus	224.8	1,253.0
33N	Appliances and lighting equipment	33.7	1,532.0
34N	Communications and electronic equipment	1,363.8	3,920.0
35N	Motor vehicles	122.8	589.7
36N	Aircraft	6,488.4	1,776.6
37N	Other transportation equipment	264.1	1,478.0
38N	Instruments	277.2	449.2
39N	Miscellaneous manufacturing	22.6	100.0
40N	Ordnance	2,263.0	1,496.3
41N	Research and development	3,643.7	

PART II—FINAL DEMAND FOR LOCAL INDUSTRIES

Local industry No.	Local industries	Military [1] (millions of dollars)	Non-household civilian [2] (millions of dollars)
1L	Printing and publishing	52.5	282.2
2L	Electricity, gas, water	50.8	933.9
3L	Transportation, warehousing	1,037.7	5,414.7
4L	Trade	493.2	11,129.8
5L	Communications	27.1	947.3
6L	Finance, insurance		689.2
7L	Real estate and rentals	18.2	2,043.9
8L	Personal and repair services, hotels	35.8	291.9
9L	Auto repair services	18.6	448.6
10L	Business services	82.4	3,749.5
11L	Amusements	2.5	251.6
12L	Medical and educational services	95.1	391.3
13L	Maintenance construction	936.5	349.4
14L	Government enterprises	101.4	218.6
15L	Office supplies	43.2	172.0
16L	Business travel, entertainment		62.1
17L	Households	11,198.0	47,695.0
	Total all industries (national and local)	31,258.0	131,647.8

[1] When this study was begun, specific data was not available for the military final demand vector; therefore, the dollar amounts are estimates developed from adjusted control totals given for various sectors in military Prime Contract Awards and Subcontract Payments, July 1962–June 1963, Office of the Secretary of Defense, tables 6 and 7. The vector only includes estimates of final purchases from industries defined as endogenous for this study. Purchases by the military on prime contracts differ from military purchases defined by the Office of Business Economics. Some of these differences are explained in Hearings Before the Subcommittee on Defense Procurement of the Joint Economic Committee, Congress of the United States, June 12, 1961, "Progress Made by the Department of Defense in Reducing the Impact of Military Procurement on the Economy," p. 141 and in the source cited above, p. 48.

[2] Row distributions of final demand were used to derive the final demand columns other than new construction and military. "The Interindustry Structure of the United States, . . ." Survey of Current Business, November 1964, table 1, p. 21. Only the percentage distributions were released by the Office of Business Economics at the time this paper was written. The vector presented above includes new construction, but excludes military and household final demands. The vector also only includes final purchases from the 57 industries defined as endogenous for this study.

TABLE A–4.—*Demand for outputs of local industries*

PART I—MILITARY FINAL

[Millions of dollars]

Local industry	Region									
	(1) New England	(2) New York	(3) New Jersey, Pennsylvania	(4) Michigan, Ohio	(5) Indiana, Illinois, Wisconsin	(6) Minnesota, South Dakota, North Dakota	(7) Iowa, Missouri, Nebraska, Kansas	(8) Georgia, North Carolina, South Carolina	(9) Virginia, West Virginia, Maryland, District of Columbia, Delaware	(10) Florida
1. Printing, publishing	3	2	4	2	2	0	2	5	7	2
2. Electricity, gas, water	3	2	3	2	2	0	2	5	7	2
3. Transportation, warehousing	53	44	71	38	44	8	44	97	140	37
4. Trade	25	21	34	18	21	4	21	46	67	18
5. Communications	1	1	2	1	1	0	1	3	4	1
6. Finance, insurance	0	0	0	0	0	0	0	0	0	0
7. Real estate, rentals	1	1	1	1	1	0	1	2	2	1
8. Repair services, hotels	2	2	2	1	2	0	2	3	5	1
9. Auto repair services	1	1	1	1	1	0	1	2	3	1
10. Business services	4	4	6	3	3	1	4	8	11	3
11. Amusements	0	0	0	0	0	0	0	0	0	0
12. Medical, educational services	5	4	7	4	4	1	4	9	13	3
13. Maintenance construction	48	40	64	35	40	7	40	88	126	34
14. Government enterprises	5	4	7	4	4	1	4	10	14	4
15. Office supplies	2	2	3	2	2	0	2	4	6	2
16. Business travel	0	0	0	0	0	0	0	0	0	0
17. Households	571	477	769	413	474	86	478	1,052	1,512	404
Region total	724	605	974	523	600	109	606	1,333	1,916	512

Local industry	Region									U.S. total
	(11) Tennessee, Kentucky	(12) Alabama, Mississippi	(13) Oklahoma, Louisiana, Arkansas	4) Texas	(15) Montana, Wyoming, Idaho	(16) Colorado, New Mexico	(17) Arizona, Nevada, Utah	(18) Oregon, Washington	(19) California	
1. Printing, publishing	2	2	2	5	0	2	1	2	8	52
2. Electricity, gas, water	2	2	2	4	0	2	1	2	7	51
3. Transportation, warehousing	33	41	43	92	6	33	27	36	149	1,038
4. Trade	16	19	21	44	3	16	13	17	71	493
5. Communications	1	1	1	2	0	1	1	1	4	27
6. Finance, insurance	0	0	0	0	0	0	0	0	0	0
7. Real estate, rentals	1	1	1	2	0	1	0	1	3	18
8. Repair services, hotels	1	1	1	3	0	1	1	1	5	36
9. Auto repair services	1	1	1	2	0	1	0	1	3	19
10. Business services	3	3	3	7	0	3	2	3	12	82
11. Amusements	0	0	0	0	0	0	0	0	0	2
12. Medical, educational services	3	4	4	8	1	3	2	3	14	95
13. Maintenance construction	30	37	39	83	6	30	24	32	135	936
14. Government enterprises	3	4	4	9	1	3	3	3	15	101
15. Office supplies	1	2	2	4	0	1	1	1	6	43
16. Business travel	0	0	0	0	0	0	0	0	0	0
17. Households	353	439	466	991	67	361	288	385	1,613	11,198
Region total	447	557	591	1,257	85	457	365	488	2,044	14,193

TABLE A–4.—*Demand for outputs of local industries*—Continued

PART II—NONHOUSEHOLD CIVILIAN

	Local industry	Region									
		(1) New England	(2) New York	(3) New Jersey, Pennsylvania	(4) Michigan, Ohio	(5) Indiana, Illinois, Wisconsin	(6) Minnesota, South Dakota, North Dakota	(7) Iowa, Missouri, Nebraska, Kansas	(8) Georgia, North Carolina, South Carolina	(9) Virginia, West Virginia, Maryland, District of Columbia, Delaware	(10) Florida
1	Printing, publishing	23	48	32	31	39	9	20	19	32	10
2	Electricity, gas, water	60	109	86	89	96	25	53	44	102	29
3	Transportation, warehousing	390	816	705	583	682	133	360	390	607	230
4	Trade	710	1,187	1,296	1,263	1,464	242	577	518	754	323
5	Communications	59	98	105	105	117	19	48	42	78	22
6	Finance, insurance	41	80	66	69	79	18	34	25	37	22
7	Real estate, rentals	121	182	243	245	273	38	99	92	126	42
8	Repair services, hotels	21	33	28	26	28	8	18	17	53	10
9	Auto repair services	28	51	43	42	49	11	24	19	44	16
10	Business services	227	452	357	356	421	94	190	142	290	128
11	Amusements	9	52	14	18	19	3	8	4	12	6
12	Medical, education services	33	56	47	46	49	12	29	34	48	17
13	Maintenance construction	301	516	427	426	440	112	266	321	445	154
14	Government enterprises	24	35	30	26	29	8	20	27	55	12
15	Office supplies	15	24	21	20	21	5	13	15	24	8
16	Business travel	2	3	3	3	7	2	3	1	3	5
17	Households	3,954	6,401	5,721	5,316	5,887	1,406	3,398	3,859	6,778	2,204
	Regional total	6,017	10,143	9,224	8,664	9,699	2,144	5,161	5,568	9,489	3,239

Local industry	Region									U.S. total
	(11) Tennessee, Kentucky	(12) Alabama, Mississippi	1(3) Oklahoma, Louisiana, Arkansas	(14) Texas	(15) Montana, Wyoming, Idaho	(16) Colorado, New Mexico	(17) Arizona, Nevada, Utah	(18) Oregon, Washington	(19) California	
1. Printing, publishing	10	9	13	20	3	7	6	11	46	388
2. Electricity, gas, water	28	22	38	50	11	21	18	33	125	1,039
3. Transportation, warehousing	188	170	288	461	58	153	130	236	914	7,494
4. Trade	300	255	393	669	104	190	182	362	1,329	12,118
5. Communications	27	22	33	54	8	14	13	31	106	1,003
6. Finance, insurance	16	12	23	31	8	13	12	20	84	689
7. Real estate, rentals	58	49	69	121	15	24	22	64	198	2,082
8. Repair services, hotels	11	8	13	18	4	8	6	12	44	366
9. Auto repair services	12	10	17	23	5	10	9	15	60	487
10. Business services	91	71	132	179	43	77	72	116	482	3,920
11. Amusements	4	1	4	6	1	4	12	4	77	257
12. Medical, educational services	16	15	22	34	5	13	11	19	75	582
13. Maintenance construction	149	144	201	323	48	120	101	177	697	5,368
14. Government enterprises	13	12	16	27	4	11	9	14	52	422
15. Office supplies	7	7	10	15	2	6	5	8	33	259
16. Business travel	1	1	3	3	2	2	3	2	11	62
17. Households	1,908	1,778	2,597	4,077	668	1,610	1,386	2,247	9,009	70,202
Region total	2,840	2,586	3,872	6,112	989	2,282	1,998	3,370	13,341	106,739

TABLE A-5.—*Distribution factors and total outputs of national industries* [1]

[Fraction of industry total]

National industry	Region									
	(1) New England	(2) New York	(3) New Jersey, Pennsylvania	(4) Michigan, Ohio	(5) Indiana, Illinois, Wisconsin	(6) Minnesota, South Dakota, North Dakota	(7) Iowa, Missouri, Nebraska, Kansas	(8) Georgia, North Carolina, South Carolina	(9) Virginia, West Virginia, Maryland, District of Columbia, Delaware	(10) Florida
1. Livestock	0.027	0.032	0.041	0.054	0.158	0.092	0.217	0.043	0.032	0.010
2. Other agriculture	0.106	0.016	0.021	0.046	0.087	0.069	0.134	0.087	0.023	0.035
3. Forestry, fisheries	0.182	0.023	0.030	0.010	0.008	0.005	0.001	0.053	0.121	0.084
4. Agricultural services	0.083	0.097	0.099	0.088	0.069	0.030	0.050	0.039	0.052	0.037
5. Coal mining	0.001	0.	0.279	0.054	0.089	0.	0.010	0.	0.365	0.
6. Food, kindred products	0.047	0.095	0.107	0.092	0.154	0.039	0.098	0.036	0.043	0.017
7. Tobacco	0.008	0.006	0.152	0.016	0.001	0.	0.	0.390	0.190	0.073
8. Fabrics, yarn	0.177	0.037	0.104	0.004	0.006	0.001	0.000	0.538	0.048	0.
9. Miscellaneous textiles, rugs	0.207	0.084	0.201	0.073	0.081	0.005	0.008	0.189	0.056	0.001
10. Apparel	0.070	0.325	0.190	0.022	0.051	0.007	0.027	0.103	0.040	0.005
11. Miscellaneous fabricated textile products	0.076	0.279	0.149	0.109	0.080	0.012	0.036	0 068	0.034	0.006
12. Lumber, wood products	0.049	0.032	0.028	0.036	0.070	0.016	0.023	0.077	0.041	0.016
13. Wooden containers	0.069	0.037	0.061	0.070	0.102	0.013	0.022	0.116	0.056	0.046
14. Household furniture	0.060	0.096	0.089	0.077	0.163	0.008	0.026	0.148	0.061	0.020
15. Office furniture	0.040	0.161	0.104	0.229	0.162	0.010	0.043	0.035	0.045	0.011
16. Paper	0.145	0.101	0.102	0.117	0.136	0.025	0.018	0.065	0.035	0.028
17. Paperboard containers	0.087	0.143	0.159	0.128	0.166	0.013	0.049	0.050	0.042	0.012
18. Chemicals	0.026	0.068	0.156	0.128	0.075	0.005	0.046	0.041	0.109	0.014
19. Plastics, synthetics	0.050	0.047	0.139	0.088	0.021	0.006	0.009	0.097	0.234	0.052
20. Drugs	0.048	0.171	0.237	0.112	0.214	0.010	0.054	0.028	0.035	0.002
21. Paints	0.036	0.072	0.216	0.174	0.189	0.013	0.053	0.026	0.023	0.008
22. Oil fields	0.	0.004	0.014	0.017	0.027	0.005	0.041	0.	0.011	0.000
23. Petroleum products	0.012	0.017	0.159	0.062	0.140	0.007	0.039	0.004	0.010	0.003
24. Rubber, miscellaneous plastics	0.164	0.066	0.121	0.286	0.140	0.005	0.029	0.009	0.033	0.001
25. Leather	0.325	0.172	0.126	0.046	0.121	0.	0.087	0.012	0.027	0.002
26. Glass	0.009	0.149	0.233	0.174	0.139	0.	0.002	0.037	0.113	0.017
27. Stone and clay	0.055	0.062	0.148	0.142	0.129	0.022	0.007	0.036	0.054	0.025
28. Iron and steel	0.025	0.052	0.265	0.221	0.197	0.019	0.014	0.004	0.066	0.000
29. Nonferrous, metals	0.108	0.080	0.154	0.136	0.140	0.009	0.016	0.006	0.044	0.004
30. Fabricated metals	0.084	0.080	0.162	0.119	0.196	0.012	0.039	0.011	0.030	0.011
31. Nonelectrical machinery	0.106	0.105	0.127	0.229	0.220	0.007	0.045	0.012	0.014	0.002
32. Electrical apparatus	0.084	0.118	0.183	0.180	0.242	0.011	0.041	0.014	0.020	0.005
33. Appliances, lighting equipment	0.091	0.083	0.128	0.221	0.244	0.012	0.041	0.003	0.019	0.001

34. Electronics equipment	0.110	0.153	0.216	0.036	0.252	0.006	0.023	0.022	0.034		0.005
35. Motor vehicles	0.009	0.060	0.060	0.569	0.157	0.004	0.037	0.017	0.017		0.001
36. Aircraft	0.082	0.076	0.049	0.038	0.049	0.005	0.089	0.019	0.035		0.002
37. Other transportation equipment	0.132	0.061	0.161	0.069	0.119	0.008	0.020	0.009	0.136		0.026
38. Instruments	0.128	0.320	0.174	0.061	0.147	0.013	0.015	0.003	0.013		0.002
39. Miscellaneous manufacturing	0.181	0.228	0.142	0.106	0.129	0.007	0.037	0.042	0.003		0.006
40. Ordnance	0.075	0.160	0.033	0.062	0.038	0.026	0.042	0.007	0.044		0.018
41. Research and development	0.052	0.108	0.059	0.031	0.121	0.017	0.011	0.007	0.164		0.014

[1] In all tables an entry of zero followed only by a decimal indicates the cell is empty. An entry consisting entirely of zeros, with no blank space, indicates the cell contains a figure of negligible size.

TABLE A–5.—*Distribution factors and total outputs of national industries* [1]—Continued

National industry	Region									
	(11) Tennessee, Kentucky	(12) Alabama, Mississippi	(13) Oklahoma, Louisiana, Arkansas	(14) Texas	(15) Montana, Wyoming, Idaho	(16) Colorado, New Mexico	(17) Arizona, Nevada, Utah	(18) Oregon Washington	(19) California	U.S. total outputs [2]
1 Livestock	0.030	0.029	0.037	0.048	0.029	0.025	0.018	0.021	0.056	26,026.6
2 Other agriculture	0.033	0.033	0.062	0.102	0.031	0.022	0.022	0.040	0.123	22,983.5
3 Forestry, fisheries	0.004	0.034	0.066	0.090	0.004	0.001	0.001	0.120	0.166	1,140.3
4 Agricultural services	0.024	0.018	0.035	0.030	0.006	0.014	0.016	0.025	0.188	1,547.3
5 Coal mining	0.032	0.036	0.006	0.	0.003	0.010	0.016	0.001	0.	2,741.1
6 Food, kindred products	0.032	0.015	0.029	0.038	0.007	0.012	0.009	0.027	0.102	63,695.8
7 Tobacco	0.159	0.005	0.	0.	0.	0.	0.	0.	0.000	5,921.9
8 Fabrics, yarn	0.019	0.050	0.003	0.009	0.	0.	0.	0.003	0.001	10,595.9
9 Miscellaneous textiles, rugs	0.020	0.024	0.006	0.007	0.	0.	0.	0.	0.036	2,180.7
10 Apparel	0.046	0.031	0.010	0.021	0.	0.001	0.002	0.005	0.043	14,219.1
11 Miscellaneous fabricated textile products	0.020	0.015	0.008	0.023	0.	0.002	0.002	0.015	0.067	2,288.0
12 Lumber, wood products	0.030	0.046	0.053	0.023	0.043	0.008	0.009	0.275	0.124	7,884.2
13 Wooden containers	0.085	0.068	0.031	0.034	0.	0.003	0.	0.056	0.122	442.3
14 Household furniture	0.055	0.024	0.026	0.024	0.	0.003	0.004	0.018	0.099	3,271.6
15 Office furniture	0.008	0.004	0.009	0.032	0.001	0.007	0.004	0.009	0.086	1,496.2
16 Paper	0.019	0.046	0.050	0.020	0.	0.001	0.	0.057	0.033	9,478.7
17 Paperboard containers	0.016	0.003	0.022	0.015	0.	0.003	0.001	0.014	0.077	3,626.5
18 Chemicals	0.066	0.015	0.054	0.015	0.003	0.014	0.001	0.038	0.035	12,048.8
19 Plastics, synthetics	0.181	0.	0.016	0.048	0.	0.	0.	0.	0.012	4,210.3
20 Drugs	0.011	0.004	0.000	0.010	0.	0.001	0.	0.001	0.061	6,605.7
21 Paints	0.033	0.004	0.005	0.032	0.	0.006	0.	0.009	0.100	1,866.5
22 Oil fields	0.010	0.015	0.262	0.421	0.029	0.048	0.007	0.001	0.089	9,611.2
23 Petroleum products	0.006	0.003	0.127	0.250	0.020	0.008	0.006	0.010	0.118	17,268.7
24 Rubber, miscellaneous plastics	0.014	0.019	0.008	0.013	0.	0.019	0.001	0.	0.072	6,810.8
25 Leather	0.034	0.	0.008	0.008	0.000	0.008	0.000	0.002	0.020	3,967.8
26 Glass	0.012	0.012	0.017	0.014	0.	0.	0.	0.019	0.052	2,136.6
27 Stone and clay	0.033	0.019	0.036	0.039	0.003	0.014	0.015	0.016	0.087	8,825.6
28 Iron and steel	0.013	0.041	0.002	0.018	0.001	0.012	0.011	0.005	0.035	19,860.4
29 Nonferrous metals	0.002	0.002	0.026	0.027	0.039	0.026	0.080	0.039	0.060	10,171.0
30 Fabricated metals	0.023	0.013	0.015	0.025	0.001	0.004	0.004	0.012	0.087	19,904.0
31 Nonelectrical machinery	0.014	0.004	0.009	0.026	0.001	0.004	0.004	0.007	0.064	23,872.7
32 Electrical apparatus	0.005	0.003	0.003	0.006	0.	0.004	0.000	0.008	0.073	6,560.8
33 Appliances, lighting equipment	0.076	0.006	0.004	0.001	0.	0.000	0.	0.004	0.066	5,894.0
34 Electronics equipment	0.009	0.005	0.004	0.015	0.	0.001	0.007	0.001	0.102	8,507.6
35 Motor vehicles	0.009	0.004	0.002	0.010	0.	0.001	0.000	0.004	0.040	22,732.0
36 Aircraft	0.001	0.013	0.011	0.065	0.	0.002	0.009	0.083	0.311	12,646.5
37 Other transportation equipment	0.009	0.067	0.034	0.033	0.001	0.001	0.001	0.041	0.073	3,721.2

38 Instruments	0.003	0.000	0.004	0.013	0.	0.002	0.002	0.002	0.065	4,988.7
39 Miscellaneous manufacturing	0.014	0.010	0.010	0.004	0.001	0.013	0.005	0.008	0.053	5,291.9
40 Ordnance	0.013	0.001	0.	0.014	0.	0.051	0.023	0.	0.405	4,641.8
41 Research and development	0.062	0.012	0.010	0.020	0.002	0.026	0.002	0.007	0.277	5,301.8

[2] These gross domestic output figures were estimated before the 1958 transactions matrix was released by the Office of Business Economics and are expected to vary somewhat from the OBE output figures.

TABLE A–6.—*Change in labor earnings in national industries*

[Millions of dollars]

National industry	Region											
	(1) New England	(2) New York	(3) New Jersey, Pennsylvania	(4) Michigan, Ohio	(5) Indiana, Illinois, Wisconsin	(6) Minnesota, South Dakota, North Dakota	(7) Iowa, Missouri, Nebraska, Kansas	(8) Georgia, North Carolina, South Carolina	(9) Virginia, West Virginia, Maryland, District of Columbia, Delaware	(10) Florida	(11) Tennessee, Kentucky	(12) Alabama, Mississippi
1. Livestock	3.6	4.3	5.5	7.2	21.0	12.2	28.8	5.8	4.2	1.3	3.9	3.8
2. Other agriculture	1.8	1.8	2.4	5.1	9.7	7.6	14.9	9.6	2.6	3.9	3.7	3.7
3. Forestry, fisheries	0.9	0.1	0.2	0.1	0.0	0.0	0.0	0.3	0.6	0.4	0.0	0.2
4. Agricultural services	0.9	1.0	1.0	0.9	0.7	0.3	0.5	0.4	0.5	0.4	0.2	0.2
5. Coal mining	0.0	0.	3.3	0.6	1.1	0.	0.1	0.	4.3	0.	1.6	0.4
6. Food, kindred products	7.8	15.7	17.8	15.2	25.5	6.5	16.2	5.9	7.2	2.9	5.2	2.4
7. Tobacco	0.1	0.0	1.1	0.1	0.0	0.	0.	2.8	1.4	0.5	1.1	0.0
8. Fabrics, yard	5.0	1.0	2.9	0.1	0.2	0.0	0.0	15.1	1.3	0.	0.5	1.4
9. Miscellaneous textiles, rugs	1.0	0.4	1.0	0.4	0.4	0.0	0.0	0.9	0.3	0.0	0.1	0.1
10. Apparel	5.7	26.5	15.4	1.8	4.2	0.5	2.2	8.4	3.3	0.4	3.7	2.5
11. Miscellaneous fabricated textile products	0.2	0.8	0.4	0.3	0.2	0.0	0.1	0.2	0.1	0.0	0.1	0.0
12. Lumber, wood products	1.5	1.0	0.9	1.1	2.2	0.5	0.7	2.4	1.3	0.5	1.0	1.5
13. Wooden containers	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.2	0.1	0.1	0.1	0.1
14. Household furniture	0.9	1.4	1.3	1.1	2.4	0.1	0.4	2.2	0.9	0.3	0.8	0.4
15. Office furniture	0.3	1.2	0.8	1.7	1.2	0.1	0.3	0.3	0.3	0.1	0.1	0.0
16. Paper	3.0	2.1	2.1	2.4	2.8	0.5	0.4	1.3	0.7	0.6	0.4	0.9
17. Paperboard containers	0.9	1.4	1.6	1.3	1.6	0.1	0.5	0.5	0.4	0.1	0.2	0.0
18. Chemicals	0.1	0.3	0.7	0.6	0.3	0.0	0.2	0.2	0.5	0.1	0.3	0.1
19. Plastics, synthetics	0.3	0.3	0.8	0.5	0.1	0.0	0.1	0.5	1.3	0.3	1.0	0.
20. Drugs	0.8	2.8	3.9	1.8	3.5	0.2	0.9	0.5	0.6	0.0	0.2	0.1
21. Paints	0.1	0.2	0.5	0.4	0.4	0.0	0.1	0.1	0.1	0.0	0.1	0.0
22. Oil fields	0.	0.0	0.1	0.1	0.2	0.0	0.3	0.	0.1	0.0	0.1	0.1
23. Petroleum products	0.1	0.2	1.4	0.5	1.2	0.1	0.3	0.0	0.1	0.0	0.1	0.0
24. Rubber, miscellaneous plastics	1.1	0.4	0.8	1.9	0.9	0.0	0.2	0.1	0.2	0.0	0.1	0.1
25. Leather	7.4	3.9	2.9	1.1	2.7	0.	2.0	0.3	0.6	0.1	0.8	0.
26. Glass	0.1	1.0	1.6	1.2	1.0	0.	0.0	0.3	0.8	0.1	0.1	0.1
27. Stone and clay	1.8	2.1	4.9	4.7	4.3	0.7	2.3	1.2	1.8	0.8	1.1	0.7
28. Iron and steel	−0.1	−0.1	−0.7	−0.6	−0.5	−0.1	−0.0	−0.0	−0.2	−0.0	−0.0	−0.1
29. Nonferrous metals	−5.6	−4.1	−7.9	−7.0	−7.2	−0.5	−0.8	−0.3	−2.3	−0.2	−0.1	−0.1
30. Fabricated metals	3.2	3.0	6.1	7.1	7.4	0.5	1.5	0.4	1.1	0.4	0.9	0.5
31. Nonelectrical machinery	−0.3	−0.3	−0.3	−0.6	−0.6	−0.0	−0.1	−0.0	−0.0	−0.0	−0.0	−0.0

32. Electrical apparatus	−2.0	−2.8	−4.3	−4.2	−5.7	−0.3	−1.0	−0.3	−0.5	−0.1	−0.1	−0.1
33. Appliances, lighting equipment	0.5	0.5	0.7	1.3	1.4	0.1	0.2	0.0	0.1	0.0	0.4	0.0
34. Electronics equipment	−18.6	−26.0	−36.7	−6.1	−42.9	−1.0	−4.0	−3.8	−5.7	−0.8	−1.5	−0.9
35. Motor vehicles	0.5	3.1	3.1	29.2	8.1	0.2	1.9	0.8	0.9	0.0	0.5	0.2
36. Aircraft	−68.7	−64.2	−41.5	−82.0	−40.9	−4.1	−74.5	−16.2	−29.5	−1.8	−1.2	−10.8
37. Other transportation equipment	−0.4	−0.2	−0.5	−0.2	−0.4	−0.0	−0.1	−0.0	−0.5	−0.1	−0.0	−0.2
38. Instruments	−4.0	−10.0	−5.4	−1.9	−4.6	−1.3	−0.5	−0.1	−0.4	−0.1	−0.3	−0.0
39. Miscellaneous manufacturing	4.1	5.1	3.2	2.4	2.9	0.2	0.8	0.9	0.1	0.1	0.3	0.2
40. Ordnance	−16.0	−31.9	−7.0	−13.1	−8.1	−5.5	−8.9	−1.4	−9.3	−3.8	−2.7	−0.1
41. Research and development	−2.1	−4.3	−2.4	−1.3	−4.8	−0.7	−0.4	−0.3	−6.5	−0.6	−2.5	−0.5
Net increase	−64.2	−62.3	−18.5	−24.7	−7.9	17.3	−14.3	39.1	−17.0	6.1	20.2	6.9
Gross increase	53.5	81.6	88.3	92.4	107.8	30.7	76.0	61.5	37.8	13.5	28.6	19.8
Gross decrease	117.7	143.9	106.8	117.0	115.8	13.4	90.3	22.5	54.8	7.4	8.4	12.9

TABLE A–6.—*Change in labor earnings in national industries*—Continued

National industry	Region										
	(13) Oklahoma, Louisiana, Arkansas	(14) Texas	(15) Montana, Wyoming, Idaho	(16) Colorado, New Mexico	(17) Arizona, Nevada, Utah	(18) Oregon, Washington	(19) California	(20) U.S. net increase	(21) U.S. gross increase	(22) U.S. gross decrease	(23) Percent change, all industries[1]
1. Livestock	4.9	6.4	3.9	3.3	2.3	2.8	7.5	132.8	132.8	0.	1.67
2. Other agriculture	6.9	11.3	3.5	2.4	2.4	4.4	13.6	111.2	111.2	0.	1.65
3. Forestry, fisheries	0.3	0.5	0.0	0.0	0.0	0.6	0.9	5.2	5.2	0.	1.33
4. Agricultural services	0.4	0.3	0.1	0.1	0.2	0.3	1.9	10.3	10.3	0.	2.14
5. Coal mining	0.1	0.	0.0	0.1	0.2	0.0	0.	11.8	11.8	0.	0.98
6. Food, kindred products	4.8	6.4	1.1	2.1	1.4	4.5	16.9	165.6	165.6	0.	1.66
7. Tobacco	0.	0.	0.	0.	0.	0.	0.	7.2	7.2	0.	1.76
8. Fabrics, yarn	0.1	0.2	0.	0.	0.	0.1	0.	28.0	28.0	0.	1.19
9. Miscellaneous textiles, rugs	0.0	0.0	0.	0.	0.	0.	0.2	4.8	4.8	0.	0.97
10. Apparel	0.8	1.7	0.	0.1	0.2	0.4	3.5	81.3	81.3	0.	1.66
11. Miscellaneous fabricated textile products	0.0	0.1	0.	0.0	0.0	0.0	0.2	2.8	2.8	0.	0.54
12. Lumber, wood products	1.7	0.7	1.4	0.3	0.3	8.8	4.0	31.9	31.9	0.	1.26
13. Wooden containers	0.0	0.1	0.	0.0	0.	0.1	0.2	1.6	1.6	0.	1.05
14. Household furniture	0.4	0.3	0.	0.0	0.1	0.3	1.4	14.6	14.6	0.	1.27
15. Office furniture	0.1	0.2	0.0	0.1	0.0	.1	.6	7.3	7.3	0.	1.19
16. Paper	1.0	0.4	0.	0.0	0.	1.2	0.7	20.4	20.4	0.	0.83
17. Paperboard containers	0.2	0.1	0.	0.0	0.0	0.1	0.8	9.8	9.8	0.	0.93
18. Chemicals	0.2	0.5	0.0	0.1	0.0	0.2	0.2	4.6	4.6	0.	0.15
19. Plastics, synthetics	0.1	0.3	0.	0.	0.	0.	0.1	5.7	5.7	0.	0.59
20. Drugs	0.0	0.2	0.	0.0	0.	0.0	1.0	16.3	16.3	0.	1.21
21. Paints	0.0	0.1	0.	0.0	0.	0.0	0.2	2.2	2.2	0.	0.48
22. Oilfields	2.1	3.3	0.2	0.4	0.1	0.0	0.7	7.8	7.8	0.	0.38
23. Petroleum products	1.1	2.2	0.2	0.1	0.1	0.1	1.0	8.8	8.8	0.	0.45
24. Rubber, miscellaneous plastics	0.1	0.1	0.	0.1	0.0	0.	0.5	6.5	6.5	0.	0.30
25. Leather	0.2	0.2	0.0	0.2	0.0	0.0	0.4	22.7	22.7	0.	1.57
26. Glass	0.1	0.1	0.	0.	0.	0.1	0.4	7.0	7.0	0.	0.81
27. Stone and clay	1.2	1.3	0.1	0.5	0.5	0.5	2.9	33.5	33.5	0.	1.10
28. Iron and steel	−0.0	−0.0	−0.0	−0.0	−0.0	−0.0	−0.1	−2.7	0.	2.7	−0.04
29. Nonferrous metals	−1.4	−1.4	−2.0	−1.3	−4.1	−2.0	−3.1	−51.7	0.	51.7	−2.21
30. Fabricated metals	0.6	0.9	0.0	0.2	0.2	0.4	3.3	37.5	37.5	0.	0.54
31. Nonelectrical machinery	−0.0	−0.1	−0.0	−0.0	−0.0	−0.0	−0.2	−2.8	0.	2.8	−0.03
32. Electrical apparatus	−0.1	−0.1	0.	−0.1	−0.0	−0.2	−1.7	−23.4	0.	23.4	−0.92
33. Appliances, lighting equipment	0.0	0.0	0.	0.0	0.	0.0	0.4	5.8	5.8	0.	0.34
34. Electronics equipment	−0.7	−2.5	0.	−0.1	−1.2	−0.2	−17.4	−170.0	0.	170.0	−5.40
35. Motor vehicles	0.1	0.5	0.	0.0	0.0	0.2	2.1	51.4	51.4	0.	1.21
36. Aircraft	−9.2	−54.6	0.	−1.8	−7.8	−70.0	−260.9	−839.6	0.	839.6	−16.05

37. Other transportation equipment	−0.1	−0.1	−0.0	−0.0	−0.0	−0.1	−0.2	−3.3	0.	3.3	−0.23
38. Instruments	−0.1	−0.4	0.	−0.0	−0.1	−0.1	−2.0	−31.1	0.	31.1	−1.59
39. Miscellaneous manufacturing	0.2	0.1	0.0	0.3	0.1	0.2	1.2	22.4	22.4	0.	1.23
40. Ordnance	0.	−3.0	0.	−10.9	−5.0	0.	−86.1	−212.7	0.	212.7	−15.42
41. Research and development	−0.4	−0.8	−0.1	−1.0	−0.1	−0.3	−11.1	−39.9	0.	39.9	−13.26
Net increase	15.8	−24.6	8.5	−4.9	−10.2	−47.4	−316.2	−498.3	879.0	1377.3	
Gross increase	27.8	38.5	10.6	10.4	8.0	25.5	66.6	879.0	879.0	0.	
Gross decrease	12.0	63.0	2.1	15.3	18.3	72.9	382.8	1377.3	0.	1377.3	

[1] These figures are valid for the national industries on the regional, as well as on the national, level. This is because demand for the output of a national industry, no matter where it is located, is a function only of the total U.S. demand for its output; thus, the percentage change in output (equal to the percentage change in employment)of that ndustry in each region will be identical.

NOTE.—In all tables an entry of zero followed only by a decimal indicates the cell is empty. An entry consisting entirely of zeros, with no blank space, indicates the cell contains a figure of negligible size.

TABLE A–7.—*Change in labor earnings for local industries by region*

Local industry	Region											
	(1) New England		(2) New York		(3) New Jersey, Pennsylvania		(4) Michigan, Ohio		(5) Indiana, Illinois, Wisconsin		(6) Minnesota, North and South Dakota	
	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent
1. Printing, publishing	3.9	1.0	9.0	1.6	9.5	1.5	11.9	1.8	12.9	1.8	3.0	2.3
2. Electricty, gas, water	2.9	1.2	6.5	1.8	7.2	1.5	8.7	1.8	9.6	1.9	2.2	2.6
3. Transportation, warehousing	4.6	0.5	19.0	1.2	17.6	0.9	25.0	1.3	28.0	1.3	6.8	1.8
4. Trade	49.2	1.3	107.5	1.9	117.4	1.8	143.5	2.1	157.8	2.1	35.7	2.7
5. Communications	3.6	1.1	8.0	1.7	8.9	1.6	10.8	1.9	11.9	1.9	2.7	2.5
6. Finance, insurance	11.4	1.4	24.4	2.0	26.9	1.9	32.3	2.2	35.8	2.2	8.3	2.8
7. Real estate, rentals	3.0	1.5	6.3	2.2	7.0	2.0	8.4	2.4	9.3	2.4	2.2	2.9
8. Repair services, hotels	7.0	1.5	15.2	2.2	16.6	2.0	20.2	2.4	22.0	2.4	4.9	3.1
9. Auto repair services	1.4	1.4	3.0	2.1	3.2	1.9	3.9	2.3	4.4	2.3	1.0	2.7
10. Business services	6.0	1.0	13.4	1.4	14.5	1.3	17.8	1.6	19.0	1.5	4.4	2.0
11. Amusements	2.0	1.6	4.6	2.2	4.7	2.2	5.7	2.5	6.2	2.5	1.4	3.1
12. Medical, educational services	11.8	1.3	25.6	1.9	30.2	2.0	38.7	2.5	38.8	2.3	9.2	2.9
13. Maintenance, contruction	0.9	0.3	6.1	1.3	4.5	0.9	8.3	1.5	9.0	1.5	2.5	1.9
14. Government enterprises	2.3	0.9	6.0	1.6	6.2	1.4	8.1	1.8	8.8	1.8	2.1	2.4
15. Office supplies	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
16. Business travel	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0,	0.
17. Households	3.9	1.7	8.2	2.5	9.0	2.3	10.8	2.7	11.9	2.7	2.6	3.4
Net increase	113.9	1.2	262.9	1.8	283.5	1.7	354.3	2.0	385.5	2.0	89.0	2.6
Gross increase	113.9	1.2	262.9	1.8	283.5	1.7	354.3	2.0	385.5	2.0	89.0	2.6
Gross decrease	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

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Local industry	(7) Iowa, Missouri, Nebraska, Kansas		(8) Georgia, North and South Carolina		(9) Virginia, West Virginia, Maryland District of Columbia, Delaware		(10) Florida		(11) Tennessee, Kentucky		(12) Alabama, Mississippi	
	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent
1. Printing, publishing	5.0	1.5	2.1	0.8	0.2	0.1	1.0	0.9	2.1	1.4	0.6	0.6
2. Electricity, gas, water	3.7	1.7	1.8	1.0	0.6	0.3	0.7	1.1	1.7	1.6	0.6	0.8
3. Transport, warehousing	9.2	1.0	−2.2	−0.3	−10.0	−1.0	−0.4	−0.1	2.8	0.6	−1.5	−0.4
4. Trade	59.7	1.8	26.2	1.0	7.6	0.2	11.6	1.1	26.4	1.7	9.5	0.8
5. Communications	4.4	1.6	2.2	1.0	0.8	0.3	1.0	1.1	2.1	1.6	0.8	0.8
6. Finance, insurance	14.0	1.9	6.8	1.1	2.5	0.3	2.8	1.2	6.2	1.8	2.4	1.0
7. Real estate, rentals	3.7	2.0	1.7	1.2	0.6	0.4	0.7	1.3	1.6	1.9	0.6	1.0
8. Repair services, hotels	8.2	2.0	3.6	1.1	1.3	0.3	1.5	1.2	3.7	1.9	1.3	0.9
9. Auto repair services	1.7	1.9	0.7	1.0	0.2	0.3	0.3	1.1	0.7	1.8	0.3	0.8
10. Business services	8.1	1.5	4.7	1.0	2.5	0.5	2.1	1.2	3.6	1.4	1.4	0.9
11. Amusements	2.3	2.1	1.0	1.2	0.4	0.3	0.5	1.3	1.0	2.0	0.4	1.0
12. Medical, education services	16.0	2.0	6.3	1.0	−5.5	−0.6	2.2	0.9	4.4	1.2	1.9	0.7
13. Maintenance construction	2.5	0.8	−2.9	−1.2	−6.4	−2.1	−0.9	−0.9	0.3	0.2	−1.3	−1.1
14. Government enterprises	3.1	1.4	0.8	0.4	−0.6	−0.3	0.4	0.5	1.3	1.3	0.2	0.3
15. Office supplies	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
16. Business travel	0.	0.	0.	0.	0.	0.	0.	07	0.	0.	0.	0.
17. Households	4.4	2.2	2.0	1.2	0.8	0.4	0.8	1.4	2.0	2.2	0.7	1.1
Net increase	146.1	1.7	54.7	0.8	−4.9	−0.1	24.5	0.9	60.0	1.5	18.0	0.6
Gross increase	146.1	1.7	59.8	0.8	17.6	0.2	25.7	0.9	60.0	1.5	20.8	0.7
Gross decrease	0.	0.	5.1	0.1	22.5	0.3	1.3	0.0	0.	0.	2.7	0 1

TABLE A–7.—*Coange in labor earnings for local industries by region*—Continued

Local industry	Region											
	(13) Oklahoma, Louisiana, Arkansas		(14) Texas		(15) Montana, Wyoming, Idaho		(16) Colorado, New Mexico		(17) Arizona, Nevada, Utah		(18) Oregon, Washington	
	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent
1. Printing, publishing	2.3	1.3	1.1	0.4	1.0	2.1	−0.0	−0.0	0.0	0.1	1.0	0.6
2. Electricity, gas, water	1.9	1.4	1.0	0.5	0.8	2.2	0.1	0.2	0.0	0.0	0.6	0.6
3. Transport, warehousing	2.9	0.5	−3.7	−0.4	2.0	1.4	−2.5	−1.1	−2.0	−1.0	0.2	0.0
4. Trade	28.8	1.6	17.1	0.6	12.6	2.5	1.6	0.2	1.7	0.2	12.4	0.8
5. Communications	2.3	1.5	1.3	0.6	1.0	2.4	0.1	0.2	0.1	0.2	0.8	0.6
6. Finance, insurance	7.0	1.7	4.6	0.7	3.0	2.5	0.6	0.3	0.5	0.3	2.9	0.8
7. Real estate, rentals	1.9	1.6	1.3	0.7	0.8	2.5	0.2	0.4	0.2	0.4	0.8	0.9
8. Repair services hotels	4.0	1.8	2.2	0.6	1.8	2.9	0.2	0.2	0.2	0.2	1.7	0.9
9. Auto repair services	0.8	1.6	0.5	0.6	0.4	2.5	0.1	0.3	0.1	0.3	0.4	0.9
10. Business services	4.1	1.3	3.3	0.7	1.6	1.9	0.5	0.4	0.5	0.5	2.0	0.9
11. Amusements	1.2	1.9	0.7	0.7	0.5	2.9	0.1	0.3	0.2	0.6	0.5	0.9
12. Medical, educational services	7.4	1.7	3.3	0.5	3.4	2.9	−0.7	−0.4	0.3	0.2	2.8	0.8
13. Maintenance construction	0.2	0.1	−3.0	−1.1	0.7	1.4	−1.4	−1.7	−1.1	−1.5	−0.6	−0.4
14. Government enterprises	1.4	1.1	0.2	0.1	0.7	2.0	−0.2	−0.4	−0.2	−0.4	0.3	0.3
15. Office supplies	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
16. Business travel	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
17. Households	2.2	2.0	1.3	0.8	0.9	3.1	0.2	0.4	0.2	0.4	0.9	1.0
Net increase	68.2	1.4	31.2	0.4	31.2	2.3	−1.2	−0.1	0.8	0.0	26.7	0.6
Gross increase	68.2	1.4	37.9	0.5	31.2	2.3	3.6	0.2	4.1	0.2	27.3	0.7
Gross decrease	0.	0.	6.7	0.1	.0	0.	4.9	0.2	3.3	0.2	0.6	0.0

Local industry	Region 19, California		U.S. net increase		U.S. gross increase		U.S. gross decrease	
	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent	Million dollars	Percent
1 Printing, publishing	−1.6	−0.3	65.2	1.1	66.8	1.1	1.6	0.0
2 Electricity, gas, water	−1.1	−0.3	49.6	1.2	50.7	1.3	1.1	0.0
3 Transportation, warehousing	−14.6	−0.9	81.4	0.5	118.2	0.7	36.8	0.2
4 Trade	−9.4	−0.2	816.8	1.4	826.2	1.4	9.4	0.0
5 Communications	−1.6	−0.3	61.4	1.3	63.0	1.3	1.6	0.0
6 Finance, insurance	−1.9	−0.2	190.5	1.5	192.4	1.5	1.9	0.0
7 Real estate, rentals	−0.2	−0.1	50.1	1.6	50.3	1.6	0.2	0.0
8 Repair services, hotels	−1.8	−0.3	113.9	1.6	115.7	1.6	1.8	0.0
9 Auto repair services	−0.0	−0.0	22.9	1.5	22.9	1.5	0.0	0.0
10 Business services	1.1	0.1	110.6	1.1	110.6	1.1	0.	0.
11 Amusements	0.2	0.1	33.6	1.7	33.6	1.7	0.	0.
12 Medical, education services	−14.9	−1.0	181.2	1.3	202.2	1.5	21.1	0.2
13 Maintenance construction	−6.9	−1.3	10.3	0.2	34.9	0.7	24.6	0.5
14 Government enterprises	−2.4	−0.6	38.7	1.0	42.0	1.1	3.4	0.1
15 Office supplies	0.	0.	0.	0.	0.	0.	0.	0.
16 Business travel	0.	0.	0.	0.	0.	0.	0.	0.
17 Households	−0.3	−0.1	62.7	1.8	63.0	1.8	0.3	0.0
Net increase	−55.5	−0.4	1888.7	1.2	1992.6	1.3	103.8	0.1
Gross increase	1.3	0.0	1888.7	1.2	1992.6	1.3	0.	0.
Gross decrease	56.8	0.4	0.	0.	0.	0.	103.8	0.1

NOTE.—In all tables an entry of zero followed only by a decimal indicates the cell is empty. An entry consisting entirely of zeros, with no blank space, indicates the cell contains a figure of negligible size.

TABLE A–8.—*Direct labor earnings before change by region*

[Millions of dollars]

Region	Military direct labor earnings [1] (1)	Non-household civilian direct labor earnings (2)	Household direct labor earnings [2] (3)
1 New England	571	2,812	225
2 New York	477	5,447	332
3 New Jersey, Pennsylvania	769	4,184	385
4 Michigan, Ohio	413	4,491	399
5 Indiana, Illinois, Wisconsin	474	4,940	432
6 Minnesota, North and South Dakota	86	1,234	78
7 Kansas, Iowa, Nebraska, Missouri	478	2,441	197
8 Georgia, North and South Carolina	1,052	1,756	162
9 Maryland, Virginia, Delaware, West Virginia, District of Columbia	1,512	3,754	203
10 Florida	404	1,397	62
11 Kentucky, Tennessee	353	1,202	91
12 Mississippi, Alabama	439	899	69
13 Arkansas, Louisiana, Oklahoma	466	1,665	108
14 Texas	991	2,094	168
15 Idaho, Montana, Wyoming	67	534	30
16 Colorado, New Mexico	361	888	48
17 Arizona, Nevada, Utah	288	809	42
18 Oregon, Washington	385	1,477	94
19 California	1,613	5,783	345
Total United States	11,198	47,807	3,472

[1] Military direct labor earnings include earnings of both civilian and military employees of the Department of Defense. See table A–12.
[2] Households were included as a local industry, rather than as a separate final demand category.

TABLE A–9.—*Total change in labor earnings by region*

[Millions of dollars]

Region	Military direct labor earnings (1)	Non-household civilian direct labor earnings (2)	Total [1] gross decrease (3)	Total [2] gross increase (4)	Total net increase (column 4—column 3) (5)
1 New England	−114.20	50.66	231.9	218.1	−13.8
2 New York	−95.43	98.14	239.3	442.6	203.3
3 New Jersey, Pennsylvania	−153.70	75.39	260.5	447.2	186.7
4 Michigan, Ohio	−82.53	80.92	199.5	527.6	328.1
5 Indiana, Illinois, Wisconsin	−94.71	89.01	210.5	582.3	371.8
6 Minnesota, North & South Dakota	−17.18	22.23	30.6	141.9	111.3
7 Kansas, Iowa, Nebraska, Missouri	−95.70	43.99	186.0	266.1	80.1
8 Georgia, North & South Carolina	−210.32	31.63	237.9	152.9	−85.0
9 Maryland, Virginia, West Virginia, Delaware, District of Columbia	−302.37	67.63	379.7	123.0	−256.7
10 Florida	−80.78	25.17	89.5	64.4	−25.1
11 Kentucky, Tennessee	−70.59	21.66	79.0	110.3	31.3
12 Mississippi, Alabama	−87.81	16.21	103.4	56.8	−46.6
13 Arkansas, Louisiana, Oklahoma	−93.19	29.99	105.2	126.0	20.8
14 Texas	−198.27	37.73	268.0	114.1	−153.9
15 Idaho, Montana, Wyoming	−13.37	9.62	15.5	51.4	35.9
16 Colorado, New Mexico	−72.18	15.99	92.4	30.0	−62.4
17 Arizona, Nevada, Utah	−57.63	14.59	79.2	26.7	−52.5
18 Oregon, Washington	−77.02	26.61	150.5	79.4	−71.1
19 California	−322.59	104.19	762.2	172.1	−590.1
Total United States	−2,239.58	861.36	[3] 3,727.0	[3] 3,727.0	----------

[1] Column 1, plus gross decrease in national and local industries, tables A–6 and A–7.
[2] Column 2, plus gross increase in national and local industries, tables A–6 and A–7.
[3] Totals may not add because of rounding.

TABLE A–10.—*Source references for labor earnings*

Sector number	Industry	Procedure	Source
1, 2	Livestock, other agriculture	Estimates of net income of farmers	U.S. Dept. of Agriculture. Agricultural Statistics, 1961.
3, 4	Forestry, agricultural services.	Wages and salaries of employees	U.S. Dept. of Commerce. Survey of Current Business, July 1961.
5–41	Manufacturing sectors	Wages and salaries of payroll workers. salaries of administrative workers, and income of unincorporated business were summed.	U.S. Dept. of Commerce, Census of Manufacturers, 1958 and Survey of Current Business,[1] July 1961.
All local sectors 1–16	Trade and service sectors	Same as for manufacturing	U.S. Dept. of Commerce, Census of Business and Selected Services, 1958; Bureau of Employment Security, Employment and Wages, 1958; U.S. Dept. of Commerce, Survey of Current Business,[1] July 1961.

[1] When the Survey of Current Business statistics were not detailed enough, the Income of Unincorporated Business was distributed, among the 60-order sectors according to information given in Internal Revenue Service, Corporation Income Tax Returns, July 1958–June 1959.

TABLE A–11.—*Source references for National industry output distribution factors*

Sector number	Industry	Factor	Source
1, 2	Livestock, other agriculture	Cash receipts from farm marketings	U.S. Department of Commerce, Statistical Abstract of United States, 1959, table 832.
3	Forestry, fisheries	An index composed of value of catch and volume of raw timber cut.	Same as above, tables 919, 947.
4	Agricultural services	Wages and salaries of employees	Bureau of Employment Security, Employment and Wages, 1958.
5–40	Manufacturing sectors	Wages and salaries of employees	U.S. Department of Commerce, Census of Manufacturers, 1958.
41	Research and development	Payrolls	U.S. Department of Commerce, Census of Selected Services, 1958.

TABLE A–12.—*Source references for local industry distribution factors*

Final demand category	Factors used to distribute aggregate local outputs	Sources
Exports and net inventory change	Regional distribution of labor earnings in each local industry.	Real estate: U.S. Department of Commerce, Statistical Abstract of United States, 1961, table 1067. Finance: Statistical Abstract of United States, 1960, table 619. Others: Either U.S. Department of Commerce, Census of Selected Services or Bureau of Employment Security, Employment and Wages, 1958.
Imports	Regional distribution of total wages and salaries in all industries within a region.	U.S. Department of Commerce, Survey of Current Business, August 1961, tables 4–27, line 2.
Gross private capital formation	Expenditures on new plants and equipment	U.S. Department of Commerce, Statistical Abstract of United States, 1961, p. 795, table 1097.
Construction	Wages in contract construction	Bureau of Employment Security, Employment and Wages, 1958.
State and local government	Wages and salaries of state and local government employees.	U.S. Department of Commerce, Survey of Current Business, August 1961, tables 4–27, lines 28, 29, 30.
Federal Government	Wages and salaries of Federal employees, except Department of Defense.	Same as above.
Military	Payrolls and allowances (only fiscal year 1959 was available).	U.S. Congress, Joint Economic Committee, "Background Material on Economic Aspects of Military Procurement and Supplies," Subcommittee on Defense, March 1963, table 3, p. 4.

ECONOMIC IMPACT OF A MILITARY BASE

A Case Study of Fort Devens, Mass.*

Increasing effort has recently been devoted to investigating the broad ties between the Nation's economy and its defense spending. Relatively little consideration, however, has been given to the impact of defense spending at the local level. Yet it is in the area immediately surrounding large defense installations, more than in the Nation or large region, where the economic consequences of many defense policies and actions are most dramatically felt.

The impact of a military facility on the local economy can be evaluated in much the same manner as the economic impact of any private establishment of similar size. Yes, important differences exist in the expenditure patterns of these two types of activities. In general, the expansion in local employment generated by a military facility is not as large as that resulting from a private facility of comparable size.

In 1961, the Federal Reserve Bank of Boston sponsored a study of the economic impact of the Pease Air Force Base in Portsmouth, N. H.[1] More recently, the bank supported a research study of Fort Devens and its influence on the economies of Ayer, Mass., and other towns within a 15-mile radius. In many respects, the conclusions of the Fort Devens study parallel those of the earlier investigation and reveal a general pattern of the operating and payroll expenditures for military installations.

THE BACKGROUND

Fort Devens is the largest military installation in New England. It was established in 1917 and served as a center for induction, training, and separation for both World Wars. After each war, it was closed and reduced to caretaker status. In 1946, a portion of the post was leased to the University of Massachusetts as the site of a temporary college campus to accommodate veterans attending college under the GI bill. The post was reopened for the Korean war and since that time has maintained a relatively stable garrison of about 10,000 men. In addition, the fort's community includes about 8,000 military dependents and 2,000 civilian employees and their families.

The fort is located in Ayer, a small, semirural town in north-central Massachusetts. More than a fifth of the town's 8.8 square miles is occupied by the fort. Only 20 percent of the remaining area is developed, mainly for housing. Commercial and industrial development encompasses less than 2 percent of the town area.

About 40 percent of Ayer's population of 4,900 is directly associated with the fort. Military families comprise about one-fourth of the total and civilian employees and their families about 15 percent. In the past the town's economy was also heavily dependent on its

*Reprinted from Federal Reserve Bank of Boston *Business Review*, October 1965. This article is based on a graduate thesis by Ian Donald Terner at Harvard University. The study was conducted with the aid of a research grant from the Federal Reserve Bank of Boston. Copies of the complete report are available on request from the research department.

[1] *New England Business Review*, July 1961.

large railroad classification yard and on a tannery, but neither of these is now in operation. After the destruction of the tannery by fire in 1961, the importance of manufacturing declined substantially. Of the six firms that remain in this sector, only one, a maker of industrial sewing machines, employs more than 50 workers. Nearly half of the people who work in Ayer are now engaged in wholesale and retail trade in which the pay tends to be relatively low. As a result average wage and income levels are considerably lower than in the State.

Because of the proximity of the fort, per capita sales are more than double the State average and about three times that of similar-sized towns in Massachusetts. However, many of the needs of the soldiers stationed at the post are met by base facilities, such as the post exchange and commissary, which for military personnel generally offer lower prices than commercial establishments in Ayer. Thus, the leading retail products are those such as lumber, furniture, and automobiles, which are not sold on the post. For example, the sales volume of automobiles in Ayer is four times the State average.

Although the presence of the fort currently adds considerably to the town's economic activity, it has one unfortunate psychological impact. Because many of the town's businessmen recall the closing of the fort after each of the World Wars, they feel uncertain about its future and hesitate to invest in the town's commercial facilities. Underinvestment leads to increasingly older, unattractive, and less efficient facilities which in turn lead to bypassed sales and even less investment.

Housing is another sector of Ayer's economy which is heavily influenced by the presence of the military. Due to the demand provided by civilian and military personnel attached to the Fort, Ayer landlords are able to receive high rents for their units, with the median rent of $86 amounting to 15 percent more than the State average. This is true despite the age and poor condition of much of the town's housing. The 1960 Census of Housing revealed that over half the town's rental units were deteriorating or dilapidated in contrast to less than one-fifth for the State as a whole. Even the opening of several hundred new housing units on the post did not reduce the demand for rental units in the town. The vacated units were rapidly rerented as families living 10 or 15 miles away moved closer.

Another aspect of Ayer's economy where the military impact is important is municipal finance. Like many suburban communities, Ayer's tax rate has been climbing steadily. The rate nearly doubled between 1952 and 1963, rising from $45 to $80 per thousand dollars of assessed valuation. However, unlike most communities, the dominant reason for the rising tax rate has not been mounting school costs but a lack of significant growth in the town's tax base. Ayer's school costs, although rising, are heavily supported by Federal funds. Under Public Law 874, the large proportion of school children who are dependents of post personnel qualifies Ayer's school system for large Federal grants. About 73 percent of the town's schoolchildren are qualified for these grants. As a result, over one-half of Ayer's school expenditures are paid by the Federal Government.

EXPENDITURES OF THE FORT

Annual operating expenditures of the fort, excluding construction spending, total about $70 million. Of this amount, approximately $30 million is spent for procurement of supplies from commercial sources. The local impact of these procurement expenditures is modest, however, since less than 1 percent are made in Ayer with an additional 11 percent spent within a 15-mile radius of the fort. On the other hand, about 62 percent of these procurement expenditures are made within New England, with Boston alone receiving 31 percent. Thus, the absolute effect of the fort's procurement spending is felt more within certain of the region's wholesaling sectors though the total impact on the regional economy is relatively small.

On the other hand, the fort's annual $10 million civilian and $30 million military payrolls do have a significant effect on both Ayer and the surrounding area. In an attempt to determine where the military payroll was spent and to estimate its total effects, questionnaires were distributed to 1,000 soldiers on the post. About 400 usable replies were tabulated. The data reveal a general pattern of expenditures for military personnel, the important determinants of which are the marital status of the soldier and his place of residence.

As might be expected, food and housing account for nearly 60 percent of married budgets. Other necessities account for most of the remainder, with only 5 to 6 percent alloted to entertainment and recreation. On the other hand, bachelors spend about 55 percent of their income for nonnecessities such as entertainment, recreation, and transportation. They also save about 15 percent of their incomes, almost twice the amount that married couples save.

Military payroll spending

[Percent of income]

Location	Fort Devens			Pease Air Force Base		
	Average	Single	Married	Average	Single	Married
Post	41	40	41	38	37	38
Adjacent town	10	9	10	26	15	28
Within 15 miles but excluding adjacent town	20	8	24	18	11	20
Beyond 15 miles	29	43	25	18	37	14
Total	100	100	100	100	100	100

Source: Fort Devens survey questionnaire. Laben, Pease Air Force Base study.

Despite these significant differences in budget allocations, the survey reveals that both married and single soldiers spend about 40 percent of their income on the post and about 10 percent in Ayer. However, bachelors spend about 43 percent of their income outside a 15-mile radius of the post, compared to only 25 percent for married soldiers. This is, of course, due mainly to the greater mobility of bachelors. In addition, some married personnel live outside of Ayer but within 15 miles of the fort and thus spend the rental portion of their budgets within the 15-mile ring.

The data reveal that where the soldier lives is the place in which he spends at least half of his income. The average soldier who lives on base, for example, spends only 10 percent of his funds in Ayer, but if he resides in Ayer, he spends more than half his income there. While housing automatically accounts for much of this "spend where you live" phenomenon, the geographic spending patterns for transportation, food, clothing, and savings also exhibit ties to one's place of residence.

THE GENERAL SPENDING PATTERN

As mentioned at the outset, the results of the Fort Devens study show a marked similarity to those of the earlier study of spending at Pease Air Force Base. As shown in the table on page 727, both studies reveal that typically 35 to 40 percent of the military payroll is spent on the base. As a result, the effect of military payrolls upon local trade and services is substantially less than that of civilian consumers with comparable income. By the same token, the pattern of military procurement spending is considerably different from that of some manufacturing firms which rely heavily on the nearest community for supplies and services. This is not the case in most military installations which mainly purchase in national market centers.

The accompanying table also discloses substantial differences in the amount of off-post spending by military personnel which is "captured" by the nearest community. The data suggest that while the proportion of payroll expenditures made both on-post and outside the 15-mile ring are relatively fixed for most military installations, the distribution of the remaining expenditures among communities within the 15-mile ring is flexible. Thus Portsmouth received a much greater proportion of the off-post payroll expenditures from Pease Air Force Base than did Ayer from Fort Devens. This is due in part to Portsmouth's greater size and more isolated position.

THE MULTIPLIER AND SIZE OF THE ECONOMY

Ayer receives most of its "export" income from sales to military personnel stationed at Fort Devens and from the sale of a few industrial products. This is called export income since it is derived from the sale of services and goods to those who live outside Ayer or to military personnel stationed at the fort. As export income increases, so does employment. More jobs lead to further demand for goods and services which in turn contribute to more workers being hired. This additional income is either spent in Ayer or used to purchase goods and services from other areas. This series of events is known as the multiplier effect. Analysis of employment data for 1954 through 1962 yielded an employment multiplier of 1.2. Thus, in Ayer every five workers engaged in producing services and goods for export out of the community generate one additional job in the local market. This low multiplier is typical of a town of Ayer's population.

THE RESULTS

Without Fort Devens, Ayer's economy would be considerably smaller than it is today. Altogether, 525 jobs (one-fourth of Ayer's labor force) are dependent on economic activity generated by Fort Devens. Of this total, 437 are directly dependent on income received from the Fort and its personnel. These jobs, in turn, generate the need for another 88 workers who provide goods and services for the augmented local population.

Fort Devens' influence is felt in another way. Today Ayer is an area shopping center because it has specialized retail stores offering a variety of lumber, furniture, and automobile products. Also, the town offers specialized services in such fields as dentistry. If, for any reason, Fort Devens were to be completely closed down, many of these larger specialty stores would go out of business. Ayer would lose much of its appeal as a shopping center. Residents from surrounding communities would do most of their shopping elsewhere and many stores and service establishments in Ayer would lose a significant part of their business.

What would the total impact of a Fort Devens closing be on a community such as Ayer? Would 30 percent or more of the labor force be unemployed and move out of the community? The answer is quite clearly no. When Fort Devens closed down after World War II, the economy of Ayer did not collapse and its population did not decline significantly. A number of stores went out of business, but most of the unemployed found work in Fitchburg, Worcester, and nearby labor markets. Many of the replacement jobs were low paying or were otherwise unsatisfactory. Nevertheless, these new jobs brought income into the town of Ayer and kept the economy going.

If Fort Devens had been a large private manufacturing firm rather than a military installation, the economic history of Ayer would have been entirely different. First of all, Ayer would have had a much larger population than it had in 1946. Unlike a military base, private firms generally sublet much of their work to local businessmen. They do not operate commissaries, PX's, and movies. Only occasionally do they build homes for employees. The result is that a much larger part of a private firm's income and that of its employees is spent in the local area and helps to build the local economy.

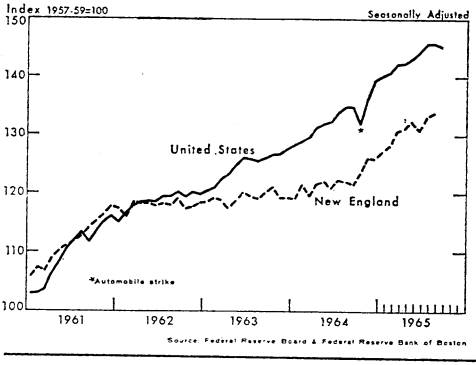
When a civilian facility with, say, 12,500 employees closes down, however, the local impact is always serious and often disastrous. The complete loss of such a firm might well permanently cripple a town the size of Ayer. On the other hand, a military installation with the same number of employees procures most of its materials and equipment from national markets and provides a great variety of consumer goods and services to its personnel. In short, military facilities are largely self-sufficient and their closing down leaves a much smaller impact on the surrounding communities.

In the case of Fort Devens, however, the installation is far from closing. Recent construction and new training commitments suggest no downturn in economic activity in the foreseeable future.

New England **Business Review**

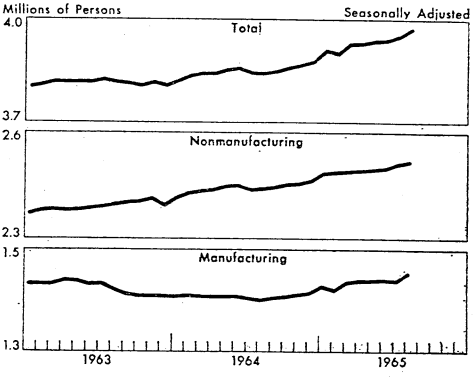
Some Economic Indicators

PRODUCTION INDEXES: TOTAL MANUFACTURING



Manufacturing production in New England continued to show a steady rise into the fall. The index in the Nation declined slightly in September mainly as a result of lower steel production.

NONAGRICULTURAL EMPLOYMENT New England



Total nonagricultural employment in New England shows a steady rise at a high level. Expansion is especially marked in nonmanufacturing and employment in manufacturing has also turned upward after declining during most of 1964.

Here's New England

MANUFACTURING INDEXES (SEASONALLY ADJUSTED) (1957-59=100)

	New England			United States		
	August 1965 [1]	July 1965	August 1964	August 1965	July 1965	August 1964
All manufacturing	134	133	122	146	146	135
Nonelectrical machinery	145	147	131	162	162	144
Electrical machinery	144	147	130	159	159	142
Transportation equipment	171	144	131	151	150	136
Textiles, apparel, leather	107	109	103	135	135	126
Textiles	110	110	103	134	134	124
Apparel	111	116	109	[2]	145	135
Leather and shoes	99	102	97	[2]	108	106
Paper	124	135	115	142	142	133

BANKING AND CREDIT

	Percent change from—			Percent change from—		
	August 1965	July 1965	August 1964	August 1965	July 1965	August 1964
Commercial and industrial loans (million dollars) (weekly reporting member banks)	2,197	+2	+19	46,827	+1	+21
Deposits (million dollars) (weekly reporting member banks)	6,134	+1	+11	155,164	0	+9
Check payments (million dollars) (selected cities)	199,803	+3	+20	3,018.8	0	+13
Consumer installment credit outstanding (index, seasonally adjusted 1957-59=100)	158.9	+1	+9	189.7	+1	+13

DEPARTMENT STORE SALES

Index, seasonally adjusted 1957-59=100	127	−3	+2	[2]	[2]	[2]

EMPLOYMENT, PRICES, MAN-HOURS AND EARNINGS

Nonagricultural employment (thousands)	4,043	+1	+3	61,070	+1	+4
Insured unemployment (thousands) (excluding R.R. and temporary programs	84	−11	−22	1,129	−1	−14
Consumer prices (index, 1957-59=100)	[4] 111.9	0	+1	110.0	0	+2
Production-worker man-hours (index, 1957-59=100)	101.0	+3	+6	111.5	+1	+8
Weekly earnings in manufacturing (dollars)	[4] 99.23	+1	+4	106.60	0	+3

OTHER INDICATORS

Total construction contract awards [3] (thousand dollars)	238,385	−8	0	4,561,629	−4	+6
Residential	106,965	−4	+8	2,001,084	−2	+6
Nonresidential	94,574	−2	−15	1,583,257	−5	+12
Public works and utilities	36,846	−26	−36	977,288	−7	−1
Electric energy production (4 weeks ending Aug. 7, 1965) (index, seasonally adjusted 1957-59=100)	150	−3	+5	161	−1	+5
Business failures (number)	71	+78	0	1,131	+5	−3
New business incorporations (number)	851	−19	+5	16,114	−4	+11

[1] Preliminary.
[2] Not available.
[3] 3-months moving averages June, July, August.
[4] Massachusetts.

THE SALINA STORY: "SWORDS INTO PLOWSHARES"*

PREFACE

This recital of the steps taken by the citizens of Salina, Kans., in overcoming the impacts of the closure of Schilling Air Force Base is a heartening example of American toughness, ingenuity, and resilience. It was for the purpose of presenting this story to the American people that the Department of Defense commissioned a Salina firm to write Salina's story. Thus, the contents of the following pages are written from the local viewpoint. This local approach is, of course, what we wanted—for it makes *The Salina Story* a valuable guideline for any American community in organizing and acting to meet changed circumstances.

The efforts of the Defense Office of Economic Adjustment, as described in *The Salina Story*, reflect the philosophy expressed by Secretary McNamara on July 10, 1965:

> While the Nation as a whole * * * benefits from the closing of surplus military facilities, these closures often have a substantial impact on the employees and communities involved. We are all aware of that fact. The Defense Department, in my judgment, bears a special responsibility as an employer. It has long been my contention that the burden of major dislocations caused by our dynamic economic growth should not rest solely upon the people immediately involved. Our society should help to carry that burden.

CONTENTS

CHAPTERS

APPENDIXES

INTRODUCTION

This story of Salina, Kans., is a recital of the efforts of a small midwestern community to overcome the economic, governmental, and social impacts of the closing of a large nearby Strategic Air Command installation—Schilling Air Force Base.

*Issued by the Office of the Secretary of Defense, August 1966.

It is a story of—

People, and the leaders they selected to bring about the betterment and vitalization of their community.

The American governmental process, particularly the close collaboration between local, State, and Federal activities; and the highly motivated sense of social responsibility shown by all of these levels of government.

The close relationship between leadership capability and economic growth; with the former having the predominant role in bringing about the latter.

Salina is a community of some 45,000, located almost in the geographic center of the contiguous 48 States. It is a trade and service center in a predominantly agricultural region—one which extends into Nebraska, Colorado, and Oklahoma. Population growth in the 1950's was phenomenal (65 percent). This expansion, however, was closely tied into the growth of Schilling Air Force Base, which had been reopened in 1952. It was in this context—the local commitment to Schilling as the basis for growth—that the community received the Department of Defense notice of the planned June 1965 closing of the Base.

The Salina story is presented in chronological sequence, beginning with a brief summary of Salina life in 1964, before the closure announcement. It ends with a description of Salina in mid-1966, after the major planning, organizing, and implementing phases of the adjustment had been completed.

The appendix includes more detailed discussions of the major elements of the adjustment program, as well as statistical data covering the major local economic indicators.

Salina's story is one of community resiliency—and it is a tribute to the persistence, patience, and devotion to a cause, exhibited by all of those who played a part.

Chapter I

Salina, 1964

In September 1964, the Salina City Planning Commission forwarded a comprehensive plan for the city's growth to the city commissioners. The document opens with the following statement:

> In 1724 a French emissary, who was in the area of what is now Salina, wrote: "This is a fine country, and the most beautiful land in the world. The meadows are rolling like the sea and abound in wild animals, expecially in the ox, cow, hind, and stag in such quantities as to surpass the imagination * * *"

The report proceeds to describe Salina in terms of its excellent schools (the Salina Senior High School ranked highest in the State in State scholarships for 12 of the past 13 years); the major population growth (Salina County was second in population growth in the State during the 1950's); the ever-increasing dependence on trade, the 50 churches, two private colleges, and the city's plans for future growth (a population of 59,000 was expected by 1975, increasing to 72,000 by 1985).

Salina's transportation resources are superb—located at the intersection of two interstate highways (I–70 and I–35W); served by four major railroads, a scheduled airline, and numerous trucking and bus concerns.

But the report also cited some sobering problems. The decline of the central business district paralleled that of many American communities. A significantly high percentage (20.6 percent) of Salina's housing was evaluated as either deteriorating or dilapidated by the 1960 census. There was a need for controlling the direction of future growth to prevent overly expensive extensions of city services in a north-south direction. Finally, the absence of an industrial base—and the overwhelming reliance on Schilling Air Force Base and trade revenues was recognized. With regard to the latter, the report notes:

Obviously the growth pattern and future of Schilling Air Force Base are quite vital to any intelligent forecasts or predictions for the future of Salina. Unfortunately, the future of most military installations is virtually impossible to forecast.

In the various sections of the report which were related to economic base considerations the need for diversification was emphasized repeatedly. The inference was quite clear. Efforts to attract new industry to the community had been spasmodic and ineffectual. Industrial development was and had been at a virtual standstill. Most civil leaders would admit that the reason was complacency, a complacency directly attributable in large measure to the presence of Schilling Air Force Base.

Schilling, a sprawling complex of nearly 4,000 acres, located less than a mile from the city's boundary, represented approximately 25 percent of the county population in the fall of 1964. Except for a 2-year period of deactivation in 1950–51, the community had become dependent upon the economic forces generated by the activities at the base. Schilling Air Force Base was started in 1942 as Smoky Hill Army Airfield and continued as a bomber base until deactivated in the fall of 1949. In the spring of 1952 it had been reopened as a part of the SAC family of major bomber bases and, in the early 1960's, a complex of 12 Atlas intercontinental missile installations was completed. Throughout these years, the community had received the economic benefits of nearly 200 million construction dollars and yearly payrolls ranging from 15 to 20 millions of dollars. Physically, the base represented over 700 buildings, hundreds of related structures, a complete complex of utility and service systems and hundreds of acres of aircraft pavements.

"Our City Planners on the Opium Pipe." This headline startled a number of Salinans reading the Salina Journal in the fall of 1964.

Is Everyone at Fifth and Ash on the Opium Pipe? Not at all, friend, not at all. Indeed the contrary is true. While to the literal-minded the predictions of Salina's newest plan for city development may seem hallucinatory, they actually are conservative in the best sense of the word. * * *

Salina's new comprehensive city plan was being discussed at public townhall meetings, and at numerous civic, fraternal, and service club meetings. The Journal and the local radio and television stations were giving full and supporting coverage to Salina's new "look at the future."

Never before have Salina's family "jewels" been so thoroughly examined and weighed * * * it is a mine of vital information * * * the report should prove helpful for private as well as public development, a handbook for industry, a record for historians, and a blueprint for city expansion * * * the basic information should enable Salina to act with wisdom and success in guiding our inevitable growth. * * *

At each of these public meetings the economic base of the community was discussed in detail and the following quotes from the new city plan were given serious emphasis:

The activities and changing role of Schilling (Smoky Hill) Air Force Base have had dramatic effects upon the economy of the community. At present, industry plays a relatively minor role in the economic picture of the community * * * Salina is the home of Schilling Air Force Base. The product exported by the base is defense; defense of the rest of the States, as well as to countries and peoples around the world. These defense products serve a different kind of market, a market whose level is set more by political decisions and in response to changing defense needs. * * * To date, the industrial growth in the Salina community has been less than in the other larger cities of the State. * * * While new industry is most desirable and necessary to balance and diversify the economic base, it is also necessary for the important purpose of halting the exporting of our young people to areas with better employment possibilities. * * * A greater emphasis must be placed on the expansion of industry in Salina to the end that manufacturing becomes a much more important element in the economy of the community. * * * If industry and manufacturing are attracted to the city, reduced activities or *closure of the airbase* will have a lesser and shorter lived effect on the economy of the community.

The businessmen attending the evening city plan meeting on the 18th of November 1964 had asked that the discussion be limited to industrial development considerations. A Salina Journal headline of that evening was the subject of pre-meeting considerations.

Ninety-five More Bases Will Be Closed—Mac Makes a New Slash—Announcement Will Be Made Thursday.

The engineer-planner leading the discussion, mildly familiar with a number of air base installations throughout the United States, was of the opinion that Schilling Air Force Base was a very improbable item in the list of forthcoming closures. Schilling had a splendid runway, only recently built for the arrival of a wing of B52's; right climate, good location, adequate support facilities, room for expansion, a record of economy and efficiency, the best maintained base in the 15th Air Force (probably best in SAC), a much desired bombing range, highly praised community relations, and many other reasons. Wing Commander Colonel Crompton was at a commander's call at Davis-Monthan Air Force Base, Ariz., to accept five new trophies emblematic of Schilling's top flight performances. A committee of local citizens was at Walker Air Force Base, N. Mex., to explain how to establish an effective base-community relationship to Air Force and civilian representatives from six other airbases.

The discussion leader opened the meeting with the admonition that some day Schilling would be on a similar list and the matter of diversification of the community's economic base had a new sense of urgency.

Chapter II

The Closing Announcement, November 19, 1964

At 10:40 a.m. on November 19, 1964, the citizens of Salina heard that, within half a year, a segment of the community which had been a mainstay of business activity would disappear. Specifically, the Department of Defense announced that:

The B–47 bomber wing would be inactivated by March 1965.

The ATLAS F ICBM Squadron would inactivate by June 1965.

The KC–135 jet air refueling aircraft would be relocated by June 1965.

Schilling Air Force Base would be closed by June 30, 1965.

The word "shock" was used to describe the reaction of civilian and military citizens of the Salina community. Disbelief better describes the reaction of those that were closest to the base. Despite spirited statements by civic leaders, statements exhorting the community to reach for our bootstraps, bitterness best describes the mood of the people. "We have a sound economic future, with or without the base." "We have good leadership and good people." "A crisis either knits a town together or disintegrates it." These and other similar truths had a hollow ring on the 19th of November. On that date, the one-line letter, which appears daily on the front page of the Journal, said:

DEAR SAL: And a Merry Christmas to you, too, Secretary McNamara.
Yours,

INA.

Not all of the reaction was prompted by economic loss considerations. A great many more people had equally important reasons to resent this unexpected development. City Commissioner R. W. Bull spoke for many thousands of Salinan's when he said,

The men and women of Air Force Families constitute a real and lasting loss Salina will suffer from the scheduled closing.

Salina has profited from the base, not only in our economic life, but because of its people. They have become a part of our community and many have been interested in our civic life. They come and go, but their coming and going has left a great deal with us. We will recover from the economic impact of the closing I have no doubt, but we are going to lose what these fine people have brought to us and we are going to miss that very much.

Neighborhood conversations with the sergeant from across the street and the major from next door were awkward and most unpleasant that evening.

Not all of the local discussion during the next few days was devoted to questioning the basic intelligence of those in high military and governmental position. There was the ribbon cutting ceremony opening the newest portion of Interstate Highways 170 and 135W that intersect immediately west of the city, the Statler-Hilton Inn project appeared to be on the road to success, the voters were asked to approve an industrial development tax levy, and the FHA promised to protect the Salina real estate market to prevent it from becoming a depressed real eststе area in the wake of the announced closing. (No such commitments were forthcoming from the VA, however.)

There were many letters to the editor offering advice and other Kansas editors were expressing their opinions. Three editorial views were expressed. Philosophical gents whose pocketbooks were not involved brought out the bromide about everyone being for economy until it affects them. It depends upon whose ox is being gored and so forth. Helpful friends sent flowers and said that the closing is a challenge and can lead to solid industrial development. The political scientists among the scribes announced that Salina's case was a test of the federal program to ease the transition from war preparedness to the paths of peace.

DEAR SAL: Can McNamara beat swords into plow shares?
Yours,

INA.

Civic leaders began hurriedly developing plans to seek a review in Washington on the ordered closing of Schilling. The details of the Washington meetings were being closely coordinated with the Kansas legislators in Washington and Gov. William Avery agreed to head the local delegation.

In a letter dated November 29, the community was introduced to the OEA (Office of Economic Adjustment) and to Donald F. Bradford, its Director. In his letter, Cyrus Vance offered the services of OEA to the city and pledged the support of all agencies of the Federal Government that might be of assistance.

On December 2, it was confirmed that Washington officials would meet with a Salina delegation on the 14th of December. Arrangements for the conference were completed by the Kansas delegation and Gov. William Avery and the men to represent Salina were selected. The seven-man group, led by Mayor Carl Rundquist, included: Carl Ramsey, chairman of the county Commission; Walter Ostenberg, superintendent of schools; Tom Lillard, local attorney and industrial development committee chairman of the chamber of commerce; Whitley Austin, editor of the Salina Journal; Norris Olson, city manager; and Jim Preston, chamber of commerce manager. Prior to the trip to Washington, a townhall meeting was held at the senior high school. Neighboring communities of Abilene, Beloit, Ellsworth, Lincoln, Lindsborg, Lyons, Marion, McPherson, Minneapolis, and Wilson had been invited to attend the meeting and did. At this meeting the delegation members listened for advice and expressions from the 250 or more citizens in attendance and everyone was given full opportunity to voice his or her opinions. It was decided that two principal questions would be asked of the Department of Defense.

Was the decision to close Schilling made objectively?

Will the closing impair our national security?

If the delegation was satisfied with the answers they were then prepared to talk of alternate uses of the base. Members of the delegation were confident that they had obtained a good cross section of community opinion for their Washington visit.

Dear SAL: Schilling presented today their check for $15,635.16 to the Salina Community Chest.

INA.

In a press announcement prior to Salina's visit to Washington, Eugene Zuckert, Secretary of the Air Force, pointed out that he had never heard of so much concern in the Air Force about a base closing and that Air Force officials realized the impact to the community.

Journal Editor Austin reported the results of the Washington visit in a lengthy article headlined "Only a Civilian Future Is Seen for Schilling—But That Future Could Be Exciting." Quite obviously, the Salina troops had lost the battle to rescind the closing action. In part Mr. Austin said:

Salina now has only one job to do for Schilling Air Force Base. That is to develop its civic, commercial, and industrial potential by civilian enterprise. Chances of the base being used for any major military purposes are remote. War might bring that chance but who wants war? The Government already has plans to help to convert Schilling for peaceful profit. They are exciting plans. We will ask the Government to deliver, to make this a show place, a pathfinder, but Salina also must do its part with brains, money and without jealousy, envy or greed.

The Pentagon gave us first-class care as a hard case deserves. They pinned the purple heart on our bosoms and then they applied the pain killers. The date for Schilling's sudden death is still June 30. Why was the arrow broken for Schilling? Certainly it was not political. Even Republican Congressmen are agreed. The seven of us went to Washington like Kansas Dorothys off to see the wizard, the wonderful wizard of Oz. Mostly, we saw Kelley, George, Colonel. This Kelley, an urbane trooper with a Ph. D. and a bright future already had slipped the mickey to Carlson and Dole. Kelley had the answers to any questions we put. He was briefed and then some. He was so good he should be solving Vietnam. Secretary Vance assured us that they would mobilize all the resources of government, and not only those of the Department of Defense, to minimize the impact upon Salina. We know that time is of the essence. We shall cut every corner possible to help you.

Austin reported Bradford to be an "energetic and enthusiastic man who has no use for redtape" and that Bradford and his staff would visit Salina in mid-January to help with the closing. The delegation was assured that if there was a failure to find another governmental use, the Government would use its resources in order to lessen the economic impact on the Salina area.

Congressman Bob Dole announced on December 18, that he would open a branch office in Salina to operate at least during the scheduled closing of the base. Dole said that there had been numerous inquiries and requests for information and that in his opinion, a congressional office in Salina would be beneficial, not only to the community and the surrounding areas, but also to the Federal agencies who had indicated their willingness and interest in helping Salina make the necessary adjustments. This decision of Congressman Dole's proved to be a highly important contribution to the community. His office became the focal point for all of the community's efforts in the conversion processes that were to take place in the ensuing months.

Chapter III

The Organizing Effort

On the day before Christmas, the Salina City Commission and Salina Chamber of Commerce, announced jointly that a coordinating committee had been formed to unite the community business and political elements in a harmonious effort to counter the economic blow of the base closing. The committee was not to have power to expend public funds without the approval of the official bodies but could act in the name of the city in the liaison work with the Air Force and other Federal agencies. The committee's main job was to bring industry and commerce to Salina.

At its first meeting this newly formed committee chose for its name the "Schilling Development Council" and elected John Williamson, vice president of Kansas Power & Light Co., as its chairman. This carefully selected committee of seven included:

Whitley Austin, editor and publisher of the Salina Journal.
Clem Blangers, secretary of the local labor unions.
Allen Dodge, owner-director of Homestead Building & Loan Co.
Tom Lillard, attorney and chairman of the chamber of commerce industrial development committee.
Carl Rundquist, mayor of Salina and manager of the Credit Bureau of Salina.
Murray Wilson, consulting engineer and founder of Wilson & Co., Engineers & Architects.

In addition, six ex officio members were appointed representing other political and business elements of the community who would serve as advisors to the council.

In the first days of the new year of 1965, the mood of the community was a mixture. A few Salinans appeared to be ready to panic, others were apparently turning aggressive, and the majority were in a wait-and-see frame of mind. The development council was preparing itself for the promised visit of Washington officials later in the month, fully realizing that Salina was facing a bootstrap operation. Above all, the new council in its formative meetings, foresaw months of work and the need for large measures of patience, fortitude, and wisdom. Whether the base closing was to be a disaster or an opportunity would depend in large measure upon an inventive, determined, and intelligent persistence of Salina businessmen and officials as well as upon the cooperation of the Department of Defense and other governmental agencies.

On January 13, 1965, a team of Washington officials, including representatives of DOD, GSA, DHEW, SBA, and Agriculture, began a series of day and night meetings that was to last for 2 full days. The Washington delegation was bolstered by a wide variety of regional representatives of Federal agencies, State officials, and envoys from the Washington offices of the Kansas Senators and Representatives. Don Bradford set the theme of the meetings when he reminded the press that the delegation was at Salina at the invitation of Salina's leadership:

> We will sit down with these men and make an assessment of Schilling, and we will discuss possible recovery programs. We will enlist the aid of any or all Federal agencies to help bring new payrolls to Salina. We already have heard some good thinking from Salina leaders and we expect great results from our talks.

DEAR SAL: Here's hoping for the best.

Yours,

INA.

Salina had been promised active Federal assistance in ajusting to the loss of Schilling. The community had been told that redtape would be cut, sound advice given, advantages proffered, equipment donated, and that assistance would be offered to find new people and new payrolls to replenish those that would be lost. To many citizens these promises only mean nothing more than talk. The cynical element professed no faith in miracles or fairy godmothers, and cast suspicion on the professed desires on the part of Federal departments to help the community.

In the full meetings, and in the smaller meetings with special groups, the Federal delegation counseled over 150 invited Salinans in a wide variety of special interests and authorities. Groups interested in the municipal airport, education, highways, hospital and medical programs, housing, industrial development, parks and recreation, small business, urban renewal, public utilities, and vocational-technical education discussed the roles that might be played by the base in solving their respective needs and desires. Many of our questions remained unanswered but it was agreed that a number of worthwhile ideas and suggestions had been explored in detail.

As a climax to the visit by Washington officialdom, a report on the dialog between the community and Washington was scheduled for an evening meeting at the senior high school auditorium. All Salinans,

and the residents of surrounding cities affected by Schilling's closure, were invited to hear Mr. Bradford. The meeting had been scheduled at the request of the development council for the purpose of acquainting the general public with the problems that faced them. The wisdom of that request was debated at length in the weeks that followed. Nothing firm, positive, or concrete had been resolved in the preceding conferences. The talks had been exploratory only. No hard and fast conclusions had been expected from the meetings; only basic guidelines for Salina action were defined and established. In the minds of many, Bradford had been put on the spot. The theme "It's up to you," the refrain which was to become so familiar and No. 1 in Salina's own hit parade, was not what the audience expected to hear. The questions: Can we use it? Do we want it? Can we afford it? Awaited the community's answers.

"We don't have the brains and we certainly don't have the gall to say that we in Washington know what is best for Salina. The people who know that, are the people who live here." These words by Mr. Bradford were exactly the opposite of what many expected to hear. There would be no spoon feedings from Uncle Sam. There will be help and counsel. The leadership and decisions, however, must come from Salina. "Your first job is to establish goals for your community. This sounds easy but it isn't. It's a hard-nosed business and it involves all the segments of the community's economy. Don't get yourself in a hassle or in a struggle for power about this thing. That kind of fratricide will kill you."

In recounting the experiences and results of other communities faced with a similar problem, Mr. Bradford pointed out both successes and failures and his opinions for the variety of results. Salina leaders were praised by Mr. Bradford for sound, practical ideas and a dynamic approach to economic recovery. In congratulating the community on a most outstanding and successful start, and for the number of sound, practical ideas discussed in the work sessions, Mr. Bradford pointed out that he hoped that Salina's leader understood that they could not solve all of the problems of Salina's future in 36 hours of brainstorming, and that the community was aware that many months of planning and hard work would be needed to develop and carry out a total program. The community was assured that in their efforts they should expect the full support of all levels of government.

Sunday Journal Editor John Schmiedeler had this to say:

"Who wants to be master of his destiny?" "What did he say?" demanded these two fellows I know as they left Salina High Auditorium Thursday night. "You heard him. What did he say? We heard him and we can't tell you. It was just talk. It was the old kissoff."

Well, I'll go along just a short way. Don Bradford's talk before a concerned audience of Salinans was not a ringing climax to what had been the most stimulating—and, perhaps, the most important—day in recent Salina history. Perhaps by design, he underplayed it.

My friends probably wanted to hear the trumpets sound "Charge!" and the foe vanquished by the knight on the white horse riding across the Potomac. My friends might have been moved by an "Ad Astra per Aspera" speech or an "everything's coming up roses" declaration. But probably not. Skepticism is the vogue.

What they really wanted to hear is that Big Daddy's going to take care of everything and his pore li'l children won't have to turn a tap. And when Bradford didn't say that, they concluded he had said nothing at all.

What Bradford did say, while mild in tone and manner, is important. Here are some quotes my doubting friends can paste in their hats for periodic perusal while on pie-in-the-sky expeditions:

"We will help this community help itself."

"We don't know what's best for Salina. The people who know that are the people who live here."

"I'm enthusiastic about people, not procedures. We've found the type of people and the capability here that ends up in good results."

"You should start thinking about the long-term objectives of Salina."

What Bradford was saying is simply this: what happens to abandoned Schilling Air Force Base, for weal or woe, is squarely up to us. Despite the horror stories one hears about Federal bureaucracy shoving square pegs into round holes, Bradford and his fellows aren't in the least bit interested in force-feeding Salina.

They advise, they'll help and they'll point out possible pitfalls, and they'll cut redtape with great and good glee.

But the blueprint, the grand design must come from here.

If it upsets my skeptical friends to be masters of their own destiny, that's just too bad. Frankly, I like the feeling.

In the organizational meetings held by the development council, prior to the mid-January conferences with Federal officials, a lengthy list of objectives, both of a general nature and specific missions, and a preliminary procedural outline was discussed at length. The obvious needs for moneys to pay expenses of the council, the need for constant liaison with Schilling Air Force Base, the desirability of a coordinated procedure to handle publicity, the maintenance of constant contact with the Office of Economic Adjustment, the need for a permanent office space, and the immediate need for a full-time coordinator-consultant to man the council office were a few of the more urgent items that faced the group. Congressman Bob Dole's offer of space in his newly established headquarters in Salina, together with the services of his secretary, was quickly accepted. Suite 905 in the United Building, Salina's only skyscraper, was a most desirable location as a meeting place for the many businessmen and community leaders who would be involved in the council's work in the months that followed.

On the day prior to the arrival of the Washington delegation, Wilson & Co., Engineers & Architects, offered the services of one of their professional staff members to the council for a period of 3 months as a donation in the all-out community effort to plan an orderly transition of Schilling from military to civilian uses. Professional Engineer-Planner R. A. McAuliffe, has had considerable experience in the evaluation and planning of a number of Strategic Air Command bases throughout the United States, including the then current master plan for Schilling Air Force Base. This experience included knowledge of the availability of plans and data at the base and in the files of Wilson & Co. Wilson & Co. had also acted as consultant designers for a large percentage gf the buildings and structures at Schilling, as well as for the airfield pavements, utility systems, and supporting facilities. This arrangement continued until April 1965, at which time the Department of Defense assumed the coordinator's salary expense for 3 additional months. Since that time, the expense of providing a coordinator has been borne by Salina.

During the month of January there was much evidence of a widespread intention of the people of the community to unite in support of the Schilling Development Council in the formulation of a plan to utilize the base for civilian purposes. Civic clubs, business associations, and individuals pledged their full support to the council. Many offered personal time and resources and many suggestions were received, as well as a wide range of personal opinions.

Salina city officials, with the full support of the business community, decided to schedule the bond elections for the city's share ($1.1 million) of a joint county-city governmental center and a new police administration building and for a new public library ($670,000). City officials had been encouraged by what they had heard from urban renewal representatives who attended the mid-January meeting. Urban renewal representatives were in Salina for a day-long series of meetings within 3 days after receiving a request from the city for a conference on the possibilities of urban renewal assistance. This was the first concrete evidence of compliance on the part of a Federal agency with the promise by OEA to do everything possible to assist the city in its recovery endeavors.

In a statement issued in late January, the Schilling Development Council said that its basic policy would be the use of the soon-to-be-closed base for industrial sites and related endeavors. In the council's opinion the creation of jobs and payrolls was most imperative. A local forecast of impacts that would result from the closing was loss of 32 percent of income, 25 percent of population, and some 3,900 vacant dwelling units—predictions that proved to be quite accurate. In the same announcement, the council reported that it would not rule out the other uses that had been suggested or that might be developed in the months ahead. In the group meetings during the mid-January conferences with Washington officials it had been pointed out that large areas, and particularly those in the residential, recreation, and community portions of the cantonment area, were best suited for educational and related uses. The award-winning new base hospital, and its related facilities, was most certainly best suited for medically associated uses. The council pointed out that education and medical development was in every sense an industry. They would create jobs and payrolls that would be equally important to those created by industrial and commercial organizations.

Much of the council office time was devoted to the development of detailed inventories of buildings, utilities and related facilities and in the preparation of maps of the base for use in the evolution of a master land-use plan. Until the inventory was completed, the majority of the local leaders did not fully realize the size of the facility, the numbers of buildings and structures, and the complexity of the installation. In cooperation with the chamber of commerce, a single page brochure announcing the availability of properties and listing thumbnail descriptions of the airbase buildings was prepared in great quantities and a mailing program was instigated through various committees of the chamber of commerce. The urgency of getting this information promiscuously scattered over the country was certainly overemphasized and the time and monies involved did little, if any, generating of industrial interest.

The council recognized the need for well-defined channels of communication between themselves and the public and appointed spokesmen to cooperate with the newspaper and the radio and television stations. The council also selected members to accept invitations to speak before the service clubs, association groups and similar organizations to keep the citizens aware of the activities of the development council.

By the end of January the base's military population had shrunk from approximately 5,000 to 4,200 men. The B–47 jet bombers were gradually disappearing from Salina's skies and the first of the Atlas

missiles was lifted from its silo and shipped to California. Salina's two hospitals began to feel the effects of the closure of the base with the loss of 25 percent of their registered nurses and nurses aids who were leaving town with their Air Force husbands. Similar losses were felt in the school system as teachers left; and in a multitude of Salina businesses as military part-time employees, and military wives and children left. While these losses were, for the moment, difficult to replace, there was a benefit in that movement of military-connected personnel from civilian jobs lessened the impact of the drop in economic activity upon Salina jobholders.

During January, representatives of various branches of the military began visiting the base in great number. As a result of these visits the community was subjected to many and varied rumors of base reactivation by these other branches of the service. Some of these rumors appeared to be quite factual and the development council hurried to check them out with the OEA staff in Washington. The rumors were to persist until June of 1965 even though the council had received a number of assurances from Washington that the base was surplus as far as the military was concerned. Cyrus Vance wrote that the Department of Defense had no plans to use all or part of the base but confirmed that several potential uses had been checked and had been found to be impractical. He assured the council that the findings of these visiting teams were negative in every instance. Despite these assurances the rumors were giving the council much to worry about. Civic leaders had agreed that the community would be better off in the long run to face the economic loss of the military rather than have another relatively short-lived military occupancy.

Early in February the community was contacted by the first of three potential Job Corps contractors. The development council advised each of these corporations that Salina was directing its efforts toward permanent payroll increases and therefore was not then interested in Job Corps use of the base.

Don Bradford, in the mid-January meeting and in subsequent conversations, had emphasized the need for Salinans to develop a use plan for the base—one which put in concrete form the community's objectives for productive civilian use of the facilities.

Early in February the first tentative land-use map was developed, together with a list of the facilities the council considered necessary to establish a new municipal airport at the base and including the supporting revenue-producing facilities. This tentative "save" or "want" list for the "airfield package" was developed in conformity with the preliminary proposals that were being prepared for a technical institute (13th and 14th years of school), the vocational-technical school (11th and 12th), and for a second campus for Kansas Wesleyan University. The history of the successful transition of the base from military to civilian purposes is, to a major extent, the story of the educational programs. The educational uses of the base are covered in detail in the appendix.

From the day of the closure announcement, Col. John F. Scanlan, the base commander, and his staff officers became intimately involved and concerned with the work of the development council. From the very beginning there was continued liaison and communications between the base commander's office and the Schilling Development Council and the Salina Airport Authority. Early in February,

Colonel Scanlan briefed the council on the procedures that were being initiated for early release of certain specific buildings and the problems that would be involved. The necessity to maintain security measures until the mission of the base was entirely phased out, as well as the possibility of early occupancy of certain buildings, was reviewed. In these early days of planning, Colonel Scanlan explained how base operations would be gradually withdrawn into smaller and smaller areas and into lesser numbers of buildings as these operations diminished. His announced plan to withdraw to the hospital area has proven to be well conceived and practical.

One of the first major tasks of the development council was to develop a means by which the city could acquire, own, maintain, operate, improve, and dispose of portions of Schilling Air Force Base. Kansas law had no provision for local governmental ownership and operation of surplus Federal facilities. Yet, Salina wanted to be the master of its own destiny—and, as a result, felt it necessary that a governmental body be empowered to deal with the GSA in the acquisition of the airport and industrial portions of the base.

On the advice of the Office of Economic Adjustment, the development council enlisted the assistance of a number of Salina lawyers to begin the drafting of acceptable enabling legislation that the Kansas State Legislature would be asked to adopt which would permit the city to create an authority empowered to acquire and control surplus real or personal properties of the United States, as well as to levy taxes and issue bonds to provide revenues. The legislation was developed from studies of similar laws in other States having communities where defense installations had been closed.

In mid-February, during a visit by a representative of the Office of Economic Adjustment, the development council was advised that in many respects it was moving too fast and that more effort should be directed toward the more basic determination of a land-use plan, the completion of a list of personal properties to be requested, and related basic decisions. Too much time and energy was being directed toward attracting industry and in following industrial client leads during these crucial planning months. The council was advised that these efforts were premature. No positive commitments could be made to prospective industries with respect to occupancy, availability, and many other essential considerations at that early date. The successes and failures of Salina's industrial development activities are the subject of a separate section of the appendix.

On the 25th of February, the last B–47 left the base and the first land use plan was presented to the community leaders for their review. The plan was reviewed in a series of meetings followed by a conducted tour of the base to acquaint the council and members of the city commission with the details of the plan. After making a few relatively minor revisions, the plan was adopted by all concerned and presented to the OEA for distribution to the Federal agencies that would be involved. The plan envisioned the use of the base as an airport-education-industry complex. The five part proposal involved:

1. The "airport package," including a municipal airport and supporting facilities.
2. The area vocational-technical school in a five building complex.

3. The proposed Kansas State University Technical Institute with supporting facilities.

4. Medical or educational use of the base hospital and community facilities area; possibly a second campus for Kansas Wesleyan University.

5. Sites and/or buildings for industry.

It was emphasized that the plan was still to be considered fluid and that the boundaries delineated on the maps were subject to change. The land-use plan, which would serve as the basis for negotiation with the Federal Government agencies in the purchase or transfer of surplus properties, was expressed in terms of "packages." The word "package" was adopted to describe the various proposed uses of Schilling. Assuming passage of permissive legislation, the Salina City Commission would create a public airport authority. This authority, or public corporation, would negotiate with the federal government through the General Services Administration to purchase that portion of Schilling which would be used as industrial sites. At that same time, the authority would take over at least part of the base for operation of a public airport. In the airport package would be considerable open land area and certain buildings suitable for lease for revenue-producing purposes. Rentals from these airport-associated buildings, plus regular airport revenues, would be used to maintain the airfield portion of Schilling. Chairman John Williamson cautioned that it was going to be a long, long road and that we must not give way to impatience. In his opinion the potential was worth the effort that the community must now make. If the community did not make the effort, a great opportunity would be lost.

The decision to utilize the airfield facilities at Schilling for a municipal airport was the nucleus of the land-use plan. Detailed engineering evaluations of the existing modern municipal airport were completed. Estimates of the cost for capital improvements that would be necessary at the existing airport in the next decade and at Schilling were prepared. Operating and maintenance cost estimates and comparisons were made for the existing airport and for the potential airfield facilities at Schilling. The decision to abandon the municipal airport and relocate that vital community facility to Schilling is also the subject of a separate section of the Salina story.

Senate bill No. 235, after intensive review by all parties concerned, was processed through the Kansas Legislature in the last days of March and early April. On April 11, Gov. William Avery signed the bill and the essential permissive legislation for the acquisition of the Schilling Airport and the supporting utilities networks was available to the city of Salina.

Prior to the announcement of the closure of Schilling Air Force Base, Salina had been struggling to work itself out of a surplus of housing (a 6 percent vacancy rate had existed as early as 1960). Over 1,000 new housing units, primarily single family residences, had been constructed during the early 1960's when the Atlas missile complex was being constructed and, after that work was completed, nearly a thousand units were left vacant.

The majority of the new residential construction had been in new subdivisions offering single-family units in the $9,000 to $18,000 range. Most of them were in the immediate vicinity of the base—an area which could have been sorely impacted were the adjacent 735 military

Capehart units to be placed on the market. Further, as a means of alleviating a serious housing shortage immediately after Schilling was reopened in 1952, over 600 units of low-cost marginal housing had been constructed in an area known as Indian Village. The majority of occupants, in 1964, were Air Force personnel in the lower enlisted grades. The combination of the above factors led to much concern among Salina leaders as to the impact of the base closing on Salina's residential housing market.

During the mid-January meetings, the Salina community was assured by Mr. Bradford that the Government would not add to the real estate problem by offering the 735 Capehart housing units that were a part of the Schilling complex. Local real estate interests were told that the conversion of these units to civilian occupancy would be delayed until the community had worked itself out of the already existing problem and the additional units that would become vacant because of the base closure. In the early months of 1965 the problem of what to do with the Capehart units became a much discussed subject of local conversation. Everyone, particularly those in governmental circles, agreed that the situation was not to be easily solved. As the reassignments of the military force to other bases accelerated the numbers of vacated Capehart units increased rapidly. Suggested uses for these fine residences included the development of a senior citizens community, a satellite residential community to Fort Riley, and for married student and faculty housing for the proposed technical institute and Kansas Wesleyan University. As early as mid-January the suggestion to use part or all of the 735 Capehart housing units as a government-operated housing installation, available to military families of servicemen overseas, was being debated. Officers and enlisted personnel were being continuously sent overseas for extended periods of duty. Quite often they were being sent to locations where there were no housing facilities for their families. This was truly a real problem because many of the wives and children had no place to go. Such use, it was said, would eliminate the need for military leaves while the men involved sought a home for the family, would eliminate worry for those unable to find housing, and would be a most appropriate use of a government investment of millions of dollars. Salina, with a school system geared to the Schilling population, could accommodate the students with no strain. The excellent school facilities at Schilling Manor could be kept open to take care of the children of the families of men who were on duty overseas.

In August of 1965, after review of the problem at Army, Air Force, and DOD levels, Colonel Scanlan announced that the DOD had directed the inauguration of a program which would open Schilling Manor to families of the military who were on overseas duty. Initially, Colonel Scalan gave approval for about a dozen Fort Riley families to move into Schilling Manor as a test of such a program. By the middle of September over 50 families had moved into the available housing units.

On October 26th it was announced that the Army would take control of the entire housing area. Because it was a unique project, Washington said that the idea would be studied through fiscal year 1967 and, if successful, similar housing projects might be opened in other areas of the nation. On the 3d of January 1966, the Schilling Manor area became a subpost of Fort Riley and the Army took over the respon-

sibility of management. National publicity on network television and radio and in the major newspapers of the country gave Salina appreciated publicity.

The Salina school board, which had been responsible for operation of the Schilling Manor School, the largest grade school in the system, decided in August of 1965 that the school would not be reopened in September 1965. The projected enrollments dictated that it would be more economical to transport the decreasing numbers of military children to in-town schools and the school board received directives that the school equipment be released to other federally impacted areas. The popularity of the "waiting wives" program had not been anticipated. As early as February 1966, the Salina school board found itself with a school population explosion problem. As many as 50 new students were added in a single day. The problem of transportation to the city became a major undertaking. Although there are day-by-day changes in the projections, it is a certainty that the school population for the Schilling Manor School will exceed 1,200 in September 1966—the average family size is about five children per family—and in mid-summer 1966 there were some 500 families in residence.

The community of Salina warmly received these new residents in a number of ways. For example, the community donated $1,000 to finance the start of a "Waiting Wives" Club. Activities were arranged for the wives as well as the children. Letters to the community from the fathers overseas expressed gratitude for relieving them of a major source of worry and concern.

In mid-April 1965, immediately following the passage of the enabling legislation, the Salina Airport Authority was created by the city commission and on April 26 five citizens were appointed to serve as directors. Named to the board were:

M. J. Kennedy, Kennedy & Coe, certified public accountants, who was selected as the airport authority's first chairman.

William Yost, field underwriter, New York Life Insurance Co.

Clifford J. Wertz, president, Consolidated Printing & Stationery Co.

Edward H. Bell, Bell Motor Co.

Allen R. Dodge, president, Homestead Building & Loan Association, who also had served on the Schilling Development Council.

By the 1st of May approximately 50 percent of the base personnel had been transferred to other assignments and the base phaseout was increasing in speed at every level to meet the official closing date of June 25.

On the 7th of May the newly formed Salina Airport Authority held its first official meeting. At this first session the authority was briefed by the development council members on the events that had taken place and the status of the various "packages." A lengthy list of problem areas in the coordination of the closure was reviewed in detail and the authority was advised of the complexity of these many matters. The airport authority devoted the next few weeks to preparing for a second visit by representatives of both the Washington and the Kansas City offices of the Federal agencies involved.

One of the more important problems that faced the newly formed authority was that of resolving a growing list of conflicts between the

"packages"—conflicts which needed to be resolved locally. Local leaders had been advised months before that no Federal agency would act as an artitrator in a dispute between two different local interests. Because of a lack of full communication, conflicts had been developed between the Kansas Wesleyan proposal, the Schilling Institute proposal, and the municipal airport "package." The university was including areas and buildings that were also in the preliminary technical institute planning. Members of the industrial development committee of the chamber of commerce were showing buildings to prospective clients that were in one or another of the educational "packages," and equally serious variations of this general situation. In a series of meetings in mid-May these conflicts were eliminated and procedures agreed upon to prevent reoccurrence.

On 24 May 1965, Don Bradford led a large group of Federal officials from Washington and from the Kansas City regional offices in a 3-day series of meetings with base officials and community leaders. The No. 1 purpose was an attempt to set up a timetable for the takeover of areas of the base by the proposed civilian users. In substance, the only definite date decided upon was that of occupancy of certain buildings by the Vocational-Technical High School, which was committed to opening its doors on or before September 1. It was decided that an occupancy permit would be made to the Salina board of education by mid-July. Mr. Bradford told a news conference that he wished he could tell the community that the other "packages" were as close to reality. He commented that the disposal of a base as large as Schilling was enormously complex and that each proposal involved hundreds of details and many decisions. It was at this meeting that the community leaders fully realized a basic fact of life with respect to conversion of Federal property to civilian uses through the established procedures of surplus disposal. The community had, from the very day of closing, been directing almost all of its inquiries toward Washington. They, as they had been warned, became aware of the importance of the regional offices of the agencies involved in implementing the disposal procedures as set forth in the laws and regulations for such actions. While it was true that Washington approval was required in many instances, the fact remained that without regional approval our proposals would be of little value. Except for necessary liaison and communication with the Office of Economic Adjustment in Washington, the community leaders turned to the regional office representatives for assistance and advice.

The requirement that the entire facility be appraised by qualified appraisers prior to the transfer of any properties had been a subject of much discussion and, in the first week of June, that work began. In an effort to expedite this phase of the disposal procedures, the Airport Authority office assisted the appraisers in every way possible to bring that long and involved task to a quick conclusion.

Chapter IV

Implementing the Conversion Plan

In June 1965 the mood of the community was changing and the authority members were spending more and more long days away from their businesses.

"You know," said an airport authority member, "I don't hear even the chronic crybabies crying any more. Perhaps they are afraid to, but I certainly don't hear them. It's been a lot of work, but it's been enjoyable. It's an education—every day is different. I don't want to sound stuffy, but you get a sense of accomplishment. You really do. I like to feel like we're doing something for the community. That makes the hours worth while. The big job still is ahead of us. What we have done so far is prepare for it. I'd like to stress the tremendous cooperation we have received from all public bodies and from private citizens as well. That's been most impressive to me."

With the official declaration of surplus announcement on the 29th of June 1965 came the realization that that milestone would increase the activity between the Salina institutions and the regional Federal offices. Everyone expected a blizzard of paperwork. The airport authority and the educational interests were developing a mountain of paper and were anticipating early decisions on the part of the Federal agencies. The first major development was expected to come from the Salina Area Vocational-Technical School. A detailed proposal to the Department of Health, Education, and Welfare had been completed and was under study in the HEW regional office. Farther away was the massive "airport package" which would involve the Federal Aviation Agency.

The man on the street was discussing the fact that Schilling Air Force Base was officially out-of-business as a fighting unit on the 25th of June. The revolving airfield beacon atop the watertower was dark. The control tower stood empty and the aircraft aprons were no longer filled with aircraft. The noise of power lawnmowers had replaced the noise of jet aircraft. The Schilling story, which began in the early days of World War II with a cluster of tar paper shacks, was concluded with the ceremonies involving the folding, packaging and shipment of a gold-fringed blue flag to Air Force archives.

However, on that day a new squadron unit was activated under the command of Colonel Scanlan. Not one hour was lost in the maze of work involved in the transition. The new command wasn't an impressive one, since it had no aircraft, no machine shops, no battle flag, and no combat mission.

On that day it was estimated that the closure and transition was approximately 6 weeks ahead of the original timetable. The commander's statement that he would try to keep the place cleaned up and in repair was carried out to the letter. Except for neatly placed "off-limits" signs and the stillness that prevailed throughout the next 12 months, the appearance of the base buildings and grounds was to remain excellent. Without exception, military and civilian visitors to the base—and there were hundreds—commented that there was no active military installation that could claim a higher degree of basic maintenance and appearance.

The activities of the airport authority and those of the other local institutions materially increased in the weeks that followed the declaration of surplus. On the 29th of June the Urban Renewal Agency granted the community funds for planning and reserved additional funds totaling nearly $1 million for the anticipated development of a city-county government and Civic Center. This tremendous boost to morale was certainly significant. On the 2d of July the Air Transport Association released a report which said that

the existing Salina Municipal Airport was deficient in landing aids which added impetus and justification to the "airport package."

Less than 24 hours after the base had been officially declared surplus it was announced that the Kansas Highway Patrol would establish a training academy and a district headquarters in Minute Manor. Minute Manor, the former readiness bomber crew building used by the aircraft crews while on alert, was occupied under a temporary occupancy permit. The building was a part of the proposed "airport package" and the airport authority had agreed with State officials to arrange for a permanent lease when the building had been transferred to the authority. The structure, which cost almost one-half million dollars, was ideally suited for such usage. The peculiarities of its design would have made it difficult to find other appropriate users. The structure, most of it underground, is a two-story, air-conditioned, reinforced concrete facility with living accommodations for 70 men, including lounges, classrooms, dining room, kitchen, and built-in communication facilities. Its construction made it particularly desirable as a hardened site for highway patrol radio equipment, as a backup for the civil defense warning system, and as a severe weather information headquarters. Areas in the outlying reaches of the airfield pavements were available for pursuit driving classes and indoor and outdoor pistol and rifle ranges were also accessible to the patrol. On September 27, 1965, the first class of patrol recruits began study and on December 3, 1965, the first class of recruits was graduated.

The airport authority, acting as the coordinating body for all of the potential users of Schilling properties, had been advised in the very early days of conversion planning that it would be necessary to have a land survey made of the base so that the eventual property transfers and deeds could be prepared in conformance with all legal requirements. The sprawling complex of over 3,300 acres was measured and mapped for purposes of the military, but this information was not adequate for proper description in civilian property transfer documents. The streets, for example, would have to serve a number of users and owners, and logic dictated that a street system should be under the control of one public agency. A basic street system was therefore imperative, yet the existing streets were not defined by rights-of-way. There was need to consider the necessity of assigning easements and rights-of-way for both overhead and underground utilities and for the major drainage ditches which traversed the cantonment areas. The land-survey problem can be best described as subdividing in reverse.

The airport authority was advised by Washington officials that the survey problem was the community's, and that, despite its complexities and cost, the community would have to solve that problem itself. Early in July of 1965 the work was started as a joint project between the city of Salina engineering department and Wilson & Co., Engineers & Architects. The work was not completed until mid-April of 1966. The survey and platting, delayed to some extent during the winter months, cost the community approximately $25,000 and is the largest single precise land survey ever accomplished within a radius of many hundred miles. The platting required 27 large maps to illustrate the area which has a perimeter of over 12 miles. In record time the platting was processed through city and county planning boards and commissions and was approved and registered at the local courthouse

on the 3d of May 1966. Immediate plans were then made to initiate the legal procedures necessary to annex the base to the city of Salina; a process which was completed in August 1966.

In establishing the platting of the base, it was necessary to rename the streets because they were duplicates of street names already existing within the city of Salina. It was suggested that the streets of Schilling subdivision be named for past base commanders during the days that it was a bustling Strategic Air Command installation. The list was long and when the final decisions were made, Mayor Waddell took it upon himself to inform each of the former commanders of the honor paid them.

The "Notice of Surplus Determination—Government Property," received on June 9, 1965, summarized the applicable regulations that provide that non-Federal public agencies shall be allowed a reasonable limit of time to develop a comprehensive and coordinated plan of use and procurement of surplus real property in which it might be interested. The notice further stipulated that the community's intentions were to be received in writing and filed with the General Services Administration within 20 days. On July 15, the Salina Airport Authority delivered its written notice to GSA. The letter stated that the Salina Airport Authority and its predecessors, the Schilling Development Council, had coordinated the planning of all qualified public agencies in the development of a plan of use for the entire Airbase, and that the planning had been coordinated with GSA, FAA, DHEW, and the Corps of Engineers. The total plan as of that date included the following proposed usages:

1. An area and six buildings for the establishment of an area vocational-technical school to be operated by the Salina school board. This proposal had been coordinated with the aforementioned agencies and had been formally submitted and approval granted and the school was expected to open September 1, 1965.

2. The State of Kansas Legislature had passed enabling legislation to permit the establishment of a technical institute for the State of Kansas at Schilling Air Force Base. A board of directors had been chosen and this board had selected a president for the new institution. A tentative proposal was being reviewed by the DHEW for their informal comments and recommendations. A formal application could be expected by August 1. This proposal involved two areas and a number of educational, residential, and student recreational buildings, as well as open, undeveloped areas.

3. A proposal was being prepared by Kansas Wesleyan University involving an area and buildings which would become a second campus for the university. This proposal could also be expected to be ready for submission within the month of July.

4. A proposal was being drafted by the Kansas Department of Vocational Education to utilize the hospital and related residential buildings as a state center for vocational rehabilitation. The area and the buildings involved in this proposal were in conflict with the Kansas Wesleyan University proposal. This conflict would, however, be resolved by the Salina community after consultation with the Federal agencies involved.

5. The Salina Airport Authority was presently preparing a proposal to utilize the major portion of Schilling Air Force Base

as the Salina Municipal Airport; including certain buildings and areas to be used in support of the municipal airport. This proposal was being prepared in consultation with the Federal Aviation Agency regional office and would be ready for formal submission within the month of July.

6. The Salina Airport Authority was also authorized to consider the purchase of land, buildings, structures that are not included in the proposals previously outlined for the purpose of industrial development. The airport authority requested that the GSA consider that the balance of surplus property not included in the above proposals be made available for purchase in the name of the authority; if the price for such property was acceptable.

This formal letter complied with the GSA requirement and outlined the community's intention of utilizing the entire Air Force base property, including certain essential off-base properties. Nothing said in the formal letter of reply was news to the Federal agencies involved. In the previous months there had been numerous contacts with these agencies and they were fully aware of the community's intentions. However, the formal reply had the effect of speeding the efforts to submit acceptable proposals to the Government. On the 11th of July, Kansas Wesleyan University submitted its revised application to DHEW. The technical institute, which by the wording of its enabling legislation had become known as the Schilling Institute, filed a formal application with DHEW late in July. On the 28th of July, the Salina Airport Authority forwarded its application to the Federal Aviation Agency proposing the utilization of Schilling facilities as a relocated Salina Municipal Airport. The vocational rehabilitation center application was submitted to DHEW on August 6. The proposal of the area vocational-technical school had had prior informal approval and was not required to resubmit a request for facilities.

The educational (area vocational-technical school, Schilling Institute, and vocational rehabilitation center) proposals, as well as the municipal airport application included requests for sufficient movable property and equipment to enable the activities to get started. These requests covered the gamut from beds to sophisticated airfield electronic equipment—and their fulfillment became a major task of the base commander and OEA in Washington. All recognized that Salina could not, while suffering the major business impacts, enter into a major equipment purchasing operation in order to get the new activities off the ground. Yet, Federal surplus property disposal procedures were comprehensive, complex, and time-consuming. A number of new approaches were adopted, with the OEA taking up the problem in critical areas. Among these were:

Early in the planning it was agreed that the concept of relating equipment to a building and its planned civilian use would be adopted. In this way, a lathe could be transferred to the vocational-technical school as a part of the shop training building. Both would be subject to a discount of up to 100 percent of fair market value. (It should be emphasized that this technique does not have the same attractiveness in the case where full market price must be paid, since much military equipment is not necessarily well-suited to civilian industrial and commercial use.)

The Schilling base commander innovated a system whereby all excess property was made available for review by civic officials

prior to its being placed in the regular disposal process. As a result of this review technique, some 111,269 items of equipment and other movable property was made available to the community.

Certain items were critical to the intended uses. These included snowplows, control tower and instrument landing facilities for the airport; dormitory and dining hall equipment for Schilling Institute; and machine tools for the vocational-technical school. In these cases, OEA interceded at the Washington level to insure that the judgment of senior Defense Department officials was applied to the problem. To the credit of these officials, the Salina Airport will have a full capability—and the schools are able to meet their initial needs.

The 10 months that followed turned out to be a most frustrating and seemingly endless wait on the part of the authority and the leaders of the educational institutions. Numerous revisions to the proposals were requested as well as supplemental data and documents. There were times when the community leaders had the impression that they were losing not only time but that there was serious doubt whether the proposals were acceptable. Despite assurances from Mr. Bradford of OEA, and other officials in high places in the governmental agencies, much local enthusiasm began to turn to dissatisfaction and doubt as to the success of the past months of work. "Promises—promises—promises—only promises." "Typical of Government." "We should have expected it." Cooler heads, in the minority, prevailed. The airport authority continued with the items of work involved in the transition that were not as spectacular as the major packages but most certainly vital to the total plan. A tentative draft of an ordinance to zone the area in compliance with county and city zoning regulations was adopted. A list of restrictive covenants was developed to be enforced to protect all potential users of the base. The complexities of the takeover and operation of water, sanitary sewer, electric, gas, and telephone utility systems was the subject of many meetings and conferences. The airport authority learned with a shock that it could not raise operating funds through taxation for a full calendar year because it had not been in existence on the last day of the previous year and that its only source of revenue would have to come from "no-fund" warrants. These and other developments, and occasional publicity releases to the effect that everything "appeared to be on schedule," helped ease the situation until early in September when it was officially announced that Westinghouse had selected Salina as the site for a major lamp plant. For a few short weeks, local pressure on the Salina Airport Authority was relieved.

On September 3 the airport authority was notified that FAA had submitted their recommendations to GSA approving the authority's proposal to establish a municipal airport at the base. The airport authority immediately forwarded a formal application for transfer to the General Services Administration. The application was expedited through the regional office of GSA and forwarded to Washington. The authority was advised that they could expect the application to be in Washington at least 30 days before approval would be granted. On that basis, the committees of the chamber of commerce, who had been in contact with a number of prospective industrial users of base prop-

erties, began quoting possibilities of occupancy by the first of the year to their clients. Formal approval of the airport package was not to come until February 14, 1966. During the intervening 5 months the community waited, and it was difficult to convince many community leaders that patience was in order. The airport authority had been intensively engaged in negotiations with the Beech Aircraft Corp. for months and had agreed on tentative lease arrangements early in December 1965. Beech executives had emphasized that occupancy beginning the first of the year was most important in their decision to open new facilities.

During the 5 months of waiting for the approval of the key package in the disposal plan, that for the airport, the airport authority could claim no important progress. The community as a whole was receiving a considerable amount of glowing publicity from many sources and the local paper and local radio stations quite regularly publicized the truly remarkable efforts of local citizens who had given of their time and money to the problem of base conversion.

An out-of-towner State official was quoted as saying that "the loss of Schilling has been the greatest thing that has ever happened to central Kansas." In his opinion, Salina's past interest in the base had reduced its interest in the welfare of the area. He was quickly refuted by Editor Austin who seriously doubted that Salina had failed its friends but that certainly it was not the fault of the Air Force.

On the anniversary date of the announced closing the Journal reviewed the accomplishments of the past year in a series of feature articles. "It Was a Crisp November Thursday the Day That Salina Changed Directions"—"Salina Didn't Roll Over and Play Dead"—"How Does a Proud Air Force Base Die?"—"Airport Authority Faces Complex, Exciting Task"—"Black Thursday Revisited"—"Year One AS (After SAFB)"—"There Are Spots of Life Where Students Study." In one article the Journal reminded its readers of OEA Consultant John Kavanagh's statement in the first meeting with Washington and regional representatives when he said, "Don't let this thing become a power struggle within your own community. That kind of fratricide will kill you." Such a struggle had not occurred. The opposite—a spirit of cooperation, an ingathering of the forces of the community resulted in a number of feature articles in major newspapers from coast to coast who saluted DOD officials and the community leaders for their actions.

On December 6, 1965, the community read with considerable interest of Secretary McNamara's announcement of additional closings of military installations. This time the headline, "Kansas Bases Escape Axe" was followed by a question mark and the miniature letter in the Journal said:

> DEAR SAL: Well, at least Salina doesn't have to worry and wait any more.
> Yours,
> INA.

Salina could accept, quite dispassionately, the news that other military establishments would be closed. Editor Austin had this to say:

> From the viewpoint of logic, Secretary McNamara is right. It might not be entirely premature to say that Salina also was right when the town agreed to roll over and say "Uncle" in return for federal help in converting those concrete acres to civilian usage. Protests would have only delayed the inevitable. Indeed,

delay might have put us into greater industrial competition. The logic of the Defense move is that even those B–52's, which we so fondly anticipated, are headed toward obsolescence and are wearing out their days over Vietnam.

With the turn of the year, the airport authority continued its efforts at the involved task of developing a police and fire protection plan for the long awaited day when that responsibility would become the community's. The problems of jurisdiction outside of the city of Salina, supporting taxation, and related elements of the problem were discussed at length with the Air Force, with the Army who had taken over the Capehart Schilling Manor housing area, with county officials, and with city officials. However, the record for January has little else to reveal than "no word yet on the airport package proposal."

Immediately following the announcement in early February that the airport package had been approved, there began a series of requests from the airport authority, and approvals by the General Services Administration, for occupancy of buildings and structure which were a part of the airport package. Within a few days, the airport authority, with the cooperation of the base commander, obtained permission to occupy the majority of the buildings in the airport package. Although public announcements of industrial development successes were delayed to coordinate them with the wishes of the clients, the next 2 weeks was a most important period of time in the Salina story.

On the 25th of February the airport authority made its first big announcement. The headlines that day announced that the Beech Aircraft Co. had leased five large buildings and hangars to be occupied by the 1st of March and that Beech expected to employ 500 persons before the end of the year. Almost lost in the publicity on the same day was a similar announcement that a firm involved in the production of mobile home components had also leased a building and that they too expected to begin hiring and would be in production within a few weeks. A week later it was announced that Funk Aviation had leased a building at the base for the production of crop-dusting aircraft.

"We've only scratched the surface," said Salina Airport Authority member, Bill Yost, at this week's announcement of the location of Funk Aviation Co. at Salina. "In the near future we will have more space filled, and that's what we need. We have some big things in the fire. We have more prospects on the list."

That was the tone of the press conference, set by men involved with the development of the Salina Airport Industrial Center, the name that had been selected for the sprawling complex. The community was asked not to expect the economic development committee to make announcements of that nature every week.

Salina Mayor Robert M. Stark said that he was not particularly surprised at the progress made in development of the industrial center and educational complex. "These announcements, such as made by Beech, Funk, and Custom Metals within the past week, have only come about by a lot of hard work by a lot of people." Jim Trickett the industrial development director of the chamber of commerce, said, "Two national firms (Westinghouse and Beech) in the top 500 firms in the country have been attracted to Salina in the past year. I feel we have been very lucky."

Despite the accomplishments with respect to industry and the usage of the buildings in the airport package, the airport authority was devoting much of its time and energy to an equally important problem

which had not been solved. The proposal which would establish Schilling Institute and utilize a major portion of the residential and community areas of the base had yet to be approved. Our industrial contacts and clients had been sold on the potential of the industrial center on the premise that there would be a tcehnical institute in addition to the already established vocational-technical school. The trials and tribulations of the Institute had been numerous. The scope of the institute package had been revised, changed, and supplemented over and over again to conform to the recommendations of Washington and Kansas City officials of DHEW, and as dictated by changing emphasis within the State of Kansas itself.

The problems of the institute were not all the result of Federal direction or requirements. The institute found itself embroiled in a statewide controversy which at times seemed to threaten the very start of the institution. The role of the institute was certainly misunderstood by all of those who rose to oppose it. As might be expected, the objections came from persons involved with the junior colleges of the State and those who were involved with the area vocational-technical high schools, and were being generated by fears that Schilling Institute would be requesting and receiving state educational moneys at the expense of their own institutions and programs. In making these objections the spokesmen unfortunately revealed that they were not conversant with, nor did they understand, the purpose and role of an institute of technology. The basic concept of the institute had escaped them.

In May 1966, the institute had over 30 employees yet they had not received official approval of the plan to establish a State-sponsored institute of technology. However, the dam was broken in early July with the granting of rights-of-entry to both the institute and the vocational rehabilitation center. Final conveyances took place in August 1966.

Chapter V

Salina, Mid-1966

Only the first few chapters have been written of the Salina story. As of this hour, Salina's industrial pot is simmering. Craddock Uniforms have leased three buildings for the production of nationally known ceremonial and school band uniforms. Production of home moisture control equipment and of artificial marble began within days after the properties became available at the base. The first Beech King-Air rolled off the modification line on April 20. The Beech Aircraft Corp. excercised an option and rented three more principal buildings at Schilling for increased production at the new Salina Airport Industrial Center. A major seed company initiated a regional distribution center in a large base warehouse. A distribution center for wholesale frozen meats and produce will soon occupy the cold storage warehouse. And on July 14, 1966, the Salina Municipal Airport moved to new quarters at former Schilling Air Force Base. Renovations to the former base operations building had been completed to make it Salina's temporary municipal airport terminal building. Plans are envisioned to build a new terminal as soon as practicable.

If the Salina story was limited to the recounting of the successes and failures in the community's efforts to convert Schilling Air Force Base to civilian usages it would not be a complete record of accomplishment; nor would it reflect a very dramatic change in community attitude. Despite the irony of the slogan "City on the Move," while our Air Force friends were moving away, the city is truly on a comeback trail. The evidences of this condition are many and there are no apparent signs that the enthusiasm is waning or that important developments are declining. Salina can proudly say that it did not roll over and play dead. The Statler-Hilton Inn, a striking and sprawling complex in downtown Salina, will be under construction in a few weeks. Construction contracts have been let and the block-long site has been cleared. A large percentage of its cost will come from local sources. The citizens of Salina, only a few months after the announced Schilling closing, voted a two-to-one mandate for the construction of a new combination county courthouse-city hall-governmental center and new city library. The vote was taken on the stormiest day of the winter and was the largest in history for a special election. This project became involved with the urban renewal program and the clearing of a two-block downtown area will soon begin. A second urban renewal program will soon be finally approved enabling a local industry to accomplish a major expansion. Plans are being developed for a downtown multi-story office building. Building permits for commercial and industrial construction within the city itself are at an all-time high. At least three dozen business establishments have completed or are in the process of completing major renovations or new structures. The spirit hereabouts is one of determined optimism born by adversity. Salina's unemployment level, while slightly higher than a few years ago during the glorious days of boom, is below State and National averages. Westinghouse ballooned Salina's hopes and there are current rumors that their initial program will be expanded. The reason Salina can look forward to good years ahead is directly related to the spirit of zeal, efficiency, and capability of all the citizens who were so willing in giving their time in the transition period from a military to an industrial economy. Not surprisingly, some three hundred people are actively engaged in work on various boards, commissions and committees. These people, without exception, are capable, willing, and have had the right kind of experience to make a splendid task force for the work that has been done and will be done in the future. Retail sales are up, people are spending money and bank clearings and deposits have been showing increases over previous years.

Salina is on the Move!

"I don't know if your people know this," said Bradford, whose Office of Economic Adjustment provided early and continuing advice and encouragement following the Schilling closure, "but this has been a remarkable feat. I cannot say enough about what this community has accomplished and will accomplish. I use you all the time as an example to other communities facing similar problems."

APPENDIX A—THE EDUCATIONAL USES

It would be virtually impossible to recount the development of any one of the four proposals which were submitted to DHEW without continual reference to one or more of the others. The one exception to this generalization would be the proposal for the Salina Area Vocational-Technical School. From the very beginning of the development of a land use plan for the base, and lasting through the first nine months of planning, the other interests were in competition with one another for the buildings and acres of Schilling. Even the names of three of the institutions seemed to overlap. It still is not an uncommon request to explain the difference between the area vocational-Technical school, the technical institute, and the vocational rehabilitation center. In more recent months the Institute is being referred to as the Schilling Institute, rather than the technical institute, which has helped to relieve the confusion. Unfortunately, however, some confusion still exists, particularly in other areas of the State of Kansas.

AREA VOCATIONAL-TECHNICAL SCHOOL

Early in 1964 Salina was included with a number of other larger communities in the State of Kansas as a site for the development of a vocational-technical high school. The statewide plan envisioned these schools as serving areas larger than any single school district. The Salina board of education, acting through Superintendent Walter Ostenberg, was completing the preparatory work necessary to schedule a bond election for construction of the facilities when the announcement of the Schilling closing was made. Ostenberg quickly realized that it would be reasonable to expect that surplus governmental buildings and equipment could be made available for such educational usage. Within a very few days after the announced closing, preliminary contacts were made with DHEW officials in Washington and he was assured that, if the base was considered surplus by other governmental agencies, an application from the Salina school board would have high priority.

Prior to the mid-January meetings with Washington and Kansas City officials, the school board had surveyed the base and were unanimously in favor of requesting that a complex of three buildings be acquired for the purpose of establishing the area school. This head start is emphasized by a quote from the minutes taken at the meeting in mid-January with the Federal officials. "The discussion was primarily concerned with the vocational training school. Representatives from Bethany College, St. John's Military Academy, Marymount College, and Kansas Wesleyan University were left largely to our own devices." After pointing out that the school board had surveyed and recorded listings of personal property and equipment, and had picked out several buildings for the purpose of determining their suitabilities for a vocational school, Mr. Ostenberg asked when the board of education might expect to obtain possession of buildings. Dr. George Decker, of DHEW, suggested that the request must generate from the local community as it developed approved plans. Only then could a specific date be established. Mr. Bradford then pointed out that the vocational-technical committee needs must be