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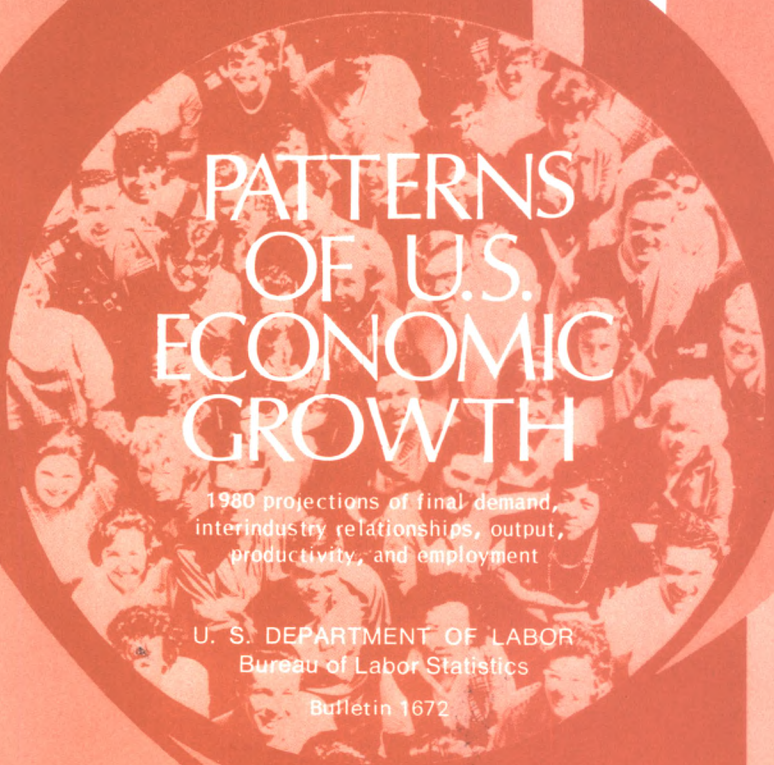

PATTERNS OF U.S. ECONOMIC GROWTH

1980 projections of final demand, interindustry relationships, output, productivity, and employment

U. S. DEPARTMENT OF LABOR
Bureau of Labor Statistics
Bulletin 1672

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This bulletin is the third in a series reporting on the BLS 1980 projections of the labor force, and industry demand, output, employment and occupation. "The U.S. economy in 1980: a preview of BLS projections," appearing in the April 1970 *Monthly Labor Review,* initiated the series; BLS bulletin 1673, *The U.S. Economy in 1980,* expanded on the Review article.

Other articles and bulletins are planned to present additional findings and evaluations for each of the major topics included in the initial study.

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1980 projections of final demand, interindustry relationships, output, productivity, and employment

U. S. DEPARTMENT OF LABOR
J. D. Hodgson, Secretary

BUREAU OF LABOR STATISTICS
Geoffrey H. Moore, Commissioner

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Preface

This bulletin presents projections of employment by industry for 1980, based on projections of the labor force, potential gross national product, the composition and industry structure of gross national product, and industry output and output per man-hour. Each of the elements in the sequence of projections is discussed in considerable detail in the chapters which follow.

The 1980 projections are part of a coordinated program of the Bureau of Labor Statistics in the field of manpower projections. This program includes detailed projections of the labor force, aggregate and industry demand, output, employment, and occupational projections.[1] A major objective of the employment projections by industry is to provide a framework for the occupational outlook program of the Bureau. In addition, detailed projections of demand, output, and employment have important uses in providing insight into the effects of alternative government policies on the distribution of gross national product and employment by industry. For businesses, these projections represent an important source of information for developing long-run capital investment and understanding changing market structures.

The projections presented in this bulletin are summarized in an article in the *Monthly Labor Review*.[2] Other articles and reports are planned to present additional findings and evaluation for each of the major topics included in the study.

This study is similar in content and technique to an earlier research project in which projections were developed for 1970.[3] Both studies were prepared within the Bureau of Labor Statistics as a part of its work on the Interagency Economic Growth Project. The Growth Project is chaired by a representative of the Council of Economic Advisors and has representatives from the Bureau of the Budget and the U.S. Department of Commerce and Labor. Various agencies and research groups perform research under its auspices.[4] The work of the Bureau of Labor Statistics in the Growth Project is under the supervision of Jack Alterman, Director of Economic Growth Studies.

This bulletin was prepared in the Bureau of Labor Statistics Office of Productivity, Technology and Growth. The study was performed by the staff of the Bureau's Division of Economic Growth. Ronald E. Kutscher, Chief of the Division of Economic Growth, was responsible for direct supervision of the projections and for preparation of the report. Donald P. Eldridge supervised the preparation of final demand estimates and assisted in the report preparation; Eva E. Jacobs prepared the aggregate

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economic projections and developed the projections of industry output per man-hour; Richard P. Oliver prepared the projections of military expenditures; William I. Karr prepared the projections of input-output coefficients; Thomas Fleming prepared the projections of State and local government spending and nondefense Federal spending; James Walsh projected business investment and residential construction; Charles Bowman projected personal consumption expenditures, exports and imports. Other staff who participated directly in various phases of the research were Arthur Andreassen, Steve Cochran, and Joyce Goins.

[1] Other substantial work by the Bureau on projections is contained in *Tomorrow's Manpower Needs*, Volumes I, II, III, and IV, (BLS Bulletin 1606), *Occupational Employment Patterns for 1960 and 1975* (BLS Bulletin 1955), and *The U.S. Labor Force: Projections for 1985*, (*Monthly Labor Review*, May 1970).

[2] "The U.S. Economy in 1980: A Preview of BLS Projections," *Monthly Labor Review*, April 1970. Reprinted with additional detail as Bulletin 1673.

[3] BLS Bulletin 1536.

[4] For a complete listing of research under the sponsorship of the Interagency Economic Growth Project see appendix B, Part II.

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Assumptions

The estimates of 1980 demand, output and employment presented in this report are not forecasts but projections of what the economy might be like under a given set of assumptions. One assumption is that the Viet Nam conflict will have been resolved and that defense expenditures will have been reduced somewhat, although the level will be still somewhat higher than just before the Viet Nam build-up. Another assumption is that the economy will continue to grow at approximately its potential growth rate based on continued high resource utilization.

Four alternative 1980 models are presented in this report. These four models are grouped into two sets of models—one set is called the basic models and the other the high durable goods models. Each of the sets has two models with identical characteristics throughout except for the unemployment rate which is varied: one of the models in each set has a 3 percent rate and the other has a 4 percent rate.

Most of the discussion throughout the text of the 1980 report will present the basic models. These are used because they represent what is believed to be the more likely projection to 1980 than the high durable models. The basic models reflect the long-term shift towards services and away from goods. In order to evaluate the difference it would make to the structure of employment if this shift were slowed down considerably, an alternative set of estimates were prepared that emphasize expenditures on durable goods. The high durable models are discussed in detail in chapter V and are summarized later in this chapter.

The basic models have the following characteristics: a 3 or 4 percent unemployment rate and a distribution of GNP that primarily reflects a continuation of past trends modified to take account of specific anticipated developments. As a proportion of gross national product, it shows personal consumption expenditures somewhat higher than in the past. State and local government purchases are also projected as an increasing proportion of GNP. Federal Government purchases on the other hand, show a sizable drop as a proportion of GNP, particularly when compared with current levels which include a large amount of Viet Nam related expenditures. However, Federal nondefense purchases are projected to increase relative to GNP so that total government purchases for nondefense functions, Federal as well as State and local, are projected to increase faster than the over-all growth rate and as a proportion of GNP. The Armed Forces in the basic models return to 2.7 million —about their pre-Viet Nam level. Investment, both nonresidential and residential, are projected to take a slightly larger proportion of GNP than at the present time.

In the high durable models the major assumptions are: a 3 or 4 percent unemployment rate and the major areas of demand related to durable goods a higher proportion of GNP than in the basic models. Therefore, Federal Government expenditures, particularly defense, do not drop as much as a proportion of GNP as in the basic models. Investment, both residential and nonresidential, are higher as a proportion of GNP than currently or than found in the basic models, and consumer expenditures for durable goods are higher in the high durable models. The other elements of demand—State and local government expenditures and consumer nondurables and services expenditures—are lower proportions than in the basic models.

Approach

The 1980 projections are made in a series of distinct but closely inter-related steps. First, the potential gross national product is developed based on a projection of the labor force, assumptions regarding the rate of unemployment and the level of the Armed Forces, and by projecting trends in average hours and output per man-hour. Given the potential gross national product, projections are developed of the composition of GNP among demand components—government, consumption, business investment and net foreign demand. Once the composition of GNP is determined, the detailed distribution of each of these final demand com-

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ponents is projected. In order to translate projections of industry demand into industry output requirements, input-output relationships which have been projected to 1980 are used. After the calculation of industry growth rate is completed, the final step is to derive the projected level of employment, by industry, by using projections of changes in output per man-hour by industry.[1]

Highlights

Gross national product in the basic models is projected to grow at an annual rate of 4.3 percent a year in real terms between 1965 and 1980.[2] This growth rate results in a 1980 gross national product of $1,165 billion in constant 1958 dollars under the 3-percent unemployment assumption and $1,155 billion under the assumption of a 4-percent unemployment rate.[3] The projected rate of growth in GNP of 4.3 percent a year is lower than the 4.9 percent recent rate of increase in aggregate output but higher than the long-run growth rate of 4.0 percent a year for the 1947–68 postwar period.

The overall growth rate in GNP is projected by taking into consideration changes in the labor force, hours of work, and output per man-hour. (See table 1.)

The labor force (1965–80) is expected to grow faster than in the 1957–65 period, 1.8 percent a year compared with 1.3 percent. The total number of jobs is projected to increase at a somewhat faster rate, 1.8 or 1.9 percent per year, compared with 1.1 percent.

In the 1957–65 period annual hours declined at a rate of 0.2 a year. During the projected period they are expected to decline also at a 0.2 a year rate. The projected decline in hours, however, will result to a considerable extent from the expected increase in part-time employment.

Output per man-hour is expected to grow at a somewhat lower rate than it has over the postwar period 1947–65 and particularly over the last decade. The slight decline in the projected rate of increase is due to the fact that the long-term favorable influence on overall productivity of the manpower shift from the low productivity farm sector to other higher productivity sectors had largely run its course towards the end of the sixties and would contribute less in the future than in the past.

To summarize: the 4.3 growth rate in GNP reflects a higher projected labor force growth, slightly higher projected growth in total jobs, greater growth in projected private jobs, continuation of past rate of decline of average hours and a somewhat smaller rate of increase of output per man-hour.

Composition of gross national product. Gross national product and its major components for selected years and projections to 1980 for the basic models are shown in table 2. In comparing the 1980 projections with the historical data, several observations can be made about GNP and its components. The ratio of consumption to GNP is higher (65.1 percent) in the 1980 projections than it has been in the past. While no clear historical trend in the proportion of GNP going to consumption is evident the slight proportionate increase for this category does not substantially depart from past relationships. The increase for consumption in the basic models reflects the underlying assumption that part of the declining Federal defense share of GNP is distributed to consumers either by transfer payments or a cut in personal taxes.

The relationship of investment to GNP for 1980 differs with respect to continuation of past trends for its two major components—nonresidential fixed expenditures and residential structures. Nonresidential fixed investment has shown considerable fluctuations in past years between 10.7 and 11.2 percent of total

[1] A detailed description of the techniques used in developing the 1980 projections is contained in appendix A.

[2] All projections throughout this report are for 1965-80. This is because the period 1965-68 has been substantially affected in many cases by the Viet Nam war. The data for the 1965-68 period are shown wherever available for use by those who desire more recent benchmarks. The growth rate between 1968 and 1980 is about the same as for the 1965-80 period—4.3 percent.

[3] All calculations in the 1980 projections were made in 1958 constant dollars. If a translation is made to 1968 dollars, the 1980 GNP would be something over $1,400 billion.

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Table 1. Factors determining gross national product, 1957, 1965, 1968, and projected 1980

Item	1957	1965	1968	Projected 1980		Average annual growth rate		
				Basic models		1957–65	1965–80	
							Basic models	
				3-percent unemployment	4-percent unemployment		3-percent unemployment	4-percent unemployment
Total labor force (thousands)	69,729	77,177	82,817	100,727	100,727	1.3	1.8	1.8
Unemployed	2,859	3,366	2,817	2,940	3,918	2.1	—.9	1.0
Employed: jobs concept [1] (thousands)	70,953	77,689	84,688	102,896	101,867	1.1	1.9	1.8
Total private	61,197	65,695	70,274	84,396	83,552	.9	1.7	1.6
Annual man-hours (per job) private	2,085	2,052	2,000	1,977	1,977	—.2	—.2	—.2
Total man-hours (millions) private	127.6	134.8	140.5	166.9	165.2	.7	1.4	1.4
GNP per man-hour private [2] (1958 dollars)	3.22	4.21	4.61	6.54	6.54	3.4	3.0	3.0
Total GNP (1958 dollars)	452.6	617.8	707.6	[3] 1,168.6	[3] 1,156.9	4.0	4.3	4.3
Private GNP (1958 dollars)	410.6	567.0	647.9	1,091.9	1,081.0	4.1	4.5	4.4
Total GNP (1968 dollars	553.8	754.3	865.7	1,427.8	1,415.7	3.9	4.3	4.3

[1] The estimates of 1980 employment start with an estimate of labor force which is a count of people and is converted to a jobs concept which is a count of jobs. This is more fully discussed in chapter II.

[2] The GNP per man-hour is private since by national income conventions government productivity is set at zero.

[3] This is GNP as was derived, in all other calculations it is rounded to 1,165 and 1,155.

GNP. Most of these years have been years of relatively high growth. The projections for 1980 reflects a constant relationship to private GNP based on these past few years of high resource utilization. The projections of the residential structures component of gross national product, on the other hand, represents a break with the past trend. As can be seen clearly from table 2, during the 1957 to 1967 period residential structure fell from 4.5 percent of GNP to only 3.0 percent with a slight recovery in 1968. The projections for 1980 do not continue this downtrend but show some increase from the recent ratio and a return to a proportion of GNP only slightly lower than prevailed in 1965. This turn around in the residential structures component of GNP reflects a reservoir of demand for housing resulting from the increase in household formations, from the growth in the elderly population who increasingly maintain their own residences, and from a backlog of substandard housing. The 1980 projected level of housing is consistent with meeting the levels called for in the national housing goals.

The 7.3 percent of GNP for Federal Government purchases for goods and services [4] in the 1980 projections is a drop from the 1965 level of 9.4 percent. The 1980 Federal purchases component of GNP reflect to a considerable extent a continuation of the downtrend of the 1957–65 period. Another way of looking at the decline in Federal expenditures as a proportion of GNP is to consider that expenditures by the Federal Government currently used for Viet Nam as well as any future fiscal dividends which may accrue, will largely be distributed in these models to Federal nondefense purchases and State and local governments through grants-in-aid and to business and consumers either through transfer payments or direct tax cuts. Although total Federal expenditures is projected to decline as a portion of GNP, Federal nondefense expenditures will be an increasing proportion of the total.

State and local government purchases had increased as a proportion of GNP from 8.3 in 1957 to 9.2 percent by 1965 and to 9.8 percent in 1968. The 1980 projections reflect a continuation of high rates of growth for State and local government purchases, but they do constitute some slow down from the very high rates of the most recent period. This slow down in the rate of increase results from an expected deceleration in school enrollment: an absolute decline at the primary school level and a slow down in the rate of increase for secondary schools and colleges. Though a slowing down of State and local expenditures is projected, they will still grow faster than GNP and are projected in 1980 to make up 10.8 percent of the total gross national product.

[4] Expenditures by the Federal government for grants-in-aid to State and local governments and transfer payments to individuals such as social security are not counted as Federal expenditures on the expenditure or demand side of the national income and product accounts.

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Projected industry output. In making the 1980 projections, for each of the components of gross national product discussed in the previous section, a projection of the detailed industry structure of demand is developed. These detailed bills of goods are translated into output for each industry by use of a projected input-output table.

In order to examine the sector composition of output a distribution of gross output originating is used.[5] An examination of table 3 reveals that sector composition of gross product originating is changing. The decline in the agricultural and mining proportions, for instance, is readily discernible.

The manufacturing sector has shown, for the historical period, a slight upward trend. However, the projections show that manufacturing's share will return to about the same proportions.

The proportions of gross product originating in trade and services have been rather stable in the past and the projections retain these proportions. Transportation, communication, and public utilities, and finance, insurance, and real estate have increased their proportion in the historical period and are projected to continue this relative growth.

Individual sectors. Table 4 shows those industries which are projected to grow most rapidly

[5] Gross output originating is a measure of the contribution of each sector in terms of payments to the factors of production. These payments, sometimes referred to as value added, when summed for all sectors, equal total gross national product. It differs from a sales or production value of an industry's output in that it excludes cost of materials, supplies, and services used in the course of production.

Table 2. Gross national product by major component selected years and projected 1980

[1958 dollars]

Component	1957	1965	1967	1968	Projected 1980	
					Basic models	
					3-percent unemployment	4-percent unemployment
Gross National Product	452.5	617.8	674.6	707.6	1,165.0	1,155.0
Personal consumption expenditures	288.2	397.7	430.3	452.6	758.3	751.9
Gross private domestic investment	68.8	99.2	100.8	105.7	186.3	184.7
Nonresidential	47.4	66.3	73.6	75.8	130.4	129.3
Residential structures	20.2	23.8	20.3	23.3	40.9	40.5
Net inventory change	1.2	9.0	6.9	6.6	15.1	15.0
Net exports	6.2	6.2	3.6	0.9	9.6	9.5
Government	89.3	114.7	140.0	148.4	210.8	208.9
Federal	51.7	57.9	74.8	78.9	85.0	84.3
State and local	37.6	56.8	65.2	69.5	125.8	124.6
	Percent distribution					
Gross National Product	100.0	100.0	100.0	100.0	100.0	100.0
Personal consumption expenditures	63.7	64.4	63.8	64.0	65.1	65.1
Gross private domestic investment	15.2	16.1	14.9	14.9	16.0	16.0
Nonresidential	10.5	10.7	10.9	10.7	11.2	11.2
Residential structures	4.5	3.9	3.0	3.3	3.5	3.5
Net inventory change	.3	1.5	1.0	.9	1.3	1.3
Net exports	1.4	1.0	.5	.1	.8	.8
Government	19.7	18.6	20.8	21.0	18.1	18.1
Federal	11.4	9.4	11.1	11.2	7.3	7.3
State and local	8.3	9.2	9.7	9.8	10.8	10.8

Gross National Product by Major Component Selected Periods and Projected 1965–80
(Average annual rate of change) [1]

	1957–65	1965–68	1965–80	
			Basic models	
			3-percent unemployment	4-percent unemployment
Gross National Product	4.0	4.6	4.3	4.3
Personal consumption expenditures	4.1	4.4	4.4	4.3
Gross private domestic investment	4.7	2.1	4.3	4.2
Nonresidential	4.3	4.6	4.6	4.6
Residential structures	2.1	—0.7	3.7	3.6
Change in business inventories	------	------	3.5	3.5
Net exports of goods and services	------	------	3.0	2.9
Government purchases of goods and services	3.2	9.0	4.1	4.1
Federal	1.4	10.9	2.6	2.5
State and local	5.3	7.0	5.4	5.4

[1] Compound interest rates between the terminal year.

SOURCE: Historical data are from the Office of Business Economics, U.S. Department of Commerce. The projections are by the Bureau of Labor Statistics.

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Table 3. Sector composition of gross output originating[1] selected years and projected 1980

[Percent distribution based on 1958 dollars]

Sector	Selected Years						Projected 1980	
							Basic models	
	1950	1957	1963	1965	1967	1968	3-percent unemployment	4-percent unemployment
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, forestry and fisheries	5.7	4.8	4.4	4.0	3.7	3.5	3.2	3.2
Mining	3.0	3.0	2.5	2.4	2.4	2.3	2.0	2.0
Construction	4.6	4.7	4.0	3.8	3.4	3.4	3.5	3.5
Manufacturing	29.7	29.7	29.5	30.8	30.5	31.2	30.3	30.3
Transportation, communication and public utilities	8.7	9.1	9.4	9.6	9.9	9.9	11.2	11.2
Wholesale and retail trade	17.0	16.6	16.8	17.0	16.9	16.9	17.4	17.4
Finance, insurance, and real estate	11.5	12.6	13.5	13.5	13.5	13.5	14.8	14.8
Services	9.3	9.2	9.5	9.3	9.4	9.3	9.6	9.6
Government and government enterprises	10.1	10.4	9.8	9.4	9.7	9.7	7.9	7.9
Other[2]	.4	—.1	.6	.2	.6	.2	.2	.2

[1] Gross output originating is the contribution of value added by each of the sectors to total gross national product.
[2] Includes rest of the world and statistical residual.

Source: Historical data are from U.S. Department of Commerce, Office of Business Economics. Projections are by the Bureau of Labor Statistics.

from 1965 to 1980. The ten sectors shown have projected growth rates ranging from about 6.0 percent a year (in real terms) for research and development to over 10.0 percent a year for office, computing, and accounting machines. Most of these industries have had high growth rates in the recent past so that the projections are a continuation of high growth rates for these sectors.

Projected Changes in the Structure of Employment. One of the primary objectives of the 1980 projections is to determine the effect of projected changes in the level and structure of demand on the employment structure by industry.

Total employment is projected to increase from 74.6 million in 1965 to 98.6–99.6 million by 1980, an annual rate of increase of 1.9 percent a year, which is considerably faster than the 1.2 percent a year rate which prevailed during the 1957–65 period.

The changes in the structure of employment between 1965 and 1980 as shown in table 5 generally are expected to be similar in many ways to those shifts experienced during the 1957–65 period. These changes—past or projected—are the net result of two basic forces: the rate of change in the output of the sector and the rate of productivity change within the sector. Increased output tends to require more employees; productivity increases mean that fewer employees are required for a given output. Thus, the service sector—which has experienced a high rate of increase in output and a relatively low productivity change—has had large increases in employment. This sector—including personal, business, and private educational and medical services, has the second highest rate of growth in projected employment of the major sectors and the largest relative increases as a proportion to total employment—up by over 3 percent from 1965 to over 18 percent of the total in 1980. Concomitantly, the 7 million new jobs projected in the service sector are the most for any of the sectors. These projections reflect a continuing shift in demand for services and lower than average increases in productivity for the service industries.

Agriculture—with moderately increasing output but a very substantial productivity change—has had absolute declines in employment. Agriculture is projected to continue to have large increases in productivity accompanied by small gains in output that will result in further declines in employment.

Mining employment also has been declining for many years. This is attributable largely to

Table 4. Industries projected to grow most rapidly in output,[1] 1965–80

Sector number	Sector name
51	Office, computing and accounting machines
63	Optical, ophthalmic and photographic equipment
57	Electronic components and accessories
66	Communications; except radio and TV broadcasting
28	Plastics and synthetic materials
68	Electric, gas, water, and sanitary services
52	Service industry machines
32	Rubber and miscellaneous plastics products
73	Business services
56	Radio, television and communication equipment
10	Chemical and fertilizer mineral mining
29	Drugs, cleaning, and toilet preparations
74	Research and development

[1] Output growth is change in real terms of gross duplicated output. This differs from gross output originating in that it counts in the output of each industry its cost of materials as well as the products primary to its output which are made in other sectors as secondary products.

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above average gains in productivity and decreased demand for mining products, particularly for coal. This sector is projected to continue to decline in employment, although at a reduced rate, because of some resurgence of coal demand.

Contract construction is one of the major sectors to show a substantially faster rate of growth in employment from 1965 to 1980 than from 1957 to 1965. Nearly 1.5 million new jobs are projected to be available in this sector by 1980. The projected increase in employment results from rising State and local government needs, sharply increased housing requirements, and expanding investment by business.

The manufacturing sector historically has had, and is projected to continue to have, the largest single share of total employment. It is, however, a declining share—from 25 percent in 1965 to just over 22 percent in 1980. This is a consequence of the sector's slightly lower-than-average rate of growth in output, particularly from 1965 to 1980, along with its somewhat higher than average productivity gain. Still, manufacturing is projected to provide between 3.5 and 4.0 million new jobs between

Table 5. Civilian employment[1] by major sector, selected years and projected 1980

[Thousands of jobs]

Sector	1957	1965	1967	1968	Projected 1980, Basic models, 3-percent unemployment	Projected 1980, Basic models, 4-percent unemployment
Total	67,842	74,568	78,906	80,788	[2] 99,600	98,600
Agriculture, forestry, and fisheries	6,233	4,671	4,196	4,154	3,188	3,156
Mining	868	667	649	646	590	584
Construction	3,701	3,994	3,981	4,050	5,482	5,427
Manufacturing	17,586	18,454	19,805	20,125	22,358	22,133
Durable	10,098	10,644	11,670	11,854	13,274	13,141
Nondurable	7,488	7,810	8,135	8,271	9,084	8,992
Transportation, communications, and public utilities	4,453	4,250	4,470	4,524	4,976	4,926
Trade	13,709	15,352	16,160	16,604	20,487	20,282
Finance, insurance, and real estate	2,786	3,367	3,569	3,726	4,639	4,593
Services	8,446	11,118	12,194	12,678	18,280	18,097
Government	7,616	10,091	11,398	11,846	16,800	16,632
Households	2,444	2,604	2,484	2,435	2,800	2,770
	Percent distribution					
Total	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, forestry, and fisheries	9.2	6.3	5.3	5.1	3.2	3.2
Mining	1.3	0.9	0.8	0.8	0.6	0.6
Construction	5.5	5.4	5.0	5.0	5.5	5.5
Manufacturing	25.9	24.7	25.1	24.9	22.4	22.4
Durable	14.9	14.3	14.8	14.7	13.3	13.3
Nondurable	11.0	10.5	10.3	10.2	9.1	9.1
Transportation, communications, and public utilities	6.6	5.7	5.7	5.6	5.0	5.0
Trade	20.2	20.6	20.5	20.6	20.6	20.6
Finance, insurance, and real estate	4.1	4.5	4.5	4.6	4.7	4.7
Services	12.4	14.9	15.5	15.7	18.4	18.4
Government	11.2	13.5	14.4	14.7	16.9	16.9
Households	3.6	3.5	3.2	3.0	2.8	2.8

	Average annual rates of change[3]			
	1957–65	1965–68	Projected 1965–80, Basic models, 3-percent unemployment	Projected 1965–80, Basic models, 4-percent unemployment
Total	1.2	2.7	1.9	1.9
Agriculture, forestry, and fisheries	−3.6	−3.8	−2.5	−2.5
Mining	−3.2	1.1	−0.8	−0.9
Construction	1.0	.5	2.1	2.1
Manufacturing	.6	2.9	1.3	1.2
Durable	.7	3.7	1.5	1.4
Nondurable	.5	1.9	1.0	.9
Transportation, communications, and public utilities	− .6	2.1	1.1	1.0
Trade	1.4	2.6	1.9	1.9
Finance, insurance, and real estate	2.4	3.4	2.2	2.1
Services	3.5	4.5	3.4	3.3
Government	3.6	5.5	3.5	3.4
Household	.8	−2.2	.5	.4

[1] Includes wage and salary workers, self employed and unpaid family workers.

[2] See chapter II for conversion from 102.5 million 1980 employment shown earlier to the 99.6 million shown in this table.

[3] Compound interest rates between the terminal years.

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1965 and 1980.

Total transportation employment has declined gradually throughout much of the postwar period, primarily because of a reduction in railroad employment. Recent increases in trucking and air transportation, however, have reversed this trend and total employment is projected to increase slowly through 1980. However, transportation's relative share of total employment is expected to decline further.

Communications and public utilities are characterized by higher than average productivity. The result is that, although services provided by these industries may increase sharply, employment will increase only moderately and decline as a proportion of total employment. On the other hand, employment in finance, insurance, and real estate is projected to increase at a faster rate than the overall average and to be a slightly larger share of total employment in 1980 than in the most recent period.

Because the trade function is interwoven so thoroughly with the economy, particularly the goods portion, changes in employment in this sector usually parallel those of the economy. Trade employment in the 1980 projections maintained exactly the same relative share of total employment as it held in 1965—20.6 percent. Given the very substantial size of the sector, trade is expected to contribute about 5 million new jobs between 1965 and 1980—ranking third among the major sectors as a source of new employment.

As a projected source of new jobs, State and local government ranks second with over 6 million jobs. In contrast, Federal Government civilian employment is projected to increase only moderately by 1980. However, since State and local government employment is much larger than Federal Government, the share of total employment attributable to government is expected to increase from 13.5 percent in 1965 to 16.9 by 1980.

Many of the Federal Government programs which may be expanded substantially by 1980 involve expenditures which are considered, in the national income and product accounts, as either transfers of funds to individuals and nonprofit organizations or grants to State and local governments. Examples of such programs are aid to education, manpower training and retraining, and antipoverty programs, medicare, and area development. From the view point of demand for final goods and services, expenditures resulting from these programs appear as purchases of goods and services by consumers and State and local governments rather than as purchases by the Federal Government.

Employment by the household sector, which has virtually stabilized in the past decade, is projected to increase very slowly to 1980. If the projections are realized, household employment in 1980 will equal that of agriculture at about 2.8 million.

Industries with the highest rates of growth in employment are shown in table 6. Most of the sectors which have rapid growth in projected employment also will be among the most rapidly growing sectors in terms of output; in fact, of all industries on the list of highest output growth only three—communication; electric, gas, water, and sanitary services; and, chemical and fertilizer mineral mining—do not appear among the rapidly growing employment sectors. (See table 4.) The reason these sectors are not among the rapidly growing in terms of employment is that each has a high projected rate of growth in productivity.

Alternative models. In making and presenting the 1980 projections, the emphasis has been on the basic models. Because a number of crucial variables enter into the projections, another set of models also was developed in order to analyze what effect, if any, a significant change in some of these variables would have

Table 6. Industries projected to grow most rapidly in employment, 1965–80

Sector number	Sector name
51	Office, computing and accounting machines
73, 74	Business services
	State and local government
57	Electronic components and accessories
23	Other furniture and fixtures
32	Rubber and miscellaneous plastics products
46	Materials handling machinery and equipment
52	Service industry machines
67	Radio and TV broadcasting
50	Machine shop products
29	Drugs, cleaning, and toilet preparations
28	Plastics and synthetic materials
62	Scientific and controlling instruments
70	Finance and insurance
55	Electric lighting and wiring equipment
76	Amusements
56	Radio, television, and communication equipment
63	Optical, ophthalmic and photographic equipment
11, 12	Construction

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Table 7. Projected 1980 labor force, hours and gross national product

Item	Projected 1980				Average annual rate of change [1] 1965–80			
	3-percent unemployment		4-percent unemployment		3-percent unemployment		4-percent unemployment	
	Basic	High durables	Basic	High durables	Basic	High durables	Basic	High durables
Total labor force (thousands)	100,727	100,727	100,727	100,727	1.8	1.8	1.8	1.8
Unemployed	2,940	2,940	3,918	3,918	–.9	–.9	1.0	1.0
Employment (jobs concept)	102,896	102,896	101,867	101,867	1.9	1.6	1.8	1.8
Government [2]	18,500	18,100	18,315	17,918	2.9	2.8	2.8	2.7
Federal	4,900	5,100	4,851	5,049	0.5	0.7	0.4	0.7
State and local	13,600	13,000	13,464	12,869	4.1	3.8	4.0	3.7
Private	84,396	84,796	83,552	83,962	1.7	1.7	1.6	1.6
Hours paid for (annual average) Private	1,977	1,977	1,977	1,977	–.2	–.2	–.2	–.2
Total man-hour (millions) Private [3]	166,858	167,642	165,189	165,996	1.4	1.5	1.4	1.4
GNP per man-hour (1958 dollars) Private	6.54	6.54	6.54	6.54	3.0	3.0	3.0	3.0
Total GNP (billions of 1958 dollars	[4] 1,168.6	[4] 1,172.1	[4] 1,156.9	[4] 1,160.3	4.3	4.4	4.3	4.3
Government	76.7	75.0	75.9	74.2	2.8	2.6	2.7	2.6
Federal	23.6	24.4	23.4	24.2	0.5	0.8	0.5	0.7
State and local	53.1	50.6	52.6	50.0	4.1	3.8	4.0	3.7
Private	1,091.9	1,097.1	1,081.0	1,086.1	4.5	4.5	4.4	4.4

[1] Compound interest rate between terminal years.
[2] The government employment to be consistent with the government product is from national income accounts. Government employment shown elsewhere in this report is from the Bureau of Labor Statistics establishment reports.
[3] Man-hours are estimated for the private sector only since the assumption is made of no change in hours of the government sector.
[4] The 1980 GNP is as calculated using the factors shown above. All calculations using the total GNP elsewhere in the report use 1,165.0 and 1,170.0 for these two models.

on the structure of industry employment in 1980.

The second set of alternative models for 1980 explored the effects of a different composition of GNP on the industry structure of output and employment. This second set of models also has a 3-percent unemployment and a 4-percent unemployment model. The factors determining the 1980 GNP are similar to those in the basic models except that the employment distribution in this model has lower government employment. The resulting higher private employment with its higher productivity results in a 1980 GNP about 5 billion higher than the respective basic models. Table 7 shows the factors which determine GNP in the high durable models and compares them with the same factors in the basic model with similar unemployment rates.

The composition of GNP in the second set of models is more heavily weighed toward durable goods than in the basic models. This change in the distribution was selected to provide a reasonable alternative since all aspects of durable goods are subject to a high degree of variability and are consequently more difficult to project. Therefore, it is important to analyze their effect on the structure of employment. The elements that are increased as a proportion of GNP in the alternative models are consumer durables, business investment (particularly producer durable goods) and defense expenditures (with emphasis on military hard goods). Table 8 highlights the change in the distribution of GNP in the 1980 high durable models compared with the 1980 basic models.

The change in assumptions has resulted in a quite different distribution of gross national product. The Federal Government proportion is higher because of the assumption about increased defense expenditures. State and local government is lower by approximately the same proportion. The demand of the private sector is characterized by a larger proportion devoted to fixed investment. In personal consumption expenditures, although a smaller part of GNP in the high durable models, a larger portion has been devoted to durable goods expenditures.

With the distribution of demand changed in the high durable models, it should follow that the distribution of employment will be affected. Table 9 shows a comparison of projected employment for 1980 in the basic models and the high durable models.

The distribution of employment in the 1980 high durable models is noticeably different from the basic models. Construction, and durable goods manufacturing have a larger share of total employment than in the basic model. Although manufacturing has a larger share in the high durable models than in the basic

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models, it is still a declining share. Services and government on the other hand, both have a lower share of employment than in the basic models but these sectors still have an increasing share of employment relative to the current distribution.

The alternative models, therefore, have shown that changing the distribution of GNP in the high durable models do not affect appreciably the overall level of employment but do have considerable effect on the distribution of total employment. Further, they clearly show that changes in the distribution of demand of the magnitude introduced in the alternative models are sufficient to change the rate at which employment shifts away from goods-producing sectors to services and government but do not alter the direction of that shift.

Implications. Important implications result from the projections because of the projected shift toward services and government employment. These sectors have generally experienced lower increases in output per man-hour than the goods-producing sectors. Since it can be expected that pressure for larger wages will also be experienced in these sectors, the implications for prices are important. If wage increases exceed gains in output per man-hour, pressure on costs will increase because of the rise in unit labor costs, which ultimately must effect prices. Therefore, unless price declines are prevalent among goods-producing industries, the effort to hold down inflation will be increasingly difficult.

In addition to the implications the shift toward services has important implications for the efforts to control inflation, it has a further effect in that the economy will be less prone to severe swings in employment. Services and government employment is usually less volatile than employment in the goods-producing sectors. As employment shifts toward services and State and local government, the Nation should experience much smaller and less severe swings in employment, when business downturns are experienced.

Another implication raised by these projections is the continuing decline in farm employment opportunities. As employment shifts away from the farm more problems will occur in urban areas that have under-funded public services, inadequate housing, and out moded transportation systems.

The 1980 projections show services and government employment increases of about 7 million each. A large number of these workers will be in areas such as the medical sector, which includes occupational groups already in critically short supply. Increased employment requirements in the medical or education fields as well as other sectors which require high skills or a significant amount of training have implications for educational planning. Expansion must be planned for professional schools

Table 8. Projected 1980 gross national product by major component.

[Billions of 1958 dollars]

Sector	Projected 1980				Percent Distribution Projected 1980				Average annual rate of change 1965–80 [1]			
	3-percent unemployment		4-percent unemployment		3-percent unemployment		4-percent unemployment		3-percent unemployment		4-percent unemployment	
	Basic model	High durables	Basic model	High durables	Basic model	High durables	Basic model	High durables	Basic model	High durables	Basic model	High durables
Gross National Product	1,165.0	1,170.0	1,155.0	1,160.0	100.0	100.0	100.0	100.0	4.3	4.4	4.3	4.3
Personal consumption expenditures	758.3	748.0	751.9	741.6	65.1	63.9	65.1	63.9	4.4	4.3	4.3	4.2
Durable goods	133.2	142.1	132.1	140.9	11.4	12.1	11.4	12.1	4.7	5.2	4.7	5.1
Gross private domestic investment	186.3	200 2	184.7	198.5	16.0	17.1	16.0	17.1	4.3	4.8	4.2	4.7
Fixed investment	171.2	184.1	169.7	182.5	14.7	15.7	14.7	15.7	4.4	4.9	4.3	4.8
Nonresidential	130.4	137.3	129.3	136.1	11.2	11.7	11.2	11.7	4.6	5.0	4.6	4.9
Residential	40.9	46.8	40.5	46.4	3.3	4.0	3.3	4.0	3.7	4.6	3.6	4.6
Net exports	9.6	9.6	9.5	9.5	.8	.8	.8	.8	3.0	3.0	2.9	2.9
Government	210.8	212.2	208.9	210.4	18.1	18.1	18.1	18.1	4.1	4.2	4.1	4.1
Federal	85.0	99.8	84.3	99.0	7.3	8.5	7.3	8.5	2.6	3.7	2.5	3.6
State and local	125.8	112.4	124.6	111.4	10.8	9.6	10.8	9.6	5.4	4.7	5.4	4.6

[1] Compound interest based between terminal years.
SOURCE: Historical data are from the Office of Business Economics, U.S. Department of Commerce. Projections are by the Bureau of Labor Statistics.

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Table 9. Projected 1980 civilian employment[1] by major sector

Sector	Projected 1980				Percent distribution, Projected 1980				Average annual rate of growth[3], 1965–80			
	3-percent unemployment		4-percent unemployment		3-percent unemployment		4-percent unemployment		3-percent unemployment		4-percent unemployment	
	Basic	High durables	Basic	High durables	Basic	High durables	Basic	High durables	Basic	High durables	Basic	High durables
Total	99,600	[2] 99,400	98,600	[2] 98,400	100.0	100.0	100.0	100.0	1.9	1.9	1.9	1.9
Agriculture, forestry, and fisheries	3,188	3,192	3,156	3,160	3.2	3.2	3.2	3.2	−2.5	−2.5	−2.5	−2.5
Mining	590	588	584	582	.6	.6	.6	.6	.8	−.8	−.9	−.9
Construction	5,482	5,595	5,427	5,539	5.5	5.6	5.5	5.6	2.1	2.3	2.1	2.2
Manufacturing	22,358	23,240	22,133	23,005	22.4	23.4	22.4	23.4	1.3	1.5	1.2	1.5
Durable	13,274	14,322	13,141	14,176	13.3	14.4	13.3	14.4	1.5	2.0	1.4	1.9
Nondurable	9,084	8,918	8,992	8,829	9.1	9.0	9.1	9.0	1.0	.9	.9	.8
Transportation, communications and public utilities	4,976	4,961	4,926	4,911	5.0	5.0	5.0	5.0	1.1	1.0	1.0	1.0
Wholesale and retail trade	20,487	20,501	20,282	20,296	20.6	20.6	20.6	20.6	1.9	1.9	1.9	1.9
Finance, insurance and real estate	4,639	4,538	4,593	4,593	4.7	4.6	4.7	4.6	2.2	2.0	2.1	1.9
Services	18,280	17,785	18,097	17,606	18.4	17.9	18.4	17.9	3.4	3.2	3.3	3.1
Government	16,800	16,200	16,632	16,038	16.9	16.3	16.9	16.3	3.5	3.2	3.4	3.1
Households	2,800	2,800	2,770	2,770	2.8	2.8	2.8	2.8	.5	.5	.4	0.4

[1] Civilian employment includes wage and salary employment, self employed and unpaid family workers.
[2] The 200,000 lower civilian employment in the high durables alternative, results from the Armed Forces' levels of 2.9 million being higher than the 2.7 million in the basic model.
[3] Compound interest rates between terminal years.

as well as for technical schools that train medical and dental technicians, in addition to technical aids in such areas as computer software technology or architectural engineering technology.

Large employment increases are also projected for personal services and wholesale and retail trade. These sectors employ hotel and motel workers and other service-oriented workers in addition to the workers needed to staff the expanding retail trade sector. Both of these areas have had difficulty in attracting personnel, because of the nature of the work and because of the pay scales. Both sectors will need to adjust wages or change the manner of doing business, or they will experience increasing difficulties in completing for talented and trained employees.

Construction, a sector currently experiencing shortages of skilled workers, will require, according to the 1980 projections, over 1.4 million additional employees. In order to meet this need, unquestionably more training will be needed, as well as increased apprenticeship opportunities and the elimination of unreasonable restrictions of entry in the skilled trades. Providing trained construction workers has been a question of increasing concern. It is one which must be answered if the Nation is to meet the critical needs in housing and public facilities.

Since the largest employment increases are projected for those areas in which serious shortages of highly trained and skilled personnel, already exist, the projections imply a need for a serious look at training and educational facilities to insure that they can meet the requirements of the 1970's.

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Chapter II. Projection of Potential Gross National Product

The first step in making projections to 1980 is to determine limits. A quantitative framework is set for the projections by estimating the total quantity of goods and services that all employed persons might be expected to produce. Thus, the initial phase in the 1980 projections is developed by projecting the total labor force, specifying a ratio of unemployment, and projecting the size of the Armed Forces, in order to estimate civilian employment. Employment is translated into man-hours by projecting average hours. Potential GNP is derived by using a projected increase in man-hours and changes projected in labor productivity or gross national product per man-hour.

This chapter describes in detail each of the elements underlying the projection of potential gross national product for 1980. Each of these factors will be discussed in turn with the data shown in table 10. In the development of the 1980 projections, four alternative projections were made. These four models are grouped into two sets—a basic model and high durable model. For each set a 3-percent and a 4-percent unemployment model is shown. The discussion throughout chapters II–IV will be limited to the basic models. In chapter V, the high durable models are discussed and comparisons made with the basic models. No direct comparisons are made between the 3- and 4-percent unemployment model in each of the sets since the projections were not developed to show the different types of policies necessary to achieve a 3-percent unemployment rate or a 4-percent unemployment rate. These alternatives are shown to give variations in level of unemployment for users who may prefer one level over the other.

Labor Force

The labor force of the United States is projected to grow at an average rate of 1.8 percent a year from 1965 to 1980, when it is expected to include 100.7 million persons.[6] This is a significantly faster than the 1.3 percent growth rate anticipated for the total U.S. population during the same period.[7] The projected rate of growth in the labor force from 1965 to 1980 is also substantially greater than the 1.3 percent annual rate from 1957 to 1965. The faster rate is due primarily to the changing age distribution of the population. A continually increasing proportion will be found in the working age groups.

Changes in labor force participation rates are a minor factor in the projected growth rate of the labor force. The labor force projections, which were developed separately by sex and age group, show substantial change in the participation rate of some individual subgroups. For all males, however, a slight decrease in the participation rate is expected; and for all females a somewhat larger increase is projected. For the total population, the net effect is a very slight increase in the overall participation rate.

In the development of the 1980 projections, a 3-and a 4-percent unemployment rate was assumed, compared with a 4.5 percent unemployment rate in 1965. The total level of unemployment in 1980 is, however, only slightly lower than the 1965 level in the 3-percent model and moderately higher in the 4-percent model, because of growth in the size of the labor force. The projections assume that the armed forces will return to their pre-Viet Nam level of 2.7 million.

A similar level of labor force was used for both the 3-percent unemployment model and the 4-percent unemployment model, although evidence suggests that the supply of labor is responsive to changes in demand. For the period 1948–65, on the average a one percentage point change in the unemployment rate was accompanied by a one half percentage point change in the labor force in the opposite direction. There is, however, still considerable uncertainty as to how the supply of labor is affected by the timing and process by which the unemployment rate is reduced. Most of the re-

[6] "The U.S. Labor Force Projections to 1985", *Monthly Labor Review*, May 1970.

[7] U. S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P–25, No. 381.

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search on the relation between participation rates and the rate of unemployment has been based on relatively short-term changes in both. It is not clear how applicable the relationships based on this research are to long-term, gradual changes in unemployment rates. A further question is raised about the applicability of functional relationships between labor force and unemployment rates, if the reduction in unemployment is achieved as a result of training and retraining programs focused upon specific groups of unemployed workers. Because of these factors and uncertainties, the 1980 projections were developed using the same labor force in both unemployment models.

The 1980 projections were developed with 1965 as the base period, because a number of elements have been substantially different in the 1965–68 period than in prior years. These differences reflect to a considerable extent the economic effects of the Viet Nam war. Among the variables whose trend has been substantially different during the most recent period are: Average hours paid, defense spending as a proportion of total GNP, and the growth rate in total employment on a jobs concept compared with the growth rate of total employment on a persons basis. The decline of 0.8 in hours paid during the 1965–68 period has been much sharper than the longer run decline of 0.2 percent a year. Also, the growth rate in jobs, 3.0 percent a year, has been faster than the growth rate in employed persons, 2.5 percent a per year. Consequently, the adjustment ratio between the labor force employment and employment on a jobs concept is much larger

Table 10. Labor force, employment, annual hours, productivity and gross national products, actual, 1957, 1965–68 and projected 1980

Item	1957	1965	1966	1967	1968	Projected 1980 Basic model		Average annual rates of change [1]			
								1957–65	1965–68	1965–80	
	(Employment in thousands)					3 percent	4 percent			3 percent	4 percent
Total labor force (including military)	69,729	77,177	78,893	80,793	82,272	100,727	100,727	1.3	2.2	1.8	1.8
Unemployed	2,859	3,366	2,875	2,975	2,817	2,940	3,918	2.1	−5.7	−.9	1.0
Employed (Persons concept)	66,870	73,811	76,018	77,818	79,455	97,787	96,788	1.2	2.5	1.9	1.8
Adjustment	4,083	3,878	4,883	4,934	5,233	5,109	5,079	−.7	10.5	1.9	1.8
Employment (jobs concept)	70,953	77,689	80,901	82,752	84,688	102,896	101,867	1.1	3.0	1.9	1.8
Government [2]	9,756	11,994	13,158	13,931	14,414	18,500	18,315	2.6	6.3	2.9	2.8
Federal	4,531	4,569	5,118	5,507	5,609	4,900	4,851	.1	7.1	.5	.4
Military	2,786	2,732	3,156	3,421	3,517	2,700	2,673	−.2	8.8	−.1	−.4
Civilian	1,745	1,837	1,962	2,086	2,092	2,200	2,178	.6	4.4	1.2	1.1
State and local	5,225	7,425	8,040	8,424	8,805	13,600	13,464	4.5	5.8	4.1	4.0
Private	61,197	65,695	67,743	68,821	70,274	84,396	83,552	.9	2.3	1.7	1.6
Agriculture	5,914	4,338	3,963	3,860	3,811	2,800	2,772	−9.8	−4.2	−2.9	−2.9
Nonagriculture	55,283	61,357	63,780	64,961	66,463	81,596	80,780	1.3	2.7	1.9	1.9
Average annual man-hours paid for:											
Private	2,086	2,051	2,037	2,011	2,000	1,977	1,977	−.2	−.8	−.2	−.2
Agriculture	2,371	2,376	2,361	2,340	2,330	2,271	2,271	--	−.7	−.3	−.3
Nonagriculture	2,054	2,028	2,017	1,991	1,981	1,967	1,967	−.2	−.8	−.2	−.2
Total man-hours (millions):											
Private [3]	127,640	134,781	137,975	138,369	140,542	166,858	165,189	.7	1.4	1.4	1.4
Agriculture	14,023	10,307	9,357	9,032	8,879	6,359	6,259	−3.8	−4.9	−3.2	−3.2
Nonagriculture	113,617	124,474	128,619	129,337	131,663	160,499	158,894	1.1	1.9	1.7	1.6
GNP per man-hour (1958 dollars)											
Private	3.22	4.21	4.36	4.46	4.61	6.54	6.54	3.4	2.8	3.0	3.0
Agriculture	1.45	2.30	2.37	2.62	2.62	5.13	5.13	5.9	4.4	5.5	5.5
Nonagriculture	3.44	4.36	4.51	4.59	4.74	6.60	6.60	3.0	2.8	2.8	2.8
Total GNP (1958 dollars)	452.5	617.8	658.1	674.6	707.6	[4] 1,168.6	[4] 1,156.9	4.0	4.6	4.3	4.3
Government	41.9	50.8	54.6	57.6	59.7	76.7	75.9	2.4	5.5	2.8	2.7
Federal	21.5	21.8	23.9	25.7	26.3	23.6	23.4	.2	6.4	.5	.5
Military	11.1	10.9	12.3	13.4	13.9	10.6	10.5	−.2	8.4	−.2	−.2
Civilian	10.3	10.9	11.6	12.3	12.4	13.0	12.9	.7	4.4	1.2	1.1
State and local	20.4	29.0	30.7	31.9	33.5	53.1	52.6	4.5	4.9	4.1	4.0
Private	410.6	567.0	603.5	617.0	647.9	1,091.9	1,081.0	4.1	4.5	4.5	4.4
Agriculture	20.3	23.7	22.4	23.7	23.3	32.6	32.3	1.9	−.6	2.1	2.1
Nonagriculture	390.3	543.3	580.8	593.3	624.6	1,059.3	1,048.7	4.2	4.8	4.6	4.5

[1] Compound interest rate based on terminal years.

[2] For consistency with measures of government product, estimates of government employment are those developed by the U.S. Department of Commerce, Office of Business Economics.

[3] In accordance with the conventions in the measurement of constant dollar gross national product, productivity for government is assumed constant. Since no change in average hours is projected for this sector the change in government product is equal to the change in employment.

[4] Gross national product for 1980 shown here is as computed, but has been rounded to $1,165 and $1,155 for control totals for the remaining calculations.

NOTE: 1966, 1967, and 1968 data are shown for information only. The 1980 estimates were made with 1965 as a base.

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in 1968 than in 1965. The extent to which the growth rate in establishment employment has come from dual job holders would be a contributing factor to the sharp decline in hours during the 1965–68 period. Finally, defense spending has been much higher, both in level and as a proportion of GNP, from 1965 through 1968, to meet demands for Viet Nam. Although 1965 was used as the base period for the 1980 projections, later data are shown where available.

Conversion to Jobs

The initial projection of employment in 1980 was made using the labor force series which was then converted to a level of employment consistent with the Bureau of Labor Statistics' establishment series. The labor force series is a count of persons and the latter employment series is a count of jobs. The difference between the two series includes both coverage and statistical differences. In the coverage differences the employment series includes dual job holders and employees under 16 years of age. While the labor force series is more suitable for use in aggregate projections, only the establishment series has detailed industry estimates.

The difference or adjustment factor between the series has not been sufficiently consistent in the past for it to be easily predictable. There is some indication that in the long run its size increases as the labor force increases. In the 1980 projections the adjustment factor is projected to be a constant proportion of the labor force in the 1965 to 1980 period. In magnitude it increases from 3.9 million in 1965 to 5.1 million in 1980.

Hours

In order to estimate for 1980 the available man-hours of labor, it was neceessary to estimate change in average hours. The data on average hours used in making these projections are measures of hours paid. Although it would be preferable, at least from the viewpoint of productivity, to have a measure of hours worked, such measures are not available for detailed industries. Therefore, the decline in hours shown would be different from those for a series of hours worked, since paid vacation and sick leave is included in the former series but is not included in the latter. Consequently the decline, both historical and projected, does not reflect the trend toward more paid leisure time.

By 1980, average hours are projected to decline 0.2 percent a year. This is the same rate as the 1957–65 decline in nonfarm average hours paid. The overall decline in average hours in the past has been the result of varying influences and differences among the sectors. Most goods-producing industries, excluding agriculture, showed very little change in hours paid from 1950 until a rise in overtime hours began in 1964–65. Services and trade sectors on the other hand, have shown a consistent decline throughout the post-World-War-II period.

In addition to the influence of sector differences on the decline in hours, other variables have influenced the trend. In the early postwar period the decline in hours resulted, to a considerable extent, from a reduction in the standard work week. However, a more important factor in the decline in hours during the later postwar period was the increasing proportion of partime employees. The increasing portion of the labor force engaged in part-time work can be seen in table 12.

During the period shown in this table, employment grew at 1.5 percent a year and part-time employment grew at 5.7 percent a year.

The 1980 projections of average hours assume a continued increase in part-time employment as a percent of the total, but no substantive reduction in the standard work week. The decline in total private average hours of 0.2 percent a year from 1965 to 1980 is, therefore, about the same rate of decline as in the 1957–65 period but is a slowdown from the rate for the entire postwar period and especially from that of the last three years. In fact, if the sharp decline in hours during the 1965–68 period of 0.8 percent a year is included and 1968 taken as a base, the 1968–80 change implied by these projections is 0.1 percent decline a year in average yearly hours paid.

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Output Per Man-Hour

Because of the widely differing treatment of private and public productivity, estimates of aggregate GNP are derived by projecting private and public employment separately. Government employment must be projected independently because it is a policy variable and, at the same time, is not determined by the input-output system. Also, in accordance with the national income accounting conventions of the Office of Business Economics, Department of Commerce, constant productivity is assumed for all general government employment. This means that the level and rate of change in government output per man-hour is substantially different from the private sector and the relative importance of the two sectors must be taken into account in projecting potential output.

Within the private sector, the trend in output per man-hour was projected separately for the farm and for the nonfarm sectors because their productivity trends and levels have been quite different. In the past, increases have averaged about 6 percent a year in the farm sector as a result of rapid changes in technology and a continuing movement of employment away from farms as the number of marginal farms decline.

This movement between sectors indicated a shift of people from a low to a higher level of output per man-hour and gave an added impetus to the rate of increase in private sector output per man-hour for the 1947–67 period. For instance as pointed out by Jerome Mark, "Analysis of the effect of shifts on output per man-hour for the private economy, derived by weighting the man-hours of industry divisions, indicates that for the postwar period, 1947–66, 0.3 percentage points of the 3.2 percent annual rate of increase was attributable to the effect of shifts among major sectors. Most of the shifts occurred during the first decade, when these shifts were about one-half of a percentage point of the growth in output per man-hour. In recent years this growth has been reduced substantially and from 1957 to 1966, has amounted to about two-tenths of a percentage point.

The bulk of the effect of shifts among sectors occurred between the farm and nonfarm sectors. Shifts among the nonfarm sectors contributed relatively little to the change in output per man-hour." [8]

[8] Paper by Jerome A. Mark, Assistant Commissioner for Productivity, Technology and Growth, Bureau of Labor Statistics, presented at a meeting of the American Statistical Association, Pittsburgh, Pa., August 20–22, 1968.

Table 11. Derivation of civilian employment control totals

Component	1957	1965	1980			
			Basic 3-percent model	Basic 4-percent model	3 percent High durables	4 percent High durables
1. Total employment (jobs concept)	71.0	77.7	102.9	101.9	102.9	101.9
2. Less general government (national income basis)	9.8	12.0	18.5	18.3	18.1	17.9
3. Total private employment	61.2	65.7	84.4	83.6	84.8	84.0
4. Agriculture	5.9	4.3	2.8	2.8	2.8	2.8
5. Nonagriculture	55.3	61.4	81.6	80.8	82.0	81.2
6. Self-employed	6.0	6.2	6.7	6.6	6.7	6.6
7. Unpaid family workers	.6	.6	.7	.7	.7	.7
8. Households	2.4	2.6	2.8	2.8	2.8	2.8
9. Government enterprises	.9	1.2	1.6	1.6	1.6	1.6
10. Wage and salary employment (private)	45.3	50.7	69.8	69.1	70.2	69.5
Adjustment to BLS government basis						
11. BLS total civilian government	7.6	10.1	16.8	16.6	16.2	16.0
12. BLS total nonagricultural wage and salary (sum of lines 10 and 11)	52.9	60.8	86.6	85.7	86.4	85.5
13. Total civilian employment BLS government basis (sum of lines 4, 6, 7, 8, and 12)	67.8	74.5	99.6	98.6	99.4	98.4

SOURCES for table 11 historical data:
Line 1. Sum of lines 2 and 3.
Line 2. Office of Business Economics, same as in table 10. This government employment level is used to be consistent with government product from the same source. General government excludes government enterprises.
Lines 3, 4, and 5. BLS, Office of Productivity, Technology and Growth. Line 5 is the sum of lines 6–10.
Lines 6–9. To the BLS published estimates of nonfarm establishment wage and salary employment is added to Office of Business Economics estimates of self-employed, household workers and government enterprise workers. These are consistent with estimates of private GNP. Also added is the number of unpaid family workers published by the BLS from data collected as a part of the labor force series.
Lines 10, 11, and 12. BLS published establishment employment data. Government enterprises are included in government employment in the BLS series.
Line 13. Once the GNP has been developed on the basis of the Office of Business Economics definition of government and private employment, we revert to BLS government definitions. The total shown here is the control total for the distribution of industry employment and is used throughout the remainder of the report.

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Table 12. Part-time employment as a percent of total employment, 1956–68

Year	Total employment labor force (millions of employees)	Nonagricultural part-time work for noneconomic reasons (millions of employees)	Parttime as a percent of total employment
1956	63,802	4,330	6.8
1957	64,071	4,515	7.0
1958	63,036	4,542	7.2
1959	64,630	4,889	7.6
1960	65,778	5,175	7.9
1961	65,746	5,361	8.2
1962	66,702	5,700	8.5
1963	67,762	6,021	8.9
1964	69,305	6,448	9.3
1965	71,088	6,740	9.5
1966	72,895	7,441	10.2
1967	74,372	8,048	10.8
1968	75,920	8,452	11.1

SOURCE: *Employment and Earnings*, Volume 15 No. 8, February 1969, Bureau of Labor Statistics.

As employment in the farm sector becomes a smaller proportion of the total, the effect of this shift becomes less significant. It is estimated that if each sector maintains its historical rate of change of output per man-hour to 1980 the effect of the shift will virtually disappear.

For 1980, the rate of increase in output per man-hour in the private sector is projected to be approximately 3.0 percent a year. This change results from the combination of a 5.5 percent rate for the farm sector and a 2.8 percent projected rate for the private nonfarm sector. This rate of projected farm output per man-hour provides for a slowdown from the 1957–65 rate of 5.9 percent. Traditionally, farm output per man-hour has fluctuated widely, but even at the lower average rate projected, the change in farm output per man-hour is expected to remain considerably above that in the nonfarm sector.

The private, nonfarm sector is assumed to maintain its historical output per man-hour growth rate of 2.8 percent a year. Even though the total nonfarm is projected at its historical rate, individual industries within the broad nonfarm sector, may deviate from their past productivity rates. The average rate assumed provides for greater than historical increases in some industries to offset the shift in weight towards lower productivity industries.

GNP Growth Rate

By combining the projections of labor force, change in hours, and output per man-hour, the 1980 gross national product is determined. The 1965–80 real GNP growth rate which results is 4.3 percent a year and the 1980 GNP is 1,165 billion dollars (1958 $'s) for the 3-percent basic model. This overall growth rate in GNP is a combination of a 4.5 percent annual growth rate for the private sector and 2.8 percent annual rate for the public sector.[9] In the 4-percent basic model the 1965–80 growth of GNP is also 4.3 percent, but combines a private sector growth of 4.4 percent with a 2.7 percent rate for the public sector and results in $1,155 billion of GNP in 1980. The projected growth in real GNP of 4.3 percent a year to 1980 in both models is slightly higher than the 1957–65 growth rate of 4.0 percent a year.

[9] The public GNP in the national income and product accounts is simply the constant dollar wages and salaries of government employees. Thus, the 2.8 or 2.7 percent growth rate reflects only the growth in public employment.

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Chapter III. Composition of Gross National Product

In chapter II the discussion centered around the development of the growth rate in real GNP from 1965 to 1980 and the factors which influenced this growth. In this chapter the discussion will focus on the composition of gross national product. The overall characteristics of the basic 1980 projection model is described first and then each of the major components of GNP are discussed in subsequent sections. In the final section the relationship between the purchases of goods and services by final users and the final demands by producing industries is discussed.

GNP components

The projections for 1980 associated with the basic 3-percent and the basic 4-percent unemployment models can be characterized as being most nearly representative of long-term trends. The levels, distributions, and rates of growth of GNP and its major components are presented for selected years and for projected 1980 in tables 13 through 15.

Even though the projected economic structure in these models is generally consistent with the trends in recent years, two important changes should be noted: First, the projected level of defense spending constitutes a much lower proportion of GNP than it does at the present time. This is the result of a two-fold assumption, that the Viet Nam conflict will end in the early 1970's with a significant reduction in military costs and that defense spending then will resume the declining trend relative to GNP that was operating prior to the Viet Nam acceleration. Secondly, residential construction is projected to be a larger proportion of GNP than it was in 1968. The trend in the ratio of housing expenditures to GNP—which reached a post-World War II low in 1967—is reversed in the 1980 projections because of the expected rise in the population age group most often associated with the purchase or rental of dwelling units.

For the other components of GNP the projected trend is closer to the recent trends. Durable consumer goods and consumer services will grow faster than total consumption while nondurable goods will grow more slowly—all in line with past trends. Nonresidential construction is projected to grow more slowly than producer durable equipment which is in accord with past trends. For foreign trade, the projected growth rate of exports is somewhat slower than imports. State and local government expenditures are projected to maintain a high rate of growth and constitute a larger share of total constant dollar GNP in 1980 than at any time since the 1930–39 decade.

Each of the major components of GNP is discussed in detail in the following sections. Each section includes only a limited discussion of the industry composition although, in practice, the components of GNP are distributed to full input-output industry detail for use in projecting industry output.[10]

Personal consumption expenditures

Personal consumption expenditures (PCE) is by far the largest component of final demand, about two-thirds of total GNP. The projected 1980 levels of PCE are $758.3 billion and $751.9 billion (1958 dollars) for the 3-percent basic and 4-percent basic models, respectively. Data are available for over 80 individual categories of consumption as part of the national income and product accounts and the 1980 projections were made at this level of detail. These data are summarized for selected years and projected 1980 in tables 16 through 18.

Time series of the PCE data, covering the years 1929 through 1965 (excluding World War II years), formed the basis for the 1980 projections. The estimating equations or "functions" which were used in making the 1980 projections were developed by Hendrik Hou-

[10] See appendix D, tables D–1 through D–8 for the full input–output sector detail for total GNP and each of the major components. For a detailed description of the methods used in deriving the bills of goods see appendix A.

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thakker and Lester D. Taylor.[11] The time series for each item of consumption and for total consumption were expressed in constant 1958 dollars per capita. Demand equations were estimated with the per capita consumption of an item expressed as a function of (a) past consumption of the item, (b) past consumption of all items, (c) the annual change in the level of total consumption, and (d) other variables, wherever significant.

The projected rate of increase in PCE of 4.4 percent a year (4.3 in the 4-percent basic model) is a somewhat faster rate than occurred during the entire post-World-War-II period, but closer to the rate of 4.1 percent a year experienced in the 1957–65 period. This projected rate of growth in consumption is very close to the rate projected for GNP. Two of the three major subdivisions of consumer expenditures, durable goods and services, are projected to maintain rates of growth which are faster than total PCE. By 1980 both durable goods and services are projected to have a larger share of total consumption than any time in the post-war period. On the other hand, expenditures on nondurable goods are projected to continue their consistently slower rate of growth relative to durables and services. Consequently, nondurable goods are expected to constitute a distinctly smaller proportion of total PCE—and of total GNP as indicated in table 14—than it has in past years.

Among durable goods category, furniture and household equipment will show the most pronounced growth to 1980, consistent with the projected strong growth in housing demand. Projected expenditures for food and beverages as well as for clothing and shoes reflect the long run declining proportion of nondurables in consumers' budgets. The other services subgroups, composed of a large number of heterogenous activities, owes its substantial growth to rapidly increasing expenditures for medical care, private education, and recreation. These comparisons are in terms of rates of growth and proportions, however, and not in terms of values, nearly every category of PCE has a higher projected constant dollar value in 1980 than it had in the historical period.

[11] Hendrik Houthakker and Lester D. Taylor, *Consumer Demand in the United States. 1929–70*, (Cambridge, Mass., Harvard University Press, 1966). A later version of these equations will appear in a forthcoming book by Professor Houthakker and Dr. Taylor.

Gross private domestic investment

Gross private domestic investment (GPDI) includes spending for private plant and equipment, residential structures and the net change in business inventories. In 1980, this investment is projected to total $186.3 billion (1958 dollars) and to grow at 4.3 percent a year from 1965 to 1980 in the basic 3-percent unemployment model. In the 4-percent basic model the

Table 13. Gross national product by major components, selected years and projected 1980

[Billions of 1958 dollars]

Components	1957	1962	1965	1967	1968	Projected 1980	
						Basic models	
						3 percent	4 percent
Gross National Product	452.5	530.0	617.8	674.6	707.6	1,165.0	1,155.0
Personal consumption expenditures	288.2	338.6	397.7	430.3	452.6	758.3	751.9
Durable goods	41.5	49.2	66.6	72.8	80.7	133.2	132.1
Nondurable goods	138.7	158.4	178.6	190.3	196.9	295.9	293.4
Services	108.0	131.1	152.5	167.2	175.0	329.2	326.4
Gross private domestic investment	68.8	79.4	99.2	100.8	105.7	186.3	184.8
Fixed investment	67.6	73.4	90.1	93.9	99.1	171.2	169.8
Nonresidential	47.4	49.7	66.3	73.6	75.8	130.4	129.3
Structures	18.2	17.9	22.3	22.6	22.7	36.5	36.2
Producers' durable equipment	29.1	31.7	44.0	51.0	53.2	93.9	93.1
Residential structures	20.2	23.8	23.8	20.3	23.3	40.9	40.5
Change in business inventories	1.2	6.0	9.0	6.9	6.6	15.1	15.0
Net exports of goods and services	6.2	4.5	6.2	3.6	0.9	9.6	9.5
Exports	26.2	30.0	37.4	42.1	45.6	79.2	78.5
Imports	19.9	25.5	31.2	38.5	44.7	69.6	69.0
Government purchases of goods and services	89.3	107.5	114.7	140.0	148.4	210.8	208.9
Federal	51.7	60.0	57.9	74.8	78.9	85.0	84.3
State and local	37.6	47.5	56.8	65.2	69.5	125.8	124.6

SOURCE: Historical data from the Office of Business Economics, U.S. Department of Commerce, and projections are from the Bureau of Labor Statistics.

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Table 14. Gross national product by major components, selected years and projected 1980

[Percent distribution based on 1958 dollars]

Components	1957	1962	1965	1967	1968	Projected 1980	
						Basic models	
						3-percent	4-percent
Gross National Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Personal consumption expenditures	63.7	63.9	64.4	63.8	64.0	65.1	65.1
Durable goods	9.2	9.3	10.8	10.8	11.4	11.4	11.4
Nondurable goods	30.7	29.9	28.9	28.2	27.8	25.4	25.4
Services	23.9	24.7	24.7	24.8	24.7	28.3	28.3
Gross private domestic investment	15.2	15.0	16.1	14.9	14.9	16.0	16.0
Fixed investment	14.9	13.8	14.6	13.9	14.0	14.7	14.7
Nonresidential	10.5	9.4	10.7	10.9	10.7	11.2	11.2
Structures	4.0	3.4	3.6	3.4	3.2	3.1	3.1
Producers' durable equipment	6.4	6.0	7.1	7.6	7.5	8.1	8.1
Residential structures	4.5	4.5	3.9	3.0	3.3	3.5	3.5
Change in business inventories	.3	1.1	1.5	1.0	.9	1.3	1.3
Net exports of goods and services	1.4	.8	1.0	.5	.1	.8	.8
Exports	5.8	5.7	6.1	6.2	6.4	6.8	6.8
Imports	4.4	4.8	5.1	5.7	6.3	6.0	6.0
Government purchases of goods and services	19.7	20.3	18.6	20.9	21.0	18.1	18.1
Federal	11.4	11.3	9.4	11.1	11.2	7.3	7.3
State and local	8.3	9.0	9.2	9.7	9.8	10.8	10.8

projected growth rate is 4.2 percent a year for a 1980 total of $184.8 billion. These projections compare with a 1957–65 growth rate of 4.7 percent for total GPDI. (See table 15.)

The role of GPDI in the input-output system differs from the other areas of final demand in that investment goods (except for residential construction) are purchased by the sectors which constitute the system. Therefore, a direct relationship exists between industry growth rates, the level of investment required by the respective industries, and the demands on the industries producing investment goods. As a consequence, the projection of investment demand is a sequential process.

Projections of investment demand are made separately for the major components of GPDI and at the level of detail for which data are available. Originally, the projections are based on analyses of past trends and relationships. As the model is developed, the projections are modified on the basis of information generated by the input-output system in order to achieve a balance between the derived industry growth rates and investment demand. The composition of GPDI is discussed in more detail in the following paragraphs.

Private residential construction. Housing expenditures are expected to be high during the 1970's. Private residential construction is projected to total $40.9 billion in the 3-percent model and $40.5 billion in the 4-percent basic model (1958 dollars) in 1980. Stated in terms of units, from 2.6 to 2.9 million private nonfarm starts are projected in the basic 1980 models, depending on the mix assumed between single family housing and multifamily units.[12] In addition to new dwelling units, the expenditure level for private residential construction includes the costs of alterations and additions to existing homes and expenditures on motel and hotels.

In the long run, the level of expenditure for housing is determined by changes in the size and age distribution of the population. During the next decade the major changes in the population distribution will show an increasing proportion of young adults and retired persons. Thus, the central problems in projecting the level of demand for housing to 1980 concern the timing of demand and the proportions of that demand for single family and multi-family units.

On the basis of the changing age distribution of population, apartment building through 1975 is projected to be particularly strong; by 1980 a further shift in the age structure could alter demand back toward a larger proportion of single family housing—assuming the availability of land and other resources necessary for this type of structure. This later shift would occur as young adults acquire families and if they choose the traditional pattern of single family housing.

[12] This range of construction would encompass—depending on the time path assumed—the goal of 26 million new housing units in the decade 1969–78 set forth as the National Housing Goals in the Housing and Urban Development Act of 1968.

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Spending gains in other types of nonfarm residential construction—hotels, motels and additions and alternations—are expected to follow the general economic trends.

Plant and equipment. Plant and equipment expenditures provide one of the major factors influencing growth in industries as well as in the economy as a whole. Among the motivating forces behind the purchase of plant and equipment by a firm are a desire to expand productive capacity for either present or new markets and to control costs through capital equipment possessing improved technology. The 1980 projections of plant and equipment spending considers these factors to the extent possible.

Spending on plant and equipment is expected to be at least two thirds of all GPDI in 1980. In the basic models the projected level of spending is 12 percent of private GNP—about the same ratio that occurred during the relatively high investment years 1965–69. In the 3-percent model the projection of $130.4 billion (1958 dollars) of nonresidential fixed investment is divided between $36.5 for structures and $93.9 billion for producers' durable equipment. For the 4 percent model the $129.3 billion level of spending (1958 dollars) comprises $36.2 billion for structures and $93.1 billion for equipment.

Among all the producer durable equipment industries the following groups are projected to show the largest gains between 1965 and 1980 in terms of demand: Industries 56 and 66, communication equipment; industry 60, civilian aircraft and parts; industry 61, office, computing, and accounting machinery; industry 63, optical and photographic equipment (including photocopying); and industry 40, heating, plumbing, and fabricated structural metal products. Most of the other industries expected to show a greater than average rate of growth during the projected period are connected with electrical equipment, devices, or parts. Included in this group are industries 53, electrical industrial equipment; industry 55, electric light and wiring equipment; industry 57, electronic components and accessories; and industry 58, miscellaneous electrical machinery and supplies.

When considered individually, the equipment groups characterized by above average growth rates in terms of demand make up relatively small proportions of total equipment spending; none of these groups currently are more than 7 percent of equipment spending, and they are not expected to exceed 10 percent of total equipment spending in 1980. The larger equipment groups will have less than average growth rates and are associated mainly with farming, mining and railroading.

Spending for new plant is expected to grow less than spending for equipment. This is due to a slower than average rate of growth in certain institutional and utility building, railroad structures and farm structures. Increases in industrial building will be less than the increases in equipment purchases, due to the historical

Table 15. Changes in gross national product by major components, selected years and projected 1980

[Average annual rate of change based on 1958 dollars] [1]

Components	1957–65	1957–62	1962–65	1965–68	1965–1980	
					Basic models	
					3 percent	4 percent
Gross National Product	4.0	3.2	5.3	4.6	4.3	4.3
Personal consumption expenditures	4.1	3.3	5.5	4.4	4.4	4.3
Durable goods	6.1	3.5	10.6	6.6	4.7	4.7
Nondurable goods	3.2	2.7	4.1	3.3	3.4	3.4
Services	4.4	4.0	5.2	4.7	5.3	5.2
Gross private domestic investment	4.7	2.9	7.7	2.1	4.3	4.2
Fixed investment	3.7	1.7	7.1	3.2	4.4	4.3
Nonresidential	4.3	1.0	10.1	4.6	4.6	4.6
Structures	2.6	−.3	7.6	.6	3.3	3.3
Producers' durable equipment	5.3	1.7	11.5	6.5	5.2	5.1
Residential structures	2.1	3.3		−.7	3.7	3.6
Change in business inventories					3.5	3.5
Net exports of goods and services					3.0	2.9
Exports	4.5	2.7	7.6	6.8	5.1	5.1
Imports	5.8	5.1	7.0	12.7	5.5	5.4
Government purchases of goods and services	3.2	3.8	2.2	9.0	4.1	4.1
Federal	1.4	3.0	−1.2	10.9	2.6	2.5
State and local	5.3	4.8	6.1	7.0	5.4	5.4

[1] Compound interest rates based on terminal years.

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Table 16. Personal consumption expenditures, by major types, for selected years and projected 1980

[Billions of 1958 dollars]

Function	1950	1957	1962	1965	1967	1968	Projected 1980	
							3-percent unemployment	4-percent unemployment
Total personal consumption expenditures	230.5	288.2	338.4	397.7	430.3	452.6	758.3	751.8
Durable goods	34.7	41.5	49.2	66.6	72.8	80.7	133.2	132.1
Automobiles and parts	15.9	18.8	21.8	30.4	30.6	36.1	50.8	50.4
Furniture and household equipment	15.1	17.4	20.5	27.4	31.4	33.3	61.2	60.7
Other	3.7	5.3	6.8	8.8	10.7	11.3	21.1	20.9
Nondurable goods	114.0	138.2	158.2	178.6	190.3	196.9	295.9	293.4
Food and beverages	63.2	76.2	83.9	92.1	95.4	98.4	147.1	145.8
Clothing and shoes	21.8	24.4	28.4	33.4	36.8	37.9	52.2	51.8
Gasoline and oil	6.5	10.5	12.5	14.4	15.8	16.9	22.9	22.7
Other	22.5	27.5	33.4	38.7	42.3	43.8	73.7	73.1
Services	81.8	108.0	131.1	152.5	167.2	175.0	329.2	326.4
Housing	26.8	39.3	49.1	58.1	63.5	66.7	134.4	133.2
Household operation	11.7	16.7	20.4	23.2	25.8	26.9	47.8	47.4
Transportation	8.5	9.5	9.9	11.0	12.0	12.6	21.8	21.6
Other	34.8	42.5	51.7	60.2	66.0	68.7	125.2	124.1

NOTE: Values are at purchaser prices.
SOURCE: Historical data are from Office of Business Economics, U.S. Department of Commerce. Projections are by the Bureau of Labor Statistics.

downtrend in the ratio of plant to equipment expenditures. However, commercial, office building, hospital construction, and social and recreational structures are expected to show large gains in the projection period.

Changes in business inventories. Business inventories may be held by either producing or consuming industries. In fact, most data on inventories are reported by consuming or purchasing industries, while the input-output classification places inventories in the producing industries. Therefore, it is necessary to convert historical data from a purchaser-holding to a producer-holding basis in order to derive appropriate industry distributions of inventories. The sector distribution of total projected inventory change is made on the basis of historical distributions and modified in some instances after individual industry growth rates are derived.

The net change in inventories is estimated to total 1.3 percent of 1980 output or about $15 billion. Implicit in this project is a slow decline in the sales-inventory ratio.

Net exports

Projections of gross exports are made initially for seven major balance-of-payments categories of goods and services.[13] Each of the categories were projected separately with respect to the major trading partners of the United States, based partially on data developed by the United Nations and the Organization for Economic Cooperation and Development on expected changes of population, industrial production, and real gross national product. The projection for each of the balance-of-payments categories was further disaggregated into input-output industry detail based on 1958–65 trends in industry composition.

The 1980 projection of U.S. exports and imports imply an improved net export position compared with recent years. Both exports and imports are expected to constitute a larger share of GNP in 1980 than in 1965—continuing the trend of the past decade but at a diminishing differential rate.

The merchandise component of the net exports balance is expected to be less than one-half of the total balance in 1980, compared with about two-thirds in 1965. The nonmerchandise balance of net exports has been an increasing proportion of the net export balance in recent years and is expected to gain a larger share by 1980. The recent increases in the net export balance of nonmerchandise transactions result primarily from increased royalty receipts and income from investments abroad; the projected increases are contingent upon the assumption that temporary barriers to the overseas flow of capital will not be continued indefinitely.

Industry structure of exports. The projected industry composition of gross exports indicates

[13] The categories correspond to those shown in table I, "U.S. International Transactions," *Survey of Current Business*, June 1969.

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that products of manufacturing industries in 1980 are expected to be a slightly greater proportion of total exports of goods and services. The share of manufacturing is projected to be nearly 55 percent of gross exports compared with about 52 percent in 1965. On the other hand, agricultural and mining products are expected to decline slightly as a proportion of total exports.

In individual export categories, computers and scientific and controlling instruments are projected to show the greatest rates of increase from 1965 to 1980 among durable manufacturing industries. In the nondurables area, paper products and chemicals are expected to increase their share of total exports. Other nondurables and agricultural products and services are estimated to expand at a slower pace. Mining products should make up a slightly smaller share of total exports than they did in 1965. The major factor in the export of services is the continued growth of income, fees, and royalties from U.S. investments abroad mentioned previously.

Industry structure of imports. In the input-output system, imports are grouped into two categories—those directly allocated to final demand and those allocated to the comparable domestic industry. Those in the former group are estimated as a part of the projection procedure of the final demand component into which they fall. The imports of the latter group are inputs into one of the sectors of the system; they are first evaluated in terms of product class data and projected independently on the basis of historical trends and—depending on the product class—import quotas and supply limitations. The projected levels then take the form of input coefficient for their respective sectors. A subsequent balancing procedure is required in order to arrive at an industry by industry balance between the level of imports, the domestic inputs, and the derived industry growth rate. Further discussions on the treatment of imports and the balancing procedure is to be found in appendix A.

Changes in the projected 1980 industry composition of imports of goods and services from 1965 generally parallel those outlined for exports. Manufacturing industries should increase their share of imports while agricultural and mining products and most nondurables expand more slowly. Among the durable manufacturing sectors, imports of automobiles and other transportation equipment, as well as radios and televisions and many types of capital equipment, are expected to increase their share of total imports to 1980. With the exception of chemicals, nondurable manufacturing industries should experience a constant or declining share of total imports over the 1965–80 period.

The major impetus to the imports of services is the expected sharp rise in payments to foreign freight carriers from 1965 to 1980. Other changes anticipated are a considerable rise in spending on foreign travel by U.S. residents and increasing income payments on foreign-held assets in the United States.

Imports assigned to final demand sectors in the input-output system are expected to consti-

Table 17. Distribution of personal consumption expenditures by major types, for selected years and projected 1980

[In percent]

Function	1950	1957	1962	1965	1967	1968	Projected 1980	
							Basic models	
							3 percent	4 percent
Total personal consumption expenditures	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Durable goods	15.1	14.4	14.5	16.7	16.9	17.8	17.6	17.6
Automobiles and parts	6.9	6.5	6.4	7.6	7.1	8.0	6.7	6.7
Furniture and household equipment	6.6	6.0	6.1	6.9	7.3	7.4	8.1	8.1
Other	1.6	1.8	2.0	2.2	2.5	2.5	2.8	2.8
Nondurable goods	49.4	48.1	46.7	44.9	44.2	43.5	39.0	39.0
Food and beverages	27.4	26.4	24.8	23.2	22.2	21.3	19.4	19.4
Clothing and shoes	9.5	8.5	8.4	8.4	8.6	8.4	6.9	6.9
Gasoline and oil	2.8	3.6	3.7	3.6	3.7	3.7	3.0	3.0
Other	9.8	9.5	9.9	9.7	9.8	9.7	9.7	9.7
Services	35.5	37.5	38.8	38.3	38.9	38.7	43.4	43.4
Housing	11.6	13.6	14.5	14.6	14.8	14.7	17.7	17.7
Household operation	5.1	5.8	6.0	5.8	6.0	5.9	6.3	6.3
Transportation	3.7	3.3	2.9	2.8	2.8	2.8	2.9	2.9
Other	15.1	14.8	15.3	15.1	15.3	15.2	16.5	16.5

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Table 18. Annual rate of change in personal consumption expenditures by major types, for selected periods

[Average in percent] [1]

Function	Selected periods					1965–80	
	1950–65	1950–57	1957–65	1957–62	1965–68	Basic models	
						3 percent	4 percent
Personal consumption expenditures	3.7	3.2	4.1	3.3	4.4	4.4	4.3
Durable goods	4.4	2.6	6.1	3.5	6.6	4.7	4.7
Automobiles and parts	4.3	2.4	6.1	3.0	5.9	3.5	3.4
Furniture and household equipment	4.1	2.0	5.9	3.3	6.7	5.5	5.4
Other	5.9	5.3	6.5	5.1	8.7	6.0	5.9
Nondurable goods	3.1	2.9	3.2	2.7	3.3	3.4	3.4
Food and beverages	2.6	2.7	2.4	2.0	1.6	3.2	3.1
Clothing and shoes	2.9	1.6	4.1	3.1	4.3	3.0	3.0
Gasoline and oil	5.3	7.1	3.8	3.5	5.5	3.2	3.1
Other	3.7	2.9	4.4	4.0	4.2	4.4	4.3
Services	4.3	4.0	4.5	4.0	4.7	5.3	5.2
Housing	5.3	5.6	5.0	4.6	4.7	5.8	5.7
Household operation	4.7	5.2	4.3	4.1	5.1	4.9	4.9
Transportation	1.7	1.6	1.7	0.8	4.6	4.7	4.6
Other	3.8	2.9	4.6	4.0	4.5	4.9	4.9

[1] Compound interest rate based on terminal years.

tute a smaller share of total imports in 1980 than in 1965. The expected slow growth in purchases abroad by Federal Government agencies —especially the Department of Defense when the Viet Nam war ends—will more than offset the sizable expansions in personal consumption expenditures on imported goods and services, including those on foreign travel. The reduction in defense expenditures abroad assumes that the United States will not be involved in any major military action in 1980.

Government expenditures

The projections to 1980 of government purchases of goods and services are based on a review of past developments, anticipated future trends, and an examination of other factors—such as the changing age distribution of the population and population migration—which are expected to influence expenditure patterns. The projections include an evaluation of the future effect of recent legistlative changes, on government expenditures, including those involving aid to education, medicare, and other health and welfare programs.

Projecting Federal, State and local expenditures presents particular difficulties due to the method of channeling governmental funds. Expenditures for many Federal programs are in the form of grants or transfer payments and do not appear as purchases of goods and services by the Federal sector in the national income accounting system—the framework for these projections. The grants and transfer payments are recorded as expenditures by the sector of final demand that actually uses the funds to purchase goods and services. For example, Federal funds for health, education, conservation, and highways show up prominently in the direct purchases of State and local governments. In the same manner, Social Security transfer payments are included as a part of personal consumption expenditures. Of course, in projecting the level and distribution of other components of final demand which involve the use of Federal funds, the effect of Federal programs over time is considered.

Although the future influence of recent legislation can be projected with a reasonable degree of accuracy, an attempt to project the expenditure effect of future legislation is an entirely different matter and beyond the scope of this study. As a consequence, if new government programs of large dimensions should emerge or if there emphasis of existing programs shifts radically, the structure of demand in 1980 will differ from that of any of the models presented here. In brief, these projections of Federal and State and local government purchases of goods and services are intended to represent the expenditure structures as they are expected to develop through a continuation of present programs.

For both Federal and State and local government the projections by major function are distributed initially into three major categories: employee compensation, construction, and all other purchases of material, equipment, and services. Consistent with the assumption in the national income accounts of no productivity change in the Government sector, constant dol-

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lar employee compensation [14] is projected to increase in the same proportion as the change in government employment. Construction expenditures are estimated by type of construction such as education or hospitals. The other purchases for each function are distributed to producing sectors on the basis of expenditure patterns developed for the basic 1958 input-output table and modified to account for anticipated shifts in the mix of the goods and services purchased.

Federal Government. Total 1980 Federal Government expenditures for goods and services are projected to increase to $85.0 billion in the 3-percent basic model projections and $84.3 in the 4-percent basic model. The proportion of defense spending to total government spending is assumed to decline sharply in the 1980 projections from the 1965 level. In 1980, nondefense activities are anticipated to be above their historic highpoints both in relation to Federal spending and to total GNP. It should be noted that much of the increase in Federal nondefense expenditures for new construction and purchases from the private sector depends upon a continuance of recent legislative patterns in the fields of health, education, conservation and in the antipoverty effort.

Much of the expected increase in Federal spending will not be directly evident due to the statistical framework of the national income accounting system. Some of the most rapidly expanding Federal programs are included only as a part of other components of final demand; for example, medicare funds are included in personal consumption expenditures and aid to education is a part of State and local government expenditures. The projected expenditure level shows only direct Federal government purchases of goods and services.

Nondefense Federal employment is projected to grow at a relatively slow rate. By 1980, the proportion of nondefense Federal employees is expected to drop further from its 1965 relationship to total government employment.

The projections of Department of Defense Defense (DOD) expenditures assume that the United States is not engaged in active warfare and, therefore, that the level of Armed Forces is lower than it is at the present time. The 1980 projections in the basic models provide what might be termed a minimum level of DOD purchases; this level, however, is well above the 1965 level and approximates expenditures in 1963 when the United States was in a large missile procurement program.

The overall total for defense expenditures is

[14] In the input-output system of accounts, employee compensation does not include the payroll of "force account" government employees, i.e., Federal or State and local Government employees working on new or maintenance construction, as opposed to contract construction. Their payroll is included as part of the new and maintenance construction expenditures by government.

Table 19. State and local government purchases of goods and services, by function, for selected years and projected 1980

[Billions of 1958 dollars]

Function	Purchases				Average Annual Rate of Change [1]		
	1957	1965	1980 basic models		1957–65	1965–80 basic models	
			3 percent	4 percent		3 percent	4 percent
Total purchases	37.6	56.8	125.8	124.6	5.3	5.4	5.4
Education	14.6	23.4	45.5	45.1	6.1	4.5	4.5
Elementary and secondary	12.2	18.4	25.5	25.3	5.3	2.2	2.1
Higher	1.9	4.0	16.7	16.5	9.8	10.0	9.9
Other	.5	.9	3.3	3.3	7.6	9.0	9.0
Noneducation	23.0	33.5	80.3	79.5	4.8	6.0	5.9
Highways	7.6	10.5	15.3	15.1	4.1	2.5	2.5
Public health and sanitation	3.8	5.0	10.3	10.2	3.5	4.9	4.9
Hospitals	2.8	3.8	7.6	7.5	3.9	4.7	4.6
Health	.6	.7	1.6	1.6	1.9	5.7	5.7
Sanitation	.4	.5	1.1	1.1	2.8	5.4	5.4
Natural resources	1.0	1.2	2.9	2.9	2.3	6.1	6.0
Parks and recreation	.6	1.0	3.4	3.4	6.6	8.5	8.5
Enterprises	2.6	4.1	12.0	11.9	5.9	7.4	7.4
All other functions	7.4	11.7	36.3	36.0	5.9	7.8	7.8

[1] Compound interest rates based on terminal years.

SOURCE: Bureau of Labor Statistics.

NOTE: Detail may not add to totals due to rounding.

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established by projecting separate levels for compensation, construction, imports, and the total of all other purchases within the context of the model assumptions. Compensation is projected in 1958 dollars by using the Armed Forces and civilian manpower levels assumed for 1980. Projections of construction and imports are based upon historical experience and the assumed conditions for each model. Operating expenses in the military personnel and the operations and maintenance accounts are projected on the basis of force levels assumed. Expenditures for procurement and for research and development are determined by establishing overall control levels for major programs such as missiles, ordnance, aircraft and ships and then distributing the control levels to detailed sector expenditures based upon current program relationships.

Defense expenditures are projected in 1980 at approximately $8 billion above the 1965 level. Armed forces strength is assumed to fall to 2.7 million, the same level as in 1965; therefore, the entire increase in defense expenditures is allocated to higher levels of procurement and construction.

Ordnance expenditures in the 1980 projections are $2.7 billion. This is well above the 1965 level, but near the 1963 level when strategic missile production had reached a peak. Aircraft expenditures are projected at $7.9 billion, somewhat above 1965 spending of $7.2 billion and again approximating the 1963 level.

Electronics expenditures are projected higher than the 1963 and 1965 levels because of increased utilization of weapon systems for which electronics are purchased separately as an item of government furnished equipment,[15] as well as increased purchases of major electronic systems. Shipbuilding expenditures, not including the purchases made in government owned and operated yards, were projected at $0.9 billion.

State and Local Government. A continued rapid pace of growth to 1980 is projected for State and local government expenditures from their 1965 level of $56.8 billion. Purchases of goods and services are projected to more than double in the 15 years span with an average annual rate of growth of 5.4 percent. This is about the same rate of increase as in the 1957–65 period but below the very high annual rate—between 6 and 7 percent—of the last 6 years, due largely to a projected slowdown in the rate of increase in educational expenditures. The increases in State and local government expenditures over the projected period result from a combination of expected population growth, shifts in the age distribution and location of the population, and demand for higher quality services. State and local government purchases which during the 1950's and 1960's was at a level lower than Federal government purchases is expected to exceed the federal level early in the 1970's and to be nearly one-half again as large by 1980.[16]

State and local government expenditures are identified by major functions or types of activity, and each function is projected separately to 1980. As noted previously, the influence of Federal funds is considered in making these projections. For the purpose of the 1980 projections, State and local government expenditures are distributed among elementary and secondary schools, higher education, other education, highways, hospitals, health, sanitation, natural resources, parks and recreation, government enterprise, and all other functions. Table 19 presents historical and projected data on the levels of expenditures and rates of growth by these functions.

Expenditures on education will continue to be the largest single demand on the resources of State and local governments through 1980, although as a proportion of total spending they are expected to decline slightly from 1965. For the period 1957–65, the increase of 6.1 percent a year in educational expenditures was greater

[15] Current contracting procedure of the Department of Defense is to purchase all major sub-components of a system directly, and then to furnish it as government furnished equipment to one contractor who assembles the sub-components into a completed system.

[16] In the fourth quarter of 1969, State and local government purchases of goods and services exceeded Federal Government purchases when both are expressed in terms of 1958 dollars at seasonally adjusted annual rates. (*Survey of Current Business*, February 1970, table 1.) The last time State and local purchases exceeded Federal purchases on this basis was in the fourth quarter of 1950. (*The National Income and Product Accounts of the U.S., 1929–65: A Supplement to the Survey of Current Business*, August 1966, table 1.2.)

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than the overall rate of growth of State and local government expenditures; in the projected period the converse will be true.

The 1980 projection assumes an improved quality of education through decreases in student-teacher ratios at both the elementary and secondary school levels. Instructional personnel other than classroom teachers, such as psychologists and other specialists, are projected to increase greatly in number. Educational systems will require new buildings and equipment in order to utilize the additional instructional personnel and fully enhance student learning opportunities.

Projected population patterns for the 1970's show elementary school age groups stabilizing and even declining slightly in the first part of the decade due to the lower birth rates of recent years. By 1980, however, the elementary school age population could be increasing again, unless birth rates continue to decline. The size of the 14 to 17 year old group, which forms the bulk of secondary school enrollment, will continue to expand at least until late in the 1970's and, in any case, total enrollment at the secondary school level is expected to increase because of higher retention rates.

An important part of the projected spending advance for elementary and secondary schools is assumed to be directly toward improving the quality of education. At the elementary level this would encompass smaller classes, more specialized personnel, and a variety of preschool and enrichment programs. At the secondary school level as well, the emphasis is assumed to be directed toward quality education, as a smaller part of the projected expenditure increase is earmarked for meeting the requirements arising from increased enrollment. Moreover, it is anticipated that elementary and secondary schools will assume greater roles as community and adult education centers.

Enrollment in higher education is expected to continue to grow. First, the prime population age group from which enrollees in institutions of higher learning are drawn will be expanding. Second, the proportion of the college age population attending degree credit institutions will be at a new high in 1980, and an even higher ratio of these students are expected to attend public higher education facilities than the 66 percent enrolled in 1965. Finally, the retention rate of those enrolled is expected to be higher.

The quality of higher education is expected to increase in the period to 1980, with the emphasis on a greater depth of staff. Larger numbers of nonteaching personnel will also be required. Construction is expected to absorb a significant part of total expenditures. Rapid proliferation of public junior and community colleges, as well as satellite or branch campuses of State universities, is expected to provide the educational facilities for a large part of the increased enrollment to 1980.

During the 1957–65 period, State and local government purchases excluding education increased at a 4.8 percent rate—somewhat slower than total State and local purchases. However, their projected rate of increase 1965–80 is 6.0 percent a year, somewhat faster than total State and local government purchases.

Highway expenditures have averaged about one-fifth of all State and local government purchases of goods and services in recent years. From an ownership and maintenance viewpoint, State governments are responsible for approximately 20 percent of the mileage, local governments for 76 percent, and the Federal Government the remainder.

Although the recent annual rate of growth of 4.1 percent (1957–65) is expected to slow to 2.5 percent a year by 1980, construction outlays for new highways and roads—as well as greatly increased maintenance responsibilities at the local and State level—will require the annual expenditures of nearly $15 billion by 1980. Completion of the presently scheduled Interstate Highway Program in the mid-1970's will result in an additional 41,000 miles of highway to be maintained by State and local governments.

As much as $10 billion is projected for State and local government purchases of goods and services in 1980 in the field of public health, hospitals, and sanitation. Widespread citizen concern and additional Federal funding will undoubtedly lead to the development of many facilities for health care such as regional health centers, community mental health facilities, nursing homes, and establishments to aid the physically and mentally handicapped. Legislation such as the Hill–Burton Act and the

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Community Mental Health Construction Act provide for the construction of many of these facilities. Even though much Federal funding will continue to be channeled into the private sector—principally to religious-affiliated facilities and nonprofit voluntary institutions—State and local government responsibilities are expected to increase, particularly in the care of handicapped persons and the chronically ill. Expenditures on health services by State and local government are projected to grow at a rate of 5.7 percent a year compared with 1.9 percent a year during the 1957–65 period.

The projected expenditure of $1.1 billion for sanitation in 1980—an annual rate of growth of 5.4 percent from 1965—reflects the demand for services such as refuse collection and disposal, insect control, and street cleaning. Also, an important part of the sanitation funds will be expended to battle water and air pollution. Sanitation construction will increase in older metropolitan centers as well as in new towns and cities due to demands for pollution control.

Expenditures for conservation and development of natural and agricultural resources together with the operation of parks and recreational activities are projected to accelerate at a rate of over 8 percent a year to 1980. Increased leisure time coupled with higher personal incomes assumes a continuing growth in public demand for parks and recreational services. Although it is a relatively small part of total state and local government expenditures, the growth rate of spending on parks and recreation is among the fastest-growing of all functions.

Government enterprises include a diverse group of public institutions which furnish a vast array of services ranging from public utilities and transit companies to offset parking lots and liquor stores. Also, included are housing and community development, water and air transportation, and other commercial activities. Due to the commercial nature of these activities, only the construction and capital equipment expenditures enter into the national income account system.[17] Much of the projected thrust of government enterprise expenditures to record levels in 1980 is expected to come from increased urban renewal, redevelopment, and rehabilitation associated with the central cities. New low-income housing will require heavy expenditures. Urban transit systems are expected to expand dramatically by 1980 and to require large outlays for construction and the purchase of capital equipment. Other public enterprises such as utilities, liquor stores, and other commerical activities are projected to increase in line with population growth.

Expenditures for the wide variety of other functions performed by State and local governments are projected to increase at a rate exceeding 7.5 percent a year to 1980 and take a larger proportion of total government spending than they do at present. Among these functions are police and fire departments; public libraries; legislative, judicial and executive departments; and various inspection and regulatory agencies. Important factors in the increased rate of spending for this category of State and local government spending are welfare and antipoverty efforts which are projected to require significant increases in expenditure levels. Crime and its control, increase in the size and quality of police forces, courts and their expansion, and reform of correctional institutions are increasingly receiving attention and are expected to receive a much larger part of State and local government resources in the 1970's. Also important to the expansion of this category is population growth and migration, together with local requests for higher quality public services. By 1980, State and local government purchases of goods and services to meet these varied demands are projected at over $36 billion.

Final demand by input-output sectors

In the preceding discussion the demand for goods and services generally has been presented from the point of view of the final user. This is in accord with the presentation of the national income and product data and is the form in which the 1980 projections were made. There is, however, an additional important step in the projections procedure. For use in the input-output system, the final demands for

[17] Employee compensation and other current expenditures are offset against income, and the resulting surplus or deficit is entered on the income side of the enterprise account.

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Table 20. Sector composition of 1980 projects

Industry number and title
Agricultural, forestry, and fisheries:
1. Livestock and livestock products
2. Other agricultural products
3. Forestry and fishery products
4. Agricultural, forestry, and fisheries services
Mining:
5. Iron and ferroalloy ores mining
6. Nonferrous metal ores mining
7. Coal mining
8. Crude petroleum and natural gas
9. Stone and clay mining and quarrying
10. Chemical and fertilizer mineral mining
Construction:
11. New construction
12. Maintenance and repair construction
Manufacturing:
13. Ordnance and accessories
14. Food and kindred products
15. Tobacco manufactures
16. Broad and narrow fabrics, yarn and thread mills
17. Miscellaneous textile goods and floor coverings
18. Apparel
19. Miscellaneous fabricated textile products
20. Lumber and wood products, except containers
21. Wooden containers
22. Household furniture
23. Other furniture and fixtures
24. Paper and allied products, except containers and boxes
25. Paperboard containers and boxes
26. Printing and publishing
27. Chemicals and selected chemical products
28. Plastics and synthetic materials
29. Drugs, cleaning, and toilet preparations
30. Paints and allied products
31. Petroleum refining and related industries
32. Rubber and miscellaneous plastics products
33. Leather tanning and industrial leather products
34. Footwear and other leather products
35. Glass and glass products
36. Stone and clay products
37. Primary iron and steel manufacturing
38. Primary nonferrous metals manufacturing
39. Metal containers
40. Heating, plumbing, and fabricated structural metal products
41. Screw machine products, bolts, nuts, etc., and metal stampings
42. Other fabricated metal products
43. Engines and turbines
44. Farm machinery and equipment
45. Construction, mining, oil field machinery and equipment
46. Materials handling machinery and equipment
47. Metalworking machinery and equipment
48. Special industry machinery and equipment
49. General industrial machinery and equipment
50. Machine shop products
51. Office, computing, and accounting machines
52. Service industry machines
53. Electric transmission and distribution equipment, and electrical industrial apparatus
54. Household appliances
55. Electric lighting and wiring equipment
56. Radio, television, and communication equipment
57. Electronic components and accessories
58. Miscellaneous electrical machinery, equipment, and supplies
59. Motor vehicles and equipment
60. Aircraft and parts
61. Other transportation equipment
62. Professional, scientific, and controlling instruments and supplies
63. Optical, ophthalmic, and photographic equipment and supplies
64. Miscellaneous manufacturing
Transportation, communication, electric, gas, sanitary services:
65. Transportation and warehousing
66. Communications, except radio and TV broadcasting
67. Radio and TV broadcasting
68. Electric, gas, water, and sanitary services
Wholesale and retail trade:
69. Wholesale and retail trade
Finance, insurance, and real estate:
70. Finance and insurance
71. Real estate and rental
Services:
72. Hotels and lodging places; personal and repair services, except automobile parts
73. Business services
74. Research and development
75. Automobile repair and services
76. Amusements
77. Medical, educational services, and nonprofit organizations
Government enterprises:
78. Federal government enterprises
79. State and local government enterprises
Imports:
80. Gross imports of goods and services
Dummy industries:
81. Business travel, entertainment, and gifts
82. Office supplies
83. Scrap, used and secondhand goods
Special industries:
84. Government industry
85. Rest of world industry
86. Household industry

goods and services must be restated in terms of the demand for the output of each sector or industry. A complete listing of the input-output sectors is presented in table 20 and is identical to the classification system in the 1958 input-output study.[18]

Available data on the consumption by final users usually is presented for a homogeneous group of products or services which, in fact, may be produced in more than one sector. Further, the price to the final user—purchasers' value—includes the cost of transportation, trade, and insurance; when translated into demands by industry these margins are demands for the transportation, and trade and insurance industries respectively, and the demand for the producing industries is only the value of the product as it leaves that industry—producers value.

To illustrate the change in the arrangement of the data, personal consumption expenditures demand is projected for the category shoes and other footwear which is then distributed into demands for the output of industry 32, rubber and miscellaneous products; industry 34, footwear and other leather products; and industry 80, imports. These demands are then adjusted to producers' values, and the appropriate margins are added to the demands for the transportation, trade, and insurance sectors, respec-

[18] The 1958 input-output tables were prepared by the Office of Business Economics and published in the *Survey of Current Business*, November 1964 and September 1965. The Office of Business Economics has recently completed an input-output study for 1963; a summary of this work appears in the November 1969 issue of the *Survey of Current Business*.

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tively. Similarly, State and local government expenditures on elementary education is projected on the basis of expected demand for this service. This projection is then distributed into three parts: construction, compensation, and all other. The first part becomes the demand for industry 11, new construction; the second is demand for industry 84, government industry; and the all other category is further distributed among all the industries supplying goods and services to elementary schools, with appropriate margins adjustments to arrive at producers' value by sector.

In a final step, the producers' value of final demand for each sector is assembled from all sources—personal consumption expenditures, gross private domestic investment, exports, and Federal and State and local government—into a single set of industry demands. The total value of these industry demands is equal to the total value of the demands by final users, of course, and when reduced by the value of imports is equivalent to GNP.

The methods used in the projection of final demands and their translation into the input-output framework is discussed in greater detail in appendix A. The final demands in producers' value by input-output sectors for total GNP and its major components are shown in appendix D, tables D–1 through D–8. The industry demands, together with the 1980 coefficients matrix, form the basis for the projected industry outputs. These topics are discussed in the following chapter.

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Chapter IV. Projected Industry Output, Ouput Per Man-Hour and Employment

In previous chapters, the discussion centered first on the factors used in determining potential output; next, on the structure of gross national product with respect to its major components; and finally, on the industry structure of each of these components. Each of these subjects provided necessary background for the discussions in this chapter on industry output, productivity, and employment. Before proceeding to these topics, another factor—the input-output coefficients which play a key role—must be examined.

Projection of input-output coefficients

The projections to 1980 of final demand by industry, discussed in chapter III, determine in part the projected levels of output by industry. Output levels of each industry depend as well upon the input-output coefficients and these, also, were projected to 1980.

Input-output coefficients reflect the relationships between producing and consuming industries. Any particular coefficient is the ratio of purchases from a producing industry to the total output of the consuming industry, i.e., the purchases required per dollar of output. As the relationships between industries change over time—and more or less of certain inputs are required per dollar of output—the coefficients also change and these changes must be projected.

A change in a coefficient affects both the industry in which the change takes place and the industry which produces the intermediate good or service. Similarly, in projecting the input-output coefficients to 1980, two alternative approaches were utilized. The first approach consisted of detailed analyses of the input structures of industries. In the second method an aggregative technique was used to adjust the coefficients from the point of view of the industry as a seller of output to other industries.[19] This latter point of view of the industry as a seller of output is the focal point of the discussion in this section.

Table 21 presents one measure of the net effect of the coefficient projections on the producing industries. The index of coefficient change for each industry is the ratio between that industry's intermediate output (assuming 1965 input-output coefficients) and the intermediate output (using 1980 coefficients), when both sets of coefficients are weighted by the 1980 industry output levels. An industry's index of change does not show how much the intermediate output of that industry actually is projected to increase or decrease; this change in intermediate output depends upon the growth rates of output of the consuming industries as well as the projected coefficient changes. The index for an industry does indicate whether the use of that industry's output is increasing or decreasing, on the average, per dollar of the consuming industries outputs from the point of view of a 1980 output distribution.

As noted above, input-output coefficients reflect relationships between producing and consuming industries and as these relationships change over time, the coefficients also change. There are several kinds of change in the relationship between industries which may be translated into a change in coefficients. The most notable of these is technological change whereby new or modified materials and processes are introduced into the production stream. Product mix change is another important cause of coefficient change; if the outputs of the products made by an industry change at different rates, then the input coefficients for the entire sector may also change. Price competition can also be the source of coefficient change; if the relative prices in two industries producing competitive products change, the relatively cheaper product may be substituted for the more expensive product.

The index of coefficient change for an industry as shown in table 21 may have resulted from one or more than one of the sources of coefficient change. The following paragraphs

[19] These two techniques are described in detail in appendix A. Also presented in appendix A are the mathematical techniques necessary for manipulation of the input-output system.

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present a few of the basic considerations which were important in modifying the coefficients in selected industries.

The decline in the forestry and fishery products industry is primarily a function of the increased processing of wood in the consumer industries, i.e., plywood, structural wood parts, etc. Increased fabrication of wood parts and components has the effect of making the stumpage input produced by the forestry component of this sector a smaller part of the total inputs of the wood processing industries, and thus resulted in the decline shown in table 21.

A projected increase in the use of atomic power in addition to general declines in the uses of coal resulted in a substantial decrease in the coefficient ratio shown for the coal mining industry. However, in terms of absolute tonnage consumption, the 1980 estimate exceeds the 1965 use. The historical decline in coal used per kilowatt generated has slowed as the physical limit of this process is being approached.

The index for wooden containers shows a very pronounced decrease. This reflects the projected long-term decline of this industry due to inroads of competitive packaging materials. The chemical industry's small change is a result of relatively slow growth in basic chemicals, in part offset by more rapidly growing sales to selected customers such as agriculture (fertilizers and insecticides) and plastics and synthetics (raw materials for the manufacture of primary plastics and synthetics).

Increased use of synthetic materials is reflected in the coefficient ratios of those industries associated with these products. These industries are the plastic and synthetic materials and the rubber and miscellaneous plastic products industry, a producer of a wide range of fabricated products. On the other hand, the leather tanning industry shows a decline; this

Table 21. Index of coefficient change, 1965–80 [1]

[1965=100]

Industry number and title	Index of coefficient change, 1965–80	Industry number and title	Index of coefficient change, 1965–80
1. Livestock and livestock products	93.6	43. Engines and turbines	93.5
2. Other agricultural products	93.6	44. Farm machinery and equipment	81.1
3. Forestry and fishery products	87.3	45. Construction, mining, and oil field machinery	86.2
4. Agricultural, forestry, and fishery services	91.6	46. Materials handling machinery and equipment	97.3
5. Iron and ferroalloy ores mining	101.7	47. Metalworking machinery and equipment	86.6
6. Nonferrous metal ores mining	98.3	48. Special industry machinery and equipment	114.1
7. Coal mining	64.9	49. General industrial machinery and equipment	95.2
8. Crude petroleum and natural gas	94.7	50. Machine shop products	115.6
9. Stone and clay mining and quarrying	99.9	51. Office, computing, and accounting machines	139.4
10. Chemical and fertilizer mineral mining	108.2	52. Service industry machines	159.4
11. New construction [2]		53. Electric industrial equipment and apparatus	104.6
12. Maintenance and repair construction	74.1	54. Household appliances	100.4
13. Ordnance and accessories	112.3	55. Electric lighting and wiring equipment	100.2
14. Food and kindred products	105.2	56. Radio, television, and communication equipment	115.5
15. Tobacco manufactures	98.3	57. Electronic components and accessories	143.4
16. Broad and narrow fabrics, yarn and thread mills	100.1	58. Miscellaneous electrical machinery and equipment	122.4
17. Miscellaneous textile goods and floor coverings	86.2	59. Motor vehicles and equipment	98.0
18. Apparel	98.1	60. Aircraft and parts	95.4
19. Miscellaneous fabricated textile products	99.6	61. Other transportation equipment	75.0
20. Lumber and wood products, except containers	91.5	62. Scientific and controlling instruments	113.4
21. Wooden containers	58.4	63. Optical, ophthalmic, and photographic equipment	148.1
22. Household furniture	79.5	64. Miscellaneous manufacturing	103.5
23. Other furniture and fixtures	107.0	65. Transportation and warehousing	92.9
24. Paper and allied products, except containers	97.7	66. Communications; except broadcasting	144.3
25. Paperboard containers and boxes	97.1	67. Radio and television broadcasting	52.8
26. Printing and publishing	80.6	68. Electric, gas, water, and sanitary services	146.1
27. Chemicals and selected chemical products	101.5	69. Wholesale and retail trade	122.6
28. Plastics and synthetic materials	132.9	70. Finance and insurance	96.0
29. Drugs, cleaning, and toilet preparations	123.4	71. Real estate and rental	78.8
30. Paints and allied products	104.2	72. Hotels; personal and repair services, except auto	106.7
31. Petroleum refining and related industries	86.7	73. Business services	128.5
32. Rubber and miscellaneous plastics products	135.0	74. Research and development	125.8
33. Leather tanning and industrial leather products	74.7	75. Automobile repair and services	116.9
34. Footwear and other leather products	115.5	76. Amusements	116.0
35. Glass and glass products	89.6	77. Medical, educational and nonprofit organizations	98.5
36. Stone and clay products	103.6	78. Federal Government enterprises	94.2
37. Primary iron and steel manufacturing	78.0	79. State and local government enterprises	93.5
38. Primary nonferrous metals manufacturing	106.9	80. Gross imports of goods and services	126.7
39. Metal containers	92.9	81. Business travel, entertainment, and gifts	73.5
40. Heating, plumbing and structural metal products	102.2	82. Office supplies	122.5
41. Stampings, screw machine products and bolts	89.7		
42. Other fabricated metal products	95.0		

[1] The index of coefficient change for each industry is the ratio between that industry's intermediate output using 1965 coefficients and the intermediate output using 1980 coefficients, when both sets of coefficients are weighted by the 1980 industry output levels. The intermediate output of an industry is that part of its total output consumed by all intermediate industries.

[2] New construction has no coefficients since none of its output is sold for intermediate consumption.

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exemplifies the effect of the increased use of synthetic materials on older materials—in this case leather.

The primary iron and steel industry exemplifies two movements in technology and material use. First, increased competition from other materials has resulted in substitution. An example of this is the projected increase in aluminum, plastics, and fibre-board to replace steel in the manufacture of tin cans. Second, improved steels and better design concepts have decreased the quantity of steel per unit of product. In the case of tin cans, thinner steels permit a lesser total tonnage of steel per can. These trends are assumed to continue.

The ratio of coefficients for the nonferrous metals industry stands in contrast to that of primary iron and steel. Two distinct trends are present in this industry. First, aluminum, the largest single component, is assumed to continue its relatively high growth into other markets. Other nonferrous metals are presumed to grow but at considerably lesser rates. These projections have the effect of moderating the total nonferrous industry so that the total industry coefficients continues to grow at a rate only slightly faster than its consuming industries.

The very high growth rate of the office, computing, and accounting machines industry, arises from its position as manufacturer of a product which is rapidly becoming a basic necessity for all modern organizations, business and government. In economic terms, two types of computer transactions are discernable—the manufacture and the use. In input-output analysis a computer purchased by the final user is capital investment. However, if the computer use is obtained by rental or use fees the owning company usually has the costs of operation and the user pays a fee which becomes another input-output transaction. In fact, this industry sells finished equipment to the capital accounts of both final users and leasing or computer use businesses. The increased coefficient for this sector reflects the projected growth of maintenance and repair and of the software required by the projected rapid expansion of computers.

The projected increase for the service machines industry, results from the projected increase in air conditioning equipment, an important product of this industry.

The coefficient ratio for the electronic components and accessories industry shows an increase as its increasingly sophisticated products replace other inputs or components in the communications and television manufacturing sectors.

A situation similar to that of computers arises with respect to the output of the optical, ophthalmic, and photographic equipment industry, which produces the equipment for the rapidly growing copying machine market. The machines are sold as capital equipment, some to final users and the remainder to the trade sector and business services sector. These sectors sell the services of the machines to other industries, thereby increasing their own intermediate outputs.

The rapid general increase of energy use in the form of electric and gas is assumed to continue as the increased ratio shows. Historically, this growth has been rapid and there are no signs of slackening.

Sector distribution of real output

Economic growth in terms of real gross national output between 1965 and 1980 is projected at 4.3 percent in the basic models. In order to compare sector growth rates in relation to the overall gross national product growth rate, a percent distribution of gross product originating [20] by major sector is used. The comparison of these relative movements is shown in table 22 which provides an indication of the relative shifts in the output of the major sectors from 1955 to 1968 and as projected for 1980.

In general the distribution of sector output over time has been marked by fairly definite long-term trends. On one hand, the decline in the share of output of agriculture, mining, and construction has been quite steady. Government and government enterprises share of gross output has had an historical decline interrupted only by a slight upturn during the 1965–68 period, largely because of the Viet Nam war. At the same time, increases have oc-

[20] Gross product originating is the net contribution or value added by each sector toward the total gross national product. It is also the deflated sum of the factor payments by each sector.

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Table 22. Distribution of gross product originating, selected years and projected 1980

[In percent]

	1950	1957	1963	1965	1967	1968	1980 Basic models	
							3 percent	4 percent
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, forestry and fisheries	5.7	4.8	4.4	4.0	3.7	3.5	3.2	3.2
Mining	3.0	3.0	2.5	2.4	2.4	2.3	2.0	2.0
Construction	4.6	4.7	4.0	3.8	3.4	3.4	3.5	3.5
Manufacturing	29.7	29.7	29.5	30.8	30.5	31.2	30.3	30.3
Transportation, communication and public utilities	8.7	9.1	9.4	9.6	9.9	9.9	11.2	11.2
Trade	17.0	16.6	16.8	17.0	16.9	16.9	17.4	17.4
Finance, insurance and real estate	11.5	12.6	13.5	13.5	13.5	13.5	14.8	14.8
Services	9.3	9.2	9.5	9.3	9.4	9.3	9.6	9.6
Government and Government enterprises	10.1	10.4	9.8	9.4	9.7	9.7	7.9	7.9
Other [1]	.4	−.1	.6	.2	.6	.2	.2	.2

[1] Includes rest of the world and statistical residual.

SOURCE: Historical data are from the Office of Business Economics, U.S. Department of Commerce. Projections are by the Bureau of Labor Statistics, U.S. Department of Labor.

curred in the transportation and public utilities categories, and in the finance, and real estate sectors. The manufacturing, trade, and services sectors' share of output has moved only within a very narrow range. The projections continue past trends except for a halt in the downward slide in the share of the construction sector. For government the projections continue its long term decline prevalent before Viet Nam.

Projected Industry Output Growth Rates. Moving from the viewpoint of major sectors to a consideration of the detailed input-output industries, the projected average annual rates of change in domestic output [21] vary from a slight decline to a growth of more than 10 percent a year. Office, computing, and accounting machines is the most rapidly growing industry.[22] In addition to computers, the industries projected to grow most rapidly are optical, ophthalmic, and photographic equipment and supplies (which includes photocopying equipment); electronic components and supplies; communications; and plastics and synthetic materials. The six industries with the next fastest projected growth rates are electric, gas, water, and sanitary services; service industry machines (which include air conditioning equipment); rubber and miscellaneous plastics products; business services; radio, television, and communications equipment; and chemical and fertilizer mineral mining. (See chart.)

The introduction and rapid assimilation of computers and computer technology into the operations of both the private and public sectors has furnished the U.S. economy with a dynamic new factor in the post-war period. Computer production now dominates the office, computing, and accounting machines industry, the result of having multiplied its output several times over during the last decade. In the last few years computer output has grown at the staggering rate of nearly 40 percent a year. Based on past performance, together with an expected growth of computer use in communications and data transmission—and even a possible introduction into the consumer market—the projected growth rate of this industry will remain extremely high through the 1970's.

As was the case with office, computing, and accounting machines, the other sectors in the fastest growing group are those which have experienced high growth rates in the recent past; none of the projected high-growth industries moved up out of the more slowly growing groups. However, in a number of sectors, the projected rate of output growth differs considerably from past growth rates. The

[21] The measure of output at the detailed industry level is gross duplicated output rather than gross product originating. Gross duplicated output includes the value of an industries' shipments plus those products which are primary to its output but made as secondary products in other sectors. Gross duplicated output differs from gross output originating in that it includes cost of materials and secondary products made in other sectors of an industry in addition to its value added.

[22] See appendix table D–9 for output growth rates for all 82 industries.

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Average Annual Growth Rates of Fastest Growing Industries, 1965-80

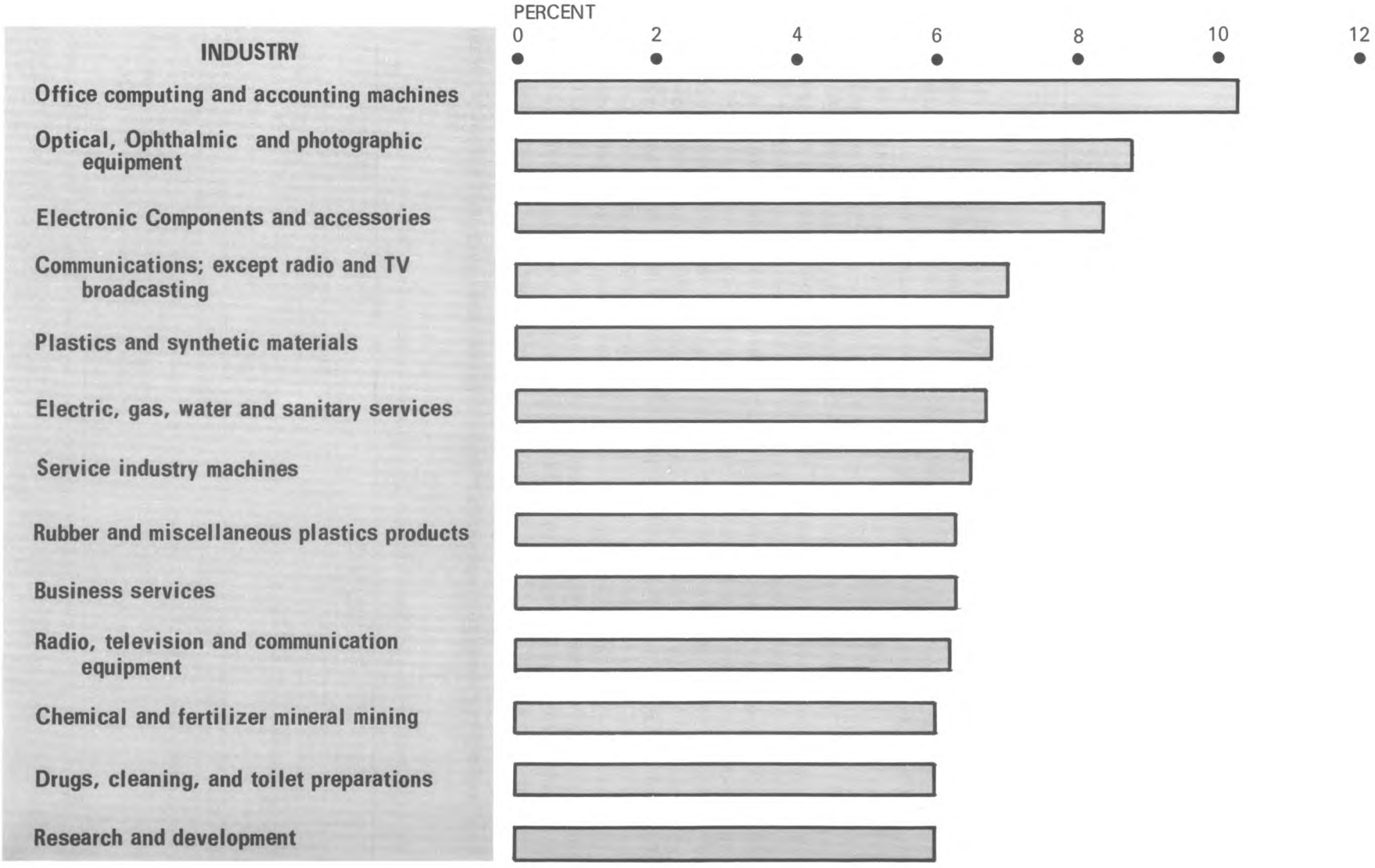

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Table 23. Industries projected to grow most rapidly in output, 1965–80

Sector	Industry	Projected average annual growth rate in output [1] basic models	
		3–percent unemployment	4–percent unemployment
51.	Office computing and accounting machines	10.3	10.2
63.	Optical, ophthalmic and photographic equipment	8.8	8.8
57.	Electronic components and accessories	8.4	8.4
66.	Communications: except radio and TV broadcasting	7.0	6.9
28.	Plastics and synthetic materials	6.8	6.7
68.	Electric, gas, water and sanitary services	6.7	6.6
52.	Service industry machines	6.5	6.4
32.	Rubber and miscellaneous plastics products	6.3	6.2
73.	Business services	6.3	6.2
56.	Radio, television and communication equipment	6.2	6.1
10.	Chemical and fertilizer mineral mining	6.0	5.9
29.	Drugs, cleaning, and toilet preparations	6.0	5.9
74.	Research and development	6.0	5.9

[1] Output growth is change in real terms of gross duplicated output.

differences are discussed in the following section.

Industries whose growth rate in output is projected at least 1 percent higher than historical rates include the coal industry which has recovered somewhat in recent years from a very low rate of growth. Some of the expected gain in the projected rate of increase for coal is due to demand in the international market. However, by 1975 nuclear energy is expected to have made significant inroads into fossil fuel power generation. The result will be that the rate of growth in the latter part of the projected period will be slower than in the earlier years.

Significant increases in rate of growth are expected for new construction. Its projected strength comes from the increases in residential housing in the 1970's, the continued strength of State and local government construction, and strong demand from certain segments of nonresidential construction, particularly commercial and office structures. Corresponding to the increased growth in the new construction industry itself is the faster pace projected for the industries which supply construction materials, particularly fabricated structual products, stone and clay building materials, construction machinery, and to some extent, the metals and lumber areas.

Other industries projected to show higher growth than their past rates include the miscellaneous electrical machinery and supplies industry. The accelerated growth in this industry stems from increasing battery use in a wide range of industrial and consumer applications. The transportation sector also will grow faster than it has in the past. Contributing factors to its growth include a continuing increase in air travel, the burgeoning air cargo business, and the continued strength of trucking. Since the railroad industry seems to have

Table 24. Industries with significant changes in projected output growth rates [1]

Industries with rates 1.0 percentage point below 1957–65 rates	Industries with rates 1.0 percentage point above 1957–65 rates
12 Maintenance and repair construction	1 Livestock and livestock products
17 Miscellaneous fabricated textile products	6 Nonferrous metal ores mining
28 Plastics and synthetic materials	7 Coal mining
29 Drugs, cleaning, and toilet preparations	8 Crude petroleum and natural gas
32 Rubber and miscellaneous plastics products	13 Ordnance and accessories
49 General industrial machinery and equipment	22 Household furniture
54 Household appliances	38 Primary nonferrous metals manufacturing
56 Radio, television and communication equipment	40 Heating, plumbing, and structural metal products
57 Electronic components and accessories	41 Stampings, screw machine products and bolts
59 Motor vehicles and equipment	45 Construction, mining and oil field machinery
61 Other transportation equipment	53 Electric industrial equipment and apparatus
67 Radio and television broadcasting	58 Miscellaneous electrical machinery and supplies
74 Research and development	60 Aircraft and parts
	62 Scientific and controlling instruments
	63 Optical, ophthalmic and photographic equipment
	65 Transportation and warehousing
	68 Electric, gas, water, and sanitary services
	73 Business services
	76 Amusements

[1] Industries not shown on this table have projected growth inoutput less than 1.0 percent per year from their 1957–65 rates.

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reached a low point, particularly in numbers of passengers, it is expected to be less of a retarding factor in future transportation growth.

Another sector with a growth rate significantly higher than its past performance is the amusement industry. Its projected growth will be due to increased leisure, higher consumer incomes, and the fact that the movie industry —whose past decline has dampened the overall growth of the sector—may be reaching its low point.

Among the industries whose projected growth rate to 1980 is at least one percent a year lower than during the 1957–65 period is the synthetic fibers industry. However, even though projected to grow at a slower rate, the industry is still in the group of fastest growing sectors with a projected average annual rate of growth of nearly 7 percent. Two other industries with declining rates of growth but still among the fastest growing are the radio, television, and communications industry and its major supplier, the electronic components industry. The former will decline from its 1957–65 rate of 9 percent a year to a projected rate of just over 6 percent, and the latter will decline from an annual rate of 15 percent to between 8 and 9 percent growth in the projections. Their decline in terms of projected rates of growth is based on two factors, one being the partly subjective question of the sustainability of extraordinarily high growth and the other the more objective result of rather slow growth in projected defense purchases of electronics. However, the market potential remains strong for other products of these industries, particularly color television receivers and telephone equipment.

Isolating those industries for which projected growth rates differ significantly from past rates is generally an appropriate use of growth rates. For some industries, comparisons between historical years and a projected year are influenced to a considerable degree by the base year selected. Certain of the industries designated as varying significantly from their past rates would not stand out with the selection of a different base year. For instance, if the historical period had been 1947–65 rather than 1957–65, the miscellaneous textile goods, general industrial machinery, household appliances, and other transportation equipment industries would not show nearly as much variation between the projected 1965–80 growth rates and their historical rates.

Just as important, if the 1957–68 reference

Table 25. Range of projected rate of change in output per man-hour by industry, 1965–80

2.5 percent per year or less		2.6 to 3.5 percent per year		3.6 percent per year or above	
3	Forestry and fishery products	13	Ordnance and accessories	1	Livestock and livestock products
4	Agricultural, forestry and fishery services	14	Food and kindred products	2	Other agricultural products
11	New construction	22	Household furniture	5	Iron and ferroalloy ores mining
12	Maintenance and repair construction	24	Paper and allied products, except containers	6	Nonferrous metal ores mining
18	Apparel	25	Paperboard containers and boxes	7	Coal mining
19	Miscellaneous fabricated textile products	26	Printing and publishing	8	Crude petroleum and natural gas
23	Other furniture and fixtures	29	Drugs, cleaning, and toilet preparations	9	Stone and clay mining and quarrying
33	Leather tanning and industrial leather products	30	Paints and allied products	10	Chemical and fertilizer mineral mining
34	Footwear and other leather products	32	Rubber and miscellaneous plastics products	15	Tobacco manufactures
35	Glass and glass products	36	Stone and clay products	16	Broad and narrow fabrics, yarn and thread mills
40	Heating, plumbing and structural metal products	37	Primary iron and steel manufacturing	17	Miscellaneous textile goods and floor coverings
41	Stampings, screw machine products and bolts	38	Primary nonferrous metals manufacturing	20	Lumber and wood products, except containers
44	Farm machinery and equipment	39	Metal containers	21	Wood containers
45	Construction, mining and oil field machinery	42	Other fabricated metal products	27	Chemicals and selected chemical products
46	Materials handling machinery and equipment	43	Engines and turbines	28	Plastics and synthetic materials
47	Metal working machinery and equipment	48	Special industry machinery and equipment	31	Petroleum refining and related industries
49	General industrial machinery and equipment	50	Machine shop products	51	Office, computing and accounting machines
55	Electric lighting and wiring equipment	52	Services industry machines	56	Radio, television and communication equipment
60	Aircraft and parts	53	Electric industrial equipment and apparatus	57	Electronic components and accessories
61	Other transportation equipment	54	Household appliances	58	Miscellaneous electrical machinery and supplies
67	Radio and television broadcasting	59	Motor vehicles and equipment	63	Optical, ophthalmic and photographic equipment
70	Finance and insurance	62	Scientific and controlling instruments	64	Miscellaneous manufacturing
73	Business services	65	Transportation and warehousing	66	Communications; except broadcasting
74	Research and development	69	Wholesale and retail trade	68	Electric, gas, water and sanitary services
76	Amusements	72	Hotels; personal and repair services, excluding auto	71	Real estate and rental
77	Medical, educational services and nonprofit organizations	75	Automobile repair and services		

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period were used two sectors which are significantly affected by the Viet Nam war, ordnance and aircraft and parts, would not appear on this list of industries expected to increase their output in the projected period.

In a related case, the motor vehicle industry has a projected 1965–80 growth rate of 2.5 percent a year which appears low when compared with average rates of the industry in the past. However, it should be kept in mind that the base year of 1965 represents a high point in motor vehicle sales, which tends both to raise the historical growth rate and lower the projected rate. Thus, at an average annual growth rate of 2.5 percent from 1965 the projected output of the industry, translated into units, implies sales of between 14 and 15 million domestically produced motor vehicles in 1980.

Output per man-hour

Basic steps in creating a growth model of the type described in this report include developing a set of demand projections and deriving a consistent set of input-output coefficients. Using these elements the input-output mechanism generates industry output levels, discussed above in terms of their growth rates. In the final stage of this model the projected growth rates in terms of output are translated into equivalent 1980 employment levels.[23] In order to take this final step, projections of industry productivity are required.

Projections of productivity followed two basic approaches: regression analysis was used in one approach, and the other was based upon past trends for selected time periods. For most industries, the productivity changes projected by using the regression equations did not meet the tests of reasonableness and, therefore, an alternative projection method was necessary. For some industries, the productivity associated with past periods was used when the industry growth rate was similar to the projected rate. In other cases, because of changes in the rate of change in output, projected productivity was selected by using an historical sub-period when out put had risen at a rate similar to the projected rate. Table 25 lists the industries in three groups by ranges of projected average annual productivity change.

Employment

A set of industry productivity projections having been selected and the projections of final demand and industry growth rates having been used, an employment change between 1965 and 1980 was projected. This projected employment change indicated an addition of between 24 and 25 million jobs under the assumptions in the basic models, a rate of increase of 1.8 to 1.9 percent a year. This compares with a 1.3 percent increase a year in jobs in the 1950–65 period, while the rate for the more recent 1957–65 span has been 1.2 percent.

Projected shifts in employment among the major sectors follow, to a considerable extent, the pattern of past changes. Agriculture will continue its long-term decline, both absolutely and as a percent of total employment; mining, although reasonably stable in the level of employment, will continue to decline in its relative share of total employment. Manufacturing's share of total employment is expected to decline somewhat in the 1965–80 period as is that of transportation and of public utilities. Wholesale and retail trade as well as contract construction will show large gains in absolute numbers of employees, although they will remain relatively constant as a proportion of total employment. The sectors projected to increase their share of total employment over the 1965 proportions are services and government. Table 26 shows the levels of industry employment and a percent distribution for selected historical years and projected 1980.

The shifts in employment projected for major sectors are more pronounced than the changes in the distribution of output; for ex-

[23] An interindustry employment table can be created from which industry employment estimates can be derived directly. Such a table is created by combining an input-output table of interindustry relations, which shows the direct and indirect effect of changes in one economic sector on all other sectors with estimates of industry labor requirements per dollar of output. This inter-industry employment table shows how much direct and indirect employment is required in each industry to produce one dollar of its final product. Then a matrix multiplication of the employment table and vector of sector final demands for goods and services will produce estimates of industry employment requirements. Although this approach was not used in these projections, the interested user will find a 1980 interindustry employment table in appendix D.

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ample, the proportions of total employment included in agricultural and in mining will decline even more sharply than their respective shares of total output. Although manufacturing's portion of output will remain remarkably stable, its share of employment is projected to decline. On the other hand, services' output will show only a modest increase as a proportion of total output, but there will be a pronounced increase in services' employment as a share of total employment table 27.

The larger shifts in sector employment relative to sector output are a function of the greater disparity in industry productivity rates relative to industry output growth rates.[24] In line with past changes, the projected productivities for agriculture, mining, and manufacturing industries generally will be higher than the private nonfarm average while those for the service industries will tend to be lower.

Changes in industry employment. A number of individual industries will show very high rates of growth in employment.[25] These include office and computing machines (industry 51), business services (industry 73), medical and educational services (industry 77), electronic components (industry 57), rubber and plastics products (industry 32), nonhousehold furniture and fixtures (industry 23), service industry machines (industry 52), and material handling equipment (industry 46). (See table 28, page 39.)

The reasons associated with the high employment growth in these industries vary. Employment growth could reasonably stem from a very high output growth, a very low productivity growth, or a combination of the two. Of the industries noted above, employment growth in computing machines, electronic components, rubber and plastics products, and nonhousehold furniture, seems clearly associated with very high growth in projected output. In only one of these industries—amusements—is employment growth clearly associated with a very low growth in productivity. Other sectors, such as business services; medical, educational and nonprofit services; and service industry

[24] Similar conclusions were found in "Factors Affecting Changes in Industry Employment", by Ronald E. Kutscher and Eva E. Jacobs, *Monthly Labor Review*, April 1967, pp. 6–12.

[25] Employment, historical and projected, for both total employment and wage and salary employment is shown in appendix D, tables D–10, –11, and –12.

Table 26. Civilian employment[1] by major sector, selected years and projected 1980

[Thousands of jobs]

Sector	1950	1957	1960	1965	1967	1968	1980	
							3-percent basic model	4-percent basic model
Total	61,290	67,842	68,868	74,568	78,906	80,788	99,600	98,600
Agriculture, forestry and fisheries	7,985	6,233	5,699	4,671	4,196	4,154	3,188	3,156
Mining	938	868	750	667	649	646	590	584
Construction	3,354	3,701	3,641	3,994	3,981	4,050	5,482	5,427
Manufacturing	15,671	17,586	17,190	18,454	19,805	20,125	22,358	22,133
Durable	8,340	10,098	9,697	10,644	11,670	11,854	13,274	13,141
Nondurable	7,331	7,488	7,493	7,810	8,135	8,271	9,084	8,992
Transportation, communications and public utilities	4,244	4,453	4,215	4,250	4,470	4,524	4,976	4,926
Trade	11,982	13,709	14,222	15,352	16,160	16,604	20,487	20,282
Finance, insurance and real estate	2,134	2,786	2,981	3,367	3,569	3,726	4,639	4,598
Services	6,825	8,446	9,263	11,118	12,194	12,678	18,280	18,097
Government	6,026	7,616	8,353	10,091	11,398	11,846	16,800	16,632
Households	2,131	2,444	2,554	2,604	2,484	2,435	2,800	2,770
	Percent distribution							
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, forestry and fisheries	13.0	9.2	8.3	6.3	5.3	5.1	3.2	3.2
Mining	1.5	1.3	1.1	0.9	0.8	0.8	0.6	0.6
Construction	5.5	5.5	5.3	5.4	5.0	5.0	5.5	5.5
Manufacturing	25.6	25.9	25.0	24.7	25.1	24.9	22.4	22.4
Durable	13.6	14.9	14.1	14.3	14.8	14.7	13.3	13.3
Nondurable	12.0	11.0	10.9	10.5	10.3	10.2	9.1	9.1
Transportations, communications and public utilities	6.9	6.6	6.1	5.7	5.7	5.6	5.0	5.0
Trade	19.5	20.2	20.7	20.6	20.5	20.6	20.6	20.6
Finance, insurance and real estate	3.5	4.1	4.3	4.5	4.5	4.6	4.7	4.7
Services	11.1	12.4	13.5	14.9	15.5	15.7	18.4	18.4
Government	9.8	11.2	12.1	13.5	14.4	14.7	16.9	16.9
Households	3.5	3.6	3.7	3.5	3.2	3.0	2.8	2.8

[1] Includes wage and salary employees, self-employed and unpaid family workers.

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Table 27. Annual rate of change [1] in civilian employment [2] by major sector

Sector	1950–65	1957–65	1965–68	Projected 1965–80 basic models	
				3-percent unemployment	4-percent unemployment
Total	1.3	1.2	2.7	1.9	1.9
Agriculture, forestry and fisheries	−3.5	−3.6	−3.8	−2.5	−2.5
Mining	−2.2	−3.2	−1.1	−.8	−.9
Construction	1.2	1.0	.5	2.1	2.1
Manufacturing	1.1	.6	2.9	1.3	1.2
Durable	1.6	.7	3.7	1.5	1.4
Nondurable	.4	.5	1.9	1.0	.9
Transportation, communications and public utilities	(3)	−.6	2.1	1.1	1.0
Trade	1.7	1.4	2.6	1.9	1.9
Finance insurance and real estate	3.1	2.4	3.4	2.2	2.1
Services	3.3	3.5	4.5	3.4	3.3
Government	3.5	3.6	5.5	3.5	3.4
Households	1.3	.8	−2.2	.5	.4

[1] Compound interest rate between terminal years.
[2] Includes wages and salary, self employed and unpaid family workers.
[3] Less than .05 percent per year.

machines each have moderately high growth rates in output coupled with a slow growth rate projected for output per man-hour.

Although the industries discussed above have the fastest employment growth rates, other industries are perhaps more important to total employment in terms of the magnitude or absolute number of jobs involved. A different group of industries stands out as important sources of job opportunities in the 1965–80 period. The contract construction industry alone is projected to supply nearly 1.5 million new jobs and the manufacturing industries an additional 3.7 to 3.9 million jobs. Wholesale and retail trade are projected to add about 5 million new jobs; business services, over 2 million jobs; and medical, educational, and nonprofit services, more than 3.5 million jobs. State and local governments will furnish almost 6 million new jobs. These six industries include 89 percent of the projected increase of 24 to 25 million jobs in the 1965–80 period. On the other hand, in the same period the agriculture sector is expected to lose about 1.5 million jobs. (See table 29, page 40.)

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Chapter V. High Durable Models

Chapters II through IV presented discussions of various aspects of the 1980 projections as developed from the assumptions in the basic 3-percent and basic 4-percent unemployment models. These models are based on a particular set of assumptions and are separated by a constant difference in the level of employment, output, and final demand.

The high durable models are presented in order to explore the effects on output and employment by industry of different assumptions regarding some of the variables used in the basic models. These models also have 3-percent and 4-percent unemployment rates, but the distribution of demand is varied among the major components of GNP. In particular, the categories of final demand that encompass durable goods are increased in the high durable models. Therefore, in terms of percentages of GNP, consumer durables, fixed private investment (especially producers durable equipment), and Federal Government expenditures (due largely to increased purchases of military hardware) are larger shares of GNP. The categories of demand that have smaller shares in the alternative models are consumer services and nondurable goods and State and local government purchases of goods and services. Gross exports and imports are relatively unchanged in the high durable models compared with the levels in the basic models.

For each of the high durable models, a complete set of 1980 projections is presented. The factors affecting the growth rate in real GNP are presented in tables 30 and 31 for all four models; the distribution of GNP into the major components of final demand is presented for all the models in tables 32 and 34 and the gross product originating by major sector in table 35. In table 36 the most rapidly growing industries are ranked separately for the basic and the high durables models; tables 37 and 38 present employment data for all models. The full industry distribution of final demands by major components, the industry output and employment growth rates, and industry employment levels are given in appendix D, tables D–1 through D–12.

In the last section of this chapter are presented additional variations in the potential growth rate for the 1965–80 period, based on variations of some factors of primary importance. However, these variations are presented only in terms of potential GNP growth rates and are not further translated into the industry structure of demand, output, and employment.

Factors determining real GNP

In the high durable models, most of the basic assumptions affecting the growth in real GNP are similar to the assumptions in the basic models. However, a few changes in assumptions are sufficient to alter slightly the 1980 GNP levels. The basic data reflecting these assumptions are presented in tables 30 and 31. The two 3-percent unemployment models are shown together, as are the two 4-percent unemployment models, in order to facilitate comparisons.

The overall labor force is identical in all four models. The levels of employment and unemployment—on both a persons concept and a jobs concept—are the same for the two 3-percent models and the two 4-percent models but differ between these two sets. The changes in

Table 28. Industries with 1965–80 employment growth rates of 2.0 percent and above

Industry number and title	1965–80 growth rates basic models	
	3-percent unemployment	4-percent unemployment
51 Office, computing and accounting machines	5.1	5.0
73, 74 Business services	4.6	4.6
State and local Government	4.0	3.9
77 Medical and educational services	3.8	3.7
57 Electronic components and accessories	3.4	3.3
23 Other furniture and fixtures	3.2	3.2
32 Rubber and miscellaneous plastic products	3.2	3.2
46 Materials handling machinery and equipment	3.1	3.1
52 Service industry machines	3.1	3.0
67 Radio and TV broadcasting	2.7	2.6
50 Machine shop products	2.5	2.5
29 Drugs, cleaning and toilet preparations	2.4	2.4
28 Plastics and synthetic materials	2.4	2.3
62 Scientific and controlling instruments	2.4	2.3
70 Finance and insurance	2.4	2.3
55 Electric lighting and wiring equipment	2.3	2.2
76 Amusements	2.3	2.2
56 Radio, television and communication equipment	2.2	2.1
63 Optical, ophthalmic and photographic equipment	2.2	2.1
11, 12 Construction	2.1	2.1

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Table 29. Projected changes in employment by major sector, 1965–80

[Thousands of jobs]

Sector	Projected 1965–80 change in employment basic models	
	3–percent unemployment	4–percent unemployment
Total	25,032	24,032
Agriculture, forestry and fisheries	−1,483	−1,515
Agriculture	−1,538	−1,566
Mining	−77	−83
Construction	1,488	1,433
Manufacturing	3,904	3,679
Durable	2,630	2,497
Nondurable	1,274	1,182
Transportation, communications and public utilities	726	676
Wholesale and retail trade	5,135	4,930
Finance, insurance and real estate	1,272	1,236
Services	7,162	6,979
Business services	2,236	2,192
Medical, educational services and nonprofit organizations	3,604	3,519
Federal government	623	593
State and local government	6,086	5,948
Households	196	166

assumptions which do bring about a difference in the level of GNP between the basic and the high durable models with the same unemployment rate is reflected in the distribution of employment between the government and private sectors.

Total government employment in the high durable models is projected to be 400,000 lower than it is in the basic models, because the level of military personnel is assumed to be 200,000 higher and State and local government employment 600,000 lower in the high durable models. With total employment held constant for the high durable model and the basic model of the same unemployment rate, the decrease of 400,000 in government employment is reflected by an identical employment increase in the private sector. Further, the projection of agricultural employment is constant in the high durable model and the basic model for the same unemployment rate so that the entire difference of 400,000 jobs is in the private nonagricultural sector.

The assumptions for the trend in hours-paid and GNP per man-hour are identical in all four models.[26] However, the projected level of 1980 GNP in the high durable model is somewhat higher than in the basic model for the same employment rate. These higher levels of projected 1980 GNP in the high durable models—about $4 billion in both cases—result from the higher productivity associated with the 400,000 additional private nonagricultural employees.

The resulting growth rate in total real GNP 1965–80, is 4.4. percent a year in the 3-percent high durable model compared with the 4.3 percent a year for the 3-percent basic model. The 4-percent basic and 4-percent high durable goods models both have a projected 1965–80 growth rate in real GNP of 4.3 percent a year.

Components of GNP

The major purpose of the high durable models is to measure and analyze changes in the structure of industry output and employment that result from changes in the structure of final demand. In addition, the durable goods sectors are subject to greater variability over time and, therefore, are more difficult to project. Consequently, the high durable models were developed with the objective of providing reasonable alternatives to the basic models, with particular attention to the problems inherent in projecting the demand for durable goods.

Tables 32 and 33 present projected 1980 GNP, in total and by major components, for the high durable models and compare these with the final demand projections in the basic models. The major components of final demand are altered in these models in a number of ways. First, total personal consumption expenditures is lower as a proportion of total gross national product. Within consumption, however, durable goods is a significantly higher proportion than it is in the basic model,

[26] The assumptions regarding the trend in hours-paid and the increases in output per man-hour in the high durable models are perhaps not realistic. First, an economic system in which the durable goods industries are emphasized is likely to have a different trend in hours-paid. Second and more important, when an economic system devotes an increasing share of its output to investment in producer durable goods over an extended period which is the case in the high durable models—an effect may be expected eventually on the pace of productivity change; this, in turn, should be reflected in the rate of growth of real GNP. However, the purpose of the high durable models presented in this report is to explore the effects on industry output and employment of an alternative distribution of final demand. The other questions, although perhaps of equal importance, await further research.

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Table 30. Labor force, hours and gross national product, 3-percent models 1957, 1965, 1968, and projected 1980

Item	1957	1965	1968	Projected 1980		Average annual rate of growth [1]		
							1965–80	
				3-percent basic model	3-percent high durables	1957–65	3-percent basic model	3-percent high durables
Total labor force	69,729	77,177	82,272	100,727	100,727	1.3	1.8	1.8
Unemployed	2,859	3,366	2,817	2,940	2,940	2.1	—.9	—.9
Employed (persons concept)	66,870	73,811	79,455	97,787	97,787	1.2	1.9	1.9
Adjustment	4,083	3,878	5,233	5,109	5,109	—.7	1.9	1.9
Employment (jobs concept)	70,953	77,689	84,688	102,896	102,896	1.1	1.9	1.9
Government [2]	9,756	11,994	14,414	18,500	18,100	2.6	2.9	2.8
Federal	4,531	4,569	5,609	4,900	5,100	.1	.5	.7
Military	2,786	2,732	3,517	2,700	2,900	—.2	—.1	.4
Civilian	1,745	1,837	2,092	2,200	2,200	.6	1.2	1.2
State and local	5,225	7,425	8,805	13,600	13,000	4.5	4.1	3.8
Private	61,197	65,695	70,274	84,396	84,796	.9	1.7	1.7
Agriculture	5,914	4,338	3,811	2,800	2,800	—3.8	—2.9	—2.9
Nonagriculture	55,283	61,357	66,463	81,596	81,996	1.3	1.9	1.9
Hours paid for (annual average) private	2,086	2,051	2,000	1,977	1,977	—.2	—.2	—.2
Agriculture	2,371	2,376	2,330	2,271	2,271	.0	—.3	—.3
Nonagriculture	2,054	2,028	1,981	1,967	1,967	—.2	—.2	—.2
Total man-hours (million's) private [3]	127,640	134,781	140,542	166,858	167,642	.7	1.4	1.4
Agriculture	14,023	10,307	8,879	6,359	6,359	—3.8	—3.2	—3.2
Nonagriculture	113,617	124,474	131,663	160,499	161,283	1.1	1.7	1.7
GNP per man-hours (1958 dollars) private	3.22	4.21	4.61	6.54	6.54	3.4	3.0	3.0
Agriculture	1.45	2.30	2.62	5.13	5.13	5.9	5.5	5.5
Nonagriculture	3.44	4.36	4.74	6.60	6.60	3.0	2.8	2.8
Total GNP (billions of 1958 dollars)	452.5	617.8	707.6	[4]1,168.6	[4]1,172.1	4.0	4.3	4.4
Government	41.9	50.8	59.7	76.7	75.0	2.4	2.8	2.6
Federal	21.5	21.8	26.3	23.6	24.4	.2	.5	.8
Military	11.1	10.9	13.9	10.6	11.4	—.2	—.2	.3
Civilian	10.3	10.9	12.4	13.0	13.0	.7	1.2	1.2
State and local	20.4	29.0	33.5	53.1	50.6	4.5	4.1	3.8
Private	410.6	567.0	647.9	1,091.9	1,097.1	4.1	4.5	4.5
Agriculture	20.3	23.7	23.3	32.6	32.6	1.9	2.1	2.1
Nonagriculture	390.3	543.3	624.6	1,059.3	1,064.5	4.2	4.6	4.6

[1] Compound interest rate between terminal years.

[2] The government employment to be consistent with the government product is from the national income accounts published by the Office of Business Economics. Government employment shown elsewhere in this report is from the Bureau of Labor Statistics establishment reports.

[3] Man-hours are estimated for the private sector only since the assumption is made of no change in the hours of the government sector.

[4] The 1980 GNP is as calculated using the factors shown above. All calculations using the total GNP elsewhere in the report use 1,165.0 and 1,170.0 for these two models.

and both nondurable goods and services are somewhat lower.

Gross private domestic investment in the basic models is 16 percent of GNP. In the high durable goods models, this component is 17.1 percent of GNP. Each of the subcomponents of fixed investment—nonresidential structures, producers' durable equipment, and residential structures—are higher in the high durable models than in the basic models. The residential structures component, however, is proportionately higher than the other components of investment. The levels of residential structures assumed in the high durable models are sufficiently high to reasonably encompass the national housing goal of 26 million new dwelling units by 1978, including the alternatives that have a large proportion of single family units in the total housing mix.

The other major component of demand that is different in the high durable models is government. Federal Government purchases are higher in this model due to much higher defense expenditures (about $20 billion more than the basic model). Both Federal nondefense and State and local government expenditures are lower, however, so that the total proportion of GNP devoted to government in the high durable models is similar to that found in the basic models. However, even though the State and local government proportion of GNP in the high durable models is lower than in the basic models, State and local government is still growing faster than GNP or the Federal defense and Federal nondefense components.

Industry structure of demand, output, and employment

The components of demand discussed in the previous section show considerable variations between the high durable models and the basic models. Table 34 shows the 1980 structure of output in terms of gross product originating for the high durable models and compares with the projected 1980 structure in the basic models. The structure of output by the major sectors has been modified somewhat by the

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changes in the components of final demand. In particular, construction and manufacturing are a higher proportion and services a lower proportion of 1980 output in the high durable models than in the basic models.

The growth rates in output for each of the 82 industries used in these projections are shown in appendix D, table D–9. Although many industries have different growth rates in the high durable models compared with the basic models, the pattern is largely consistent with the final demand assumptions. Generally, the durable goods sectors of manufacturing show higher growth rates and the service sectors lower growth rates in the high durable models than in the basic models. Of course, some exceptions to the general pattern appear because of indirect interindustry effects.

Table 35 compares the industries projected to grow most rapidly, 1965–80, in the high durable models and in the basic models. Although there are some differences in the order of appearance, the two sets of models produced remarkably similar lists of fastest-growing industries. In fact, of all the industries that appear on either list, only two fail to appear on both lists. The drugs, cleaning, and toilet preparations industry appears among the fastest growing industries in the basic models but does not in the high durable models. The scientific and controlling instruments industry, has a 6.1 percent a year growth in the high durable models, but in the basic models is projected at less than 6 percent a year. It follows from this comparison that those industries which are projected to grow most rapidly are not significantly affected by changes in the structure of demand of the size and magnitude introduced in the high durable goods models.

The 1980 employment projections for the high durable models are shown in table 36 and 37 and are compared with the 1980 projections made in the basic models. The following general observations can be made from these comparisons: First, durable goods manufacturing is projected to have about 1 percent more employment in 1980 under the assumptions in the high durable models than in the basic mod-

Table 31. Labor force, hours and gross national product, 4-percent models 1957, 1965, 1968, and projected 1980

Item	1957	1965	1968	Projected 1980		Average annual rate of growth [1]		
							1965–80	
				4-percent basic model	4-percent high durables	1957–65	4-percent basic model	4-percent high durables
Total labor force	69,729	77,177	82,272	100,727	100,727	1.3	1.8	1.8
Unemployed	2,859	3,366	2,817	3,918	3,918	2.1	1.0	1.0
Employed (persons concept)	66,870	73,811	79,455	96,809	96,809	1.2	1.8	1.8
Adjustment	4,083	3,878	5,233	5,058	5,058	—.7	1.8	1.8
Employment (jobs concept)	70,953	77,689	84,688	101,867	101,867	1.1	1.8	1.8
Government [2]	9,756	11,994	14,414	18,315	17,918	2.6	2.8	2.7
Federal	4,531	4,569	5,609	4,851	5,049	.1	.4	.7
Military	2,786	2,732	3,517	2,673	2,871	—.2	—.1	.3
Civilian	1,745	1,837	2,092	2,178	2,178	.6	1.1	1.1
State and local	5,225	7,425	8,805	13,464	12,869	4.5	4.0	3.7
Private	61,197	65,695	70,274	83,552	83,949	.9	1.6	1.6
Agriculture	5,914	4,338	3,811	2,772	2,772	-3.8	-2.9	-2.9
Nonagriculture	55,283	61,357	66,463	80,780	81,177	1.3	1.9	1.9
Hours paid for (annual average) private	2,086	2,051	2,000	1,977	1,977	—.2	—.2	—.2
Agriculture	2,371	2,376	2,330	2,271	2,271	.0	—.3	—.3
Nonagriculture	2,054	2,028	1,981	1,967	1,967	—.2	—.2	—.2
Total man-hours (millions) private [3]	127,640	134,781	140,542	165,189	165,996	—.7	1.4	1.4
Agriculture	14,023	10,307	8,879	6,295	6,295	—3.8	—3.2	—3.2
Nonagriculture	113,617	124,474	131,663	158,894	159,701	1.1	1.6	1.7
GNP per man-hours (1958 dollars) private	3.22	4.21	4.61	6.54	6.54	3.4	3.0	3.0
Agriculture	1.45	2.30	2.62	5.13	5.13	5.9	5.5	5.5
Nonagriculture	3.44	4.36	4.74	6.60	6.60	3.0	2.8	2.8
Total GNP (billions of 1958 dollars)	452.5	617.8	707.6	[4] 1,156.9	[4] 1,160.3	4.0	4.3	4.3
Government	41.9	50.8	59.7	75.9	74.2	2.4	2.7	2.6
Federal	21.5	21.8	26.3	23.4	24.2	.2	.5	.7
Military	11.1	10.9	13.9	10.5	11.3	—.2	—.2	.2
Civilian	10.3	10.9	12.4	12.9	12.9	.7	1.1	1.1
State and local	20.4	29.0	33.5	52.6	50.0	4.5	4.0	3.7
Private	410.6	567.0	647.9	1,081.0	1,086.1	4.1	4.4	4.4
Agriculture	20.3	23.7	23.3	32.3	32.3	1.9	2.1	2.1
Nonagriculture	390.3	543.3	624.6	1,048.7	1,053.8	4.2	4.5	4.5

[1] Compound interest rate between terminal years.

[2] The government employment to be consistent with the government product is from the national income accounts published by the Office of Business Economics. Government employment shown elsewhere in this report is from the Bureau of Labor Statistics establishment reports.

[3] Man-hours are estimated for the private sector only since the assumption is made of no change in the hours of the government sector.

[4] The 1980 GNP is as calculated using the factors shown above All calculations using the total GNP elsewhere in the report use 1,165.0 and 1,155.0 for these two models.

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Table 32. Gross national product by major component, for 3-percent models 1965, 1968, and projected 1980

[Billions of 1958 dollars]

Item	1965	1968	Projected 1980		Percent distribution				Average annual rate of growth [1]	
							1980		1965-80	
			3-percent basic	3-percent high durables	1965	1968	3-percent basic	3-percent high durables	3-percent basic	3-percent high durables
Gross National Product	617.8	707.6	1,165.0	1,170.0	100.0	100.0	100.0	100.0	4.3	4.4
Personal consumption expenditure	397.7	452.6	758.0	748.0	64.4	64.0	65.1	63.9	4.4	4.3
Durable goods	66.6	80.7	133.2	142.1	10.8	11.4	11.4	12.1	4.7	5.2
Nondurable goods	178.6	196.9	295.9	286.1	28.9	27.8	25.4	24.5	3.4	3.2
Services	152.5	175.0	329.2	319.8	24.7	24.7	28.3	27.3	5.3	5.1
Gross private domestic investment	99.2	105.7	186.3	200.2	16.1	14.9	16.0	17.1	4.3	4.8
Fixed investment	90.1	99.1	171.2	184.1	14.6	14.0	14.7	15.7	4.4	4.9
Nonresidential	66.3	75.8	130.4	137.3	10.7	10.7	11.2	11.7	4.6	5.0
Structures	22.3	22.7	36.5	38.9	3.6	3.2	3.1	3.3	3.3	3.8
Producers' durables	44.0	53.2	93.9	98.4	7.1	7.5	8.1	8.4	5.2	5.5
Residential structures	23.8	23.3	40.9	46.8	3.9	3.3	3.5	4.0	3.7	4.6
Change in business inventories	9.0	6.6	15.1	16.1	1.5	.9	1.3	1.4	3.5	3.9
Net exports of goods and services	6.2	.9	9.6	9.6	1.0	.1	.8	.8	3.0	3.0
Exports	37.4	45.6	79.2	79.2	6.1	6.4	6.8	6.8	5.1	5.1
Imports	31.2	44.7	69.6	69.6	5.1	6.3	6.0	5.9	5.5	5.5
Government purchases of goods and services	114.7	148.4	210.8	212.2	18.6	21.0	18.1	18.1	4.1	4.2
Federal	57.9	78.9	85.0	99.8	9.4	11.2	7.3	8.5	2.6	3.7
State and local	56.8	69.5	125.8	112.4	9.2	9.8	10.8	9.6	5.4	4.7

[1] Compound interest rate between terminal years.

SOURCE: Historical data are from the Office of Business Economics, U.S. Department of Commerce. Projections are by the Bureau of Labor Statistics.

els. Second, employment in the nondurable goods industries is only modestly changed between the two sets of models. Finally, transportation and trade have the same proportions of employment in the basic models and in the high durable models. (See table 37 page 48.)

The slightly higher proportion of employment in manufacturing in the high durable models is offset by lower proportion in services and government. However, the manufacturing employment projected for 1980 in both the basic and high durable models is a declining proportion of total employment when compared with 1965 or 1968. Also, although services and government have a somewhat lower employment in the high durable models, they still show significant increases over their present proportions. Therefore, an alteration in

Table 33. Gross national product by major component, for 4-percent models 1965, 1968, and projected 1980

[Billions of 1958 dollars]

Item	1965	1968	Projected 1980		Percent distribution				Average annual rate of growth [1]	
							1980		1965–80	
			4-percent basic	4-percent high durables	1965	1968	4-percent basic	4-percent high durables	4-percent basic	4-percent high durables
Gross National Product	617.8	707.6	1,155.0	1,160.0	100.0	100.0	100.0	100.0	4.3	4.3
Personal consumption expenditures	397.7	452.6	751.9	741.6	64.4	64.0	65.1	63.9	4.3	4.2
Durable goods	66.6	80.7	132.1	140.9	10.8	11.4	11.4	12.1	4.7	5.1
Nondurable goods	178.6	196.9	293.4	283.7	28.9	27.8	25.4	24.5	3.4	3.1
Services	152.5	175.0	326.4	317.1	24.7	24.7	28.3	27.3	5.2	5.0
Gross private domestic investment	99.2	105.7	184.7	198.5	16.1	14.9	16.0	17.1	4.2	4.7
Fixed investment	90.1	99.1	169.7	182.5	14.6	14.0	14.7	15.7	4.3	4.8
Nonresidential	66.3	75.8	129.3	136.1	10.7	10.7	11.2	11.7	4.6	4.9
Structures	22.3	22.7	36.2	38.6	3.6	3.2	3.1	3.3	3.3	3.7
Producers' durables	44.0	53.0	93.1	97.6	7.1	7.5	8.1	8.4	5.1	5.5
Residential structures	23.8	23.3	40.5	46.4	3.9	3.3	3.5	4.0	3.6	4.6
Change in business inventories	9.0	6.6	15.0	16.0	1.5	.9	1.3	1.4	3.5	3.9
Net exports of goods and services	6.2	.9	9.5	9.5	1.0	.1	.8	.8	2.9	2.9
Exports	37.4	45.6	78.5	78.5	6.1	6.4	6.8	6.8	5.1	5.1
Imports	31.2	44.7	69.0	69.0	5.1	6.3	6.0	5.9	5.4	5.4
Government purchases of goods and services	114.7	148.4	208.9	210.4	18.6	21.0	18.1	18.1	4.1	4.1
Federal	57.9	78.9	84.3	99.0	9.4	11.2	7.3	8.5	2.5	3.6
State and local	56.8	69.5	124.6	111.4	9.2	9.8	10.8	9.6	5.4	4.6

[1] Compound interest rate between terminal years.

SOURCE: Historical data are from the Office of Business Economics, U.S. Department of Commerce. Projections are by the Bureau of Labor Statistics.

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Table 34. Sector composition of gross product originating,[1] selected years and projected 1980
[Percent distribution based on 1958 dollars]

Sector	1950	1957	1963	1965	1967	1968	Projected 1980			
							3 percent		4 percent	
							Basic	High durables	Basic	High durables
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Agriculture, forestry, and fisheries	5.7	4.8	4.4	4.0	3.7	3.5	3.1	3.1	3.1	3.1
Mining	3.0	3.0	2.5	2.4	2.4	2.3	2.0	1.9	2.0	1.9
Construction	4.6	4.7	4.0	3.8	3.4	3.4	3.5	3.6	3.5	3.6
Manufacturing	29.7	29.8	29.5	30.8	30.5	31.2	30.6	31.5	30.6	31.5
Transportation communications and public utilities	8.7	9.1	9.4	9.6	9.9	9.9	11.1	11.0	11.1	11.0
Wholesale and retail trade	17.0	16.6	16.8	17.0	16.9	16.9	17.4	17.4	17.4	17.4
Finance, insurance and real estate	11.5	12.6	13.5	13.5	13.5	13.5	14.7	14.4	14.7	14.4
Services	9.3	9.2	9.5	9.3	9.4	9.3	9.6	9.3	9.6	9.3
Other[2]	10.5	10.3	10.4	9.6	10.3	9.9	8.0	7.8	8.0	7.8

[1] Gross product originating is the value added by each of the sectors to total product of gross national product.
[2] Includes government and government enterprises, rest of the world, and statistical residual.

SOURCE: Historical data are from Office of Business Economics, U.S. Department of Commerce. Projections are by the Bureau of Labor Statistics.

the structure of demand to the extent and magnitude found in the high durable models does affect the rate at which employment is shifted away from the goods-producing sector and added to services and government, but is not sufficient to change the direction of this movement. This is because demand was not altered enough in the direction of durable goods to overcome the sector differences in output per man-hour.

Alternative rates of growth in real GNP

The two sets of 1980 models just discussed each have projected growth rates in GNP that vary only slightly. This is because the factors which go into calculating the GNP growth rates are basically the same in all models. The only differences are in the unemployment rate and a slight modification in the division of employment between the public and private sectors. These alone are not sufficient to alter the 1965–80 growth rate in real GNP to any appreciable degree.

This section explores the effects on the projected growth rate in real GNP which result from alternative combinations of three underlying factors. These factors are the unemployment rate, which is varied between 2.5 percent and 4.5 percent of the civilian labor force; the decline in annual hours-paid, which is varied between a 0.1 percent decline and a 0.3 percent decline a year; and the change in GNP per man-hour, which is varied between 2.3 percent

Table 35. Industries projected to grow most rapidly in real output, 1965–80

Basic models					High durable models				
Rank	Sector number	Industry	Rate[1]		Rank	Sector number	Industry	Rate[1]	
			3 percent	4 percent				3 percent	4 percent
1	51	Office, computing and accounting machines	10.3	10.2	1	51	Office, computing and accounting machines	10.9	10.8
2	63	Optical, ophthalmic, and photographic equipment	8.8	8.8	2	57	Electronic components and accessories	9.3	9.2
3	57	Electronic components and accessories	8.4	8.4	3	63	Optical, ophthalmic, and photographic equipment	9.0	8.9
4	66	Communications; except broadcasting	7.0	6.9	4	56	Radio, television and communication equipment	7.0	7.0
5	28	Plastics and synthetic materials	6.8	6.7	5–6	66	Communications; except broadcasting	6.9	6.9
6	68	Electric, gas, water, and sanitary services	6.7	6.6	5–6	52	Service industry machines	6.9	6.8
7	52	Service industry machines	6.5	6.4	7	28	Plastics and synthetic materials	6.8	6.8
8–9	32	Rubber and miscellaneous plastics products.	6.3	6.2	8	74	Research and development	6.7	6.7
8–9	73	Business services	6.3	6.2	9	68	Electric, gas, water, and sanitary services	6.6	6.5
10	56	Radio, television and communication equipment	6.2	6.1	10–11	32	Rubber and miscellaneous plastic products	6.4	6.4
11–12–13	10	Chemical and fertilizer mineral mining	6.0	5.9	10–11	73	Business services	6.4	6.3
11–12–13	29	Drugs, cleaning and toilet preparations	6.0	5.9	12	62	Scientific and controlling instruments	6.1	6.1
11–12–13	74	Research and development	6.0	5.9	13	10	Chemical and fertilizer mineral mining	6.0	5.9

[1] Average annual rate of change in compound interest between terminal years. Output is the gross duplicated value stated in 1958 prices.

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Table 36. Civilian employment[1] by major industry group, 3-percent models 1965, 1968, and projected 1980

Industry group	1965	1968	Projected 1980		Percent distribution				Average annual rate of change[2]	
							1980		1965-80	
			3 percent basic	3 percent high durables	1965	1968	3 percent basic	3 percent high durables	3 percent basic	3 percent high durables
Total	74,568	80,788	99,600	99.400	100.0	100.0	100.0	100.0	1.9	1.9
Agriculture, forestry and fisheries	4,671	4,154	3,188	3,192	6.2	5.1	3.2	3.2	−2.5	−2.5
Agriculture	4,338	3,811	2,800	2,800	5.8	4.7	2.8	2.8	−2.9	−2.9
Mining	667	646	590	588	.9	.8	.6	.6	−.8	−.8
Construction	3,994	4,050	5,482	5,595	5.4	5.0	5.5	5.6	2.1	2.3
Manufacturing	18,454	20,125	22,358	23,240	24.7	24.8	22.4	23.4	1.3	1.5
Durable goods	10,644	11,854	13,274	14,322	14.3	14.6	13.3	14.4	1.5	2.0
Ordnance and accessories	226	342	250	351	.3	.4	.3	.4	.7	3.0
Lumber and wood products	698	676	685	702	.9	.9	.7	.7	−.1	--
Furniture and fixtures	454	496	640	656	.6	.6	.6	.7	2.3	2.5
Stone, clay and glass products	646	651	809	830	.9	.8	.8	.8	1.5	1.7
Primary metals	1,308	1,322	1,343	1,413	1.8	1.6	1.3	1.4	.1	.5
Fabricated metal products	1,288	1,417	1,638	1,697	1.8	1.7	1.6	1.7	1.6	1.9
Machinery, except electrical	1,783	2,009	2,495	2,670	2.4	2.5	2.5	2.7	2.3	2.7
Electrical machinery	1,662	1,986	2,334	2,554	1.7	2.4	2.3	2.6	2.3	2.9
Transportation equipment	1,745	2,034	2,014	2,343	2.3	2.5	2.0	2.4	1.0	2.0
Instruments	392	463	553	594	.5	.6	.6	.6	2.3	2.8
Miscellaneous manufacturing	442	458	513	512	.6	.6	.5	.5	1.0	1.0
Nondurable goods	7,810	8,271	9,084	8,918	10.5	10.2	9.1	9.0	1.0	.9
Food and kindred products	1,798	1,811	1,799	1,735	2.4	2.2	1.8	1.7	.0	−.2
Tobacco manufactures	87	84	65	63	.1	.1	.1	.1	−2.0	−2.2
Textiles and apparel	2,311	2,426	2,655	2,590	3.1	3.0	2.7	2.6	.9	.8
Paper and allied products	640	693	801	795	.9	1.1	0.8	.8	1.5	1.5
Printing and publishing	1,057	1,128	1,322	1,307	1.4	1.4	1.3	1.3	1.5	1.4
Chemical and chemical products	905	1,024	1,187	1,172	1.2	1.3	1.2	1.2	1.8	1.7
Petroleum and products	183	187	155	152	.2	.2	.2	.2	−1.1	−1.2
Rubber and plastic products	474	560	763	777	.6	.7	.8	.8	3.2	3.3
Leather and leather products	355	358	337	327	.5	.4	.3	.3	−.4	−.5
Transportation, communications and public utilities	4,250	4,524	4,976	4,961	5.7	5.6	5.0	5.0	1.1	1.0
Wholesale and retail trade	15,352	16,604	20,487	20,501	20.6	20.5	20.6	20.6	1.9	1.9
Finance, insurance and real estate	3,367	3,726	4,639	4,538	4.5	4.6	4.7	4.6	2.1	2.0
Services	11,118	12,678	18,280	17,785	14.9	15.5	18.4	17.9	3.4	3.2
Government	10,090	11,846	16,800	16,200	13.5	15.0	16.9	16.3	3.5	3.2
Households	2,604	2,435	2,800	2,800	3.5	3.0	2.8	2.8	.5	.5

[1] Civilian employment includes wage and salary employees, self employed and unpaid family workers.

[2] Compound interest rates based on terminal years.

and 2.9 percent a year.[27] Table 38 shows the variations. (See table 38 page 49.)

It can be seen that varying these factors affects considerably the projected growth rate in GNP. A combination of the elements with minimum productive potential—a 4.5 percent unemployment rate, a 0.3 percent decline in annual hours-paid, and a 2.3 percent annual rate of growth in GNP per man-hour—imply a growth rate in real GNP, 1965–80, of only 3.8 percent a year. At the other extreme, a combination of elements with the maximum growth potential—a 2.5 percent unemployment rate, a decline in hours-paid of 0.1 percent, and a GNP per man-hour increasing at 2.9 percent a year—imply a growth rate in real GNP, 1965–80, of 4.8 percent, i.e., a full percentage point greater.

While a difference of 1.0 percentage point in the growth of real GNP in any one year may not appear particularly significant, the cumulative effects may be very substantial. Taken over the period 1965 to 1980, two real GNP growth rates differing by 1.0 percentage point would result in a total accumulated difference of 16 percent or nearly $100 billion in the 1980

[27] The variation and the rate of change in GNP per man-hour is for the total economy so that the median rate of 2.6 percent a year is consistent with the 3.0 percent change to 1980 for the total private economy as shown in tables 30 and 31.

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level of real GNP. Hence, the unemployment rate, annual hours-paid, and GNP per man-hour have important implications with respect to long-run performance.

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Chapter VI. Implications of the 1980 Projections

One of the important conclusions coming from the 1980 projections is the continued shift in the structure of industry employment. This structural shift, discussed in detail in earlier chapters, is toward the service sectors—personal, business, medical, and educational as well as government (especially State and local government), and away from the goods producing sectors—agriculture, mining, and manufacturing. An important determinant in this structural shift is the sector or industry differences in output per man-hour; most service sectors have significantly lower levels of output per man-hour than the goods-producing sectors.

Manpower implications

These projections indicate that a high proportion of new jobs will come in industries which at the present time have existing manpower problems for varying reasons. Important job potential rests in the following sectors:

	Change in Jobs 1965–80 (millions)
Construction	1.4
Wholesale and retail trade	5.0
Finance, insurance and real estate	1.3
Personal services	1.0
Business services	2.2
Medical and education	3.6
State and local government	6.1

Each of these sectors offers special problems of either manpower planning, training, or education in order to assure that individuals will be available to fill projected job requirements. For example, in the construction industry, filling many high skill jobs is a major problem. Therefore, to provide the number of workers to meet construction requirements may call for an increase and possible upgrading of present apprenticeship and training programs. In addition, a redefinition of job duties may be necessary and the elimination of discriminatory hiring practices is in order.

Large increases in the number of jobs in wholesale and retail trade and personal services are projected for 1980. To assure an adequate manpower supply, the problems to be considered in these areas are the low wages and the difficulty this places on recruitment. Also, as an increasing proportion of the jobs in these sectors will be filled by part-time workers, additional training may be necessary to provide the calibre of worker needed to handle the increasing complexity of retail and service operations.

In the medical and educational services sectors, and to a lesser extent in business services, a two-level manpower problem exists. First, a need exists to provide additional training and educational facilities for occupations with a high skill or training requirement such as medicine, nursing, accounting, college teaching, and computer programming. At the same time preparations must be made to insure an adequate supply of individuals to fill the lesser skilled jobs in hospitals and schools—those concerned with maintenance, laundry, food preparation, cleaning and similar operations.

The large employment increases projected for State and local government include expansion for policemen, sanitation workers, educational workers—teachers, particularly at the college level—as well as other professional workers and associated clerical, administrative, and maintenance personnel. The large projected increase in the number of employees in State and local government is based on the assumption of continued efforts by these levels of government against proverty, urban decay, poor schools, and inadequate transportation facilities. If such efforts are to be made by State and local government, much remains to be done in recruiting, educating, training and providing funds to give proper wages to this rapidly expanding sector.

Due to the changing structure of employment, continuing reassessment of job opportunities will be necessary in the years ahead. Certainly, the orientation of manpower training programs must change over time in order to match individual skills with job opportunities. This process will require flexibility in our educational system—particularly the technical training areas—with expansion of some programs, retrenchment in others, and a restructuring of programs as job responsibilities change.

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Other Implications

Earlier chapters have presented discussions of the large employment gains projected to take place by 1980. Between 1965 and 1980, total jobs are projected to increase by as much as 25 million. However, these projections were made on the basis of a full employment assumption, defined variously in these projections as a 3-percent or 4-percent unemployment rate. Implicit in the 1980 projections, therefore, is the assumption that proper policy alternatives will be pursued in order to achieve a high rate of economic growth and a low level of unemployment. However, the correct mix of monetary and fiscal policies necessary to achieve these goals are not easily predetermined and will unquestionably change as time passes. In particular, these policy objectives must be considered in the context of their effect on inflation, post Viet Nam adjustments, and the balance of payments, as well as their effects on social goals such as elimination of poverty, construction of low-income housing, and revitalization of the inner city.

As noted in chapter II, the growth of the labor force is projected to be 1.8 percent a year for the 1965–80 period. The population growth for the same period is projected to be 1.3 percent a year. Since the working population will be growing considerably faster than the nonworking population, the changes have potentially significant implications for growth of real income per capita. Since those earning incomes will increase faster than those who are not, real income per capita will increase even

Table 37. Civilian employment[1] by major industry group, 4-percent models 1965, 1968, and projected 1980

Industry group	1965	1968	Projected 1980		Percent distribution				Average annual rate of growth[2]	
							1980		1965–80	
			4-percent basic	4-percent high durables	1965	1968	4-percent basic	4-percent high durables	4-percent basic	4-percent high durables
Total	74,568	80,788	98,600	98,400	100.0	100.0	100.0	100.0	1.9	1.9
Agriculture, forestry and fishery products	4,671	4,154	3,156	3,160	6.2	5.1	3.2	3.2	−2.5	−2.5
Agriculture	4,338	3,811	2,772	2,772	5.8	4.7	2.8	2.8	−2.9	−2.9
Mining	667	646	584	582	.9	.8	.6	.6	−.9	−.9
Construction	3,994	4,050	5,427	5,539	5.4	5.0	5.5	5.6	2.1	2.2
Manufacturing	18,454	20,125	22,133	23,005	24.7	24.8	22.4	23.4	1.2	1.5
Durable goods	10,644	11,854	13,141	14,176	14.3	14.6	13.3	14.4	1.4	1.9
Ordnance and accessories	226	342	247	347	.3	.4	.3	.4	.6	2.9
Lumber and wood products	698	676	678	695	.9	.9	.7	.7	−.2	.0
Furniture and fixtures	454	496	634	650	.6	.6	.6	.7	2.3	2.4
Stone, clay and glass products	646	651	801	822	.9	.8	.8	.8	1.4	1.6
Primary metals	1,308	1,322	1,329	1,399	1.8	1.6	1.3	1.4	.1	.4
Fabricated metal products	1,288	1,417	1,622	1,679	1.8	1.7	1.6	1.7	1.5	1.8
Machinery, except electrical	1,783	2,009	2,471	2,643	2.4	2.5	2.5	2.7	2.2	1.9
Electrical machinery	1,662	1,986	2,311	2,528	1.7	2.4	2.3	2.6	2.2	2.8
Transportation equipment	1,745	2,034	1,993	2,318	2.3	2.5	2.0	2.4	.9	2.7
Instruments	392	463	547	588	.5	.6	.6	.6	2.2	2.7
Miscellaneous manufacturing	442	458	508	507	.6	.6	.5	.5	.9	.9
Nondurable goods	7,810	8,271	8,992	8,829	10.5	10.2	9.1	9.0	.9	.8
Food and kindred products	1,798	1,811	1,781	1,718	2.4	2.2	1.8	1.7	−.1	−.3
Tobacco manufactures	87	84	64	62	.1	.1	.1	.4	−2.1	−2.2
Textiles and apparel	2,311	2,426	2,628	2,565	3.1	3.0	2.7	2.6	.9	.7
Paper and allied products	640	693	793	787	.9	1.1	.8	.8	1.4	1.4
Printing and publishing	1,057	1,128	1,309	1,294	1.4	1.4	1.3	1.3	1.4	1.4
Chemical and chemical products	905	1,024	1,175	1,160	1.2	1.3	1.2	1.2	1.8	1.7
Petroleum and products	183	187	153	150	.2	.2	.2	.2	−1.2	−1.3
Rubber and plastics products	474	560	755	769	.6	.7	.8	.8	3.2	3.3
Leather and leather products	355	358	334	324	.5	.4	.3	.3	−.4	−.6
Transportation, communication, and public utilities	4,250	4,524	4,926	4,911	5.7	5.6	5.0	5.0	1.0	1.0
Wholesale and retail trade	15,352	16,604	20,282	20,296	20.6	20.5	20.6	20.6	1.9	1.9
Finance, insurance and real estate	3,367	3,726	4,593	4,493	4.5	4.6	4.7	4.6	2.1	1.9
Services	11,118	12,678	18,097	17,606	14.9	15.5	18.4	17.9	3.3	3.1
Government	10,090	11,846	16,632	16,038	13.5	15.0	16.9	16.3	3.4	3.1
Households	2,604	2,435	2,770	2,770	3.5	3.0	2.8	2.8	.4	.4

[1] Civilian employment includes wage and salary workers, self employed and unpaid family workers.

[2] Compound interest rate between terminal years.

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assuming no increase in real income per worker.

An important factor about the 1980 projections mentioned earlier was the continued shift in the structure of industry employment. A major factor in this structural shift is the sector or industry differences in output per man-hour, as most service sectors will have significantly lower levels. The significance of the lower output per man-hour rate projected for services, along with the projected large demand increases, is the potential for continued price pressures in service industries, since wage gains undoubtedly will continue to exert pressure on costs through increasing unit labor costs. Therefore, long-range efforts to hold down the rate of overall price increase will be more difficult unless price declines are prevalent in the goods-producing sectors or unless innovation allows for greater than expected increases in the growth of output per man-hour in the services sectors.

The shift in employment toward services and government have further implications in addition to those just discussed. Employment in services and government tends to be more stable. Thus, with the relative decline in employment in the goods-producing sectors—which have more volatile employment—and an increase in the more stable areas, there will be fewer wide swings in employment. If downturns do take place, they should be increasingly less severe as the shift toward service and government employment continues.

Table 38. Alternative 1980 gross national product annual rate of change, 1965–80

Unemployment rate 1980	1980 projected percent rate of change in annual hours paid per person	Projected annual change in GNP per man-hour (Total economy [1])		
		2.3 percent average change national	2.6 percent annual in real product	2.9 percent rate of gross 1965–80
2.5 percent unemployment	(—.1)	4.2	4.5	4.8
	(—.2)	4.1	4.4	4.7
	(—.3)	4.0	4.3	4.6
3.0 percent unemployment	(—.1	4.1	4.4	4.7
	—.2	4.0	4.3	4.6
	—.3	3.9	4.2	4.5
3.5 percent unemployment	(—.1)	4.1	4.4	4.7
	(—.2)	4.0	4.3	4.6
	(—.3)	3.9	4.2	4.5
4.0 percent unemployment	(—.1)	4.1	4.4	4.7
	(—.2)	4.0	4.3	4.6
	(—.3)	3.9	4.2	4.5
4.5 percent unemployment	(—.1)	4.0	4.3	4.6
	(—.2)	3.9	4.2	4.5
	(—.3)	3.8	4.1	4.4

[1] The GNP per man-hour for the total economy is .3 to .4 lower than for the total private because the government has been added in with an assumption of no change in output per man-hour.

The projections show only moderate increases in the number of jobs in the household sector. The modest increase in domestic help is a reflection of the generally low status given this type of employment by workers rather than any diminution in demand. In fact with increasing incomes, the demand for household workers will certainly be very high. In order to satisfy this demand, it may be necessary to institute some change in present household employment practices. Better working conditions, shorter hours, and large wage increases undoubtedly would be needed in order to attract individuals who may not otherwise be interested in this work.

Another interesting and important facet of these projections is the relative limitation on opportunities for self-employment. Table 11 showed that the number of self-employed is projected to increase only moderately from current levels (6.2 million in 1965 to 6.7 million in 1980). In relation to total employment, the self-employed are a declining proportion, so that a larger and larger proportion of workers will be wage and salary employees.

In contrast to the increased employment projected for a number of sectors and the problems associated with such increases, the agricultural sector presents the opposite situation. Further reductions are projected in agricultural employment, which raises problems associated with further shifts in population from rural to urban areas. Also, as farm employment continues to drop, the opportunities for those who provide services in farm States will also continue to decrease. This adds to the problem of population declines in some regions while other areas experience sharp increases. Therefore, imbalances will exist with underutilization of public facilities in some regions and over-utilization in other regions, mainly large urban areas.

Along with the decline in agriculture, the shift in employment away from goods-producing areas such as manufacturing and mining to government and services implies a further decline in the proportion of jobs in the usual blue-collar areas. Many of the jobs opening up

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in the service sectors require specialized training or education. Consequently, these trends have significant implications for educational institutions and training programs.

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APPENDIX A. Methods of Developing the 1980 Projections

Throughout the text of this report the methods used in developing the 1980 estimates have received only a limited explanation. This procedure was followed in order to provide a concise statement of the findings and analyses for the reader with little interest in methodology. This appendix is intended to fill the gap for those who may be interested in the techniques used in developing the 1980 estimates.

The method is presented in two forms: In the first part a brief statement of the complete method is given. In the second part each of the separate elements is discussed in considerable detail. The first statement is intended for the reader who is interested only in a general survey of the methods, while the second is designed for the analyst who needs to follow in rather explicit detail the techniques used to develop various elements of the 1980 projections.

The final part of this appendix discusses some current work and planned efforts to improve both the data and methods used in making projections.

General statement of methods

First, in developing the 1980 projections a potential growth rate is derived by projecting the labor force to the target year, assuming an unemployment rate and projecting the rates of change of productivity and average hours-paid. The next step is to distribute this potential growth in real GNP among the major components of gross national product: Consumer expenditures, domestic investment, government expenditures—both Federal and State and local—and net foreign demand. In making this distribution of GNP among components, alternative distributions or models are considered.

After the potential growth in GNP has been calculated and distributed among its major categories, the next stage in the projections is to develop for each of the major demand categories projections of the industry composition of demand, such as the amounts spent by consumers for food, clothing, rent, automobiles, drugs, cosmetics, trips abroad, medical expenses, and other goods and services. For each of the major demand categories of GNP, a different procedure is followed in allocating demand to the producing industry. The industry detail to which the categories of demand are allocated matches the input-output classification used in the next step [1].

Allocation of consumer expenditures to producing industry relies on consumption functions for each of the categories of consumer expenditures. These functions, which were developed by Professor Houthakker and Dr. Taylor, relate expenditures on a given item, such as automobiles, to past levels and changes in expenditures for this item and to changes in consumer income.

For business investment in plant and equipment, preliminary estimates of expenditures for producer durable equipment by type are projected primarily by using past trends in the distribution of equipment expenditures. These initial estimates are modified subsequently in the calculations. Residential construction projections are made by analyzing

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past demographic characteristics of the population and their influence on the housing industry and then using these relationships to estimate residential construction to 1980.

Federal Government demand is divided initially into the major areas of defense and nondefense. Usually, defense expenditures are fixed by assumption, therefore the only major problem in distributing defense expenditures among the producing sectors involves the shift among major weapon systems (missiles, aircraft, anti-missile missiles) in the overall national defense posture. In the Federal nondefense area—inasmuch as a great many of the nondefense programs involve grants-in-aid to State and local governments—many of the expenditures are shown as State and local purchases of goods and services, following the conventions of the national income accounting system.

Projections of expenditures by State and local governments are made by analyzing separately each of the major areas of State and local government responsibility. These areas cover elementary and secondary education, higher education, highway construction, health care and hospitals, sanitation, parks and recreation, natural resources, and other activities such as urban renewal and mass transportation.

The final category of demand, net foreign demand, covers both U.S. exports and imports. These must be treated separately, since gross exports constitute a demand from U.S. production and imports act as a supplement to U.S. production.

The description of the economic growth model has progressed from the development of the potential gross national product to its distribution into major categories, and the further distribution of this demand to producing industries. Demand in the national income accounting system covers only final demand, i.e., only that of the ultimate consumers. Therefore, in order to derive the output from industries whose products are not sold to ultimate customers but instead are used by other industries in the course of production, an additional set of calculations is necessary. It is at this stage that the input-output framework of analysis comes into use. The input-output system translates final demands, such as food, automobiles, highway construction, airplanes, and machine tools into the outputs required from all industries, regardless of the degree to which the industries' products are sold directly to ultimate consumers. The industries producing basic metals and agricultural products sell only a very small proportion of their outputs to the ultimate consumers, but their total outputs are calculated in the input-output system as the indirect production necessary to satisfy final demands for items such as automobiles and foodstuffs.

The input-output tables used as a base in the economic growth model are published by the Office of Business Economics, U.S. Department of Commerce. However, these input-output tables incorporate the technology and product mix for 1958 and, therefore will not adequately reflect the technology and product mix for 1980 for most industries. In order to project the input-output coefficients, i.e., the ratios of purchases to outputs, a great amount of research is necessary. For some industries, detailed studies are made, analyzing the change taking place in the industries' technology as well as the changes expected in product mix due to differing growth rates of product groups within industries. The projected changes for an industry are then evaluated for the effects that

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they would have on other industries' purchases. The consequences of these changes—some of which save materials while others imply more inputs of materials—are introduced into the projections.

While the detailed sector studies are used in many areas, there is still a large number of industries for which individual studies are not available. For these industries, analyses are made of the direction and magnitude of change in the use of its products by other industries. An average change in input-output coefficients is used for all sectors not covered by the specific industry studies.

With the projections of demand and the projected input-output table, the necessary ingredients for estimating industry growth rates are present. The final step in the economic growth model is to develop employment estimates by industry. This is accomplished by use of a set of industry productivity projections. Each of the steps in the economic growth model are shown in the diagram on p. 54.

Once this stage has been reached the projections would be complete if everything within the model were in complete balance. It would be extremely improbable, however, if everything proved to be in balance with the first set of calculations. The model is designed to achieve a balance for three of its components during calculating sequences. The first of these is business investment in plant and equipment. A capital flow matrix is used in this balancing procedure to trace transactions in capital goods between industries that produce capital and those who purchase it.

In addition to capital investment, a balance also is achieved for imports. At the initial stage of the model, net foreign demand (exports less imports) is projected by industry. After the model has been used to calculate growth rates in output by industry, estimates of imports by industry also can be calculated and compared with the original projections of imports by industry. If differences exist, either the initial import projections or the import coefficients are modified and the model is rerun.

Employment is the other element for which a balancing procedure is incorporated into the model. The initial stage in the economic growth model involves a projection of the labor force and an assumption about employment. The final stage of the model is the derivation of employment by industry. The sum of the industry employment levels will equal the total employment projected in the first stage if the model is in complete balance. If employment is not in balance, the modifications are made, usually in the industry projections of output per man-hour.

Detailed description

This section will discuss in detail each of the separate elements necessary to develop the 1980 projections. The discussion will be useful to those who wish to use these projections and who also want to introduce modifications in order to better meet their individual needs. Usually, in order to introduce such modifications, it is necessary to understand in detail how the projections were developed.

Factors Affecting Growth Rates in Real GNP. In making projections of the type contained in this report, the first step is to develop a growth rate for potential real gross national product for the appropriate time period—in this case from 1965 to 1980. In order to develop the growth

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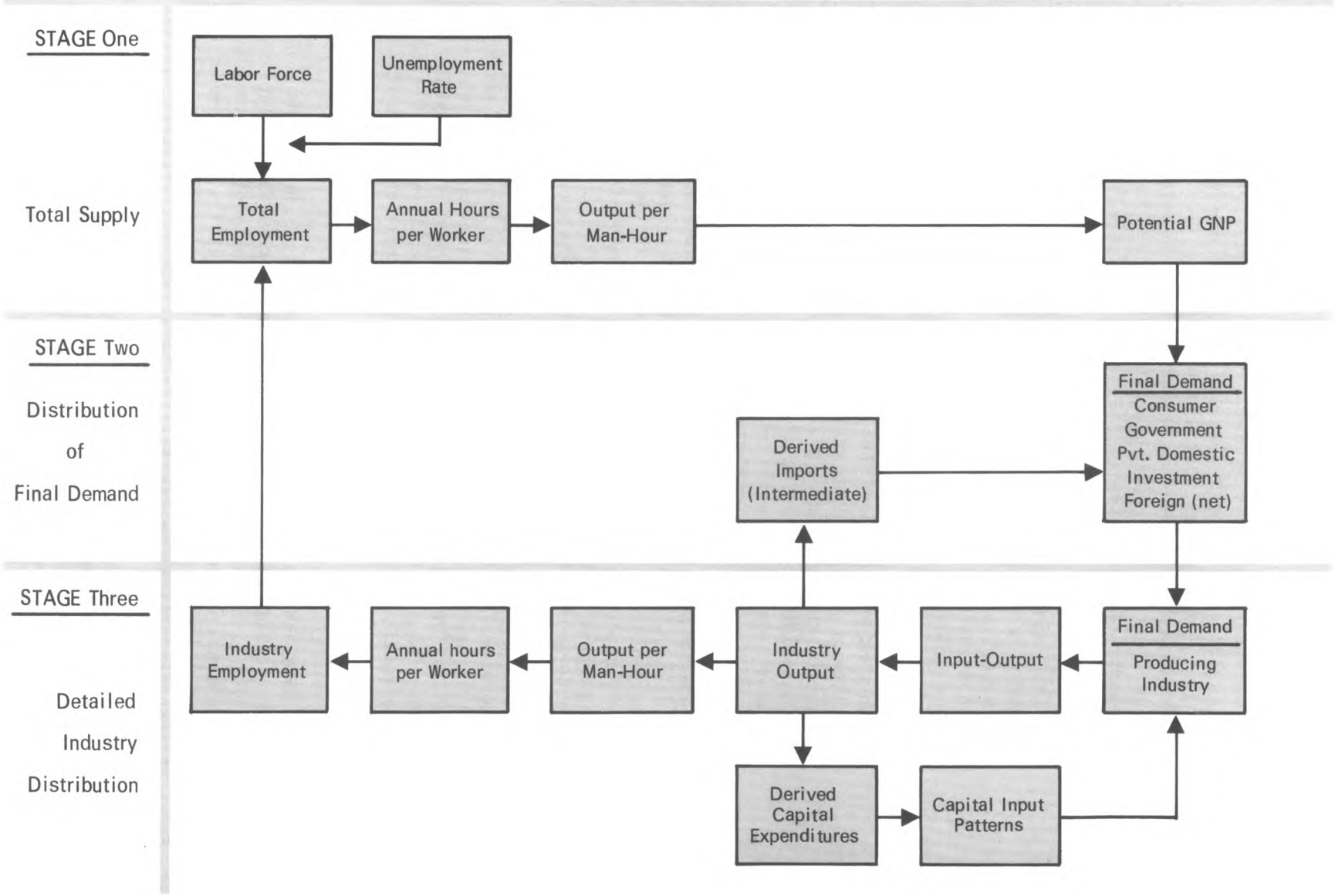
Interrelationship of Potential Gross National Product, Final Demand, Industry Production, Productivity, and Employment



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rate, the labor input and the productivity of that labor must be projected for the target year. This is accomplished through a series of steps. First, the growth rate for the total labor force to 1980 as developed in the Office of Manpower and Employment Statistics of the Bureau of Labor Statistics is used. Then, the 1980 unemployment rate of the civilian labor force is set by assumption as is the number of persons in the Armed Forces. The civilian labor force is obtained by subtracting the Armed Forces from the total labor force.

It is necessary to convert the projection of the labor force from a count of persons to a count of jobs. The necessity occurs because the estimates of employment at the detailed industry level used in later stages of the projections are related to data series obtained from establishment payrolls, which are counts of jobs, while the labor force projection is based on household surveys, which is a count of persons. The conversion ratio leading to a job concept of employment termed the adjustment factor, adjusts not only for those individuals who hold more than one job but also for other statistical differences between the two employment series. In as much as this adjustment ratio fluctuates a great deal and in an apparently random pattern, the adjustment factor is derived from data in a reasonably normal base period. In the case of the 1980 projections, the base period was 1965. With this conversion, the estimate of total employed is on a jobs basis.

Next in the projections sequence, employment is projected for three broad components of total employment, each of which has had a distinctly different level or rate of increase in its output per man-hour. Separate estimates were made for farm, nonfarm private, and government employment. Estimates of farm employment are made separately because this sector has had a rate of change in output per man-hour twice as great as in the private nonfarm sector i.e., about 6.0 percent a year. Separate estimates of government employment are made because the productivity change of government employees is assumed to be zero in the national income and product accounts which forms the data base for the models. The government estimates are further split into Federal civilian, Federal military, and State and local employment estimates.[2] The third element for which separate estimates are developed is the private nonfarm sector. This sector has had an historical rate of change in output per man-hour of 2.8 percent a year.

For each of the areas for which a separate estimate of employment is developed, it is also necessary to derive a change in annual hours of pay. Again, in developing 1980 estimates of changes in annual hours paid, separate estimates were made for farm, nonfarm private, and government because of variations among these components in the rate of change of hours. Farm hours paid, which has a higher level of hours, is projected to decline at a somewhat more rapid rate than hours paid in the private nonfarm sector. For government, no change in hours paid were projected over this period.

With the estimates of changes in hours paid and the estimates of employment for each of the separate components of total employment, the next step in these projections is to calculate the total potential man-hours in 1980. This is accomplished by multiplying the estimate of employment for each component of total employment by the estimated level of 1980 average hours paid for that sector.

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The final sequence in developing the real gross national product is to estimate the change in labor productivity for each of these three elements, farm, private nonfarm, and government. In developing the 1980 estimates, government—as noted above—is actually projected in three categories, Federal military, Federal civilian and State and local. The potential 1980 output for each element of government is derived by estimating an index of employment change 1965–80 and applying to this an estimate of wages and salaries for 1965 in 1958 dollars. For farm and private nonfarm sectors, the potential output is derived separately by taking the estimated potential man-hours in each group and multiplying this by the projected level of output per man-hour. The sum of these components—farm, private nonfarm, and government—is equal to total potential domestic gross national product. Finally, an estimate of the contribution of "rest of the world" is made to arrive at total potential gross national product.

Composition of GNP. The previous section described in detail the steps necessary to derive the potential gross national product. In developing the economic growth model the next requirement is to derive the composition of this potential GNP with respect to the major demand components. The 1980 projections has two different demand compositions of GNP within the four models—the two basic models and the two high durables models. The two demand compositions are derived by a combination of analyses of past trends and by assumptions.

Defense spending depends to a considerable extent on what is assumed about the level of military activity. The assumption is that in 1980 the U.S. will not be involved in an armed conflict; consequently the range of defense expenditures will be limited. Still there is a wide range of reasonable estimates of the level of defense spending consistent with this assumption. Essentially the defense spending projected, particularly in the basic model is related to the downtrend in defense expenditures as a ratio of GNP prevalent in the 1957–65 period and assumptions on the limits of this trend.

State and local government spending as a percent of gross national product has had a strong trend upward during most of the post World War II period. In determining the 1980 State and local component one set of models assumes a continuation of that trend while the other set shows no further increases in the ratio.

Investment has always been a highly variable component of demand and it is one of the factors which is varied considerably in the 1980 projections. Two models assume that investment as a proportion of GNP is at the lower end of a reasonable range and the other two models set it at the higher end of this range. One of the subcomponents of gross private domestic investment is residential structures. There has been little relationship between the building of new residential structures and movements in the gross national product. This is because other factors—such as household formation, rural to urban movements, and interest rates—are more important determinants of residential construction than growth in GNP. In developing projections of residential structures these factors—particularly household formation—were given primary consideration.

Personal consumption expenditure is, by far, the largest category of

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demand and, as a ratio to GNP, has moved within a relatively small band. The 1980 projections continue the historical relationship of consumption to GNP and the several models have ratios of consumption to GNP within ranges found during the post war period.

In future projections work the development of potential demand and its distribution among major demand components discussed in this and the preceding section will be calculated by an aggregate econometric model developed by Dr. Lester Thurow of Massachusetts Institute of Technology. A description of Dr. Thurow's model can be found in this appendix under the heading, "Plans for Development of Data and Techniques."

Industry structure of final demand. In the preceding section, potential gross national product was allocated to the major categories of demand—personal consumption expenditures, gross private domestic investment, federal government expenditures, State and local government expenditures, and net foreign demand. These demands must be further disaggregated into demands by industry, consistent with the input-output classification system. This section deals with the techniques of distribution for each of the major categories of final demand.

Personal consumption expenditures (PCE). Allocation of consumer expenditures among each of the producing industries relies upon consumption functions for each of the categories of consumer expenditures as defined in the national income and product accounts. These functions, which were developed by Professor Houthakker and Dr. Taylor while associated with Harvard University, relate expenditures of a specific item, such as shoes, to past expenditure on this item and to past levels and changes in total consumer income. In this formulation, total consumption expenditures is treated as an income variable and is, by far, the most important of the explanatory variables. Annual change in total consumption expenditures was the next most important variable. Relative prices appear in about one-half of the equations and, in addition, one or two other variables appear in some of the equations. In the estimating procedure the sum of the projected levels of the individual items is brought into balance with the projected level of total personal consumption expenditures by prorating any difference according to the income elasticities of the individual equations.

The demand function implicit in most of the equations is dynamic in the sense that it allows the effect of a change in an explanatory variable to be distributed over time. Thus, a change in income may have a more immediate effect on the expenditure for some items and a lagged or gradual effect on other items. In general, a change in income has an initial strong influence on durable goods while services respond more slowly to the level of income.[3]

A set of personal consumption expenditures in terms of the national income and product accounts, whether for a known or projected year, must be transformed into a set of final demands consistent with the input-output framework. This transformation consists of reordering the data from the one product classification system to another and moving from valuation at site of purchase to valuation at site of production. A

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set of conversion factors for this purpose has been developed by the Office of Business Economics.[4]

In the national income and product accounts, the classification of personal consumption expenditures has similar or related consumer products grouped into a single item, while the input-output system classified products by the producing industry. For example, consumer demand for the item "shoes and other footwear" is distributed among final demands from the leather products industry, the rubber products industry, and imported footwear. The extreme case is consumer demand for "other durable house furnishings," which is distributed among twenty-one input-output sectors covering a wide range of the manufacturing industries. On the other hand, one or more entire personal consumption expenditures items may be directly transferable into final demand for a single input-output industry. For example, consumer demands for electricity and gas—separate personal consumption expenditures items—consist entirely of final demand for the output of the electricity, gas, water, and sanitary services sector. The limiting case of this kind—consumer categories being condensed into demand for a single sector—occurs with respect to the various types of "purchased local and intercity transportation," in which seven PCE categories all are reflected entirely as demand on the transportation sector.

Personal consumption expenditures, both projected and historical, are developed initially in purchasers' values and then converted into producers' values; that is, the distribution costs of trade, transportation, and insurance associated with each purchase are subtracted out of each industry sector and added to trade, transportation, and insurance, the margin industries. The margin rates in use are based on the 1958 proportions with the introduction of some modifications and time trends. The margins are aggregated by type and included as part of the final demand by the consumer for the output of the respective margin industries.

While standardized programs have been developed to derive the personal consumption expenditures "bill of goods" in a continuous sequence of operations, the results are reviewed at each stage of the process. Modifications are made to the system as additional structural information becomes available. Moreover, the projected levels of personal consumption expenditures are sometimes modified to reflect more recent data and the constraints imposed by other parts of the input-output system.

A different approach is used in this report with respect to personal remittances-in-kind to foreigners and expenditures of foreign visitors in the United States than that used in the national income and product accounts and in the original input-output table. In the latter data, such expenditures are included in the industry detail of both personal consumption expenditures and exports. To avoid double counting, these remittances and expenditures are deducted in a lump sum from personal consumption expenditures and shown as a negative entry in industry 85, "rest of the world". In this report, the adjustment for remittances and expenditures of foreign visitors is made for each sector and the negative entry in industry 85 is eliminated.[5]

Gross private domestic investment (GPDI). In projecting the industry composition of investment demand for each of the producing industries,

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investment is treated as four separate categories: 1) Nonresidential construction, 2) producers' durable equipment, 3) residential structures and, 4) net inventory change. For two of these—residential and nonresidential structures—little adjustment is needed in order to use this in an industry final demand bill of goods since new construction is one industry in the 82 sector input-output tables used for these projections. The only adjustments necessary are to deduct the estimated commissions on expenditures for structures that go to the real estate industry, and transfer the estimated value of net purchases of used structures from the private sector to the public sector.

The projections of demand for producers' durable equipment are developed by industry analyses of time trends which appear in the basic data. These data consist of the full detail of the producers' durable equipment portion of the national income and product accounts. Little effort beyond the extension of past trends is required at this point in the calculations because of a later sequence which balances the demand for producers' durable equipment with industry capital requirements.

Projected net inventory change by producing industries is based on industry distributions of these changes for historical years. Since most data on inventory change are compiled by purchasing or holding industries, the data must be translated into a producing-industry basis. In order to translate inventories from purchasing-industry to producing-industry, inventory data on goods-in-process, finished goods and supplies and materials are used separately. For supplies and materials and for goods-in-process the direct requirements table is used to estimate the producing industry composition. For example, if the construction machinery industry holds certain inventories, use of the coefficients for this industry in the direct requirement table will convert these inventories into the steel, rubber, and engines which serve as inputs to this industry. By following this procedure for each industry, inventories are converted from a purchasing-industry basis to producing-industry basis. Finished goods-on-hand are, of course, already on a producing-industry basis.

In developing the 1980 projections of inventory change by producing industry, a percent distribution of inventory change by industry for a recent historical year is used as the initial projections of the distribution of net inventory change. The initial projection is modified as required at a later stage in the model.

Federal Government Expenditures. The Federal Government industry bill of goods is prepared by breaking the government account into two broad groups, defense and nondefense. In the case of defense, the projections rely upon detailed historical patterns compiled for one or two recent years. From these data it is possible to make broad assumptions about major shifts in weapon systems, such as a general movement toward more electronics or computers, and to adjust the industry structure of the projected demand accordingly.

For nondefense activity, which include the National Aeronautics and Space Administration (NASA) as well as other nondefense installation, historical data for a recent period is developed separately for NASA and for all other nondefense areas. For both of the nondefense groupings, expenditures for new construction and for the constant dollars compensation of employees were projected separately. The constant

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dollar compensation, of course, was estimated at an earlier stage of the calculations when the potential GNP was developed. After these two items are projected, the industry composition of the other nondefense spending is estimated, primarily on the basis of the industry distribution in the base period. However, some adjustments are made to incorporate known or projected shifts in the distribution of expenditures, e.g., the high rate of growth in expenditures for computers.

State and Local Government Expenditures. State and local government bills of goods are developed by separately projecting purchases for each of the following components of State and local spending: elementary and secondary education, higher education, other education, highways, hospitals, health, sanitation, natural resources, parks and recreation, government enterprises, and finally "all other." These separate estimates consider to the extent possible the effect that special factors will have on a given category. For instance, education projections are made by considering enrollment projections and trends in pupil-teacher ratios; the projections of highways and hospitals expenditures consider recent changes in federal legislation and attempt to gage their effects on past trends in these categories.

A projection of employment is made for each of these categories of State and local government expenditures, consistent with the overall employment estimate used in developing the potential gross national product. With these employment projections it is possible to derive a separate estimate of constant dollar compensation for each of the individual functions of State and local government in 1980. Next, for each function an estimate of structures is made for 1980 based on past trends and recent developments in federal legislation which may be expected to materially effect these trends. Given these estimates of construction and compensation for each area of State and local spending, a residual amount remains which is distributed to producing sectors based on a distribution of industry purchases obtained from the 1958 input-output study. Some modification is made within these industry distributions to take into consideration recent changes, e.g., the use of computers and teaching machines.

Net Foreign Demand. Exports and imports are handled separately at their gross levels in the input-output system and are netted only at a final stage in order to present a conceptually correct level of GNP. Exports are treated as any other component of final demand in the input-output system; imports, on the other hand, require a unique treatment.

In order to develop an industry bill of goods for exports, a two stage process is followed. Data are developed for exports in balance of payments categories, which classifies exports into about eight major groups. These data, in turn, are related to the country or area of the world for which these exports were destined. To develop projections of exports by each of these major categories, projections of the industrial production of real gross national product for each of the important trading partners of the United States are used.[6] Thus, these projections of exports have taken into consideration the major developments expected with respect to our most important trading partners.

After projections are developed for the eight balance of payments

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categories, they are disaggregated into demands for the output of each of the industries of the input-output table. This is accomplished by analyzing the industry composition of each of the balance of payments categories historically and projecting the industry distributions for these categories to 1980.

Competitive imports are grouped into two categories in the input-output system: those allocated to final demand and those which go to an intermediate sector.[7] Those in the first category include imported items consumed by final demand components in substantially the same form in which they are imported; the projections of final demand by industry for these components will include an estimate of imports. For example, the PCE projection for clothing includes an estimate of finished imported clothing.

Imports which become a part of an intermediate sector, i.e., that require further processing, also may be divided into two groups: those that are the same or similar to domestic products and, therefore, competitive, and those that are different in nature from domestic products and, therefore, noncompetitive. Competitive imports are treated as inputs into the industry producing the same or similar domestic products. Imports of steel, for example, are a input into the primary iron and steel manufacturing industry.

Noncompetitive imports are treated as inputs into the using or consuming sector; for example, since coffee has no domestically produced counterpart, it is treated as a purchase by the food industry—where it is ground, blended, and packaged prior to being sold to consumers. Once imports have been assigned to the appropriate sector as an input, they take the form of coefficients and are projected in the same manner as all other coefficients. The method of projecting coefficients is discused in the section, "Projection of Input-Output Coefficients," pp. 66–72 of this appendix. At a later stage in the input-output system the original projection of imports are reevaluated in the light of implied growth rates and supply requirements. The system balancing procedure is discussed on 72–75.

The industry demands for each of the categories of final demand have been described in detail. The total final demand by industry is, of course, a simple summation of the demand by industry for each of the components just discussed. In analyzing and using the total final demand by industry or the industry structure of any component of demand, it is important to understand certain input-output conventions and the industry classification system on which they are based; these are discussed in succeeding sections.

Industry Conventions of the Input-Output System. A number of industries included in the input-output system are not identifiable as industries in the ordinary sense. In the 1958 input-output table there are three synthetic or "dummy" industries which represent an aggregation of commodities or services which originate in other industres but whose use is related to a common activity for which information on consumption is generally available only for the entire group. In such instances, products made in different industries are channeled through a fictitious distributing industry. One example is industry 82, office supplies, which "buys" and then distributes paper clips, typewriter paper, and similar office supplies through one central source. The two other

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dummy industries which perform a similar function are industry 81, business travel, entertainment, and gifts; and industry 83, scrap, used, and secondhand goods. Purchases from industries 81 and 82 do not generate output or employment in these industries themselves, but do generate output and employment in the industries which actually produce the products and services. Industry 83, the used or scrap industry, is not used in tracing the effect of final demand on industry output and employment since this would imply generation of output in order to produce scrap to sell to the scrap industry.

In addition, in these projections two industries have been modified from their treatment in the 1958 input-output work. The first is research and development, (R & D), industry 74. In the 1958 input-output table, it is primarily a dummy industry which buys all research and development (R & D) and then sells this package to purchasing industries. The R & D industry in these projections has been redefined to include only commercial establishments. Therefore, most R & D is not treated as a direct sale from the producing industry to the purchaser. For example, R & D on military aircraft by the aircraft industry is sold directly to the Federal Government.

Industry 85, "rest of the world", is modified to exclude travel receipts from foreign visitors and personal remittances-in-kind to foreigners. This adjustment affects the industry detail of the personal consumption expenditure and export categories of final demand.

The treatment of government requires some additional explanation. Industry 78, Federal Government enterprises, and Industry 79, State and local government enterprises, cover governmental sales of a product or service such as the postal service or local transit companies. Industry 84 includes employment involved in the general governmental operations of administration, teaching, and similar activities at both the Federal, and State and local levels.

Industry 80, gross imports of goods and services, covers U.S. payments to foreigners for merchandise, services, and factors of production. The service of domestics is found in industry 86, households.

Classification in the Input-Output System. The 1958 input-output table classifies all productive activities into 87 industries. In addition, a number of categories make up final demand and one composite category constitutes value added. Each of the producing industries may cover a broad range of products and services. Most of the producing industries are combinations of detailed industries as defined in the *Standard Industrial Classification Manual* (SIC), 1957 edition, prepared by the Bureau of the Budget. The SIC coverage of the 1958 interindustry classification system is given in table A–1.

Valuation of Transactions. Input-output relationships can be expressed, in concept, in either producers' value or purchasers' value. Specifically, the inputs for making an automobile can be related to the price received by the producer or to the price paid by the purchaser. In the input-output tables, the valuation is at producers' value.

Under a system using producers' valuation, the individual inputs into a consuming industry are valued at producers' prices. The trade margins and transportation costs associated with all of these inputs appear as

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Table A–1. Industry numbering for the 1958 input-output study

Industry number and industry title	Related SIC codes (1957 edition)
Agricultural, forestry, and fisheries:	
1. Livestock and livestock products	013, pt. 014, 0193 pt. 02, pt. 0729
2. Other agricultural products	011, 012, pt. 014, 0192, 0190, pt. 02
3. Forestry and fishery products	074, 081, 082, 084, 086, 091
4. Agricutural, forestry, and fisheries services	071, 0723, pt. 0729, 085, 098
Mining:	
5. Iron and ferroalloy ores mining	1011, 106
6. Nonferrous metal ores mining	102, 103, 104, 105, 108, 109
7. Coal mining	11, 12
8. Crude petroleum and natural gas	1311, 1321
9. Stone and clay mining and quarrying	141, 142, 144, 145, 148, 149
10. Chemical and fertilizer mineral mining	147
Construction:	
11. New construction	138, pt. 15, pt. 16, pt. 17, pt. 6561
12. Maintenance and repair construction	pt. 15, pt. 16, pt. 17
Manufacturing:	
13. Ordnance and accessories	19
14. Food and kindred products	20
15. Tobacco manufactures	21
16. Broad and narrow fabrics, yarn and thread mills	221, 222, 223, 224, 226, 228
17. Miscellaneous textile goods and floor coverings	227, 229
18. Apparel	225, 23 (except 239), 3992
19. Miscellaneous fabricated textile products	239
20. Lumber and wood products, except containers	24 (except 244)
21. Wooden containers	244
22. Household furniture	251
23. Other furniture and fixtures	25 (except 251)
24. Paper and allied products, except containers and boxes	26 (except 265)
25. Paperboard containers and boxes	265
26. Printing and publishing	27
27. Chemicals and selected chemical products	281 (except alumina pt. of 2819)
28. Plastics and synthetic materials	282
29. Drugs, cleaning, and toilet preparations	283, 284
30. Paints and allied products	285
31. Petroleum refining and related industries	29
32. Rubber and miscellaneous plastics products	30
33. Leather tanning and industrial leather products	311, 312
34. Footwear and other leather products	31 (except 311, 312)
35. Glass and glass products	321, 322, 323
36. Stone and clay products	324, 325, 326, 327, 328, 329
37. Primary iron and steel manufacturing	331, 332, 3391, 3399
38. Primary nonferrous metals manufacturing	2819 (alumina only), 333, 334, 335, 336, 3392
39. Metal containers	3411, 3491
40. Heating, plumbing, and fabricated structural metal products	343, 344
41. Screw machine products, bolts, nuts, etc., and metal stampings	345, 346
42. Other fabricated metal products	342, 347, 348, 349 (except 3491)
43. Engines and turbines	351
44. Farm machinery and equipment	352
45. Construction, mining, oil field machinery and equipment	3531, 3532, 3533
46. Materials handling machinery and equipment	3534, 3535, 3536, 3537
47. Metalworking machinery and equipment	354
48. Special industry machinery and equipment	355
49. General industrial machinery and equipment	356
50. Machine-shop products	359
51. Office, computing, and accounting machines	357
52. Service industry machines	358
53. Electric transmission and distribution equipment, and electrical industrial apparatus	361, 362
54. Household appliances	363
55. Electric lighting and wiring equipment	364
56. Radio, television, and communication equipment	365, 366
57. Electronic components and necessories	367
58. Miscellaneous electrical machinery, equipment, and supplies	369
59. Motor vehicles and equipment	371
60. Aircraft and parts	372
61. Other transportation equipment	373, 374, 375, 379
62. Professional, scientific, and controlling instruments and supplies	381, 382, 384, 387
63. Optical, ophthalmic, and photographic equipment and supplies	383, 385, 386
64. Miscellaneous manufacturing	39 (except 3992)
Transportation, communication, electric, gas, sanitary services:	
65. Transportation and warehousing	40, 41, 42, 44, 45, 46, 47
66. Communications, except radio and TV broadcasting	481, 482, 489
67. Radio and TV broadcasting	483
68. Electric, gas, water, and sanitary services	49
Wholesale and retail trade:	
69. Wholesale and retail trade	50 (except manufacturers sales offices), 52, 53, 54, 55, 56, 57, 58, 59, pt. 7399
Finance, insurance, and real estate:	
70. Finance and insurance	60, 61, 62, 63, 64, 66, 67
71. Real estate and rental	65 (except 6541 and pt. 6561)
Services:	
72. Hotels and lodging places: personal and repair services, except automobile repair	70, 72, 76 (except 7694 and 7609)

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Table A–1.—Continued: Industry Numbering for the 1958 Input-Output Study

Industry number and industry title	Related SIC codes (1957 edition)
73. Business services	6541, 73 (except 7361, 7391, and pt. 7399), 7604, 7699, 81, 89 (except 8921)
74. Research and development	----
75. Automobile repair and services	75
76. Amusements	78, 79
77. Medical, educational services, and nonprofit organizations	0722, 7361, 80, 82, 84, 86, 8921
Government enterprises:	
78. Federal Government enterprises	----
79. State and local government enterprises	----
Imports:	
80. Gross imports of goods and services	----
Dummy industries:	
81. Business travel, entertainment, and gifts	----
82. Office supplies	----
83. Scrap, used and secondhand goods	----
Special industries:	
84. Government industry	----
85. Rest of world industry	----
86. Household industry	----
87. Inventory Valuation Adjustment (IVA)	----

direct purchases from the trade and transportation industries, respectively. The consequence of using the producers' valuation of transactions as the basis for deriving output is that the outputs generated in the input-output system include only requirements at earlier stages of the production process; there are no forward accumulations encompassing the transportation and trade activities required to move products of a given industry onto the next stage of production or to the ultimate consumer.

In using the input-output table to convert estimates of final demand (usually stated in purchaser's value) into output requirements, additional information is needed on the value of the margins for transportation and trade. These values are deducted from purchasers' value to derive the appropriate producers' value A final demand "bill of goods", therefore, consists of expenditures for specific goods and services, valued at producers' prices, plus separate purchases from the transportation and trade industries for the services involved in getting the product from the producer to the purchaser. Information on trade and transportation margins associated with each transaction was developed as a part of the 1958 input-output study by the the Office of Business Economics. This information was used to convert the final demand expenditures for goods and services in 1980, which were estimated initially in purchasers' value, into producers' value.

The conversion from producers' to purchasers' values has special implications for the trade sector. If transactions were shown as they actually occurred, the detailed connections would be between trade sector and the producing industries, while the consuming industries would purchase most of their inputs from a single source, trade. To show the links between producing and consuming industries, or final markets, commodities are shown as moving directly from producer to user; their passage through the trade industry has been omitted in so far as the purchaser is concerned. Therefore, the output of the trade industry is measured only in terms of total margins; that is, operating expenses plus profits.

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Secondary Product Transfers. A final demand "bill of goods" shows the demand for items classified by specific groups of products or services. However, a product may be made in an industry where it represents the principal proportion of the industry's ouput, or it may be made as a "secondary" product in some other industry. For example, synthetic resins are made both in industry 28, plastics and synthetic materials, and industry 27, chemicals and selected chemical products. In order to avoid splitting the demand for a product between two or more industries, a convention has been adopted of transferring most secondary products to the primary producing industry. In the case of synthetic resins the transfer is from the chemical industry to the plastics industry. Thus, the latter industry meets the entire demand for synthetic resins from the total supply, wherever produced. This approach requires that specific items of final demand be classified according to the industries producing the items as primary products. The primary industries, in turn, will generate demand for these items in the industries where they are produced as secondary products. In this way, the final demand for the product or service generates production both in the primary industry and also in the industry where the product is secondary.

This approach of transferring products, wherever made, to a single industry is based on the assumption of fictitious sales to the primary producing industries. It is used in a number of areas in the input-output table. This approach permits the demand for products or services to be distributed back to the original producing industries in the proportion that they contributed to the supply.

An alternative approach is used in a few cases when secondary production is large and intrinsically different from the primary output of an industry such as automobile repair performed in automobile dealer establishments. In these instances, the industries are redefined, i.e., the secondary products and their associated inputs are removed permanently from the producing industries and assigned to primary industries. In the case cited above, the automobile repair services were taken from the trade sector and placed in a separate industry.

Base Year Prices. The basic input-output table is for the year 1958 and reflects the 1958 price level. In order to use the input-output relationships, the detailed projections of final demand expenditures must either be stated in 1958 prices, or the basic input-output relationships must be recalculated on a basis consistent with the price level underlying the final demand estimates. In this study the projections of final demand expenditures are developed in constant 1958 prices.

This does not mean that changes in relative price [8] are ignored. For example, projected changes in relative prices are used in developing the detailed estimates of consumer expenditures. Also, the change in relative price is implicit in projections of input-output relationships. The substitution of one material for another due to relative price changes may affect input-output coefficients in the same way as technological change. When past trends are used as the basis for projecting input-ouput relationships, the past effect of relative prices is assumed to continue.

Input-Output Relationships. An input-output transactions table is a rectangular array of interlocking numbers, with the transaction of each

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sector or industry represented by the entries in a particular row and column. Every entry in the table can be read in two ways. Read across a row, the numbers tell how much the industry of that row sells to every industry, including itself, and to the components of final demand, i.e., consumption, investment, government expenditures, and net exports. The sum of all the entries in a row gives the total output or sales of that industry. Read down a column, the entries tell how much the industry of that column buys from every industry, including itself, in order to produce its own output. The table also shows, as the last entry in each column, the "value added" by the industry.[9] The sum of the individual purchases from other industries and itself, plus the value added, equals the total value of production of the industry. It is the information in the column on purchases of specific materials, parts, fuels, business services, etc., that is used as the basis for deriving the input-output ratios.

An input-output transactions table, when converted into ratio form, i.e., into a direct "coefficients" matrix, can be used to measure the effect of a change in demand for an industry's output on all of the immediate supplying industries. For example, if the demand for automobiles increases or decreases by a certain amount the direct coefficients of that industry will indicate the proportionate effects on the steel, aluminum, glass, textile, rubber, plastics, trade, and transportation industries.

Each of the industries directly affected by a change in demand for automobiles has its own supplying industries. The steel industry, for example, needs coal and iron ore to make steel and the coal and iron ore industries, in turn, need other items such as fuel to run the mining machinery and to repair parts for equipment. By linking all the input-output coefficients together in a consistent and integrated set of relationships, it is possible to trace the effect of a particular demand, that for automobiles, for example, on each industry back along the production process. These effects include all the raw materials, parts, components, fuels, transportation, and distributive services which are ultimately included in making the final product, the automobile.

The complex relationships among industries are encompassed in the coefficients of the total (direct and indirect) requirements matrix, also called an inverse matrix[10]. An inverse matrix (such as table 3 of the 1958 Input-Output Study[11]), provides the basic framework used to explore potential effects on the industrial composition of employment in 1980 which may result from alternative assumptions with respect to rates and patterns of growth.

Thus, through the use of an input-output system, projections of the demand of final users such as consumers or government can be translated into the total output requirements from all industries. However, since the base period input-output table represents the price, technology, and product mix of 1958, it is not adequate for use in a year as distant as 1980. The procedures for coefficient projection are discussed in the next section.

Projection of Input-Output Coefficients. The need to project input-output coefficients arises because of changes that have taken place or are expected to take place. These changes may affect coefficients in a variety of ways. Technological change is one of the major factors underlying changes in coefficients from period to period. The introduction of nuclear

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electric power plants requires a new input, nuclear fuel. Growth of this new input reduced the relative need for other fuels.

Other factors, such as product mix or price change, also can cause significant change in coefficients. Product mix problems are inherent in a system that uses fixed classification and aggregative industry groups. In dividing the U.S. economy into approximately 80 sectors, broad industry groupings, such as food and kindred products and chemicals, are created. These large sectors include different commodities and services, each of which has its own set of input requirements. If the production of the various commodities changes at different rates, then the total input coefficients of the sector may also change. This can occur even if there are no technological changes in the producing industries. For example, construction, mining, and oil field machinery are all included in one sector. Since the output of construction machinery is growing more rapidly than the other products, and the material and service requirements of each differ somewhat, the sector input coefficients may change due solely to the change in product mix.

Most coefficients tend to change slowly. One reason is that long-lived capital equipment usually has been incorporated into the existing processes. Even a profitable innovation, such as the basic oxygen steel furnace (BOF), takes a substantial amount of time to become widely adopted throughout the industry. Oxygen furnaces were first introduced in the United States in 1954. In 1967, they still were less than one-third of ingot steel output, although the pace of conversion finally has accelerated in the past few years.

Stages of projection. Before turning to the specific methods of coefficients projections, it is necessary to consider the context in which those projections are made. As noted in the preceding section, an input-output system may be thought of as being composed of four related components: The matrix of interindustry transactions which are converted into coefficients, the set of values-added in the industries, the set of final demands for the industries, and the set of industry outputs. Each is dependent on the other and must be mutually consistent in order to produce a balanced system. Therefore, the projection of coefficients cannot be a totally independent operation—although certain coefficients may be projected independently—but must be made in conjunction with projections of industry final demands and outputs for the appropriate year.[12]

All projections of input-output relationships begin with a set of input-output tables for a base year. For the 1980 projections, the base year tables were the 1958 input-output matrices prepared by the Office of Business Economics. From this starting point, the first step to the 1980 projections was the construction of an input-output system for the latest year for which reasonably complete data were available, 1965. The 1965 system then became the basis for the final projections to 1980. The use of an interim year in the projections procedure has a definite purpose: To allow information about recent structural changes to be incorporated into the projections.

In the input-output table constructed for 1958 each component, in fact each transaction, was independently established. Census data and those from a variety of other sources, as well as a number of imputations

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used in producing the national income and product accounts, were utilized for this purpose. Thus, each element in the system is "known" and the integrated whole is a balanced system.

In constructing input-output systems for years other than the benchmark year, the process changes in emphasis from the derivation of the "correct" values from available data to the estimation of "best" values. There are two distinct cases to be considered in terms of the years chosen for estimation.

The first case is when an input-output system is developed for a non-benchmark year, such as 1965. In this case, there exist some of the necessary data: output levels by industry, final demands by type of purchase, and industry productivity and technological trends. But the industry output levels must be deflated to benchmark-year price levels and adjusted for secondary product transfers consistent with input-output conventions; the final demands must be deflated, translated into industry demands with consideration of product-mix changes, and converted from purchasers' to producers' values with adjustment for changing trade, transportation, and insurance margins. Available information on changes in technology will be incomplete and, thus, not wholly sufficient to yield proper industry adjustments.

The second case is when an input-output system is developed for a future year, such as 1980. In this case, there exist all the problems mentioned above for a non-benchmark historical year; in addition, all variables are unknown. The growth rate, structure, and production processes may change due to factors unforeseen or imperfectly understood. Developing an input-output table for a non-benchmark historical year is primarily a problem of restructuring existing data into the proper form, with estimation techniques taking a secondary role. Development of an input-output system for a projected year, on the other hand, requires the estimation of all of the parts of the system as well as the integration of those parts into a balanced system. In either case, the coefficients must be projected in order to achieve a fully balanced system.

Method of coefficient projection. Two methods of projecting input-output coefficients have been used in this study. The first method concentrates attention on changes within particular industries and the second focuses on interindustry relationships with the added objective of achieving a balanced system. The first approach utilizes specific data on the technology of an individual industry, including past and expected changes for selected input-output coefficients. Estimates are made for the expected influence of changing technology on the industry's purchases per dollar of its output. Of course, as discussed earlier, the change in the input-output coefficients in the past may not have resulted from technological change but from product mix or other factors. If it were a case of product mix change, the coefficients projected for the industry would include an extension of the influence of this factor.

The second or aggregate approach to coefficient projection used in estimating the 1980 coefficients is a general method of coefficient adjustment which takes account of the analyses of specific industries and coefficients.[13] In the first type of analysis each industry is evaluated as a purchaser of other industries' products, i.e., an industry is viewed as a column in the input-output array. In the more general method of co-

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efficient projection, changes in the sales of an industry to other sectors over time is analyzed, i.e., an industry is viewed as a row in the conventional input-output table. In projecting coefficients first to 1965 and then to 1980 both approaches were utilized.

Coefficient projection to 1965. The first step in developing the 1965 input-output table is to estimate output levels and final demands by industry from available data. As noted above, the existing data require a number of adjustments in order to be stated in base year prices and in accord with the input-output sector definitions.

The next step is to calculate the differences by industry between "actual" intermediate demand and the "derived" intermediate demand which is generated by the base year direct coefficients matrix. "Actual" intermediate demand for an industry is simply its total output less its final demand:

$$X - Y = T$$

where for a particular industry,
X = total output,
Y = final demand,
T = intermediate demand.

The "derived" intermediate demands are calculated by multiplying the output of each sector by the direct coefficients in its column and then summing across each row. In matrix terms this calculation is expressed as:

$$A\,X = T$$

where A is a direct coefficients matrix,
X is the vector of industry outputs,
T is the vector of intermediate demands.

The "actual" and "derived" intermediate demands for each sector are then compared. The following example will illustrate the procedure:

	(1) "Actual" Intermediate	(2) "Derived" Intermediate	(3) Difference (1–2)	(4) Ratio of 1 ÷ 2
Industry A	1100	1000	100	1.10
Industry B	400	500	–100	.80

The ratios in column 4 indicate the implicit changes in the coefficients affecting each industry between the base year and the current year. When calculated for each of the sectors of the input-output system using 1965 outputs and the base year table, the ratios constitute the first estimate of the direction and magnitude of coefficient changes from 1958 to 1965.

This procedure lays the basis for assembling a new direct coefficients matrix for 1965. The next step is to utilize all of the exogenous information gained from the separate industry studies; the independently projected coefficients are inserted into the system. One area where this type of data exist, and where revised coefficients can be substituted directly, is competitive imports. Of course, inasmuch as a change in the competitive import ratio will change all of the coefficients proportionately in the column for that industry, a scalar calculation needs to be performed whenever import coefficients for a sector are changed.[14] With the incorporation of the independently estimated coefficients, the "actual" and "derived" intermediate demands are again calculated. The differences or

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"gaps" for most sectors, hopefully, will be smaller with the inclusion of the more recent data, although for some industries the gap may actually increase.

At this point in the analysis, the original estimate of industry outputs and final demands are thoroughly reexamined. An unusually large gap between "actual" and "derived" intermediate demand is often the result of a poor estimate of output or final demand, or both. A standard check on a suspect estimate of output is to examine the sector's column, identifying those industries who sell a significant part of their output to the sector in question. If the "derived" intermediate demands of the supplying industries also shows gaps in the same direction, either positive or negative, and of about the same relative magnitude, the output estimate in question is very likely in error and is completely reestimated. Correction of an error of this type may resolve the difficulties in one or more additional sectors.

Errors in final demand estimates may occur because the product mix within a consumer classification has changed, but the allocation of that demand to industries is still based on the base year distribution. Changes in the transportation and trade margins may also have occurred in the time since the base year table was assembled. Errors of this type often can be detected only by working simultaneously with the coefficients, industry outputs, and final demands.

Whenever a number of changes, in coefficients, outputs, or final demands, are made in the system, the gap analysis is redone. If the appropriate corrections have been introduced, the gaps, on the average, will become progressively smaller.

When a single direct coefficient is changed, the "derived" intermediate demand for the supplying industry is altered. When the estimated final demand for an industry is changed, the "actual" intermediate demand for that industry is altered. When an estimated industry output is changed, the "actual" intermediate demand of that industry is altered and, in addition, the "derived" intermediate demands of all the supplying industries are altered. Therefore, after as much investigation of industry outputs, final demands, and specific coefficient change has been made as time and resources will allow, the latter two elements are fixed at their existing levels. The gap analysis is repeated, with the calculated "actual" intermediate demands now at their final levels.

At this point, all that remains of the balancing procedure is to bring "derived" intermediate demand to the actual level for each industry, by using the aggregative approach to coefficient adjustment. With fixed industry outputs and final demands, this can be accomplished by multiplying the ratio factor for each industry by the coefficients in its row of the matrix.[15] The independently estimated coefficients should be omitted from this procedure as they have usually been derived from more reliable data.

If the scaling procedure is done accurately, the system will be in balance, i.e.,

$$X - Y = A X = T.$$

Then it will also be true that the final demands by industry and the inverse matrix will generate the correct industry outputs:

$$(I - A)^{-1} Y = X$$ [16]

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Coefficient projections to 1980. Projecting coefficients and developing a balanced input-output system for a future year, 1980, as opposed to a non-benchmark historical year, involves somewhat different procedures. First, data on industry outputs, final demands, and technological advances contributing to coefficient change in 1980 must be entirely estimated. On the other hand, information on the trends of these factors can be derived from the changes between the base year systems and the balanced system previously developed for 1965.

The first step in developing the direct coefficients matrix for 1980 is to project the 1958 to 1965 trends of coefficients change by industry. The projection of trends, of course, is tempered by judgment and made in light of the existing situation in the individual industries. A large change in the coefficients of an industry may result from a one-time shift in its input structure due to a major technological advance; in any event, rapid changes in coefficients are not likely to continue indefinitely. On the other hand, a gradual, well-defined change in the structure of a particular industry, or in the relative importance of some coefficients within an industry, may continue over a long period of time. Information gained from individual industry studies also may contribute to the projection of trends. These sources of information are used to adjust the 1965 matrix, which then becomes a first approximation of the 1980 direct coefficients matrix.

The second step in developing the 1980 system is the estimation of final demands by industry; the estimation procedure for final demand are covered thoroughly in the section on final demand in this appendix pp. 75–77. The next step is to use the projected final demands—the vector—and the preliminary 1980 direct coefficients—the A matrix—to generate tentative industry output levels for 1980 by the now familiar matrix inversion and multiplication procedure:

$$(I - A)^{-1} Y = X$$

Since the industry output levels are generated within the input-ouput system, any change in direct coefficients or in final demands will automatically affect one or more output levels. When only final demands are altered the matrix multiplication must be repeated in order to generate the modified output levels. When direct coefficients are altered a new inverse matrix must be calculated and then multiplied by the vector of final demands to generate modified output levels.

The procedures for determining the derived levels of final demands and outputs by industry and balancing the system for 1980 are different in scope from those used for 1965. The 1980 projections of all the elements of the system are pure estimates in the sense that they are not bound within fairly definite limits by existing data. Therefore, the initial 1980 projections of final demands and output levels by industry are subject to a more searching review and, possibly, to more substantial revisions than were appropriate for the 1965 estimates.

In order to evaluate the industry output levels generated by the system, the implied average annual rates of growth by industry are calculated for the period 1965 to 1980. An extremely high or a very low, or negative, rate of growth in an industry is sufficient reason for checking all of the factors which produced that rate. Then, the 1965 to 1980 rates of growth by industry are compared with those for historical periods; a sharp increase or decrease in the rate of growth of an industry compared with

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an earlier period, is considered sufficient reason to investigate the cause or causes. Although extreme rates or deviations in rates of growth most often trigger additional investigation, it does not follow that those rates are always changed; further investigation may, in fact, reinforce the credibility of a preliminary projection. For example, since the projected rate of growth in new construction is slightly increased, the growth rates of some of its supplying industries, such as stone and clay products, depart from past trends, but for valid reasons.

The process of evaluating each ingredient of the 1980 projections continues through several iterations. When the point is reached where reasonable estimates of each of the components have been achieved, the industry outputs and final demands are fixed at their desired levels.

At this point, if the modifications introduced into the system have been appropriate, the differences or gaps between the desired level of output and that generated by the system for each industry should be relatively small, no more than 5 percent of the total output. Then the gap analysis is used, as in 1965, to bring the system into balance: the differences between desired industry outputs and final demands are the "actual" intermediate demands and the generated outputs multiplied by the latest direct coefficients matrix yield the "derived" intermediate demands. The ratio factors for the industries are calculated and used to adjust the direct coefficients matrix to its final form. Thus, the aggregative method of coefficient adjustment was used to balance the 1980 input-output system in exactly the same way the 1965 system was balanced.

Industry Output Levels. The projected output levels for the input-output sectors are calculated by the matrix algebra operation described in the preceding section. The industry output levels, in fact, were generated repeatedly in developing the 1980 input-output system. For each projection, by using the previously determined output level for 1965 as base, the average annual rate of growth, 1965–80, was calculated for each industry. Comparisons between these growth rates and those for historical periods for the same industry were an integral part of the projections procedure.

Output Per Man-Hour. In order to progress from the projection of the growth rate in industry output to projection of employment in each industry, it is necessary to develop an estimate of change in output per man-hour. Two approaches are followed: the use of industry equations and projection of historical trends.

The industry equations are regressions taking several forms, simple, multiple, and log, and relate output per man-hour, the dependent variable, to output or employment in the same period or to output per man-hour or in the previous period. Although an output per man-hour estimating equation to 1980 was developed for most of the input-output sectors, many of the equations did not yield satisfactory results in light of past data. In these cases it was necessary to use the second approach.

The second approach to projecting output per man-hour by industry relies on information on the value of shipments in each sector, deflated by an appropriate index derived from statistics of the Office of Prices and Living Conditions of the Bureau of Labor Statistics. Then the deflated data were related to man-hours in the same sector, and annual

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changes in output per man-hour, output, and man-hours were developed for all combinations of historical years for each industry. These data were used in the following way: If the projected rate of growth of output for a given industry was close to the historical rate, the output per man-hour projections used initially for the industry was the historical rate of change for the post war period. If, however, the projected rate of growth of output for a sector was significantly different than the historical rate, the historical data were examined to find the longest subperiod when this industry's rate of growth in output was similar to the projected rate; the output per man-hour associated with this subperiod was used as the projected rate for such a sector. In addition, there remain a few sectors for which projections of growth in output are much different from past rates of growth and in these cases the projected outputs per man-hour were determined on a judgmental basis.

Employment Projections. The estimates of employment for each of the 82 sectors were derived from the estimate of output per man-hour, the projected level of output, and the projected annual hours for that sector. By dividing the projected output by output per man-hour, the level of man-hours for that sector is determined. Man-hours is converted to employment in each industry by dividing the former by the projected level of annual hours. These estimates of employment include not only wage and salary workers, but also the self employed and unpaid family workers. Once total employment has been computed for a sector, ratios are used to convert this into the three components of total employment. These ratios also are projected, with consideration of discernable trends within the industry.

In the procedure just described, employment is derived from estimated changes in output per man-hour and estimated 1980 output. When output by industry is not of interest, there is a short-cut procedure by which the estimates of final demand by sector can be directly converted into employment. In this procedure, the inverse matrix of the projected 1980 input-output system is converted into an interindustry employment table. This is accomplished by creating a row vector of employment-output ratios for each of the 82 sectors and multiplying each element of this vector by the coefficients in the corresponding row of the 1980 inverse matrix. The resulting matrix can be used to translate final demand projections by sector into the direct employment required in that industry to meet this final demand and the indirect employment required in the supporting industries which provides the raw materials, parts, component, fuel, transportation, and distribution services embodied in one of these final demands. An interindustry employment table for 1980 is provided in appendix D.

System Balancing Procedures. The 1980 projections contain many complex relationships among economic variables that were developed through a lengthly sequence of operations. It is necessary to have a set of checks and balances to insure that the various states of the projections make up an internally consistent model. The economic growth model is designed to provide a feed-back and balancing procedure with respect to three of its elements, imports, investment, and employment. Although the treatment of these elements has been discussed earlier, their special impor-

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tance in balancing the system warrants separate presentations. In practice, all three must be brought into balance simultaneously.

Imports. As was noted in earlier descriptions, imports are used in several ways. First, total imports are a part of the national income and product accounts and are offset against total exports in order to arrive at the net exports component of gross national product. Next, imports are a part of the components of final demand, consumption, investment, and government. Also, those imports directly competitive with domestically produced products are allocated to the competing industry and treated as an input. Finally, noncompetitive imports which require further processing are allocated to the sector that does the processing.

For both competitive and noncompetitive imports, input coefficients were projected to 1980 by using procedures similar to those used for other input coefficients. As the economic growth model calculations proceed to the point where industry growth rates in output have been derived, it is possible to use the projected output for a sector in combination with the projected import coefficients to derive an estimated level of imports by industry. The sum of these derived industry imports, when added to the final demand imports, can be checked against the total imports in the net export component of the gross national product.

In addition, since imports by industry have been separately projected, it is possible to make an industry by industry comparison of those values and the imports derived by using a sector's projected output and its projected import coefficient. Whenever major differences appear, these discrepancies can be brought into balance in one of several ways. First, changes can be made in the level of total imports. Second, the industry composition of total imports can be changed. Finally, changes can be made in the imports coefficients in the input-output table. In practice, a check is made of all the elements which go into the import projections and those which seem the least reasonable are altered.

Gross private domestic investment. The first step in balancing GPDI within the system is to check and, if necessary, modify the levels of two categories within this component. These categories are nonresidential fixed investment composed of business structures and producers' durable equipment, and net inventory change.

For producers' durable equipment and for net inventory change an industry composition of demand is estimated in the final demand projections sequence of the economic growth model. In the case of producers' durable equipment the distribution is based on time trends. For net inventory change a recent historical distribution is used. In the initial rounds of calculations changes are made in the industry composition of these categories of demand, primarily on the basis of requirements implied by the projected growth rates in industry outputs. In the case of inventory change, the industry composition can be weighted toward those sectors which have unusually high projected rates of growth in output.

For producers durables equipment and for some components of nonresidential structures, a more systematic look at the industry composition is involved. This is accomplished by calculating investment-output ratios for each sector, with projection where a time trend exists, and relating these ratios to the projected industry growth rates.[17] This proced-

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ure yields estimates of investment requirements in 1980 by purchasing industry. In order to compare these estimates of investment by purchasing industry with the initial industry demands for investment, it is necessary to convert the former data to a producing industry basis. A capital flow table is used for this purpose; such a table traces transactions in investment goods between capital-producing and capital-consuming industries.[18] At this time, the only capital flow matrix is for 1958.[19] In order to take some account of structural changes since 1958, the capital flow table was aggregated to about 15 sectors. Within these aggregated sectors, some general structural shifts can be made, such as more computers per dollar of investment and less plant per dollar of investment. Using this aggregated capital flow table, along with the investment by purchasing industry aggregated to the equivalent sectors, another estimate of demand for capital by producing industry can be calculated. If the industry demands which result are significantly different from those already included in the model, further modifications may be needed in the bill of goods for nonresidential construction and producers' durable equipment.

Employment. The last area where a balancing check is made is for total employment. After the economic growth calculations are completed, employment by industry is derived. The individual industry employment levels are totaled and checked against the total employment used in deriving the potential growth rate of GNP in the first stage of the calculations. If these levels do not match, several elements within the projections are checked. For each sector the projections of final demand, input-output coefficients, and output per man-hour are evaluated. Modifications are made whenever inconsistencies appear in order to bring about the desired balance in the employment. Most often these modifications are made in the individual industry projections of output per man-hour. In theory, of course, if the industry projections of output per man-hour could be relied on, the aggregate productivity used in the first step of the projections could be modified. However, the modifications usually are made in the detailed industry's projected rate of change in output per man-hour, because, first, the aggregate output per man-hour rates have been stable over most of the postwar period and, second, much remains to be learned about the appropriate method for projecting industry productivity.

Plans for development of data and techniques

A number of research efforts are now planned or underway under the aegis of the Interagency Economic Growth Project. The objective of these research projects is the development of new techniques and additional data leading to improved projections of economic growth.

Aggregate Econometric Model. In developing the projections contained in this report, the estimate of total GNP and its composition were made with only a minimum consideration of the income implications. In order to overcome this shortcoming, as well as to develop a model useful as an independent tool, the Interagency Economic Growth Project engaged Dr. Lester Thurow of MIT to develop an aggregate econometric model of the

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United States.[20] This model is a thirty-equation econometric representation of the U.S. economy and is especially designed to study the effects of certain alternative fiscal policies.

The Thurow model can be roughly divided into three sections: supply, income, and demand. The supply side consists of an aggregate production function which is used to calculate potential private GNP. Total potential GNP is obtained by adding an exogenous estimate of gross government product to the estimate of potential private GNP. The production function used in deriving private GNP has both labor and capital inputs; consequently, the model derives an estimate of gross private investment in a simultaneous solution with the production function.

The supply GNP is used in the income portion of the model to calculate the income flows. Components of demand GNP are estimated in constant dollars by using supply GNP and disposable personal income. Prices used in the system are exogenously estimated. Separate equations are used to derive each of the major components of final demand. From the three major parts of the model, estimates can be derived of total GNP in current and constant dollars, and government revenues and expenditures for the Federal government and for State and local governments.

Although this model was not used in developing the projections for 1980, current plans are to use it in future projection work. It will be an important factor in determining the overall level of GNP and the demand composition of this GNP. Also, it will be possible to consider explicitly some of the implications of the demand projections for income payments as a part of the economic growth model.

Capital. The estimates of capital requirements in the 1980 projections (as was true in the earlier 1970 projections) were developed without the use of gross stocks of capital by industry; also, the only available capital flow matrix was for 1958. In order to fundamentally improve projections of the demand for capital by producing industries, estimates of the levels of capital stock in purchasing industries over time and a more recent capital flow matrix are necessary. The Interagency Economic Growth Project has research planned in both of these areas. With respect to the former, Jack Faucett Associates has explored methods and data sources for estimating gross stocks by industry and also has developed gross stock estimates for eight selected input-output sectors; this research has been published by the Bureau of Labor Statistics in a separate report.[21]

The Office of Business Economics, as one part of its contribution to the Interagency Economic Growth Project, is beginning work on a 1963 capital flow table which will complement their 1963 input-output table. In the future, capital flow tables will be a regular part of the work of the Office of Business Economics in the input-output field; for each year an input-output table is developed, a complementary capital flow table is planned. These data on changing capital investment patterns will make feasible the projection of capital flow tables.

Projections of Output Per Man-Hour. As is apparent in reading the earlier description of methods used in the 1980 projections, the projection

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of the rates of growth in output per man-hour relies primarily on past trends for most industries. The statistical methods developed to project output per man-hour by industry, in general, have not been successful. The problem of how to project labor productivity is of particular interest to the Bureau of Labor Statistics and one in which much exploratory work is contemplated.

Sources of Economic Growth. The origins of economic growth, of course, are fundamental to the development of an economic growth model. The Interagency Economic Growth Project has contracted with Mr. Edward F. Denison of the Brookings Institution to revise, refine, and update his earlier work concerning the sources of economic growth in the United States.[22] The current work will include estimates of capital requirements as well as estimates of the labor input by industry. The completed work should prove instrumental in future efforts to separate the factors contributing to economic growth.

FOOTNOTES

[1] The 82-industry input-output table used as the base is the 1958 table published by the Office of Business Economics in the September 1965 issue of the *Survey of Current Business.*

[2] With zero productivity assumed for the government sector, the projected change in government product is simply the projected change in constant dollar compensation. The three levels of government are separately treated because of differences in their level of compensation.

[3] The derivation and form of these estimating equations are fully discussed in Houthakker, Hendrik, and Taylor, Lester D., *Consumer Demand in the United States, 1929–70,* Volume 126, [Harvard University Press, 1966.] This work will be updated in a forthcoming book by the same authors.

[4] Nancy W. Simon, "Personal Consumption Expenditures in the 1958 Input-Output Study," *Survey of Current Business* [October 1965.] pp. 7–20.

[5] The data for 1958 in appendix D of the Input-Output tables, tables D–3 and D–6 have been modified from the levels in the original 1958 input-output table to reflect this convention.

[6] Projections of gross national product, industrial production, or population made by the United Nations or by the Organization of Economic Cooperation and Development are used in making these projections.

[7] Intermediate sector as used here is any one of the industries in the input-output chart that performs further processing of an item and is meant as a distinction from a final demand category.

[8] Relative price change is the relationship between the change in price of a given commodity or service and the average price change of all commodities and services.

[9] Value added of an industry consists of labor compensation, proprietors' income, profits, interest, depreciation, and indirect business taxes.

[10] In algebraic terms the roles of the transactions, direct coefficients, and inverse coefficients matrices, and their relationships to each other, final demand, and total output are as follows:

Given: Y, a n x 1 vector of final demands,
X, a n x 1 vector of industry outputs,
T, a n x n matrix of intermediate input-output transactions in which the elements of a row or a column are additive.

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In particular,

$$\sum_{j=1}^{n} T_{ij} + Y_i = X_i \text{ for all } i = 1, \ldots\ldots\ldots, n$$

where i's represent rows and j's represent columns.

And defining $\frac{T_{ij}}{X_j} = A_{ij}$, $T_{ij} = A_{ij} X_j$

where every A_{ij} is one element in the direct coefficients matrix A.

Then:

$$\sum_{j=1}^{n} A_{ij} X_j = \sum_{j=1}^{n} T_{ij},$$

and by substitution: $\sum_{j=1}^{n} A_{ij} X_j + Y_i = X_i$ for each sector.

For all sectors: $A X + Y = X$,
so that by rearranging and factoring:

$$X - A X = Y, \quad (I - A)X = Y,$$

where I is a n x n identity matrix.
Finally, derive the inverse of $(I - A)$ and premultiply both sides of the last equation by the inverse matrix $(I-A)^{-1}$ so that:

$$X = (I - A)^{-1}Y.$$

[11] Morris, R. Goldman, Martin L. Marimont, and Beatrice N. Vaccara, *Survey of Current Business*, November 1964, and National Economics Division, *Survey of Current Business*, September 1965.

[12] Value added by industry is determined exactly in base year tables; for other years the industry values-added are determined only within a range of reasonableness. Adjusting for price changes in the elements of value added for projected years presents particularly difficult conceptual problems.

[13] The aggregate method described on the following pages for updating an input-output table resembles in many ways the Stone or RAS method developed by Professor Richard Stone of Cambridge University, England. The method described here, however, is somewhat less mechanical than the Stone Method. The Office of Business Economics, in producing the updated 1961 input-output table which they have published, used a method similar to the one described here. However, they did it in two stages by updating initially in current prices and then performing an item by item deflation. This unquestionably is a superior technique.

[14] Since competitive imports are considered in the input-output system as a part of total supply, change in the ratio of imports to total supply will necessitate an equal and offsetting change in domestic production and the input coefficients to produce this domestic product.

[15] Although no direct account is taken of value added in the set of procedures described here, it is important to keep in mind that any change in the sum of coefficients in a column implicitly changes the value-added ratio. Consequently, it is desirable that the sum of the coefficients in the column not change by a large margin.

[16] See footnote 10 for the derivation of this question.

[17] Conceptually, this should be calculated using capital stock to output ratios. See p. 76 of this appendix for a discussion of the research work in capital planned to improve the economic growth model.

[18] The 1958 capital flow matrix tabulates transactions in capital (producers durable equipment and nonresidential structures) between industries that produce capital goods and those that purchase the capital goods. Whenever the industry that pur-

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chases the capital goods is not the industry that uses it, as is sometimes the case for capital items such as construction equipment, adjustments are made to put the capital on a using industry basis rather than to have it on a financial or holding industry basis.

[19] Capital Flow Matrix, 1958, BLS Bulletin 1601, (1968).

[20] This model was published in the June 1969 issue of the *Survey of Current Business* and is described there in much greater detail.

[21] Capital Stocks, Production Functions and Investment Functions for Selected Input-Output Sectors, BLS Report 355, (1970). Under another contract with the Office of Emergency Preparedness, Jack Faucett Associates is developing estimates of gross capital stocks for each of the input-output sectors.

[22] Edward F. Denison, *The Sources of Economic Growth and the Alternatives Before Us,* [New York Committee for Economic Development, 1962.]

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APPENDIX B. Bibliography of Research By The Interagency Economic Growth Project

General

Alterman, Jack, "Studies of Long Term Economic Growth," *Monthly Labor Review,* August 1965, pp. 983–987.

_____, "Interindustry Employment Requirements," *Monthly Labor Review,* July 1965, pp. 841–850.

Jacobs, Eva E. and Kutscher, Ronald E., "Factors Affecting Changes in Industry Employment, *Monthly Labor Review,* April 1967, pp. 6–12.

Thurow, Lester, "A Fiscal Policy Model of the United States," *Survey of Current Business,* Vol. 49, No. 6, June 1969, pp. 45–64.

U.S. Department of Labor, Bureau of Labor Statistics, *Projections 1970,* Bulletin 1536, 1966.

Federal Government

Colm, Gerhard and Wagner, Peter, *Federal Budget Projections: Studies of Government Finance,* Washington, D.C., The Brookings Institution, 1965. (Only partially sponsored from growth project funds.)

Oliver, Richard P., "The Employment Effect of Defense Expenditures," *Monthly Labor Review,* September 1967, pp. 9–15.

_____, "Increases in Defense-Related Employment During the Viet Nam Buildup," *Monthly Labor Review,* February 1970, pp. 3–10.

Waldorf, William H., "The Responsiveness of Federal Personal Income Taxes to Income Change," *Survey of Current Business,* Vol. 47, No. 12, December 1967, pp. 32–45.

Walsh, James I., "Federal Highway Programs and Employment," *Monthly Labor Review,* August 1968, pp. 37–39.

State and Local Government

Council of State Governments, *Financing Public Hospitals and Health Services: 1970 Projections,* Research Memorandum, Washington, D.C., unpublished.

_____, *Financing Public Welfare: 1970 Projections,* Research Memorandum 382, Washington, D.C., 1965.

_____, *Health and Hospital Expenditures of State and Local Governments; 1970 Projections,* Research Memorandum 390, Washington, D.C., 1966.

_____, *Income and Sales Taxes: The 1970 Outlook,* Research Memorandum 384, Washington, D.C., 1966.

_____, *Income Taxes,* Washington, D.C., 1965, unpublished.

_____, *Local School Expenditures: 1970 Projections,* Research Memorandum 382, Washington, D.C., 1965.

_____, *Property Taxes, The 1970 Outlook,* Research Memorandum 381, Washington, D.C., 1965.

_____, *Public Spending for Higher Education, 1970,* Research Memorandum 374, Washington, D.C., 1965.

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Federal Reserve Bank of St. Louis

_____, *Sales and Miscellaneous Taxes: 1970 Projections,* Washington, D.C., 1965, unpublished.

_____, *State Programming and Economic Development,* Research Memorandum 379, Washington, D.C., 1965.

_____, *Transportation Outlays of State and Cities: 1970 Projections,* Research Memorandum 375, Washington, D.C., 1965.

_____, *Water, Sewages, and Other Sanitation Expenditures,* Washington, D.C., 1965, unpublished.

_____, *Water Supply and Sanitation Expenditures of State and Local Government: Projections to 1970,* Research Memorandum 389, Washington, D.C., 1966.

Muskin, Selma J. and Adams, Robert F., *Emerging Patterns of Federalism,* Washington, D.C., The George Washington University, State and Local Finances Project, March 1966, unpublished.

Muskin, Selma J. and Tupo, Gabrielle C., *Project 1970: Projecting the State and Local Sector,* Washington, D.C., The George Washington University, State and Local Finances Project, June 1966, unpublished.

Sacks, Seymour, *Police and Fire Protection, and Other Expenditures of States and Localities: 1970 Projections,* Syracuse, N.Y., Syracuse University, unpublished.

Personal Consumption Expenditures

Brady, Dorothy et al., *The Diffusion of New Products and Their Impact on Consumer Expenditures,* Philadelphia, Pa., University of Pennsylvania, Department of Economics, Economic Research Services Unit, December 1962, unpublished.

Ferber, Robert and Guthries, Harold, *Factors Influencing Consumer Behavior,* Champaign-Urbana, Illinois, University of Illinois, Inter-University Committee for Research on Consumer Behavior, Consumer Savings Project, August 1964, unpublished.

Friedman, Charles S., "Auto Ownership by Households in Mid–1964: Influences of Income and Other Socioeconomic Factors," *Survey of Current Business,* Vol. 46, No. 10, October 1966, pp. 14–24.

_____, "The Stock of Automobiles in the U.S.," *Survey of Current Business,* Vol. 45, No. 10, October 1965, pp. 21–27.

_____, "Stock of Passenger Cars: Postwar Growth and Distribution," *Survey of Current Business,* Vol. 43, No. 9, September 1963, pp. 17–24.

Houthakker, Hendrik and Taylor, Lester D., *Consumer Demand in the United States, 1929–1970,* Vol. 126, Cambridge, Mass., Harvard University Press, 1966. (Revised edition to be published in 1970.)

Simon, Nancy W., "Personal Consumption Expenditures in the 1958 Input-Output Study," *Survey of Current Business,* Vol. 45, No. 10, October 1965, pp. 7–20.

Taylor, Lester D., *Combining Time Series and Cross Sectional Data,* Cambridge, Mass., Harvard University, April 1967, unpublished.

_____, *Projecting Consumer Expenditures in 1970: A Final Report,* Cambridge, Mass., Harvard University, 1967, unpublished.

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http://fraser.stlouisfed.org/
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Gross Private Domestic Investment

Atkinson, T. Jay, "Factors Affecting the Purchase of New Houses," *Survey of Current Business,* Vol. 46, No. 8, August 1966, pp. 20–36.

_____, "Long Term Influences Affecting the Volume of New Housing Units," *Survey of Current Business,* Vol. 43, No. 11, November 1963, pp. 8–19.

Brown, Murray, "Depreciation and Corporate Profits," *Survey of Current Business,* Vol. 43, No. 10, October 1963, pp. 5–12.

Frumpkin, Norman, "Construction Activity in the 1958 Input-Output Study," *Survey of Current Business,* Vol. 45, No. 5, May 1965, pp. 13–34.

Jack Faucett Associates, Inc., *Capital Stocks, Production Functions and Investment Functions for Selected Input-Output Sectors,* Silver Spring, Md., 1968, unpublished.

_____, *Development of a Matrix of Interindustry Transactions in Capital Goods in 1963,* Silver Spring, Md., 1966, unpublished.

_____, *Methodology for Constructing Gross and Net Capital Stock Series for Input-Output Sectors,* Silver Spring, Md., 1967, unpublished.

_____, *Projections of Business Investment Levels to 1970,* Silver Spring, Md., 1965, unpublished.

Grose, Lawrence, Rottenberg, Irving and Wasson, Robert C., New Estimates of Fixed Business Capital in the United States, *Survey of Current Business,* Vol. 46, No. 12, December 1966, pp. 34–40; also Vol. 47, No. 2, February 1967, pp. 20–24; Vol. 47, No. 12, December 1967, pp. 46–52; and Vol. 49, No. 2, February 1967, pp. 20–27; Office of Business Economics, U.S. Department of Commerce.

Jaszi, George, Wasson, Robert C., and Grose, Lawrence, "Expansion of Fixed Business Capital in the United States," *Survey of Current Business,* Vol. 42, No. 11, November 1962, pp. 9–18.

Kutscher, Ronald E. and Walsh, James I., "How Business Investment Affects Employment," *Monthly Labor Review,* November 1968, pp. 35–39.

U.S. Department of Labor, Bureau of Labor Statistics, *Capital Flows, 1958,* Bulletin 1601, 1968.

Exports and Imports

Allen, William R., *National Income, Absorption, and the Balance of Payments,* Staff Working Paper in Economics and Statistics, No. 3, U.S. Department of Commerce, Office of Business Economics, 1964.

Bowman, Charles, T., "Report on Employment Related to Exports," *Monthly Labor Review,* June 1969, pp. 16–20.

_____, "Employment Related to Exports by States," *Monthly Labor Review,* September 1968, pp. 42–44.

Parrish, Evelyn M., *A Pattern of Balances of Payment Between World Regions in 1970,* Staff Working Paper in Economics and Statistics, No. 9, U.S. Department of Commerce, Office of Business Economics, 1964.

Roxon, Daniel, "Domestic Job Attributable to U.S. Exports," *Monthly Labor Review,* December 1968, pp. 12–20.

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Harvard University, Harvard Economic Research Project, *Projections of Input Structure* (for selected industries), Cambridge, Mass., unpublished.

For the following industries:

1. Textiles and apparel (ISP 16, 17, 18, and 19)
2. Paper and allied products and paper board containers (ISP 24 and 25)
3. Petroleum refining (ISP 31)
4. Glass (ISP 35)
5. Iron and steel (ISP 37)
6. Metal containers (ISP 39)
7. Heating, plumbing, and fabricated structural metals (ISP 40)
8. Screw machines products and other fabricated metal products (ISP 41 and 42)
9. Engines and turbines (ISP 43)
10. Farm machinery and equipment (ISP 44)
11. Construction, mining machinery, and equipment (ISP 45)
12. Household appliances (ISP 54)
13. Motor vehicles (ISP 59)
14. Other transportation equipment (ISP 61)
15. Transportation and warehousing (ISP 65)
16. Electric and gas utilities (ISP 68)
17. Metalworking sectors: General considerations

———, *Projections of 1958 Input-Output Coefficients to 1970*, Cambridge, Mass., unpublished.

Jack Faucett Associates, Inc., *Projections to 1970 of Input Coefficients for Selected Construction Activities*, Silver Spring, Md., 1964, unpublished.

U.S. Department of Agriculture, Economic Research Service, *Agriculture 1970: Its Markets and Selected Characteristics of Its Structure*, June 1963, unpublished.

U.S. Department of Interior, Bureau of Mines, *Methodology Used to Estimate 1970 Inputs and Outputs of Six Interindustry Sales and Purchases (ISP): Mining and Two Refining Sectors*, January 1964, unpublished.

U.S. Department of Labor, Bureau of Labor Statistics, *1970 Input-Output Coefficients*, Report 326, 1967.

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APPENDIX C. Annotated Bibliography of Publications on Economic Projections

General

"U.S. Economy in 1980," *Monthly Labor Review,* April 1970.

Projections for 1980 are developed for the labor force, gross national product and its major components, output by industry, output per man-hour, employment by sector and occupation. This summary report also presents the major implications of these projections.

Labor Force

"The U.S. Labor Force: Projections to 1985," Sophia C. Travis, *Monthly Labor Review,* May 1970, pp. 3–12.

A complete new set of labor force projections by age, sex, and race for 1980 is presented. Also, these projections for the first time have been extended to 1985.

"Labor Force Projections for 1970–80," Special Labor Force Report No. 49, *Monthly Labor Review,* February 1965.

The overall U.S. labor force projections provide data by age and sex for 1970, 1975, and 1980. They are based on population projections of the Census Bureau and on BLS projections of past trends in labor force participation rates of various age-sex groups based on current Population Survey data since 1948. The projections take account of trends in factors such as school enrollment and labor force participation of students; work activity of mothers of young children and other married women, and of trends in retirement. (These projections are based on the current definition of age 16 and over. See the 1968 *Manpower Report of the President,* appendix tables E–2 to E–5.)

"Labor Force Projections by Color, 1970–80," Special Labor Force Report No. 73 *Monthly Labor Review,* September 1966.

Labor force projections by color include data by age and sex for 1970, 1975, and 1980. They are consistent with overall United States projections but were prepared in less age detail.

"Labor Force Projections by States, 1970 and 1980," Special Labor Force Report No. 74 *Monthly Labor Review,* October 1966.

Projections by State are by broad age groups and sex for 1970 and 1980, with data by color for most States. These projections were based on data from Censuses of 1940, 1950, and 1960 using trends in ratios of State to national labor force participation rates for each age-sex-color group.

The projections are intended to be illustrative of a set of consistent State projections based on past trends and particular assumptions with respect to migration. They do not take account of specific economic developments in particular States.

"Education of Adult Workers in 1975," Special Labor Force Report No. 95 *Monthly Labor Review,* April 1968.

These show years of school completed by age and sex for the civilian labor force 25 years old and over in 1975. They are consistent with the projections of the labor force. They are also consistent with the most recent projections of the educational attainment of the population.

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Output and Interindustry Relations

Projections 1970, (BLS Bulletin 1536), December 1966.

Projections 1970 presents projections of potential demand, its industrial structure and the employment consistent with these demand projections. These projections were made using as a framework a projected input-output table. The 1970 projections were made under four alternative assumptions regarding the level of unemployment, the level of GNP, its distribution into major components, and the industrial structure of demand within each of these components.

1970 Input Output Coefficients, (BLS Report 326).

BLS Report 326 contains the input-output coefficients used in making the 1970 projections.

Industry and Occupation Detail

Projections 1970. (BLS Bulletin 1536), December 1966.

The 1970 industry employment projections in this publication were made with approximately 80 industrial categories both for wage and salary employment and also for total employment which includes in addition to wage and salary workers, the self-employed and unpaid family workers.

Tomorrow's Manpower Needs, Volumes I, II, III, IV (BLS Bulletin 1606), 1969.

This four volume publication presents projections to 1975 of national industrial and occupational manpower requirements and provides a guide to their use in developing State and area manpower projections. The report includes occupational-industry matrices for 1960 and 1975, information on how to develop death and retirement losses and how to appraise the adequacy of supply in individual occupations, discussions of changing occupational patterns for individual industries, and discussions of employment growth and training requirements for several occupations.

America's Industrial and Occupational Manpower Requirements, 1964–75, Reprinted from the *Outlook for Technological Change and Employment,* Appendix Volume 1, Report of the National Commission on Technology, Automation, and Economic Progress, Washington, D.C., 1966, 181 pp.

The report was prepared to illustrate the effect of technological innovations on manpower requirements for major industries and occupations. Each industry and occupational statement includes information on past employment trends through 1964, projected 1975 requirements, and discussion of technological innovations and other economic and demographic developments affecting manpower needs.

"Projected Requirements for Technicians in 1980," Michael F. Crowley, *Monthly Labor Review,* May 1970, pp. 13–17.

This is a study of the supply and demand of technicians who work with scientists and engineers. It includes employment estimates for 1966 and projected 1980 requirements, definitions of technician occupations, analyses of future supply and demand conditions, and sources of educa-

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tion and training. The study was supported by the National Science Foundation and is designed for use in manpower and education planning and for vocational counseling.

Health Manpower 1966–75: A Study of Requirements and Supply, (BLS Report 323), 1967, 50 pp.

A report on projected requirements for 13 professional and paraprofessional health occupations in 1975. It includes an analysis of the number of new workers that would need to be trained to meet growing manpower requirements. It also presents an analysis of health manpower requirements by industry. The report was designed for use by Government officials as an aid in planning training and education programs and assessing the effect of recent Federal legislation designed to encourage the training of health workers.

"Projections of Manpower Supply in a Specific Occupation," Neal H. Rosenthal, *Monthly Labor Review,* November 1966, pp. 1262–1266.

This article presents a method for making projections of occupational supply that illustrates what levels of supply would result if no steps were taken, through vocational guidance or changes in training programs, to adjust supply to prospective demand. The article presents projections of the supply of scientists and engineers to 1975 as an illustration of the method.

"Estimating Need for Skilled Workers, 1965–75," Allan F. Salt *Monthly Labor Review,* April 1966, pp. 365–371.

This article presents projections of the requirements of skilled workers to 1975 and estimates of total openings that will result from growth and replacement needs between 1965 and 1975 for several skilled occupations. The estimates were prepared to provide background information for planning training programs for skilled workers and for the evaluation of the adequacy of training activities to meet manpower needs.

"Teaching Shortage to Ease," Ludmilla K. Murphy, *Occupational Outlook Quarterly,* September 1968, pp. 36 and 37.

This article presents projections of requirements and supply of elementary and secondary school teachers to 1975. It indicates the implications of the potential rapid expansion of the supply of teachers relative to requirements.

Occupational Outlook Handbook, 1968–69 edition, (BLS Bulletin 1550, 1968, 765 pp).

Presents statements on employment outlook through the 1970's for approximately 700 occupations and 30 industries. In addition to outlook statements, the Handbook includes information on the nature of the work, training requirements, current employment, and earnings and working conditions. The Handbook is designed for use by vocational guidance counselors, teachers, and others interested in helping young people choose a career.

"Matching Sheepskins With Jobs," Neal Rosenthal and Janice Neipert Hedges, *Monthly Labor Review,* November 1968, pp. 9–15.

A study of the supply and demand for college graduates during the 1966–75 period. Presents information on manpower needs that will result from occupational growth and replacement of those who die, retire, or otherwise leave the labor force. The analysis of supply discusses not only new college graduates but also re-entrants, delayed entrants, and immigrants. Includes discussions of requirements and supply for college grad-

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uates as a whole, and for selected occupations such as physicians, engineers, and scientists. The study also discusses implications of the findings for educators, officials responsible for public policy, students, and counselors.

Manpower Requirements in Occupations for Which Vocational Education Prepares Workers, July 1969, 13 pp.

This pamphlet summarizes estimates of the number of workers who will be needed annually through the mid-1970's to meet manpower requirements in a large number of occupations for which vocational education curricula have been developed. It is designed for use in evaluating at the national level the adequacy of present vocational education programs in meeting manpower needs.

Ph.D. Scientists and Engineers in Private Industry, a report is in process.

This study presents information on the factors underlying the requirements for Ph.D. scientists and engineers in private industry who have doctoral degrees. It includes information on recruitment of these workers and on supply-demand conditions in the mid-1960's. Projections of manpower requirements are made that relate to the Bureau's economic model of total industry and occupational manpower requirements. Conducted with the financial support of the National Science Foundation (NSF), the study was designed to aid in making recommendations regarding the scope of future NSF programs of support for graduate education in the sciences.

Requirements for Pilots and Mechanics in Civil Aviation, 1966–77. To be published jointly by the Bureau and the Manpower Administration in 1970.

A comprehensive study designed to appraise current and future aviation manpower requirements and resources. Present estimates of future requirements for pilots and mechanics in each of the principal sectors of civil aviation. The study was conducted at the request and with the support of the Federal Aviation Administration and the U.S. Department of Defense.

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TABLE D-1. INDUSTRIAL COMPOSITION OF TOTAL FINAL DEMAND[1] 1958, 1962, 1965 AND PROJECTED 1980'S

(Millions of 1958 dollars)

Industry number and title[2]	1958[3]	1962	1965	1980 3 percent basic model[4]	1980 3 percent high durable[4]	1980 4 percent basic model[4]	1980 4 percent high durable[4]
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	2,757	2,628	1,697	2,688	2,400	2,665	2,578
2. OTHER AGRICULTURAL PRODUCTS	5,770	4,850	5,959	9,927	9,773	9,842	9,689
3. FORESTRY AND FISHERY PRODUCTS	193	248	250	367	462	363	458
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	0	-28	122	-208	-191	-206	-189
5. IRON AND FERROALLOY ORES MINING	18	65	139	235	237	233	235
6. NONFERROUS METAL ORES MINING.	164	293	325	470	404	467	401
7. COAL MINING	632	530	469	961	909	953	901
8. CRUDE PETROLEUM AND NATURAL GAS	-11	41	60	76	78	76	77
9. STONE AND CLAY MINING AND QUARRYING	42	52	101	157	165	156	164
10. CHEMICAL AND FERTILIZER MINERAL MINING.	78	74	112	215	209	214	207
11. NEW CONSTRUCTION.	52,416	58,173	64,167	118,400	123,000	117,216	121,949
12. MAINTENANCE AND REPAIR CONSTRUCTION	4,420	5,075	5,640	10,402	10,261	10,298	10,173
13. ORDNANCE AND ACCESSORIES.	3,592	4,167	4,395	6,639	9,647	6,588	9,565
14. FOOD AND KINDRED PRODUCTS	47,632	53,514	56,091	90,164	86,825	89,402	86,083
15. TOBACCO MANUFACTURES.	4,660	5,343	5,580	7,858	7,734	7,891	7,668
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	879	1,229	1,490	2,167	2,146	2,149	2,128
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	913	1,123	1,441	3,058	3,178	3,032	3,151
18. APPAREL	11,316	13,833	16,506	26,884	26,032	26,658	25,810
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	1,222	1,467	1,904	3,172	3,121	3,146	3,094
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	322	380	575	1,061	1,086	1,052	1,077
21. WOODEN CONTAINERS	-4	34	39	42	45	42	45
22. HOUSEHOLD FURNITURE	2,634	2,933	3,689	7,676	7,963	7,611	7,895
23. OTHER FURNITURE AND FIXTURES.	1,098	1,491	1,918	3,978	3,968	3,946	3,934
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	1,185	1,560	1,927	4,762	4,620	4,722	4,581
25. PAPERBOARD CONTAINERS AND BOXES	61	186	128	275	266	273	264
26. PRINTING AND PUBLISHING	2,814	3,580	4,117	8,230	7,992	8,161	7,924
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	1,931	2,305	2,648	6,688	6,457	6,633	6,402
28. PLASTICS AND SYNTHETIC MATERIALS.	318	650	945	1,930	1,932	1,914	1,915
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	4,419	5,591	6,789	16,297	15,508	16,162	15,375
30. PAINTS AND ALLIED PRODUCTS.	44	64	79	152	160	151	159
31. PETROLEUM REFINING AND RELATED INDUSTRIES	8,855	10,379	11,875	19,499	18,808	19,336	18,647
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	1,745	2,270	2,704	5,800	5,819	5,751	5,769
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	25	28	48	66	68	66	67
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	2,705	2,803	3,126	3,744	3,626	3,714	3,595
35. GLASS AND GLASS PRODUCTS.	197	242	345	626	640	621	635
36. STONE AND CLAY PRODUCTS	351	392	518	1,008	1,010	999	1,001
37. PRIMARY IRON AND STEEL MANUFACTURING.	513	454	1,282	1,782	1,812	1,768	1,797
38. PRIMARY NONFERROUS METALS MANUFACTURING	649	557	891	1,658	1,720	1,645	1,705
39. METAL CONTAINERS.	67	59	165	225	241	224	239
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	951	1,184	1,759	2,507	2,703	2,488	2,680
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	309	390	634	1,217	1,194	1,206	1,184
42. OTHER FABRICATED METAL PRODUCTS	926	1,239	1,520	2,883	2,853	2,860	2,829
43. ENGINES AND TURBINES.	1,144	1,177	1,571	3,166	3,372	3,142	3,343
44. FARM MACHINERY AND EQUIPMENT.	1,878	1,928	2,593	4,498	4,686	4,464	4,646
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	2,060	2,341	3,246	5,645	5,934	5,601	5,883
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	593	716	921	1,763	1,868	1,750	1,852
47. METALWORKING MACHINERY AND EQUIPMENT.	1,662	2,203	2,867	4,336	4,742	4,302	4,701
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	1,813	2,534	3,276	5,474	5,860	5,432	5,810
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	1,453	1,788	2,228	3,872	4,313	3,842	4,276
50. MACHINE SHOP PRODUCTS	84	145	164	330	309	328	306
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	1,371	2,319	3,665	15,996	17,694	15,873	17,543
52. SERVICE INDUSTRY MACHINES	1,395	1,840	2,526	5,146	5,598	5,105	5,550
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	2,136	2,590	3,377	5,977	6,705	5,931	6,648
54. HOUSEHOLD APPLIANCES.	2,780	3,239	4,246	9,297	9,747	9,219	9,664
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	470	551	759	1,580	1,613	1,568	1,599
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	4,335	7,794	9,770	24,499	27,372	24,303	27,138
57. ELECTRONIC COMPONENTS AND ACCESSORIES	593	1,074	1,382	3,069	3,727	3,044	3,695
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	536	670	991	2,034	2,056	2,018	2,038
59. MOTOR VEHICLES AND EQUIPMENT.	14,093	22,200	33,160	53,217	55,315	52,783	54,842
60. AIRCRAFT AND PARTS.	8,729	10,625	10,489	15,214	20,660	15,097	20,483
61. OTHER TRANSPORTATION EQUIPMENT.	2,820	3,501	5,096	8,803	9,885	8,735	9,800
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	1,900	2,542	2,786	5,928	6,650	5,881	6,593
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	909	1,181	1,934	6,775	7,004	6,721	6,944
64. MISCELLANEOUS MANUFACTURING	3,184	4,008	5,213	11,966	11,941	11,867	11,939
65. TRANSPORTATION AND WAREHOUSING.	13,463	15,853	19,692	36,217	36,297	35,916	35,898
66. COMMUNICATIONS,EXCEPT BROADCASTING.	4,694	6,086	7,801	20,090	19,517	19,924	19,350
67. RADIO AND TELEVISION BROADCASTING	9	23	37	113	113	112	112
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	8,928	11,017	12,966	25,896	24,671	25,678	24,460
69. WHOLESALE AND RETAIL TRADE.	67,627	79,848	95,853	176,476	176,253	175,001	174,746
70. FINANCE AND INSURANCE	12,028	13,872	16,967	33,228	32,018	32,948	31,744
71. REAL ESTATE AND RENTAL.	41,771	50,160	58,440	138,351	134,435	137,178	133,286
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	9,788	11,229	12,823	25,246	24,006	25,033	23,801
73. BUSINESS SERVICES	3,184	4,356	4,384	9,130	8,984	9,054	8,907
74. RESEARCH AND DEVELOPMENT.	372	361	436	938	1,171	931	1,161
75. AUTOMOBILE REPAIR AND SERVICES.	4,599	5,061	5,588	10,459	9,992	10,371	9,907
76. AMUSEMENTS.	3,517	3,804	4,095	7,276	6,834	7,215	6,776
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	21,419	24,883	29,728	67,033	63,928	66,472	63,382
78. FEDERAL GOVERNMENT ENTERPRISES.	816	977	1,095	2,563	2,377	2,542	2,357
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	434	626	795	1,939	1,695	1,923	1,681
80. GROSS IMPORTS OF GOODS AND SERVICES	-14,483	-17,574	-23,772	-52,084	-52,088	-51,628	-51,638
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	206	331	307	1,146	924	1,136	916
83. SCRAP,USED AND SECONDHAND GOODS	-374	249	844	1,481	1,590	1,466	1,602
84. GOVERNMENT INDUSTRY	39,029	43,383	47,666	69,990	68,430	69,290	67,843
85. REST OF THE WORD INDUSTRY	2,560	3,525	5,458	11,473	11,473	11,358	11,357
86. HOUSEHOLD INDUSTRY.	3,503	3,323	3,190	3,616	3,338	3,586	3,298
87. INVENTORY VALUATION ADJUSTMENT.	-311	269	-2,123	0	0	0	0
TOTAL	447,325	530,076	617,799	1,165,000	1,170,000	1,155,000	1,160,000

See footnotes on p. 129.

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TABLE D-2. INDUSTRIAL COMPOSITION OF TOTAL FINAL DEMAND[1] 1958, 1962, 1965 AND PROJECTED 1980'S

(Percent distribution)

Industry number and title [2]	1958	1962	1965	1980 3 percent basic model [3]	1980 3 percent high durable [3]	1980 4 percent basic model [3]	1980 4 percent high durable [3]
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	.62	.50	.27	.23	.22	.23	.22
2. OTHER AGRICULTURAL PRODUCTS	1.29	.91	.96	.85	.84	.85	.84
3. FORESTRY AND FISHERY PRODUCTS	.04	.05	.04	.03	.04	.03	.04
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	.00	*	.02	-.02	-.02	-.02	-.02
5. IRON AND FERROALLOY ORES MINING	*	.01	.02	.02	.02	.02	.02
6. NONFERROUS METAL ORES MINING.	.04	.06	.05	.04	.03	.04	.03
7. COAL MINING	.14	.10	.11	.08	.08	.08	.08
8. CRUDE PETROLEUM AND NATURAL GAS	*	*	*	*	*	*	*
9. STONE AND CLAY MINING AND QUARRYING	*	*	.02	.01	.01	.01	.01
10. CHEMICAL AND FERTILIZER MINERAL MINING.	.02	.01	.02	.02	.02	.02	.02
11. NEW CONSTRUCTION.	11.72	10.97	10.39	10.16	10.51	10.15	10.51
12. MAINTENANCE AND REPAIR CONSTRUCTION	.99	.96	.91	.89	.88	.89	.88
13. ORDNANCE AND ACCESSORIES.	.80	.79	.71	.57	.82	.57	.82
14. FOOD AND KINDRED PRODUCTS	10.65	10.10	9.08	7.74	7.42	7.74	7.42
15. TOBACCO MANUFACTURES.	1.04	1.01	.90	.68	.66	.68	.66
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	.20	.23	.24	.19	.18	.19	.18
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.18	.21	.23	.26	.27	.26	.27
18. APPAREL	2.53	2.61	2.67	2.31	2.22	2.31	2.23
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.27	.28	.31	.27	.27	.27	.27
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	.07	.07	.09	.09	.09	.09	.09
21. WOODEN CONTAINERS	*	*	*	*	*	*	*
22. HOUSEHOLD FURNITURE	.59	.55	.60	.66	.68	.66	.68
23. OTHER FURNITURE AND FIXTURES.	.25	.28	.31	.34	.34	.34	.34
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.26	.29	.31	.41	.39	.41	.39
25. PAPERBOARD CONTAINERS AND BOXES	.01	.04	.02	.02	.02	.02	.02
26. PRINTING AND PUBLISHING	.63	.68	.67	.71	.68	.71	.68
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	.43	.43	.43	.57	.55	.57	.55
28. PLASTICS AND SYNTHETIC MATERIALS.	.07	.12	.15	.17	.17	.17	.17
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	.99	1.05	1.10	1.40	1.33	1.40	1.33
30. PAINTS AND ALLIED PRODUCTS.	*	.01	.01	.01	.01	.01	.01
31. PETROLEUM REFINING AND RELATED INDUSTRIES	1.98	1.96	1.92	1.67	1.61	1.67	1.61
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	.39	.43	.44	.50	.50	.50	.50
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	*	*	*	*	*	*	*
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.60	.53	.51	.32	.31	.32	.31
35. GLASS AND GLASS PRODUCTS.	.04	.05	.06	.05	.05	.05	.05
36. STONE AND CLAY PRODUCTS	.08	.07	.08	.09	.09	.09	.09
37. PRIMARY IRON AND STEEL MANUFACTURING.	.11	.09	.21	.15	.15	.15	.15
38. PRIMARY NONFERROUS METALS MANUFACTURING	.15	.11	.14	.14	.15	.14	.15
39. METAL CONTAINERS.	.01	.01	.03	.02	.02	.02	.02
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	.21	.22	.28	.22	.23	.22	.23
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	.07	.07	.10	.10	.10	.10	.10
42. OTHER FABRICATED METAL PRODUCTS	.21	.23	.25	.25	.24	.25	.24
43. ENGINES AND TURBINES.	.26	.22	.25	.27	.29	.27	.29
44. FARM MACHINERY AND EQUIPMENT.	.42	.36	.42	.39	.40	.39	.40
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.46	.44	.53	.48	.51	.48	.51
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	.13	.14	.15	.15	.16	.15	.16
47. METALWORKING MACHINERY AND EQUIPMENT.	.37	.42	.46	.37	.41	.37	.41
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	.41	.48	.53	.47	.50	.47	.50
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	.32	.34	.36	.33	.37	.33	.37
50. MACHINE SHOP PRODUCTS	.02	.03	.03	.03	.03	.03	.03
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	.31	.44	.59	1.37	1.51	1.37	1.51
52. SERVICE INDUSTRY MACHINES	.31	.35	.41	.44	.48	.44	.48
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.48	.49	.55	.51	.57	.51	.57
54. HOUSEHOLD APPLIANCES.	.62	.61	.69	.80	.83	.80	.83
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	.11	.10	.12	.14	.14	.14	.14
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	.97	1.47	1.58	2.10	2.34	2.10	2.34
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.13	.20	.22	.26	.32	.26	.32
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	.12	.13	.14	.17	.18	.17	.18
59. MOTOR VEHICLES AND EQUIPMENT.	3.15	4.19	5.37	4.57	4.73	4.57	4.73
60. AIRCRAFT AND PARTS.	1.95	2.00	1.70	1.31	1.77	1.31	1.77
61. OTHER TRANSPORTATION EQUIPMENT.	.63	.66	.82	.76	.84	.76	.84
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	.40	.48	.45	.51	.57	.51	.57
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	.20	.22	.31	.58	.60	.58	.60
64. MISCELLANEOUS MANUFACTURING	.71	.76	.84	1.03	1.02	1.03	1.02
65. TRANSPORTATION AND WAREHOUSING.	3.01	2.99	3.03	3.11	3.09	3.11	3.09
66. COMMUNICATIONS,EXCEPT BROADCASTING.	1.05	1.15	1.26	1.72	1.67	1.73	1.67
67. RADIO AND TELEVISION BROADCASTING	*	*	*	*	*	*	*
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	2.00	2.08	2.10	2.22	2.11	2.22	2.11
69. WHOLESALE AND RETAIL TRADE.	15.12	15.06	15.52	15.15	15.06	15.15	15.06
70. FINANCE AND INSURANCE	2.69	2.62	2.75	2.85	2.74	2.85	2.74
71. REAL ESTATE AND RENTAL.	9.34	9.46	9.46	11.88	11.49	11.88	11.49
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	2.19	2.12	2.08	2.17	2.05	2.17	2.05
73. BUSINESS SERVICES	.71	.82	.71	.78	.77	.78	.77
74. RESEARCH AND DEVELOPMENT.	.08	.07	.07	.08	.10	.08	.10
75. AUTOMOBILE REPAIR AND SERVICES.	1.03	.95	.90	.90	.85	.90	.85
76. AMUSEMENTS.	.79	.72	.66	.62	.58	.62	.58
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	4.79	4.69	4.81	5.75	5.46	5.76	5.46
78. FEDERAL GOVERNMENT ENTERPRISES.	.18	.18	.18	.22	.20	.22	.20
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	.10	.12	.13	.17	.14	.17	.14
80. GROSS IMPORTS OF GOODS AND SERVICES	-3.24	-3.32	-3.85	-4.47	-4.45	-4.47	-4.45
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.00	.00	.00	.00	.00	.00	.00
82. OFFICE SUPPLIES	.05	.06	.05	.10	.08	.10	.08
83. SCRAP,USED AND SECONDHAND GOODS	-.08	.05	.14	.13	.14	.13	.14
84. GOVERNMENT INDUSTRY	8.73	8.18	7.72	6.01	5.85	6.00	5.85
85. REST OF THE WORD INDUSTRY	.57	.66	.88	.98	.98	.98	.98
86. HOUSEHOLD INDUSTRY.	.78	.63	.52	.31	.29	.31	.28
87. INVENTORY VALUATION ADJUSTMENT.	-.07	.05	-.34	.00	.00	.00	.00
TOTAL [4]	100.00	100.00	100.00	100.00	100.00	100.00	100.00

See footnotes on p. 129.

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TABLE D-3. INDUSTRIAL COMPOSITION OF PERSONAL CONSUMPTION EXPENDITURES 1958, 1962, 1965 AND PROJECTED 1980'S

(Millions of 1958 dollars)

Industry number and title [1]	1958 [2]	1962	1965	1980 3 percent basic model [3]	1980 3 percent high durable [3]	1980 4 percent basic model [3]	1980 4 percent high durable [3]
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	2,110	1,883	1,829	2,274	2,198	2,255	2,179
2. OTHER AGRICULTURAL PRODUCTS	2,428	2,297	2,436	3,889	3,754	3,856	3,722
3. FORESTRY AND FISHERY PRODUCTS	781	301	336	557	537	552	532
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	0	0	0	0	0	0	0
5. IRON AND FERROALLOY ORES MINING	0	0	0	0	0	0	0
6. NONFERROUS METAL ORES MINING.	0	0	0	0	0	0	0
7. COAL MINING	261	186	246	102	99	101	98
8. CRUDE PETROLEUM AND NATURAL GAS	0	0	0	0	0	0	0
9. STONE AND CLAY MINING AND QUARRYING	17	21	22	48	47	48	47
10. CHEMICAL AND FERTILIZER MINERAL MINING.	1	2	0	0	0	0	0
11. NEW CONSTRUCTION.	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	0	0	0	0	0	0	0
13. ORDNANCE AND ACCESSORIES.	158	201	248	620	619	615	614
14. FOOD AND KINDRED PRODUCTS	45,376	50,547	52,832	83,149	80,227	82,447	79,542
15. TOBACCO MANUFACTURES.	4,249	4,847	5,113	7,273	7,045	7,212	6,985
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	696	825	1,034	1,662	1,533	1,648	1,619
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	743	909	1,139	2,565	2,657	2,543	2,634
18. APPAREL	11,033	12,719	15,353	25,045	24,306	24,834	24,099
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	1,101	1,339	1,698	2,735	2,688	2,712	2,665
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	149	174	222	301	307	298	304
21. WOODEN CONTAINERS	0	0	0	0	0	0	0
22. HOUSEHOLD FURNITURE	2,416	2,606	3,333	6,882	7,284	6,823	7,222
23. OTHER FURNITURE AND FIXTURES.	129	158	205	376	391	373	388
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	848	1,039	1,172	2,588	2,494	2,566	2,473
25. PAPERBOARD CONTAINERS AND BOXES	38	45	50	109	105	108	104
26. PRINTING AND PUBLISHING	2,444	2,991	3,372	6,065	6,042	6,014	5,991
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	213	259	270	599	591	594	586
28. PLASTICS AND SYNTHETIC MATERIALS.	10	14	17	26	25	26	25
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	3,704	4,669	5,602	13,857	13,380	13,740	13,265
30. PAINTS AND ALLIED PRODUCTS.	18	22	24	52	51	52	51
31. PETROLEUM REFINING AND RELATED INDUSTRIES	7,257	8,134	9,473	14,618	14,159	14,494	14,039
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	1,309	1,731	2,022	4,263	4,357	4,227	4,330
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	0	0	0	0	0	0	0
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	2,594	2,597	2,939	3,562	3,453	3,533	3,423
35. GLASS AND GLASS PRODUCTS.	130	147	183	312	324	309	322
36. STONE AND CLAY PRODUCTS	214	243	288	484	491	480	487
37. PRIMARY IRON AND STEEL MANUFACTURING.	19	22	26	42	41	42	41
38. PRIMARY NONFERROUS METALS MANUFACTURING	11	13	17	33	34	33	34
39. METAL CONTAINERS.	0	0	0	0	0	0	0
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	70	84	99	207	218	205	216
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	249	267	332	563	585	558	581
42. OTHER FABRICATED METAL PRODUCTS	372	451	562	1,096	1,101	1,087	1,092
43. ENGINES AND TURBINES.	126	150	199	617	711	621	705
44. FARM MACHINERY AND EQUIPMENT.	8	11	14	25	26	25	26
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	0	0	0	0	0	0	0
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	0	0	0	0	0	0	0
47. METALWORKING MACHINERY AND EQUIPMENT.	31	39	50	63	65	62	64
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	19	24	31	57	60	57	60
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	0	0	0	0	0	0	0
50. MACHINE SHOP PRODUCTS	0	0	0	0	0	0	0
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	58	73	95	177	184	176	182
52. SERVICE INDUSTRY MACHINES	247	301	363	669	790	663	784
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	15	18	22	45	45	45	45
54. HOUSEHOLD APPLIANCES.	2,371	2,853	3,718	8,479	8,894	8,407	8,818
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	313	388	468	838	831	831	823
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	1,353	1,826	3,015	9,098	9,783	9,021	9,698
57. ELECTRONIC COMPONENTS AND ACCESSORIES	149	201	328	1,014	1,055	1,005	1,047
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	260	333	401	959	985	951	977
59. MOTOR VEHICLES AND EQUIPMENT.	9,198	13,222	19,577	31,394	33,465	31,129	33,179
60. AIRCRAFT AND PARTS.	27	33	43	149	155	148	154
61. OTHER TRANSPORTATION EQUIPMENT.	725	979	1,441	2,715	3,106	2,692	3,079
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	349	496	574	1,056	1,091	1,047	1,072
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	451	612	760	1,975	2,908	1,958	1,991
64. MISCELLANEOUS MANUFACTURING	2,526	3,004	4,041	9,298	9,464	9,220	9,383
65. TRANSPORTATION AND WAREHOUSING.	8,568	9,958	11,724	22,238	21,614	22,050	21,431
66. COMMUNICATIONS,EXCEPT BROADCASTING.	3,908	4,918	6,285	16,522	16,106	16,383	15,968
67. RADIO AND TELEVISION BROADCASTING	0	0	0	0	0	0	0
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	8,058	10,023	11,485	22,801	22,042	22,609	21,854
69. WHOLESALE AND RETAIL TRADE.	61,483	71,336	85,254	153,969	154,024	152,669	152,707
70. FINANCE AND INSURANCE	11,813	13,604	16,624	31,997	30,977	31,727	30,712
71. REAL ESTATE AND RENTAL.	39,946	47,587	56,194	130,874	128,976	129,769	127,773
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	9,263	10,747	12,178	23,681	22,664	23,481	22,471
73. BUSINESS SERVICES	1,888	2,263	2,533	3,878	3,759	3,845	3,727
74. RESEARCH AND DEVELOPMENT.	0	0	0	0	0	0	0
75. AUTOMOBILE REPAIR AND SERVICES.	4,386	4,818	5,378	9,622	9,323	9,541	9,243
76. AMUSEMENTS.	3,186	3,501	3,592	6,642	6,162	6,586	6,110
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	20,445	23,944	28,302	62,542	60,256	62,014	59,741
78. FEDERAL GOVERNMENT ENTERPRISES.	632	747	831	1,692	1,634	1,679	1,620
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	312	405	512	1,158	1,124	1,148	1,114
80. GROSS IMPORTS OF GOODS AND SERVICES	3,855	5,209	6,044	12,519	12,164	12,413	12,060
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
83. SCRAP,USED AND SECONDHAND GOODS	-55	-44	-60	-30	-21	-30	-24
84. GOVERNMENT INDUSTRY	0	0	0	0	0	0	0
85. REST OF THE WORD INDUSTRY	0	0	0	0	0	0	0
86. HOUSEHOLD INDUSTRY.	3,502	3,322	3,189	3,613	3,335	3,583	3,295
87. INVENTORY VALUATION ADJUSTMENT.	0	0	0	0	0	0	0
TOTAL	290,063	338,644	397,699	758,300	748,000	751,900	741,600

See footnotes on p. 129.

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TABLE D-4. INDUSTRIAL COMPOSITION OF GROSS PRIVATE DOMESTIC INVESTMENT[1] 1958, 1962, 1965 AND PROJECTED 1980'S

(Millions of 1958 dollars)

Industry number and title[2]	1958	1962	1965	1980 3 percent basic model[3]	1980 3 percent high durable[3]	1980 4 percent basic model[3]	1980 4 percent high durable[3]
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	601	698	-200	260	262	258	260
2. OTHER AGRICULTURAL PRODUCTS	428	-144	628	735	738	729	732
3. FORESTRY AND FISHERY PRODUCTS	19	16	54	74	75	73	74
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	20	14	54	13	15	13	15
5. IRON AND FERROALLOY ORES MINING	-23	-5	35	53	55	53	55
6. NONFERROUS METAL ORES MINING.	-32	4	18	32	35	32	35
7. COAL MINING	-22	-17	7	9	10	9	10
8. CRUDE PETROLEUM AND NATURAL GAS	-40	21	38	53	55	53	54
9. STONE AND CLAY MINING AND QUARRYING	4	8	39	60	63	60	63
10. CHEMICAL AND FERTILIZER MINERAL MINING.	-1	0	0	0	0	0	0
11. NEW CONSTRUCTION.	36,957	41,236	45,291	74,996	84,896	74,246	84,170
12. MAINTENANCE AND REPAIR CONSTRUCTION	0	0	0	0	0	0	0
13. ORDNANCE AND ACCESSORIES.	94	0	82	101	110	100	109
14. FOOD AND KINDRED PRODUCTS	248	494	168	199	201	197	199
15. TOBACCO MANUFACTURES.	-26	16	9	12	14	12	14
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	-104	148	150	172	175	171	174
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	18	137	200	339	365	336	362
18. APPAREL	-123	629	630	735	737	729	732
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	-1	27	35	45	48	45	48
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	68	62	113	130	133	129	132
21. WOODEN CONTAINERS	-9	18	20	18	20	18	20
22. HOUSEHOLD FURNITURE	120	177	223	354	309	351	306
23. OTHER FURNITURE AND FIXTURES.	799	1,025	1,346	2,585	2,748	2,565	2,725
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	-3	68	130	204	205	202	203
25. PAPERBOARD CONTAINERS AND BOXES	-1	30	48	98	100	97	99
26. PRINTING AND PUBLISHING	11	70	96	127	129	126	128
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	-24	69	237	358	360	355	357
28. PLASTICS AND SYNTHETIC MATERIALS.	-44	91	175	279	280	277	277
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	56	142	244	408	410	405	406
30. PAINTS AND ALLIED PRODUCTS.	-4	2	13	15	19	15	19
31. PETROLEUM REFINING AND RELATED INDUSTRIES	-186	157	153	214	216	212	214
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	20	85	165	264	267	262	265
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	-3	-4	14	12	14	12	13
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	37	102	121	116	117	115	116
35. GLASS AND GLASS PRODUCTS.	-5	14	47	66	68	66	67
36. STONE AND CLAY PRODUCTS	28	32	57	77	79	76	78
37. PRIMARY IRON AND STEEL MANUFACTURING.	-160	-102	553	621	640	616	635
38. PRIMARY NONFERROUS METALS MANUFACTURING	-10	99	308	483	486	479	482
39. METAL CONTAINERS.	23	16	142	176	189	175	187
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	639	545	1,130	1,501	1,616	1,490	1,602
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	-67	5	59	71	75	70	74
42. OTHER FABRICATED METAL PRODUCTS	118	268	451	654	720	649	714
43. ENGINES AND TURBINES.	516	524	647	955	1,032	948	1,023
44. FARM MACHINERY AND EQUIPMENT.	1,648	1,648	2,204	3,453	3,660	3,427	3,628
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	1,246	1,310	2,100	3,319	3,595	3,294	3,565
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	328	416	702	1,135	1,260	1,126	1,249
47. METALWORKING MACHINERY AND EQUIPMENT.	1,022	1,402	2,238	3,193	3,590	3,169	3,559
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	1,361	1,860	2,525	3,687	4,114	3,659	4,078
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	970	1,209	1,737	2,758	3,165	2,737	3,138
50. MACHINE SHOP PRODUCTS	-10	39	47	59	70	68	69
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	1,001	1,498	2,496	12,181	13,408	12,089	13,293
52. SERVICE INDUSTRY MACHINES	919	1,288	1,761	3,335	3,700	3,310	3,668
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	1,484	1,973	2,526	4,299	4,740	4,266	4,700
54. HOUSEHOLD APPLIANCES.	29	174	252	417	456	414	452
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	-4	56	133	300	335	298	332
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	938	1,805	2,007	7,561	7,500	7,504	7,536
57. ELECTRONIC COMPONENTS AND ACCESSORIES	-21	202	391	754	797	748	790
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	59	150	180	366	410	363	406
59. MOTOR VEHICLES AND EQUIPMENT.	3,046	6,657	10,813	15,540	15,606	15,423	15,473
60. AIRCRAFT AND PARTS.	96	1,068	1,289	3,231	3,475	3,207	3,445
61. OTHER TRANSPORTATION EQUIPMENT.	1,103	1,309	2,185	4,424	4,400	4,391	4,362
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	524	776	1,049	2,126	2,380	2,110	2,360
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	168	267	662	3,687	3,840	3,659	3,807
64. MISCELLANEOUS MANUFACTURING	313	485	523	849	870	843	863
65. TRANSPORTATION AND WAREHOUSING.	661	783	1,353	2,911	3,180	2,889	3,153
66. COMMUNICATIONS,EXCEPT BROADCASTING.	362	469	690	1,460	1,610	1,449	1,596
67. RADIO AND TELEVISION BROADCASTING	0	0	0	0	0	0	0
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	0	0	0	0	0	0	0
69. WHOLESALE AND RETAIL TRADE.	3,816	5,213	6,910	14,333	14,004	14,225	13,884
70. FINANCE AND INSURANCE	0	0	0	0	0	0	0
71. REAL ESTATE AND RENTAL.	1,209	1,100	1,124	4,104	2,604	4,063	2,582
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	0	0	0	0	0	0	0
73. BUSINESS SERVICES	0	0	0	0	0	0	0
74. RESEARCH AND DEVELOPMENT.	0	0	0	0	0	0	0
75. AUTOMOBILE REPAIR AND SERVICES.	0	0	0	0	0	0	0
76. AMUSEMENTS.	22	15	67	84	85	83	84
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	0	0	0	0	0	0	0
78. FEDERAL GOVERNMENT ENTERPRISES.	0	0	0	0	0	0	0
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	0	0	0	0	0	0	0
80. GROSS IMPORTS OF GOODS AND SERVICES	24	-112	43	50	60	50	60
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
83. SCRAP,USED AND SECONDHAND GOODS	-1,028	-701	-354	-1,000	-900	-990	-880
84. GOVERNMENT INDUSTRY	0	0	0	0	0	0	0
85. REST OF THE WORD INDUSTRY	0	0	0	0	0	0	0
86. HOUSEHOLD INDUSTRY.	0	0	0	0	0	0	0
87. INVENTORY VALUATION ADJUSTMENT.	-311	269	-2,123	0	0	0	0
TOTAL	60,901	79,405	99,200	186,300	200,200	184,700	198,500

See footnotes on p. 129.

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TABLE D-5. INDUSTRIAL COMPOSITION OF PRODUCER'S DURABLE EQUIPMENT [1] 1958, 1962, 1965 AND PROJECTED 1980'S

(Millions of 1958 dollars)

Industry number and title [2]	1958	1962	1965	1980 3 percent basic model [3]	1980 3 percent high durable [3]	1980 4 percent basic model [3]	1980 4 percent high durable [3]
1. LIVESTOCK AND LIVESTOCK PRODUCTS	0	0	0	0	0	0	0
2. OTHER AGRICULTURAL PRODUCTS	0	0	0	0	0	0	0
3. FORESTRY AND FISHERY PRODUCTS	0	0	0	0	0	0	0
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	0	0	0	0	0	0	0
5. IRON AND FERROALLOY ORES MINING	0	0	0	0	0	0	0
6. NONFERROUS METAL ORES MINING	0	0	0	0	0	0	0
7. COAL MINING	0	0	0	0	0	0	0
8. CRUDE PETROLEUM AND NATURAL GAS	0	0	0	0	0	0	0
9. STONE AND CLAY MINING AND QUARRYING	0	0	0	0	0	0	0
10. CHEMICAL AND FERTILIZER MINERAL MINING	0	0	0	0	0	0	0
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	0	0	0	0	0	0	0
13. ORDNANCE AND ACCESSORIES	0	0	0	0	0	0	0
14. FOOD AND KINDRED PRODUCTS	0	0	0	0	0	0	0
15. TOBACCO MANUFACTURES	0	0	0	0	0	0	0
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	0	0	0	0	0	0	0
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	45	64	62	167	190	166	188
18. APPAREL	0	0	0	0	0	0	0
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	0	0	0	0	0	0	0
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	6	6	6	5	5	5	5
21. WOODEN CONTAINERS	0	0	0	0	0	0	0
22. HOUSEHOLD FURNITURE	126	142	165	280	230	278	228
23. OTHER FURNITURE AND FIXTURES	798	1,020	1,304	2,547	2,703	2,525	2,680
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	0	0	0	0	0	0	0
25. PAPERBOARD CONTAINERS AND BOXES	0	0	0	0	0	0	0
26. PRINTING AND PUBLISHING	0	0	0	0	0	0	0
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	0	0	0	0	0	0	0
28. PLASTICS AND SYNTHETIC MATERIALS	0	0	0	0	0	0	0
29. DRUGS,CLEANING AND TOILET PREPARATIONS	0	0	0	0	0	0	0
30. PAINTS AND ALLIED PRODUCTS	0	0	0	0	0	0	0
31. PETROLEUM REFINING AND RELATED INDUSTRIES	0	0	0	0	0	0	0
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	52	14	22	34	35	34	35
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	0	0	0	0	0	0	0
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	5	0	0	0	0	0	0
35. GLASS AND GLASS PRODUCTS	0	0	0	0	0	0	0
36. STONE AND CLAY PRODUCTS	0	0	0	0	0	0	0
37. PRIMARY IRON AND STEEL MANUFACTURING	0	0	0	0	0	0	0
38. PRIMARY NONFERROUS METALS MANUFACTURING	0	0	0	0	0	0	0
39. METAL CONTAINERS	10	11	38	58	66	58	65
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	708	560	902	1,190	1,300	1,180	1,289
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	0	0	0	0	0	0	0
42. OTHER FABRICATED METAL PRODUCTS	166	169	235	384	440	381	436
43. ENGINES AND TURBINES	576	474	534	818	887	811	879
44. FARM MACHINERY AND EQUIPMENT	1,670	1,532	2,035	3,301	3,500	3,273	3,470
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	1,319	1,272	2,018	3,250	3,520	3,222	3,490
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	352	434	681	1,120	1,240	1,110	1,229
47. METALWORKING MACHINERY AND EQUIPMENT	1,153	1,328	2,034	3,050	3,440	3,024	3,411
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	1,468	1,848	2,397	3,580	4,000	3,550	3,966
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	1,051	1,141	1,538	2,550	2,950	2,528	2,925
50. MACHINE SHOP PRODUCTS	0	0	0	0	0	0	0
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	1,016	1,430	2,290	11,710	12,500	11,610	12,393
52. SERVICE INDUSTRY MACHINES	955	1,243	1,635	3,199	3,400	3,172	3,371
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	1,617	1,918	2,355	4,100	4,500	4,065	4,462
54. HOUSEHOLD APPLIANCES	93	101	149	284	320	282	317
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	25	39	86	209	240	207	238
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	1,009	1,634	1,721	7,190	7,210	7,119	7,148
57. ELECTRONIC COMPONENTS AND ACCESSORIES	27	52	136	380	420	377	416
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	83	125	142	309	350	306	347
59. MOTOR VEHICLES AND EQUIPMENT	3,575	5,917	8,600	13,462	13,400	13,347	13,286
60. AIRCRAFT AND PARTS	358	883	1,119	3,069	3,310	3,043	3,282
61. OTHER TRANSPORTATION EQUIPMENT	1,178	1,167	1,998	4,127	4,100	4,092	4,065
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	532	704	958	1,952	2,200	1,935	2,181
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	163	252	592	3,600	3,750	3,569	3,718
64. MISCELLANEOUS MANUFACTURING	279	381	406	680	700	674	694
65. TRANSPORTATION AND WAREHOUSING	507	640	845	2,232	2,500	2,213	2,479
66. COMMUNICATIONS,EXCEPT BROADCASTING	352	469	680	1,460	1,610	1,448	1,596
67. RADIO AND TELEVISION BROADCASTING	0	0	0	0	0	0	0
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	0	0	0	0	0	0	0
69. WHOLESALE AND RETAIL TRADE	3,747	4,742	5,927	12,763	12,424	12,654	12,318
70. FINANCE AND INSURANCE	0	0	0	0	0	0	0
71. REAL ESTATE AND RENTAL	0	0	0	0	0	0	0
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	0	0	0	0	0	0	0
73. BUSINESS SERVICES	0	0	0	0	0	0	0
74. RESEARCH AND DEVELOPMENT	0	0	0	0	0	0	0
75. AUTOMOBILE REPAIR AND SERVICES	0	0	0	0	0	0	0
76. AMUSEMENTS	0	0	0	0	0	0	0
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	0	0	0	0	0	0	0
78. FEDERAL GOVERNMENT ENTERPRISES	0	0	0	0	0	0	0
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	0	0	0	0	0	0	0
80. GROSS IMPORTS OF GOODS AND SERVICES	16	21	42	50	60	50	60
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
83. SCRAP,USED AND SECONDHAND GOODS	-19	0	450	800	900	792	933
84. GOVERNMENT INDUSTRY	0	0	0	0	0	0	0
85. REST OF THE WORD INDUSTRY	0	0	0	0	0	0	0
86. HOUSEHOLD INDUSTRY	0	0	0	0	0	0	0
87. INVENTORY VALUATION ADJUSTMENT	0	0	0	0	0	0	0
TOTAL	25,028	31,733	44,002	93,900	98,400	93,100	97,600

See footnotes on p. 129.

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TABLE D-6. INDUSTRIAL COMPOSITION OF NET EXPORTS[1] 1958, 1962, 1965 AND PROJECTED 1980'S

(Millions of 1958 dollars)

Industry number and title [2]	1958 [3]	1962	1965	1980 3 percent basic model[4]	1980 3 percent high durable[4]	1980 4 percent basic model[4]	1980 4 percent high durable[4]
1. LIVESTOCK AND LIVESTOCK PRODUCTS	38	27	44	71	71	70	70
2. OTHER AGRICULTURAL PRODUCTS	1,814	2,473	3,382	5,185	5,185	5,140	5,140
3. FORESTRY AND FISHERY PRODUCTS	30	38	60	91	91	90	90
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	3	6	13	13	13	13	13
5. IRON AND FERROALLOY ORES MINING	41	70	104	182	182	180	180
6. NONFERROUS METAL ORES MINING	4	6	30	26	26	25	25
7. COAL MINING	332	239	328	541	541	536	536
8. CRUDE PETROLEUM AND NATURAL GAS	28	20	22	23	23	23	23
9. STONE AND CLAY MINING AND QUARRYING	23	29	51	91	91	90	90
10. CHEMICAL AND FERTILIZER MINERAL MINING	55	64	99	173	173	172	172
11. NEW CONSTRUCTION	2	2	2	4	4	4	4
12. MAINTENANCE AND REPAIR CONSTRUCTION	0	0	0	0	0	0	0
13. ORDNANCE AND ACCESSORIES	17	135	185	535	535	530	530
14. FOOD AND KINDRED PRODUCTS	1,681	1,900	2,351	4,727	4,727	4,686	4,686
15. TOBACCO MANUFACTURES	437	480	457	666	666	660	660
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	227	212	216	188	188	186	186
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	46	66	90	136	136	135	135
18. APPAREL	273	298	320	434	434	430	430
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	19	23	72	142	142	141	141
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	110	149	248	638	638	633	633
21. WOODEN CONTAINERS	3	3	2	4	4	4	4
22. HOUSEHOLD FURNITURE	16	14	20	32	32	32	32
23. OTHER FURNITURE AND FIXTURES	18	13	12	7	7	7	7
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	262	395	551	1,769	1,769	1,754	1,754
25. PAPERBOARD CONTAINERS AND BOXES	19	23	13	19	19	19	19
26. PRINTING AND PUBLISHING	94	139	201	700	700	694	694
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	676	977	1,287	3,165	3,165	3,138	3,138
28. PLASTICS AND SYNTHETIC MATERIALS	319	513	737	1,593	1,583	1,569	1,569
29. DRUGS,CLEANING AND TOILET PREPARATIONS	[5]	369	446	569	569	564	564
30. PAINTS AND ALLIED PRODUCTS	27	27	32	66	66	65	65
31. PETROLEUM REFINING AND RELATED INDUSTRIES	657	627	777	1,088	1,088	1,079	1,079
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	212	255	320	592	592	587	587
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	28	32	34	53	53	53	53
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	49	33	23	30	30	30	30
35. GLASS AND GLASS PRODUCTS	69	81	115	248	248	246	246
36. STONE AND CLAY PRODUCTS	100	108	163	409	409	405	405
37. PRIMARY IRON AND STEEL MANUFACTURING	535	416	590	915	915	907	907
38. PRIMARY NONFERROUS METALS MANUFACTURING	305	399	500	952	952	944	944
39. METAL CONTAINERS	26	23	18	25	25	25	25
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	225	251	273	410	410	406	406
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	29	35	148	335	335	332	332
42. OTHER FABRICATED METAL PRODUCTS	258	262	331	563	563	558	558
43. ENGINES AND TURBINES	211	277	495	1,180	1,180	1,170	1,170
44. FARM MACHINERY AND EQUIPMENT	188	228	341	858	858	851	851
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	709	872	1,053	2,048	2,048	2,030	2,030
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	76	86	108	204	204	202	202
47. METALWORKING MACHINERY AND EQUIPMENT	331	524	416	708	708	702	702
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	370	555	612	1,450	1,450	1,438	1,438
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	275	333	401	800	900	793	793
50. MACHINE SHOP PRODUCTS	15	5	14	20	20	20	20
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	136	322	463	2,096	2,096	2,078	2,078
52. SERVICE INDUSTRY MACHINES	135	179	272	873	873	865	865
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	281	344	462	1,115	1,115	1,105	1,105
54. HOUSEHOLD APPLIANCES	208	194	256	346	346	343	343
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	64	75	124	399	399	396	396
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	212	317	403	1,012	1,012	1,003	1,003
57. ELECTRONIC COMPONENTS AND ACCESSORIES	90	147	203	686	686	680	680
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	71	77	146	361	361	358	358
59. MOTOR VEHICLES AND EQUIPMENT	921	1,138	1,430	2,811	2,811	2,787	2,787
60. AIRCRAFT AND PARTS	559	1,068	1,212	2,871	2,871	2,846	2,846
61. OTHER TRANSPORTATION EQUIPMENT	299	191	274	290	290	288	288
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	183	336	358	1,287	1,287	1,276	1,276
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	107	150	250	695	695	689	689
64. MISCELLANEOUS MANUFACTURING	125	188	256	597	597	592	592
65. TRANSPORTATION AND WAREHOUSING	2,393	2,872	3,561	6,833	6,933	6,774	6,774
66. COMMUNICATIONS,EXCEPT BROADCASTING	65	82	111	151	151	150	150
67. RADIO AND TELEVISION BROADCASTING	9	20	34	113	113	112	112
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	36	35	34	72	72	71	71
69. WHOLESALE AND RETAIL TRADE	1,500	1,990	2,440	5,170	5,170	5,126	5,126
70. FINANCE AND INSURANCE	23	28	36	129	129	128	128
71. REAL ESTATE AND RENTAL	271	429	437	977	977	969	969
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	192	202	287	431	431	427	427
73. BUSINESS SERVICES	249	330	418	776	776	769	769
74. RESEARCH AND DEVELOPMENT	0	17	0	0	0	0	0
75. AUTOMOBILE REPAIR AND SERVICES	1	1	1	2	2	2	2
76. AMUSEMENTS	335	346	463	682	682	676	676
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	9	10	14	26	26	26	26
78. FEDERAL GOVERNMENT ENTERPRISES	61	76	92	170	170	169	169
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	3	-1	3	7	7	7	7
80. GROSS IMPORTS OF GOODS AND SERVICES	-21,082	-25,474	-32,321	-68,933	-68,933	-68,339	-68,339
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
83. SCRAP,USED AND SECONDHAND GOODS	250	324	442	911	911	903	903
84. GOVERNMENT INDUSTRY	0	0	0	0	0	0	0
85. REST OF THE WORD INDUSTRY	2,867	4,420	5,931	11,973	11,973	11,852	11,852
86. HOUSEHOLD INDUSTRY	1	1	1	3	3	3	3
87. INVENTORY VALUATION ADJUSTMENT	0	0	0	0	0	0	0
TOTAL	2,205	4,546	6,200	9,600	9,600	9,500	9,500

See footnotes on p. 130.

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TABLE D-7. INDUSTRIAL COMPOSITION OF PURCHASES BY FEDERAL GOVERNMENT 1958, 1962, 1965 AND PROJECTED 1980'S

(Millions of 1958 dollars)

Industry number and title [1]	1958 [2]	1962	1965	1980 3 percent basic model [3]	1980 3 percent high durable [3]	1980 4 percent basic model [3]	1980 4 percent high durable [3]
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	-3	5	6	18	13	18	13
2. OTHER AGRICULTURAL PRODUCTS	1,073	205	-412	37	26	37	26
3. FORESTRY AND FISHERY PRODUCTS	-137	-107	-200	-358	-244	-355	-241
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	45	38	74	233	164	231	163
5. IRON AND FERROALLOY ORES MINING	0	0	0	0	0	0	0
6. NONFERROUS METAL ORES MINING.	192	283	277	412	343	409	340
7. COAL MINING	0	56	11	26	27	26	27
8. CRUDE PETROLEUM AND NATURAL GAS	1	0	0	0	0	0	0
9. STONE AND CLAY MINING AND QUARRYING	10	0	0	0	0	0	0
10. CHEMICAL AND FERTILIZER MINERAL MINING.	11	2	2	0	0	0	0
11. NEW CONSTRUCTION.	3,388	3,448	2,954	7,400	6,900	7,326	6,841
12. MAINTENANCE AND REPAIR CONSTRUCTION	1,091	1,204	1,453	2,695	2,791	2,668	2,767
13. ORDNANCE AND ACCESSORIES.	3,329	3,824	3,873	5,354	8,358	5,314	8,287
14. FOOD AND KINDRED PRODUCTS	55	269	313	708	521	702	517
15. TOBACCO MANUFACTURES.	0	0	0	4	6	4	6
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	51	34	80	103	114	102	113
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	5	10	10	12	14	12	14
18. APPAREL	41	71	73	154	132	153	131
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	103	77	98	247	240	245	237
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	-6	-6	-9	-14	2	-14	2
21. WOODEN CONTAINERS	2	12	17	17	18	17	18
22. HOUSEHOLD FURNITURE	25	42	12	10	11	10	11
23. OTHER FURNITURE AND FIXTURES.	26	69	63	194	152	192	151
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	72	54	65	178	132	177	131
25. PAPERBOARD CONTAINERS AND BOXES	5	88	17	49	42	49	42
26. PRINTING AND PUBLISHING	92	176	105	204	191	202	189
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	824	678	608	1,119	1,156	1,111	1,146
28. PLASTICS AND SYNTHETIC MATERIALS.	13	32	16	42	44	42	44
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	150	222	247	683	509	679	505
30. PAINTS AND ALLIED PRODUCTS.	3	13	10	19	24	19	24
31. PETROLEUM REFINING AND RELATED INDUSTRIES	745	912	948	1,049	1,289	1,042	1,278
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	130	70	61	102	118	101	117
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	0	0	0	1	1	1	1
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	23	69	41	30	20	30	20
35. GLASS AND GLASS PRODUCTS.	3	0	0	0	0	0	0
36. STONE AND CLAY PRODUCTS	5	3	4	12	9	12	9
37. PRIMARY IRON AND STEEL MANUFACTURING.	118	116	112	198	210	197	208
38. PRIMARY NONFERROUS METALS MANUFACTURING	343	46	66	190	248	189	245
39. METAL CONTAINERS.	18	20	5	24	27	24	27
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	17	304	257	389	459	387	456
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	94	79	90	225	179	223	177
42. OTHER FABRICATED METAL PRODUCTS	132	194	95	317	262	315	260
43. ENGINES AND TURBINES.	288	220	215	388	427	386	423
44. FARM MACHINERY AND EQUIPMENT.	17	11	12	60	57	60	57
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	84	143	63	183	212	183	210
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	139	144	44	168	194	168	192
47. METALWORKING MACHINERY AND EQUIPMENT.	273	227	138	327	340	324	337
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	33	35	34	60	55	60	55
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	203	237	77	282	320	280	317
50. MACHINE SHOP PRODUCTS	44	51	42	61	71	61	70
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	87	212	424	969	1,536	962	1,523
52. SERVICE INDUSTRY MACHINES	73	34	77	118	110	117	109
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	351	245	344	476	769	473	762
54. HOUSEHOLD APPLIANCES.	171	17	18	49	45	49	45
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	89	19	20	1	12	1	12
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	1,770	3,790	4,264	6,519	8,724	6,469	8,649
57. ELECTRONIC COMPONENTS AND ACCESSORIES	375	524	460	615	1,189	611	1,178
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	113	62	105	184	165	183	163
59. MOTOR VEHICLES AND EQUIPMENT.	490	562	522	850	1,253	844	1,242
60. AIRCRAFT AND PARTS.	8,047	8,456	7,945	8,963	14,159	8,896	14,038
61. OTHER TRANSPORTATION EQUIPMENT.	655	943	1,009	1,052	1,825	1,045	1,809
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	658	815	565	976	1,506	969	1,493
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	168	123	235	326	386	324	383
64. MISCELLANEOUS MANUFACTURING	41	57	47	117	104	116	103
65. TRANSPORTATION AND WAREHOUSING.	1,439	1,834	1,482	2,265	2,965	2,249	2,939
66. COMMUNICATIONS,EXCEPT BROADCASTING.	169	354	411	779	684	774	678
67. RADIO AND TELEVISION BROADCASTING	0	3	3	0	0	0	0
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	348	486	592	763	707	758	701
69. WHOLESALE AND RETAIL TRADE.	645	989	981	1,566	1,875	1,555	1,859
70. FINANCE AND INSURANCE	1	30	20	37	41	37	41
71. REAL ESTATE AND RENTAL.	112	621	256	623	526	619	522
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	246	297	306	829	660	823	654
73. BUSINESS SERVICES	492	1,019	691	1,279	1,829	1,270	1,813
74. RESEARCH AND DEVELOPMENT.	372	344	436	938	1,171	931	1,161
75. AUTOMOBILE REPAIR AND SERVICES.	129	108	87	226	167	224	166
76. AMUSEMENTS.	18	40	42	55	59	55	58
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	554	697	1,056	3,442	2,806	3,417	2,782
78. FEDERAL GOVERNMENT ENTERPRISES.	56	49	61	260	211	258	209
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	113	210	268	726	522	720	518
80. GROSS IMPORTS OF GOODS AND SERVICES	2,717	2,799	2,461	4,260	4,604	4,228	4,564
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	74	111	80	235	176	233	174
83. SCRAP,USED AND SECONDHAND GOODS	117	196	10	100	100	99	116
84. GOVERNMENT INDUSTRY	19,951	21,184	21,028	22,290	23,230	22,067	23,068
85. REST OF THE WORD INDUSTRY	-307	-895	-473	-500	-500	-495	-495
86. HOUSEHOLD INDUSTRY.	0	0	0	0	0	0	0
87. INVENTORY VALUATION ADJUSTMENT.	0	0	0	0	0	0	0
TOTAL	53,594	60,015	57,900	85,000	99,800	84,300	99,000

See footnotes on p. 130.

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TABLE D-8. INDUSTRIAL COMPOSITION OF PURCHASES OF STATE AND LOCAL GOVERNMENTS 1958, 1962, 1965 AND PROJECTED 1980'S

(Millions of 1958 dollars)

Industry number and title [1]	1958	1962	1965	1980 3 percent basic model [2]	1980 3 percent high durable [2]	1980 4 percent basic model [2]	1980 4 percent high durable [2]
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	11	15	18	65	56	64	56
2. OTHER AGRICULTURAL PRODUCTS	27	19	25	81	70	80	69
3. FORESTRY AND FISHERY PRODUCTS	0	0	0	3	3	3	3
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	-68	-86	-19	-467	-383	-463	-380
5. IRON AND FERROALLOY ORES MINING	0	0	0	0	0	0	0
6. NONFERROUS METAL ORES MINING.	0	0	0	0	0	0	0
7. COAL MINING	61	66	77	283	232	281	230
8. CRUDE PETROLEUM AND NATURAL GAS	0	0	0	0	0	0	0
9. STONE AND CLAY MINING AND QUARRYING	-12	-6	-11	-42	-36	-42	-36
10. CHEMICAL AND FERTILIZER MINERAL MINING.	12	6	11	42	36	42	35
11. NEW CONSTRUCTION.	12,069	13,487	15,920	36,000	31,200	35,640	30,934
12. MAINTENANCE AND REPAIR CONSTRUCTION	3,339	3,871	4,187	7,707	7,470	7,630	7,406
13. ORDNANCE AND ACCESSORIES.	4	7	7	29	25	29	25
14. FOOD AND KINDRED PRODUCTS	272	304	427	1,381	1,149	1,370	1,139
15. TOBACCO MANUFACTURES.	0	0	1	3	3	3	3
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	9	10	10	42	36	42	36
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	1	1	2	6	6	6	6
18. APPAREL	92	116	130	516	423	512	418
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	0	1	1	3	3	3	3
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	1	1	1	6	6	6	6
21. WOODEN CONTAINERS	0	1	0	3	3	3	3
22. HOUSEHOLD FURNITURE	57	94	101	398	327	395	324
23. OTHER FURNITURE AND FIXTURES.	126	226	292	816	670	809	664
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	6	4	9	23	20	23	20
25. PAPERBOARD CONTAINERS AND BOXES	0	0	0	0	0	0	0
26. PRINTING AND PUBLISHING	173	204	343	1,134	930	1,125	922
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	242	322	246	1,447	1,195	1,435	1,175
28. PLASTICS AND SYNTHETIC MATERIALS.	0	0	0	0	0	0	0
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	179	189	250	780	640	774	635
30. PAINTS AND ALLIED PRODUCTS.	0	0	0	0	0	0	0
31. PETROLEUM REFINING AND RELATED INDUSTRIES	382	549	524	2,530	2,056	2,509	2,037
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	75	129	136	579	475	574	470
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	0	0	0	0	0	0	0
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	2	2	2	6	6	6	6
35. GLASS AND GLASS PRODUCTS.	0	0	0	0	0	0	0
36. STONE AND CLAY PRODUCTS	4	6	6	26	22	26	22
37. PRIMARY IRON AND STEEL MANUFACTURING.	1	2	1	6	6	6	6
38. PRIMARY NONFERROUS METALS MANUFACTURING	0	0	0	0	0	0	0
39. METAL CONTAINERS.	0	0	0	0	0	0	0
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	0	0	0	0	0	0	0
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	5	4	5	23	20	23	20
42. OTHER FABRICATED METAL PRODUCTS	46	64	81	253	207	251	205
43. ENGINES AND TURBINES.	3	6	15	26	22	26	22
44. FARM MACHINERY AND EQUIPMENT.	17	30	22	102	85	101	84
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	21	16	30	95	79	94	78
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	50	70	67	256	210	254	209
47. METALWORKING MACHINERY AND EQUIPMENT.	5	11	25	45	39	45	39
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	30	60	74	220	181	218	179
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	5	9	13	32	28	32	28
50. MACHINE SHOP PRODUCTS	35	50	61	180	148	179	147
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	89	214	187	573	470	568	466
52. SERVICE INDUSTRY MACHINES	21	38	53	151	125	150	124
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	5	10	23	42	36	42	36
54. HOUSEHOLD APPLIANCES.	1	1	2	6	6	6	6
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	8	13	14	42	36	42	36
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	62	56	81	309	253	306	251
57. ELECTRONIC COMPONENTS AND ACCESSORIES	0	0	0	0	0	0	0
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	33	48	59	164	135	163	134
59. MOTOR VEHICLES AND EQUIPMENT.	438	621	819	2,622	2,180	2,600	2,161
60. AIRCRAFT AND PARTS.	0	0	0	0	0	0	0
61. OTHER TRANSPORTATION EQUIPMENT.	38	79	187	322	264	319	262
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	86	119	200	483	396	479	392
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	15	29	27	92	75	91	74
64. MISCELLANEOUS MANUFACTURING	179	274	346	1,105	906	1,096	898
65. TRANSPORTATION AND WAREHOUSING.	402	406	572	1,970	1,615	1,954	1,601
66. COMMUNICATIONS,EXCEPT BROADCASTING.	190	263	304	1,178	966	1,168	958
67. RADIO AND TELEVISION BROADCASTING	0	0	0	0	0	0	0
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	486	473	855	2,260	1,850	2,240	1,834
69. WHOLESALE AND RETAIL TRADE.	183	320	268	1,438	1,180	1,426	1,170
70. FINANCE AND INSURANCE	191	210	287	1,065	871	1,056	863
71. REAL ESTATE AND RENTAL.	233	423	429	1,773	1,452	1,758	1,440
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	87	-17	52	305	251	302	249
73. BUSINESS SERVICES	555	744	742	3,197	2,620	3,170	2,598
74. RESEARCH AND DEVELOPMENT.	0	0	0	0	0	0	0
75. AUTOMOBILE REPAIR AND SERVICES.	83	134	122	609	500	604	496
76. AMUSEMENTS.	-44	-98	-69	-187	-154	-185	-152
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	311	232	356	1,023	840	1,015	833
78. FEDERAL GOVERNMENT ENTERPRISES.	67	105	111	441	362	437	359
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	6	12	12	48	42	48	42
80. GROSS IMPORTS OF GOODS AND SERVICES	3	4	1	20	17	20	17
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	132	220	227	911	748	903	742
83. SCRAP,USED AND SECONDHAND GOODS	342	474	806	1,500	1,500	1,485	1,487
84. GOVERNMENT INDUSTRY	19,078	22,199	26,638	47,700	45,200	47,223	44,775
85. REST OF THE WORD INDUSTRY	0	0	0	0	0	0	0
86. HOUSEHOLD INDUSTRY.	0	0	0	0	0	0	0
87. INVENTORY VALUATION ADJUSTMENT.	0	0	0	0	0	0	0
TOTAL	40,562	47,466	56,800	125,800	112,400	124,600	111,400

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TABLE D-9. DOMESTIC OUTPUT BY INDUSTRY[1]

(Average annual rates of change at producers value in 1958)

Industry number and title[2]	1947 to 1965	1947 to 1957	1957 to 1965	1965 to 1980			
				3 percent basic model[3]	3 percent high durable[3]	4 percent basic model[3]	4 percent high durable[3]
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	1.7	1.7	1.7	2.8	2.7	2.8	2.6
2. OTHER AGRICULTURAL PRODUCTS	1.7	.9	2.7	3.0	2.9	3.0	2.9
3. FORESTRY AND FISHERY PRODUCTS	1.8	2.2	1.4	2.0	2.5	2.0	2.4
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	1.8	2.2	1.4	1.5	1.5	1.5	1.4
5. IRON AND FERROALLOY ORES MINING	2.7	3.1	2.3	2.5	3.0	2.5	2.9
6. NONFERROUS METAL ORES MINING.	1.8	3.1	.1	4.8	5.0	4.8	4.9
7. COAL MINING	-1.8	-3.1	.0	1.8	1.8	1.8	1.7
8. CRUDE PETROLEUM AND NATURAL GAS	3.3	4.6	1.8	3.4	3.4	3.4	3.3
9. STONE AND CLAY MINING AND QUARRYING	5.3	6.2	4.2	4.2	4.5	4.2	4.4
10. CHEMICAL AND FERTILIZER MINERAL MINING.	6.1	6.2	6.1	5.9	6.0	5.9	5.9
11. NEW CONSTRUCTION.	4.9	5.5	4.1	4.4	4.8	4.4	4.7
12. MAINTENANCE AND REPAIR CONSTRUCTION	4.2	2.9	5.9	3.2	3.2	3.2	3.1
13. ORDNANCE AND ACCESSORIES.	7.4	14.1	-.4	3.2	5.7	3.2	5.6
14. FOOD AND KINDRED PRODUCTS	2.4	2.4	2.6	3.3	3.2	3.3	3.1
15. TOBACCO MANUFACTURES.	1.3	.3	2.4	2.3	2.2	2.3	2.1
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	2.4	1.3	3.7	3.7	3.7	3.7	3.6
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	4.4	2.5	6.9	4.2	4.3	4.1	4.2
18. APPAREL	3.4	3.4	3.4	3.8	3.5	3.7	3.5
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	3.8	3.6	3.9	3.7	3.6	3.6	3.5
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	2.3	1.4	3.3	3.5	3.7	3.4	3.6
21. WOODEN CONTAINERS	-2.1	-3.6	-.2	.3	.4	.2	.3
22. HOUSEHOLD FURNITURE	3.5	3.7	3.4	5.0	5.3	4.9	5.2
23. OTHER FURNITURE AND FIXTURES.	3.4	2.4	4.6	5.4	5.4	5.3	5.4
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	3.9	3.6	4.3	4.8	4.8	4.7	4.7
25. PAPERBOARD CONTAINERS AND BOXES	4.7	4.5	4.9	4.4	4.4	4.3	4.3
26. PRINTING AND PUBLISHING	3.3	3.0	3.6	4.4	4.3	4.3	4.3
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	6.8	7.5	6.0	5.4	5.4	5.3	5.3
28. PLASTICS AND SYNTHETIC MATERIALS.	9.3	9.6	9.0	6.8	6.8	6.7	6.8
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	7.1	7.1	7.0	6.0	5.7	5.9	5.6
30. PAINTS AND ALLIED PRODUCTS.	2.6	1.2	4.3	4.3	4.4	4.2	4.3
31. PETROLEUM REFINING AND RELATED INDUSTRIES	3.9	4.8	2.8	3.5	3.4	3.4	3.3
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	4.8	2.9	7.3	6.3	6.4	6.2	6.4
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	-1.5	-2.2	-.8	-.3	-.4	-.3	-.4
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.5	.4	.6	1.4	1.2	1.4	1.2
35. GLASS AND GLASS PRODUCTS.	3.0	1.9	4.4	3.9	4.0	3.8	3.9
36. STONE AND CLAY PRODUCTS	5.0	5.9	3.8	4.5	4.8	4.5	4.8
37. PRIMARY IRON AND STEEL MANUFACTURING.	1.6	1.3	1.9	1.9	2.2	1.8	2.2
38. PRIMARY NONFERROUS METALS MANUFACTURING	3.7	3.1	4.3	5.3	5.7	5.2	5.6
39. METAL CONTAINERS.	3.1	3.3	2.9	3.3	3.1	3.2	3.0
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	3.8	4.7	2.7	4.2	4.5	4.1	4.4
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	1.7	1.0	2.7	3.7	4.1	3.7	4.0
42. OTHER FABRICATED METAL PRODUCTS	3.2	2.8	3.8	3.9	4.1	3.8	4.0
43. ENGINES AND TURBINES.	3.0	2.4	3.9	4.2	4.6	4.1	4.5
44. FARM MACHINERY AND EQUIPMENT.	1.7	.2	3.6	3.4	3.7	3.4	3.7
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	2.1	1.8	2.4	3.5	3.8	3.4	3.8
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	3.4	3.0	4.1	4.2	4.5	4.1	4.5
47. METALWORKING MACHINERY AND EQUIPMENT.	2.7	3.1	2.3	3.0	3.6	2.9	3.5
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	1.1	-1.3	4.2	4.0	4.4	3.9	4.3
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	3.4	1.8	5.5	3.4	3.9	3.3	3.9
50. MACHINE SHOP PRODUCTS	7.2	8.5	5.6	4.9	5.5	4.8	5.4
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	8.9	7.7	10.5	10.3	10.9	10.2	10.8
52. SERVICE INDUSTRY MACHINES	4.6	2.6	7.2	6.5	6.9	6.4	6.8
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	3.9	4.1	3.6	4.9	5.5	4.8	5.4
54. HOUSEHOLD APPLIANCES.	4.5	2.7	6.8	5.1	5.4	5.0	5.3
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	3.3	2.1	5.0	4.7	5.0	4.6	4.9
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	9.1	9.0	9.1	6.2	7.0	6.1	7.0
57. ELECTRONIC COMPONENTS AND ACCESSORIES	13.4	12.0	15.2	8.4	9.3	8.4	9.2
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	2.2	.9	3.7	5.5	5.7	5.4	5.6
59. MOTOR VEHICLES AND EQUIPMENT.	5.3	4.5	6.2	2.9	3.1	2.8	3.1
60. AIRCRAFT AND PARTS.	11.1	20.2	.7	2.6	4.6	2.6	4.6
61. OTHER TRANSPORTATION EQUIPMENT.	2.5	.9	4.5	2.9	3.7	2.9	3.7
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	4.1	4.0	4.2	5.4	6.1	5.4	6.1
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	6.7	6.4	7.1	8.8	9.0	8.8	8.9
64. MISCELLANEOUS MANUFACTURING	3.4	2.2	5.0	5.6	5.6	5.5	5.5
65. TRANSPORTATION AND WAREHOUSING.	1.6	.7	2.8	4.0	4.0	3.9	3.9
66. COMMUNICATIONS,EXCEPT BROADCASTING.	7.4	7.7	7.1	7.0	6.9	6.9	6.9
67. RADIO AND TELEVISION BROADCASTING	7.5	10.3	4.1	2.0	2.1	1.9	2.0
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	7.5	9.0	5.7	6.7	6.6	6.6	6.5
69. WHOLESALE AND RETAIL TRADE.	3.9	3.6	4.4	4.7	4.7	4.6	4.6
70. FINANCE AND INSURANCE	4.4	4.2	4.7	4.4	4.3	4.3	4.2
71. REAL ESTATE AND RENTAL.	5.4	5.4	5.4	5.0	4.8	4.9	4.8
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	2.8	2.1	3.7	4.6	4.3	4.5	4.3
73. BUSINESS SERVICES	5.2	5.2	5.3	6.3	6.4	6.2	6.3
74. RESEARCH AND DEVELOPMENT.	6.4	5.2	7.8	6.0	6.7	5.9	6.9
75. AUTOMOBILE REPAIR AND SERVICES.	3.0	2.3	3.9	4.8	4.6	4.7	4.6
76. AMUSEMENTS.	.2	-1.5	2.3	4.4	4.1	4.3	4.0
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	5.0	5.0	5.1	5.5	5.2	5.4	5.1
78. FEDERAL GOVERNMENT ENTERPRISES.	5.4	4.9	6.1	5.1	5.0	5.0	4.9
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	3.4	2.3	4.8	5.5	5.3	5.4	5.3
80. GROSS IMPORTS OF GOODS AND SERVICES	.0	.0	.0	.0	.0	.0	.0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	NA	NA	5.5	2.7	2.8	2.6	2.7
82. OFFICE SUPPLIES	NA	NA	5.2	7.1	6.8	7.1	6.8
83. SCRAP,USED AND SECONDHAND GOODS	NA	NA	6.8	4.3	4.3	4.2	4.2
84. GOVERNMENT INDUSTRY	NA	NA	2.8	2.6	2.5	2.6	2.5
85. REST OF THE WORD INDUSTRY	NA	NA	10.8	7.0	7.0	6.9	7.0
86. HOUSEHOLD INDUSTRY.	NA	NA	-1.3	.8	.3	.9	.3
87. INVENTORY VALUATION ADJUSTMENT.	NA	NA	NA	NA	NA	NA	NA
TOTAL	NA	NA	5.0	4.5	4.5	4.4	4.5

See footnotes on p. 130.

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TABLE D-10. CIVILIAN EMPLOYMENT[1] BY INDUSTRY 1958 TO 1968 AND PROJECTED 1980'S

(Thousands)

Industry number and title	1958	1959	1960	1961	1962	1963
1,2. AGRICULTURE	5,540	5,519	5,389	5,142	4,937	4,712
3. FORESTRY AND FISHERY PRODUCTS	106	104	107	108	108	107
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	206	199	203	208	216	216
5. IRON AND FERROALLOY ORES MINING	36	33	38	31	28	28
6. NONFERROUS METAL ORES MINING	59	52	58	58	56	54
7. COAL MINING	224	207	195	170	161	157
8. CRUDE PETROLEUM AND NATURAL GAS	350	352	331	324	319	310
9,10. NONMETALLIC MINING AND QUARRYING	120	125	128	125	123	122
11,12. CONSTRUCTION	3,522	3,717	3,641	3,581	3,689	3,747
13. ORDNANCE AND ACCESSORIES	158	204	220	244	264	266
14. FOOD AND KINDRED PRODUCTS	1,816	1,829	1,835	1,816	1,804	1,793
15. TOBACCO MANUFACTURES	95	94	94	91	90	89
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	610	618	604	581	580	569
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	105	113	109	103	105	105
18. APPAREL	1,283	1,340	1,338	1,317	1,366	1,375
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	127	138	141	142	147	151
20,21. LUMBER AND WOOD PRODUCTS	711	752	720	678	685	683
22. HOUSEHOLD FURNITURE	273	291	285	275	290	294
23. OTHER FURNITURE AND FIXTURES	108	115	119	113	118	119
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	400	414	425	424	429	430
25. PAPERBOARD CONTAINERS AND BOXES	165	174	177	178	187	190
26. PRINTING AND PUBLISHING	948	961	984	991	1,004	1,010
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	391	394	400	398	403	406
28. PLASTICS AND SYNTHETIC MATERIALS	143	149	155	154	165	175
29. DRUGS,CLEANING AND TOILET PREPARATIONS	198	203	209	213	217	221
30. PAINTS AND ALLIED PRODUCTS	61	62	63	62	63	63
31. PETROLEUM REFINING AND RELATED INDUSTRIES	224	216	212	202	195	189
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	346	376	382	377	411	420
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	41	40	37	37	36	34
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	320	336	328	324	329	318
35. GLASS AND GLASS PRODUCTS	144	154	159	156	160	162
36. STONE AND CLAY PRODUCTS	434	446	462	443	450	456
37. PRIMARY IRON AND STEEL MANUFACTURING	847	857	911	833	841	842
38. PRIMARY NONFERROUS METALS MANUFACTURING	313	332	327	317	332	337
39. METAL CONTAINERS	70	70	71	69	70	70
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	429	423	426	415	416	426
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	253	280	287	263	282	287
42. OTHER FABRICATED METAL PRODUCTS	344	368	370	357	379	386
43. ENGINES AND TURBINES	90	90	86	79	84	85
44. FARM MACHINERY AND EQUIPMENT	116	125	115	112	115	123
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	145	162	157	142	149	152
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	61	63	64	59	62	66
47. METALWORKING MACHINERY AND EQUIPMENT	246	258	275	261	274	283
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	164	167	171	165	174	175
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	210	227	233	223	235	240
50. MACHINE SHOP PRODUCTS	156	168	179	177	189	191
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	133	138	146	152	159	163
52. SERVICE INDUSTRY MACHINES	90	97	100	95	101	102
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	304	332	344	339	350	339
54. HOUSEHOLD APPLIANCES	148	157	155	148	150	156
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	124	137	141	140	147	153
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	400	453	489	508	555	540
57. ELECTRONIC COMPONENTS AND ACCESSORIES	179	213	234	243	266	262
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	97	106	107	100	103	99
59. MOTOR VEHICLES AND EQUIPMENT	607	694	725	633	693	742
60. AIRCRAFT AND PARTS	772	722	629	611	639	640
61. OTHER TRANSPORTATION EQUIPMENT	218	223	220	209	219	231
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	223	241	246	240	249	253
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	103	107	110	109	112	115
64. MISCELLANEOUS MANUFACTURING	396	412	414	403	415	411
65. TRANSPORTATION AND WAREHOUSING	2,703	2,754	2,743	2,655	2,661	2,658
66. COMMUNICATIONS,EXCEPT BROADCASTING	775	750	750	737	732	727
67. RADIO AND TELEVISION BROADCASTING	89	91	94	96	97	101
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	622	624	628	628	624	623
69. WHOLESALE AND RETAIL TRADE	13,589	13,947	14,222	14,143	14,262	14,352
70. FINANCE AND INSURANCE	2,140	2,204	2,284	2,354	2,410	2,474
71. REAL ESTATE AND RENTAL	687	697	697	698	719	735
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	2,390	2,400	2,466	2,533	2,582	2,630
73,74. BUSINESS SERVICES,RESEARCH AND DEVELOPMENT	1,527	1,666	1,761	1,849	1,977	2,061
75. AUTOMOBILE REPAIR AND SERVICES	381	390	426	433	448	476
76. AMUSEMENTS	603	624	635	660	668	675
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	3,635	3,808	3,975	4,114	4,297	4,479
78. FEDERAL GOVERNMENT ENTERPRISES[2]						
79. STATE AND LOCAL GOVERNMENT ENTERPRISES[2]						
84. TOTAL GOVERNMENT[2]	7,839	8,083	8,353	8,594	8,890	9,225
TOTAL FEDERAL GOVERNMENT[2]	2,191	2,233	2,270	2,279	2,340	2,357
TOTAL STATE AND LOCAL GOVERNMENT[2]	5,648	5,850	6,083	6,315	6,550	6,868
86. HOUSEHOLD INDUSTRY	2,550	2,575	2,554	2,656	2,694	2,656
TOTAL[3]	66,032	67,982	68,868	68,618	69,956	70,731

See footnotes on p. 130.

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TABLE D-10. CIVILIAN EMPLOYMENT[1] BY INDUSTRY 1958 TO 1968 AND PROJECTED 1980'S—Continued

(Thousands)

Industry number and title	1964	1965	1966	1967	1968
1,2. AGRICULTURE	4,521	4,338	3,963	3,860	3,811
3. FORESTRY AND FISHERY PRODUCTS	108	112	109	113	115
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	215	221	219	223	226
5. IRON AND FERROALLOY ORES MINING	28	30	30	29	29
6. NONFERROUS METAL ORES MINING	54	56	58	52	57
7. COAL MINING	155	149	145	147	141
8. CRUDE PETROLEUM AND NATURAL GAS	311	308	305	298	298
9,10. NONMETALLIC MINING AND QUARRYING	121	124	125	123	121
11,12. CONSTRUCTION	3,844	3,994	4,075	3,981	4,050
13. ORDNANCE AND ACCESSORIES	244	226	261	317	342
14. FOOD AND KINDRED PRODUCTS	1,787	1,798	1,817	1,816	1,811
15. TOBACCO MANUFACTURES	90	87	84	87	84
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	572	584	609	605	614
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	108	115	122	124	132
18. APPAREL	1,391	1,450	1,495	1,483	1,502
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	155	162	170	173	178
20,21. LUMBER AND WOOD PRODUCTS	694	698	706	675	676
22. HOUSEHOLD FURNITURE	310	325	344	334	351
23. OTHER FURNITURE AND FIXTURES	120	129	141	143	145
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	433	440	459	466	471
25. PAPERBOARD CONTAINERS AND BOXES	193	200	209	214	222
26. PRINTING AND PUBLISHING	1,026	1,057	1,091	1,113	1,128
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	406	411	438	468	473
28. PLASTICS AND SYNTHETIC MATERIALS	183	194	206	205	216
29. DRUGS,CLEANING AND TOILET PREPARATIONS	224	234	247	259	265
30. PAINTS AND ALLIED PRODUCTS	64	66	67	68	70
31. PETROLEUM REFINING AND RELATED INDUSTRIES	184	183	184	183	187
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	439	474	514	519	560
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	34	35	34	33	33
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	316	320	332	320	325
35. GLASS AND GLASS PRODUCTS	165	172	180	177	188
36. STONE AND CLAY PRODUCTS	465	474	481	465	463
37. PRIMARY IRON AND STEEL MANUFACTURING	896	941	957	936	931
38. PRIMARY NONFERROUS METALS MANUFACTURING	344	367	402	394	391
39. METAL CONTAINERS	72	71	77	78	78
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	447	466	490	497	507
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	293	323	347	350	363
42. OTHER FABRICATED METAL PRODUCTS	399	428	456	462	469
43. ENGINES AND TURBINES	87	91	99	104	110
44. FARM MACHINERY AND EQUIPMENT	130	139	151	153	145
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	164	177	191	188	192
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	72	79	87	88	89
47. METALWORKING MACHINERY AND EQUIPMENT	298	318	351	367	358
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	184	196	208	208	201
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	249	266	290	295	285
50. MACHINE SHOP PRODUCTS	194	212	235	247	249
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	173	191	218	239	245
52. SERVICE INDUSTRY MACHINES	106	114	125	129	135
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	340	362	404	418	417
54. HOUSEHOLD APPLIANCES	161	165	180	175	178
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	162	177	200	204	206
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	527	550	629	657	676
57. ELECTRONIC COMPONENTS AND ACCESSORIES	265	307	389	385	388
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	94	101	111	114	121
59. MOTOR VEHICLES AND EQUIPMENT	755	844	863	817	871
60. AIRCRAFT AND PARTS	606	625	754	836	852
61. OTHER TRANSPORTATION EQUIPMENT	249	276	306	302	311
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	254	262	288	299	304
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	120	130	146	155	159
64. MISCELLANEOUS MANUFACTURING	420	442	457	452	458
65. TRANSPORTATION AND WAREHOUSING	2,679	2,727	2,791	2,841	2,868
66. COMMUNICATIONS,EXCEPT BROADCASTING	747	776	816	852	865
67. RADIO AND TELEVISION BROADCASTING	105	110	117	123	126
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	627	637	643	654	665
69. WHOLESALE AND RETAIL TRADE	14,780	15,352	15,810	16,160	16,604
70. FINANCE AND INSURANCE	2,542	2,598	2,671	2,781	2,916
71. REAL ESTATE AND RENTAL	751	769	782	798	810
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	2,714	2,752	2,814	2,851	2,880
73,74. BUSINESS SERVICES,RESEARCH AND DEVELOPMENT	2,181	2,303	2,461	2,633	2,777
75. AUTOMOBILE REPAIR AND SERVICES	493	501	508	529	536
76. AMUSEMENTS	695	708	722	758	768
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	4,676	4,854	5,112	5,423	5,717
78. FEDERAL GOVERNMENT ENTERPRISES[2]					
79. STATE AND LOCAL GOVERNMENT ENTERPRISES[2]					
84. TOTAL GOVERNMENT[2]	9,596	10,091	10,871	11,398	11,846
TOTAL FEDERAL GOVERNMENT[2]	2,348	2,377	2,564	2,719	2,737
TOTAL STATE AND LOCAL GOVERNMENT[2]	7,249	7,714	8,307	8,679	9,109
86. HOUSEHOLD INDUSTRY	2,683	2,604	2,559	2,484	2,435
TOTAL	72,290	74,569	77,308	78,906	80,788

See footnotes on p. 130.

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TABLE D-10. CIVILIAN EMPLOYMENT[1] BY INDUSTRY 1958 TO 1968 AND PROJECTED 1980'S—Continued

(Thousands)

Industry number and title	1980			
	3 percent basic model[4]	3 percent high durable[4]	4 percent basic model[4]	4 percent high durable[4]
1,2. AGRICULTURE	2,800	2,800	2,772	2,772
3. FORESTRY AND FISHERY PRODUCTS	131	132	129	131
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	257	260	255	257
5. IRON AND FERROALLOY ORES MINING	26	28	26	28
6. NONFERROUS METAL ORES MINING	61	62	60	61
7. COAL MINING	99	99	98	97
8. CRUDE PETROLEUM AND NATURAL GAS	269	263	264	260
9,10. NONMETALLIC MINING AND QUARRYING	135	137	134	136
11,12. CONSTRUCTION	5,482	5,595	5,427	5,539
13. ORDNANCE AND ACCESSORIES	250	351	247	347
14. FOOD AND KINDRED PRODUCTS	1,799	1,735	1,781	1,718
15. TOBACCO MANUFACTURES	65	63	64	62
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	551	541	545	536
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	121	124	120	123
18. APPAREL	1,780	1,727	1,762	1,710
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	203	198	201	196
20,21. LUMBER AND WOOD PRODUCTS	685	702	678	695
22. HOUSEHOLD FURNITURE	432	448	428	444
23. OTHER FURNITURE AND FIXTURES	208	208	206	206
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	556	551	550	545
25. PAPERBOARD CONTAINERS AND BOXES	245	244	243	242
26. PRINTING AND PUBLISHING	1,322	1,307	1,309	1,294
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	501	498	496	493
28. PLASTICS AND SYNTHETIC MATERIALS	275	277	272	274
29. DRUGS,CLEANING AND TOILET PREPARATIONS	336	321	333	318
30. PAINTS AND ALLIED PRODUCTS	75	76	74	75
31. PETROLEUM REFINING AND RELATED INDUSTRIES	155	152	153	150
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	763	777	755	769
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	25	25	25	25
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	312	302	309	299
35. GLASS AND GLASS PRODUCTS	218	221	216	219
36. STONE AND CLAY PRODUCTS	591	609	585	603
37. PRIMARY IRON AND STEEL MANUFACTURING	851	891	842	882
38. PRIMARY NONFERROUS METALS MANUFACTURING	492	522	487	517
39. METAL CONTAINERS	80	78	79	77
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	618	641	612	634
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	405	425	401	421
42. OTHER FABRICATED METAL PRODUCTS	535	553	530	547
43. ENGINES AND TURBINES	120	128	119	127
44. FARM MACHINERY AND EQUIPMENT	173	180	171	178
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	220	230	218	228
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	125	132	124	131
47. METALWORKING MACHINERY AND EQUIPMENT	395	429	391	425
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	248	262	246	259
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	326	353	323	349
50. MACHINE SHOP PRODUCTS	308	333	305	330
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	400	433	396	428
52. SERVICE INDUSTRY MACHINES	180	190	178	188
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	480	523	475	518
54. HOUSEHOLD APPLIANCES	210	219	208	217
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	249	260	247	257
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	760	855	752	846
57. ELECTRONIC COMPONENTS AND ACCESSORIES	505	563	500	557
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	130	134	129	133
59. MOTOR VEHICLES AND EQUIPMENT	901	933	892	923
60. AIRCRAFT AND PARTS	761	1,017	753	1,006
61. OTHER TRANSPORTATION EQUIPMENT	352	393	348	389
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	373	411	369	407
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	180	183	178	181
64. MISCELLANEOUS MANUFACTURING	513	512	509	507
65. TRANSPORTATION AND WAREHOUSING	3,117	3,126	3,086	3,095
66. COMMUNICATIONS,EXCEPT BROADCASTING	972	959	962	949
67. RADIO AND TELEVISION BROADCASTING	163	164	161	162
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	724	712	717	705
69. WHOLESALE AND RETAIL TRADE	20,487	20,501	20,282	20,296
70. FINANCE AND INSURANCE	3,690	3,607	3,653	3,571
71. REAL ESTATE AND RENTAL	949	931	940	922
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	3,621	3,509	3,584	3,473
73,74. BUSINESS SERVICES,RESEARCH AND DEVELOPMENT	4,539	4,579	4,495	4,534
75. AUTOMOBILE REPAIR AND SERVICES	664	652	657	645
76. AMUSEMENTS	998	956	988	946
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	8,458	8,089	8,373	8,009
78. FEDERAL GOVERNMENT ENTERPRISES[2]				
79. STATE AND LOCAL GOVERNMENT ENTERPRISES[2]				
84. TOTAL GOVERNMENT[2]	16,800	16,200	16,632	16,038
TOTAL FEDERAL GOVERNMENT[2]	3,000	3,000	2,970	2,970
TOTAL STATE AND LOCAL GOVERNMENT[2]	13,800	13,200	13,662	13,068
86. HOUSEHOLD INDUSTRY	2,800	2,800	2,770	2,770
TOTAL	99,600	99,400	98,600	98,400

See footnotes on p. 130.

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TABLE D-11. CIVILIAN EMPLOYMENT[1] [2] BY INDUSTRY

(Average annual rates of change)

Industry number and title	1959 to 1965	1965 to 1967	1965 to 1980			
			3 percent basic[3] model	3 percent high[3] durable	4 percent basic[3] model	4 percent high[3] durable
1,2. AGRICULTURE	-3.9	-5.7	-2.9	-2.9	-2.9	-2.9
3,4. AGRICULTURAL SERVICES,FORESTRY AND FISHERY	1.6	.4	1.0	1.1	1.0	1.0
5. IRON AND FERROALLOY ORES MINING	-1.6	-1.7	-1.0	-.5	-1.0	-.5
6. NONFERROUS METAL ORES MINING	1.2	-3.7	.6	.7	.5	.6
7. COAL MINING	-5.3	-.7	-2.7	-2.7	-2.7	-2.8
8. CRUDE PETROLEUM AND NATURAL GAS	-2.2	-1.7	-.9	-1.1	-1.0	-1.1
9,10. NONMETALLIC MINING AND QUARRYING	-.1	.4	.6	.7	.5	.6
11,12. CONSTRUCTION	1.2	-.2	2.1	2.3	2.1	2.2
13. ORDNANCE AND ACCESSORIES	1.7	18.4	.7	3.0	.6	2.9
14. FOOD AND KINDRED PRODUCTS	-.3	.5	.0	-.2	-1.0	-.3
15. TOBACCO MANUFACTURES	-1.3	.0	-2.0	-2.2	-2.0	-2.2
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	-1.0	1.8	-.4	-.5	-.5	-.6
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.3	3.8	.3	.5	.3	.4
18. APPAREL	1.3	1.1	1.4	1.2	1.3	1.1
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	2.7	3.3	1.5	1.3	1.4	1.3
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	-1.1	-2.1	.0	.2	.0	.1
21. WOODEN CONTAINERS	-3.5	5.1	-3.6	-3.6	-3.6	-3.6
22. HOUSEHOLD FURNITURE	1.9	1.4	1.9	2.2	1.9	2.1
23. OTHER FURNITURE AND FIXTURES	1.9	5.3	3.2	3.2	3.2	3.2
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	1.0	2.9	1.6	1.5	1.5	1.4
25. PAPERBOARD CONTAINERS AND BOXES	2.3	3.4	1.4	1.3	1.3	1.3
26. PRINTING AND PUBLISHING	1.6	2.6	1.5	1.4	1.4	1.4
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.7	6.7	1.3	1.3	1.3	1.2
28. PLASTICS AND SYNTHETIC MATERIALS	4.5	2.8	2.4	2.4	2.3	2.3
29. DRUGS,CLEANING AND TOILET PREPARATIONS	2.4	5.0	2.4	2.1	2.4	2.1
30. PAINTS AND ALLIED PRODUCTS	1.1	1.5	.9	.9	.8	.9
31. PETROLEUM REFINING AND RELATED INDUSTRIES	-2.7	.0	-1.1	-1.2	-1.2	-1.3
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	2.4	4.6	3.2	3.3	3.2	3.3
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	-2.2	-2.9	-2.2	-2.2	-2.2	-2.2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	-.8	.0	-.2	-.4	-.2	-.5
35. GLASS AND GLASS PRODUCTS	1.9	1.4	1.6	1.7	1.5	1.6
36. STONE AND CLAY PRODUCTS	.3	-1.0	1.5	1.7	1.4	1.6
37. PRIMARY IRON AND STEEL MANUFACTURING	1.6	.3	-.7	-.4	-.7	-.4
38. PRIMARY NONFERROUS METALS MANUFACTURING	1.7	3.6	2.0	2.4	1.9	2.3
39. METAL CONTAINERS	.2	4.8	.8	.6	.7	.5
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	1.6	3.3	1.9	2.1	1.8	2.1
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	2.4	4.1	1.5	1.8	1.5	1.8
42. OTHER FABRICATED METAL PRODUCTS	2.6	3.9	1.5	1.7	1.4	1.6
43. ENGINES AND TURBINES	.2	6.9	1.9	2.3	1.8	2.2
44. FARM MACHINERY AND EQUIPMENT	1.8	4.9	1.5	1.7	1.4	1.7
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	1.5	3.1	1.5	1.8	1.4	1.7
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	3.8	5.5	3.1	3.5	3.1	3.4
47. METALWORKING MACHINERY AND EQUIPMENT	3.6	7.4	1.5	1.8	1.4	1.9
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	2.7	3.0	1.6	2.0	1.5	1.9
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	2.7	5.3	1.4	1.9	1.3	1.8
50. MACHINE SHOP PRODUCTS	4.0	7.9	2.5	3.1	2.5	3.0
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	5.6	11.9	5.1	5.6	5.0	5.5
52. SERVICE INDUSTRY MACHINES	2.7	6.4	3.1	3.5	3.0	3.4
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	1.5	7.5	1.9	1.9	1.8	2.4
54. HOUSEHOLD APPLIANCES	.8	3.0	1.6	1.9	1.6	1.8
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	4.4	7.4	2.3	2.6	2.2	2.5
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	3.3	10.1	2.2	3.0	2.1	2.9
57. ELECTRONIC COMPONENTS AND ACCESSORIES	6.3	12.0	3.4	4.1	3.3	4.1
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	-.8	6.3	1.7	1.9	1.6	1.9
59. MOTOR VEHICLES AND EQUIPMENT	3.3	-1.6	.4	.7	.4	.6
60. AIRCRAFT AND PARTS	-2.3	15.7	1.3	3.3	1.3	3.2
61. OTHER TRANSPORTATION EQUIPMENT	3.6	4.6	1.6	2.4	1.6	2.3
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	1.4	6.8	2.4	3.1	2.3	3.0
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	3.3	9.2	2.2	2.3	2.1	2.2
64. MISCELLANEOUS MANUFACTURING	1.2	1.1	1.0	1.0	.9	.9
65. TRANSPORTATION AND WAREHOUSING	-.2	2.1	.9	.9	.8	.8
66. COMMUNICATIONS,EXCEPT BROADCASTING	.6	4.8	1.5	1.4	1.4	1.4
67. RADIO AND TELEVISION BROADCASTING	3.2	5.7	2.7	2.7	2.6	2.6
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.3	1.3	.9	.7	.8	.7
69. WHOLESALE AND RETAIL TRADE	1.6	2.6	1.9	1.9	1.9	1.9
70. FINANCE AND INSURANCE	2.8	3.4	2.4	2.2	2.3	2.1
71. REAL ESTATE AND RENTAL	1.6	1.2	1.4	1.3	1.3	1.2
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	2.3	1.8	1.8	1.6	1.8	1.6
73,74. BUSINESS SERVICES,RESEARCH AND DEVELOPMENT	5.5	6.9	4.6	4.7	4.6	4.6
75. AUTOMOBILE REPAIR AND SERVICES	4.3	2.8	1.9	1.8	1.8	1.7
76. AMUSEMENTS	2.1	3.5	2.3	2.0	2.2	1.9
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	4.1	5.7	3.8	3.5	3.7	3.4
78. FEDERAL GOVERNMENT ENTERPRISES[4]						
79. STATE AND LOCAL GOVERNMENT ENTERPRISES[4]						
84. TOTAL GOVERNMENT[4]	3.8	6.3	3.5	3.2	3.4	3.1
TOTAL FEDERAL GOVERNMENT[4]	1.0	7.0	1.6	1.6	1.5	1.5
TOTAL STATE AND LOCAL GOVERNMENT[4]	4.7	6.1	4.0	3.6	3.9	3.6
86. HOUSEHOLD INDUSTRY	.2	-2.4	.5	.5	.4	.4
TOTAL	1.6	2.9	1.9	1.9	1.9	1.9

See footnotes on p. 130.

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TABLE D-12. WAGE AND SALARY EMPLOYMENT BY INDUSTRY 1958 TO 1968 AND PROJECTED 1980'S

(Thousands)

Industry number and title	1958	1959	1960	1961	1962	1963
1,2. AGRICULTURE[1]	5,540	5,519	5,389	5,142	4,937	4,712
3. FORESTRY AND FISHERY PRODUCTS	57	55	58	59	62	62
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	113	109	113	117	123	121
5. IRON AND FERROALLOY ORES MINING	35	32	37	30	27	27
6. NONFERROUS METAL ORES MINING.	58	51	57	57	55	53
7. COAL MINING	215	198	186	161	152	140
8. CRUDE PETROLEUM AND NATURAL GAS	328	330	309	303	298	289
9,10. NONMETALLIC MINING AND QUARRYING	115	120	123	120	118	117
11,12. CONSTRUCTION	2,778	2,960	2,885	2,816	2,902	2,963
13. ORDNANCE AND ACCESSORIES.	158	204	220	244	264	266
14. FOOD AND KINDRED PRODUCTS	1,773	1,790	1,790	1,775	1,763	1,752
15. TOBACCO MANUFACTURES.	95	94	94	91	90	89
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	608	615	601	578	579	568
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	104	111	108	102	104	104
18. APPAREL	1,256	1,312	1,312	1,291	1,340	1,349
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	126	137	140	141	146	150
20,21. LUMBER AND WOOD PRODUCTS	615	659	627	583	590	593
22. HOUSEHOLD FURNITURE	260	278	272	262	275	279
23. OTHER FURNITURE AND FIXTURES.	101	107	111	106	110	111
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	399	413	424	423	428	429
25. PAPERBOARD CONTAINERS AND BOXES	165	174	177	178	187	190
26. PRINTING AND PUBLISHING	873	888	911	917	926	931
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	389	392	397	395	400	403
28. PLASTICS AND SYNTHETIC MATERIALS.	143	149	155	154	165	175
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	197	202	208	212	216	219
30. PAINTS AND ALLIED PRODUCTS.	61	62	63	62	63	63
31. PETROLEUM REFINING AND RELATED INDUSTRIES	224	216	212	202	195	189
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	344	373	379	375	408	418
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	41	40	37	37	36	34
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	318	334	326	321	325	315
35. GLASS AND GLASS PRODUCTS.	142	152	157	154	158	160
36. STONE AND CLAY PRODUCTS	421	452	447	428	435	441
37. PRIMARY IRON AND STEEL MANUFACTURING.	846	856	910	832	840	841
38. PRIMARY NONFERROUS METALS MANUFACTURING	312	331	326	316	331	336
39. METAL CONTAINERS.	70	70	71	69	70	70
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	421	414	417	406	407	416
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	249	276	283	259	278	283
42. OTHER FABRICATED METAL PRODUCTS	337	362	364	351	373	381
43. ENGINES AND TURBINES.	90	90	86	79	84	85
44. FARM MACHINERY AND EQUIPMENT.	113	122	112	109	112	120
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	145	162	157	142	149	152
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	61	63	64	59	62	65
47. METALWORKING MACHINERY AND EQUIPMENT.	231	245	261	247	259	267
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	161	164	168	162	171	172
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	204	221	227	217	229	234
50. MACHINE SHOP PRODUCTS	136	149	158	156	167	169
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	133	138	146	152	159	163
52. SERVICE INDUSTRY MACHINES	90	97	100	95	101	102
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	304	332	344	339	350	339
54. HOUSEHOLD APPLIANCES.	148	157	155	148	150	156
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	121	134	138	136	143	150
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	400	453	489	508	555	549
57. ELECTRONIC COMPONENTS AND ACCESSORIES	179	213	234	243	246	262
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	97	106	107	100	103	99
59. MOTOR VEHICLES AND EQUIPMENT.	606	692	724	632	692	741
60. AIRCRAFT AND PARTS.	771	721	628	610	638	639
61. OTHER TRANSPORTATION EQUIPMENT.	217	222	217	207	217	229
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	221	239	244	238	246	250
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	103	107	110	109	112	115
64. MISCELLANEOUS MANUFACTURING	370	385	387	375	387	384
65. TRANSPORTATION AND WAREHOUSING.	2,506	2,562	2,549	2,460	2,472	2,469
66. COMMUNICATIONS,EXCEPT BROADCASTING.	773	748	748	735	729	725
67. RADIO AND TELEVISION BROADCASTING	87	89	92	94	95	99
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	610	612	615	614	610	610
69. WHOLESALE AND RETAIL TRADE.	10,750	11,127	11,391	11,337	11,566	11,778
70. FINANCE AND INSURANCE	2,012	2,074	2,152	2,217	2,270	2,334
71. REAL ESTATE AND RENTAL.	507	520	517	514	530	543
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	1,559	1,597	1,626	1,648	1,686	1,707
73,74. BUSINESS SERVICES,RESEARCH AND DEVELOPMENT	1,143	1,241	1,321	1,387	1,501	1,582
75. AUTOMOBILE REPAIR AND SERVICES.	239	257	275	276	289	308
76. AMUSEMENTS.	510	528	534	552	562	566
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	3,185	3,343	3,496	3,625	3,805	3,979
78. FEDERAL GOVERNMENT ENTERPRISES[2]						
79. STATE AND LOCAL GOVERNMENT ENTERPRISES[2]						
84. TOTAL GOVERNMENT[2]	7,839	8,083	8,353	8,594	8,890	9,225
TOTAL FEDERAL GOVERNMENT[2]	2,191	2,233	2,270	2,279	2,340	2,358
TOTAL STATE AND LOCAL GOVERNMENT[2]	5,648	5,850	6,083	6,315	6,550	6,868
86. HOUSEHOLD INDUSTRY.	2,550	2,575	2,554	2,656	2,694	2,656
TOTAL	59,458	61,405	62,175	61,841	63,227	64,072

See footnotes on p. 130.

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TABLE D-12. WAGE AND SALARY EMPLOYMENT BY INDUSTRY 1958 TO 1968 AND PROJECTED 1980'S—Continued

(Thousands)

Industry number and title	1964	1965	1966	1967	1968
1,2. AGRICULTURE	4,521	4,338	3,963	3,860	3,811
3. FORESTRY AND FISHERY PRODUCTS	62	64	63	65	68
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	121	126	124	127	133
5. IRON AND FERROALLOY ORES MINING	27	29	29	28	28
6. NONFERROUS METAL ORES MINING	53	55	57	51	56
7. COAL MINING	147	141	137	139	133
8. CRUDE PETROLEUM AND NATURAL GAS	291	287	282	276	276
9,10. NONMETALLIC MINING AND QUARRYING	116	120	121	119	117
11,12. CONSTRUCTION	3,050	3,186	3,275	3,208	3,267
13. ORDNANCE AND ACCESSORIES	244	226	261	317	342
14. FOOD AND KINDRED PRODUCTS	1,750	1,757	1,777	1,786	1,781
15. TOBACCO MANUFACTURES	90	87	84	87	84
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	571	583	608	604	613
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	107	114	121	123	131
18. APPAREL	1,365	1,425	1,471	1,461	1,480
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	154	161	169	172	177
20,21. LUMBER AND WOOD PRODUCTS	604	607	614	597	598
22. HOUSEHOLD FURNITURE	293	309	328	319	335
23. OTHER FURNITURE AND FIXTURES	113	122	134	136	138
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	432	439	458	465	470
25. PAPERBOARD CONTAINERS AND BOXES	193	200	209	214	222
26. PRINTING AND PUBLISHING	952	979	1,017	1,048	1,063
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	405	410	437	466	471
28. PLASTICS AND SYNTHETIC MATERIALS	182	194	206	205	216
29. DRUGS,CLEANING AND TOILET PREPARATIONS	223	233	246	257	264
30. PAINTS AND ALLIED PRODUCTS	64	66	67	68	70
31. PETROLEUM REFINING AND RELATED INDUSTRIES	184	183	184	183	187
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	436	471	511	516	557
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	34	35	34	33	33
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	314	318	330	318	323
35. GLASS AND GLASS PRODUCTS	163	169	178	175	176
36. STONE AND CLAY PRODUCTS	451	459	466	453	451
37. PRIMARY IRON AND STEEL MANUFACTURING	895	940	956	935	930
38. PRIMARY NONFERROUS METALS MANUFACTURING	343	366	400	392	389
39. METAL CONTAINERS	72	71	77	78	78
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	435	455	479	483	494
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	289	319	343	344	357
42. OTHER FABRICATED METAL PRODUCTS	394	424	452	458	465
43. ENGINES AND TURBINES	87	91	99	104	110
44. FARM MACHINERY AND EQUIPMENT	127	136	148	149	141
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	164	177	191	188	192
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	72	79	87	88	89
47. METALWORKING MACHINERY AND EQUIPMENT	283	304	337	352	343
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	181	193	205	205	198
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	243	261	285	290	280
50. MACHINE SHOP PRODUCTS	173	189	215	225	227
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	173	191	218	239	245
52. SERVICE INDUSTRY MACHINES	106	114	125	129	135
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	340	362	404	418	417
54. HOUSEHOLD APPLIANCES	161	165	180	175	178
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	158	173	196	200	202
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	527	550	629	667	676
57. ELECTRONIC COMPONENTS AND ACCESSORIES	265	307	389	385	388
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	94	101	111	114	121
59. MOTOR VEHICLES AND EQUIPMENT	753	843	862	816	870
60. AIRCRAFT AND PARTS	605	624	753	834	850
61. OTHER TRANSPORTATION EQUIPMENT	246	274	303	299	308
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	250	259	285	296	301
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	120	130	146	155	159
64. MISCELLANEOUS MANUFACTURING	395	417	431	426	432
65. TRANSPORTATION AND WAREHOUSING	2,488	2,532	2,593	2,649	2,675
66. COMMUNICATIONS,EXCEPT BROADCASTING	745	774	814	850	863
67. RADIO AND TELEVISION BROADCASTING	103	107	114	120	123
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	615	623	630	642	653
69. WHOLESALE AND RETAIL TRADE	12,160	12,716	13,245	13,606	14,081
70. FINANCE AND INSURANCE	2,401	2,454	2,526	2,638	2,774
71. REAL ESTATE AND RENTAL	556	569	574	587	609
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	1,768	1,817	1,868	1,919	1,949
73,74. BUSINESS SERVICES,RESEARCH AND DEVELOPMENT	1,690	1,808	1,961	2,101	2,246
75. AUTOMOBILE REPAIR AND SERVICES	322	336	343	353	360
76. AMUSEMENTS	575	591	601	626	636
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	4,171	4,345	4,591	4,908	5,201
78. FEDERAL GOVERNMENT ENTERPRISES[2]					
79. STATE AND LOCAL GOVERNMENT ENTERPRISES[2]					
84. TOTAL GOVERNMENT[2]	9,596	10,091	10,871	11,398	11,846
TOTAL FEDERAL GOVERNMENT[2]	2,348	2,378	2,564	2,719	2,737
TOTAL STATE AND LOCAL GOVERNMENT[2]	7,249	7,714	8,307	8,679	9,109
86. HOUSEHOLD INDUSTRY	2,683	2,604	2,558	2,484	2,435
TOTAL	65,536	67,775	70,557	72,201	74,108

See footnotes on p. 130.

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TABLE D-12. WAGE AND SALARY EMPLOYMENT BY INDUSTRY 1958 TO 1968 AND PROJECTED 1980'S—Continued

(Thousands)

Industry number and title	1980			
	3 percent basic model[3]	3 percent high durable[3]	4 percent basic model[3]	4 percent high durable[3]
1,2. AGRICULTURE	2,800	2,800	2,772	2,772
3. FORESTRY AND FISHERY PRODUCTS	78	79	77	78
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	152	155	151	154
5. IRON AND FERROALLOY ORES MINING	25	27	25	27
6. NONFERROUS METAL ORES MINING	60	61	59	60
7. COAL MINING	90	89	89	88
8. CRUDE PETROLEUM AND NATURAL GAS	245	239	242	236
9,10. NONMETALLIC MINING AND QUARRYING	130	132	129	131
11,12. CONSTRUCTION	4,600	4,713	4,553	4,665
13. ORDNANCE AND ACCESSORIES	250	351	247	347
14. FOOD AND KINDRED PRODUCTS	1,755	1,691	1,737	1,674
15. TOBACCO MANUFACTURES	65	63	64	62
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	550	540	544	535
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	120	123	119	122
18. APPAREL	1,753	1,700	1,735	1,683
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	202	197	200	195
20,21. LUMBER AND WOOD PRODUCTS	585	602	579	596
22. HOUSEHOLD FURNITURE	415	431	411	427
23. OTHER FURNITURE AND FIXTURES	200	200	198	198
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	555	550	549	544
25. PAPERBOARD CONTAINERS AND BOXES	245	244	243	242
26. PRINTING AND PUBLISHING	1,240	1,225	1,228	1,213
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	500	497	495	492
28. PLASTICS AND SYNTHETIC MATERIALS	275	277	272	274
29. DRUGS,CLEANING AND TOILET PREPARATIONS	335	320	332	317
30. PAINTS AND ALLIED PRODUCTS	75	76	74	75
31. PETROLEUM REFINING AND RELATED INDUSTRIES	155	152	153	150
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	760	774	752	766
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	25	25	25	25
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	310	300	307	297
35. GLASS AND GLASS PRODUCTS	215	218	213	216
36. STONE AND CLAY PRODUCTS	575	593	569	587
37. PRIMARY IRON AND STEEL MANUFACTURING	850	890	841	881
38. PRIMARY NONFERROUS METALS MANUFACTURING	490	520	485	515
39. METAL CONTAINERS	80	78	79	77
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	605	628	599	621
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	400	420	396	416
42. OTHER FABRICATED METAL PRODUCTS	530	548	525	542
43. ENGINES AND TURBINES	120	128	119	127
44. FARM MACHINERY AND EQUIPMENT	170	177	168	175
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	220	230	218	228
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	125	132	124	131
47. METALWORKING MACHINERY AND EQUIPMENT	380	414	376	410
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	245	259	243	256
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	320	347	317	343
50. MACHINE SHOP PRODUCTS	285	310	282	307
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	400	433	396	428
52. SERVICE INDUSTRY MACHINES	180	190	178	188
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	480	523	475	518
54. HOUSEHOLD APPLIANCES	210	219	208	217
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	245	256	243	253
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	760	855	752	846
57. ELECTRONIC COMPONENTS AND ACCESSORIES	505	563	500	557
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	130	134	129	133
59. MOTOR VEHICLES AND EQUIPMENT	900	932	891	922
60. AIRCRAFT AND PARTS	760	1,016	752	1,005
61. OTHER TRANSPORTATION EQUIPMENT	350	391	346	387
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	370	408	366	404
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	180	183	178	181
64. MISCELLANEOUS MANUFACTURING	485	484	480	479
65. TRANSPORTATION AND WAREHOUSING	2,900	2,909	2,871	2,880
66. COMMUNICATIONS,EXCEPT BROADCASTING	970	957	960	947
67. RADIO AND TELEVISION BROADCASTING	160	161	158	159
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	710	698	703	691
69. WHOLESALE AND RETAIL TRADE	17,625	17,639	17,450	17,464
70. FINANCE AND INSURANCE	3,530	3,447	3,494	3,412
71. REAL ESTATE AND RENTAL	730	712	723	705
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	2,600	2,488	2,575	2,464
73,74. BUSINESS SERVICES,RESEARCH AND DEVELOPMENT	4,005	4,045	3,967	4,006
75. AUTOMOBILE REPAIR AND SERVICES	485	473	480	468
76. AMUSEMENTS	870	828	861	819
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	7,900	7,531	7,821	7,456
78. FEDERAL GOVERNMENT ENTERPRISES[2]				
79. STATE AND LOCAL GOVERNMENT ENTERPRISES[2]				
84. TOTAL GOVERNMENT[2]	16,800	16,200	16,632	16,038
TOTAL FEDERAL GOVERNMENT[2]	3,000	3,000	2,970	2,970
TOTAL STATE AND LOCAL GOVERNMENT[2]	13,800	13,200	13,662	13,068
86. HOUSEHOLD INDUSTRY	2,800	2,800	2,770	2,770
TOTAL	92,200	92,000	91,274	91,074

See footnotes on p. 130.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Livestock and livestock products	Other agricultural products	Forestry and fishery products	Agricultural, forestry and fishery services	Iron and ferroalloy ores mining	Nonferrous metal ores mining	Coal mining
	1	2	3	4	5	6	7
1. LIVESTOCK AND LIVESTOCK PRODUCTS	.1709140	.0797160	.0402940	.1482060	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	.2595610	.0197580	.0882770	.3476560	-	-	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	.0085320	-	-	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	.0173280	.0274190	.0098230	.0004220	-	-	-
5. IRON AND FERROALLOY ORES MINING	-	-	-	-	.0793930	.0098590	-
6. NONFERROUS METAL ORES MINING	-	-	-	-	.0303980	.1604170	-
7. COAL MINING	.0002340	.0000250	-	-	.0037040	.0010170	.1193040
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	.0000280	.0028830	-	.0000010	-	.0000560	.0005150
10. CHEMICAL AND FERTILIZER MINERAL MINING	-	.0013550	.0000370	-	-	.0009460	.0000240
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0047810	.0073940	.0001750	.0012430	.0004960	.0009200	.0008610
13. ORDNANCE AND ACCESSORIES	-	-	-	-	-	-	-
14. FOOD AND KINDRED PRODUCTS	.1267000	.0001210	.0133060	.0047540	-	-	-
15. TOBACCO MANUFACTURES	-	-	-	-	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	-	.0003050	-	-	.0001150	.0014090	.0006650
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.0002300	.0011980	.0066200	.0039790	-	-	-
18. APPAREL	-	-	-	-	-	-	-
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0002840	.0013610	-	-	-	-	-
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.0000710	.0000680	-	-	.0045970	.0006470	.0068250
21. WOODEN CONTAINERS	-	.0019070	-	.0000210	-	-	-
22. HOUSEHOLD FURNITURE	-	-	-	-	-	-	-
23. OTHER FURNITURE AND FIXTURES	-	-	-	-	-	-	-
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	-	-	.0044450	.0012570	.0000210	.0003980	.0022980
25. PAPERBOARD CONTAINERS AND BOXES	.0005300	.0001130	.0051520	.0039450	-	-	.0005460
26. PRINTING AND PUBLISHING	.0001910	.0003170	.0000520	.0000160	.0000360	.0003170	.0002700
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0019820	.0939490	.0041330	.0002090	.0101980	.0382590	.0008320
28. PLASTICS AND SYNTHETIC MATERIALS	-	-	-	-	-	-	-
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0023300	-	-	.0000340	.0000050	.0000880	-
30. PAINTS AND ALLIED PRODUCTS	-	-	.0010560	-	.0000080	.0001620	.0003340
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0013730	.0270400	.0112470	.0016740	.0078850	.0074030	.0091250
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0020270	.0254430	.0047160	.0002350	.0011070	.0029620	.0182360
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	-	-	-	-	-	-	-
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000280	.0001350	.0000070	.0000010	.0000020	.0000030	.0000030
35. GLASS AND GLASS PRODUCTS	.0001270	-	-	-	-	-	-
36. STONE AND CLAY PRODUCTS	.0000400	.0010800	-	-	.0049540	.0094690	.0022750
37. PRIMARY IRON AND STEEL MANUFACTURING	-	-	-	-	.0112860	.0313080	.0050170
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0000360	.0000330	-	-	.0013950	.0081790	.0059410
39. METAL CONTAINERS	.0001910	.0004970	-	-	-	-	-
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	-	-	-	-	.0009100	.0003670	.0003800
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0007180	-	-	-	.0001910	.0003990	.0049420
42. OTHER FABRICATED METAL PRODUCTS	.0010880	.0016500	.0003770	.0057090	.0006590	.0010400	.0050510
43. ENGINES AND TURBINES	-	-	.0000660	-	.0002790	.0003850	-
44. FARM MACHINERY AND EQUIPMENT	.0003860	.0056320	-	-	-	-	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	-	-	-	-	.0167790	.0234710	.0330540
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	-	-	-	-	.0000650	.0003830	.0059190
47. METALWORKING MACHINERY AND EQUIPMENT	-	-	-	-	.0000600	.0005460	.0034990
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	-	-	-	-	-	.0000050	-
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	-	-	-	-	.0003520	.0019050	.0018190
50. MACHINE SHOP PRODUCTS	.0001050	.0001730	-	-	.0000670	.0001070	.0002970
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	-	-	-	-	-	-	-
52. SERVICE INDUSTRY MACHINES	-	-	-	-	-	-	-
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	-	-	-	-	.0006160	.0038550	.0064220
54. HOUSEHOLD APPLIANCES	-	-	-	-	-	-	-
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0000640	.0000450	.0000590	-	.0003010	.0004120	.0015830
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	.0000030	-	-	-	.0009380	-	-
57. ELECTRONIC COMPONENTS AND ACCESSORIES	-	-	-	-	-	-	-
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0003020	.0009800	-	-	.0001930	.0001420	.0001060
59. MOTOR VEHICLES AND EQUIPMENT	.0008310	.0013570	-	-	.0023830	.0007850	.0021070
60. AIRCRAFT AND PARTS	-	-	-	-	-	-	-
61. OTHER TRANSPORTATION EQUIPMENT	-	.0001060	.0090620	-	.0015290	-	.0034060
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	-	-	-	-	.0001640	.0003590	.0000560
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	-	-	-	-	.0000450	.0000540	.0000150
64. MISCELLANEOUS MANUFACTURING	.0000440	.0000210	.0012920	.0003350	.0000090	.0000050	.0014750
65. TRANSPORTATION AND WAREHOUSING	.0139570	.0089300	.0095830	.0059320	.0856290	.0236870	.0035300
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0024840	.0038470	.0021760	.0051470	.0015870	.0019600	.0009340
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0067110	.0148240	.0002600	.0007750	.0663780	.0718510	.0517250
69. WHOLESALE AND RETAIL TRADE	.0379610	.0571410	.0135930	.0019520	.0125540	.0256650	.0317930
70. FINANCE AND INSURANCE	.0079390	.0109820	.0155900	.0032180	.0045050	.0127330	.0095670
71. REAL ESTATE AND RENTAL	.0072730	.0523710	.0197220	.0095870	.0559210	.0192210	.0203970
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	-	-	-	-	.0007050	.0008380	.0002380
73. BUSINESS SERVICES	.0023660	.0363620	.0590100	.0032090	.0051990	.0070880	.0059570
74. RESEARCH AND DEVELOPMENT	-	-	-	-	.0003950	.0003370	.0002460
75. AUTOMOBILE REPAIR AND SERVICES	.0019610	.0019400	-	-	-	-	.0006120
76. AMUSEMENTS	-	-	-	-	.0000190	.0000230	.0000050
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0064250	.0006240	.0005810	.0006870	.0007620	.0009970	.0011760
78. FEDERAL GOVERNMENT ENTERPRISES	.0001350	.0001300	.0004820	.0006220	.0005690	.0007450	.0009550
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0000180	.0000310	.0000520	.0001150	.0000680	.0002920	.0002280
80. GROSS IMPORTS OF GOODS AND SERVICES	.0102980	.0100450	.3619340	.0000450	.3039930	.1794240	.0007910
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0005040	.0008740	.0005090	.0005900	.0028290	.0031840	.0030010
82. OFFICE SUPPLIES	.0000440	.0001210	.0003360	.0000450	.0001830	.0002500	.0002960
TOTAL[4]	.6906030	.5003030	.6925560	.5516210	.7224360	.6563340	.3746530

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Crude petroleum and natural gas	Stone and clay mining and quarrying	Chemical and fertilizer mineral mining	New construction	Maintenance and repair construction	Ordnance and accessories	Food and kindred products
	8	9	10	11	12	13	14
1. LIVESTOCK AND LIVESTOCK PRODUCTS	-	-	-	-	-	-	.2264340
2. OTHER AGRICULTURAL PRODUCTS	-	-	-	.0042950	-	-	.0719960
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	-	-	-	.0042020
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	-	-	-	-	-	-
5. IRON AND FERROALLOY ORES MINING	-	.0002490	.0006060	-	-	-	-
6. NONFERROUS METAL ORES MINING	-	.0005900	.0005120	-	-	-	-
7. COAL MINING	.0000170	.0016820	.0008360	-	-	-	.0006450
8. CRUDE PETROLEUM AND NATURAL GAS	.0664300	-	.0020360	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	-	.0073210	.0159740	.0125060	.0062950	-	.0000560
10. CHEMICAL AND FERTILIZER MINERAL MINING	-	.0004190	.0574550	-	-	-	.0001340
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0003790	.0012000	.0005580	.0001250	.0000580	.0015860	.0019100
13. ORDNANCE AND ACCESSORIES	-	-	-	.0000690	-	.0630760	-
14. FOOD AND KINDRED PRODUCTS	-	-	.0000970	.0002500	-	-	.1825600
15. TOBACCO MANUFACTURES	-	-	-	-	-	-	.0000070
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	-	-	.0003150	-	-	-	.0001190
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.0002060	.0000290	-	.0000700	.0000630	.0001050	.0000090
18. APPAREL	-	-	-	-	-	.0005340	.0005660
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	-	-	-	-	.0000390	-	.0013920
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.0005180	.0000180	.0004030	.0534850	.0228660	.0002370	.0000550
21. WOODEN CONTAINERS	-	-	-	-	-	.0004180	.0006750
22. HOUSEHOLD FURNITURE	-	-	-	.0046060	-	.0000120	-
23. OTHER FURNITURE AND FIXTURES	-	-	-	.0047510	.0007030	-	-
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0004150	.0083700	.0051060	.0065410	.0040220	.0014690	.0051470
25. PAPERBOARD CONTAINERS AND BOXES	.0000510	.0018720	.0008680	-	-	.0033760	.0158250
26. PRINTING AND PUBLISHING	.0000780	.0003200	.0000460	.0001540	.0000750	.0020490	.0019290
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0036380	.0063480	.0156750	.0068920	.0042690	.0022800	.0038090
28. PLASTICS AND SYNTHETIC MATERIALS	-	-	-	-	-	-	.0022030
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0000730	.0001240	.0001830	-	-	.0006380	.0048240
30. PAINTS AND ALLIED PRODUCTS	.0004720	-	-	.0051490	.0491090	.0005060	.0000950
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0036900	.0181270	.0059950	.0142260	.0196320	.0021590	.0029090
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0028410	.0183230	.0035190	.0063160	.0039440	.0424260	.0126530
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	-	-	-	-	-	-	.0000020
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000030	.0000030	.0000040	.0000270	.0000030	.0000330	.0000030
35. GLASS AND GLASS PRODUCTS	.0000370	-	-	.0016830	.0047470	.0008890	.0067690
36. STONE AND CLAY PRODUCTS	.0003570	.0623420	.0004900	.0791320	.0323440	.0026950	.0000430
37. PRIMARY IRON AND STEEL MANUFACTURING	.0002630	.0136480	.0123870	.0380840	.0128230	.0114480	.0000220
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0006420	.0010760	.0030760	.0308540	.0177150	.0641540	.0013510
39. METAL CONTAINERS	-	-	-	-	-	-	.0220400
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	.0005660	.0000090	.0001780	.0868410	.0469300	.0001940	-
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0004390	.0001250	.0006390	.0017500	.0010730	.0057110	.0019750
42. OTHER FABRICATED METAL PRODUCTS	.0045070	.0005770	.0008240	.0155690	.0030630	.0101530	.0013040
43. ENGINES AND TURBINES	.0012650	.0000010	.0002730	.0000560	.0000200	.0009700	-
44. FARM MACHINERY AND EQUIPMENT	-	.0000120	-	.0000420	-	.0008890	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.0032560	.0337230	.0185380	.0030010	.0011450	.0003890	-
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	-	.0167020	.0048880	.0065900	.0005810	.0000170	-
47. METALWORKING MACHINERY AND EQUIPMENT	.0000050	.0000680	.0000200	.0000280	.0000110	.0109750	.0002070
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	.0005400	-	-	-	-	.0010050	.0000010
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0072850	.0033540	.0014470	.0064830	.0011590	.0065740	.0000280
50. MACHINE SHOP PRODUCTS	.0000560	.0004600	.0002550	.0000570	.0000350	.0588700	.0000200
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	-	-	-	-	-	.0024850	.0000100
52. SERVICE INDUSTRY MACHINES	-	-	-	.0203100	.0041280	.0041880	.0000030
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0024820	.0023740	.0050210	.0084800	.0048340	.0226200	.0001270
54. HOUSEHOLD APPLIANCES	-	-	-	.0115260	.0056010	.0002910	-
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0000670	.0000860	.0000480	.0162980	.0084130	.0122960	.0003600
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	-	-	-	.0005680	.0021940	.0734890	-
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0021660	-	-	.0001180	.0000180	.0082660	-
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0001100	.0001870	.0001070	.0002980	.0003120	.0003130	.0000590
59. MOTOR VEHICLES AND EQUIPMENT	.0008320	.0009580	.0022170	.0000410	.0000140	.0043680	.0000100
60. AIRCRAFT AND PARTS	-	-	-	-	-	.2733380	-
61. OTHER TRANSPORTATION EQUIPMENT	-	.0001380	.0002850	.0000550	-	.0028670	-
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	.0000580	.0002220	.0001960	.0041090	.0010230	.0184600	.0000020
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	.0000030	.0000600	.0000530	-	-	.0006550	-
64. MISCELLANEOUS MANUFACTURING	.0000410	.0003790	.0002090	.0017970	.0029640	.0026420	.0004850
65. TRANSPORTATION AND WAREHOUSING	.0238930	.0152570	.0615150	.0339580	.0166610	.0100910	.0305830
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0002600	.0021650	.0024250	.0023110	.0012030	.0061980	.0041320
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0193680	.0678680	.0647720	.0029450	.0023060	.0039050	.0073560
69. WHOLESALE AND RETAIL TRADE	.0126780	.0391900	.0249530	.0980740	.0833820	.0300500	.0359970
70. FINANCE AND INSURANCE	.0094600	.0105320	.0058770	.0084610	.0028190	.0083020	.0051380
71. REAL ESTATE AND RENTAL	.1558800	.0233750	.0096980	.0037600	.0019220	.0040730	.0041620
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0000380	.0009530	.0008470	-	-	.0008330	.0005880
73. BUSINESS SERVICES	.0336530	.0100010	.0088580	.0493350	.0041440	.0260690	.0312690
74. RESEARCH AND DEVELOPMENT	-	.0002530	-	.0002360	.0002440	.0007770	.0006520
75. AUTOMOBILE REPAIR AND SERVICES	.0014980	.0002290	-	.0050930	.0013530	-	.0061880
76. AMUSEMENTS	.0000010	.0000210	.0000220	-	-	.0000290	.0000170
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0010150	.0010920	.0010260	.0011220	.0006870	.0011700	.0011800
78. FEDERAL GOVERNMENT ENTERPRISES	-	.0005940	.0007710	-	-	.0008090	.0004530
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0004030	.0009380	.0003140	.0002510	.0001330	.0001400	.0004630
80. GROSS IMPORTS OF GOODS AND SERVICES	.1036210	.0595560	.1165260	-	-	.0142420	.0275500
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0046540	.0036330	.0067390	.0032700	.0016750	.0148970	.0040220
82. OFFICE SUPPLIES	.0003350	.0003040	.0005350	.0003470	.0001780	.0013770	.0005530
TOTAL[4]	.4705450	.4374570	.4662170	.6623950	.3789320	.8450770	.7352780

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Tobacco manufactures	Broad and narrow fabrics, yarn and thread mills	Miscellaneous textile goods and floor coverings	Apparel	Miscellaneous fabricated textile products	Lumber and wood products, except containers	Wooden containers
	15	16	17	18	19	20	21
1. LIVESTOCK AND LIVESTOCK PRODUCTS	-	.0044980	.0058650	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	.1428390	.0410360	.0013080	.0005820	-	.0231710	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	.0054730	.0003730	.0665840	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	-	-	-	-	.0009440	-
5. IRON AND FERROALLOY ORES MINING	-	-	-	-	-	-	-
6. NONFERROUS METAL ORES MINING	-	-	-	-	-	.0000290	-
7. COAL MINING	.0002340	.0014730	.0006200	.0000470	-	.0001950	-
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	-	-	.0000200	-	-	.0000170	-
10. CHEMICAL AND FERTILIZER MINERAL MINING	-	.0000660	.0000090	.0000220	-	.0000090	-
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0000530	.0006180	.0001520	.0005470	.0001450	.0017460	.0000870
13. ORDNANCE AND ACCESSORIES	-	-	-	-	.0000030	-	-
14. FOOD AND KINDRED PRODUCTS	.0058750	.0021090	.0012400	-	-	.0000110	-
15. TOBACCO MANUFACTURES	.1549420	-	-	-	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	.0001880	.3588220	.1800070	.2641310	.3909060	-	-
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	-	.0212930	.1012860	.0050000	.0805870	.0001960	-
18. APPAREL	-	.0013900	.0025800	.1596000	.0083130	.0011370	.0000150
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	-	.0027960	.0043410	.0112960	.0626230	.0001550	-
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.0002240	.0001200	.0000140	-	.0000080	.2620500	.3515670
21. WOODEN CONTAINERS	.0006900	-	-	.0000020	-	.0010410	.0321370
22. HOUSEHOLD FURNITURE	-	.0000130	.0020820	.0000030	.0024690	.0017740	.0049770
23. OTHER FURNITURE AND FIXTURES	-	.0000030	-	-	.0018970	.0002490	.0007990
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0116880	.0015130	.0103070	.0009740	.0126090	.0067130	.0018080
25. PAPERBOARD CONTAINERS AND BOXES	.0118660	.0077380	.0059950	.0062000	.0096310	.0041490	.0022270
26. PRINTING AND PUBLISHING	.0022040	.0007610	.0004700	.0009600	.0012600	.0037200	.0021580
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0008870	.0461740	.0029200	.0090410	.0002410	.0088050	.0000180
28. PLASTICS AND SYNTHETIC MATERIALS	.0203750	.1984260	.2219300	.0176330	-	.0106220	-
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0013560	.0022670	.0004500	.0000940	.0007790	.0011270	.0005920
30. PAINTS AND ALLIED PRODUCTS	.0000260	.0003490	.0004900	.0000250	.0001840	.0054700	.0009370
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0000380	.0022140	.0014170	.0003960	.0009310	.0095740	.0060690
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0062680	.0121540	.0432810	.0050900	.0914980	.0062080	.0018430
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0000260	.0001120	.0000820	.0019370	.0000050	-	-
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000010	.0000230	.0003060	.0006570	.0022280	.0000520	.0000060
35. GLASS AND GLASS PRODUCTS	-	.0147460	.0014380	.0000020	.0000140	.0011240	-
36. STONE AND CLAY PRODUCTS	.0000060	.0002370	.0007790	.0000110	-	.0037280	.0015040
37. PRIMARY IRON AND STEEL MANUFACTURING	-	.0003530	.0004510	.0000640	.0003450	.0000370	.0393800
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0011320	.0002290	.0002130	-	.0000330	.0011080	-
39. METAL CONTAINERS	.0012720	-	.0000040	-	-	-	.0000460
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	-	.0000470	-	-	.0000080	.0003500	.0005190
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0000510	.0000950	.0000930	-	.0002380	.0020660	.0018140
42. OTHER FABRICATED METAL PRODUCTS	.0014860	.0008060	.0010550	.0011970	.0019530	.0075760	.0063800
43. ENGINES AND TURBINES	-	-	-	-	-	-	-
44. FARM MACHINERY AND EQUIPMENT	-	-	.0002980	-	-	.0000260	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	-	-	-	-	-	.0000010	-
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	-	-	.0000040	-	-	.0005760	-
47. METALWORKING MACHINERY AND EQUIPMENT	.0000560	.0001960	.0001920	.0000070	.0001780	.0001450	.0003110
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	-	.0040800	.0005510	.0000020	-	.0013260	.0034920
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0000350	.0001100	.0001030	.0000150	.0005030	.0012430	.0003100
50. MACHINE SHOP PRODUCTS	.0000270	.0000360	.0000370	.0000010	.0001010	.0004480	.0004670
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	-	-	-	-	.0000080	-	-
52. SERVICE INDUSTRY MACHINES	-	-	-	-	.0000090	.0000010	-
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0000080	.0000560	.0000570	.0000100	-	.0000330	-
54. HOUSEHOLD APPLIANCES	-	-	-	-	-	-	-
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0001040	.0002580	.0001950	-	.0000430	.0011870	.0020670
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	-	-	-	-	-	-	-
57. ELECTRONIC COMPONENTS AND ACCESSORIES	-	-	-	-	.0000110	-	-
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0000060	.0000080	.0000070	.0000030	.0000170	.0000960	.0001000
59. MOTOR VEHICLES AND EQUIPMENT	-	-	.0003670	-	-	.0000580	-
60. AIRCRAFT AND PARTS	-	-	.0002770	-	.0003040	.0000300	-
61. OTHER TRANSPORTATION EQUIPMENT	-	-	-	.0000030	-	.0006650	.0002060
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	-	.0000020	.0000180	.0001530	.0039970	.0000190	-
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	-	.0000240	-	.0000040	-	-	-
64. MISCELLANEOUS MANUFACTURING	.0011420	.0015660	.0078230	.0187270	.0171100	.0015550	.0004930
65. TRANSPORTATION AND WAREHOUSING	.0115160	.0194860	.0271600	.0075060	.0089540	.0420280	.0341620
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0006490	.0022870	.0035220	.0040450	.0026500	.0042220	.0023720
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0014390	.0131390	.0080820	.0039120	.0042640	.0163920	.0218040
69. WHOLESALE AND RETAIL TRADE	.0117430	.0338890	.0456600	.0364150	.0472590	.0431530	.0495750
70. FINANCE AND INSURANCE	.0020000	.0057730	.0076810	.0063960	.0043010	.0058970	.0059850
71. REAL ESTATE AND RENTAL	.0011770	.0041450	.0062210	.0104950	.0097460	.0058370	.0086650
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0004190	.0015950	.0011080	.0025590	.0015470	.0017800	.0025470
73. BUSINESS SERVICES	.0405780	.0130490	.0105350	.0133840	.0081560	.0082260	.0082880
74. RESEARCH AND DEVELOPMENT	.0014500	.0003240	.0002650	.0003240	.0003800	-	-
75. AUTOMOBILE REPAIR AND SERVICES	.0007350	.0006790	.0005340	.0002750	.0015100	.0153500	.0154520
76. AMUSEMENTS	.0000090	.0000340	.0000260	.0000560	.0000370	.0000390	.0000560
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0011860	.0012350	.0010330	.0013730	.0010810	.0011810	.0012770
78. FEDERAL GOVERNMENT ENTERPRISES	.0020360	.0007270	.0010970	.0017300	.0013000	.0003670	.0008680
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0000590	.0002270	.0002040	.0000900	.0002860	.0006310	.0005170
80. GROSS IMPORTS OF GOODS AND SERVICES	.0030140	.0308700	.1254230	.0037720	.0026700	.0788060	.0120160
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0013020	.0029340	.0031040	.0050370	.0051610	.0052520	.0064460
82. OFFICE SUPPLIES	.0002060	.0005780	.0005140	.0009020	.0007380	.0004610	.0005850
TOTAL[4]	.4446230	.8597880	.8433030	.6081800	.7916020	.6687680	.6329440

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Household furniture	Other furniture and fixtures	Paper and allied products, except containers	Paperboard containers and boxes	Printing and publishing	Chemicals and selected chemical products	Plastics and synthetic materials
	22	23	24	25	26	27	28
1. LIVESTOCK AND LIVESTOCK PRODUCTS	-	-	-	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	-	-	-	-	-	.0010770	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	-	-	.0058100	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	-	-	-	-	-	-
5. IRON AND FERROALLOY ORES MINING	-	-	-	-	-	.0044870	-
6. NONFERROUS METAL ORES MINING	-	-	-	-	-	.0045140	-
7. COAL MINING	.0003350	-	.0015850	.0001500	-	.0050810	.0013710
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	-	.0018810	-
9. STONE AND CLAY MINING AND QUARRYING	-	-	.0033500	-	-	.0015580	.0001140
10. CHEMICAL AND FERTILIZER MINERAL MINING	-	-	.0014930	-	-	.0362930	.0001140
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0005560	.0002950	.0034630	.0035000	.0034210	.0004750	.0060010
13. ORDNANCE AND ACCESSORIES	-	-	-	.0003630	.0004410	-	-
14. FOOD AND KINDRED PRODUCTS	.0083540	.0000660	.0060660	.0000630	-	.0098500	.0033840
15. TOBACCO MANUFACTURES	-	-	.0000040	.0000120	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	.0566680	.0019130	.0054970	-	.0000630	.0000800	.0009200
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.0137960	.0179450	.0016080	-	.0014660	.0001700	.0001810
18. APPAREL	.0003170	.0009490	.0006040	.0008270	.0000010	.0003920	.0004180
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0011590	.0008910	.0020410	.0000790	-	.0021270	-
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.1108680	.0463200	.0466530	.0007810	.0000390	.0022380	.0002160
21. WOODEN CONTAINERS	.0000600	.0000230	.0002230	.0002420	.0000010	.0001090	.0000920
22. HOUSEHOLD FURNITURE	.0123540	.0234540	.0000140	-	-	-	.0000070
23. OTHER FURNITURE AND FIXTURES	.0053840	.0142830	.0001010	-	.0002840	.0000010	.0000060
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0035440	.0033800	.1770410	.3873830	.1826980	.0095730	.0342460
25. PAPERBOARD CONTAINERS AND BOXES	.0185530	.0186510	.0262630	.0404260	.0050110	.0057430	.0054440
26. PRINTING AND PUBLISHING	.0003690	.0010260	.0096700	.0069590	.1319080	.0024810	.0011110
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0000640	.0001600	.0344040	.0024070	.0180990	.1972980	.3807060
28. PLASTICS AND SYNTHETIC MATERIALS	.0003410	.0011110	.0204020	.0073610	-	.0402940	.0322280
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0000360	.0000450	.0021230	.0017110	.0005200	.0175090	.0118870
30. PAINTS AND ALLIED PRODUCTS	.0212970	.0171700	.0002580	-	-	.0036080	.0064070
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0021070	.0019980	.0099390	.0050050	.0008810	.0469370	.0125520
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0893280	.0344320	.0448780	.0214220	.0024060	.0068220	.0175410
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0008050	.0009330	-	-	-	.0000050	-
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0002630	.0000100	.0000830	.0001220	.0000370	.0000100	.0000010
35. GLASS AND GLASS PRODUCTS	.0138490	.0365880	.0000430	.0018480	-	.0014210	.0002620
36. STONE AND CLAY PRODUCTS	.0025660	.0017140	.0046170	.0000610	.0000140	.0029870	.0003970
37. PRIMARY IRON AND STEEL MANUFACTURING	.0213890	.1183260	.0000930	.0005260	-	.0039200	-
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0114490	.0158730	.0015070	.0001350	.0010590	.0140120	.0003420
39. METAL CONTAINERS	.0000060	-	.0000470	.0038100	.0000020	.0066320	.0011430
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	.0032200	.0128590	.0000380	-	-	.0001630	.0002340
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0044970	.0047190	.0012590	.0008690	.0002160	.0006950	.0006480
42. OTHER FABRICATED METAL PRODUCTS	.0539270	.0361070	.0100620	.0023640	.0016590	.0034560	.0013100
43. ENGINES AND TURBINES	-	-	-	-	-	-	-
44. FARM MACHINERY AND EQUIPMENT	-	.0005580	-	-	-	.0000140	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	-	.0003040	-	-	.0000280	-	-
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	.0007190	.0000520	-	-	-	.0005520	-
47. METALWORKING MACHINERY AND EQUIPMENT	.0009790	.0025980	.0007550	.0005790	.0001040	.0006520	.0012670
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	.0025400	.0003470	.0018900	.0032440	.0019450	.0132010	.0011350
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0003090	.0017390	.0005530	.0005130	.0000950	.0003330	.0005450
50. MACHINE SHOP PRODUCTS	.0001610	.0002660	.0004970	.0003880	.0000690	.0005090	.0003920
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	-	.0059600	.0004720	-	.0011120	.0016620	-
52. SERVICE INDUSTRY MACHINES	.0000800	.0009970	.0000380	-	-	.0000870	-
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0001710	.0003280	.0004700	.0001050	.0004340	.0012180	.0006540
54. HOUSEHOLD APPLIANCES	.0015310	.0009140	-	.0000820	-	-	.0000180
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0009830	.0009240	.0012290	.0004660	.0001030	.0001140	.0003920
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	.0002960	.0019590	-	-	.0005120	-	.0002260
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0004430	.0001550	-	-	.0000920	.0000030	-
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0000230	.0000230	.0000220	.0000140	.0000160	.0000290	.0000060
59. MOTOR VEHICLES AND EQUIPMENT	.0000440	.0023960	-	-	.0001610	.0000050	-
60. AIRCRAFT AND PARTS	.0000510	.0009990	-	-	.0013310	.0000800	-
61. OTHER TRANSPORTATION EQUIPMENT	.0000100	.0005450	-	-	.0000290	-	-
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	.0000420	.0072150	.0003550	-	.0001600	.0004220	.0002980
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	-	.0000090	.0002700	-	.0048780	.0004210	.0022130
64. MISCELLANEOUS MANUFACTURING	.0048570	.0157410	.0009170	.0009760	.0026810	.0015090	.0006100
65. TRANSPORTATION AND WAREHOUSING	.0198400	.0153450	.0311730	.0280810	.0139640	.0278610	.0257090
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0064680	.0050050	.0036490	.0028100	.0142160	.0050650	.0027740
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0121250	.0115430	.0619540	.0082260	.0143850	.0474780	.0178150
69. WHOLESALE AND RETAIL TRADE	.0508510	.0547670	.0346040	.0339260	.0241820	.0258620	.0197960
70. FINANCE AND INSURANCE	.0051280	.0050150	.0056740	.0061320	.0093450	.0089130	.0066850
71. REAL ESTATE AND RENTAL	.0112430	.0099580	.0037350	.0088980	.0336860	.0090730	.0052480
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0021170	.0016450	.0009420	.0012960	.0013700	.0006120	.0006510
73. BUSINESS SERVICES	.0040950	.0133000	.0159720	.0094730	.0510240	.0249860	.0136590
74. RESEARCH AND DEVELOPMENT	.0001170	-	.0011070	.0010570	.0014170	.0006210	.0005960
75. AUTOMOBILE REPAIR AND SERVICES	.0006960	.0016010	.0010410	.0008400	.0012210	.0016450	.0004440
76. AMUSEMENTS	.0000470	.0000400	.0000220	.0000320	.0000430	.0000170	.0000180
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0013090	.0012100	.0011030	.0012580	.0013070	.0010310	.0010760
78. FEDERAL GOVERNMENT ENTERPRISES	.0005610	.0009400	.0009930	.0008750	.0067280	.0021150	.0043430
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0001890	.0001660	.0012000	.0001110	.0001580	.0005070	.0003200
80. GROSS IMPORTS OF GOODS AND SERVICES	.0001520	-	.0994650	.0007480	.0074690	.0472300	.0218810
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0065070	.0077020	.0041080	.0049510	.0169550	.0119000	.0014980
82. OFFICE SUPPLIES	.0010040	.0012060	.0005890	.0008020	.0039900	.0011200	.0011150
TOTAL[4]	.5931490	.5937130	.6902280	.6043090	.5654360	.6765560	.6496670

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Drugs, cleaning, and toilet preparations	Paints and allied products	Petroleum refining and related industries	Rubber and miscellaneous plastics products	Leather tanning and industrial leather products	Footwear and other leather products	Glass and glass products
	29	30	31	32	33	34	35
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	.0006650	-	-	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	.0003660	-	-	-	-	-	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	-	.0009170	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	-	-	-	-	-	-	-
5. IRON AND FERROALLOY ORES MINING	-	-	.0001430	-	-	-	-
6. NONFERROUS METAL ORES MINING.	.0000700	.0000880	-	-	-	-	.0000420
7. COAL MINING	.0005960	.0003060	.0001100	.0003810	.0021820	-	.0013220
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	.4346120	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	.0005490	.0004580	.0033290	.0008820	-	-	.0110290
10. CHEMICAL AND FERTILIZER MINERAL MINING.	.0000070	-	.0000610	.0011250	.0008220	-	.0002890
11. NEW CONSTRUCTION.	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0002530	.0003720	.0013820	.0009380	.0000760	.0001220	.0004180
13. ORDNANCE AND ACCESSORIES.	.0000150	-	-	-	.0000540	-	-
14. FOOD AND KINDRED PRODUCTS	.0200570	.0077730	.0005970	.0002010	.0019730	-	-
15. TOBACCO MANUFACTURES.	-	-	-	-	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	.0001010	.0002070	.0000020	.0123280	.0000530	.0247540	-
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	-	.0000030	-	.0539590	.0000560	.0134450	.0000550
18. APPAREL	.0003220	.0003720	.0001510	.0024660	.0000070	.0050130	.0010840
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0004450	.0000030	.0000730	.0003980	.0012120	.0003880	.0000130
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	.0009750	.0007610	.0001210	.0015560	-	.0079760	.0140470
21. WOODEN CONTAINERS	-	-	.0000050	.0000010	.0007930	.0001340	.0023030
22. HOUSEHOLD FURNITURE	-	-	-	.0000620	-	.0002580	.0018440
23. OTHER FURNITURE AND FIXTURES.	-	-	-	.0001050	-	.0000060	.0000010
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0066830	.0074800	.0031790	.0041480	.0025830	.0082360	.0021130
25. PAPERBOARD CONTAINERS AND BOXES	.0271070	.0108590	.0018050	.0073840	.0012750	.0119650	.0817740
26. PRINTING AND PUBLISHING	.0041120	.0024260	.0000390	.0032010	.0016830	.0053350	.0014820
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	.1127710	.1311440	.0340090	.0338430	.0610870	.0003170	.0337330
28. PLASTICS AND SYNTHETIC MATERIALS.	.0032210	.2919620	.0008290	.1716170	.0177760	.0475530	-
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	.0660870	.0116440	.0029370	.0009920	.0233420	.0003500	.0015660
30. PAINTS AND ALLIED PRODUCTS.	.0021400	.0016430	.0003470	.0001920	.0000210	.0000140	.0000460
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0079110	.0089610	.0579300	.0024180	.0034100	.0002990	.0022840
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	.0285330	.0030180	.0011460	.0315420	.0080790	.0744590	.0037590
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	-	-	-	.0005100	.0843640	.1347210	-
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000170	.0000080	.0000030	.0009610	.0015460	.0685510	.0000070
35. GLASS AND GLASS PRODUCTS.	.0137860	-	.0001260	.0129620	.0000330	.0000790	.0404400
36. STONE AND CLAY PRODUCTS	.0017910	.0098110	.0019050	.0044500	.0080370	.0022270	.0276270
37. PRIMARY IRON AND STEEL MANUFACTURING.	.0001170	.0055650	.0000180	.0020640	-	-	-
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0001470	.0003160	.0001030	.0029640	.0001710	.0003790	.0020920
39. METAL CONTAINERS.	.0141450	.0411420	.0010970	-	-	-	-
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	.0000370	.0005400	.0001280	.0004470	-	.0001180	.0004050
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	.0027620	.0003930	.0000980	.0028760	.0005830	.0004640	.0038600
42. OTHER FABRICATED METAL PRODUCTS	.0085730	.0013720	.0103310	.0112130	.0013290	.0073190	.0038120
43. ENGINES AND TURBINES.	-	-	-	.0000070	-	-	-
44. FARM MACHINERY AND EQUIPMENT.	-	.0001110	-	.0000120	-	.0000540	.0001720
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	-	-	-	.0000110	-	-	-
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	-	-	-	.0000250	-	.0000230	.0000030
47. METALWORKING MACHINERY AND EQUIPMENT.	.0001180	.0001000	.0001380	.0006080	.0005800	.0000860	.0014170
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	.0012020	.0000140	-	.0014290	-	.0000100	-
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	.0000500	.0001780	.0000750	.0009170	.0002270	.0001130	.0014000
50. MACHINE SHOP PRODUCTS	.0000200	.0001270	.0000280	.0039400	.0001890	.0001270	.0007620
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	.0000390	-	-	-	-	-	-
52. SERVICE INDUSTRY MACHINES	.0002390	-	-	.0000230	-	-	.0002030
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0000420	.0000250	.0001760	.0005480	.0005120	.0000290	.0006630
54. HOUSEHOLD APPLIANCES.	.0002040	-	-	.0006020	-	-	.0005040
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	.0000420	.0001740	.0000280	.0016650	.0008280	.0007330	.0026000
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	-	-	.0003350	.0008620	-	-	-
57. ELECTRONIC COMPONENTS AND ACCESSORIES	-	-	-	.0004320	-	.0008560	.0000030
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	.0000300	.0000230	.0000200	.0001640	.0000100	.0000230	.0000560
59. MOTOR VEHICLES AND EQUIPMENT.	.0000320	-	.0000140	.0000170	.0000540	.0000350	-
60. AIRCRAFT AND PARTS.	-	-	-	.0024690	-	.0000740	-
61. OTHER TRANSPORTATION EQUIPMENT.	-	-	-	.0002400	-	.0000230	-
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	.0043770	.0001490	.0000680	.0020000	.0003280	.0018580	.0010500
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	.0000930	.0000360	.0000150	.0002920	.0000690	.0013240	.0011750
64. MISCELLANEOUS MANUFACTURING	.0008220	.0007390	.0004030	.0047160	.0005420	.0037240	.0008840
65. TRANSPORTATION AND WAREHOUSING.	.0161480	.0277750	.0402630	.0186480	.0199580	.0097720	.0215010
66. COMMUNICATIONS,EXCEPT BROADCASTING.	.0023410	.0052820	.0014670	.0034390	.0028530	.0039820	.0037420
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	.0057510	.0064090	.0186740	.0216150	.0081430	.0039370	.0481710
69. WHOLESALE AND RETAIL TRADE.	.0246440	.0427950	.0102240	.0356670	.0285190	.0252640	.0350590
70. FINANCE AND INSURANCE	.0076080	.0073340	.0050470	.0056550	.0072140	.0069080	.0091960
71. REAL ESTATE AND RENTAL.	.0077470	.0111300	.0088610	.0092210	.0024680	.0081690	.0065560
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0005040	.0005780	-	.0013020	.0010990	.0027960	.0016900
73. BUSINESS SERVICES	.1280920	.0284960	.0456730	.0335900	.0074120	.0386940	.0291080
74. RESEARCH AND DEVELOPMENT.	.0053570	.0083390	.0007390	.0008420	.0010950	.0012900	.0010670
75. AUTOMOBILE REPAIR AND SERVICES.	.0007100	.0029950	.0018780	.0003110	.0015000	.0004040	.0014160
76. AMUSEMENTS.	.0000170	.0000200	-	.0000320	.0000240	.0000600	.0000390
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0011420	.0012000	.0010770	.0012430	.0010650	.0013370	.0012470
78. FEDERAL GOVERNMENT ENTERPRISES.	.0020260	.0021800	.0016810	.0008040	.0042160	.0020790	.0024080
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	.0002270	.0002350	.0003740	.0002810	.0003200	.0000850	.0004030
80. GROSS IMPORTS OF GOODS AND SERVICES	.0153770	.0029460	.0353670	.0275770	.1522660	.0365250	.0306900
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0052660	.0094410	.0012780	.0065930	.0023840	.0050110	.0067940
82. OFFICE SUPPLIES	.0005860	.0011980	.0003620	.0009510	.0004060	.0012180	.0009710
TOTAL[4]	.5552140	.6986560	.7308810	.5569360	.4677450	.5711050	.4483970

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Stone and clay products	Primary iron and steel manufacturing	Primary nonferrous metals manufacturing	Metal containers	Heating, plumbing and structural metal products	Stampings, screw machine products and bolts	Other fabricated metal products
	36	37	38	39	40	41	42
1. LIVESTOCK AND LIVESTOCK PRODUCTS	-	-	-	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	.0005050	-	-	-	-	-	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	-	-	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	-	-	-	-	-	-
5. IRON AND FERROALLOY ORES MINING	.0011610	.0468060	.0021610	-	-	-	-
6. NONFERROUS METAL ORES MINING	.0005180	.0003440	.0558710	-	-	-	.0002480
7. COAL MINING	.0020050	.0109810	.0009550	.0001110	.0001140	.0003740	.0002720
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	.0643730	.0029810	.0004430	-	.0001750	-	.0001610
10. CHEMICAL AND FERTILIZER MINERAL MINING	.0029720	.0003750	.0001880	-	-	-	.0000400
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0004430	.0062090	.0035590	.0024860	.0008930	.0006190	.0005200
13. ORDNANCE AND ACCESSORIES	-	.0000560	.0001540	-	.0001260	.0006790	.0001890
14. FOOD AND KINDRED PRODUCTS	.0007990	.0003320	.0000620	-	-	-	.0000320
15. TOBACCO MANUFACTURES	-	-	-	-	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	.0017650	-	.0015130	-	.0002390	.0000790	.0008050
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.0002210	.0000460	.0005440	-	.0000410	.0001120	.0011250
18. APPAREL	.0000010	.0006840	.0004790	-	.0008240	.0009650	.0009230
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0003900	.0000930	.0001790	-	.0002800	.0001200	.0000160
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.0016300	.0009320	.0010340	.0003870	.0022280	.0047880	.0073430
21. WOODEN CONTAINERS	.0006340	.0000710	-	.0002100	.0004420	.0002070	.0003400
22. HOUSEHOLD FURNITURE	-	.0000620	-	.0000150	.0008250	.0002220	.0009830
23. OTHER FURNITURE AND FIXTURES	.0000010	.0000020	.0000040	-	.0011620	.0000960	.0006980
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0160050	.0023830	.0027660	.0037740	.0018210	.0044110	.0036750
25. PAPERBOARD CONTAINERS AND BOXES	.0089960	.0007590	.0007060	.0109930	.0039420	.0091220	.0051120
26. PRINTING AND PUBLISHING	.0020320	.0014380	.0009200	.0030560	.0005360	.0014310	.0024500
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0264520	.0188120	.0149740	.0000190	.0025070	.0032690	.0095090
28. PLASTICS AND SYNTHETIC MATERIALS	.0108020	.0011680	.0169760	.0048470	.0004850	.0039490	.0008960
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0063780	.0018840	.0010490	.0025130	.0002800	.0006930	.0003250
30. PAINTS AND ALLIED PRODUCTS	.0011790	.0007880	.0007710	.0087530	.0027930	.0051450	.0016110
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0082590	.0046140	.0041630	.0016140	.0031470	.0062360	.0042730
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0101650	.0030810	.0016720	.0220850	.0020780	.0091620	.0117900
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0000620	-	-	.0002600	.0000890	.0000810	.0000640
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000330	.0000030	.0000030	.0000030	.0000050	.0002350	.0000690
35. GLASS AND GLASS PRODUCTS	.0007530	.0000570	.0000300	.0000210	.0054890	.0009880	.0002410
36. STONE AND CLAY PRODUCTS	.1473860	.0085310	.0047230	.0019630	.0061870	.0076450	.0067300
37. PRIMARY IRON AND STEEL MANUFACTURING	.0027000	.2153330	.0118240	.2603710	.1554680	.1435320	.1329180
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0018780	.0188430	.2713510	.1271940	.0883610	.0508710	.0794970
39. METAL CONTAINERS	-	-	-	.0064950	.0003960	.0033960	.0006820
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	.0006540	.0024020	.0003030	.0048280	.0228590	.0079510	.0085350
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0012660	.0053790	.0081370	.0115220	.0073030	.0185930	.0180070
42. OTHER FABRICATED METAL PRODUCTS	.0115950	.0164400	.0106580	.0039280	.0298980	.0318950	.0413130
43. ENGINES AND TURBINES	-	.0001120	.0000050	-	.0037300	.0011960	.0009770
44. FARM MACHINERY AND EQUIPMENT	.0000290	.0011130	.0000280	.0000410	.0014490	.0008910	.0008210
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.0000590	.0006540	.0000070	-	.0027160	.0002450	.0025630
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	.0000360	.0001410	.0001190	-	.0011780	.0003170	.0011730
47. METALWORKING MACHINERY AND EQUIPMENT	.0011860	.0056450	.0064030	.0108750	.0048230	.0099950	.0224270
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	.0007070	.0010670	.0001770	.0000040	.0025510	.0004510	.0021320
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0003520	.0036350	.0039100	.0070830	.0119500	.0007180	.0082480
50. MACHINE SHOP PRODUCTS	.0006730	.0105830	.0050010	.0070380	.0061060	.0054960	.0042510
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	-	.0001600	-	-	.0009100	.0018050	.0004370
52. SERVICE INDUSTRY MACHINES	.0000680	.0000780	.0002130	-	.0088140	.0018540	.0013430
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0008780	.0043210	.0054780	.0010650	.0117570	.0042830	.0038290
54. HOUSEHOLD APPLIANCES	.0000030	.0001610	.0005470	.0033890	.0138240	.0047620	.0026260
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0037000	.0005190	.0058500	.0004390	.0021540	.0041430	.0023760
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	.0000270	.0000110	.0011180	-	.0001210	.0002600	.0004330
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0003410	.0009380	.0002970	.0009380	.0031000	.0013350	.0001080
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0000550	.0000060	.0059260	.0000100	.0000550	.0003000	.0003340
59. MOTOR VEHICLES AND EQUIPMENT	.0001990	.0018220	.0014550	.0000190	.0040650	.0267990	.0047720
60. AIRCRAFT AND PARTS	.0001280	.0000550	.0000220	.0033240	.0014830	.0015300	.0007370
61. OTHER TRANSPORTATION EQUIPMENT	-	.0006450	.0004770	-	.0057620	.0002180	.0006040
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	.0005590	.0003160	.0004850	.0002110	.0115870	.0020130	.0042660
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	.0000900	.0000700	.0000490	.0000540	.0001290	.0004720	.0001410
64. MISCELLANEOUS MANUFACTURING	.0025100	.0005980	.0014280	.0007470	.0009560	.0051790	.0030860
65. TRANSPORTATION AND WAREHOUSING	.0425360	.0404930	.0184910	.0190990	.0152210	.0133490	.0117590
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0041280	.0047250	.0036000	.0012940	.0047150	.0031320	.0033730
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0575030	.0643830	.0287110	.0125570	.0133800	.0187000	.0164710
69. WHOLESALE AND RETAIL TRADE	.0313340	.0299270	.0279700	.0335540	.0369750	.0300340	.0352800
70. FINANCE AND INSURANCE	.0094660	.0069890	.0069270	.0059880	.0076950	.0076240	.0063180
71. REAL ESTATE AND RENTAL	.0072620	.0034280	.0036520	.0038170	.0057020	.0076750	.0048720
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0014010	.0010690	.0007450	.0008610	.0012410	.0014550	.0013940
73. BUSINESS SERVICES	.0165410	.0139050	.0092840	.0122820	.0166080	.0151660	.0208790
74. RESEARCH AND DEVELOPMENT	.0011540	.0007420	.0007810	.0010330	.0011360	.0010890	.0011130
75. AUTOMOBILE REPAIR AND SERVICES	.0024180	.0003050	.0008340	.0047340	.0035950	.0009830	.0014570
76. AMUSEMENTS	.0000360	.0000260	.0000190	.0000190	.0000320	.0000370	.0000360
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0012300	.0011760	.0011040	.0012160	.0011850	.0011670	.0010820
78. FEDERAL GOVERNMENT ENTERPRISES	.0008180	.0007310	.0004550	.0006710	.0009650	.0009720	.0009040
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0013000	.0006830	.0002950	.0000960	.0002250	.0002710	.0002300
80. GROSS IMPORTS OF GOODS AND SERVICES	.0254390	.0520790	.0748030	.0001900	.0022330	.0136920	.0433580
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0069800	.0031660	.0035850	.0026900	.0064800	.0075230	.0078410
82. OFFICE SUPPLIES	.0007810	.0005520	.0004760	.0003350	.0006620	.0009180	.0009800
TOTAL[4]	.5559400	.6289180	.6388990	.6131210	.5582630	.5149150	.5664230

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1] — Continued

(Producer values - 1958 dollars)[2]

Industry number and title[3]	Engines and turbines	Farm machinery and equipment	Construction, mining and oil field machinery	Materials handling machinery and equipment	Metalworking machinery and equipment	Special industry machinery and equipment	General industrial machinery and equipment
	43	44	45	46	47	48	49
1. LIVESTOCK AND LIVESTOCK PRODUCTS	-	-	-	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	-	-	-	-	-	-	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	-	-	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	.0011990	-	-	-	-	-
5. IRON AND FERROALLOY ORES MINING	-	-	-	-	.0001570	-	-
6. NONFERROUS METAL ORES MINING	-	-	-	-	-	-	-
7. COAL MINING	.0010200	.0009130	.0006660	-	-	.0000130	.0001990
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	-	.0001490	.0001180	-	-	-	.0023450
10. CHEMICAL AND FERTILIZER MINERAL MINING	-	-	-	-	-	-	-
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0002980	.0006620	.0002230	.0003110	.0020360	.0008950	.0010990
13. ORDNANCE AND ACCESSORIES	-	.0024760	.0003210	-	.0002740	.0007660	.0001240
14. FOOD AND KINDRED PRODUCTS	-	.0000550	-	.0000890	-	.0003720	-
15. TOBACCO MANUFACTURES	-	-	-	-	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	.0000880	.0000550	.0000790	.0001730	-	.0012020	.0005360
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.0002150	-	-	-	-	-	-
18. APPAREL	.0006180	.0006280	.0006780	.0006590	.0009830	.0008900	.0008320
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	-	-	-	-	-	-	-
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.0002480	.0031990	.0011420	.0007170	.0012920	.0050220	.0013110
21. WOODEN CONTAINERS	-	.0001220	-	.0000060	.0000020	.0000610	.0000240
22. HOUSEHOLD FURNITURE	-	.0000320	.0001320	-	.0000270	.0000370	.0002770
23. OTHER FURNITURE AND FIXTURES	-	.0004160	-	.0003260	.0000010	.0000160	.0000920
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0010690	.0005540	.0008800	.0006380	.0000070	.0020260	.0026350
25. PAPERBOARD CONTAINERS AND BOXES	.0045990	.0020450	.0008480	.0003580	.0002770	.0002880	.0015920
26. PRINTING AND PUBLISHING	.0014380	.0004420	.0004160	.0005630	.0000810	.0009320	.0005290
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0000550	.0009390	.0008970	-	.0009640	.0020440	.0017350
28. PLASTICS AND SYNTHETIC MATERIALS	.0006210	.0001420	.0004600	.0004800	.0004270	.0006880	.0002590
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0004580	.0005940	.0005360	.0007240	.0004180	.0007060	.0004320
30. PAINTS AND ALLIED PRODUCTS	.0012000	.0038250	.0014760	.0025970	.0000470	.0003200	.0006750
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0037950	.0036350	.0042450	.0032700	.0048940	.0053300	.0035450
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0070930	.0468860	.0218910	.0249160	.0048450	.0190970	.0055980
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0000970	.0006950	.0000910	.0000670	.0000490	.0008010	.0001660
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000070	.0000060	.0000070	.0000090	.0000640	.0000100	.0000090
35. GLASS AND GLASS PRODUCTS	.0005020	.0001040	.0000270	.0002930	.0001310	.0000450	.0000500
36. STONE AND CLAY PRODUCTS	.0062330	.0051730	.0056020	.0037100	.0071660	.0041150	.0088160
37. PRIMARY IRON AND STEEL MANUFACTURING	.0590400	.1072240	.1184440	.0948950	.0661340	.0751750	.0851750
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0352140	.0131040	.0100570	.0226360	.0295820	.0459790	.0268060
39. METAL CONTAINERS	-	-	.0000340	.0000010	.0002630	.0000080	.0000040
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	.0011500	.0022730	.0174400	.0120270	.0036910	.0104130	.0179030
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0184050	.0258730	.0048430	.0149130	.0225490	.0097950	.0092620
42. OTHER FABRICATED METAL PRODUCTS	.0012020	.0044550	.0131180	.0206520	.0199040	.0155650	.0181920
43. ENGINES AND TURBINES	.0757790	.0335620	.0189990	.0078200	.0016720	.0004400	.0093780
44. FARM MACHINERY AND EQUIPMENT	.0109000	.0316770	.0113820	.0037860	.0012520	.0022000	.0017110
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.0242400	.0099670	.0525720	.0445990	.0017020	.0065280	.0064360
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	.0014390	.0004440	.0063620	.0475520	.0027400	.0053920	.0086830
47. METALWORKING MACHINERY AND EQUIPMENT	.0168700	.0168980	.0164230	.0140390	.0575070	.0194170	.0151590
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	.0009630	.0023180	.0015610	.0037030	.0058020	.0518980	.0045920
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0249180	.0648610	.0726220	.0894650	.0428780	.0704590	.0864690
50. MACHINE SHOP PRODUCTS	.0420880	.0212630	.0065250	.0229160	.0088490	.0056600	.0082140
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	-	-	.0009270	.0029360	.0000660	.0042230	.0000940
52. SERVICE INDUSTRY MACHINES	.0000970	.0003990	.0006730	.0019390	.0020060	.0048450	.0089060
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0172090	.0058740	.0226870	.0618570	.0550470	.0453460	.0640190
54. HOUSEHOLD APPLIANCES	.0000480	.0041230	.0002160	-	.0038530	.0015450	-
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0004640	.0006820	.0011310	.0028920	.0006090	.0004820	.0010830
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	.0000890	.0000760	.0009230	.0001820	.0000550	.0112840	.0023380
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0009380	.0009380	.0031000	.0015860	.0051660	.0103330	.0077500
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0182190	.0076960	.0016140	.0024100	.0000960	.0004270	.0010120
59. MOTOR VEHICLES AND EQUIPMENT	.0251700	.0155450	.0138580	.0092940	.0474210	.0026640	.0061750
60. AIRCRAFT AND PARTS	.0095140	.0019560	.0006260	.0018080	.0053440	.0033080	.0159620
61. OTHER TRANSPORTATION EQUIPMENT	.0071020	.0015270	.0038540	.0031840	.0002200	.0024570	.0039740
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	.0008720	.0014080	.0008390	.0005550	.0016670	.0020010	.0070890
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	.0000580	.0000600	.0000630	.0000640	.0001270	.0017630	.0002360
64. MISCELLANEOUS MANUFACTURING	.0012980	.0009510	.0005780	.0278360	.0024880	.0008980	.0002830
65. TRANSPORTATION AND WAREHOUSING	.0101920	.0127970	.0118330	.0103590	.0067540	.0104220	.0108730
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0028860	.0031170	.0036680	.0037900	.0089400	.0102600	.0097020
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0064740	.0077110	.0099940	.0069220	.0106700	.0094090	.0099670
69. WHOLESALE AND RETAIL TRADE	.0252690	.0381260	.0350140	.0437440	.0294370	.0346720	.0447700
70. FINANCE AND INSURANCE	.0055150	.0078700	.0065940	.0074720	.0073660	.0066500	.0057530
71. REAL ESTATE AND RENTAL	.0040200	.0045610	.0049190	.0084500	.0158410	.0086280	.0062940
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0009290	.0009830	.0010250	.0010410	.0015320	.0013980	.0012030
73. BUSINESS SERVICES	.0242630	.0327690	.0208420	.0239760	.0181020	.0205510	.0201330
74. RESEARCH AND DEVELOPMENT	.0007860	.0007620	.0008190	.0006170	.0007960	.0007160	.0007720
75. AUTOMOBILE REPAIR AND SERVICES	.0004860	.0010400	.0010220	.0006720	.0009190	.0016650	.0007990
76. AMUSEMENTS	.0000270	.0000260	.0000290	.0000320	.0000400	.0000380	.0000360
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0010850	.0011040	.0011570	.0010400	.0011000	.0011210	.0010990
78. FEDERAL GOVERNMENT ENTERPRISES	.0009070	.0016950	.0007250	.0011630	.0007370	.0008660	.0009330
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0001420	.0002940	.0001460	.0000820	.0001160	.0001790	.0001570
80. GROSS IMPORTS OF GOODS AND SERVICES	.0405310	.0854010	.0271930	.0158540	.0269980	.0545540	.0384710
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0072580	.0060360	.0077980	.0096220	.0086790	.0094150	.0095900
82. OFFICE SUPPLIES	.0008730	.0009700	.0009600	.0011990	.0010740	.0012080	.0011800
TOTAL[4]	.5545830	.6553620	.5759440	.6927880	.5519330	.6279330	.6115170

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Machine shop products	Office, computing and accounting machines	Service industry machines	Electric industrial equipment and apparatus	Household appliances	Electric lighting and wiring equipment	Radio, television and communication equipment
	50	51	52	53	54	55	56
1. LIVESTOCK AND LIVESTOCK PRODUCTS	-	-	-	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	-	-	-	-	-	-	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	-	-	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	-	-	-	-	-	-
5. IRON AND FERROALLOY ORES MINING	-	-	-	.0006240	-	-	-
6. NONFERROUS METAL ORES MINING	-	-	-	-	-	.0013940	-
7. COAL MINING	.0001350	-	.0003430	.0003370	.0003420	-	.0002890
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	.0000260	-	-	-	-	-	-
10. CHEMICAL AND FERTILIZER MINERAL MINING	-	-	-	-	-	-	-
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0039770	.0007020	.0011750	.0012830	.0006140	.0000550	.0012840
13. ORDNANCE AND ACCESSORIES	.0000430	.0011230	-	.0013180	.0000060	.0000080	.0149220
14. FOOD AND KINDRED PRODUCTS	-	-	.0000860	-	.0000060	-	-
15. TOBACCO MANUFACTURES	-	-	-	-	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	.0000010	.0000600	.0001120	.0002870	.0025230	-	.0002300
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	-	.0000030	-	.0003190	.0000740	.0000070	-
18. APPAREL	.0011980	.0007780	.0006530	.0008330	.0006570	.0008740	.0006530
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0000010	-	.0000470	-	-	-	.0000130
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	-	.0005030	.0030900	.0011900	.0015060	.0011370	.0016120
21. WOODEN CONTAINERS	-	.0001470	.0022370	.0000120	.0025120	-	-
22. HOUSEHOLD FURNITURE	-	-	.0009210	-	.0001630	.0000070	.0091980
23. OTHER FURNITURE AND FIXTURES	.0000010	.0001590	.0004790	.0000040	.0002370	.0000020	.0000060
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0000840	.0066470	.0039140	.0077600	.0014960	.0026790	.0041800
25. PAPERBOARD CONTAINERS AND BOXES	-	.0017180	.0083190	.0038780	.0096520	.0171520	.0049160
26. PRINTING AND PUBLISHING	.0001860	.0032610	.0002350	.0011850	.0006520	.0003150	.0013890
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0000010	.0003630	.0065150	.0038370	.0051820	.0053960	.0009820
28. PLASTICS AND SYNTHETIC MATERIALS	-	.0011400	.0009930	.0068060	.0025910	.0233530	.0065400
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0006510	.0002190	.0007260	.0001180	.0001910	.0001750	.0003390
30. PAINTS AND ALLIED PRODUCTS	-	.0010050	.0051880	.0029880	.0048370	.0048410	.0004330
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0099010	.0014700	.0029250	.0030800	.0012680	.0017300	.0011620
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0017750	.0127040	.0218430	.0102360	.0616130	.0194480	.0144160
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0002190	.0000690	.0000960	.0000750	.0001690	.0001110	.0001160
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0010630	.0000140	.0000070	.0000130	.0010680	.0000090	.0000110
35. GLASS AND GLASS PRODUCTS	.0000480	.0002460	.0027060	.0008620	.0021180	.0274820	.0042160
36. STONE AND CLAY PRODUCTS	.0171180	.0026250	.0059000	.0050930	.0077590	.0064350	.0029660
37. PRIMARY IRON AND STEEL MANUFACTURING	.0740920	.0120600	.0344190	.0446950	.0486480	.0516850	.0051160
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0527850	.0118290	.0416690	.1001810	.0345360	.0616530	.0136280
39. METAL CONTAINERS	-	-	.0000090	-	-	.0000080	-
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	.0018870	.0000220	.0233600	.0028550	.0183280	.0022450	.0006130
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0044060	.0050580	.0264350	.0109070	.0463780	.0228740	.0106360
42. OTHER FABRICATED METAL PRODUCTS	.0206030	.0058180	.0219050	.0072680	.0284570	.0166910	.0077990
43. ENGINES AND TURBINES	.0046900	-	.0014660	.0147950	-	-	-
44. FARM MACHINERY AND EQUIPMENT	.0005180	.0000140	.0003700	.0001620	.0000050	.0002480	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.0028330	.0000100	.0004450	.0010070	.0003290	.0002700	.0001440
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	.0004880	.0000230	.0014460	.0005040	-	.0000110	.0000140
47. METALWORKING MACHINERY AND EQUIPMENT	.0158570	.0081130	.0026130	.0102080	.0069390	.0048130	.0034160
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	.0054940	.0046850	.0024850	.0009960	.0000190	.0000070	.0002770
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0098310	.0065700	.0189970	.0099870	.0116130	.0014760	.0013370
50. MACHINE SHOP PRODUCTS	.1050810	.0035880	.0013090	.0025610	.0014470	.0023080	.0012970
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	.0009130	.1116890	.0002240	.0017080	.0001810	-	.0010770
52. SERVICE INDUSTRY MACHINES	.0006630	.0000120	.0551480	.0003350	.0416780	.0009000	.0006500
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0050630	.0195780	.1008240	.0699470	.0439110	.0342580	.0146620
54. HOUSEHOLD APPLIANCES	.0000950	-	.0095350	.0007940	.0156560	.0004520	.0004280
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0008230	.0041590	.0067950	.0174530	.0073730	.0407580	.0073850
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	.0006060	.0109530	.0054670	.0129480	.0063390	.0027440	.0959820
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0012400	.1561450	.0051660	.0411660	.0006720	.0048780	.3099810
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0020220	.0004780	.0000160	.0023640	.0003560	.0301950	.0003750
59. MOTOR VEHICLES AND EQUIPMENT	.0040730	.0000540	.0127060	.0015860	.0021350	.0000080	.0001610
60. AIRCRAFT AND PARTS	.0030930	.0065910	.0063940	.0010600	.0001390	.0000080	.0080310
61. OTHER TRANSPORTATION EQUIPMENT	.0025320	-	.0003620	.0040990	.0018700	.0000070	.0001280
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	.0014140	.0045900	.0224840	.0163190	.0348620	.0027950	.0097140
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	.0001570	.0000890	.0000610	.0006310	.0016320	.0000830	.0021470
64. MISCELLANEOUS MANUFACTURING	.0003270	.0014330	.0016260	.0004610	.0013890	.0051770	.0016600
65. TRANSPORTATION AND WAREHOUSING	.0094280	.0063730	.0127220	.0101610	.0149150	.0123100	.0094120
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0075330	.0046690	.0040660	.0045520	.0055710	.0028770	.0053180
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0130630	.0057150	.0125500	.0072020	.0065690	.0053740	.0026900
69. WHOLESALE AND RETAIL TRADE	.0321180	.0419810	.0554110	.0317900	.0429660	.0624340	.0344060
70. FINANCE AND INSURANCE	.0079150	.0051120	.0077610	.0043650	.0031490	.0041140	.0038800
71. REAL ESTATE AND RENTAL	.0135730	.0070630	.0119110	.0071210	.0048600	.0084370	.0052920
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0018750	.0011730	.0056080	.0012560	.0065020	.0013150	.0040250
73. BUSINESS SERVICES	.0175640	.0349290	.0167490	.0362060	.0964660	.0282870	.0418580
74. RESEARCH AND DEVELOPMENT	.0008440	.0007520	.0007870	.0015170	.0015100	.0015020	.0002260
75. AUTOMOBILE REPAIR AND SERVICES	.0016740	.0002270	.0010790	.0007290	.0003670	.0004170	.0001090
76. AMUSEMENTS	.0000440	.0000350	.0000280	.0000370	.0000260	.0000330	.0000290
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0012330	.0010230	.0011110	.0011850	.0011990	.0011800	.0011360
78. FEDERAL GOVERNMENT ENTERPRISES	.0011520	.0014550	.0010190	.0023480	.0020020	.0013870	.0021630
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0001800	.0000970	.0001630	.0001740	.0001900	.0001820	.0000940
80. GROSS IMPORTS OF GOODS AND SERVICES	.0119540	.0187300	.0027160	.0118630	.0003470	.0344880	.0570970
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0081620	.0174270	.0078350	.0156360	.0072370	.0092440	.0128800
82. OFFICE SUPPLIES	.0009960	.0017150	.0009570	.0015210	.0007300	.0009450	.0013040
TOTAL[4]	.4873220	.5569930	.6147190	.5667980	.6567340	.5736880	.7484500

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Electronic components and accessories	Miscellaneous electrical machinery and equipment	Motor vehicles and equipment	Aircraft and parts	Other transportation equipment	Scientific and controlling instruments	Optical, opthalmic and photographic equipment
	57	58	59	60	61	62	63
1. LIVESTOCK AND LIVESTOCK PRODUCTS.	-	-	-	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	-	-	-	-	-	.0011640	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	-	-	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES.	-	-	-	-	-	-	-
5. IRON AND FERROALLOY ORES MINING	-	.0012160	-	-	-	-	-
6. NONFERROUS METAL ORES MINING.	-	.0009840	-	-	-	.0004010	-
7. COAL MINING	.0001640	-	.0005970	.0001810	.0006810	-	.0015760
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	-	.0001620	.0000050	-	.0000670	.0000290	-
10. CHEMICAL AND FERTILIZER MINERAL MINING.	-	-	-	-	-	-	-
11. NEW CONSTRUCTION.	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0007210	.0000610	.0027100	.0017130	.0003410	.0001460	.0003150
13. ORDNANCE AND ACCESSORIES.	.0082110	-	.0002450	.0051340	-	.0183440	.0012530
14. FOOD AND KINDRED PRODUCTS	-	-	.0000010	-	-	.0030930	-
15. TOBACCO MANUFACTURES.	-	-	-	-	-	-	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS.	-	.0003150	.0019580	.0001430	.0005710	.0074710	.0005040
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	-	-	.0036360	.0004990	.0007030	.0017890	.0003070
18. APPAREL	.0012010	.0008310	.0003730	.0008050	.0009450	.0024420	.0007610
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	-	-	.0053530	-	.0003630	.0003060	-
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS.	.0002420	.0000220	.0004630	.0015860	.0216710	.0006970	.0000630
21. WOODEN CONTAINERS	-	.0000110	-	-	-	.0001240	-
22. HOUSEHOLD FURNITURE	.0043430	-	.0000390	-	.0053260	.0004960	-
23. OTHER FURNITURE AND FIXTURES.	.0000140	-	.0001280	.0011920	.0028760	.0025420	.0000030
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0114210	.0012260	.0032260	.0003860	.0015760	.0047280	.0312620
25. PAPERBOARD CONTAINERS AND BOXES	.0054110	.0067890	.0009540	.0007320	.0003190	.0075420	.0064950
26. PRINTING AND PUBLISHING	.0005410	.0002080	.0004840	.0008010	.0004780	.0005410	.0002500
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS.	.0225320	.0209480	.0020250	.0012260	.0021660	.0029500	.0655730
28. PLASTICS AND SYNTHETIC MATERIALS.	.0129960	.0053520	.0010240	.0008560	.0204610	.0028930	.0013370
29. DRUGS,CLEANING AND TOILET PREPARATIONS.	.0000620	.0000730	.0007720	.0004220	.0006100	.0020390	.0000750
30. PAINTS AND ALLIED PRODUCTS.	.0006410	.0000060	.0039380	.0008370	.0078510	.0005210	.0002000
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0015390	.0013210	.0008560	.0020110	.0035840	.0012570	.0025290
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS.	.0081500	.0585960	.0430020	.0153480	.0211410	.0170310	.0106700
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0000360	.0000470	.0002340	-	.0002850	.0004870	.0000450
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000130	.0000090	.0000030	.0000100	.0000080	.0007240	.0003940
35. GLASS AND GLASS PRODUCTS.	.0200700	.0006100	.0055710	.0001220	.0047160	.0030000	.0104470
36. STONE AND CLAY PRODUCTS	.0044390	.0089850	.0024660	.0036510	.0077240	.0033330	.0180430
37. PRIMARY IRON AND STEEL MANUFACTURING.	.0116890	.0164050	.0616200	.0149080	.0881940	.0072400	.0028100
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0288750	.1002250	.0145820	.0222610	.0416400	.0374200	.0386600
39. METAL CONTAINERS.	-	-	.0000010	-	.0000020	.0022420	-
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS.	.0004490	.0000230	.0009170	.0006060	.0436510	.0012310	-
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS.	.0164190	.0202150	.0182380	.0163370	.0032600	.0147330	.0050390
42. OTHER FABRICATED METAL PRODUCTS	.0129880	.0043440	.0342010	.0099680	.0172670	.0154580	.0095930
43. ENGINES AND TURBINES.	-	.0010610	.0031740	.0014320	.0213460	.0000130	-
44. FARM MACHINERY AND EQUIPMENT.	-	.0005220	.0007770	.0001280	.0039930	.0002720	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.0006690	.0012530	.0003550	.0001410	.0045500	.0005440	.0002280
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT.	-	-	.0002540	.0005020	.0052470	.0000040	-
47. METALWORKING MACHINERY AND EQUIPMENT.	.0044010	.0120160	.0083720	.0205460	.0043170	.0114040	.0041250
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT.	.0003240	.0000180	.0001960	.0003730	.0002220	.0014620	.0010890
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT.	.0010100	.0166580	.0055760	.0103800	.0166640	.0057710	-
50. MACHINE SHOP PRODUCTS	.0014800	.0114860	.0084710	.0115010	.0049630	.0105050	.0009150
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES.	.0044960	.0016560	.0027890	.0013090	-	.0366640	.0014500
52. SERVICE INDUSTRY MACHINES	.0000150	.0000330	.0030960	.0006550	.0063990	.0016660	-
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0334060	.0234730	.0024970	.0034020	.0325760	.0336740	.0131140
54. HOUSEHOLD APPLIANCES.	.0010030	.0034120	.0000010	.0047050	.0163490	.0011130	-
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT.	.0081380	.0376110	.0043010	.0013310	.0034370	.0033220	.0038920
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT.	.0424440	.0056910	.0059590	.0387080	.0016620	.0126470	.0056130
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0858740	.0274440	.0049390	.0154990	.0071790	.0877390	.0003400
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT.	.0007890	.0429690	.0183970	.0037600	.0012230	.0009430	.0036500
59. MOTOR VEHICLES AND EQUIPMENT.	-	.0337890	.2783240	.0064050	.0129020	.0141750	-
60. AIRCRAFT AND PARTS.	-	.0006840	.0003470	.1490190	.0042630	.0152340	.0000610
61. OTHER TRANSPORTATION EQUIPMENT.	-	.0000190	.0006450	.0001780	.0525340	.0011060	.0004020
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS.	.0050160	.0004110	.0000410	.0157440	.0014280	.0611120	.0076590
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT.	.0002900	.0003750	.0000380	.0018990	.0000910	.0050680	.0581000
64. MISCELLANEOUS MANUFACTURING	.0015770	.0005510	.0007930	.0017770	.0023650	.0054390	.0016990
65. TRANSPORTATION AND WAREHOUSING.	.0088440	.0119120	.0135680	.0082140	.0150950	.0096420	.0144880
66. COMMUNICATIONS,EXCEPT BROADCASTING.	.0030900	.0035160	.0025830	.0051160	.0029160	.0047570	.0033020
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES.	.0077610	.0062120	.0069700	.0085950	.0096430	.0039340	.0037940
69. WHOLESALE AND RETAIL TRADE.	.0543010	.0350780	.0291620	.0184840	.0474920	.0459630	.0414860
70. FINANCE AND INSURANCE	.0045010	.0041980	.0035250	.0028540	.0047700	.0049150	.0062790
71. REAL ESTATE AND RENTAL.	.0181350	.0065040	.0022780	.0051380	.0039540	.0088330	.0115610
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0018660	.0012300	.0005840	-	.0014550	.0012730	.0011920
73. BUSINESS SERVICES	.0344110	.0362280	.0337630	.0607790	.0377770	.0222830	.0570170
74. RESEARCH AND DEVELOPMENT.	.0002210	.0015610	.0009130	.0009480	.0010100	.0000970	.0031680
75. AUTOMOBILE REPAIR AND SERVICES.	.0000170	.0005360	.0004140	.0003900	.0008120	.0002250	.0004980
76. AMUSEMENTS.	.0000460	.0000310	.0000140	-	.0000360	.0000360	.0000350
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0012020	.0010960	.0010710	.0010590	.0011830	.0011100	.0011790
78. FEDERAL GOVERNMENT ENTERPRISES.	.0030680	.0021020	.0014480	.0008830	.0006910	.0010420	.0019540
79. STATE AND LOCAL GOVERNMENT ENTERPRISES.	.0001800	.0002210	.0001630	.0001570	.0002120	.0001350	.0000970
80. GROSS IMPORTS OF GOODS AND SERVICES	.0299980	.0392970	.0648890	.0235380	.0579310	.0400200	.0473450
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0146610	.0098420	.0028380	.0030240	.0073090	.0165300	.0072480
82. OFFICE SUPPLIES	.0015000	.0009930	.0004420	.0009780	.0010470	.0016960	.0008130
TOTAL[4]	.5479010	.6306730	.7235890	.5312860	.6955200	.6367820	.5119970

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Miscellaneous manufacturing	Transportation and warehousing	Communications, except broadcasting	Radio and television broadcasting	Electric, gas, water and sanitary services	Wholesale and retail trade	Finance and insurance
	64	65	66	67	68	69	70
1. LIVESTOCK AND LIVESTOCK PRODUCTS	-	.0000480	-	-	-	-	-
2. OTHER AGRICULTURAL PRODUCTS	.0012290	.0009970	-	-	-	-	-
3. FORESTRY AND FISHERY PRODUCTS	.0004790	.0000420	-	-	-	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	-	-	-	-	.0015920	-
5. IRON AND FERROALLOY ORES MINING	-	-	-	-	-	-	-
6. NONFERROUS METAL ORES MINING	-	-	-	-	.0001400	-	-
7. COAL MINING	.0001320	.0000510	-	-	.0141870	.0000440	.0002340
8. CRUDE PETROLEUM AND NATURAL GAS	-	-	-	-	.0509060	.0000030	-
9. STONE AND CLAY MINING AND QUARRYING	.0000680	.0000390	-	-	.0000120	.0000400	-
10. CHEMICAL AND FERTILIZER MINERAL MINING	.0000070	.0000260	-	-	.0000020	-	-
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0025890	.0149800	.0248260	.0040130	.0165690	.0069000	.0044330
13. ORDNANCE AND ACCESSORIES	.0000850	-	-	-	.0000120	.0000920	-
14. FOOD AND KINDRED PRODUCTS	.0013080	.0028930	-	-	.0000210	.0055370	-
15. TOBACCO MANUFACTURES	.0000890	-	-	-	.0000050	.0000250	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	.0165770	.0001950	.0000600	-	.0000930	.0000920	-
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.0061160	.0004770	.0003150	.0011790	.0000010	.0002500	.0008390
18. APPAREL	.0013550	.0001190	-	-	-	.0004900	.0000110
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0010420	.0004000	.0005000	.0014970	-	.0003540	.0010650
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.0159290	.0002520	.0000160	-	.0001270	.0005570	-
21. WOODEN CONTAINERS	.0001390	.0002250	-	-	-	.0004080	-
22. HOUSEHOLD FURNITURE	.0002100	-	-	-	.0000020	.0001080	-
23. OTHER FURNITURE AND FIXTURES	.0006110	-	-	-	-	.0000930	-
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0198560	.0009800	-	.0053380	.0007960	.0046120	.0038270
25. PAPERBOARD CONTAINERS AND BOXES	.0347220	.0002480	-	.0012850	.0000250	.0035610	.0009210
26. PRINTING AND PUBLISHING	.0048450	.0022420	.0096720	.0063990	.0002580	.0024130	.0151120
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0076970	.0010580	.0000230	.0302220	.0011080	-	-
28. PLASTICS AND SYNTHETIC MATERIALS	.0358450	.0000030	-	-	.0000960	.0000350	-
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0027000	.0003620	.0000860	.0000290	.0000320	.0014770	.0004510
30. PAINTS AND ALLIED PRODUCTS	.0069810	.0010980	-	-	.0000040	.0002410	-
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0028250	.0328040	.0013930	.0012870	.0062220	.0066620	.0029820
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0566410	.0068450	.0005440	.0005580	.0010460	.0057880	.0020260
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0042000	.0000670	-	-	-	.0000190	-
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0039870	.0000100	.0000180	.0000220	.0000070	.0001560	.0000310
35. GLASS AND GLASS PRODUCTS	.0034870	.0001570	-	-	-	.0009450	-
36. STONE AND CLAY PRODUCTS	.0020920	.0001130	-	-	.0011690	.0012020	-
37. PRIMARY IRON AND STEEL MANUFACTURING	.0220080	.0008640	-	-	.0008960	.0000740	-
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0437580	.0014040	.0019440	-	.0002900	.0001620	-
39. METAL CONTAINERS	-	-	-	-	-	.0000700	-
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	.0003420	.0000160	-	-	-	.0009940	-
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0084410	.0003870	-	-	-	.0003810	-
42. OTHER FABRICATED METAL PRODUCTS	.0155130	.0011890	.0002480	-	.0053900	.0006270	-
43. ENGINES AND TURBINES	.0000080	.0022430	-	-	.0000880	.0001070	-
44. FARM MACHINERY AND EQUIPMENT	.0002400	-	-	-	.0000050	.0001520	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.0000080	-	-	-	-	.0002550	-
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	.0000110	.0005310	-	-	-	.0001750	-
47. METALWORKING MACHINERY AND EQUIPMENT	.0006940	.0006770	.0000110	-	.0001100	.0001460	-
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	.0003030	-	-	-	-	.0002960	-
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0009440	.0004390	-	-	-	.0003070	-
50. MACHINE SHOP PRODUCTS	.0030140	.0003010	-	-	-	.0003330	-
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	.0069770	.0002150	-	-	.0011520	.0013090	.0005170
52. SERVICE INDUSTRY MACHINES	.0002800	.0000670	-	-	-	.0007570	-
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0054050	.0009350	.0000370	-	.0005100	.0002460	-
54. HOUSEHOLD APPLIANCES	.0025470	-	-	-	-	.0005020	-
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0028320	.0002170	-	-	.0001310	.0001890	-
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	.0028890	.0006050	.0097420	.0262260	.0003330	.0008320	.0009950
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0029760	.0015070	.0008340	.0009380	.0001030	.0001500	-
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0001850	.0023000	.0004100	-	.0000190	.0005320	.0000770
59. MOTOR VEHICLES AND EQUIPMENT	.0103980	.0026380	-	-	.0000370	.0019300	-
60. AIRCRAFT AND PARTS	.0006930	.0059480	-	-	.0000020	.0005310	-
61. OTHER TRANSPORTATION EQUIPMENT	.0015180	.0065030	.0003350	-	.0000480	.0001040	.0002930
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	.0009140	.0004540	.0000040	-	-	.0002410	-
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	.0000090	.0000010	-	-	.0000060	.0031730	-
64. MISCELLANEOUS MANUFACTURING	.0558130	.0014530	.0008010	.0059910	.0003190	.0011540	.0008760
65. TRANSPORTATION AND WAREHOUSING	.0140310	.0678390	.0013410	.0015520	.0129410	.0033950	.0083710
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0055480	.0220900	.0276560	.0663420	.0025770	.0171780	.0221140
67. RADIO AND TELEVISION BROADCASTING	-	-	-	.0026290	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0054090	.0087550	.0064340	.0042000	.1984920	.0350410	.0053670
69. WHOLESALE AND RETAIL TRADE	.0541580	.0299980	.0043170	.0120160	.0120470	.0162730	.0098560
70. FINANCE AND INSURANCE	.0083080	.0198470	.0043830	.0078420	.0052560	.0153860	.1965760
71. REAL ESTATE AND RENTAL	.0124130	.0277550	.0121990	.0466540	.0025400	.0471620	.0720400
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0016290	-	-	-	-	.0022690	-
73. BUSINESS SERVICES	.0408120	.0240100	.0319080	.0474280	.0208390	.0569770	.0922970
74. RESEARCH AND DEVELOPMENT	.0014410	.0002390	.0002060	.0003870	.0002310	.0002330	.0002300
75. AUTOMOBILE REPAIR AND SERVICES	.0012210	.0298240	.0012330	.0009400	.0009430	.0121240	.0028730
76. AMUSEMENTS	.0000390	.0011670	.0002680	.3767610	-	.0010650	.0002000
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0011420	.0011010	.0008900	.0011560	.0009710	.0011510	.0063410
78. FEDERAL GOVERNMENT ENTERPRISES	.0015620	.0015620	.0039840	.0005680	.0185370	.0094830	.0118350
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0002210	.0219940	.0004160	.0000930	.1132710	.0036750	.0027030
80. GROSS IMPORTS OF GOODS AND SERVICES	.1088640	.0391450	.0031680	-	.0036610	.0002140	.0048750
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0088420	.0032290	.0036770	.0148760	.0022290	.0121600	.0104580
82. OFFICE SUPPLIES	.0013290	.0016440	.0039240	.0014320	.0010470	.0027970	.0066500
TOTAL[4]	.6895320	.3978240	.1578230	.6698600	.4978610	.2960080	.4874760

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Real estate and rental	Hotels, personal and repair services, except auto	Business services	Research and development[5]	Automobile repair and services	Amusements	Medical, educational and nonprofit organizations
	71	72	73	74	75	76	77
1. LIVESTOCK AND LIVESTOCK PRODUCTS	.0101000	-	-	-	-	.0037670	.0001950
2. OTHER AGRICULTURAL PRODUCTS	.0126120	-	-	-	-	-	.0002320
3. FORESTRY AND FISHERY PRODUCTS	.0000250	-	-	-	-	-	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	.0000930	-	-	-	-	.0005640	-
5. IRON AND FERROALLOY ORES MINING	.0000800	-	-	-	-	-	-
6. NONFERROUS METAL ORES MINING	.0000820	-	-	-	-	-	-
7. COAL MINING	.0001730	-	.0010050	-	.0013750	-	.0000090
8. CRUDE PETROLEUM AND NATURAL GAS	.0019160	-	-	-	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	.0001340	-	-	-	-	-	-
10. CHEMICAL AND FERTILIZER MINERAL MINING	.0000230	-	-	-	-	-	-
11. NEW CONSTRUCTION	-	-	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0588910	.0025400	.0006290	-	.0134210	.0196200	.0264700
13. ORDNANCE AND ACCESSORIES	.0000660	-	-	-	-	-	-
14. FOOD AND KINDRED PRODUCTS	.0010010	.0010670	-	-	-	-	.0073740
15. TOBACCO MANUFACTURES	.0000260	-	-	-	-	-	.0000070
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	.0002600	.0102520	-	-	-	-	.0001070
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	.0000940	.0019930	.0004730	.0003600	.0021460	.0005940	.0010450
18. APPAREL	.0003870	.0073630	.0001300	-	.0001330	-	.0015610
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0000410	.0096150	.0006330	.0004340	.0020910	.0008650	.0013650
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	.0003810	.0003870	-	-	-	-	.0001350
21. WOODEN CONTAINERS	.0000130	-	-	-	-	-	-
22. HOUSEHOLD FURNITURE	.0000390	.0007590	-	-	-	-	-
23. OTHER FURNITURE AND FIXTURES	.0000140	.0002010	-	-	-	-	-
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0001680	.0119190	.0021240	.0012650	.0004130	.0005950	.0037190
25. PAPERBOARD CONTAINERS AND BOXES	.0001460	.0015520	.0002640	.0003040	.0001190	.0001420	.0008960
26. PRINTING AND PUBLISHING	.0009380	.0005440	.1277980	.0000900	.0013070	.0035530	.0144340
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	.0012360	.0082080	.0004530	-	.0000080	-	.0003990
28. PLASTICS AND SYNTHETIC MATERIALS	.0001700	-	-	-	-	-	-
29. DRUGS,CLEANING AND TOILET PREPARATIONS	.0005410	.0160320	.0009660	.0011580	.0012640	.0001760	.0529890
30. PAINTS AND ALLIED PRODUCTS	.0001760	.0000080	-	-	.0080910	-	-
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0043450	.0111470	.0034030	-	.0034190	.0006490	.0029830
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0007110	.0057150	.0021400	.0032300	.0346820	.0003050	.0028580
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	.0000090	-	-	-	-	-	-
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0000580	.0004730	.0000130	-	.0000050	.0014620	.0000960
35. GLASS AND GLASS PRODUCTS	.0000930	.0002530	-	-	.0120510	-	.0002700
36. STONE AND CLAY PRODUCTS	.0003160	.0042340	.0000070	-	.0049420	-	.0000030
37. PRIMARY IRON AND STEEL MANUFACTURING	.0003230	-	-	-	-	-	-
38. PRIMARY NONFERROUS METALS MANUFACTURING	.0001760	.0005140	.0005030	-	-	-	-
39. METAL CONTAINERS	.0000400	-	-	-	-	-	-
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	.0001480	-	-	-	-	-	-
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	.0000720	-	-	-	-	-	.0007740
42. OTHER FABRICATED METAL PRODUCTS	.0001070	.0022670	.0000250	-	.0142090	-	.0000170
43. ENGINES AND TURBINES	.0000700	-	.0026530	-	-	-	-
44. FARM MACHINERY AND EQUIPMENT	.0000800	.0003480	.0027460	-	-	-	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	.0001100	-	.0005230	-	-	-	-
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	.0000890	-	-	-	-	-	-
47. METALWORKING MACHINERY AND EQUIPMENT	.0005440	-	.0005870	-	.0001190	-	-
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	.0001540	.0000430	-	-	-	-	-
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	.0001460	-	-	-	-	-	-
50. MACHINE SHOP PRODUCTS	.0001640	-	.0000190	-	.0130490	-	.0000090
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	.0001240	-	.0456960	-	-	-	.0003870
52. SERVICE INDUSTRY MACHINES	.0002190	.0034990	.0059390	.0003820	-	-	-
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	.0001110	.0005650	.0000030	-	.0008010	-	-
54. HOUSEHOLD APPLIANCES	.0003490	.0109780	-	-	-	-	-
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0000550	.0006400	.0000030	-	.0044030	-	.0000020
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	.0002270	.0009360	.0039340	-	-	-	.0008950
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0003200	.0395330	.0009380	.0272890	.0009380	.0009380	.0006610
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0000580	.0003200	.0001620	-	.0160000	-	.0005510
59. MOTOR VEHICLES AND EQUIPMENT	.0003040	-	.0001660	-	.1609550	-	.0000780
60. AIRCRAFT AND PARTS	.0002130	-	-	-	-	-	-
61. OTHER TRANSPORTATION EQUIPMENT	.0000930	.0006030	.0004800	.0008720	.0009810	.0001360	.0007030
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	.0001910	.0072080	-	-	.0027640	-	.0078860
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	.0000710	.0082450	.0085620	-	-	.0041360	.0045340
64. MISCELLANEOUS MANUFACTURING	.0002340	.0219350	.0082820	.0010080	.0002350	.0158190	.0014600
65. TRANSPORTATION AND WAREHOUSING	.0059270	.0069760	.0034400	.0003550	.0088550	.0037480	.0049840
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0040250	.0074400	.0663420	.0004210	.0082210	.0061480	.0103410
67. RADIO AND TELEVISION BROADCASTING	.0002280	-	.0293880	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0041690	.0200110	.0103140	-	.0346880	.0077370	.0333810
69. WHOLESALE AND RETAIL TRADE	.0176040	.0435680	.1834640	.0022230	.0865940	.0126810	.0188850
70. FINANCE AND INSURANCE	.0322130	.0156910	.0091850	.0009040	.0252960	.0220820	.0112570
71. REAL ESTATE AND RENTAL	.0189700	.0430200	.0268390	.0020200	.0363140	.0466290	.0635570
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	.0042240	.0291170	.0039370	-	-	-	.0048510
73. BUSINESS SERVICES	.0232250	.0329740	.0381240	.0152010	.0246020	.0447750	.0322150
74. RESEARCH AND DEVELOPMENT	.0002330	.0002410	.0002300	.0002090	.0002520	-	.0017570
75. AUTOMOBILE REPAIR AND SERVICES	.0016020	.0108210	.0038400	-	.0189520	-	.0016870
76. AMUSEMENTS	.0016750	-	.0011320	.0009940	-	.2485350	.0038990
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	.0007320	.0011520	.0001380	-	.0011520	.0011440	.0155970
78. FEDERAL GOVERNMENT ENTERPRISES	.0042060	.0005540	.0204020	-	.0004320	.0005310	.0006720
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0068400	.0015580	.0002400	-	.0027800	.0002170	.0005510
80. GROSS IMPORTS OF GOODS AND SERVICES	-	-	-	-	-	.0276830	.0002240
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0006860	.0094000	.0052190	.0023480	.0027910	.0113640	.0147370
82. OFFICE SUPPLIES	.0005620	.0020490	.0105460	-	.0005210	.0015470	.0049570
TOTAL[4]	.2272710	.4164680	.6340390	.0610670	.5513710	.4881420	.3586560

See footnotes on p. 131.

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TABLE D-13. DIRECT REQUIREMENTS PER DOLLAR OF GROSS OUTPUT, 1980[1]—Continued

(Producers values - 1958 dollars)[2]

Industry number and title[3]	Federal government enterprises	State and local government enterprises	Gross imports of goods and services	Business travel, entertainment and gifts	Office supplies
	78	79	80	81	82
1. LIVESTOCK AND LIVESTOCK PRODUCTS	.0004330	-	-	.0040380	-
2. OTHER AGRICULTURAL PRODUCTS	.1457460	-	-	.0097480	-
3. FORESTRY AND FISHERY PRODUCTS	-	-	-	.0022480	-
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	-	.0001200	-	-	-
5. IRON AND FERROALLOY ORES MINING	.0004400	-	-	-	-
6. NONFERROUS METAL ORES MINING	-	-	-	-	-
7. COAL MINING	.0122250	.0171730	-	-	-
8. CRUDE PETROLEUM AND NATURAL GAS	-	.0041000	-	-	-
9. STONE AND CLAY MINING AND QUARRYING	.0001000	-	-	-	-
10. CHEMICAL AND FERTILIZER MINERAL MINING	-	-	-	-	-
11. NEW CONSTRUCTION	-	-	-	-	-
12. MAINTENANCE AND REPAIR CONSTRUCTION	.0031550	.2200650	-	-	-
13. ORDNANCE AND ACCESSORIES	-	.0000020	-	.0006910	-
14. FOOD AND KINDRED PRODUCTS	.0645260	.0001110	-	.2894820	-
15. TOBACCO MANUFACTURES	-	-	-	.0187050	-
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	-	-	-	-	-
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	-	.0004720	-	-	-
18. APPAREL	-	.0003240	-	.0009010	-
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	.0004580	-	-	-	-
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	-	.0000090	-	.0002390	-
21. WOODEN CONTAINERS	-	-	-	-	-
22. HOUSEHOLD FURNITURE	-	-	-	-	-
23. OTHER FURNITURE AND FIXTURES	-	-	-	-	-
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	.0068100	.0003950	-	.0004590	.1966330
25. PAPERBOARD CONTAINERS AND BOXES	.0016390	-	-	-	-
26. PRINTING AND PUBLISHING	.0096720	.0025550	-	.0009430	.4792550
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	-	.0202570	-	-	.0058400
28. PLASTICS AND SYNTHETIC MATERIALS	-	.0000080	-	-	-
29. DRUGS,CLEANING AND TOILET PREPARATIONS	-	.0006420	-	.0050400	-
30. PAINTS AND ALLIED PRODUCTS	-	.0000250	-	-	-
31. PETROLEUM REFINING AND RELATED INDUSTRIES	.0015430	.0083900	-	-	-
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	.0002720	.0011530	-	.0002600	.0054890
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	-	-	-	-	-
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	.0001590	-	-	.0032140	-
35. GLASS AND GLASS PRODUCTS	-	-	-	.0003240	.0003620
36. STONE AND CLAY PRODUCTS	.0029610	.0001270	-	.0002800	-
37. PRIMARY IRON AND STEEL MANUFACTURING	-	.0004670	-	-	.0017390
38. PRIMARY NONFERROUS METALS MANUFACTURING	-	-	-	-	-
39. METAL CONTAINERS	-	-	-	-	-
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	-	-	-	-	-
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	-	-	-	-	-
42. OTHER FABRICATED METAL PRODUCTS	.0007380	.0044500	-	.0005240	.0024800
43. ENGINES AND TURBINES	-	-	-	-	-
44. FARM MACHINERY AND EQUIPMENT	-	-	-	-	-
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	-	-	-	-	-
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	-	-	-	-	-
47. METALWORKING MACHINERY AND EQUIPMENT	-	-	-	-	-
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	-	-	-	-	-
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	-	-	-	-	-
50. MACHINE SHOP PRODUCTS	.0002750	.0003200	-	-	-
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	-	-	-	-	.0114200
52. SERVICE INDUSTRY MACHINES	-	-	-	-	-
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	-	-	-	-	-
54. HOUSEHOLD APPLIANCES	-	-	-	.0017200	.0109780
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	.0000530	.0000620	-	-	-
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	-	-	-	.0070730	-
57. ELECTRONIC COMPONENTS AND ACCESSORIES	.0002140	.0001030	-	-	-
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	.0001380	.0002140	-	-	-
59. MOTOR VEHICLES AND EQUIPMENT	.0024120	.0026330	-	-	-
60. AIRCRAFT AND PARTS	-	-	-	-	-
61. OTHER TRANSPORTATION EQUIPMENT	-	-	-	-	-
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	-	-	-	.0011640	-
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	-	-	-	.0016850	.1815760
64. MISCELLANEOUS MANUFACTURING	-	.0000730	-	.0064540	.1263170
65. TRANSPORTATION AND WAREHOUSING	.1565150	.0137230	-	.3632030	-
66. COMMUNICATIONS,EXCEPT BROADCASTING	.0033620	.0061550	-	-	-
67. RADIO AND TELEVISION BROADCASTING	-	-	-	-	-
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	.0285270	.1222960	-	-	-
69. WHOLESALE AND RETAIL TRADE	.0159390	.0089860	-	.0545520	-
70. FINANCE AND INSURANCE	.0012410	.0090880	-	-	-
71. REAL ESTATE AND RENTAL	.0095010	.0137760	-	-	-
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	-	.0015510	-	.1403250	-
73. BUSINESS SERVICES	.0313240	.0326720	-	-	-
74. RESEARCH AND DEVELOPMENT	.0007670	-	-	-	-
75. AUTOMOBILE REPAIR AND SERVICES	.0058870	.0011200	-	-	-
76. AMUSEMENTS	-	-	-	.0187490	-
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	-	.0000550	-	.0065050	-
78. FEDERAL GOVERNMENT ENTERPRISES	.0015300	.0008210	-	-	-
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	.0002240	.0001030	-	-	-
80. GROSS IMPORTS OF GOODS AND SERVICES	.0117960	-	-	.0360960	-
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	.0068660	.0023450	-	-	-
82. OFFICE SUPPLIES	.0067690	.0077750	-	-	-
TOTAL[4]	.5342170	.5047160	.0000000	.9746220	1.0220890

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2]

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Livestock and livestock products	Other agricultural products	Forestry and fishery products	Agricultural, forestry and fishery services	Iron and ferroalloy ores mining	Nonferrous metal ores mining	Coal mining
	1	2	3	4	5	6	7
1. LIVESTOCK AND LIVESTOCK PRODUCTS	36,196	3,208	1,994	6,544	68	64	52
2. OTHER AGRICULTURAL PRODUCTS	14,130	40,249	4,481	16,152	120	109	98
3. FORESTRY AND FISHERY PRODUCTS	74	62	53,541	37	38	33	48
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	3,684	3,500	1,615	113,185	23	25	24
5. IRON AND FERROALLOY ORES MINING	6	10	3	5	10,268	153	12
6. NONFERROUS METAL ORES MINING	14	24	7	12	757	22,560	24
7. COAL MINING	41	47	18	26	163	118	25,453
8. CRUDE PETROLEUM AND NATURAL GAS	137	264	118	130	167	185	140
9. STONE AND CLAY MINING AND QUARRYING	46	108	18	46	24	44	33
10. CHEMICAL AND FERTILIZER MINERAL MINING	28	68	13	29	9	38	5
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	716	754	266	484	557	495	362
13. ORDNANCE AND ACCESSORIES	3	3	2	2	3	4	4
14. FOOD AND KINDRED PRODUCTS	2,898	333	425	641	56	74	54
15. TOBACCO MANUFACTURES	1	1	1	1	1	1	1
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	59	87	73	70	23	78	60
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	39	62	129	95	9	13	28
18. APPAREL	25	24	14	16	13	18	19
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	59	79	20	39	10	14	9
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	84	114	69	71	283	96	424
21. WOODEN CONTAINERS	41	94	13	41	3	3	3
22. HOUSEHOLD FURNITURE	3	4	5	3	4	3	5
23. OTHER FURNITURE AND FIXTURES	2	2	2	2	2	2	2
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	181	175	274	171	74	120	150
25. PAPERBOARD CONTAINERS AND BOXES	154	82	181	160	26	43	55
26. PRINTING AND PUBLISHING	421	546	602	315	231	304	245
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	631	1,531	298	652	240	735	114
28. PLASTICS AND SYNTHETIC MATERIALS	100	173	88	98	38	78	89
29. DRUGS,CLEANING AND TOILET PREPARATIONS	87	53	20	35	14	30	13
30. PAINTS AND ALLIED PRODUCTS	22	27	27	16	18	22	21
31. PETROLEUM REFINING AND RELATED INDUSTRIES	82	170	80	82	70	73	61
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	486	835	300	396	131	204	638
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	2	2	1	1	1	1	2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	13	19	7	10	4	5	7
35. GLASS AND GLASS PRODUCTS	92	50	29	37	19	25	31
36. STONE AND CLAY PRODUCTS	71	113	36	58	245	454	150
37. PRIMARY IRON AND STEEL MANUFACTURING	125	131	76	95	514	1,210	469
38. PRIMARY NONFERROUS METALS MANUFACTURING	81	98	49	63	105	308	249
39. METAL CONTAINERS	107	43	21	35	7	14	6
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	37	41	30	27	79	69	78
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	103	57	31	46	57	91	336
42. OTHER FABRICATED METAL PRODUCTS	141	153	71	255	113	165	291
43. ENGINES AND TURBINES	10	14	15	8	30	36	33
44. FARM MACHINERY AND EQUIPMENT	88	197	31	83	13	18	22
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	12	20	9	10	575	842	1,117
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	7	11	5	6	17	34	268
47. METALWORKING MACHINERY AND EQUIPMENT	33	40	22	28	54	104	258
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	34	74	20	34	17	42	19
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	27	43	21	24	88	180	217
50. MACHINE SHOP PRODUCTS	59	69	30	39	65	106	118
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	44	65	72	35	26	34	28
52. SERVICE INDUSTRY MACHINES	9	12	12	7	7	8	9
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	30	41	31	23	78	215	318
54. HOUSEHOLD APPLIANCES	5	6	6	4	5	5	7
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	24	23	15	15	32	44	93
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	21	26	22	16	44	22	21
57. ELECTRONIC COMPONENTS AND ACCESSORIES	28	36	33	21	38	38	39
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	31	38	10	20	21	19	18
59. MOTOR VEHICLES AND EQUIPMENT	53	49	18	28	68	42	69
60. AIRCRAFT AND PARTS	20	20	14	13	36	24	22
61. OTHER TRANSPORTATION EQUIPMENT	16	16	325	11	91	24	151
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	16	18	10	11	22	35	25
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	21	25	23	14	12	16	13
64. MISCELLANEOUS MANUFACTURING	45	55	82	43	31	38	86
65. TRANSPORTATION AND WAREHOUSING	1,571	1,119	835	951	4,278	1,844	634
66. COMMUNICATIONS,EXCEPT BROADCASTING	314	332	271	309	197	213	143
67. RADIO AND TELEVISION BROADCASTING	76	114	140	62	41	51	41
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	313	382	121	207	936	1,128	757
69. WHOLESALE AND RETAIL TRADE	7,726	7,382	3,739	4,172	2,627	4,099	4,222
70. FINANCE AND INSURANCE	1,438	1,386	1,458	977	854	1,427	1,037
71. REAL ESTATE AND RENTAL	231	383	196	227	378	190	172
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	218	246	160	155	286	348	233
73. BUSINESS SERVICES	2,078	3,091	3,815	1,682	1,101	1,378	1,115
74. RESEARCH AND DEVELOPMENT	42	38	24	25	66	73	56
75. AUTOMOBILE REPAIR AND SERVICES	253	183	84	118	149	98	88
76. AMUSEMENTS	97	126	126	73	76	76	60
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	1,163	287	209	374	195	256	249
78. FEDERAL GOVERNMENT ENTERPRISES	327	392	321	276	371	458	376
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	227	258	104	154	587	636	419
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	77,926	70,012	77,476	150,434	28,100	42,280	42,413

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Crude petroleum and natural gas	Stone and clay mining and quarrying	Chemical and fertilizer mineral mining	New construction	Maintenance and repair construction	Ordnance and accessories	Food and kindred products
	8	9	10	11	12	13	14
1. LIVESTOCK AND LIVESTOCK PRODUCTS	109	59	61	113	60	128	10,371
2. OTHER AGRICULTURAL PRODUCTS	171	97	91	390	115	173	7,562
3. FORESTRY AND FISHERY PRODUCTS	12	17	19	290	131	35	320
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	30	25	21	81	40	42	1,360
5. IRON AND FERROALLOY ORES MINING	4	20	21	47	20	33	10
6. NONFERROUS METAL ORES MINING	8	29	30	99	55	179	21
7. COAL MINING	24	110	82	66	35	55	59
8. CRUDE PETROLEUM AND NATURAL GAS	12,689	212	171	176	172	96	128
9. STONE AND CLAY MINING AND QUARRYING	10	26,777	467	524	253	38	38
10. CHEMICAL AND FERTILIZER MINERAL MINING	4	15	10,352	17	14	13	23
11. NEW CONSTRUCTION	0	0	0	28,524	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	628	453	397	394	43,300	457	585
13. ORDNANCE AND ACCESSORIES	4	3	3	14	6	31,893	4
14. FOOD AND KINDRED PRODUCTS	61	67	79	114	73	180	18,032
15. TOBACCO MANUFACTURES	1	1	2	2	1	4	2
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	18	42	32	70	34	117	94
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	12	28	12	31	16	74	44
18. APPAREL	14	20	14	44	25	118	70
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	8	12	11	22	14	23	100
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	69	84	77	2,707	1,165	184	138
21. WOODEN CONTAINERS	2	5	3	19	9	27	61
22. HOUSEHOLD FURNITURE	3	3	3	242	11	68	5
23. OTHER FURNITURE AND FIXTURES	2	2	1	211	34	25	2
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	94	335	213	418	250	355	514
25. PAPERBOARD CONTAINERS AND BOXES	25	109	57	144	100	231	607
26. PRINTING AND PUBLISHING	412	315	256	731	277	878	733
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	108	230	303	352	353	328	497
28. PLASTICS AND SYNTHETIC MATERIALS	33	97	49	154	251	258	161
29. DRUGS,CLEANING AND TOILET PREPARATIONS	12	25	19	39	34	45	128
30. PAINTS AND ALLIED PRODUCTS	23	17	14	117	765	41	26
31. PETROLEUM REFINING AND RELATED INDUSTRIES	35	104	57	107	114	50	74
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	143	620	208	460	258	1,579	741
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	1	2	1	3	2	6	2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	5	7	6	14	8	29	12
35. GLASS AND GLASS PRODUCTS	20	31	20	161	226	185	372
36. STONE AND CLAY PRODUCTS	54	2,175	104	2,834	1,194	341	81
37. PRIMARY IRON AND STEEL MANUFACTURING	119	647	535	1,795	725	1,154	307
38. PRIMARY NONFERROUS METALS MANUFACTURING	74	121	147	1,046	566	2,009	183
39. METAL CONTAINERS	5	8	8	18	49	17	559
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	59	65	49	2,959	1,588	100	39
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	59	82	85	344	170	906	197
42. OTHER FABRICATED METAL PRODUCTS	194	167	120	823	266	782	171
43. ENGINES AND TURBINES	44	31	31	37	16	80	13
44. FARM MACHINERY AND EQUIPMENT	10	23	14	26	10	51	49
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	112	1,035	611	149	60	53	13
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	8	646	216	278	37	27	7
47. METALWORKING MACHINERY AND EQUIPMENT	39	88	58	167	75	1,085	65
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	32	26	22	52	32	102	35
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	276	275	144	364	104	500	37
50. MACHINE SHOP PRODUCTS	44	141	90	227	104	4,720	83
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	49	35	30	91	32	170	70
52. SERVICE INDUSTRY MACHINES	11	9	7	393	91	107	12
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	127	184	226	516	247	1,106	44
54. HOUSEHOLD APPLIANCES	5	5	4	223	109	50	8
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	20	37	23	671	344	631	42
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	24	22	21	70	80	2,440	29
57. ELECTRONIC COMPONENTS AND ACCESSORIES	86	38	35	109	62	1,238	41
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	13	18	18	52	30	100	27
59. MOTOR VEHICLES AND EQUIPMENT	33	45	62	71	33	176	56
60. AIRCRAFT AND PARTS	23	26	30	60	27	11,535	32
61. OTHER TRANSPORTATION EQUIPMENT	15	27	39	56	27	147	23
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	18	29	25	261	90	1,012	21
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	17	17	15	36	18	69	29
64. MISCELLANEOUS MANUFACTURING	36	66	44	148	128	208	79
65. TRANSPORTATION AND WAREHOUSING	1,391	1,303	3,173	2,602	1,395	1,776	2,507
66. COMMUNICATIONS,EXCEPT BROADCASTING	174	206	207	402	196	531	417
67. RADIO AND TELEVISION BROADCASTING	93	54	45	150	47	153	127
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	303	939	884	406	234	361	343
69. WHOLESALE AND RETAIL TRADE	2,736	4,892	3,540	11,781	8,500	7,381	8,048
70. FINANCE AND INSURANCE	1,235	1,135	792	1,357	655	1,345	1,288
71. REAL ESTATE AND RENTAL	910	191	115	146	87	142	184
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	278	355	353	448	240	845	397
73. BUSINESS SERVICES	2,477	1,469	1,231	4,092	1,273	4,179	3,469
74. RESEARCH AND DEVELOPMENT	21	64	26	106	105	191	122
75. AUTOMOBILE REPAIR AND SERVICES	130	98	121	388	173	138	436
76. AMUSEMENTS	123	77	76	168	70	195	145
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	211	244	221	333	197	408	603
78. FEDERAL GOVERNMENT ENTERPRISES	286	403	372	477	260	561	427
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	253	556	536	316	182	260	281
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	27,017	48,045	27,652	73,943	68,147	87,330	64,039

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Tobacco manufactures	Broad and narrow fabrics, yarn and thread mills	Miscellaneous textile goods and floor coverings	Apparel	Miscellaneous fabricated textile products	Lumber and wood products, except containers	Wooden containers
	15	16	17	18	19	20	21
1. LIVESTOCK AND LIVESTOCK PRODUCTS	646	633	473	275	366	356	182
2. OTHER AGRICULTURAL PRODUCTS	6,917	2,915	889	1,079	1,395	1,786	724
3. FORESTRY AND FISHERY PRODUCTS	31	115	90	405	103	4,860	1,777
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	615	303	127	132	164	429	178
5. IRON AND FERROALLOY ORES MINING	4	18	14	9	12	6	30
6. NONFERROUS METAL ORES MINING	12	45	35	23	31	16	16
7. COAL MINING	30	153	105	68	93	43	55
8. CRUDE PETROLEUM AND NATURAL GAS	73	227	175	111	155	165	148
9. STONE AND CLAY MINING AND QUARRYING	26	51	37	24	37	29	25
10. CHEMICAL AND FERTILIZER MINERAL MINING	20	109	79	48	63	17	9
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	246	563	472	375	468	453	420
13. ORDNANCE AND ACCESSORIES	2	4	4	3	7	3	3
14. FOOD AND KINDRED PRODUCTS	222	279	222	162	210	138	118
15. TOBACCO MANUFACTURES	7,885	2	2	2	2	2	2
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	47	32,418	6,687	10,457	14,309	69	54
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	25	604	16,586	329	1,785	39	26
18. APPAREL	15	191	259	63,144	695	117	58
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	23	217	254	590	37,919	29	21
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	128	197	197	127	227	47,468	17,315
21. WOODEN CONTAINERS	54	17	10	8	11	71	44,080
22. HOUSEHOLD FURNITURE	3	12	117	9	146	119	290
23. OTHER FURNITURE AND FIXTURES	1	3	4	4	90	17	44
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	586	720	852	454	907	428	300
25. PAPERBOARD CONTAINERS AND BOXES	411	535	419	417	608	222	171
26. PRINTING AND PUBLISHING	653	680	576	554	676	615	553
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	473	3,084	2,232	1,334	1,719	442	228
28. PLASTICS AND SYNTHETIC MATERIALS	373	4,116	4,051	1,665	2,369	289	141
29. DRUGS,CLEANING AND TOILET PREPARATIONS	48	196	142	87	126	50	38
30. PAINTS AND ALLIED PRODUCTS	14	75	71	37	54	136	77
31. PETROLEUM REFINING AND RELATED INDUSTRIES	44	126	98	60	84	98	80
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	432	975	1,739	625	3,196	423	306
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	2	8	9	73	20	2	2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	7	17	44	81	212	14	11
35. GLASS AND GLASS PRODUCTS	28	936	316	324	498	102	67
36. STONE AND CLAY PRODUCTS	42	138	129	72	118	231	185
37. PRIMARY IRON AND STEEL MANUFACTURING	72	193	166	119	190	159	1,243
38. PRIMARY NONFERROUS METALS MANUFACTURING	77	174	146	109	154	120	120
39. METAL CONTAINERS	47	63	49	29	40	20	14
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	16	46	37	28	41	52	63
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	36	94	87	60	111	185	204
42. OTHER FABRICATED METAL PRODUCTS	117	199	195	154	260	413	441
43. ENGINES AND TURBINES	9	13	12	9	11	13	12
44. FARM MACHINERY AND EQUIPMENT	40	23	22	12	16	16	12
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	8	27	20	13	18	13	15
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	4	18	13	9	12	37	19
47. METALWORKING MACHINERY AND EQUIPMENT	28	92	79	47	82	56	79
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	30	378	188	143	200	92	169
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	20	73	54	36	71	89	74
50. MACHINE SHOP PRODUCTS	35	84	83	52	109	109	153
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	64	71	60	55	68	42	40
52. SERVICE INDUSTRY MACHINES	9	13	11	10	13	9	10
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	23	80	64	46	69	47	55
54. HOUSEHOLD APPLIANCES	3	8	7	7	9	7	7
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	18	48	42	27	45	82	123
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	20	35	32	27	38	24	25
57. ELECTRONIC COMPONENTS AND ACCESSORIES	30	50	43	40	60	35	38
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	12	18	15	11	17	28	30
59. MOTOR VEHICLES AND EQUIPMENT	19	33	36	25	37	79	86
60. AIRCRAFT AND PARTS	15	35	48	23	58	32	31
61. OTHER TRANSPORTATION EQUIPMENT	11	25	24	18	23	83	54
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	11	33	32	29	187	21	22
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	22	46	41	32	40	22	22
64. MISCELLANEOUS MANUFACTURING	80	164	347	735	677	113	87
65. TRANSPORTATION AND WAREHOUSING	1,051	2,762	2,782	1,642	2,279	2,971	2,964
66. COMMUNICATIONS,EXCEPT BROADCASTING	220	399	384	357	392	340	309
67. RADIO AND TELEVISION BROADCASTING	121	110	92	87	99	70	65
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	167	645	498	346	489	411	521
69. WHOLESALE AND RETAIL TRADE	3,799	8,236	8,160	7,255	9,614	6,830	7,730
70. FINANCE AND INSURANCE	604	1,523	1,468	1,255	1,386	1,134	1,143
71. REAL ESTATE AND RENTAL	108	177	159	166	193	145	153
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	231	722	584	821	801	585	758
73. BUSINESS SERVICES	3,297	3,008	2,502	2,358	2,703	1,898	1,767
74. RESEARCH AND DEVELOPMENT	190	135	116	102	137	40	37
75. AUTOMOBILE REPAIR AND SERVICES	115	213	191	141	228	819	907
76. AMUSEMENTS	114	144	125	122	142	105	110
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	268	473	395	416	457	319	350
78. FEDERAL GOVERNMENT ENTERPRISES	461	690	644	581	660	352	414
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	127	436	359	249	353	330	386
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	31,882	72,488	57,924	100,965	91,463	77,628	88,594

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Household furniture	Other furniture and fixtures	Paper and allied products, except containers	Paperboard containers and boxes	Printing and publishing	Chemicals and selected chemical products	Plastics and synthetic materials
	22	23	24	25	26	27	28
1. LIVESTOCK AND LIVESTOCK PRODUCTS	243	115	176	116	156	262	182
2. OTHER AGRICULTURAL PRODUCTS	550	240	300	187	250	351	253
3. FORESTRY AND FISHERY PRODUCTS	584	274	321	144	89	438	195
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	108	59	66	45	48	70	50
5. IRON AND FERROALLOY ORES MINING	26	87	9	7	5	71	31
6. NONFERROUS METAL ORES MINING	48	66	24	16	16	180	77
7. COAL MINING	67	90	125	70	54	230	152
8. CRUDE PETROLEUM AND NATURAL GAS	112	103	220	153	104	498	320
9. STONE AND CLAY MINING AND QUARRYING	37	52	144	66	40	104	59
10. CHEMICAL AND FERTILIZER MINERAL MINING	23	15	54	28	24	487	199
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	392	399	642	579	605	488	650
13. ORDNANCE AND ACCESSORIES	5	13	4	15	22	5	4
14. FOOD AND KINDRED PRODUCTS	280	127	241	154	203	381	265
15. TOBACCO MANUFACTURES	2	2	2	2	4	3	2
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	2,090	337	352	183	111	93	112
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	372	365	107	70	62	33	42
18. APPAREL	90	117	86	102	34	59	65
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	81	60	118	59	38	120	59
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	5,486	2,530	2,817	1,217	652	260	255
21. WOODEN CONTAINERS	19	16	21	22	8	12	12
22. HOUSEHOLD FURNITURE	47,420	1,149	12	7	6	5	5
23. OTHER FURNITURE AND FIXTURES	236	42,131	9	5	17	3	3
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	527	511	22,743	9,291	4,992	574	1,161
25. PAPERBOARD CONTAINERS AND BOXES	659	684	900	25,215	375	288	325
26. PRINTING AND PUBLISHING	457	525	1,030	968	48,128	720	605
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	593	381	971	545	564	14,217	5,746
28. PLASTICS AND SYNTHETIC MATERIALS	688	353	573	400	175	725	12,371
29. DRUGS,CLEANING AND TOILET PREPARATIONS	51	40	82	71	45	345	321
30. PAINTS AND ALLIED PRODUCTS	367	303	38	27	22	95	151
31. PETROLEUM REFINING AND RELATED INDUSTRIES	57	48	102	79	47	294	189
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	2,610	1,225	1,611	1,283	505	450	766
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	28	32	3	3	2	3	2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	40	20	21	24	18	12	10
35. GLASS AND GLASS PRODUCTS	676	1,467	79	129	42	118	91
36. STONE AND CLAY PRODUCTS	232	250	284	148	101	214	144
37. PRIMARY IRON AND STEEL MANUFACTURING	985	3,614	176	173	106	398	229
38. PRIMARY NONFERROUS METALS MANUFACTURING	458	626	154	115	116	493	248
39. METAL CONTAINERS	41	30	28	93	17	192	115
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	167	506	45	39	35	51	52
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	370	434	148	130	77	130	114
42. OTHER FABRICATED METAL PRODUCTS	1,847	1,403	513	325	216	282	219
43. ENGINES AND TURBINES	12	17	11	10	11	16	13
44. FARM MACHINERY AND EQUIPMENT	13	35	9	7	11	13	9
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	22	38	23	15	13	66	34
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	42	18	15	10	8	50	24
47. METALWORKING MACHINERY AND EQUIPMENT	171	276	97	89	54	115	125
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	160	66	145	187	130	605	295
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	87	155	68	66	39	108	80
50. MACHINE SHOP PRODUCTS	150	252	109	102	60	124	105
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	42	165	62	47	108	103	69
52. SERVICE INDUSTRY MACHINES	15	191	11	9	14	15	12
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	82	162	71	56	64	140	101
54. HOUSEHOLD APPLIANCES	37	32	7	8	8	8	7
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	85	92	84	62	38	37	44
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	38	93	28	26	56	39	36
57. ELECTRONIC COMPONENTS AND ACCESSORIES	55	117	42	37	64	63	48
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	20	24	16	14	13	19	15
59. MOTOR VEHICLES AND EQUIPMENT	43	89	31	27	28	35	28
60. AIRCRAFT AND PARTS	41	87	34	36	90	38	32
61. OTHER TRANSPORTATION EQUIPMENT	30	51	25	22	19	29	23
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	44	314	40	27	32	47	43
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	27	29	32	27	140	40	67
64. MISCELLANEOUS MANUFACTURING	233	543	101	99	175	121	94
65. TRANSPORTATION AND WAREHOUSING	2,119	1,922	2,527	2,522	1,836	2,619	2,509
66. COMMUNICATIONS,EXCEPT BROADCASTING	385	364	331	305	659	397	339
67. RADIO AND TELEVISION BROADCASTING	63	77	83	71	150	111	94
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	432	484	1,059	595	503	909	666
69. WHOLESALE AND RETAIL TRADE	7,546	7,777	6,054	6,158	5,475	5,393	5,001
70. FINANCE AND INSURANCE	1,047	1,018	1,040	1,073	1,292	1,351	1,243
71. REAL ESTATE AND RENTAL	156	147	118	137	284	177	144
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	700	660	466	532	782	574	436
73. BUSINESS SERVICES	1,723	2,101	2,271	1,933	4,081	3,031	2,551
74. RESEARCH AND DEVELOPMENT	91	83	179	195	218	138	148
75. AUTOMOBILE REPAIR AND SERVICES	236	218	215	187	176	212	172
76. AMUSEMENTS	106	116	109	104	191	149	118
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	357	334	315	342	337	323	328
78. FEDERAL GOVERNMENT ENTERPRISES	404	453	556	458	1,071	685	835
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	305	325	662	402	340	561	433
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	86,236	79,724	52,396	58,294	76,696	42,206	42,167

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Drugs, cleaning, and toilet prepara-tions	Paints and allied products	Petroleum refining and related industries	Rubber and miscella-neous plastics products	Leather tanning and industrial leather products	Footwear and other leather products	Glass and glass products
	29	30	31	32	33	34	35
1. LIVESTOCK AND LIVESTOCK PRODUCTS	349	236	96	131	85	105	80
2. OTHER AGRICULTURAL PRODUCTS	350	277	155	227	126	234	148
3. FORESTRY AND FISHERY PRODUCTS	85	134	29	77	97	90	114
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	71	60	30	44	27	42	35
5. IRON AND FERROALLOY ORES MINING	15	31	8	14	7	6	7
6. NONFERROUS METAL ORES MINING	37	64	16	36	18	17	20
7. COAL MINING	73	107	43	78	94	46	91
8. CRUDE PETROLEUM AND NATURAL GAS	159	251	5,913	147	91	77	121
9. STONE AND CLAY MINING AND QUARRYING	51	73	112	63	32	25	382
10. CHEMICAL AND FERTILIZER MINERAL MINING	67	127	22	73	50	30	27
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	324	486	561	416	181	262	366
13. ORDNANCE AND ACCESSORIES	9	5	4	6	4	5	5
14. FOOD AND KINDRED PRODUCTS	520	358	87	148	122	112	102
15. TOBACCO MANUFACTURES	2	3	1	2	1	2	2
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	82	79	27	863	51	1,123	57
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	47	29	14	950	21	347	20
18. APPAREL	55	64	26	206	16	383	95
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	51	44	18	57	67	55	20
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	207	215	88	218	73	531	905
21. WOODEN CONTAINERS	9	9	4	8	42	17	113
22. HOUSEHOLD FURNITURE	6	4	4	16	2	21	97
23. OTHER FURNITURE AND FIXTURES	3	2	2	8	1	3	3
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	744	805	238	569	217	604	982
25. PAPERBOARD CONTAINERS AND BOXES	873	468	95	357	108	443	2,204
26. PRINTING AND PUBLISHING	1,456	789	653	729	350	870	571
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	1,902	3,647	612	1,748	1,158	781	626
28. PLASTICS AND SYNTHETIC MATERIALS	265	3,762	74	2,533	337	1,090	105
29. DRUGS,CLEANING AND TOILET PREPARATIONS	14,017	318	68	105	394	105	55
30. PAINTS AND ALLIED PRODUCTS	60	15,229	28	47	16	24	19
31. PETROLEUM REFINING AND RELATED INDUSTRIES	95	150	4,337	76	52	41	46
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	1,009	493	177	25,773	353	2,293	323
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	3	2	1	21	27,503	3,982	2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	13	12	6	88	134	76,214	9
35. GLASS AND GLASS PRODUCTS	611	71	32	567	43	107	37,186
36. STONE AND CLAY PRODUCTS	156	441	131	248	333	187	1,048
37. PRIMARY IRON AND STEEL MANUFACTURING	280	617	153	251	76	117	136
38. PRIMARY NONFERROUS METALS MANUFACTURING	183	297	100	210	70	100	129
39. METAL CONTAINERS	336	861	36	37	28	20	20
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	35	65	50	52	15	28	42
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	222	128	65	219	64	90	242
42. OTHER FABRICATED METAL PRODUCTS	399	214	462	472	109	349	236
43. ENGINES AND TURBINES	17	13	29	12	6	9	10
44. FARM MACHINERY AND EQUIPMENT	20	15	12	11	4	11	13
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	20	27	63	20	12	11	27
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	12	18	11	14	7	8	17
47. METALWORKING MACHINERY AND EQUIPMENT	76	104	55	104	53	54	107
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	143	180	44	152	56	60	49
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	49	71	148	79	27	34	79
50. MACHINE SHOP PRODUCTS	80	119	50	339	44	74	101
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	159	77	79	68	30	66	53
52. SERVICE INDUSTRY MACHINES	27	13	13	13	5	11	13
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	66	76	88	83	44	44	67
54. HOUSEHOLD APPLIANCES	11	9	6	17	3	6	14
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	29	39	22	91	45	57	123
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	48	35	38	57	14	30	24
57. ELECTRONIC COMPONENTS AND ACCESSORIES	83	55	70	67	23	66	38
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	14	18	15	18	8	11	14
59. MOTOR VEHICLES AND EQUIPMENT	28	37	35	27	18	21	26
60. AIRCRAFT AND PARTS	35	37	29	128	16	32	23
61. OTHER TRANSPORTATION EQUIPMENT	19	25	23	27	12	15	17
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	192	38	22	102	29	97	57
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	51	46	27	42	16	56	44
64. MISCELLANEOUS MANUFACTURING	124	105	65	223	51	197	82
65. TRANSPORTATION AND WAREHOUSING	1,676	2,751	2,698	1,913	1,393	1,361	1,723
66. COMMUNICATIONS,EXCEPT BROADCASTING	475	435	289	337	199	335	290
67. RADIO AND TELEVISION BROADCASTING	293	121	149	112	46	117	90
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	344	507	454	529	240	258	753
69. WHOLESALE AND RETAIL TRADE	6,408	7,160	3,721	6,021	3,762	5,154	5,175
70. FINANCE AND INSURANCE	1,173	1,359	1,210	1,035	831	1,041	1,086
71. REAL ESTATE AND RENTAL	152	180	514	140	66	122	110
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	483	569	267	549	317	711	535
73. BUSINESS SERVICES	8,024	3,299	4,057	3,046	1,262	3,187	2,448
74. RESEARCH AND DEVELOPMENT	605	887	105	146	153	197	151
75. AUTOMOBILE REPAIR AND SERVICES	166	274	211	137	132	124	166
76. AMUSEMENTS	266	157	158	134	63	133	112
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	301	369	293	321	220	323	279
78. FEDERAL GOVERNMENT ENTERPRISES	739	744	525	531	592	585	575
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	249	363	346	346	180	189	451
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	47,888	51,356	30,514	54,883	42,542	105,780	61,730

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Stone and clay products	Primary iron and steel manufacturing	Primary nonferrous metals manufacturing	Metal containers	Heating, plumbing and structural metal products	Stampings, screw machine products and bolts	Other fabricated metal products
	36	37	38	39	40	41	42
1. LIVESTOCK AND LIVESTOCK PRODUCTS	95	66	64	63	74	75	79
2. OTHER AGRICULTURAL PRODUCTS	163	108	103	100	114	117	126
3. FORESTRY AND FISHERY PRODUCTS	47	33	35	28	36	48	63
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	34	27	26	28	31	29	32
5. IRON AND FERROALLOY ORES MINING	24	623	61	177	116	105	101
6. NONFERROUS METAL ORES MINING	37	117	1,755	266	199	128	185
7. COAL MINING	131	434	93	150	108	109	104
8. CRUDE PETROLEUM AND NATURAL GAS	192	173	132	112	104	121	112
9. STONE AND CLAY MINING AND QUARRYING	2,040	142	49	57	59	52	54
10. CHEMICAL AND FERTILIZER MINERAL MINING	60	22	24	15	11	12	15
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	462	795	535	550	416	390	380
13. ORDNANCE AND ACCESSORIES	4	7	12	7	21	31	16
14. FOOD AND KINDRED PRODUCTS	126	86	84	82	99	98	104
15. TOBACCO MANUFACTURES	2	1	1	1	2	2	2
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	119	42	115	61	71	70	99
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	32	16	27	36	21	30	47
18. APPAREL	23	76	63	45	95	99	99
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	36	19	24	17	28	28	19
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	235	162	151	147	243	352	480
21. WOODEN CONTAINERS	38	9	4	15	29	16	22
22. HOUSEHOLD FURNITURE	4	9	5	7	53	19	57
23. OTHER FURNITURE AND FIXTURES	3	3	3	3	56	9	35
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	693	214	240	371	251	353	309
25. PAPERBOARD CONTAINERS AND BOXES	350	79	88	353	190	312	209
26. PRINTING AND PUBLISHING	537	465	386	556	457	476	563
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	659	464	572	341	260	286	357
28. PLASTICS AND SYNTHETIC MATERIALS	274	97	368	247	121	179	147
29. DRUGS,CLEANING AND TOILET PREPARATIONS	136	57	50	72	33	39	35
30. PAINTS AND ALLIED PRODUCTS	42	40	39	161	70	104	50
31. PETROLEUM REFINING AND RELATED INDUSTRIES	86	64	59	47	47	59	53
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	515	243	219	759	276	465	500
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	4	2	2	9	5	6	5
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	12	8	8	10	12	30	17
35. GLASS AND GLASS PRODUCTS	78	34	41	48	257	89	56
36. STONE AND CLAY PRODUCTS	33,643	474	329	285	398	417	394
37. PRIMARY IRON AND STEEL MANUFACTURING	290	26,761	791	7,321	4,743	4,354	4,111
38. PRIMARY NONFERROUS METALS MANUFACTURING	157	655	20,405	2,882	2,175	1,352	1,939
39. METAL CONTAINERS	19	13	15	19,142	22	82	28
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	62	163	66	243	33,110	336	365
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	137	422	621	789	636	46,110	1,080
42. OTHER FABRICATED METAL PRODUCTS	522	772	573	487	1,234	1,265	30,337
43. ENGINES AND TURBINES	13	25	18	19	121	49	47
44. FARM MACHINERY AND EQUIPMENT	10	54	11	23	69	46	46
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	99	99	85	46	128	43	116
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	59	26	20	17	66	26	64
47. METALWORKING MACHINERY AND EQUIPMENT	117	412	473	698	446	634	1,193
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	71	82	48	49	132	56	121
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	68	221	241	356	537	142	412
50. MACHINE SHOP PRODUCTS	116	987	554	864	742	655	577
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	47	48	39	45	75	82	62
52. SERVICE INDUSTRY MACHINES	11	14	16	17	183	51	42
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	92	258	333	212	602	280	312
54. HOUSEHOLD APPLIANCES	6	13	21	69	248	93	59
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	180	65	333	95	166	215	156
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	27	33	69	39	62	52	52
57. ELECTRONIC COMPONENTS AND ACCESSORIES	49	76	75	82	186	109	83
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	19	23	219	45	47	54	47
59. MOTOR VEHICLES AND EQUIPMENT	38	76	72	69	128	457	141
60. AIRCRAFT AND PARTS	36	42	34	172	119	105	78
61. OTHER TRANSPORTATION EQUIPMENT	24	62	43	36	239	37	52
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	46	45	55	53	496	121	203
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	25	22	21	23	27	31	27
64. MISCELLANEOUS MANUFACTURING	139	73	102	86	96	213	159
65. TRANSPORTATION AND WAREHOUSING	2,815	2,956	1,761	2,138	1,779	1,640	1,594
66. COMMUNICATIONS,EXCEPT BROADCASTING	317	341	285	274	345	283	306
67. RADIO AND TELEVISION BROADCASTING	77	71	59	71	79	72	82
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	980	1,128	674	616	515	536	524
69. WHOLESALE AND RETAIL TRADE	5,198	5,143	5,020	5,886	6,041	5,143	5,714
70. FINANCE AND INSURANCE	1,259	1,093	1,102	1,084	1,123	1,056	1,000
71. REAL ESTATE AND RENTAL	134	120	103	108	114	117	106
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	531	424	395	432	556	555	569
73. BUSINESS SERVICES	2,086	1,926	1,604	1,943	2,144	1,957	2,228
74. RESEARCH AND DEVELOPMENT	173	134	145	185	183	174	175
75. AUTOMOBILE REPAIR AND SERVICES	226	148	137	278	235	140	161
76. AMUSEMENTS	110	96	84	95	109	102	111
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	306	306	302	334	317	299	293
78. FEDERAL GOVERNMENT ENTERPRISES	488	494	380	417	427	409	414
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	631	677	410	390	334	340	333
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	58,743	51,806	43,577	53,453	65,492	74,621	60,441

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Engines and turbines	Farm machinery and equipment	Construction, mining and oil field machinery	Materials handling machinery and equipment	Metalworking machinery and equipment	Special industry machinery and equipment	General industrial machinery and equipment
	43	44	45	46	47	48	49
1. LIVESTOCK AND LIVESTOCK PRODUCTS	71	86	78	103	83	95	89
2. OTHER AGRICULTURAL PRODUCTS	102	144	113	151	118	139	127
3. FORESTRY AND FISHERY PRODUCTS	20	38	26	32	26	49	29
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	28	173	32	39	30	35	34
5. IRON AND FERROALLOY ORES MINING	60	89	97	91	66	71	77
6. NONFERROUS METAL ORES MINING	106	68	66	104	100	131	102
7. COAL MINING	90	109	107	89	67	73	82
8. CRUDE PETROLEUM AND NATURAL GAS	86	98	100	103	96	106	95
9. STONE AND CLAY MINING AND QUARRYING	43	54	55	52	46	45	118
10. CHEMICAL AND FERTILIZER MINERAL MINING	7	11	9	11	8	10	9
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	295	365	340	395	424	382	388
13. ORDNANCE AND ACCESSORIES	13	92	24	17	26	52	30
14. FOOD AND KINDRED PRODUCTS	97	104	106	139	108	129	123
15. TOBACCO MANUFACTURES	2	2	2	3	2	3	3
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	61	89	68	146	66	110	77
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	30	62	38	50	26	35	23
18. APPAREL	82	90	90	103	106	106	101
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	21	21	19	22	28	17	18
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	108	261	158	185	161	361	181
21. WOODEN CONTAINERS	4	12	6	7	6	9	8
22. HOUSEHOLD FURNITURE	9	11	18	14	12	22	29
23. OTHER FURNITURE AND FIXTURES	5	22	5	21	5	6	11
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	230	226	200	261	174	246	265
25. PAPERBOARD CONTAINERS AND BOXES	193	142	98	135	84	94	128
26. PRINTING AND PUBLISHING	533	587	487	607	448	537	515
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	171	262	214	257	182	245	210
28. PLASTICS AND SYNTHETIC MATERIALS	113	207	138	199	104	153	109
29. DRUGS,CLEANING AND TOILET PREPARATIONS	30	38	34	43	29	37	32
30. PAINTS AND ALLIED PRODUCTS	42	85	48	75	29	31	38
31. PETROLEUM REFINING AND RELATED INDUSTRIES	45	49	50	52	49	55	47
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	455	1,470	808	985	390	729	383
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	6	24	6	10	5	26	8
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	14	16	12	26	17	13	13
35. GLASS AND GLASS PRODUCTS	68	72	60	88	66	72	63
36. STONE AND CLAY PRODUCTS	395	370	379	358	411	323	490
37. PRIMARY IRON AND STEEL MANUFACTURING	2,437	3,693	4,081	3,759	2,619	2,852	3,147
38. PRIMARY NONFERROUS METALS MANUFACTURING	1,147	665	634	1,085	1,072	1,423	1,077
39. METAL CONTAINERS	11	15	12	16	16	12	12
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	145	201	733	597	236	492	741
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	1,180	1,508	527	1,074	1,389	774	760
42. OTHER FABRICATED METAL PRODUCTS	353	483	746	1,062	965	814	895
43. ENGINES AND TURBINES	23,528	863	535	296	99	76	298
44. FARM MACHINERY AND EQUIPMENT	399	31,352	409	174	63	98	86
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	810	375	29,219	1,435	99	259	265
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	91	61	296	37,287	139	256	377
47. METALWORKING MACHINERY AND EQUIPMENT	1,047	1,026	1,016	998	44,090	1,150	967
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	83	139	112	204	252	34,482	216
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	1,092	2,314	2,630	3,282	1,589	2,539	31,906
50. MACHINE SHOP PRODUCTS	3,329	1,890	861	2,015	914	708	919
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	59	69	75	131	60	142	68
52. SERVICE INDUSTRY MACHINES	24	40	44	73	66	119	188
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	809	517	1,070	2,387	1,995	1,811	2,345
54. HOUSEHOLD APPLIANCES	17	85	22	22	82	45	22
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	119	102	119	232	132	127	156
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	70	66	87	98	92	394	171
57. ELECTRONIC COMPONENTS AND ACCESSORIES	143	132	205	243	282	511	397
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	533	248	90	115	66	51	72
59. MOTOR VEHICLES AND EQUIPMENT	490	334	297	245	810	118	174
60. AIRCRAFT AND PARTS	468	215	136	202	297	253	746
61. OTHER TRANSPORTATION EQUIPMENT	303	105	192	184	50	138	195
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	96	127	118	150	161	190	387
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	26	31	27	34	28	61	34
64. MISCELLANEOUS MANUFACTURING	104	106	89	925	144	105	88
65. TRANSPORTATION AND WAREHOUSING	1,352	1,607	1,574	1,707	1,252	1,515	1,533
66. COMMUNICATIONS,EXCEPT BROADCASTING	299	350	335	398	442	505	488
67. RADIO AND TELEVISION BROADCASTING	91	112	88	108	83	91	91
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	327	401	423	427	380	399	411
69. WHOLESALE AND RETAIL TRADE	5,018	6,472	6,015	7,612	5,362	6,161	6,899
70. FINANCE AND INSURANCE	905	1,138	1,027	1,232	1,046	1,056	990
71. REAL ESTATE AND RENTAL	97	114	109	148	162	134	121
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	516	538	558	688	631	668	641
73. BUSINESS SERVICES	2,492	3,066	2,401	2,945	2,258	2,474	2,473
74. RESEARCH AND DEVELOPMENT	148	151	153	159	150	145	153
75. AUTOMOBILE REPAIR AND SERVICES	114	151	145	156	129	171	143
76. AMUSEMENTS	116	134	119	147	117	128	128
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	291	310	312	341	298	317	312
78. FEDERAL GOVERNMENT ENTERPRISES	389	518	404	514	391	429	441
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	223	277	280	289	250	269	275
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	54,924	67,651	62,409	80,166	74,351	69,006	65,861

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Machine shop products	Office, computing and accounting machines	Service industry machines	Electric industrial equipment and apparatus	Household appliances	Electric lighting and wiring equipment	Radio, television and communication equipment
	50	51	52	53	54	55	56
1. LIVESTOCK AND LIVESTOCK PRODUCTS	73	124	98	113	102	92	131
2. OTHER AGRICULTURAL PRODUCTS	106	160	146	157	169	134	187
3. FORESTRY AND FISHERY PRODUCTS	16	28	49	34	44	38	47
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	27	40	40	36	42	38	45
5. IRON AND FERROALLOY ORES MINING	64	19	47	54	53	49	19
6. NONFERROUS METAL ORES MINING	129	57	134	220	114	184	76
7. COAL MINING	70	36	72	69	78	62	50
8. CRUDE PETROLEUM AND NATURAL GAS	128	64	99	91	92	86	76
9. STONE AND CLAY MINING AND QUARRYING	65	25	43	39	48	50	33
10. CHEMICAL AND FERTILIZER MINERAL MINING	7	9	14	13	16	18	15
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	504	300	410	375	388	324	375
13. ORDNANCE AND ACCESSORIES	10	117	39	87	42	15	654
14. FOOD AND KINDRED PRODUCTS	95	177	129	160	133	125	182
15. TOBACCO MANUFACTURES	2	4	3	4	3	3	4
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	49	64	93	81	206	73	107
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	14	28	44	33	84	37	39
18. APPAREL	113	102	98	100	106	99	116
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	14	16	26	19	26	18	22
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	80	141	339	185	273	201	283
21. WOODEN CONTAINERS	5	12	113	6	125	9	8
22. HOUSEHOLD FURNITURE	7	58	65	27	28	13	578
23. OTHER FURNITURE AND FIXTURES	4	12	30	6	21	4	9
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	136	439	397	442	428	459	511
25. PAPERBOARD CONTAINERS AND BOXES	54	162	343	208	389	606	319
26. PRINTING AND PUBLISHING	396	782	518	649	1,069	543	825
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	148	228	342	327	403	451	380
28. PLASTICS AND SYNTHETIC MATERIALS	71	156	203	245	321	466	292
29. DRUGS,CLEANING AND TOILET PREPARATIONS	32	27	43	32	41	39	37
30. PAINTS AND ALLIED PRODUCTS	20	36	116	73	109	101	37
31. PETROLEUM REFINING AND RELATED INDUSTRIES	72	32	48	46	45	43	39
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	196	576	870	499	1,880	773	744
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	13	5	7	5	14	6	7
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	98	16	16	15	102	14	18
35. GLASS AND GLASS PRODUCTS	34	210	197	143	190	1,121	532
36. STONE AND CLAY PRODUCTS	762	217	379	331	441	386	282
37. PRIMARY IRON AND STEEL MANUFACTURING	2,588	721	1,774	1,738	2,094	1,861	642
38. PRIMARY NONFERROUS METALS MANUFACTURING	1,419	608	1,469	2,468	1,218	1,649	818
39. METAL CONTAINERS	8	13	21	17	24	21	17
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	142	49	912	168	736	133	79
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	412	557	1,608	819	2,479	1,309	1,009
42. OTHER FABRICATED METAL PRODUCTS	898	423	1,023	499	1,217	746	609
43. ENGINES AND TURBINES	145	26	103	396	49	29	28
44. FARM MACHINERY AND EQUIPMENT	36	13	32	28	26	23	15
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	128	23	55	76	46	37	32
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	39	13	81	38	22	13	12
47. METALWORKING MACHINERY AND EQUIPMENT	930	553	377	670	540	389	386
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	240	213	139	76	59	44	55
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	475	323	793	463	525	155	142
50. MACHINE SHOP PRODUCTS	67,008	421	366	460	370	369	356
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	63	18,260	86	117	160	65	150
52. SERVICE INDUSTRY MACHINES	28	16	17,281	25	762	31	32
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	334	988	3,439	30,238	1,692	1,213	1,012
54. HOUSEHOLD APPLIANCES	14	14	189	29	16,480	22	28
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	92	288	409	771	389	35,969	486
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	60	590	264	467	266	135	25,547
57. ELECTRONIC COMPONENTS AND ACCESSORIES	108	4,220	433	1,243	312	260	7,987
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	88	42	56	125	51	800	51
59. MOTOR VEHICLES AND EQUIPMENT	123	41	269	88	118	65	50
60. AIRCRAFT AND PARTS	176	374	351	136	111	41	627
61. OTHER TRANSPORTATION EQUIPMENT	122	22	64	182	107	28	32
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	96	281	989	682	1,385	163	533
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	25	39	35	46	79	32	84
64. MISCELLANEOUS MANUFACTURING	67	128	136	99	163	227	163
65. TRANSPORTATION AND WAREHOUSING	1,282	1,251	1,611	1,554	1,774	1,546	1,567
66. COMMUNICATIONS,EXCEPT BROADCASTING	384	373	360	369	532	315	454
67. RADIO AND TELEVISION BROADCASTING	72	122	92	117	234	101	154
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	404	263	429	360	398	356	283
69. WHOLESALE AND RETAIL TRADE	5,089	7,112	8,014	6,065	8,260	8,095	7,870
70. FINANCE AND INSURANCE	1,049	885	1,180	887	955	879	955
71. REAL ESTATE AND RENTAL	148	134	160	126	139	132	155
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	617	831	1,218	752	1,362	622	1,264
73. BUSINESS SERVICES	1,957	3,326	2,501	3,185	6,406	2,763	4,208
74. RESEARCH AND DEVELOPMENT	140	131	167	221	235	223	91
75. AUTOMOBILE REPAIR AND SERVICES	152	111	169	137	161	135	129
76. AMUSEMENTS	104	170	130	158	235	135	195
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	295	297	328	321	340	308	361
78. FEDERAL GOVERNMENT ENTERPRISES	392	524	485	575	707	494	700
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	263	191	291	249	280	251	214
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	91,823	49,454	55,492	62,157	61,121	68,861	66,657

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Electronic components and accessories	Miscellaneous electrical machinery and equipment	Motor vehicles and equipment	Aircraft and parts	Other transportation equipment	Scientific and controlling instruments	Optical, opthalmic and photographic equipment
	57	58	59	60	61	62	63
1. LIVESTOCK AND LIVESTOCK PRODUCTS	121	99	76	62	97	167	92
2. OTHER AGRICULTURAL PRODUCTS	173	146	138	103	173	261	142
3. FORESTRY AND FISHERY PRODUCTS	42	35	30	27	144	36	56
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	42	35	33	26	47	52	35
5. IRON AND FERROALLOY ORES MINING	21	46	69	24	80	23	15
6. NONFERROUS METAL ORES MINING	88	246	78	74	128	122	99
7. COAL MINING	50	56	96	45	104	42	88
8. CRUDE PETROLEUM AND NATURAL GAS	82	90	84	67	112	74	99
9. STONE AND CLAY MINING AND QUARRYING	38	52	42	27	56	32	65
10. CHEMICAL AND FERTILIZER MINERAL MINING	22	24	14	8	17	13	42
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	348	326	480	335	386	314	290
13. ORDNANCE AND ACCESSORIES	329	23	26	246	17	680	57
14. FOOD AND KINDRED PRODUCTS	164	134	93	79	124	237	123
15. TOBACCO MANUFACTURES	4	3	2	2	2	4	2
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	75	125	318	75	123	373	85
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	26	79	170	43	58	77	33
18. APPAREL	121	106	86	97	114	219	81
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	20	31	300	16	39	38	25
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	186	116	161	179	1,243	180	188
21. WOODEN CONTAINERS	8	6	7	5	12	13	7
22. HOUSEHOLD FURNITURE	261	18	20	39	286	71	10
23. OTHER FURNITURE AND FIXTURES	6	3	13	64	137	120	4
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	564	334	335	222	294	444	1,019
25. PAPERBOARD CONTAINERS AND BOXES	299	301	157	105	135	337	302
26. PRINTING AND PUBLISHING	619	617	664	792	671	598	711
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	592	630	356	188	418	328	1,152
28. PLASTICS AND SYNTHETIC MATERIALS	302	355	308	137	460	247	174
29. DRUGS,CLEANING AND TOILET PREPARATIONS	36	39	46	27	48	61	46
30. PAINTS AND ALLIED PRODUCTS	35	30	109	34	163	35	23
31. PETROLEUM REFINING AND RELATED INDUSTRIES	41	45	39	33	56	38	54
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	465	1,834	1,778	665	869	781	503
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	4	5	12	3	12	22	5
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	15	18	16	13	16	77	42
35. GLASS AND GLASS PRODUCTS	893	173	376	91	274	287	461
36. STONE AND CLAY PRODUCTS	289	475	282	259	461	271	737
37. PRIMARY IRON AND STEEL MANUFACTURING	712	1,079	2,832	919	3,254	797	314
38. PRIMARY NONFERROUS METALS MANUFACTURING	934	2,470	785	813	1,358	1,247	1,011
39. METAL CONTAINERS	19	18	18	11	22	64	22
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	66	70	124	85	1,622	108	34
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	1,017	1,287	1,401	1,120	493	1,056	368
42. OTHER FABRICATED METAL PRODUCTS	620	467	1,676	578	907	788	451
43. ENGINES AND TURBINES	28	62	128	64	579	37	18
44. FARM MACHINERY AND EQUIPMENT	13	34	55	22	165	25	12
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	42	74	51	31	208	45	29
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	11	20	30	37	233	16	11
47. METALWORKING MACHINERY AND EQUIPMENT	349	753	709	1,213	442	764	284
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	58	58	59	51	65	106	106
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	115	673	370	497	756	329	62
50. MACHINE SHOP PRODUCTS	279	1,041	1,040	1,104	713	1,039	168
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	165	109	147	138	81	787	118
52. SERVICE INDUSTRY MACHINES	17	25	93	39	158	51	15
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	1,247	990	297	369	1,301	1,391	512
54. HOUSEHOLD APPLIANCES	30	72	16	104	309	38	8
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	414	1,521	311	142	233	270	208
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	1,260	252	266	1,250	125	603	200
57. ELECTRONIC COMPONENTS AND ACCESSORIES	22,939	820	322	907	318	2,547	152
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	53	24,469	652	138	88	73	119
59. MOTOR VEHICLES AND EQUIPMENT	42	586	15,049	175	274	283	34
60. AIRCRAFT AND PARTS	167	91	79	39,137	247	936	54
61. OTHER TRANSPORTATION EQUIPMENT	25	32	59	30	34,557	72	34
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	280	92	60	732	174	35,504	325
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	42	39	32	75	37	128	17,048
64. MISCELLANEOUS MANUFACTURING	128	109	119	141	163	259	124
65. TRANSPORTATION AND WAREHOUSING	1,372	1,594	1,739	1,065	1,873	1,519	1,468
66. COMMUNICATIONS,EXCEPT BROADCASTING	328	357	358	419	374	380	348
67. RADIO AND TELEVISION BROADCASTING	116	122	132	169	130	104	149
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	324	362	403	291	456	286	296
69. WHOLESALE AND RETAIL TRADE	7,642	6,538	6,585	4,975	7,782	7,532	6,380
70. FINANCE AND INSURANCE	883	918	912	690	1,024	961	963
71. REAL ESTATE AND RENTAL	186	127	104	107	121	146	145
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	832	659	471	362	677	837	543
73. BUSINESS SERVICES	3,160	3,332	3,615	4,629	3,552	2,848	4,072
74. RESEARCH AND DEVELOPMENT	81	234	194	156	190	84	372
75. AUTOMOBILE REPAIR AND SERVICES	115	135	138	104	181	127	130
76. AMUSEMENTS	160	151	143	162	156	158	162
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	311	317	338	275	342	332	281
78. FEDERAL GOVERNMENT ENTERPRISES	658	574	560	465	494	481	550
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	232	254	276	197	311	213	214
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	53,847	59,639	49,562	68,200	73,911	72,043	44,778

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Miscellaneous manufacturing	Transportation and warehousing	Communications, except broadcasting	Radio and television broadcasting	Electric, gas, water and sanitary services	Wholesale and retail trade	Finance and insurance
	64	65	66	67	68	69	70
1. LIVESTOCK AND LIVESTOCK PRODUCTS	140	93	36	208	68	165	131
2. OTHER AGRICULTURAL PRODUCTS	302	161	71	217	212	249	258
3. FORESTRY AND FISHERY PRODUCTS	156	18	8	32	17	18	16
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	60	31	12	75	32	218	41
5. IRON AND FERROALLOY ORES MINING	27	5	1	5	4	3	2
6. NONFERROUS METAL ORES MINING	105	11	7	13	13	6	5
7. COAL MINING	59	34	11	26	541	37	33
8. CRUDE PETROLEUM AND NATURAL GAS	106	247	28	63	912	98	62
9. STONE AND CLAY MINING AND QUARRYING	36	18	9	15	23	14	10
10. CHEMICAL AND FERTILIZER MINERAL MINING	27	5	2	18	5	3	4
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	476	1,202	1,211	1,038	2,443	689	716
13. ORDNANCE AND ACCESSORIES	14	5	8	22	3	7	5
14. FOOD AND KINDRED PRODUCTS	166	111	42	169	75	210	131
15. TOBACCO MANUFACTURES	3	1	1	4	1	3	3
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	749	44	21	73	20	41	51
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	198	27	11	42	9	20	32
18. APPAREL	143	23	7	21	12	46	17
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	75	30	24	91	8	27	64
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	1,009	90	56	104	109	101	85
21. WOODEN CONTAINERS	15	13	1	3	3	21	3
22. HOUSEHOLD FURNITURE	24	6	7	19	3	9	4
23. OTHER FURNITURE AND FIXTURES	32	3	2	3	3	6	2
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	1,099	148	134	360	132	282	422
25. PAPERBOARD CONTAINERS AND BOXES	1,062	46	22	104	30	133	77
26. PRINTING AND PUBLISHING	932	548	855	1,176	453	748	2,040
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	697	117	41	517	129	82	86
28. PLASTICS AND SYNTHETIC MATERIALS	847	64	24	80	39	49	45
29. DRUGS,CLEANING AND TOILET PREPARATIONS	91	19	7	27	13	34	26
30. PAINTS AND ALLIED PRODUCTS	144	49	23	26	47	21	17
31. PETROLEUM REFINING AND RELATED INDUSTRIES	57	167	14	33	59	44	34
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	1,844	315	63	164	124	253	173
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	142	3	1	6	1	2	2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	339	7	5	73	5	20	12
35. GLASS AND GLASS PRODUCTS	240	51	19	43	25	67	25
36. STONE AND CLAY PRODUCTS	197	74	45	62	140	88	43
37. PRIMARY IRON AND STEEL MANUFACTURING	931	153	43	85	143	78	51
38. PRIMARY NONFERROUS METALS MANUFACTURING	1,122	111	78	92	83	56	44
39. METAL CONTAINERS	29	9	3	14	7	12	7
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	64	65	48	46	99	66	33
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	566	77	26	62	43	55	30
42. OTHER FABRICATED METAL PRODUCTS	701	136	38	73	286	85	50
43. ENGINES AND TURBINES	18	69	4	10	13	12	12
44. FARM MACHINERY AND EQUIPMENT	22	9	5	11	7	14	15
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	21	13	4	9	38	15	8
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	12	27	2	5	10	10	3
47. METALWORKING MACHINERY AND EQUIPMENT	150	74	15	33	38	33	23
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	76	12	6	31	13	22	14
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	99	51	9	20	40	29	15
50. MACHINE SHOP PRODUCTS	357	106	16	37	34	63	28
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	211	50	38	90	70	93	133
52. SERVICE INDUSTRY MACHINES	23	12	8	15	11	25	18
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	270	80	28	59	63	41	30
54. HOUSEHOLD APPLIANCES	55	9	5	8	9	14	7
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	168	42	19	32	36	27	17
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	129	55	270	722	32	53	74
57. ELECTRONIC COMPONENTS AND ACCESSORIES	191	85	117	291	42	56	66
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	38	87	15	10	10	27	12
59. MOTOR VEHICLES AND EQUIPMENT	203	140	9	19	25	72	24
60. AIRCRAFT AND PARTS	70	265	12	32	16	36	19
61. OTHER TRANSPORTATION EQUIPMENT	78	250	16	14	17	13	25
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	79	39	12	30	15	26	17
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	37	23	25	73	23	85	63
64. MISCELLANEOUS MANUFACTURING	28,897	90	63	473	56	91	128
65. TRANSPORTATION AND WAREHOUSING	1,733	41,315	299	881	1,291	711	1,052
66. COMMUNICATIONS,EXCEPT BROADCASTING	421	717	23,506	1,880	239	601	951
67. RADIO AND TELEVISION BROADCASTING	131	81	71	58,324	81	131	236
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	358	242	115	213	11,164	483	187
69. WHOLESALE AND RETAIL TRADE	7,992	4,359	1,508	4,134	3,068	80,402	3,951
70. FINANCE AND INSURANCE	1,231	1,772	449	1,726	837	1,385	65,083
71. REAL ESTATE AND RENTAL	166	230	92	436	132	305	534
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	681	206	148	587	196	641	456
73. BUSINESS SERVICES	3,578	2,202	1,936	4,464	2,197	3,562	6,424
74. RESEARCH AND DEVELOPMENT	221	52	33	70	50	48	58
75. AUTOMOBILE REPAIR AND SERVICES	185	1,101	71	115	123	463	205
76. AMUSEMENTS	159	219	98	38,938	85	255	264
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	324	238	148	334	222	230	1,036
78. FEDERAL GOVERNMENT ENTERPRISES	566	405	489	458	2,165	1,131	1,650
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	262	1,053	90	172	5,542	422	284
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	64,233	60,116	32,817	120,057	34,380	95,795	88,005

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Real estate and rental	Hotels, personal and repair services, except auto	Business services	Research and development[5]	Automobile repair and services	Amusements	Medical, educational and nonprofit organizations
	71	72	73	74	75	76	77
1. LIVESTOCK AND LIVESTOCK PRODUCTS	452	121	134	16	81	289	208
2. OTHER AGRICULTURAL PRODUCTS	739	200	293	22	136	226	231
3. FORESTRY AND FISHERY PRODUCTS	17	32	27	3	21	16	24
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	110	41	77	5	41	132	44
5. IRON AND FERROALLOY ORES MINING	3	6	5	1	17	2	3
6. NONFERROUS METAL ORES MINING	8	18	13	3	28	7	9
7. COAL MINING	21	35	64	3	90	17	34
8. CRUDE PETROLEUM AND NATURAL GAS	83	131	85	6	105	42	85
9. STONE AND CLAY MINING AND QUARRYING	25	24	16	2	36	13	17
10. CHEMICAL AND FERTILIZER MINERAL MINING	4	13	8	1	9	3	7
11. NEW CONSTRUCTION	0	0	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	2,778	488	539	34	1,060	1,449	1,560
13. ORDNANCE AND ACCESSORIES	4	23	16	9	10	4	10
14. FOOD AND KINDRED PRODUCTS	84	138	155	22	85	129	277
15. TOBACCO MANUFACTURES	1	2	2	1	1	3	3
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	28	630	65	17	148	54	78
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	9	83	33	12	110	27	34
18. APPAREL	34	514	39	6	49	15	121
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	12	399	48	19	142	55	68
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	110	144	165	16	108	88	108
21. WOODEN CONTAINERS	4	6	8	1	7	3	3
22. HOUSEHOLD FURNITURE	4	54	11	8	10	3	5
23. OTHER FURNITURE AND FIXTURES	3	14	5	1	5	3	4
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	90	498	942	69	216	187	335
25. PAPERBOARD CONTAINERS AND BOXES	28	159	130	24	114	57	116
26. PRINTING AND PUBLISHING	371	590	7,033	143	612	857	1,277
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	95	340	188	32	229	75	191
28. PLASTICS AND SYNTHETIC MATERIALS	36	179	79	23	217	50	65
29. DRUGS,CLEANING AND TOILET PREPARATIONS	18	255	36	19	44	16	768
30. PAINTS AND ALLIED PRODUCTS	54	23	19	2	167	31	34
31. PETROLEUM REFINING AND RELATED INDUSTRIES	36	74	42	3	43	19	35
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	87	409	290	111	1,327	121	226
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	1	8	3	1	4	12	2
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	8	57	18	2	13	163	18
35. GLASS AND GLASS PRODUCTS	28	114	53	29	568	27	74
36. STONE AND CLAY PRODUCTS	100	220	78	12	308	60	75
37. PRIMARY IRON AND STEEL MANUFACTURING	81	157	136	29	645	67	84
38. PRIMARY NONFERROUS METALS MANUFACTURING	58	159	128	32	271	66	72
39. METAL CONTAINERS	8	17	10	2	17	7	30
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	111	42	42	5	75	58	65
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	29	134	94	33	312	34	85
42. OTHER FABRICATED METAL PRODUCTS	45	207	118	24	800	50	80
43. ENGINES AND TURBINES	7	11	77	3	32	8	8
44. FARM MACHINERY AND EQUIPMENT	11	20	99	2	17	9	8
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	11	11	30	2	23	6	8
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	7	6	7	1	11	3	4
47. METALWORKING MACHINERY AND EQUIPMENT	39	58	91	13	187	19	29
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	14	33	41	4	31	10	19
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	21	37	52	6	102	13	19
50. MACHINE SHOP PRODUCTS	32	71	81	12	1,123	24	36
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	37	73	920	20	76	73	70
52. SERVICE INDUSTRY MACHINES	15	82	118	9	26	13	12
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	33	146	115	40	133	31	44
54. HOUSEHOLD APPLIANCES	15	195	12	2	11	8	10
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	29	71	42	13	261	22	26
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	25	112	203	39	75	32	56
57. ELECTRONIC COMPONENTS AND ACCESSORIES	34	1,001	311	633	126	66	83
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	8	26	23	2	519	7	22
59. MOTOR VEHICLES AND EQUIPMENT	19	52	45	3	2,498	14	21
60. AIRCRAFT AND PARTS	18	32	52	7	37	13	22
61. OTHER TRANSPORTATION EQUIPMENT	10	36	32	32	56	16	35
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	20	316	43	10	131	15	310
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	17	176	233	6	30	123	117
64. MISCELLANEOUS MANUFACTURING	42	723	373	42	78	661	116
65. TRANSPORTATION AND WAREHOUSING	542	989	1,028	128	1,151	726	854
66. COMMUNICATIONS,EXCEPT BROADCASTING	225	396	1,957	57	456	400	430
67. RADIO AND TELEVISION BROADCASTING	78	108	1,855	34	108	135	103
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	120	381	355	22	600	189	475
69. WHOLESALE AND RETAIL TRADE	2,928	6,135	17,424	752	9,926	3,472	3,677
70. FINANCE AND INSURANCE	2,333	1,563	1,375	128	2,275	2,282	1,204
71. REAL ESTATE AND RENTAL	5,223	311	294	24	288	381	396
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	625	121,941	962	87	333	424	1,035
73. BUSINESS SERVICES	1,770	2,943	50,789	920	2,929	3,677	2,781
74. RESEARCH AND DEVELOPMENT	40	73	90	94,786	98	25	227
75. AUTOMOBILE REPAIR AND SERVICES	107	453	290	13	32,566	68	132
76. AMUSEMENTS	247	134	1,435	136	129	102,712	541
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	174	274	190	19	314	287	120,901
78. FEDERAL GOVERNMENT ENTERPRISES	545	412	2,311	65	509	369	389
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	351	308	266	18	473	154	308
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0	0	0
TOTAL	21,586	146,461	94,867	98,890	66,016	121,024	141,090

See footnotes on p. 131.

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TABLE D-14. TOTAL EMPLOYMENT (PRIMARY AND INDIRECT)[1] PER BILLION DOLLARS OF DELIVERY TO FINAL DEMAND, 1980[2] —Continued

(Producers values - 1958 dollars)[3]

Industry number and title[4]	Federal government enterprises	State and local government enterprises	Gross imports of goods and services	Business travel, entertainment and gifts	Office supplies
	78	79	80	81	82
1. LIVESTOCK AND LIVESTOCK PRODUCTS	1,211	58	0	3,268	149
2. OTHER AGRICULTURAL PRODUCTS	6,453	109	0	2,892	250
3. FORESTRY AND FISHERY PRODUCTS	42	46	0	231	140
4. AGRICULTURAL,FORESTRY AND FISHERY SERVICES	619	38	0	491	52
5. IRON AND FERROALLOY ORES MINING	9	8	0	6	13
6. NONFERROUS METAL ORES MINING	10	21	0	16	48
7. COAL MINING	350	522	0	40	78
8. CRUDE PETROLEUM AND NATURAL GAS	135	276	0	160	130
9. STONE AND CLAY MINING AND QUARRYING	35	65	0	26	66
10. CHEMICAL AND FERTILIZER MINERAL MINING	14	15	0	13	37
11. NEW CONSTRUCTION	0	0	0	0	0
12. MAINTENANCE AND REPAIR CONSTRUCTION	640	9,960	0	777	544
13. ORDNANCE AND ACCESSORIES	3	3	0	35	25
14. FOOD AND KINDRED PRODUCTS	1,288	66	0	5,322	195
15. TOBACCO MANUFACTURES	2	1	0	149	3
16. BROAD AND NARROW FABRICS,YARN AND THREAD MILLS	46	30	0	158	241
17. MISCELLANEOUS TEXTILE GOODS AND FLOOR COVERINGS	23	19	0	42	88
18. APPAREL	18	35	0	166	70
19. MISCELLANEOUS FABRICATED TEXTILE PRODUCTS	47	13	0	102	57
20. LUMBER AND WOOD PRODUCTS,EXCEPT CONTAINERS	98	309	0	131	1,037
21. WOODEN CONTAINERS	21	4	0	27	13
22. HOUSEHOLD FURNITURE	3	4	0	16	11
23. OTHER FURNITURE AND FIXTURES	2	9	0	5	15
24. PAPER AND ALLIED PRODUCTS,EXCEPT CONTAINERS	400	214	0	344	7,206
25. PAPERBOARD CONTAINERS AND BOXES	127	50	0	252	557
26. PRINTING AND PUBLISHING	1,120	733	0	653	23,546
27. CHEMICALS AND SELECTED CHEMICAL PRODUCTS	317	418	0	294	860
28. PLASTICS AND SYNTHETIC MATERIALS	67	94	0	125	359
29. DRUGS,CLEANING AND TOILET PREPARATIONS	25	30	0	161	61
30. PAINTS AND ALLIED PRODUCTS	22	181	0	33	43
31. PETROLEUM REFINING AND RELATED INDUSTRIES	71	83	0	100	63
32. RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS	298	166	0	468	1,056
33. LEATHER TANNING AND INDUSTRIAL LEATHER PRODUCTS	2	1	0	17	21
34. FOOTWEAR AND OTHER LEATHER PRODUCTS	21	6	0	267	65
35. GLASS AND GLASS PRODUCTS	53	65	0	171	172
36. STONE AND CLAY PRODUCTS	157	306	0	107	275
37. PRIMARY IRON AND STEEL MANUFACTURING	104	249	0	197	352
38. PRIMARY NONFERROUS METALS MANUFACTURING	70	176	0	146	442
39. METAL CONTAINERS	47	18	0	173	23
40. HEATING,PLUMBING AND STRUCTURAL METAL PRODUCTS	34	373	0	50	50
41. STAMPINGS,SCREW MACHINE PRODUCTS AND BOLTS	55	70	0	130	243
42. OTHER FABRICATED METAL PRODUCTS	118	264	0	172	474
43. ENGINES AND TURBINES	18	11	0	32	14
44. FARM MACHINERY AND EQUIPMENT	38	8	0	25	13
45. CONSTRUCTION,MINING AND OIL FIELD MACHINERY	24	42	0	13	21
46. MATERIALS HANDLING MACHINERY AND EQUIPMENT	11	17	0	14	11
47. METALWORKING MACHINERY AND EQUIPMENT	37	43	0	65	133
48. SPECIAL INDUSTRY MACHINERY AND EQUIPMENT	22	26	0	25	127
49. GENERAL INDUSTRIAL MACHINERY AND EQUIPMENT	28	44	0	41	68
50. MACHINE SHOP PRODUCTS	71	69	0	90	141
51. OFFICE,COMPUTING AND ACCOUNTING MACHINES	61	57	0	63	323
52. SERVICE INDUSTRY MACHINES	10	28	0	24	23
53. ELECTRIC INDUSTRIAL EQUIPMENT AND APPARATUS	38	83	0	82	204
54. HOUSEHOLD APPLIANCES	6	29	0	63	195
55. ELECTRIC LIGHTING AND WIRING EQUIPMENT	25	91	0	47	102
56. RADIO,TELEVISION AND COMMUNICATION EQUIPMENT	29	37	0	234	95
57. ELECTRONIC COMPONENTS AND ACCESSORIES	46	43	0	252	144
58. MISCELLANEOUS ELECTRICAL MACHINERY AND EQUIPMENT	32	20	0	47	37
59. MOTOR VEHICLES AND EQUIPMENT	90	61	0	82	54
60. AIRCRAFT AND PARTS	53	18	0	128	75
61. OTHER TRANSPORTATION EQUIPMENT	49	18	0	107	32
62. SCIENTIFIC AND CONTROLLING INSTRUMENTS	17	29	0	120	112
63. OPTICAL,OPTHALMIC AND PHOTOGRAPHIC EQUIPMENT	43	44	0	81	3,175
64. MISCELLANEOUS MANUFACTURING	77	92	0	368	3,782
65. TRANSPORTATION AND WAREHOUSING	7,095	1,270	0	16,018	1,932
66. COMMUNICATIONS,EXCEPT BROADCASTING	373	334	0	502	513
67. RADIO AND TELEVISION BROADCASTING	108	95	0	101	137
68. ELECTRIC,GAS,WATER AND SANITARY SERVICES	495	1,491	0	293	567
69. WHOLESALE AND RETAIL TRADE	4,646	4,089	0	9,650	6,244
70. FINANCE AND INSURANCE	836	1,049	0	1,430	1,193
71. REAL ESTATE AND RENTAL	185	148	0	219	212
72. HOTELS,PERSONAL AND REPAIR SERVICES,EXCEPT AUTO	293	394	0	17,385	684
73. BUSINESS SERVICES	2,932	2,582	0	2,746	3,746
74. RESEARCH AND DEVELOPMENT	109	44	0	81	241
75. AUTOMOBILE REPAIR AND SERVICES	454	136	0	627	179
76. AMUSEMENTS	138	99	0	2,093	169
77. MEDICAL,EDUCATIONAL AND NONPROFIT ORGANIZATIONS	163	126	0	1,127	328
78. FEDERAL GOVERNMENT ENTERPRISES	84,016	551	0	434	817
79. STATE AND LOCAL GOVERNMENT ENTERPRISES	434	38,620	0	549	378
80. GROSS IMPORTS OF GOODS AND SERVICES	0	0	0	0	0
81. BUSINESS TRAVEL,ENTERTAINMENT AND GIFTS	0	0	0	0	0
82. OFFICE SUPPLIES	0	0	0	0	0
TOTAL	117,280	67,045	0	73,185	65,350

See footnotes on p. 131.

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Footnotes to Tables D-1 Through D-14

Table D-1

[1] Total final demand is the sum of demands from consumers, business, government, and foreign sources. The data are the sums of tables D-3, 4, 6, 7, and 8.

[2] Industry number and title are consistent with the 1958 input-output study of the U.S. Department of Commerce, Office of Business Economics, as published in the Survey of Current Business, September 1965.

[3] The data on 1958 purchases by the Federal Government, included in total final demand, have been changed to conform with the treatment of research and development in subsequent years and projected 1980. See appendix A for particulars.

[4] The percent in the title of each model—3 or 4—refers to the rate of unemployment assumed in that model. The basic models reflect a continuation of past trends in the composition of GNP, modified to take account of specific anticipated developments. The high durable models reflect a composition of GNP more heavily weighted toward the durable goods components. See chap. 1 for a discussion of the assumptions.

Table D-2

[1] See footnote 1, table D-1.
[2] See footnote 2, table D-1.
[3] See footnote 4, table D-1.
[4] Sums of individual items may not equal totals because of rounding.
* Less than 0.005 percent.

Table D-3

[1] See footnote 2, table D-1.

[2] Travel receipts from foreign visitors to the United States were distributed among the individual producing industries for all years. Therefore, the 1958 data differ from that presented in the Department of Commerce's 1958 input-output table where it is shown as a single item in industry 85. Offsetting adjustments also have been made in net exports, as shown in table D-6.

[3] See footnote 4, table D-1.

Table D-4

[1] Gross private domestic investment includes residential structures, nonresidential structures, producers' durable equipment and change in business inventories.
[2] See footnote 2, table D-1.
[3] See footnote 4, table D-1.

Table D-5

[1] Producers' durable equipment is a part of gross private domestic investment and, therefore, the data in this table also are included in table D-4.
[2] See footnote 2, table D-1.
[3] See footnote 4, table D-1.

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Table D-6

[1] The detailed entries reflect gross exports and goods and services from each producing industry. Imports in total are shown as negative entries in these columns on row 80. Therefore, the sum of each column equals the GNP component, "net exports of goods and services" for the appropriate year or model.

[2] See footnote 2, table D-1.

[3] See footnote 2, table D-3.

[4] See footnote 4, table D-1.

Table D-7

[1] See footnote 2, table D-1.

[2] See footnote 3, table D-1.

[3] See footnote 4, table D-1.

Table D-8

[1] See footnote 2, table D-1.

[2] See footnote 4, table D-1.

Table D-9

[1] Average annual rates of change computed from compound interest tables and based on terminal years.

[2] See footnote 2, table D-1.

[3] See footnote 4, table D-1.

Table D-10

[1] Includes wage and salary employees, self-employed and unpaid family workers.

[2] Employment in government enterprises (industries 78 and 79) is included in general government (industry 84).

[3] For derivation of civilian employment control totals see chap. 2, table 11.

[4] See footnote 4, table D-1.

Table D-11

[1] See footnote 1, table D-10.

[2] See footnote 1, table D-9.

[3] See footnote 4, table D-1.

[4] See footnote 2, table D-10.

Table D-12

[1] Agricultural employment includes self-employed and unpaid family workers, as well as wage and salary employees.

[2] See footnote 2, table D-10.

[3] See footnote 4, table D-1.

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Table D-13

[1] The figures in each column show direct purchases per dollar of gross output by the industry named at the top.

[2] Valuation of transactions is at the site of production and excludes cost of transporting and handling necessary to bring the item to the final user.

[3] See footnote 2, table D-1.

[4] The total shown for each industry is the sum of all direct purchases of materials and services inputs. It does not equal 1.0 because value added and the scrap and byproduct adjustment are not included.

[5] The treatment of this industry has been changed from the 1958 input-output study. See appendix A for particulars.

Table D-14

[1] Primary employment is employment required in the industry producing the product or service. This includes not only the employment initially required by this industry but any indirect employment effect from its supporting industries' requirements. Indirect employment covers employment in each of the supporting industries. Employment covers wage and salary employees, self-employed and unpaid family workers.

Employment is not generated by the following industries because they do not purchase goods and services from other industries: Gross imports of goods and services (80); scrap, used and secondhand goods (83); rest of the world (85); and inventory valuation adjustment (87). There is no employment in business travel, entertainment and gifts (81); and office supplies (82) which are dummy sectors within the input-output framework and serve as a central distributing mechanism for items produced by various industries but with a similar distribution pattern.

[2] The figures in each column show total employment directly attributable to $1 billion of delivery to final demand by the industry named at the top. Employment shown does not include any multiplier effects from respending of income generated.

[3] Valuation of final demand is at the site of production and excludes cost of transporting and handling necessary to bring the item to the final user.

[4] See footnote 4, table D-1.

[5] See footnote 5, table D-13.

SOURCES: Final demand data for 1958 are from the U.S. Department of Commerce, Office of Business Economics, Survey of Current Business, September 1965. All other historical data and the 1980 projections were prepared by the U.S. Department of Labor, Bureau of Labor Statistics.

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