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SURVEY OF CURRENT BUSINESS

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the BUSINESS SITUATION

REVISED (45-day) estimates show that real GNP declined 4½ percent at an annual rate in the fourth quarter of 1981, compared with the 5-percent decline shown by the preliminary (15-day) estimates (table 1). The largest upward revisions were in the producers' durable equipment component (due to computers and aircraft) of nonresidential fixed investment, and the Federal purchases component (defense and Commodity Credit Corporation) of government purchases. Personal consumption expenditures (nondurable goods) and change in business inventories (nondurable manufacturing and retail trade) were revised downward. The revisions leave the increase in GNP prices as measured by the fixed-weighted price index at an annual rate of 8½ percent.

The revisions do not alter the picture of a decline widely spread across GNP components that was described in the January "Business Situation." However, less of the decline than was indicated there was in final sales. According to the revised estimates, about one-half of the decline in real GNP was traceable to final sales, and one-half to a lower rate of inventory accumulation in the fourth quarter than in the third.

Business inventories in the fourth quarter were lower than shown in the preliminary estimates; decumulation in December was larger than projected. For the quarter, the ratio of business inventories to final sales, which moved up steadily throughout 1981, was 3.31. The inventory-sales ratio for manufacturing and trade—at 1.76—was up to its first-quarter 1975 high.

(See "Constant-Dollar Inventories, Sales, and Inventory-Sales Ratios for Manufacturing and Trade," in this issue.) In manufacturing, inventories changed little in the fourth quarter, but sales dropped. Inventory-sales ratios were up for all categories of du-

rables and nondurables other than food. There was no evidence of a large inventory buildup in defense goods, or in finished manufactured goods. In trade, the inventory-sales ratios of wholesale durables and retail nondurables were at all-time highs.

Table 1.—Revisions in Selected Component Series of the NIPA's, Fourth Quarter of 1981

	Seasonally adjusted at annual rates			Percent change from preceding quarter at annual rates	
	15-day estimate	45-day estimate	Revision	15-day estimate	45-day estimate
Billions of current dollars					
GNP.....	2984.9	2995.3	10.4	2.7	4.1
Personal consumption expenditures.....	1909.5	1908.4	-1.1	5.6	5.3
Nonresidential fixed investment.....	332.6	337.5	4.9	-3.0	2.8
Residential investment.....	93.4	93.8	.4	-25.2	-24.0
Change in business inventories.....	17.6	12.6	-5.0		
Net exports.....	16.0	20.8	4.8		
Government purchases.....	615.7	622.2	6.5	19.5	24.6
National income.....					
Compensation of employees.....	1821.7	1820.9	-.8	7.1	6.9
Corporate profits with inventory valuation and capital consumption adjustments.....					
Other.....	396.8	397.7	.9	5.8	6.8
Personal income.....	2484.4	2485.9	1.5	7.2	7.4
Billions of constant (1972) dollars					
GNP.....	1495.6	1497.6	2.0	-5.2	-4.7
Personal consumption expenditures.....	958.3	957.2	-1.1	-1.8	-2.3
Nonresidential fixed investment.....	159.2	161.7	2.5	-10.9	-5.1
Residential investment.....	39.5	39.3	-.2	-26.9	-28.1
Change in business inventories.....	8.5	6.2	-2.3		
Net exports.....	36.7	37.5	.8		
Government purchases.....	293.4	295.6	2.2	7.1	10.5
Index numbers, 1972 = 100 ¹					
GNP implicit price deflator.....	199.58	200.01	.43	8.4	9.3
GNP fixed-weighted price index.....	206.7	206.8	.1	8.3	8.5
GNP chain price index.....				8.4	8.5

1. Not at annual rates.

NOTE.—For the fourth quarter of 1981, the following revised or additional major source data became available: For *personal consumption expenditures*, revised retail sales for November and December, and sales and inventories of used cars of franchised automobile dealers for November; for *nonresidential fixed investment*, manufacturers' shipments of equipment for November (revised) and December, construction put in place for November (revised) and December, and a partial tabulation of business expenditures for plant and equipment for the quarter; for *residential investment*, construction put in place for November (revised) and December; for *change in business inventories*, book values for manufacturing and trade for November (revised) and December; for *net exports of goods and services*, merchandise trade for November (revised) and December, and revised net investment income and other services receipts for the quarter; for *government purchases of goods and services*, Federal unified budget outlays for December, and State and local construction put in place for November (revised) and December; for *wages and salaries*, revised employment, average hourly earnings, and average weekly hours for November and December; for *net interest*, revised net interest received from abroad for the quarter; for *GNP prices*, the Consumer Price Index for December, unit value indexes for exports and imports for December, and residential housing prices for the quarter.

Summary of BEA Staff Papers

Summary Input-Output Tables of the U.S. Economy: 1973, 1974, and 1975

By Paula C. Young and Shirley F. Loftus

Employment and Employee Compensation in the 1972 Input-Output Study

By Jane-Ring F. Crane

BOTH of these papers complement the BEA 1972 "benchmark" input-output study. The first, No. 37 in the BEA staff paper series, presents summary (85 industry/commodity) tables that are updates of the 1972 study. Of necessity, they are based on information that is much less adequate than that used in 1972, for which the economic censuses are available. In addition to presenting the tables, the paper describes the tables, explains their derivation, and examines the changes in output requirements during the 1972-75 period that are revealed by the updated estimates.

The second paper, No. 38 in the series, presents employment and employment-related data for 1972 comparable to the 85- and 496-industry level of detail. Because the data are consistent with the definitions and conventions used in the 1972 input-output tables, they can be used with those tables to calculate, by industry, an estimate of the impact of a stipulated change in final demand upon total employment and compensation, upon hours, and upon wages of production workers.

Both papers may be ordered from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. The accession number for *Summary Input-Output Tables of the U.S. Economy: 1973, 1974, and 1975* is PB 82 142-399; enclose \$10.50 for a paper copy and \$4.00 for microfiche. The accession number for *Employment and Employee Compensation in the 1972 Input-Output Study* is PB 82 142-415; enclose \$6.00 for a paper copy and \$4.00 for microfiche.

The BEA Long-Term Econometric Model

By Henry Townsend

THIS paper describes an econometric model developed at BEA as an aid for the analysis of long-term developments in the U.S. economy. The model contains 254 equations, which estimate components of GNP in current and constant dollars, national and personal income by type, government receipts and expenditures, implicit price deflators, detailed labor force participation rates and unemployment rates, various financial rates and flows, and other macroecon-

omic variables. The model was estimated with annual data from 1947 to 1978, using national income and product accounts estimates available as of July 1980.

Most of the paper is devoted to describing the equations in the model in terms of their variables and of their long-term properties and underlying theory. An appendix lists the equations, and shows the results of statistical tests, periods of fit, and specifications of the error terms. Also included

are chapters on error statistics of within-sample simulations and multipliers for several fiscal policy variables.

This paper, number 36 in the BEA Staff Paper series, may be ordered from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. The accession number is PB 82 142-407; enclose \$10.50 for a paper copy, \$4.00 for microfiche.

National Income and Product Accounts Tables

The tables that follow are presented in eight groups, and the table numbers reflect these groups. The same numbers are used in other publications presenting national income and product account estimates. The groups are:

1. National product and income
2. Personal income and outlays
3. Government receipts and expenditures
4. Foreign transactions
5. Saving and investment
6. Product and income by industry
7. Implicit price deflators and price indexes
8. Supplementary table: Percent change from preceding period for selected items

The abbreviations used in the tables are: CCAdj Capital consumption adjustment
IVA Inventory valuation adjustment
NIPA's National income and product accounts
p Preliminary
r Revised

The NIPA estimates for 1929-76 are in *The National Income and Product Accounts of the United States, 1929-76: Statistical Tables* (Stock No. 003-010-00101-1, price \$10.00). Estimates for 1976-79 are in *National Income and Product Accounts, 1976-79* (Stock No. 003-010-72188-0, price \$3.75). Additional estimates for 1980 are in the July 1981 SURVEY. These publications are available from the Superintendent of Documents and Commerce Department District Offices; see addresses inside front cover.

Table 1.1-1.2.—Gross National Product in Current and Constant Dollars

	Billions of dollars								Billions of 1972 dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates						1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981						1980		1981			
			III	IV	I	II	III	IV ^r			III	IV	I	II	III	IV ^r
Gross national product.....	2,626.1	2,924.8	2,637.3	2,730.6	2,853.0	2,885.8	2,965.0	2,995.3	1,480.7	1,510.1	1,471.9	1,485.6	1,516.4	1,510.4	1,515.8	1,497.6
Personal consumption expenditures.....	1,672.8	1,857.8	1,682.2	1,751.0	1,810.1	1,829.1	1,883.9	1,908.4	935.1	958.8	930.8	946.8	960.2	955.1	962.8	957.2
Durable goods	211.9	232.1	208.8	223.3	238.3	227.3	236.2	226.8	135.8	139.4	132.6	139.1	146.8	137.4	140.3	133.2
Nondurable goods	675.7	743.0	674.2	703.5	726.0	735.3	751.3	759.3	358.4	367.1	354.9	360.4	364.5	367.0	368.8	368.2
Services	785.2	882.7	799.2	824.2	845.8	866.5	896.4	922.2	440.9	452.3	443.3	447.3	448.9	450.7	453.7	455.8
Gross private domestic investment	395.3	450.7	377.1	397.7	437.1	458.6	463.0	443.9	203.6	215.0	195.3	200.5	211.6	219.7	221.5	207.2
Fixed investment.....	401.2	433.7	393.2	415.1	432.7	435.3	435.6	431.3	206.6	207.4	200.2	207.6	213.1	208.9	206.5	201.0
Nonresidential.....	296.0	328.3	294.0	302.1	315.9	324.6	335.1	337.5	158.4	162.2	155.5	157.0	162.0	161.1	163.9	161.7
Structures.....	108.8	125.4	107.3	111.5	117.2	123.1	128.3	133.0	48.4	50.9	46.8	47.8	49.6	50.4	51.5	52.0
Producers' durable equipment.....	187.1	202.9	186.8	190.7	198.7	201.5	206.8	204.5	110.0	111.3	108.8	109.3	112.4	110.7	112.4	109.7
Residential	105.3	105.4	99.2	113.0	116.7	110.7	100.5	93.8	48.1	45.2	44.7	50.6	51.0	47.8	42.7	39.3
Nonfarm structures.....	100.3	99.9	94.5	107.6	111.4	105.4	94.9	88.1	45.2	42.2	41.9	47.5	48.0	44.8	39.7	36.3
Farm structures.....	2.0	2.3	1.7	2.2	2.2	2.1	2.3	2.5	.9	1.0	.7	1.0	.9	.9	1.0	1.0
Producers' durable equipment.....	3.0	3.2	3.0	3.1	3.2	3.2	3.3	3.3	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0
Change in business inventories.....	-5.9	17.0	-16.0	-17.4	4.5	23.3	27.5	12.6	-2.9	7.6	-5.0	-7.2	-1.4	10.8	14.9	6.2
Nonfarm.....	-4.7	14.6	-12.3	-14.0	6.8	21.5	23.1	7.1	-2.4	6.4	-3.1	-5.6	-.3	9.9	12.8	3.4
Farm	-1.2	2.3	-3.7	-3.4	-2.4	1.8	4.4	5.5	-.5	1.2	-1.8	-1.5	-1.1	.9	2.2	2.8
Net exports of goods and services.....	23.3	25.0	44.5	23.3	29.2	20.8	29.3	20.8	52.0	44.5	57.6	48.5	50.9	46.2	43.2	37.5
Exports	339.8	365.6	342.4	346.1	367.4	368.2	368.0	358.9	161.1	159.6	160.5	157.4	162.5	161.5	160.1	154.2
Imports.....	316.5	340.6	297.9	322.7	338.2	347.5	338.7	338.2	109.1	115.1	102.8	108.9	111.6	115.4	116.9	116.7
Government purchases of goods and services.....	534.7	591.3	533.5	558.6	576.5	577.4	588.9	622.2	290.0	291.8	288.2	289.8	293.6	289.5	288.3	295.6
Federal.....	198.9	230.3	194.9	212.0	221.6	219.5	226.4	253.6	108.1	111.6	106.9	107.4	111.2	108.7	109.6	116.9
National defense.....	131.7	154.4	131.4	141.6	145.2	148.2	154.1	170.1	70.9	74.0	70.9	71.9	72.1	72.6	74.0	77.2
Nondefense.....	67.2	75.9	63.5	70.4	76.4	71.3	72.2	83.5	37.2	37.6	35.9	35.4	39.0	36.1	35.6	39.7
State and local.....	335.8	361.0	338.6	346.6	354.9	357.9	362.5	368.6	181.9	180.2	181.3	182.4	182.5	180.7	178.8	178.8

Table 1.3-1.4.—Gross National Product by Major Type of Product in Current and Constant Dollars

Gross national product.....	2,626.1	2,924.8	2,637.3	2,730.6	2,853.0	2,885.8	2,965.0	2,995.3	1,480.7	1,510.1	1,471.9	1,485.6	1,516.4	1,510.4	1,515.8	1,497.6
Final sales.....	2,632.0	2,907.8	2,653.4	2,748.0	2,848.5	2,862.5	2,937.6	2,982.6	1,483.6	1,502.4	1,476.9	1,492.7	1,517.8	1,499.6	1,500.9	1,491.4
Change in business inventories.....	-5.9	17.0	-16.0	-17.4	4.5	23.3	27.5	12.6	-2.9	7.6	-5.0	-7.2	-1.4	10.8	14.9	6.2
Goods.....	1,130.4	1,272.5	1,129.4	1,169.0	1,247.5	1,257.0	1,298.3	1,287.4	665.2	685.2	657.5	662.9	688.9	686.3	691.9	673.7
Final sales.....	1,136.3	1,255.6	1,145.4	1,186.3	1,243.1	1,233.7	1,270.8	1,274.7	668.1	677.6	662.4	670.1	690.3	675.5	677.0	667.5
Change in business inventories.....	-5.9	17.0	-16.0	-17.4	4.5	23.3	27.5	12.6	-2.9	7.6	-5.0	-7.2	-1.4	10.8	14.9	6.2
Durable goods.....	458.6	507.4	456.5	476.7	501.4	516.9	525.2	486.2	279.4	282.4	274.6	281.8	289.3	288.6	287.0	264.6
Final sales.....	462.6	499.5	464.9	476.0	505.5	498.3	506.6	487.5	281.3	279.1	278.4	281.5	292.5	279.7	279.2	265.1
Change in business inventories.....	-4.0	7.9	-8.4	.7	-4.2	18.5	18.6	-1.3	-1.9	3.3	-3.8	.3	-3.1	8.9	7.8	-.5
Nondurable goods.....	671.9	765.1	672.9	692.2	746.1	740.1	773.0	801.2	385.7	402.8	382.9	381.1	399.6	397.7	404.9	409.1
Final sales.....	673.7	756.1	680.5	710.3	737.5	735.3	764.2	787.2	386.8	398.5	384.0	388.6	397.9	395.8	397.8	402.4
Change in business inventories.....	-1.8	9.1	-7.7	-18.1	8.6	4.8	8.9	14.0	-1.1	4.4	-1.1	-7.5	1.7	1.9	7.1	6.7
Services.....	1,229.6	1,371.1	1,249.0	1,285.3	1,317.1	1,344.7	1,390.5	1,432.2	695.7	707.6	699.9	701.7	703.6	704.7	709.9	712.2
Structures.....	266.0	281.1	258.9	276.4	288.4	284.1	276.3	275.7	119.8	117.2	114.5	121.0	123.9	119.4	114.0	111.7
Addenda:																
Gross domestic purchases ¹	2,602.8	2,899.8	2,592.8	2,707.3	2,823.8	2,865.1	2,935.8	2,974.5	1,428.7	1,465.6	1,414.3	1,437.1	1,465.5	1,464.2	1,472.6	1,460.1
Final sales to domestic purchasers ¹	2,608.7	2,882.8	2,608.8	2,724.6	2,819.3	2,841.8	2,908.3	2,961.9	1,431.7	1,458.0	1,419.2	1,444.2	1,466.9	1,453.5	1,457.7	1,453.9

1. Gross domestic purchases equals GNP less exports plus imports; final sales to domestic purchasers equals final sales less exports plus imports.

Table 1.5-1.6.—Gross National Product by Sector in Current and Constant Dollars

	Billions of dollars								Billions of 1972 dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates						1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981						1980		1981			
			III	IV	I	II	III	IV ^r			III	IV	I	II	III	IV ^r
Gross national product.....	2,626.1	2,924.8	2,637.3	2,730.6	2,853.0	2,885.8	2,965.0	2,995.3	1,480.7	1,510.1	1,471.9	1,485.6	1,516.4	1,510.4	1,515.8	1,497.6
Gross domestic product.....	2,576.5	2,870.8	2,586.9	2,682.0	2,800.7	2,835.5	2,909.4	2,937.6	1,452.4	1,482.0	1,443.4	1,458.9	1,488.4	1,483.8	1,487.1	1,468.5
Business.....	2,221.2	2,479.8	2,230.0	2,311.4	2,420.8	2,449.2	2,517.6	2,531.7	1,251.8	1,280.1	1,242.3	1,257.5	1,286.4	1,281.8	1,285.7	1,266.5
Nonfarm.....	2,153.7	2,408.3	2,159.1	2,248.6	2,350.1	2,383.7	2,442.2	2,457.2	1,216.8	1,242.7	1,207.6	1,227.9	1,250.9	1,248.9	1,246.2	1,225.0
Nonfarm less housing.....	1,940.9	2,168.1	1,943.1	2,025.3	2,120.2	2,147.3	2,198.7	2,206.2	1,084.5	1,105.4	1,074.6	1,093.7	1,115.4	1,112.1	1,108.2	1,085.8
Housing.....	212.8	240.2	216.0	223.3	229.9	236.4	243.5	251.0	132.3	137.4	133.0	134.2	135.5	136.8	137.9	139.2
Farm.....	68.1	72.3	67.9	69.4	67.3	72.4	75.2	74.3	35.3	37.8	33.1	33.2	33.6	36.5	39.4	41.5
Statistical discrepancy.....	-7	-8	3.0	-6.6	3.4	-6.9	2	2	-4	-4	1.7	-3.6	1.8	-3.6	.1	.1
Households and institutions.....	85.9	97.7	86.9	90.4	93.9	96.4	98.4	102.0	45.4	47.0	45.6	46.1	46.7	46.9	46.8	47.5
Private households.....	6.7	6.9	6.7	6.9	7.0	6.9	6.9	6.9	3.5	3.3	3.4	3.4	3.4	3.3	3.3	3.2
Nonprofit institutions.....	79.2	90.7	80.2	83.5	86.9	89.5	91.5	95.1	41.9	43.7	42.1	42.7	43.2	43.5	43.6	44.3
Government.....	269.3	293.3	269.9	280.3	285.9	289.9	293.5	304.0	155.2	154.9	155.5	155.3	155.3	155.2	154.6	154.5
Federal.....	81.9	90.0	80.7	87.1	87.9	88.2	88.5	95.3	49.2	49.0	49.4	48.9	49.0	49.0	49.0	49.0
State and local.....	187.4	203.3	189.3	193.3	198.0	201.6	205.0	208.7	106.0	105.9	106.1	106.3	106.4	106.2	105.6	105.4
Rest of the world.....	49.7	54.0	50.5	48.6	52.3	50.4	55.6	57.6	28.3	28.1	28.5	28.7	28.0	26.6	28.7	29.1
Addendum:																
Gross domestic business product less housing.....	2,008.4	2,239.7	2,014.0	2,088.0	2,191.0	2,212.8	2,274.1	2,280.7	1,119.5	1,142.7	1,109.4	1,123.3	1,150.8	1,145.0	1,147.8	1,127.4

Table 1.7.—Relation of Gross National Product, Net National Product, National Income, and Personal Income

	Billions of dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981			
			III	IV	I	II	III	IV ^r
Gross national product.....	2,626.1	2,924.8	2,637.3	2,730.6	2,853.0	2,885.8	2,965.0	2,995.3
Less:								
Capital consumption allowances with CCAdj.....	287.3	321.7	291.8	298.9	306.5	316.7	326.5	336.9
Capital consumption allowances.....	224.1	257.0	226.9	233.7	243.2	251.9	261.7	271.1
Less: CCAdj.....	-63.1	-64.7	-64.9	-65.2	-63.3	-64.9	-64.8	-65.7
Equals: Net national product.....	2,338.9	2,603.1	2,345.5	2,431.7	2,546.4	2,569.1	2,638.5	2,658.4
Less:								
Indirect business tax and nontax liability.....	212.3	251.1	215.8	228.0	245.5	249.4	254.0	255.4
Business transfer payments.....	10.5	11.6	10.6	10.9	11.2	11.5	11.8	12.1
Statistical discrepancy.....	-7	-8	3.0	-6.6	3.4	-6.9	.2	
Plus: Subsidies less current surplus of government enterprises.....	4.6	5.1	6.3	5.4	4.7	5.7	5.1	4.8
Equals: National income.....	2,121.4	2,346.3	2,122.4	2,204.8	2,291.1	2,320.9	2,377.6	
Less:								
Corporate profits with IVA and CCAdj.....	182.7	191.5	177.9	183.3	203.0	190.3	195.7	
Net interest.....	179.8	215.0	185.3	193.3	200.8	211.0	220.2	228.0
Contributions for social insurance.....	203.7	238.9	204.1	212.3	233.7	236.3	240.6	244.8
Wage accruals less disbursements.....	0	0	.5	-.5	0	0	.2	-.1
Plus:								
Government transfer payments to persons.....	283.8	321.6	300.1	303.1	308.4	312.7	330.4	334.9
Personal interest income.....	256.3	308.6	261.8	269.7	288.7	300.9	315.7	329.0
Personal dividend income.....	54.4	61.3	55.1	56.1	58.0	60.2	63.0	64.1
Business transfer payments.....	10.5	11.6	10.6	10.9	11.2	11.5	11.8	12.1
Equals: Personal income.....	2,160.2	2,404.0	2,182.1	2,256.2	2,319.8	2,368.5	2,441.7	2,485.9

Table 1.8.—Relation of Gross National Product, Net National Product, and National Income in Constant Dollars

(Billions of 1972 dollars)								
Gross national product.....	1,480.7	1,510.1	1,471.9	1,485.6	1,516.4	1,510.4	1,515.8	1,497.6
Less: Capital consumption allowances with CCAdj.....	147.5	153.4	147.9	149.5	151.2	152.4	154.2	155.8
Equals: Net national product.....	1,333.2	1,356.7	1,324.0	1,336.1	1,365.2	1,358.0	1,361.6	1,341.8
Less: Indirect business tax and nontax liability plus business transfer payments less subsidies plus current surplus of government enterprises.....	149.0	153.9	149.2	151.9	153.2	152.9	154.6	155.1
Statistical discrepancy.....	-4	-4	1.7	-3.6	1.8	-3.6	.1	
Equals: National income.....	1,184.6	1,203.1	1,173.1	1,187.8	1,210.3	1,208.7	1,206.9	

Table 1.11.—National Income by Type of Income

	Billions of dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981			
			III	IV	I	II	III	IV ^r
National income.....	2,121.4	2,346.3	2,122.4	2,204.8	2,291.1	2,320.9	2,377.6	
Compensation of employees.....	1,596.5	1,771.5	1,597.4	1,661.8	1,722.4	1,752.0	1,790.7	1,820.9
Wages and salaries.....	1,343.6	1,482.6	1,342.3	1,397.3	1,442.9	1,467.0	1,498.7	1,522.0
Government and government enterprises.....	253.6	273.9	253.9	263.3	267.1	270.5	274.7	283.2
Other.....	1,090.0	1,208.7	1,088.4	1,134.0	1,175.7	1,196.4	1,224.0	1,238.8
Supplements to wages and salaries.....	252.9	288.8	255.0	264.5	279.5	285.1	292.0	298.9
Employer contributions for social insurance.....	115.8	134.7	116.0	121.0	131.5	133.2	135.6	138.4
Other labor income.....	137.1	154.2	139.1	143.5	148.0	151.8	156.3	160.5
Proprietors' income with IVA and CCAdj.....	130.6	134.6	129.7	134.0	132.1	134.1	137.1	135.2
Farm.....	23.4	22.3	22.1	22.5	18.9	21.7	24.7	23.8
Proprietors' income with IVA.....	30.3	30.0	29.0	29.6	26.1	29.3	32.6	31.9
CCAdj.....	-6.9	-7.7	-6.9	-7.2	-7.2	-7.6	-7.9	-8.2
Nonfarm.....	107.2	112.4	107.6	111.6	113.2	112.5	112.4	111.5
Proprietors' income.....	112.7	116.1	113.1	117.5	117.4	115.7	115.9	115.4
IVA.....	-3.7	-1.6	-3.5	-4.0	-2.5	-1.2	-1.4	-1.5
CCAdj.....	-1.9	-2.1	-2.0	-2.0	-1.7	-2.0	-2.2	-2.4
Rental income of persons with CCAdj.....	31.8	33.6	32.0	32.4	32.7	33.3	33.9	34.5
Rental income of persons.....	64.9	70.0	65.9	66.4	68.2	69.3	70.5	71.9
CCAdj.....	-33.1	-36.4	-33.9	-33.9	-35.5	-35.9	-36.6	-37.4
Corporate profits with IVA and CCAdj.....	182.7	191.5	177.9	183.3	203.0	190.3	195.7	
Corporate profits with IVA.....	199.8	205.4	195.9	201.0	217.7	205.1	209.1	
Profits before tax.....	245.5	232.9	237.6	249.5	257.0	229.0	234.4	
Profits tax liability.....	82.3	77.6	78.5	85.2	87.7	76.4	78.1	
Profits after tax.....	163.2	155.3	159.1	164.3	169.2	152.7	156.3	
Dividends.....	56.0	63.1	56.7	57.7	59.6	62.0	64.8	66.0
Undistributed profits.....	107.2	92.1	102.4	106.6	109.6	90.6	91.5	
IVA.....	-45.7	-27.5	-41.7	-48.4	-39.2	-24.0	-25.3	-21.5
CCAdj.....	-17.2	-13.9	-17.9	-17.8	-14.7	-14.7	-13.4	-12.8
Net interest.....	179.8	215.0	185.3	193.3	200.8	211.0	220.2	228.0
Addenda:								
Corporate profits after tax with IVA and CCAdj.....	100.3	113.9	99.5	98.1	115.3	114.0	117.6	
Dividends.....	56.0	63.1	56.7	57.7	59.6	62.0	64.8	66.0
Undistributed profits with IVA and CCAdj.....	44.3	50.7	42.8	40.4	55.7	52.0	52.8	

Table 1.13.—Gross Domestic Product of Corporate Business in Current Dollars and Gross Domestic Product of Nonfinancial Corporate Business in Current and Constant Dollars

	Billions of dollars									Billions of dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates							1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981							1980		1981			
			III	IV	I	II	III	IV ^r				III	IV	I	II	III	IV ^r
Gross domestic product of corporate business.....	1,616.5	1,814.6	1,617.5	1,688.0	1,774.8	1,797.1	1,840.6	.....	Net domestic product.....	1,369.3	1,546.5	1,369.1	1,431.7	1,513.1	1,532.6	1,570.6	.....
Capital consumption allowances with CCAdj.....	175.4	197.7	178.4	183.2	187.5	194.6	201.1	207.7	Indirect business tax and nontax liability plus business transfer payments less subsidies.....	152.5	183.3	155.4	165.1	179.2	182.1	185.7	186.1
Net domestic product.....	1,441.1	1,616.8	1,439.0	1,504.8	1,587.3	1,602.5	1,639.5	.....	Domestic income.....	1,216.9	1,363.2	1,213.6	1,266.6	1,333.9	1,350.5	1,384.9	.....
Indirect business tax and nontax liability plus business transfer payments less subsidies.....	159.3	191.5	162.4	172.5	187.2	190.2	194.0	194.5	Compensation of employees.....	1,037.2	1,152.1	1,034.8	1,078.5	1,121.3	1,140.6	1,167.2	1,179.3
Domestic income.....	1,281.8	1,425.4	1,276.6	1,332.4	1,400.1	1,412.2	1,445.5	.....	Wages and salaries.....	864.2	955.5	860.9	898.2	930.7	946.5	968.3	976.6
Compensation of employees.....	1,103.1	1,226.6	1,101.7	1,147.8	1,193.3	1,214.0	1,242.5	1,256.6	Supplements to wages and salaries.....	172.9	196.6	173.9	180.4	190.5	194.1	198.9	202.7
Wages and salaries.....	917.9	1,015.9	915.2	954.6	989.1	1,006.0	1,029.4	1,039.1	Corporate profits with IVA and CCAdj.....	123.6	146.6	121.2	128.2	152.1	146.5	152.0	.....
Supplements to wages and salaries.....	185.2	210.7	186.4	193.2	204.1	208.0	213.1	217.4	Profits before tax.....	183.8	184.6	177.9	191.3	202.9	181.9	187.2	.....
Corporate profits with IVA and CCAdj.....	151.5	167.5	147.0	155.6	177.6	167.6	171.1	.....	Profits tax liability.....	63.1	59.2	60.3	65.9	68.1	57.8	59.5	.....
Profits before tax.....	214.4	208.9	206.7	221.8	231.5	206.2	209.8	.....	Profits after tax.....	120.6	125.5	117.6	125.4	134.8	124.1	127.6	.....
Profits tax liability.....	82.3	77.6	78.5	85.2	87.7	76.4	78.1	.....	Dividends.....	40.4	50.6	40.8	42.7	46.9	48.8	52.5	54.2
Profits after tax.....	132.0	131.2	128.2	136.6	143.8	129.9	131.8	.....	Undistributed profits.....	80.3	74.9	76.8	82.7	87.9	75.4	75.2	.....
Dividends.....	37.4	47.3	37.9	39.5	43.7	45.5	49.1	50.8	IVA.....	-45.7	-27.5	-41.7	-48.4	-39.2	-24.0	-25.3	-21.5
Undistributed profits.....	94.6	84.0	90.3	97.1	100.1	84.3	82.7	.....	CCAdj.....	-14.4	-10.5	-15.0	-14.7	-11.6	-11.4	-9.9	-9.1
IVA.....	-45.7	-27.5	-41.7	-48.4	-39.2	-24.0	-25.3	-21.5	Net interest.....	56.1	64.4	57.6	59.9	60.5	63.4	65.8	68.2
CCAdj.....	-17.2	-13.9	-17.9	-17.8	-14.7	-14.7	-13.4	-12.8									
Net interest.....	27.2	31.3	27.9	29.0	29.3	30.7	31.9	33.5									
Gross domestic product of nonfinancial corporate business.....	81.3	81.6	79.7	83.3	84.7	80.8	80.3	.....									
Capital consumption allowances with CCAdj.....	1535.2	1,733.0	1,537.7	1,604.7	1,690.1	1,716.3	1,760.3	.....									
Net domestic product.....	165.9	186.6	168.6	173.0	177.1	183.7	189.7	195.9									
Indirect business tax and nontax liability plus business transfer payments less subsidies.....																	
Domestic income.....																	

Table 1.14-1.15.—Auto Output in Current and Constant Dollars

	Billions of dollars								Billions of 1972 dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates						1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981						1980		1981			
			III	IV	I	II	III	IV ^r			III	IV	I	II	III	IV ^r
Auto output.....	60.2	69.3	54.3	68.8	68.1	73.6	76.8	58.9	38.6	41.6	34.6	42.8	42.8	44.3	44.8	34.5
Final sales.....	62.2	69.5	57.8	65.5	77.9	62.7	75.2	62.1	39.9	41.5	36.8	40.9	48.5	37.8	44.1	35.8
Personal consumption expenditures.....	61.8	68.2	58.7	66.1	75.6	63.3	70.2	63.5	36.5	36.6	34.3	37.5	42.8	34.2	37.0	32.5
New autos.....	46.2	49.4	44.3	48.8	57.4	44.3	51.6	44.4	28.6	29.1	26.9	29.7	35.0	26.1	29.7	25.4
Net purchases of used autos.....	15.6	18.7	14.4	17.3	18.2	19.0	18.6	19.1	7.8	7.5	7.4	7.8	7.8	8.1	7.3	7.0
Producers' durable equipment.....	12.4	14.4	13.3	12.5	13.7	12.9	17.2	13.7	8.5	9.9	8.6	8.9	9.9	8.8	11.6	9.3
New autos.....	21.2	24.4	21.9	22.4	24.7	22.3	28.8	21.9	13.2	14.3	13.4	13.6	15.0	13.0	16.5	12.5
Net purchases of used autos.....	-8.8	-10.0	-8.7	-9.9	-11.0	-9.4	-11.6	-8.2	-4.7	-4.4	-4.8	-4.7	-5.0	-4.3	-4.9	-3.2
Net exports.....	-12.9	-13.9	-15.1	-13.9	-12.2	-14.2	-13.1	-15.9	-5.5	-5.4	-6.6	-6.0	-4.7	-5.6	-5.0	-6.4
Exports.....	4.0	3.9	3.4	3.9	4.1	4.0	4.6	2.9	2.4	2.3	1.8	2.4	2.5	2.4	2.6	1.6
Imports.....	16.8	17.8	18.4	17.8	16.3	18.2	17.7	18.8	8.0	7.7	8.4	8.3	7.2	8.0	7.7	8.0
Government purchases.....	.8	.8	.8	.8	.8	.7	.9	.8	.5	.5	.5	.5	.5	.4	.5	.4
Change in business inventories.....	-1.9	-1.1	-3.5	3.2	-9.8	10.9	1.6	-3.2	-1.3	.1	-2.2	1.9	-5.7	6.6	.7	-1.2
New.....	-1.3	.0	-3.8	3.5	-10.8	12.5	-.7	-.8	-.9	.1	-2.4	2.1	-6.2	7.3	-.2	-.3
Used.....	-.6	-.2	.4	-.3	1.0	-1.6	2.3	-2.4	-.3	-.1	.2	-.1	.4	-.7	1.0	-.9
Addenda:																
Domestic output of new autos ¹	48.8	54.5	45.3	55.4	52.2	59.1	61.6	45.2	30.2	31.9	27.3	33.7	31.8	34.8	35.4	25.8
Sales of imported new autos ²	21.7	24.7	21.2	23.2	26.3	23.5	24.4	24.8	13.5	14.5	12.9	14.1	16.0	13.8	14.0	14.2

Table 1.16-1.17.—Truck Output in Current and Constant Dollars

	25.7	27.0	23.2	27.7	27.0	28.5	25.4	27.3	13.8	13.1	12.2	14.3	13.6	13.9	12.1	12.7
Truck output¹.....	25.7	27.0	23.2	27.7	27.0	28.5	25.4	27.3	13.8	13.1	12.2	14.3	13.6	13.9	12.1	12.7
Final sales.....	27.8	27.2	27.5	26.8	27.6	28.1	27.4	25.8	14.9	13.2	14.5	13.7	13.9	13.7	13.0	12.0
Personal consumption expenditures.....	7.9	8.1	7.9	7.5	7.8	8.2	8.6	7.8	4.9	4.7	4.8	4.5	4.7	4.8	4.9	4.5
Producers' durable equipment.....	17.6	17.0	18.0	16.8	16.9	17.4	17.5	16.3	9.1	7.7	9.1	8.2	8.0	8.0	7.8	7.1
Net exports.....	-1.1	-1.6	-1.9	-1.0	-.7	-1.1	-2.5	-2.2	-.8	-1.0	-1.2	-.7	-.6	-.8	-1.4	-1.3
Exports.....	3.1	3.3	3.1	3.3	3.6	3.4	3.2	3.1	1.6	1.5	1.6	1.6	1.7	1.5	1.4	1.3
Imports.....	4.1	4.9	5.0	4.3	4.3	4.5	5.7	5.3	2.3	2.5	2.8	2.3	2.3	2.4	2.8	2.6
Government purchases.....	3.3	3.8	3.4	3.5	3.6	3.7	3.8	3.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Change in business inventories.....	-2.1	-.2	-4.3	.9	-.6	.4	-2.0	1.5	-1.2	-.1	-2.2	.5	-.3	.2	-1.0	.7

Table 1.14-1.15:

1. Consists of final sales and change in business inventories of new autos produced in the United States.

2. Consists of personal consumption expenditures, producers' durable equipment, and government purchases.

Table 1.16-1.17:

1. Includes new trucks only.

Table 2.1.—Personal Income and Its Disposition

	Billions of dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981			
			III	IV	I	II	III	IV ^r
Personal income.....	2,160.2	2,404.0	2,182.1	2,256.2	2,319.8	2,368.5	2,441.7	2,485.9
Wage and salary disbursements.....	1,343.7	1,482.6	1,341.8	1,397.8	1,442.9	1,467.0	1,498.5	1,522.1
Commodity-producing industries.....	465.4	512.7	460.1	484.0	501.3	508.1	520.2	521.0
Manufacturing.....	350.7	387.3	346.7	364.9	377.4	386.7	393.9	391.0
Distributive industries.....	328.9	361.0	329.2	340.6	351.9	357.8	365.3	369.1
Service industries.....	295.7	335.0	298.7	310.0	322.5	330.5	338.5	348.7
Government and government enterprises.....	253.6	273.9	253.9	263.3	267.1	270.5	274.5	283.3
Other labor income.....	137.1	154.2	139.1	143.5	148.0	151.8	156.3	160.5
Proprietors' income with IVA and CCAdj.....	130.6	134.6	129.7	134.0	132.1	134.1	137.1	135.2
Farm.....	23.4	22.3	22.1	22.5	18.9	21.7	24.7	23.8
Nonfarm.....	107.2	112.4	107.6	111.6	113.2	112.5	112.4	111.5
Rental income of persons with CCAdj.....	31.8	33.6	32.0	32.4	32.7	33.3	33.9	34.5
Personal dividend income.....	54.4	61.3	55.1	56.1	58.0	60.2	63.0	64.1
Personal interest income.....	256.3	308.6	261.8	269.7	288.7	300.9	315.7	329.0
Transfer payments.....	294.2	333.2	310.7	313.9	319.6	324.2	342.2	347.0
Old-age, survivors, disability, and health insurance benefits.....	153.8	180.4	163.2	165.3	169.8	172.0	188.5	191.4
Government unemployment insurance benefits.....	16.0	15.5	19.0	17.5	15.6	15.6	14.8	16.0
Veterans benefits.....	15.0	16.0	14.9	15.5	15.9	15.9	15.9	16.4
Government employees retirement benefits.....	42.8	48.5	43.1	45.7	46.7	48.5	48.9	49.9
Other transfer payments.....	66.7	72.8	70.5	69.9	71.7	72.3	74.0	73.4
Aid to families with dependent children.....	12.4	13.4	12.8	13.1	13.3	13.6	13.4	13.2
Other.....	54.3	59.4	57.7	56.8	58.3	58.7	60.5	60.1
Less: Personal contributions for social insurance.....	87.9	104.2	88.1	91.2	102.3	103.1	105.0	106.5
Less: Personal tax and nontax payments.....	338.5	388.1	341.5	359.2	372.0	382.9	399.8	398.0
Equals: Disposable personal income.....	1,821.7	2,015.8	1,840.6	1,897.0	1,947.8	1,985.6	2,042.0	2,087.9
Less: Personal outlays.....	1,720.4	1,908.5	1,729.2	1,799.4	1,858.9	1,879.0	1,935.1	1,961.2
Personal consumption expenditures.....	1,672.8	1,857.8	1,682.2	1,751.0	1,810.1	1,829.1	1,883.9	1,908.4
Interest paid by consumers to business.....	46.4	49.5	46.0	46.8	47.8	48.9	50.3	51.2
Personal transfer payments to foreigners (net).....	1.2	1.2	1.0	1.6	1.0	1.0	1.0	1.6
Equals: Personal saving.....	101.3	107.3	111.4	97.6	88.9	106.6	106.9	126.7
Addenda:								
Disposable personal income:								
Total, billions of 1972 dollars.....	1,018.4	1,040.3	1,018.5	1,025.8	1,033.3	1,036.8	1,043.6	1,047.3
Per capita:								
Current dollars.....	8,002	8,769	8,074	8,299	8,504	8,651	8,873	9,048
1972 dollars.....	4,473	4,525	4,468	4,488	4,511	4,517	4,535	4,539
Population (millions).....	227.7	229.9	228.0	228.6	229.1	229.5	230.1	230.7
Personal saving as percentage of disposable personal income.....	5.6	5.3	6.1	5.1	4.6	5.4	5.2	6.1

Table 2.2-2.3.—Personal Consumption Expenditures by Major Type of Product in Current and Constant Dollars

	Billions of dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981			
			III	IV	I	II	III	IV ^r
Personal consumption expenditures.....	1,672.8	1,857.8	1,682.2	1,751.0	1,810.1	1,829.1	1,883.9	1,908.4
Durable goods.....	211.9	232.1	208.8	223.3	238.3	227.3	236.2	226.8
Motor vehicles and parts.....	89.9	98.4	87.0	94.6	105.4	93.4	101.6	93.4
Furniture and household equipment.....	84.6	92.6	84.6	88.9	92.3	92.4	93.2	92.6
Other.....	37.3	41.1	37.2	39.8	40.6	41.6	41.4	40.8
Nondurable goods.....	675.7	743.0	674.2	703.5	726.0	735.3	751.3	759.3
Food.....	345.7	381.5	347.7	360.4	372.5	377.8	386.5	389.4
Clothing and shoes.....	104.8	116.0	105.3	109.4	113.4	115.8	117.5	117.1
Gasoline and oil.....	89.0	94.8	85.3	90.5	93.5	92.4	95.1	98.4
Other nondurable goods.....	136.2	150.6	136.0	143.3	146.6	149.4	152.1	154.4
Fuel oil and coal.....	19.8	20.9	20.7	20.5	20.5	21.0	21.3	20.8
Other.....	116.4	129.7	115.3	122.7	126.1	128.4	130.8	133.6
Services.....	785.2	882.7	799.2	824.2	845.8	866.5	896.4	922.2
Housing.....	272.0	306.7	275.7	285.3	293.6	302.1	310.9	320.3
Household operation.....	111.6	126.4	116.1	116.9	118.1	123.4	130.5	133.4
Electricity and gas.....	55.7	62.9	59.3	58.8	58.4	61.5	65.5	66.3
Other.....	56.0	63.5	56.8	58.2	59.7	61.9	65.0	67.1
Transportation.....	64.1	68.9	65.8	67.5	67.6	67.9	69.6	70.5
Other.....	337.5	380.7	341.5	354.5	366.5	373.0	385.4	398.0
Personal consumption expenditures.....	935.1	958.8	930.8	946.8	960.2	955.1	962.8	957.2
Durable goods.....	135.8	139.4	132.6	139.1	146.8	137.4	140.3	133.2
Motor vehicles and parts.....	53.8	54.2	51.5	54.6	60.6	51.7	55.0	49.5
Furniture and household equipment.....	58.9	61.1	58.4	60.7	62.1	61.2	60.9	60.1
Other.....	23.1	24.1	22.6	23.8	24.1	24.5	24.3	23.6
Nondurable goods.....	358.4	367.1	354.9	360.4	364.5	367.0	368.8	368.2
Food.....	181.5	184.4	180.1	179.9	182.9	185.0	185.2	184.5
Clothing and shoes.....	78.0	83.7	78.3	80.1	82.8	84.0	84.2	83.8
Gasoline and oil.....	26.2	25.2	25.2	26.3	24.9	24.4	25.7	26.0
Other nondurable goods.....	72.6	73.8	71.4	74.1	74.0	73.6	73.8	74.0
Fuel oil and coal.....	4.2	3.6	4.3	4.2	3.7	3.6	3.7	3.6
Other.....	68.4	70.2	67.0	69.8	70.3	70.0	70.1	70.4
Services.....	440.9	452.3	443.3	447.3	448.9	450.7	453.7	455.8
Housing.....	164.2	170.2	164.8	166.5	168.0	169.6	170.8	172.3
Household operation.....	61.5	62.6	62.6	62.1	61.4	62.4	63.3	63.1
Electricity and gas.....	23.3	23.1	24.1	23.4	22.6	23.2	23.4	23.2
Other.....	38.3	39.5	38.4	38.7	38.8	39.3	39.9	39.9
Transportation.....	34.8	34.6	34.7	35.1	34.8	34.5	34.6	34.6
Other.....	180.4	184.9	181.2	183.6	184.6	184.2	185.0	185.8

Table 3.14.—State and Local Government Social Insurance Funds Receipts and Expenditures

[Billions of dollars]								
Receipts.....	45.1	52.1	46.0	47.8	49.6	51.5	53.0	54.5
Contributions for social insurance.....	31.5	36.4	32.3	33.7	34.8	35.9	36.9	38.0
Personal contribution.....	7.7	8.9	8.1	8.4	8.6	8.8	8.9	9.1
Employer contributions.....	23.8	27.6	24.3	25.3	26.3	27.1	28.0	28.8
Government and government enterprises.....	21.0	24.3	21.4	22.4	23.2	24.0	24.7	25.5
Other.....	2.8	3.2	2.8	2.9	3.0	3.2	3.3	3.4
Interest and dividends received.....	13.6	15.7	13.7	14.1	14.8	15.6	16.0	16.5
Expenditures.....	18.2	20.0	18.3	18.8	19.2	19.8	20.3	20.8
Administrative expenses (purchases of goods and services).....	.6	.6	.6	.6	.6	.6	.6	.6
Transfer payments to persons.....	17.6	19.4	17.8	18.2	18.7	19.2	19.7	20.2
Surplus or deficit (—).....	26.9	32.1	27.7	29.0	30.4	31.7	32.7	33.7

Table 3.14:

NOTE.—In this table, interest and dividends received are included in receipts; in tables 3.2 and 3.3, interest received and dividends received are netted against expenditures.

Table 4.1-4.2—Foreign Transactions in the National Income and Product Accounts in Current and Constant Dollars

	Billions of dollars								Billions of 1972 dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates						1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981						1980		1981			
			III	IV	I	II	III	IV ^r			III	IV	I	II	III	IV ^r
Receipts from foreigners.....	340.9	366.7	343.5	347.2	368.5	369.3	369.1	360.0								
Exports of goods and services.....	339.8	365.6	342.4	346.1	367.4	368.2	368.0	358.9	161.1	159.6	160.5	157.4	162.5	161.5	160.1	154.2
Merchandise.....	218.2	229.6	222.9	221.0	236.3	234.2	225.1	222.7	92.2	88.9	93.5	89.0	92.4	91.0	86.6	85.5
Durable goods.....	127.7	132.6	129.9	127.5	132.5	139.4	132.6	126.0	55.6	51.1	55.7	52.5	52.9	54.3	50.2	47.0
Nondurable goods.....	90.5	96.9	93.0	93.6	103.9	94.8	92.5	96.7	36.6	37.8	37.8	36.4	39.5	36.7	36.4	38.5
Services.....	121.6	136.1	119.5	125.0	131.1	134.0	142.9	136.2	68.9	70.7	67.0	68.4	70.1	70.5	73.5	68.6
Factor income ¹	79.5	90.6	76.3	80.7	87.1	88.7	95.9	90.6	45.4	47.2	43.1	44.4	46.7	46.9	49.5	45.7
Other.....	42.1	45.5	43.2	44.3	43.9	45.4	47.0	45.6	23.5	23.5	23.9	24.1	23.4	23.7	24.0	22.9
Capital grants received by the United States (net).....	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1								
Payments to foreigners.....	340.9	366.7	343.5	347.2	368.5	369.3	369.1	360.0								
Imports of goods and services.....	316.5	340.6	297.9	322.7	338.2	347.5	338.7	338.2	109.1	115.1	102.8	108.9	111.6	115.4	116.9	116.7
Merchandise.....	245.9	260.3	231.5	248.8	259.1	265.3	255.8	261.1	74.0	78.4	70.5	73.4	74.5	77.3	79.1	82.8
Durable goods.....	112.1	123.6	108.7	116.0	116.4	123.3	125.7	128.9	47.6	51.0	45.8	47.5	47.7	50.6	52.0	53.8
Nondurable goods.....	133.8	136.8	122.8	132.9	142.7	142.0	130.1	132.3	26.4	27.4	24.6	25.8	26.8	26.7	27.1	29.0
Services.....	70.6	80.3	66.4	73.9	79.1	82.2	82.9	77.0	35.1	36.7	32.4	35.5	37.1	38.1	37.8	33.9
Factor income ¹	29.9	36.6	25.9	32.2	34.9	38.3	40.3	33.0	17.0	19.1	14.6	17.7	18.7	20.3	20.8	16.7
Other.....	40.7	43.7	40.6	41.7	44.2	43.8	42.6	44.0	18.1	17.6	17.8	17.8	18.4	17.8	17.0	17.2
Transfer payments (net).....	6.0	6.2	5.9	8.0	5.7	5.1	6.8	7.3								
From persons (net).....	1.2	1.2	1.0	1.6	1.0	1.0	1.0	1.6								
From government (net).....	4.9	5.1	4.9	6.4	4.7	4.1	5.8	5.7								
Interest paid by government to foreigners.....	12.5	16.4	11.9	14.1	15.8	17.0	17.1	15.8								
Net foreign investment.....	5.9	3.5	27.8	2.3	8.8	-2	6.5	-1.3								

Table 4.1-4.2:

1. Equals rest-of-the-world production as shown in tables 1.5-1.6.

Table 4.3-4.4.—Merchandise Exports and Imports by Type of Product and by End-Use Category in Current and Constant Dollars

	Billions of dollars								Billions of 1972 dollars							
	1980	1981 ^r	Seasonally adjusted at annual rates						1980	1981 ^r	Seasonally adjusted at annual rates					
			1980		1981						1980		1981			
			III	IV	I	II	III	IV ^r			III	IV	I	II	III	IV ^r
Merchandise exports	218.2	229.6	222.9	221.0	236.3	234.2	225.1	222.7	92.2	88.9	93.5	89.0	92.4	91.0	86.6	85.5
Foods, feeds, and beverages	35.9	38.8	38.4	38.8	44.9	38.8	35.8	35.9	15.3	15.7	16.4	15.2	17.1	15.1	15.0	15.7
Industrial supplies and materials.....	67.1	64.9	65.9	65.2	67.6	62.9	62.4	66.6	23.7	22.1	23.5	23.0	23.1	21.4	21.2	22.7
Durable goods	24.3	20.6	23.3	22.2	22.1	21.5	19.2	19.5	8.6	7.0	8.3	7.8	7.6	7.3	6.5	6.7
Nondurable goods.....	42.8	44.3	42.7	43.0	45.5	41.4	43.2	47.1	15.1	15.1	15.2	15.2	15.5	14.1	14.7	16.1
Capital goods, except autos	73.5	80.1	77.6	75.5	79.1	83.4	80.2	77.7	34.7	32.3	35.6	33.1	33.3	34.1	31.6	30.0
Autos	16.9	18.9	16.5	18.1	18.5	20.8	20.2	16.3	6.8	6.6	6.5	6.8	6.8	7.3	6.9	5.4
Consumer goods.....	16.5	16.0	16.0	16.1	16.6	16.4	15.8	15.1	8.3	7.9	7.9	7.9	8.3	8.3	7.8	7.4
Durable goods	8.8	7.6	8.3	8.0	7.9	7.8	7.7	7.0	3.8	3.1	3.6	3.4	3.3	3.2	3.1	2.8
Nondurable goods.....	7.7	8.4	7.7	8.1	8.6	8.6	8.2	8.1	4.5	4.8	4.4	4.6	5.0	5.1	4.7	4.6
Other	8.3	10.9	8.4	7.3	9.7	12.0	10.7	11.2	3.5	4.2	3.5	3.0	3.8	4.7	4.1	4.3
Durable goods	4.2	5.5	4.2	3.7	4.8	6.0	5.4	5.6	1.8	2.1	1.8	1.5	1.9	2.3	2.1	2.2
Nondurable goods.....	4.2	5.4	4.2	3.7	4.8	6.0	5.3	5.6	1.8	2.1	1.8	1.5	1.9	2.3	2.1	2.2
Merchandise Imports	245.9	260.3	231.5	248.8	259.1	265.3	255.8	261.1	74.0	78.4	70.5	73.4	74.5	77.3	79.1	82.8
Foods, feeds, and beverages	18.2	18.8	18.2	19.5	20.5	18.7	18.1	18.0	6.7	7.3	6.6	7.0	7.4	7.0	7.1	7.6
Industrial supplies and materials, excluding petroleum	52.1	56.8	47.5	51.6	55.4	57.4	57.7	56.6	17.3	19.0	15.6	16.9	18.4	19.1	19.4	19.2
Durable goods	31.2	33.6	27.6	31.2	32.1	35.3	34.7	32.2	10.2	11.2	8.9	10.0	10.6	11.7	11.6	10.9
Nondurable goods.....	20.9	23.2	19.9	20.4	23.3	22.0	23.0	24.4	7.1	7.8	6.7	6.9	7.8	7.4	7.8	8.3
Petroleum and products	79.1	77.2	69.1	76.8	82.8	84.3	71.3	70.5	6.9	5.9	5.8	6.2	6.3	6.2	5.6	5.7
Capital goods, except autos	30.1	33.8	30.0	31.2	32.0	32.1	34.6	36.7	14.7	17.1	14.4	14.8	15.3	16.1	17.7	19.2
Autos	27.1	30.0	28.1	28.9	27.0	30.6	30.6	31.7	10.9	10.4	11.2	10.8	9.8	10.8	10.6	10.4
Consumer goods.....	34.4	38.4	34.3	34.8	37.1	36.9	38.3	41.2	15.5	16.6	15.2	15.2	15.7	16.0	16.6	18.1
Durable goods	21.2	23.5	20.8	21.7	23.2	22.6	23.3	25.1	10.9	11.3	10.5	10.7	11.2	11.0	11.0	12.0
Nondurable goods.....	13.1	14.8	13.5	13.1	13.9	14.3	15.1	16.1	4.7	5.3	4.7	4.5	4.4	5.0	5.5	6.2
Other	4.9	5.3	4.2	6.0	4.3	5.3	5.2	6.5	2.0	2.1	1.7	2.4	1.7	2.1	2.1	2.6
Durable goods	2.5	2.7	2.1	3.0	2.1	2.6	2.6	3.2	1.0	1.1	.8	1.2	.8	1.0	1.0	1.3
Nondurable goods.....	2.5	2.7	2.1	3.0	2.1	2.6	2.6	3.2	1.0	1.1	.8	1.2	.8	1.0	1.0	1.3
Addenda:																
Exports:																
Agricultural products	42.3	44.9	43.8	44.8	51.5	44.9	40.7	42.4	18.0	18.2	18.7	17.7	19.7	17.6	17.0	18.5
Nonagricultural products	175.9	184.7	179.1	176.2	184.8	189.3	184.4	180.3	74.1	70.7	74.8	71.3	72.7	73.4	69.6	67.1
Imports of nonpetroleum products	166.8	183.1	162.4	172.0	176.3	181.0	184.5	190.6	67.1	72.5	64.7	67.1	68.2	71.0	73.5	77.2

Table 6.4.—National Income Without Capital Consumption Adjustment by Industry

	Billions of dollars							
	1980	1981 [*]	Seasonally adjusted at annual rates					
			1980		1981			
			III	IV	I	II	III	IV [*]
National income without CCAdj.....	2,180.4	2,406.3	2,183.1	2,265.6	2,350.2	2,381.1	2,437.6	
Domestic industries.....	2,130.8	2,352.3	2,132.6	2,217.1	2,297.9	2,330.7	2,382.0	
Private industries.....	1,829.1	2,022.9	1,830.1	1,903.1	1,977.2	2,005.4	2,051.3	
Agriculture, forestry, and fisheries.....	62.8	67.2	62.1	63.4	61.4	65.8	70.3	
Mining.....	37.0	44.2	36.0	40.9	42.5	41.0	46.1	
Construction.....	108.4	114.8	106.6	111.6	116.4	114.1	113.8	
Manufacturing.....	527.2	586.0	517.6	548.1	577.2	586.3	596.6	
Durable goods.....	311.5	350.2	305.7	329.2	346.4	354.9	355.0	
Nondurable goods.....	215.7	235.7	211.9	218.9	230.9	231.4	241.6	
Transportation and public utilities.....	174.3	193.1	179.3	180.9	187.5	190.8	195.5	
Transportation.....	80.0	85.1	79.9	82.5	84.7	85.3	85.4	
Communication.....	50.1	55.9	50.9	54.0	53.9	54.4	56.7	
Electric, gas, and sanitary services.....	44.3	52.2	48.5	44.4	48.9	51.2	53.5	
Wholesale trade.....	133.8	151.1	131.4	139.6	146.6	148.5	153.6	
Retail trade.....	180.0	200.9	183.6	186.6	197.1	200.1	204.2	
Finance, insurance, and real estate.....	290.8	312.3	294.3	304.0	308.1	309.9	313.7	
Services.....	314.8	353.3	319.1	327.9	340.4	348.7	357.5	
Government and government enterprises.....	301.7	329.4	302.5	314.0	320.7	325.3	330.8	341.0
Rest of the world.....	49.7	54.0	50.5	48.6	52.3	50.4	55.6	57.6

Table 6.20.—Corporate Profits by Industry

	Billions of dollars							
	1980	1981 [*]	Seasonally adjusted at annual rates					
			1980		1981			
			III	IV	I	II	III	IV [*]
Corporate profits with IVA and CCAdj.....	182.7	191.5	177.9	183.3	203.0	190.3	195.7	
Domestic industries.....	151.5	167.5	147.0	155.6	177.6	167.6	171.1	
Financial.....	27.9	20.9	25.8	27.4	25.5	21.0	19.2	
Nonfinancial.....	123.6	146.6	121.2	128.2	152.1	146.5	152.0	
Rest of the world.....	31.1	24.0	30.9	27.7	25.4	22.8	24.5	
Corporate profits with IVA.....	199.8	205.4	195.9	201.0	217.7	205.1	209.1	
Domestic industries.....	168.7	181.4	165.0	173.4	192.3	182.3	184.6	
Financial.....	30.6	24.2	28.7	30.5	28.6	24.3	22.7	
Federal Reserve Banks.....	11.9	14.5	11.3	12.0	13.5	14.3	15.2	
Other.....	18.7	9.7	17.4	18.5	15.1	10.1	7.5	
Nonfinancial.....	138.1	157.1	136.2	142.9	163.7	158.0	161.9	
Manufacturing.....	74.5	83.5	68.5	76.2	90.4	84.4	85.1	
Durable goods.....	20.9	27.0	19.4	25.8	31.5	31.9	26.0	
Primary metal industries.....	3.1	3.2	.7	3.8	5.1	3.8	3.7	
Fabricated metal products.....	3.9	3.8	3.9	4.8	4.1	4.6	4.7	
Machinery, except electrical.....	6.3	8.3	6.2	6.1	8.7	8.2	8.6	
Electric and electronic equipment.....	5.3	6.8	5.5	5.3	8.4	6.2	6.6	
Motor vehicles and equipment.....	-4.3	-8	-4.8	-8	-1.6	2.7	-2.2	
Other.....	6.5	5.7	8.0	6.6	6.8	6.3	4.7	
Nondurable goods.....	53.7	56.5	49.1	50.4	58.9	52.5	59.0	
Food and kindred products.....	7.3	9.6	5.7	8.6	10.4	9.5	8.9	
Chemicals and allied products.....	7.5	8.6	7.0	8.1	10.1	8.3	8.5	
Petroleum and coal products.....	24.6	22.0	22.2	19.9	21.6	19.6	26.4	
Other.....	14.3	16.4	14.2	13.8	16.8	15.1	15.2	
Transportation and public utilities.....	18.5	21.0	22.5	18.8	20.8	20.0	21.6	
Wholesale and retail trade.....	20.9	28.3	20.4	22.6	27.5	28.4	30.1	
Other.....	24.1	24.3	24.8	25.2	25.1	25.1	25.2	
Rest of the world.....	31.1	24.0	30.9	27.7	25.4	22.8	24.5	

Table 7.1-7.2.—Implicit Price Deflators and Fixed-Weighted Price Indexes, 1972 Weights, for Gross National Product

	Implicit price deflators, 1972=100							
	1980	1981 [*]	Seasonally adjusted					
			1980		1981			
			III	IV	I	II	III	IV [*]
Gross national product.....	177.36	193.69	179.18	183.81	188.14	191.06	195.61	200.01
Personal consumption expenditures.....	178.9	193.8	180.7	184.9	188.5	191.5	195.7	199.4
Durable goods.....	156.0	166.5	157.5	160.5	162.3	165.4	168.3	170.4
Nondurable goods.....	188.6	202.4	190.0	195.2	199.2	200.4	203.7	206.2
Services.....	178.1	195.2	180.3	184.3	188.4	192.2	197.6	202.3
Gross private domestic investment.....	194.2	209.1	196.4	199.9	203.1	208.4	210.9	214.5
Fixed investment.....	186.8	202.4	189.1	192.4	195.0	201.4	204.5	208.7
Nonresidential.....	224.7	246.4	229.5	233.3	236.2	244.1	249.2	255.6
Structures.....	170.2	182.3	171.7	174.5	176.8	182.0	184.0	186.4
Producers' durable equipment.....	218.6	233.3	221.9	223.3	228.7	231.8	235.4	238.7
Residential.....	221.7	236.8	225.2	226.3	231.8	235.0	239.1	242.9
Nonfarm structures.....	219.9	235.5	223.1	224.2	229.6	233.4	237.6	241.2
Farm structures.....	149.4	159.4	151.0	152.4	155.2	158.0	161.5	163.1
Producers' durable equipment.....								
Change in business inventories.....								
Net exports of goods and services.....								
Exports.....	211.0	229.1	213.4	219.9	226.1	228.0	229.8	232.8
Imports.....	290.1	295.9	289.7	296.4	303.1	301.2	289.8	289.8
Government purchases of goods and services.....	184.4	202.6	185.1	192.8	196.4	199.5	204.2	210.5
Federal.....	183.9	206.4	182.4	197.4	199.4	201.9	206.6	217.0
National defense.....	185.6	208.7	185.2	196.8	201.2	204.2	208.3	220.4
Nondefense.....	180.6	201.7	176.7	198.7	195.9	197.3	203.1	210.3
State and local.....	184.7	200.3	186.7	190.0	194.5	198.0	202.8	206.2
Fixed-weighted price indexes, 1972=100								
Gross national product.....	183.3	200.4	185.1	189.7	194.4	198.1	202.6	206.8
Personal consumption expenditures.....	184.3	201.0	186.3	190.8	195.8	198.9	202.9	206.4
Durable goods.....	160.1	171.9	162.0	164.9	166.7	170.4	174.0	176.5
Nondurable goods.....	195.6	212.6	197.3	202.9	209.5	211.2	213.5	216.2
Services.....	182.0	200.2	184.3	188.5	193.1	197.3	202.8	207.6
Gross private domestic investment.....	203.8	220.9	207.1	209.7	214.6	219.1	223.4	226.9
Fixed investment.....	195.5	213.5	198.6	202.0	206.7	211.8	216.1	219.5
Nonresidential.....	217.9	235.7	221.0	224.1	229.0	233.5	238.1	241.7
Structures.....	182.6	200.8	185.8	189.4	193.9	199.3	203.4	206.7
Producers' durable equipment.....	219.6	234.8	223.1	224.3	229.7	233.1	237.3	240.9
Residential.....								
Change in business inventories.....								
Net exports of goods and services.....								
Exports.....	217.1	237.2	219.1	226.6	232.9	236.1	239.0	241.1
Imports.....	302.9	321.1	308.7	315.5	324.4	324.8	318.6	317.2
Government purchases of goods and services.....	190.8	209.0	192.1	198.2	202.7	206.9	210.6	216.1
Federal.....	191.2	213.2	190.8	201.2	205.5	210.8	213.7	222.8
National defense.....	195.1	218.8	194.9	205.8	210.0	216.1	219.3	229.4
Nondefense.....	181.1	199.0	180.4	189.5	194.0	197.1	199.5	206.0
State and local.....	190.5	206.2	193.0	196.2	200.7	204.3	208.6	211.5
Addenda:								
Gross domestic purchases ¹	188.8	205.8	190.9	195.4	200.3	203.8	207.8	211.7
Final sales.....	183.2	200.4	185.0	189.6	194.3	198.0	202.5	206.8
Final sales to domestic purchasers ¹	188.7	205.9	190.8	195.4	200.2	203.8	207.8	211.7
Personal consumption expenditures, food.....	192.7	208.6	195.1	202.6	205.7	206.0	210.3	212.5
Personal consumption expenditures, energy.....	317.1	359.9	320.3	325.2	353.3	360.3	360.1	366.1
Other personal consumption expenditures.....	169.5	184.1	171.3	175.0	178.4	182.0	186.2	189.9
Gross domestic product.....	183.3	200.5	185.1	189.8	194.4	198.2	202.7	206.9
Business.....	184.5	201.8	186.7	190.9	195.7	199.5	204.3	208.0
Nonfarm.....								

Table 7.1-7.2.

1. Gross domestic purchases equals GNP less exports plus imports; final sales to domestic purchasers equals final sales less exports plus imports.

Reconciliation and Other Special Tables

Table 1.—Reconciliation of Changes in Compensation Per Hour in the Business Economy other than Farm and Housing and Average Hourly Earnings in the Private Nonfarm Economy, Seasonally Adjusted

	1981			
	I	II	III ^r	IV ^p
1. Compensation per hour of all persons in the business economy other than farm and housing (percent change at annual rate) ¹	12.0	8.8	8.8	7.1
2. Less: Contribution of supplements.....	1.5	.1	0	.6
3. Plus: Contribution of housing and nonprofit institutions.....	-.1	0	-.1	.1
4. Less: Contribution of employees of government enterprises and self-employed and unpaid family workers.....	-.3	.3	.5	-.2
5. Equals: Wages and salaries per hour of employees in the private nonfarm economy (percent change at annual rate).....	10.7	8.4	8.2	6.8
6. Less: Contribution of nonproduction workers in manufacturing.....	-.2	.6	.1	.2
7. Less: Contribution of non-BLS data, detailed weighting, and seasonal adjustment.....	1.9	-.5	.1	.8
8. Equals: Average hourly earnings, production and nonsupervisory workers in the private nonfarm economy (percent change at annual rate).....	9.0	8.4	8.0	5.8

^rRevised.

^pPreliminary.

1. Bureau of Labor Statistics estimates of changes in hourly compensation in the nonfarm business sector for the four quarters are 11.7, 9.6, 9.5 and 6.2 percent.

Table 3.—Reconciliation of Changes in the Implicit Price Deflator for Personal Consumption Expenditures and the Consumer Price Index for all Urban Consumers, Seasonally Adjusted

	1981	
	III ^r	IV ^p
Implicit price deflator for personal consumption expenditures (percent change at annual rate).....	9.0	7.8
2. Less:		
Contribution of shifting weights in PCE.....	.2	.3
New autos.....	1.3	-1.5
Gasoline and oil.....	.9	.4
Electricity, gas, fuel oil, and coal.....	.2	-.1
Furniture and household equipment.....	-.3	-.2
Food purchased for off-premise consumption.....	-.2	.1
Purchased meals and beverages.....	-.4	0
Clothing and shoes.....	-.1	0
Housing.....	-.1	1.0
Other.....	-1.1	.7
3. Equals: PCE chain price index (percent change at annual rate).....	8.7	7.4
4. Less:		
Contribution of differences in weights of comparable CPI and PCE expenditure components.....	.8	-.6
Gasoline and oil.....	.3	-.3
Electricity, gas, fuel oil, and coal.....	-.2	-.1
Furniture, appliances, floor coverings, other household furnishings.....	0	.1
Food at home.....	.4	-.2
Food away from home.....	-.1	-.1
Apparel commodities.....	.1	0
Rent.....	-.4	-.3
Other.....	.5	.4
5. Less:		
Contribution of PCE expenditure components not comparable with CPI components.....	.6	1.0
New Autos.....	0	-.1
Net purchases of used autos.....	.2	.2
Owner-occupied nonfarm and farm dwellings—space rent.....	.1	.4
Services furnished without payment by financial intermediaries except life insurance carriers.....	0	.1
Current expenditures by nonprofit institutions.....	.4	.6
Other.....	-.2	-.1
6. Plus:		
Contribution of CPI expenditure components not comparable with PCE components.....	4.6	.9
New autos.....	-.1	-.2
Used autos.....	.5	.9
Homeownership.....	4.0	-.5
Other.....	.2	.6
7. Less: Contribution of differences in seasonal adjustment ¹	.2	0
8. Equals: Consumer Price Index, all items (percent change at annual rate).....	12.0	7.7

^rRevised.

^pPreliminary.

1. These differences arise because component price indexes that are used in the BEA measures and in the CPI are seasonally adjusted at different levels of detail.

Fixed Reproducible Tangible Wealth in the United States, 1925-79

Annual estimates of the stock of privately owned and government-owned durable equipment and structures and of durable goods owned by consumers in the United States for 1925-79 have been published by BEA.

The report, *Fixed Reproducible Tangible Wealth in the United States, 1925-79*, provides tabulations of gross and net stocks, depreciation, discards, ratios of net to gross stocks, and average ages of gross and net stocks in historical-cost, constant-cost, and current-cost valuations. Fixed nonresidential private capital is presented by legal form of organization and major industry group (farm, manufacturing, and nonfarm nonmanufacturing). Residential capital is presented by legal form of organization and tenure group (owner-occupied and tenant-occupied). Government-owned fixed capital is presented for the Federal Government (military and nonmilitary) and for State and local governments. The estimates are consistent, definitionally and statistically, with the national income and product accounts. The investment series used to derive the wealth estimates and a detailed statement of methodology are also presented.

Fixed Reproducible Tangible Wealth in the United States, 1925-79 is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. (Stock number 003-010-00102-0, price \$13.00).

Sources of Growth in Selected State and Local Government Tax Receipts

FROM 1961 to 1980, general own-source receipts of State and local governments as measured in the national income and product accounts (NIPA's) increased more than \$220 billion, or six times. In this article, the analysis of this growth goes beyond the conventional analysis by type of receipt and by type of jurisdiction to examine what are called the "sources" of growth. The article distinguishes as sources of growth legislative actions, on the one hand, and events outside the reach of legislative actions—mainly economic activity and inflation—on the other.

Analysis of these sources for receipts that make up 65 to 70 percent of the total indicated two distinct periods. In 1962-72, legislative actions accounted for between one-quarter and one-half of the growth in most years. In 1972-80, economic activity and inflation accounted for virtually all of the growth. In the latter period, legislative actions held down growth in receipts of local government and

there was a shift of fiscal resources away from local toward State government. The introduction of "circuit-breakers" and other initiatives, such as California's Proposition 13, in property taxes, and removal of certain items from the sales tax base, were among the specific legislative actions holding down growth in receipts in 1972-80. More generally, improvement in the State and local fiscal position, in part a result of accelerated growth in Federal grants-in-aid, lessened pressure for continued increases in tax rates and bases.

Coverage and framework

In the NIPA's, general own-source receipts consists of personal tax and nontax receipts, corporate profits tax accruals, and indirect business tax and nontax accruals. This article covers seven types of these receipts for which information on legislative actions can be found or derived (table 1). A substantial portion of the 30 to

35 percent of general own-source receipts not covered are local government receipts.

Not all State legislative actions are covered—for example, those made after 1974 to increase receipts related to exploitation of energy sources (severance taxes, rents, and royalties). However, most of the receipts changes resulting from legislative actions are reflected in the data presented.

Except in the case of property taxes, the discussion is in terms of specific legislative actions—imposition of new taxes (or abolition of old ones), rate changes, or changes in the tax base. Property taxes are discussed in terms of: (1) average effective tax rates, i.e., the tax liability as a percentage of assessed value of taxable property; (2) the relationship between assessment values and market values (assessment/market ratios); and (3) the relationship between current- and constant-dollar values of taxable property. The alternative framework is necessary because the task of estimating the effects of property tax rate actions for 80,000 local governments, most of which are empowered to levy property taxes, is too complex to attempt.

Local indirect business property tax accruals

Although local indirect business property tax accruals grew substantially from 1961, they grew less rapidly than did general own-source receipts as a whole; they remained, however, the largest single own-source receipt for States and localities. These taxes are levied as a proportion of the value of real property—structures (including residences) and the land upon which the structures rest—and business personalty—equipment, vehicles owned by business, in-

Table 1.—Selected State and Local Government Taxes as a Percent of Total General Own-Source Receipts

Year	Total general own-source receipts (billions of dollars)	Indirect business tax and nontax accruals				Personal tax and nontax receipts		All other general own-source receipts
		Local property tax	State general sales and use tax	State motor fuel tax	State alcoholic beverage and tobacco taxes	State income tax	Local income tax	
1961	43.1	39.6	11.3	8.3	4.1	5.9	0.6	30.2
1962	46.7	39.4	11.6	8.1	4.0	6.0	.7	30.2
1963	49.9	39.4	11.6	8.0	4.0	6.1	.7	30.2
1964	54.4	38.7	11.8	7.7	3.9	6.5	.8	30.6
1965	59.0	38.2	12.4	7.6	4.0	6.7	.8	30.3
1966	64.7	36.8	13.2	7.3	4.0	7.4	1.0	30.3
1967	71.0	36.9	13.4	7.1	3.9	7.5	1.4	29.8
1968	81.5	35.7	14.3	6.7	3.9	8.5	1.4	29.5
1969	91.6	34.8	14.5	6.5	3.7	9.4	1.5	29.6
1970	101.7	35.1	14.5	6.3	3.9	9.4	1.5	29.6
1971	113.8	34.7	14.6	6.0	3.7	9.6	1.5	29.9
1972	129.3	32.6	14.6	5.9	3.6	11.8	1.7	29.8
1973	141.5	31.9	14.9	5.8	3.5	11.9	1.6	30.4
1974	152.8	31.3	15.6	5.3	3.4	11.8	1.7	30.9
1975	166.3	31.2	15.5	5.0	3.2	12.0	1.7	31.4
1976	187.1	30.3	15.6	4.8	3.0	12.5	1.8	32.0
1977	208.4	29.6	15.9	4.5	2.8	13.0	1.8	32.4
1978	225.6	27.4	16.6	4.3	2.7	14.0	1.7	33.3
1979	242.6	25.6	17.2	4.0	2.5	14.3	1.7	34.7
1980	264.5	24.6	17.3	3.6	2.4	15.3	1.6	35.2

ventories, and the like. Some localities levy property taxes on intangible property—bank stock, for example—but this represents a negligible proportion of the tax base. (Property taxes on household furnishings are included in personal property taxes in the NIPA's.)

Table 2 shows property tax accruals calculated on several different bases in order to isolate the sources of growth. Column 1 is the regularly published accruals estimate (see NIPA table 3.3). Column 2 shows what these taxes would have been if the average effective tax rate had been held constant at the 1961 level. Column 3 is the difference between columns 1 and 2, and is the accruals due to the changes in the average effective tax rate from the 1961 level.

Column 4 shows what property taxes would have been if the assessment/market ratio had been held constant at the 1961 level, and column 5, the difference between column 4 and the published accruals in column 1, is the accruals due to changes in the assessment/market ratio from the 1961 level. Column 6 holds both the average effective tax rate and the assessment/market ratio constant. Column 7 again holds the average effective tax rate and assessment/market ratio constant, but applies them to market values calculated in 1961 dollars to remove the effect of inflation.¹ Column 8 is the difference between columns 6 and 7, and is the accruals due to the rise in prices of taxable property.

Table 3 shows the annual change in property taxes calculated on the various bases shown in table 2. Columns 1, 2, and 3 present total changes in the published accruals, changes due to real growth in the taxable property, and changes due to inflation, respectively. Columns 2 and 3 are changes that are not the result of legislative actions. Columns 4 and 5 show changes due to changes in the average effective tax rate, and due to changes in the assessment/market ratio.

1. Current- and constant-dollar estimates for taxable types of equipment and structures for fixed private capital were taken from Bureau of Economic Analysis *Fixed Reproducible Tangible Wealth in the United States, 1925-79* (Washington, D.C.: U.S. Government Printing Office, March 1982) and from unpublished BEA data.

The contribution of real growth in taxable property varied considerably. Only once from 1962 to 1969 did real growth generate more than \$0.4 billion in tax increases. The weak increases in 1968 and 1969, after a strong 1967 increase, may be related to the urban unrest prevalent in the later 1960's, when much inner-city

property was abandoned by owners and thus effectively removed from taxable status. In 1970-76, the tax increases generated by real growth averaged about \$1.2 billion. The small increase in 1977 probably reflects reduced additions of new structures to the tax base during the 1974-1975 recession.

Table 2.—Local Government Indirect Business Property Tax Accruals, Various Measures

[Billions of dollars]

Year	Published	Assuming 1961 effective tax rate	Column (1) less column (2)	Assuming 1961 assessment/market ratio	Column (1) less column (4)	Assuming 1961 effective tax rate and 1961 assessment/market ratio	Assuming the application of 1961 effective tax rate and 1961 assessment/market ratio to market values calculated in 1961 dollars	Column (6) less column (7)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1961.....	17.0	17.0	0	17.0	0	17.0	17.0	0
1962.....	18.4	17.5	.9	18.4	0	17.5	17.4	0
1963.....	19.7	17.9	1.8	19.6	0	17.9	17.7	.2
1964.....	21.1	18.3	2.7	21.0	0	18.3	18.0	.3
1965.....	22.5	18.8	3.7	22.5	0	18.7	18.2	.6
1966.....	23.8	19.2	4.6	23.8	.1	19.2	18.2	1.0
1967.....	26.2	21.5	4.7	26.1	.2	21.4	19.4	2.0
1968.....	29.1	24.1	5.0	28.3	.8	23.4	19.5	3.9
1969.....	31.9	26.8	5.1	30.6	1.3	25.5	20.0	5.7
1970.....	35.7	30.2	5.5	34.4	1.3	28.9	21.5	7.4
1971.....	39.5	33.8	5.7	38.3	1.1	32.7	23.3	9.3
1972.....	42.2	37.2	4.9	41.3	.8	36.4	24.5	11.8
1973.....	45.2	41.0	4.2	46.2	-1.1	42.1	25.5	16.5
1974.....	47.9	46.1	1.8	49.3	-1.5	47.5	26.0	21.6
1975.....	51.9	51.7	.2	53.8	-1.8	53.6	27.2	26.3
1976.....	56.7	58.0	-1.2	57.9	-1.2	59.1	28.0	31.1
1977.....	61.7	63.9	-2.2	63.4	-1.7	65.6	28.2	37.3
1978.....	61.8	70.6	-8.8	66.1	-4.3	74.9	29.0	45.9
1979.....	62.1	79.0	-17.0	69.2	-7.1	86.2	30.0	56.2
1980.....	65.9	87.6	-21.7	74.6	-8.7	96.3	30.8	65.6

NOTE.—Interactions between rate and assessment/market ratio changes were separately calculated and allocated to columns 2 and 4.

Table 3.—Annual Change in Local Government Indirect Business Property Tax Accruals, by Source of Change

[Billions of dollars]

Year	Published	Real growth in taxable property	Inflation in the value of taxable property	Change in average effective tax rate	Change in assessment/market ratio
	(1)	(2)	(3)	(4)	(5)
1962.....	1.4	0.4	0	0.9	0
1963.....	1.3	.3	.1	.8	0
1964.....	1.4	.3	.2	1.0	0
1965.....	1.5	.2	.2	1.0	0
1966.....	1.3	.1	.4	.8	0
1967.....	2.4	1.1	1.0	.1	.1
1968.....	2.9	.1	1.9	.3	.6
1969.....	2.8	.4	1.8	.1	.5
1970.....	3.8	1.6	1.7	.5	0
1971.....	3.7	1.8	2.0	.2	-.3
1972.....	2.7	1.2	2.5	-.8	-.2
1973.....	3.0	1.0	4.7	-.8	-1.9
1974.....	2.7	.4	5.1	-2.4	-.4
1975.....	4.1	1.3	4.8	-1.6	-.4
1976.....	4.8	.8	4.8	-1.5	.7
1977.....	5.0	.3	6.2	-.9	-.5
1978.....	.1	.8	8.6	-.6	-2.6
1979.....	.2	1.0	10.3	-.8	-2.8
1980.....	3.8	.8	9.4	-.4	-1.5

Only in 1962-66 did changes in the average effective rate add substantially to property tax increases. In that period, tax increases generated by increasing effective rates averaged about \$1.0 billion. In 1967-71, increases averaged only \$0.2 billion and in 1972-80, the average effective tax rate declined so that the contribution of effective rate changes was negative, ranging between -\$0.8 billion and -\$8.2 billion.

Declines in effective rates did not necessarily involve explicit "millage" changes; legislative actions granting exemptions or imposing income-related ceilings on property taxes for the elderly, the poor, or other specified classes of property owners also reduce average effective tax rates. It may be that declines in tax rates brought about by these "circuit-breaker" mechanisms were partly offset by increased rates for taxpayers not qualifying for circuit-breakers.

The negative changes due to the average effective tax rate after 1971 coincide reasonably well with the major "circuit-breaker" actions taken by a number of State legislatures. The Advisory Commission on Intergovernmental Relations (ACIR) lists 30 States and the District of Columbia as having circuit-breaker programs in 1978; of these, 18 were put into effect between 1971 and 1974. Of the six in existence before 1971, four were expanded in that year.² ACIR estimates that these circuit-breakers lowered taxes about \$0.9 billion in 1977. However, other factors, including rate freezes (such as those that became law in California in 1972 and in Indiana in 1974), also contributed significantly to the negative impact of the average effective tax rate on property tax growth. California's Proposition 13 accounted for a portion of the large 1978 and 1979 changes (about \$1.5 billion and \$3.5 billion, respectively), but the effect of other rate reductions in those years was significant—about \$4.5 billion in 1978. It appears, therefore, that policy decisions since 1971, at least with respect to average effective tax rates, reduced property taxes markedly below levels that would otherwise have been reached.

Table 3 indicates that changes in assessment/market ratios had little effect on property tax growth in 1962-67, and added modestly in 1968-69. After 1970, the impact of such changes was negative. Although partly the result of legislative action, (e.g., in Maryland in 1978), most of the negative impact probably was caused by the inability of assessors to keep pace with the effects of inflation on market values. About one-half of the \$2.6 billion decline in 1978 was the result of California's Proposition 13, which abruptly pushed back assessments to levels that had obtained in 1977, and in some cases, even earlier.

Changes in assessment/market ratios may reflect policy decisions primarily intended to affect property tax receipts, but they also may reflect policy decisions where there is no intent to affect the level of receipts. Where assessments have increased more slowly than market values because of a shortage of assessors, a decision might be made to hire more assessors to bring assessments up to date in order to equalize assessments, and thus tax liabilities, for properties of equal market values. In another situation, a decision might be made to alter the shares of taxes paid by different classes of property owners. For example, residential property might be assigned a lower assessment/market ratio than commercial or in-

dustrial property, thus shifting the property tax burden away from homeowners.

Sales taxes

This section discusses the growth of four major State sales taxes: general sales, motor fuel, alcohol, and tobacco products. For these taxes the effects of legislative actions were identified directly, most often with data from State revenue offices. (Local governments also have sales taxes, and they increased markedly over the period, but they are among the local taxes for which data on legislative actions are not generally available.) Administrative changes, such as acceleration of collections from businesses, are not covered because sales taxes are measured on an accrual basis in the NIPA's.

State general sales taxes.—The contribution of legislative actions to growth in this group of taxes shifted rather abruptly in 1972 (table 4). Through the 1960's and early 1970's, legislative actions accounted for between 20 percent and 70 percent of growth. In 1973-77, legislative actions still added to growth, but were much less important, contributing between 4 percent and 13 percent of growth. In 1978-80, the impact of legislative actions was negative. Base changes—primarily the removal of grocery food sales, drugs, industrial and agricultural equipment, and most recently, resi-

Table 4.—Annual Change in Selected State Government Sales Tax Accruals and Percent Due to Legislative Actions

(Billions of dollars)

Year	Total		General sales tax accruals		Motor fuel sales tax accruals		Alcohol and tobacco sales tax accruals	
	Annual change	Percent due to legislative actions	Annual change	Percent due to legislative actions	Annual change	Percent due to legislative actions	Annual change	Percent due to legislative actions
1962.....	0.9	41	0.5	45	0.2	41	0.1	22
1963.....	.7	30	.4	26	.2	14	.1	56
1964.....	1.0	28	.7	26	.2	16	.1	69
1965.....	1.4	36	.9	31	.3	18	.3	69
1966.....	1.7	39	1.2	44	.3	0	.2	57
1967.....	1.4	60	.9	69	.3	20	.2	73
1968.....	3.1	48	2.2	50	.5	27	.5	60
1969.....	2.3	42	1.6	44	.5	27	.2	64
1970.....	2.4	38	1.5	37	.4	26	.5	50
1971.....	2.6	29	1.8	26	.5	23	.3	58
1972.....	3.5	30	2.3	19	.8	37	.5	68
1973.....	3.2	19	2.2	12	.7	35	.3	33
1974.....	2.9	15	2.8	13	-.1	(*)	.2	12
1975.....	2.3	13	1.9	8	.3	39	.2	35
1976.....	4.3	13	3.5	12	.6	13	.2	24
1977.....	4.3	6	3.8	4	.4	15	.2	59
1978.....	5.0	1	4.4	(@)	.4	17	.2	32
1979.....	4.3	(@)	4.3	(@)	0	(*)	.1	11
1980.....	4.1	(@)	4.1	(@)	-.2	(*)	.3	8

@Effect of legislative action negative.

*Total change negative, legislative action positive.

2. "Significant Features of Fiscal Federalism, 1978-79", Advisory Commission on Intergovernmental Relations, May 1979.

dential utilities sales, from the tax base—were responsible for this negative turn. Rate reductions were a negligible factor. On the basis of information available for 1981, it would appear that this movement has been reversed.

State motor fuel sales taxes.—In 1961–67, legislative actions accounted for about 20 percent of the \$0.3 billion average increase in motor fuel sales taxes. In 1968–73, when increases averaged twice as much, legislative actions accounted for about 30 percent. These taxes declined in 1974, as a result of the 1973 embargo by the Organization of Petroleum Exporting Countries (OPEC) on oil exported to the United States; legislated rate increases were insufficient to reverse the effects of a decline in motor fuel consumption.

Consumption increased slightly in 1975, as did taxes. Consumption continued to increase in 1976–78, at rates similar to those recorded in the 1960's; legislative actions contributed only modestly to the accompanying acceleration in taxes. In 1979–80, the second round of OPEC actions reduced consumption more severely than did the 1973 embargo. Again, legislated rate increases partly counteracted the decline.

In most States, motor fuel taxes are reserved for the use of transportation or highway departments. In addition, other departments of State government are affected by factors, e.g. the state of the economy, in different ways than are highway operations. Thus, pressures for legislative actions with respect to fuel taxes do not necessarily occur at the same time or for the same reasons as they do with respect to income or general sales taxes. Prices of goods and services purchased for the construction, repair, and maintenance of highways increased more rapidly through most of the 1970's than most other prices paid by State governments. These factors, coupled with the depressed motor fuel tax collections, have generated great pressure for legislative actions. Partial data indicate that 26 States increased motor fuel tax rates in 1981, adding \$0.6 billion to accruals. Despite these rate increases, motor fuel taxes declined slightly.

Table 5.—Annual Change in State and Local Government Personal Income Taxes and Percent Due to Legislative Action

[Billions of dollars]

Year	Total		State		Local	
	Annual change	Percent due to legislative actions	Annual change	Percent due to legislative actions	Annual change	Percent due to legislative actions
1962.....	0.4	17	0.3	21	0.1	0
1963.....	.3	47	.2	50	0	0
1964.....	.6	14	.5	17	.1	0
1965.....	.4	7	.4	8	0	0
1966.....	1.0	24	.8	13	.2	79
1967.....	.9	51	.5	28	.3	87
1968.....	1.8	19	1.6	20	.2	13
1969.....	1.9	18	1.7	20	.2	7
1970.....	1.1	32	1.0	38	.2	(@)
1971.....	1.6	26	1.4	18	.2	85
1972.....	4.8	20	4.3	19	.5	28
1973.....	1.7	(@)	1.6	(@)	.1	(@)
1974.....	1.5	(@)	1.2	(@)	.3	0
1975.....	2.2	13	1.9	15	.3	2
1976.....	3.9	11	3.5	6	.2	50
1977.....	4.1	8	3.7	7	.4	23
1978.....	4.7	(@)	4.4	(@)	.2	8
1979.....	3.3	(@)	3.0	(@)	.2	0
1980.....	6.2	(@)	6.0	(@)	.2	0

@ Effect of legislative action negative.

State alcohol and tobacco taxes.—In all but one year from 1962 to 1972, legislative actions generated at least one-half of total receipts growth for these two taxes. In all but one year after 1972, legislative actions generated less than one-half of the total growth. Because tobacco and alcohol are regarded as "luxuries," these two taxes have traditionally been regarded as relatively easy taxes to increase. After 1972, however, State legislatures did not look to these taxes for additional revenue growth.

Thus, in each of these four major State sales taxes, legislative actions were a major contributor to tax growth before 1973, and, with the exception of motor fuel taxes after 1978, their role was smaller thereafter. There were substantial increases legislated in some States but reductions in other States were relatively more important, and increases less important, than before. This shift approximately coincided with the beginning of improvements in the fiscal position of State and local governments, partly the result of accelerated growth in Federal grants-in-aid beginning in 1972. One consequence of the improvement was reduced pressure on State legislatures for continued increases in tax rates or bases for these sales taxes. Whether or not they could have continued to bear repeated increases is open to question.

Personal income taxes

The contribution of legislative actions to personal income tax growth at the State level appears to have been more modest than for sales taxes (table 5). Legislative actions made their largest positive contribution in 1970–72, when they accounted for one-quarter of total growth. A number of States changed income tax laws during that period, but most of the increases came from six major industrial States. Illinois, Pennsylvania, and Ohio each imposed a broad-based personal income tax for the first time; Michigan and Massachusetts increased rates significantly; and New York imposed a surtax.

A large part of the non-legislated change in 1972 was caused by a change in Federal withholding practices under the Revenue Act of 1971. Because most taxpayers do not differentiate between Federal and State reporting for withholding purposes (for example, by claiming different numbers of exemptions for the two levels of government), the effect of the Federal change, which generated large increases in overwithholding at the Federal level, had the same effect at the State level. It is estimated that overwithholding added approximately \$1 billion to State income tax collections in 1972. Further, because the

(continued on p. 58)

Recent Developments in Mortgage Markets

MORTGAGE markets have changed significantly in recent years. For example, since 1978:

- Thrift institutions—subject to the vagaries of deposit inflows—have accounted for only 50 percent of mortgage originations, down noticeably from their 57 percent share in 1976-78. Mortgage companies, with their excellent access to capital markets, have increased their share of originations from 16½ percent in 1976-78 to 23½ percent.

- Local governments have become important suppliers of mortgage funds through the issue of tax-exempt mortgage revenue bonds.

- Secondary markets, bringing funds to mortgage markets from non-traditional investors, have become increasingly important. In 1979-81:III, 46 percent of home mortgages originated were sold in secondary markets, up sharply from 36 percent in 1976-78.

- The average maturity of savings and loan associations' liabilities has shortened, as depositors shifted funds to 6-month money market certificates from longer term certificates. This shift exacerbated the asset/liability maturity mismatch and has exposed the associations to severe financial strains.

- Major regulatory changes have blurred the distinctions between thrift institutions, which hold the bulk of their assets as home mortgages, and commercial banks, which hold relatively few of their assets in this form.

- A number of alternatives to the standard long-term fixed-payment mortgage have been developed and their use seems likely to increase in years to come.

This article will discuss these developments, interpreting many of them as evolutionary responses to changes in the financial climate. More specifi-

cally, higher rates of inflation—and the high and volatile interest rates associated with higher inflation rates—will frequently be cited as factors prompting these developments. The first section focuses on the behavior of mortgage lenders, both originators and ultimate holders of mortgage assets. The following section turns to the secondary market and mortgage-backed securities—the principal vehicle nontraditional investors have used to enter the mortgage market. The changing regulatory framework is discussed in the third section, with emphasis on the introduction of short-term variable ceiling certificates at depository institutions and on the Depository Institutions Deregulation and Monetary Control Act of 1980. Relevant provisions of the Economic Re-

covery Tax Act of 1981—specifically provisions relating to Individual Retirement Accounts and All Savers Certificates—are also discussed in this section. Alternative mortgage instruments are discussed in the final section.

Mortgage lenders

This section discusses the mortgage activity of mortgage originators and ultimate holders of mortgage assets. The discussion calls attention to both cyclical and secular elements in recent mortgage activity, providing background for the remainder of the article.

Mortgage originators.—Reduced inflows of funds—net new savings (exclusive of interest credited) and net mortgage loan repayments—at thrift

Table 1.—Originations of Long-Term Mortgage Loans, One- to Four-Family Nonfarm Houses, 1970-81

Year	Depository institutions			Mort- gage compa- nies	Feder- ally spon- sored credit agen- cies ¹	Total ²
	Com- mercial banks	Thrifts				
		Savings and loan associ- ations	Mutual savings banks			
Billions of dollars						
1970.....	7.8	14.8	2.1	8.9	1.4	35.6
1971.....	12.6	26.6	3.5	12.5	1.8	57.8
1972.....	17.7	36.7	5.1	13.3	2.0	75.9
1973.....	18.8	38.4	5.9	12.7	2.4	79.1
1974.....	16.1	30.9	3.9	13.0	2.5	67.5
1975.....	14.4	41.2	4.3	14.0	2.9	77.9
1976.....	24.5	61.9	6.4	15.7	2.7	112.8
1977.....	36.7	86.3	8.7	25.7	3.1	162.0
1978.....	43.9	90.0	9.4	34.4	4.8	185.0
1979.....	40.7	82.8	9.0	45.3	4.4	186.6
1980.....	28.8	61.1	5.4	29.4	4.4	133.8
1981 ³	15.8	34.1	3.3	19.0	3.6	77.5
Percent of total						
1970.....	21.9	41.6	5.9	25.0	3.9	100
1971.....	21.8	46.0	6.1	21.6	3.1	100
1972.....	23.3	48.4	6.7	17.5	2.6	100
1973.....	23.8	48.5	7.5	16.1	3.0	100
1974.....	23.9	45.8	5.8	19.3	3.7	100
1975.....	18.5	52.9	5.5	18.0	3.7	100
1976.....	21.7	54.9	5.7	13.9	2.4	100
1977.....	22.7	53.3	5.4	15.9	1.9	100
1978.....	23.7	48.6	5.1	18.6	2.6	100
1979.....	21.8	44.4	4.8	24.3	2.4	100
1980.....	21.5	45.7	4.0	22.0	3.3	100
1981 ³	20.4	44.0	4.3	24.5	4.6	100

1. Includes Government National Mortgage Association.

2. Includes data not shown separately.

3. Three quarters, not at annual rate.

Source: U.S. Department of Housing and Urban Development.

institutions (savings and loan associations and mutual savings banks) account for much of the decline in their share of mortgage originations since 1978. At insured savings and loan associations (S&L's), the inflow of funds fell \$24.3 billion from 1978 to 1980 while mortgage originations fell \$28.9 billion; at mutual savings banks, the inflow of funds fell \$6.2 billion while mortgage originations dropped \$4 billion (tables 1 and 2).¹ The slowing of the inflow of funds, in turn, is largely attributable to the high interest rates since 1978. When rates are high, savings inflows at thrifts tend to be low, as individuals shift their savings toward instruments paying market-determined yields from the below-market regulated yields paid on savings accounts at thrifts. The proliferation of money market mutual funds in the late 1970's made it easier for individuals to move their saving to high-yield instruments. The savings flow would undoubtedly have been even slower if depository institutions had not been permitted in June 1978 to begin offering short-term certificates with yields linked to the rate on 6-month Treasury bills. Loan repayments, the other important component of funds inflow, fall when interest rates rise because many loan repayments occur on the occasion of a house sale, and high interest rates discourage house sales. Furthermore, high rates on new mortgages induce house buyers to assume outstanding low-rate mortgages rather than take out an entirely new mortgage; repayments by house sellers, therefore, fall.

Other factors, two of which deserve explicit mention, contributed to the decline in thrift institutions' share of originations. First, secular decline in savings banks' originations—traceable to weak housing markets, declining population, and slow economic growth in the Northeast, where 94 percent of savings banks are located—continued in 1979–81. Second, interest rates on conventional mortgages, in which thrifts specialize, pressed against usury ceilings in some States. (Government-underwritten mortgages, on the other hand, were generally exempt from usury laws. This exemption was extended to conventional

mortgages by the Depository Institutions Deregulation and Monetary Control Act of 1980.)

Mortgage companies do not depend on deposit flows or mortgage repayments for loanable funds and enjoy excellent access to capital markets via passthrough certificates (discussed in the next section). Mortgage companies' share of originations, accordingly, was 6 percentage points higher in the first three quarters of 1981 than it had been in 1978. Mortgage companies have long been the principal originators of the mortgages insured by the Federal Housing Administration (FHA) or guaranteed by the Veterans Administration (VA), and the domination of this federally underwritten sector of the market by mortgage companies has been increasing. Since 1978, mortgage companies have accounted for 82 percent of all federally underwritten long-term mortgage

loans on 1- to 4-family nonfarm homes, up almost 15 percentage points from their 1970–72 share (table 3). Moreover, during the 1970's mortgage companies became important originators of conventional mortgages, largely as a result of a 1971 change in the Federal National Mortgage Association's (FNMA's) charter—a change that authorized FNMA to begin purchasing conventional mortgages. (FNMA and three other housing credit agencies are described on page 21.) Since 1978, mortgage companies have originated 8.4 percent of all long-term conventional mortgage loans on 1- to 4-family homes, and conventional originations have accounted for 28.5 percent of total mortgage company originations; in 1970–71, these shares had been 1.6 percent and 4.7 percent, respectively.

Mortgage holders.—Mortgage originators need not, of course, hold mort-

Table 2.—Inflow of Funds at Thrift Institutions, 1970–81

[Billions of dollars]

Year	Insured savings and loan associations			Mutual savings banks		
	Net new savings	Net mortgage repayments	Total	Net new savings	Net mortgage repayments	Total
1970.....	5.3	13.2	18.5	0.9	4.0	4.9
1971.....	20.7	20.2	40.9	5.7	5.7	11.4
1972.....	23.9	25.6	49.5	5.5	7.4	12.9
1973.....	10.5	26.7	37.2	— .4	7.6	7.2
1974.....	4.7	23.2	27.9	— 2.8	6.6	3.8
1975.....	29.3	28.2	57.5	4.8	7.1	11.9
1976.....	34.4	37.3	71.7	5.3	7.8	13.1
1977.....	32.0	48.5	80.5	2.9	10.1	13.0
1978.....	23.5	52.2	75.7	— .6	10.6	10.0
1979.....	15.0	49.7	64.7	— 7.0	10.0	3.0
1980.....	10.7	40.7	51.4	— 4.9	8.7	3.8
1981.....	— 25.5	34.3	8.8	— 13.8	(¹)	(¹)

1. Not available.

Source: Federal Home Loan Bank Board and National Association of Mutual Savings Banks.

Table 3.—Originations of Long-Term Mortgage Loans on One- to Four-Family Nonfarm Houses by Mortgage Companies, 1970–81

[Billions of dollars]

Year	Federally underwritten		Conventional		(1) as percent of (2)	(3) as percent of (4)	(3) as percent of (1) + (3)
	Mortgage companies	Total	Mortgage companies	Total			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970.....	8.5	12.6	0.4	23.0	67.3	1.8	4.7
1971.....	11.9	17.8	.6	40.0	66.6	1.6	5.0
1972.....	11.2	16.2	2.2	59.7	68.8	3.6	16.3
1973.....	8.6	12.8	4.1	66.4	67.1	6.2	32.3
1974.....	9.4	12.4	3.7	55.1	75.4	6.6	28.1
1975.....	10.9	15.1	3.1	62.8	72.3	4.9	21.9
1976.....	12.5	17.4	3.3	95.4	71.6	3.4	20.8
1977.....	19.9	25.4	5.8	136.6	78.3	4.2	22.6
1978.....	24.0	30.6	10.5	154.4	78.3	6.8	30.4
1979.....	32.9	39.5	12.3	147.1	83.4	8.4	27.2
1980.....	21.7	27.1	7.7	106.7	80.3	7.2	26.1
1981 ¹	12.0	14.6	6.7	62.5	82.2	10.7	35.8

1. Three quarters, not at annual rate.

Source: U.S. Department of Housing and Urban Development.

1. Unless otherwise noted, data on mortgages relate to long-term loans on 1- to 4-family nonfarm houses.

Selected Housing Credit Agencies

The *Federal National Mortgage Association* (FNMA or Fannie Mae) provides funds to mortgage originators through its purchases of mortgages on the secondary market. It became a privately owned corporation in 1968. Previously, it was wholly owned by the Federal Government (1938-54) and under mixed ownership (1954-68). FNMA is subject to supervision by the Secretary of Housing and Urban Development and, regarding its issues of securities, by the Secretary of the Treasury.

FNMA acquires home mortgages through three types of programs. First, biweekly auctions are held at which FNMA offers commitments to purchase home mortgages. Mortgage originators who want to obtain a commitment from FNMA submit bids that specify the volume of mortgages for which commitments are sought and the yield to FNMA. Delivery of the mortgages during the 4-month commitment period is at the option of the mortgage originator.

Second, FNMA sells 9- and 12-month convertible, standby commitments at posted prices, i.e., outside the auction system. After holding a standby commitment for 4 months, the holder may convert it to a 4-month commitment, with the yield to FNMA being the weighted average yield at the most recent auction. Under a standby commitment, delivery of the mortgages is at the option of the mortgage originator.

Third, FNMA initiated a number of new mandatory delivery programs in 1981. For each of these, FNMA specifies a yield at which it will purchase mortgages; generally, delivery must be made within 1 to 4 months.

FNMA finances its operations by the sale of debentures and notes in capital markets and by charging commitment fees. Although its notes and debentures are classified as "Federal Agency Securities," they are not obligations of the Federal Government and are not federally guaranteed.

The *Government National Mortgage Association* (GNMA or Ginnie Mae) assists in providing mortgage credit and in stabilizing the financing of selected types of mortgages. It was established within the Department of Housing and Urban Development in 1968 to take over some of the activities that previously had been performed by FNMA. Many of those activities—notably the servicing and disposal of mortgages it purchased or that were transferred to it, and the purchase and resale of mortgages at yields that subsidized housing—have since been reduced to very low levels.

Currently, GNMA's primary involvement in the mortgage market is through its mortgage-backed securities program. Since 1970, GNMA has guaranteed the timely payment of principal and interest on pass-through certificates backed by pools of federally underwritten mortgages. (In a pool backing GNMA passthroughs, the individual mortgages are insured by the Federal Housing Administration or guaranteed by the Veterans Administration. Thus, GNMA's guarantees of the passthrough certificates mainly cover the timing of the cash flow.)

The *Federal Home Loan Mortgage Corporation* (FHLMC, The Mortgage Corporation, or Freddie Mac) provides assistance to the secondary market for home mortgages by supplying liquidity through its purchases of mortgages. Its primary concern is the secondary market for conventional home mortgages, i.e., those not insured by the Federal Housing Administration or guaranteed by the Veterans Administration. The FHLMC was chartered by Congress in 1970 as a private corporation. It is owned by the 12 Federal home loan banks (which, in turn, are owned by their member institutions).

FHLMC periodically auctions commitments to purchase mortgages. Auctions for 8-month commitments, with delivery at the option of the mortgage originator, are held monthly. Auctions for the "immediate purchase" of mortgages—under which mortgages must be delivered to FHLMC within 60 days—are held weekly. Like FNMA, FHLMC decides after each auction which bids to accept.

Mortgages acquired by the FHLMC are placed in pools and used to back the issuance of two kinds of certificates: participation certificates and guaranteed mortgage certificates. FHLMC guarantees the timely payment of interest and principal to owners of participation certificates, and the semi-annual payment of interest and annual repayment of principal to owners of guaranteed mortgage certificates. Sales of the two kinds of certificates provide FHLMC with most of the funds it needs to operate its mortgage purchase programs.

The *Federal Home Loan Bank System* has supervisory and regulatory authority for system members and provides credit to members to stabilize their mortgage lending. The System was established by an act of Congress in 1932. It is supervised by the Federal Home Loan Bank Board, an agency in the executive branch of the Federal Government. The System consists, in addition to the Board, of 12 Federal home loan banks, which are owned by their member institutions.

The Board has supervisory and regulatory authority for all federally chartered savings and loan associations. These associations are required by law to be members of the System. In addition, about 2,000 State-chartered savings and loan associations have joined voluntarily in order to qualify for insurance by the Federal Savings and Loan Insurance Corporation, as have over 80 mutual savings banks and few life insurance companies.

The 12 banks make loans ("advances") to their member institutions, serving as a central source of credit. These advances meet heavy withdrawals of deposits, smooth seasonal imbalance between deposits and loan disbursements, and allow expansion of mortgage lending. The primary source of financing for the banks' advances is the sale of consolidated obligations in the money and capital markets. (Like FNMA's debt, these obligations are classified as "Federal Agency Securities," but they are not obligations of the Federal Government and are not federally guaranteed.) Deposits received from member banks also help finance advances.

gage assets in portfolio; mortgage companies, for example, sell all of the mortgages they originate. Nevertheless, there is considerable overlap between mortgage originators and mortgage holders, as is clear from a comparison of tables 1 and 4. During 1970-78, for example, depository institutions—commercial banks and thrift institutions—accounted for about 78 percent of originations and 72 percent of the increase in holdings of mortgages. This overlap has been smaller, but still significant, since 1978; depository institutions have accounted for about 71 percent of originations and 50 percent of the increase in holdings.²

Commercial banks, life insurance companies, and, to a lesser extent, mutual savings banks are diversified investors that select assets for their portfolios on the basis of relative yields. (Risk, cash flow, and maturity are also important considerations, of course.) S&L's, on the other hand, have tended year after year to devote

70-80 percent of the increase in their assets to home mortgages. The year 1980 was an exception to this rule; mortgages accounted for only 53 percent of total financial assets acquired by S&L's, by far the lowest percentage since World War II.

Federally sponsored credit agencies (FSCA) tend to increase their holdings of home mortgages more rapidly when interest rates rise and less rapidly when interest rates decline. FNMA and FHLMC (the Federal Home Loan Mortgage Corporation) account for the bulk of FSCA activity in mortgage markets. An important part of FNMA and FHLMC operations consists of selling commitments to purchase mortgages from mortgage originators. Delivery of the mortgages to these agencies during the commitment period is at the option of the loan originators. If mortgage rates fall during the commitment period, originators find that they can obtain better prices for their loans by selling their mortgages to other buyers than they can by "taking down" their FNMA/FHLMC commitments. Thus, falling mortgage rates—or, more generally, mortgage rates that rise by less than had been expected—are associated with decreased acquisitions of mortgages by the FSCA. Converse-

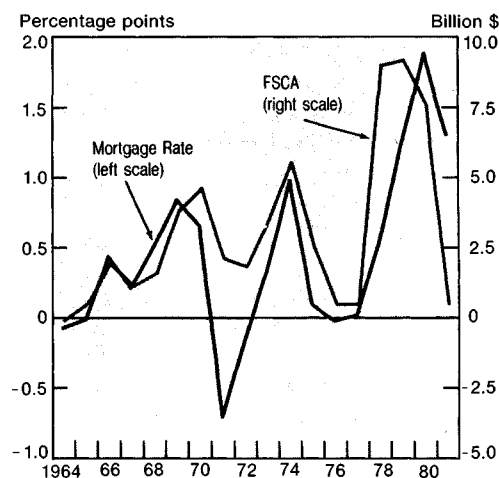
2. The steep decline in depository institutions' share of the net increase in holdings since 1978 reflects the slow inflow of funds—which has limited the amount that these institutions have available to invest in all types of assets, mortgages included—and the increased importance of mortgage pools and State and local governments in mortgage markets.

Table 4.—Increase in Home Mortgage Loans Held, by Type of Institution, 1970-81

Year	Depository institutions			Life insurance companies	Federally sponsored credit agencies	Mortgage pools	State and local governments	Households	Other	Total
	Commercial banks	Thrifts								
		Savings and loans associations	Mutual savings banks							
Billions of dollars										
1970	0.9	6.8	1.1	-0.9	4.6	1.2	0.1	-0.3	1.5	15.0
1971	5.7	16.4	1.2	-2.1	2.1	4.3	.1	3.0	-.8	29.9
1972	9.0	24.6	2.7	-2.3	1.8	4.3	.1	3.3	-.2	43.7
1973	11.0	21.5	2.6	-1.9	3.5	3.2	.6	3.0	1.4	44.9
1974	6.6	13.9	.7	-1.4	5.5	3.3	.7	3.8	-.2	33.3
1975	2.1	23.2	.8	-1.4	2.5	7.3	.8	3.0	3.1	41.4
1976	9.2	36.9	3.1	-1.5	.5	11.9	.8	5.0	-.2	65.7
1977	18.9	49.9	4.5	-1.4	.5	15.7	.2	8.1	3.0	99.4
1978	24.1	45.4	4.6	-.3	9.0	12.4	1.9	8.7	3.5	109.3
1979	20.0	38.4	2.4	1.8	9.2	22.8	4.7	9.0	4.2	112.5
1980	11.3	24.6	.6	1.7	7.6	18.0	7.5	6.3	3.4	81.0
1981 ¹	15.6	18.1	.6	-.2	4.6	12.0	6.9	5.1	5.3	68.4
Percent of total										
1970	6.0	45.3	7.3	-6.0	30.7	8.0	.7	-2.0	10.0	100
1971	19.1	54.8	4.0	-7.0	7.0	14.4	.3	10.0	-2.7	100
1972	20.6	56.3	6.2	-5.3	4.1	9.8	.2	7.6	.5	100
1973	24.5	47.9	5.8	-4.2	7.8	7.1	1.3	6.7	3.1	100
1974	19.8	41.7	2.1	-4.2	16.5	9.9	2.1	11.4	.6	100
1975	5.1	56.0	1.9	-3.4	6.0	17.6	1.9	7.2	7.5	100
1976	14.0	56.2	4.7	-2.3	.8	18.1	1.2	7.6	-.3	100
1977	19.0	50.2	4.5	-1.4	.5	15.8	.2	8.1	3.0	100
1978	22.0	41.5	4.2	-.3	8.2	11.3	1.7	8.0	3.2	100
1979	17.8	34.1	2.1	1.6	8.2	20.3	4.2	8.0	3.7	100
1980	14.0	30.4	.7	2.1	9.4	22.2	9.3	7.8	4.2	100
1981 ¹	22.8	26.5	.9	.3	6.7	17.5	10.1	7.5	7.7	100

1. Three quarters, at seasonally adjusted annual rate, preliminary.
Source: Federal Reserve Board.

CHART 1
Net Acquisition of Home Mortgages by FSCA's and Change in Mortgage Rate, 1964-81



NOTE: — FSCA's are federally sponsored agencies.

Mortgage rate changes are changes in the effective rate on conventional loans originated for the purchase of newly built single-family homes.

Latest data shown are for the first half of 1981.

DATA: FHLBB, FRB

U.S. Department of Commerce, Bureau of Economic Analysis

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ly, mortgage rates that rise by more than had been expected are associated with increased acquisitions by the FSCA (chart 1).³

Since 1978, mortgage pools have been second only to S&L's as a source of mortgage funds, and State and local governments—previously a negligible source—have supplied almost as much as the FSCA's. The remarkable rise of these two types of lenders is discussed in the following section.

Secondary markets

Secondary markets allow mortgage originators to sell mortgages that they do not wish to hold in portfolio and allow ultimate investors to hold mortgage assets without becoming involved in the mortgage origination and servicing processes. Secondary market sales rose \$50 billion (360 percent) from 1970 to 1980; proceeds of these sales financed a good part of the increase in originations in the primary market during the period.

3. Federal home loan bank (FHLB) loans to S&L's follow the same general pattern as FSCA holdings of mortgages: When mortgage rates rise, FHLB loans increase faster than when mortgage rates decline. Rising mortgage rates are usually associated with declining net deposit flows at S&L's—declining in absolute terms, in percentage rates of change, or relative to mortgage demand—and S&L's supplement these declining flows with FHLB loans.

Four factors explain the increase in secondary market activity (table 5). First, as a healthy part of an expanding economy, secondary market activity would be expected to increase as a matter of course; "business as usual," with no innovations in the market and unchanged behavior patterns of market participants, would result in increased activity. Also, rising house prices inflate dollar measures of activity. Note, for example, that the size of the average mortgage rose about 130 percent from 1970 to 1980. Thus, even if there had been no increase in the number of mortgages sold on secondary markets, the value of sales would have risen from \$14.2 billion in 1970 to about \$32 billion in 1980. Perhaps as much as one-half the increase in sales on secondary markets, therefore, represents the effects of economic growth and rising prices.

Second, in 1971, FNMA and FHLMC began to purchase conventional mortgages. (These agencies also standardized underwriting practices on conventional mortgages and sponsored the development of an information sharing network that further stimulated secondary market activity in conventional mortgages.) Prior to this time, FNMA purchased only federally underwritten mortgages and FHLMC did not exist. Conventional mortgages accounted for 70 percent of total originations in 1971; authorizing these agencies to purchase conventionals, therefore, paved the way for much enlarged secondary market sales.

The new market for conventionals enabled S&L's to increase their mortgage sales. (Most S&L originations are conventionals.) S&L's were induced to avail themselves of this new market because the demand for mortgages rose more quickly than deposit inflows and mortgage repayments. This disparity was the third factor in increased secondary market activity. The top panel in table 6 shows these two sources of funds at all federally insured S&L's, home mortgages made by these S&L's, and their net secondary market purchases of mortgages.⁴

4. The net purchases figures in table 6 differ from those in table 5 because table 6 applies only to insured associations, and table 5 covers all operating associations. Neither set of data includes sales of federally insured passthrough securities out of portfolio or acquisitions of federally insured passthroughs. Adjusting the figures to reflect these sales and acquisitions would probably reduce net sales somewhat for the entire period. The general pattern, however, with positive net sales in recent years, would not be changed

Table 5.—Sales and Purchases of Long-Term Mortgage Loans on One- to Four-Family Nonfarm Houses, 1970-81

Year	Depository institutions			Federally sponsored credit agencies ¹	Mort-gage pools	Mort-gage compa-nies	Total ²
	Com-mercial banks	Thrift institutions					
		Savings and loan associ-ations	Mutual savings banks				
	Sales in billions of dollars						
1970	1.7	0.8	0.3	1.6	0.1	9.6	14.2
1971	2.0	1.7	.2	1.9	.2	12.4	18.5
1972	2.2	2.9	.2	3.8	.2	14.3	24.1
1973	2.0	2.8	.2	4.3	.4	15.0	24.9
1974	1.6	3.1	.2	2.5	.7	14.9	23.1
1975	2.9	4.7	.2	6.7	.5	14.5	29.7
1976	4.0	7.7	.5	10.8	.5	17.3	40.9
1977	5.8	13.0	.2	7.6	1.3	27.3	55.4
1978	6.8	15.0	.3	9.1	1.4	35.0	67.8
1979	6.6	18.1	.5	5.8	.8	44.4	76.6
1980	7.5	15.5	.7	7.2	3.2	31.5	65.8
1981 ³	2.9	8.2	.3	5.1	2.6	20.4	39.8
	Sales as percent of total						
1970	12.0	5.6	2.1	11.3	.7	67.6	100
1971	10.8	9.2	1.1	10.3	1.1	67.0	100
1972	9.1	12.0	.8	15.8	.8	59.3	100
1973	8.0	11.2	.8	17.3	1.6	60.2	100
1974	6.9	13.4	.9	10.8	3.0	64.5	100
1975	9.8	15.8	.7	22.6	1.7	48.8	100
1976	9.8	18.8	1.2	26.4	1.2	42.3	100
1977	10.5	23.5	.4	13.7	2.3	49.3	100
1978	10.0	22.1	.4	13.4	2.1	51.6	100
1979	8.6	23.6	.7	7.6	1.0	58.0	100
1980	11.4	23.6	1.1	10.9	4.9	47.9	100
1981 ³	7.2	20.6	.7	12.8	6.5	51.3	100
	Purchases in billions of dollars						
1970	.5	3.4	1.4	5.4	1.8	.1	13.4
1971	1.1	6.6	1.9	3.7	3.9	.4	18.3
1972	1.0	9.5	2.7	5.0	4.8	1.4	25.1
1973	.9	5.9	2.0	7.4	4.2	1.4	22.6
1974	.4	4.8	1.0	8.8	6.3	.9	23.0
1975	.2	7.2	1.1	10.7	11.2	.8	31.9
1976	.8	11.1	2.1	9.6	16.4	2.2	42.8
1977	1.8	13.2	2.9	9.3	23.4	4.1	55.7
1978	1.7	10.3	2.8	18.8	23.2	3.8	63.0
1979	2.2	11.6	2.6	15.8	29.9	5.7	73.2
1980	4.3	12.4	1.0	14.4	26.7	3.4	69.9
1981 ³	2.2	7.0	.2	8.2	15.8	3.2	41.3
	Purchases as percent of total						
1970	3.7	25.4	10.4	40.3	13.4	.7	100
1971	6.0	36.1	10.4	20.2	21.6	2.2	100
1972	4.0	37.8	10.8	19.9	19.1	5.6	100
1973	4.0	26.1	8.8	32.7	18.6	6.2	100
1974	1.7	20.9	4.3	38.3	27.4	3.9	100
1975	.6	22.6	3.4	33.5	35.1	2.5	100
1976	1.9	25.9	4.9	22.4	38.3	5.1	100
1977	3.2	23.7	5.2	16.7	42.0	7.4	100
1978	2.7	16.3	4.4	29.8	36.8	6.0	100
1979	3.0	15.8	3.6	21.6	40.8	7.8	100
1980	6.2	17.7	1.4	20.6	38.2	4.9	100
1981 ³	5.3	16.9	.5	19.9	38.3	7.7	100

1. Includes Government National Mortgage Association.

2. Includes data not shown separately. Total sales may differ from total purchases because of the incomplete nature of the survey.

3. Three quarters, not at annual rate.

Source: U.S. Department of Housing and Urban Development.

From 1970-72 to 1978-80, the amount of mortgages rose twice as fast as deposits and repayments.

Regional developments are an important aspect of increased S&L purchases and sales in the secondary markets.⁵ In the early 1970's, inflows

much. See David F. Seiders, "Major Developments, in Residential Mortgage and Housing Markets Since the Hunt Commission," *Journal of American Real Estate and Urban Economics Association* 8 (Spring 1980): 17-18.

5. See Dwight M. Jaffee and Kenneth T. Rosen, "The Use of Mortgage Passthrough Securities," in *New Sources of Capital for the Savings and Loan Industry*, Proceedings of the Fifth Annual Conference, December 6-7, 1979, Federal Home Loan Bank of San Francisco.

of funds were substantially larger than mortgages made in virtually all FHLB districts. In the "Eastern" and "Central" districts, mortgage loans amounted to only 41 percent of net deposits and repayments in 1970-72 (bottom panel of table 6); in the "Southern" and "Western" districts, they amounted to only 45 percent (middle panel). S&L's in all districts used their "surplus" funds to purchase mortgages on the secondary market. By 1978-80, the picture had changed substantially. S&L's in the Eastern and Central districts had reduced their net purchases, as mort-

gages had risen to 56 percent of net deposits and repayments. In the Southern and Western districts, S&L's had become net sellers, as rapid economic growth had increased the demand for mortgages to almost 75 percent of net deposits and repayments.

The fourth factor in the increased activity in the secondary market was the introduction of new forms of securities backed by mortgage pools. A mortgage pool is a collection of mortgages that constitutes the asset against which securities are issued.⁶ Table 7 lists the distinguishing characteristics of the most important types of securities backed by mortgage pools. By far the most common type of these securities is the Government National Mortgage Association (GNMA) passthrough certificate; these certificates are discussed immediately below. Three of the others—two types issued by the FHLMC and privately insured passthroughs—are similar in many respects to GNMA passthroughs. Much of the discussion of GNMA passthroughs applies to these three securities as well. Tax-exempt mortgage revenue bonds, however, are quite unlike the other mortgage-backed securities listed in table 7 and do receive explicit discussion.

Passthrough certificates.—More than 800 private mortgage originators are active issuers of GNMA passthroughs, and since 1978 about 70 percent of the FHA/VA mortgages that have been originated have been put in GNMA pools. When mortgages are placed in a GNMA pool, the mortgage originator earns a fee for servicing the mortgages and for "passing

Table 6.—Inflow of Funds, Mortgage Lending, and Secondary Market Purchases at Insured Savings and Loan Associations, 1970–80

[Billions of dollars]

Year	Funds			Home mortgage loans made	(4) as a percent of (3)	Net secondary market purchases
	Net deposits	Net mortgage repayments	Total			
	(1)	(2)	(3)	(4)	(5)	(6)
All Federal Home Loan Bank Districts						
1970.....	10.8	13.2	24.0	9.9	41.3	2.6
1971.....	27.3	20.2	47.5	18.3	38.5	5.4
1972.....	32.0	25.6	57.6	25.9	45.0	6.9
1973.....	19.9	26.7	46.6	27.5	59.0	3.8
1974.....	15.6	23.2	38.8	22.1	57.0	2.4
1975.....	42.1	28.2	70.3	30.0	42.7	3.3
1976.....	49.7	37.3	87.0	44.8	51.5	4.4
1977.....	50.2	48.5	98.7	61.3	62.1	.7
1978.....	44.2	52.2	96.4	64.4	66.8	-4.5
1979.....	38.9	49.7	88.6	59.6	67.3	-6.3
1980.....	40.9	40.7	81.6	41.2	50.5	-2.9
Southern and Western Districts¹						
1970.....	2.4	3.7	6.1	2.8	45.9	.5
1971.....	8.6	5.9	14.5	5.5	37.9	1.2
1972.....	9.9	7.2	17.1	8.5	49.7	1.2
1973.....	5.5	7.7	13.2	8.8	66.7	-.2
1974.....	4.2	6.9	11.1	7.5	67.6	-.2
1975.....	14.0	9.0	23.0	10.7	46.5	-.6
1976.....	17.4	12.6	30.0	17.8	59.3	-2.2
1977.....	17.7	16.3	34.0	25.2	74.1	-6.0
1978.....	15.2	17.7	32.9	25.6	77.8	-8.0
1979.....	15.7	17.0	32.7	25.6	78.3	-7.6
1980.....	12.5	14.0	26.5	16.7	63.0	-5.4
Eastern and Central Districts²						
1970.....	8.4	9.5	17.9	7.1	39.7	2.1
1971.....	18.7	14.3	33.0	12.8	38.8	4.2
1972.....	22.1	18.4	40.5	17.4	43.0	5.7
1973.....	14.4	19.0	33.4	18.7	56.0	3.6
1974.....	11.4	16.3	27.7	14.6	52.7	2.6
1975.....	28.1	19.2	47.3	19.3	40.8	3.9
1976.....	32.3	24.7	57.0	27.0	47.4	6.6
1977.....	32.5	32.2	64.7	36.1	55.8	6.7
1978.....	29.0	34.5	63.5	38.8	61.1	3.5
1979.....	23.2	32.7	55.9	34.0	60.8	1.3
1980.....	28.4	26.7	55.1	24.5	44.5	2.5

1. Little Rock, San Francisco, and Seattle.

2. Boston, New York, Pittsburgh, Atlanta, Cincinnati, Indianapolis, Chicago, Des Moines, and Topeka.

Source: Federal Home Loan Bank Board.

through" principal and interest payments to owners of the passthrough certificates. GNMA passthroughs carry a coupon rate 50 basis points below the rate on the mortgages in the pool; 44 basis points go to the originator as a servicing fee and 6 basis points go to GNMA as an insurance fee. In return for its six basis points, GNMA guarantees the timely payment of principal and interest to the owners of the passthroughs.

Passthroughs are designed to appeal to institutional investors, such as pension funds and life insurance companies, who do not want to become involved in the origination and servicing of mortgages but who value the attractive long-term yield and the high cash flow each month that characterize mortgages. Passthroughs also appeal to commercial banks and thrift institutions because the certificates are considered eligible mortgage investments by most regula-

tory bodies and qualify as mortgage investments in determining the tax treatment of thrifts.

Attracting nontraditional investors—e.g., pension funds and State and local governments—to the secondary mortgage market has increased communication between mortgage and bond markets. In this way, passthroughs may have contributed to increased volatility of mortgage rates, although other factors may also have been at work.⁷ Whatever the entire explanation, the increased volatility

6. For more detailed discussion of mortgage pools and mortgage-backed securities, see: Charles M. Sive-sind, "Mortgage-Backed Securities: The Revolution in Real Estate Finance," *Federal Reserve Bank of New York Quarterly Review* 4 (Autumn 1979): 1-10; David F. Seiders, "The GNMA-Guaranteed Passthrough Security: Market Development and Implications for the Growth and Stability of Home Mortgage Lending," Staff Economic Studies No. 108, (Washington, D.C.: Board of Governors of the Federal Reserve System, December 1979); Mary A. Fruscello, "The Mortgage Corporation and the Secondary Mortgage Market," Monograph Series No. 5, (Washington, D.C.: Federal Home Loan Mortgage Corporation, June 1977); Douglas E. Johnson, "The Implications of a GNMA Depository," *Mortgage Banker* 40 (September 1980): 48-51; James J. Connolly, "The GNMA Market: A Retrospective," *Mortgage Banker* 40 (September 1980): 16-19; Richard G. Marcis, "Mortgage-Backed Securities: Financial Alternatives for Savings and Loan Associations," *Federal Home Loan Bank Board Journal* 11 (November 1978): 5-11.

7. One reason for doubting that increased communication is the sole explanation is that diversified investors—commercial banks, mutual savings banks, and life insurance companies—have been important participants in both markets for years. Other factors that may have contributed to the increased volatility include: an increased sensitivity to inflationary trends on the part of mortgage lenders, the rising importance of mortgage companies and their dependence on money and capital markets for loanable funds, and differential rates of deposit increase at commercial banks and thrift institutions.

itself is apparent (table 8). During the 1950's, mortgage rates typically peaked and troughed from 4 to 7 months after the peak or trough in Treasury bond yields (column 7) and the cyclical amplitudes of mortgage rates were much smaller than those of Treasury bond yields whether measured in basis points (columns 4, 9, and 11) or in percent (columns 5, 10, and 12). During the 1970's and into the 1980's, however, the lags were noticeably shorter and, measured in basis points, the cyclical amplitudes of mortgage rates were larger than those of Treasury bond yields.

Volatility aside, mortgage-backed securities are important primarily to the extent that they result in increased and more stable flows of

funds to mortgage originators and, thence, to mortgage borrowers. Not all of the proceeds from the sale of mortgage-backed securities constitute, however, a net addition to the supply of loanable funds in mortgage markets. Some of the funds presumably would have found a different channel to the mortgage market—perhaps through the direct purchase of mortgages, the purchase of debt of FSCA's or the origination of new mortgage loans. Nevertheless, it is generally agreed that passthroughs and like instruments have increased the supply of mortgage funds by offering an attractive yield along with various other characteristics (asset size, quality, marketability, and administrative simplicity) that have elicited at least

some funds from investors who have traditionally shied away from mortgage investments.

The available data on the ownership of GNMA passthroughs are summarized in table 9. Unfortunately, almost one-half of the ownership is in the "nominees and others" category, which does not help much in identifying owners. GNMA, however, estimates that about one-third of this category represents holdings by pension and retirement funds. If this is correct, then holdings by these two types of institutions alone rose from 7.7 percent of total holdings in 1971 to about 25.2 percent, or \$30½ billion, by mid-1981.

In addition to increasing the flow of funds to mortgage originators, there

Table 7.—Securities Backed by Mortgage Pools

Type	GNMA passthrough	FHLMC participation certificates	FHLMC guaranteed mortgage certificate	Privately insured passthrough	Tax-exempt mortgage revenue bond
Issued by	Private mortgage originators (more than 800 in 1981).	FHLMC	FHLMC	Private mortgage originators	State and local government agencies.
Insured by	GNMA, with "full faith and credit" of U.S. Government.	FHLMC	FHLMC	Private mortgage insurers	Not insured.
First issue	1970	1971	1975	1977	1978.
Amount outstanding July 1981	\$101.6 billion	¹ \$21.6 billion	¹ \$2.9 billion	\$12.6 billion	² \$37.0 billion.
Type of mortgage in pool	FHA/VA	Conventional	Conventional	FHA/VA and conventional	FHA/VA and conventional.
Cash flow	Monthly passthrough of principal and interest, whether collected by mortgage servicer or not.	Same as GNMA passthrough	Semi-annual interest payments; annual principal payments.	Same as GNMA passthrough	Same as other tax-exempt revenue bonds.
Comments	Active secondary market; traded in futures market since 1975.		Designed to appeal to investors who prefer bond-type instruments; none sold since December 1979.		

1. Total sales through July 1981; outstanding amount of participation certificates and guaranteed mortgage certificates combined was \$17.7 billion in July.

2. Estimate.

NOTE.—GNMA: Government National Mortgage Association; FHLMC: Federal Home Loan Mortgage Corporation; FHA: Federal Housing Administration; VA: Veterans Administration.

Table 8.—Turning Points in Treasury Bond Yields and Mortgage Commitment Rates

Turning point	Treasury bond yields ¹				Mortgage commitment rates ²					Col. (9) Col. (4)	Col. (10) Col. (5)
	Date	Level	Change from previous turn		Date	Lag	Level	Change from previous turn			
			Basis points	Per-cent ³				Basis points	Per-cent ³		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Trough	12/49	2.19			2/51	14	4.31				
Peak	6/53	3.13	94	35.3	1/54	7	4.87	56	12.2	.60	.35
Trough	7/54	2.47	-66	-23.6	11/54	4	4.68	-19	-4.0	.29	.17
Peak	10/57	3.73	126	40.6	2/58	4	5.69	101	19.5	.80	.48
Trough	4/58	3.12	-61	-17.8	10/58	6	5.38	-31	-5.6	.51	.31
Peak	1/60	4.37	125	33.4	7/60	6	6.10	72	12.5	.58	.37
Trough	5/61	3.73	-64	-15.8	8/65	51	5.47	-63	-10.9	.98	.69
Peak	6/70	6.99	326	60.8	3/70	-3	8.97	350	48.5	1.07	.80
Trough	10/71	5.46	-153	-24.6	5/72	7	7.33	-164	-20.1	1.07	.82
Peak	8/74	7.33	187	29.2	10/74	2	9.64	231	27.2	1.24	.93
Trough	12/76	6.38	-95	-13.9	3/77	3	8.68	-96	-10.5	1.01	.75
Peak	3/80	11.87	549	60.2	4/80	1	16.16	748	60.2	1.36	1.00
Trough	6/80	9.40	-247	-23.2	8/80	2	12.19	-397	-28.0	1.61	1.21

1. Monthly average of daily yields on fully taxable U.S. Treasury bonds neither due nor callable for a specified number of years. Prior to April 1952 the "specified number" was 15; from April 1952 through March 1953, it was 12; and since April 1953 it has been 10.

2. A spliced series. January 1949 through December 1963: conventional mortgage yields on one- to four-family properties authorized by life insurance companies; January 1964 through July 1972: the contract interest rate on conventional first mortgage loans originated by life insurance companies for the purchase of new single-family homes; January 1973 to present: the average contract interest rate on commitments by all lenders for newly built single-family homes (with a 75-percent loan-to-price ratio and a 25-year term of maturity). Data for August 1972 through December 1972 were interpolated.

3. Calculated "symmetrically," i.e., the percent change from level X to level Y equals

$$\frac{Y-X}{(X+Y)/2} \times 100.$$

Sources: U.S. Department of the Treasury, Federal Home Loan Bank Board, and Jack M. Guttentag and Morris Beck, *New Series on Home Mortgage Yields Since 1951*, (New York: National Bureau of Economic Research, 1970).

Table 9.—GNMA Passthrough Certificates Outstanding, by Type of Holder, 1971–81

End of year	Total amount outstanding (billions of dollars)	All holders	Type of holder (percent)							
			Depository institutions			Credit unions	Pension and retirement funds	Mortgage companies and investment banks	Individuals	Nominees and others
			Commercial banks	Thrifts						
				Savings and loan associations	Mutual savings banks					
1971	3.1	100	4.0	49.2	19.2	6.7	5.1	7.5	1.0	7.7
1972	5.5	100	5.2	41.7	20.2	6.1	5.0	9.4	1.3	10.4
1973	7.9	100	5.7	33.3	21.6	5.1	7.1	10.1	1.9	15.3
1974	11.8	100	5.9	30.4	18.0	4.0	7.7	10.6	1.6	21.7
1975	18.3	100	4.8	27.3	14.7	3.2	7.9	18.9	1.2	22.0
1976	30.6	100	5.3	19.6	13.0	2.6	10.0	20.3	1.1	28.1
1977	44.9	100	6.0	14.7	11.7	2.6	11.4	17.3	1.2	35.0
1978	54.3	100	5.9	13.7	11.0	2.4	11.5	13.1	1.4	41.1
1979	76.4	100	5.9	15.3	9.8	2.1	9.8	6.6	1.6	48.9
1980	93.9	100	5.3	17.2	9.7	2.0	9.2	6.8	1.8	48.0
1981 ¹	101.6	100	5.2	18.2	9.4	1.8	9.0	6.2	1.8	48.4

1. July.

Source: Government National Mortgage Association and Federal Reserve Board.

is another way in which passthroughs may have aided mortgage markets. Recall that most passthroughs are backed by FHA and VA mortgages. The FHA/VA sector of the mortgage market has generally been more stable than the conventional sector because the FHA/VA sector was not subject to State-imposed usury ceilings. By strengthening the relatively more stable sector, passthroughs may have increased the stability of the overall mortgage market.

Another way in which passthroughs may have contributed to more stable mortgage markets stems from the existence of an efficient secondary market for GNMA passthroughs. This secondary market permits originators to sell passthroughs out of portfolio during periods of slow deposit inflow. Several factors, however, suggest that this process may have been relatively unimportant. First, some funds used to purchase passthroughs would have found their way to mortgage markets anyway. Second, because periods of slow deposit inflow tend to be periods of high market interest rates, mortgage originators would have to record a capital loss if the passthroughs were sold from portfolio at those times; this they have been loath to do.⁸ Third, to

the extent that sales of passthroughs out of portfolio resulted in a net increase in loanable mortgage funds, mortgage interest rates would have tended to fall, inducing diversified investors to switch out of mortgages and into other assets.⁹

Mortgage revenue bonds.—Tax-exempt mortgage revenue bonds (MRB's) are debt instruments issued by State housing finance agencies and by local governments to finance the origination of mortgages. A common approach is for a State or local government agency to lend the proceeds of the bond sale to financial institutions, who then relend them to homebuyers.¹⁰ Because the proceeds were originally raised in the tax-exempt market, the mortgages can be written at a lower rate than otherwise—perhaps 1 to 4 percentage points below the unsubsidized mortgage rate.

MRB's became an important source of housing finance in the late 1970's. Sales of these bonds amounted to \$14.3 billion in 1980, compared with only \$0.6 billion 5 years earlier. The Congressional Budget Office estimated that, in the absence of legislative restraints, MRB sales could have reached \$20–\$35 billion by 1984; Patric Hendershott estimated an eventual upper bound of \$440 billion,

replacing one-half of regular home financing.¹¹

Concern about the Federal revenue loss caused by MRB's led to the enactment, late in 1980, of the Mortgage Bond Subsidy Act. The act limits the amount of single-family MRB's that may be issued in each State during 1981–83, and removes the tax exemption in later years. For each State, the limit is the larger of \$200 million or 9 percent of the average level of mortgage originations in the State during the preceding 3 years. In general, each State's limit is allocated equally to State and to local housing agencies.

Sales of MRB's virtually ceased with the enactment of this legislation because ambiguities in the act dissuaded potential issuers from going to market. MRB sales surged late in 1981, however, after Treasury Department regulations—issued in July and November to implement the new law—resolved many of the ambiguities.

In addition to limiting the volume of MRB sales, the act places restrictions on the price that may be paid for houses financed by MRB proceeds; in general, the price cannot exceed 90 percent of the average price of single-family houses in the city or county. Before this legislation was enacted, many MRB's specified income-eligibility limits for borrowers, but these had

8. Edward J. Kane, *Reregulation, Savings and Loan Diversification and the Flow of Housing Finance*, Working Paper No. 640, (Cambridge, Mass: National Bureau of Economic Research, March 1981) p.13, points out that "[in] every year since 1966, S&L's unrealized mortgage losses were sufficient in the aggregate to wipe out their federal income-tax liability." S&L's did not "book" the losses, however, and did make positive tax payments each year. Kane argues that S&L's did not "book" the losses because, if they had, the associations would have fallen short of the capital-adequacy requirements set by the Federal Saving and Loan Insurance Corporation (FSLIC) to determine eligibility for FSLIC insurance.

9. See Seiders, "GNMA-Guaranteed Passthrough Security," on which this and the preceding paragraph have been based.

10. MRB's are described and analyzed by John A. Tuccillo and John C. Weicher, *Local Mortgage Revenue Bonds* (Washington, D.C.: The Urban Institute, May 1979), and Peggy Brockschmidt, "Tax-Exempt Single-Family Bonds," *Federal Reserve Bank of Kansas City Economic Review* 65 (May 1980): 3–12.

11. U.S. Congress, Congressional Budget Office, *Tax-Exempt Bonds for Single-Family Housing* (Washington, D.C.: U.S. Government Printing Office, April 1979) p. 40, and Patric H. Hendershott, *Mortgage Revenue Bonds: Tax-Exemption with a Vengeance*, Working Paper No. 447 (Cambridge, Mass: National Bureau of Economic Research, February 1980) p. 24.

Table 10.—Variable-Ceiling Certificates of Deposit

Type	Maturity	Authorization effective	Reference rate	Formula for ceiling rates			Amounts outstanding, December 1981 [billions of dollars]		
				When the reference rate is:	The ceiling rate is:		Commercial banks	Savings and loans	Mutual savings banks
					For commercial banks	For savings and loans and mutual savings banks			
6-month money market (MMC).....	26 weeks.	June 1, 1978.	Discount rate on 6-month U.S. Treasury bills.	8.75% and above 8.50% to 8.75% 7.50% to 8.50% 7.25% to 7.50% below 7.25%.	ref. rate + ¼% ref. rate + ¼% ref. rate + ¼% 7.75% 7.75%.	ref. rate + ¼% 9.0% ref. rate + ½% ref. rate + ½% 7.75%.	216.3	182.3	53.7
2½-year small savers (SSC).....	2½ to 4 years.	January 1, 1980.	Yield on 2½-year U.S. Treasury securities.	12.00% and above 9.50% to 12.00% below 9.50%.	11.75% ref. rate - ¼% 9.25%.	12.00% ref. rate 9.50%.	57.1	97.7	21.8
All savers (ASC).....	1 year.	October 1, 1981.	Yield on 52-week U.S. Treasury bills.		70% of ref. rate.	70% of ref. rate.	18.6	19.8	5.1

Source: Federal Reserve Board, Federal Home Loan Bank Board, and National Association of Mutual Savings Banks.

generally been quite high. Of the 50 local jurisdictions that had sold MRB's by early 1979, 9 specified no income limits at all on the income of the borrowers. Of the remaining 41 jurisdictions, one-half specified income limits that were more than double the median income of the locality. In only seven jurisdictions were the income limits set so that families with more than 150 percent of median income would be ineligible.

Deregulation

In June 1978, the Federal regulatory agencies authorized depository institutions to issue small-denomination certificates of deposit carrying market-determined interest rates, and on March 31, 1980, the Depository Institutions Deregulation and Monetary Control Act of 1980 was signed into law. These actions were two of the most important steps in years toward freeing up the housing finance system.¹²

Variable-ceiling certificates.—The formulas used to determine the ceiling interest rate that can be paid on the three kinds of small-denomination certificates of deposit, as well as some of their other characteristics, are shown in table 10. The amount of these variable-ceiling certificates outstanding has risen rapidly. In January 1979, they accounted for 11 percent of all savings and small time deposits at depository institutions; by January 1982, they accounted for over

50 percent. Variable-ceiling certificates have enabled depository institutions to compete for funds despite high market interest rates that have characterized recent years. Previously, all savings and small time deposits had been subject to the fixed (usually low) rate ceilings of regulation Q. (Technically, regulation Q applies only to commercial banks. As in common practice, the term will be used to encompass the deposit rate ceilings to which thrifts have been subject since 1966.) When market rates rose above regulation Q ceilings, depositors tended to shift funds out of thrift institutions and into higher yielding market instruments. Slow or negative inflows of funds, in turn, led to reduced mortgage lending activity by thrifts.

Econometric models have been used to estimate the amount that deposits at thrift institutions would have fallen as a result of rising market rates if thrifts had not been authorized to offer variable-ceiling certificates. One such estimate concluded that about two-thirds of the \$110 billion invested in 6-month money market certificates (MMC's) at thrift institutions during 1978:III–1979:II were transferred out of other thrift accounts; and the remaining one-third (\$38 billion) represented new money—money that would not have been deposited at thrifts if MMC's had not existed. Looked at from another angle, this finding implies that if MMC's had not existed, deposit flows to thrift institutions would have dried up in 1978:III–1979:II, averaging only \$3.9 billion per quarter (compared

with \$13.2 billion per quarter in 1977:III–1978:II). By preventing this decline, and thereby augmenting the supply of mortgage funds, MMC's may have induced about 300,000 housing starts during these four quarters.¹³

As just noted, a large fraction of the funds deposited in MMC's were transferred out of other accounts at thrifts. For at least three reasons, thrifts were not indifferent to this shift in the composition of their liabilities. First, and most obviously, MMC's are more costly than other small accounts. Thrifts' earnings, therefore, suffered. Second, because rates on MMC's are tied to a market rate, thrifts became more vulnerable to interest rate increases. In December 1977, 6 months before MMC's were authorized, only 7½ percent of thrifts' liabilities were either tied to market rates or unregulated. By late 1981, 65 percent of thrifts' liabilities were in this category.

Third, the switch to MMC's caused a reduction in the average maturity of thrifts' liabilities. During most of the 1970's, the trend at S&L's had been toward lengthening the maturity of liabilities, thus bringing asset and

12. Regulatory changes that permit thrifts to offer new types of mortgage instruments are covered in the following section.

13. Dwight M. Jaffee and Kenneth T. Rosen, "Mortgage Credit Availability and Residential Construction," *Brookings Papers on Economic Activity*, No. 2 (1979):366. For alternative estimates, comparable in magnitude, see Allan Sinai, et al., "Mortgage Finance and the Housing Outlook," *The Data Resources Review of the U.S. Economy* 8 (February 1979):1.9–1.22. Patric H. Hendershott, however, argues that MMC's provided much less support to housing. See his "Real User Costs and the Demand for Single-Family Housing," *Brookings Papers on Economic Activity*, No. 2 (1980), especially pages 411 and 423 and Jaffee's reply (page 449).

Table 11.—Deposit Balances at Insured Savings and Loan Associations, by Type of Account, 1970-81

Type of account	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Billions of dollars												
Regular.....	82.3	90.0	98.7	103.5	102.8	116.8	129.9	142.5	142.1	126.3	116.9	98.4
Jumbo certificates ¹	.4	1.1	1.8	2.6	3.7	5.3	6.5	8.5	13.6	23.1	36.6	46.2
6-month money market certificates.....	0	0	0	0	0	0	0	0	19.3	101.9	159.6	202.6
Small savers certificates.....	0	0	0	0	0	0	0	0	0	0	41.1	77.4
Other certificates.....	53.3	70.7	91.8	105.7	120.7	142.4	173.1	210.6	229.8	197.0	129.4	80.6
Deposits not elsewhere classified.....	(²)	(²)	(²)	4.1	4.5	5.7	6.7	7.7	7.0	4.9	3.7	(²)
Total.....	136.0	161.8	192.3	215.9	231.7	270.2	316.2	369.3	411.7	453.3	487.3	505.2
Percent of total												
Regular.....	60.5	55.6	51.3	47.9	44.4	43.2	41.1	38.6	34.5	27.9	24.0	19.5
Jumbo certificates ¹	.3	.7	.9	1.2	1.6	2.0	2.1	2.3	3.3	5.1	7.5	9.1
6-month money market certificates.....	0	0	0	0	0	0	0	0	4.7	22.5	32.7	40.1
Small savers certificates.....	0	0	0	0	0	0	0	0	0	0	8.4	15.3
Other certificates.....	39.2	43.7	47.7	49.0	52.1	52.7	54.7	57.0	55.8	43.5	26.6	16.0
Deposits not elsewhere classified.....	(²)	(²)	(²)	1.9	1.9	2.1	2.1	2.1	1.7	1.1	.8	(²)
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Certificates in the amount of \$100,000 or more.

2. Included in "Other certificates."

NOTE.—Data are for September of each year; figures for 1970-72 are estimates.

Source: 1973-80: Federal Home Loan Bank Board.

liability maturities into better balance and reducing the exposure of S&L's to interest rate risk.¹⁴ Certificate accounts with maturities of 2 and 4 years were introduced in the early 1970's and an initial surge in these accounts took certificate accounts to about one-half of S&L deposits by late 1973 (table 11). The shift toward certificate accounts continued, albeit at a slower pace, during the middle of the decade; by late 1977, 57 percent of S&L deposits were in certificate accounts with relatively long maturities ("other certificates" in table 11). The introduction of the 6-month MMC in 1978 caused an immediate reversal of this trend; by September 1981, long certificates were down to 16 percent of total deposits.

At about the same time that the average maturity of liabilities at S&L's started to fall, the average "maturity" of their mortgage asset portfolios started to rise, worsening the maturity imbalance.¹⁵ By mid-1981—when the percentage of liabilities accounted for by long-term certificates was about one-half of its 1978 level—the maturity of mortgage assets was more than double its 1978 level.

14. See Dwight M. Jaffee and Kenneth T. Rosen, "The Changing Liability Structure of Savings and Loan Associations," *Journal of American Real Estate and Urban Economics Association* 8 (Spring 1980):33-49, and Walt Woerheide, "The Reduction of Interest Rate Risk Susceptibility at S&L's: How It Can Be and Has Been Done," *Federal Home Loan Bank Board Journal* 13 (September 1980):16-19.

15. The "maturity" of mortgage assets held by S&L's was calculated by dividing the amount of mortgage assets held at the beginning of a year by the amount of mortgage repayments during the year.

The Depository Institutions Act.—The changes mandated by the Depository Institutions Deregulation and Monetary Control Act of 1980 were designed to shape the development of thrifts (and commercial banks) for years to come. Five provisions of the act could have important consequences for mortgage lenders:

- all depository institutions are authorized to offer interest-earning checking accounts (NOW accounts);
- interest rate ceilings on deposits are to be gradually eliminated;
- the investment powers of thrift institutions are to be expanded significantly;
- State usury ceilings on residential first mortgage loans are eliminated;
- all depository institutions that are subject to reserve requirements will have access to the Federal Reserve's discount window.

Other parts of the act increase the level of federally insured deposits from \$40,000 to \$100,000; require reserves to be held by all depository institutions offering transaction accounts or nonpersonal time deposits; permit the Federal Reserve Board to impose supplemental reserve requirements in "extraordinary circumstances"; require the Federal Reserve to establish a schedule of fees for its services; and simplify "Truth in Lending" disclosures.

The last two of the major provisions can be dealt with briefly. S&L's and mutual savings banks that experience exceptional difficulties may benefit from access to the discount window, although these institutions are required to avail themselves of normal borrowing channels before turning to the Federal Reserve for credit; for thrifts, this means that the Federal home loan banks will continue to supply the overwhelming portion of their emergency credit needs. The elimination of usury ceilings—which becomes permanent if States do not reimpose ceilings before April 1, 1983—should enable borrowers to obtain mortgage loans during periods of very high interest rates and may result in a more evenly distributed regional impact of high interest rates.¹⁶ (Although State ceilings were eliminated, Federal ceilings on FHA and VA mortgages persist; Congress has authorized a demonstration program, however, under which FHA mortgages may be written at market rates.)

The NOW accounts provisions of the act became effective January 1, 1981. If NOW accounts enable thrifts to attract funds away from commercial banks, mortgage markets could benefit in two ways. First, because thrifts devote a larger portion of their funds to mortgage lending than commercial banks do, the volume of mortgage lending would be expected to

16. To keep open the option of imposing lower ceilings in the future, some States have passed new usury laws with very high ceilings.

rise. Second, because funds in NOW accounts will probably be less interest-sensitive than savings and time deposits, mortgage lending may become more stable cyclically.

The gradual elimination of deposit rate ceilings, over a 6-year period, should smooth the inflow of deposits during periods of high market interest rates by eliminating the competitive disadvantage that depository institutions have faced vis-a-vis direct investments. (It will also, of course, do away with the competitive advantage that thrifts have had vis-a-vis commercial banks by virtue of the one-quarter point thrift differential in regulation Q ceilings.) The cost of funds to thrifts is likely to rise substantially, although perhaps not as much as might at first be thought. When interest rates are high, thrifts supplement slow deposit flows (and slow mortgage repayments) with advances—although they are expensive—from the Federal home loan banks. Elimination of regulation Q should reduce the need for thrifts to resort to advances in these periods. Moreover, regulation Q has limited only explicit interest payments. Considerable evidence suggests that depository institutions have circumvented these limits (imperfectly, to be sure) by providing a variety of nonpecuniary returns to depositors. As just one example, the number of branch offices per insured S&L has risen from less than 1 in 1966, when thrifts were first subjected to regulation Q, to 4 in 1979, and increase of 14 percent per year.¹⁷ With the elimination of regulation Q, depository institutions will be able to avoid much of the expense of implicit interest payments such as these.

Expanded investment powers will permit thrifts to make more nonmortgage loans than they now do, and will permit a reduction in the maturity of thrifts' assets, bringing the maturity of the left side of the balance sheet closer to that of the right. The new

asset powers include permission for federally chartered S&L's to do the following:

- invest up to 20 percent of their assets in consumer loans, commercial paper, and corporate debt securities;
- invest in shares or certificates of open-end investment companies (mutual funds) that are registered with the Securities and Exchange Commission and that restrict their portfolios to the same investment instruments that S&L's are allowed to hold directly;
- invest up to 5 percent of their assets in loans for education and community development and in unsecured construction loans;
- issue credit cards and extend credit in connection with credit cards;
- provide trust and fiduciary powers under restrictions similar to those applicable to national banks.

For federally chartered mutual savings banks, new powers include permission to do the following:

- invest up to 5 percent of total assets in commercial, corporate, and business loans within the home State of the bank or within 75 miles of the bank's home office;
- accept demand deposits in connection with commercial, corporate, and business loan relationships.

In conjunction with NOW accounts, these new asset powers open up the possibility of S&L's becoming "family financial centers" that offer much the same range of services and convenience to households that "one-stop" commercial banking has offered for years. S&L's will be able to meet a family's needs for consumer and education loans, credit cards, trust services, and checking and savings accounts. All of these new asset powers also provide thrifts with a means to reduce the maturity of their asset portfolios, as does the authorization to invest in commercial paper, corporate debt securities, and mutual funds. Finally, diversification of its portfolio

will enable an S&L to earn a given level of return at lower risk or, conversely, to earn a higher level of income at a given risk.

The extent to which thrifts will avail themselves of their new powers remains to be seen, however. To take full advantage of the "bad debt allowance" afforded thrifts by Section 593 of the Internal Revenue Code—an allowance that reduces the maximum marginal tax rate for thrifts from 46 percent to 27.6 percent—at least 82 percent of an S&L's total assets (72 percent for a mutual savings bank) must be held as "qualifying assets." Basically, these assets are mortgages, Treasury debt, and cash. For most thrifts, the qualifying component of assets far exceeds the statutory minimum, and tax considerations will not be a constraint on whether or not to exercise their new asset powers. Nevertheless, some thrifts are close to, or at, the minimum. For these thrifts, which are presumably among the more innovative and aggressive in their industry, Section 593 constitutes a powerful disincentive to further diversification. For example, for an S&L to reduce its qualifying assets below the minimum without reducing its after-tax income, the net pretax yield on nonqualifying assets would have to be more than 50 percent higher than on qualifying assets.¹⁸

Perhaps of greater relevance, State-chartered thrifts that have had some of these investment alternatives open to them have made very little use of them. Virtually all of the 17 States in which mutual savings banks operate, for instance, allow at least some types of consumer lending. Yet consumer loans made up only 1.5 percent of total assets of mutual savings banks at yearend 1979 (and only 2.3 percent of total assets in New England, where savings banks have traditionally been granted rather broad consumer lending powers.)

Several factors contribute to the apparent lack of enthusiasm for consumer lending on the part of thrifts.¹⁹ First, commercial banks

17. The number of branch offices would have increased from 1966 to 1980 even if thrifts had not been subject to regulation Q. A number of studies, however, have identified regulation Q as the major factor in increased branching. See, for example, Kristine L. Chase, "Interest Rate Deregulation, Branching, and Competition in the Savings and Loan Industry," *Federal Home Loan Bank Board Journal* 14 (November 1981):2-6.

18. U.S. Congress, House of Representatives, Committee on Banking, Finance, and Urban Affairs, *The Report of the Interagency Task Force on Thrift Institutions*, Committee Print 96-14, 96th Congress, 2nd session, 1980, p. 111.

19. See *Report of the Interagency Task Force*, pages 58-59.

have a competitive advantage by virtue of their long experience in the field. Second, consumer lending is quite expensive, with net returns lower than is commonly thought. The net yield (after operating expenses and losses) on installment credit loans held by medium-sized commercial banks averaged only 0.17 percentage points more than the net yield on mortgages during 1974-78. Moreover, rates on consumer loans respond only very sluggishly to changes in the general level of interest rates; thus, although these loans are short-term assets, they do not possess the principal attraction of other short-term instruments.²⁰ On the other hand, the low levels of consumer lending by mutual savings banks may reflect consumer preference. Consumers may prefer to borrow from the institutions that handle their other financial affairs; restrictions on thrifts that prevented them from offering "full service banking" may have encouraged consumers to look to other institutions to satisfy their credit needs.

Maris estimates that consumer loans at S&L's will rise from about 1 percent of assets in 1979 to about 9½ percent by the end of 1985.²¹ As he points out, increased consumer lending need not be entirely at the expense of mortgage lending. Consumer lending may attract additional deposits and thus generate larger total assets. Thus, although he expects mortgage loans to form a smaller percentage of total assets, the dollar value of mortgages need not fall.

Thrifts dissuaded from entering the consumer loan market directly—either because of lack of demand or because of the start-up costs involved—may decide to participate in the market indirectly. Such participation might be arranged by purchasing consumer receivables from institutions that originate and service consumer loans and by purchasing liabilities (commercial paper and debt issues) from these institutions. Indirect participation would allow thrifts to diversify their portfolios with

liquid assets, while avoiding the high cost that would be involved in developing their own origination and servicing departments. Furthermore, liabilities of consumer-loan originators would probably be safer, from the point of view of default risk, than direct consumer loans.

In the long run, the authorization to hold up to one-fifth of their total assets as corporate debt securities and commercial paper may be of more significance for federally chartered S&L's than their new consumer lending powers. It is reasonable to expect the behavior of S&L's to be similar to that shown by commercial banks and mutual savings banks for many years. When selecting assets for their portfolios, S&L's will pay close attention to the yields on mortgages, bonds, and commercial paper. Also, mutual funds may enable even small S&L's to use their new investment powers without having to establish their own bond and commercial paper departments.

It is unclear how quickly S&L's will take advantage of their expanded authority to invest in commercial paper. The entrance of S&L's into the bond markets, however, will probably be slow unless bond yields rise dramatically relative to mortgage yields. As shown by the behavior of diversified investors, the yield spread between mortgages and bonds strongly favored mortgage investment during 1976-80. Mutual savings banks' holdings of home mortgage rose 31 percent during this period, somewhat faster than their holdings of corporate bonds (21 percent). Commercial banks' holdings of home mortgages doubled while their holdings of corporate bonds declined.²²

The ultimate effect of the provisions of the Depository Institutions Act cannot be predicted with any confidence. While some of the reforms (removal of interest rate ceilings and authorization of NOW accounts, for example) will probably tend to increase the volume and stability of funds flowing to mortgage lenders,

others (such as expanded asset powers) may cut into funds that thrifts would otherwise use for mortgage originations.²³

Two consequences of the act do seem clear, however. First, competition among financial institutions will become much more intense. Thrifts will compete for loans with commercial banks, mortgage bankers, and finance companies and will compete for deposits with commercial banks and money market mutual funds. New types of institutions—institutions that cross traditional industry lines—will be developed, further intensifying competition. Congress is now considering legislation that would enable thrifts to compete even more effectively by granting them many of the powers now enjoyed by commercial banks. Even if such legislation is enacted, however, some—perhaps many—thrifts will find themselves unable to compete effectively in the changed environment and will close their doors or merge with stronger firms.

Second, the thrifts that do survive will not change into full-service commercial banks overnight or move *en masse* out of the mortgage markets or suddenly metamorphose into mortgage bankers. Local conditions—mortgage and consumer loan demand, competition from other financial institutions, deposit flows, managerial daring, etc.—will, in large part, determine which path a particular institution takes. Whichever path is chosen, however, the institution will find itself in need of new or retrained staff able to operate in unfamiliar markets. It will also be forced to compete against institutions that have more experience and expertise in those markets. These factors, along with simple inertia—which is an especially

20. The net yields on consumer loans and mortgages outstanding at commercial banks "have moved up and down in almost complete tandem in recent years." (Brian Maris, "Consumer Lending by S&L's: The Prospects," *Federal Home Loan Bank Board Journal* 13 (May 1980): 21.)

21. Maris, "Consumer Lending" p. 25.

22. A formal analysis of S&L's authorization to invest in corporate bonds—concluding that associations are unlikely to make much immediate use of the authority—is provided by Patric H. Hendershott and Kevin E. Villani, *Savings and Loan Usage of the Authority to Invest in Corporate Debt*, Working Paper No. 725 (Cambridge, Mass.: National Bureau of Economic Research, July 1981).

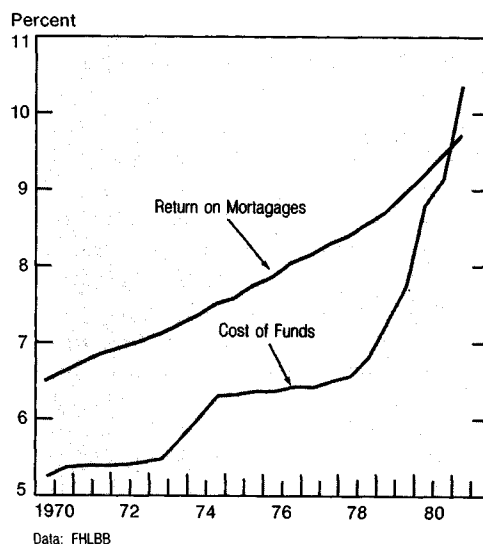
23. Analyses of proposals similar to the provisions of the Depository Institutions Act generally found that the net effect on mortgage lending would be minor. See, for example, Ray C. Fair and Dwight M. Jaffee, "The Implications of the Proposals of the Hunt Commission for the Mortgage and Housing Markets: An Empirical Study," and Paul S. Anderson and Robert W. Eisenmenger, "An Empirical Study of the Hunt Commission Report Proposals for the Mortgage and Housing Markets," both in *Policies for a More Competitive Financial System*, Conference Series No. 8 (Boston: Federal Reserve Bank of Boston, June 1972). Addressing the Depository Institutions Act itself, Kane ("Reregulation," pp. 1-2) concludes that the act's effects "on S&L participation in mortgage markets should prove relatively mild."

powerful force for thrift institutions that have cultivated a particular sense of their role in the local community—combine to guarantee that the pace of change will be moderate.

Recent legislative and regulatory developments.—During the first half of 1981, the average cost of funds to S&L's rose above the average return on their mortgage assets (chart 2). As a result, more than two-thirds of insured S&L's incurred losses, totaling \$1.5 billion. This was the first loss for a 6-month period in at least 40 years. By mid-1981, 10 percent of insured S&L's were on the Federal Home Loan Bank Board's "problem list", as compared with only 3 percent at the end of 1980. (In general, S&L's on the problem list face a significant probability of requiring Federal intervention to stave off insolvency.) Several legislative and regulatory actions taken in mid-1981 were addressed to the plight of the thrifts.

The Economic Recovery Tax Act of 1981 authorized depository institutions to offer a small denomination tax-exempt certificate of deposit—the All Savers Certificate—beginning October 1981. Yields on the 1-year certificates are to be set at 70 percent of the yield on 1-year Treasury bills, and 75 percent of the funds raised with the certificates—or 75 percent of net savings gains—is to be earmarked for housing loans. The certificates will probably prove popular with individuals in the higher tax brackets and should have a noticeable effect on the cost of funds at thrift institutions. Furthermore, some individuals who, because they are in lower tax brackets, would not benefit from the tax-exempt status of All Savers Certificates may find the certificates attractive nonetheless. The low minimum denomination in which the certificates are being offered by most institutions, combined with a federally insured yield more than double the passbook rate may induce these individuals to shift funds from passbook accounts into All Savers Certificates. Although thrifts' earnings may benefit from the All Savers Certificate, it is less likely that they will channel much of the proceeds from sales of the certificates into housing. Thrifts are more likely to channel the proceeds into short-term instruments. The 1-year securities that FNMA has decided to offer, which will be count-

CHART 2
Average Return on Mortgages and Average Cost of Funds, Insured Saving and Loan Associations, 1970-81



Data: FHLBB
U.S. Department of Commerce, Bureau of Economic Analysis

82-2-2

ed as mortgage securities for purposes of assessing compliance with the provisions of the act, are prime possibilities.

The act also liberalized the regulations governing Individual Retirement Accounts (IRA's) by increasing the number of people eligible to use IRA's and by raising annual contribution limits. Thrifts, which held more than one-half of all outstanding IRA's at yearend 1979, will be major beneficiaries of the change if, as is to be ex-

pected, the liberalization leads to larger and more stable funds flows.²⁴

Two steps taken in August 1981 address the problem that old, low-yielding mortgages constitute for thrifts. This problem is illustrated by the situation in September 1980. About 75 percent of the mortgages in S&L portfolios carried yields of less than 10.5 percent, although S&L's were paying about 10.8 percent on new MMC's (table 12).

First, the Federal Home Loan Bank Board proposed a regulatory change that would permit thrift institutions that sell low-yield mortgages to spread the resulting loss over several years, contrary to conventional accounting practice, which requires that the entire loss be recorded at the time it is incurred. FNMA announced that it would offer to buy unlimited quantities of old mortgages at market prices if the accounting change becomes effective.

Also in August, FNMA announced that it would swap passthrough certificates for old mortgages. A regulatory interpretation by the Bank Board holds that many S&L's will be able to make such swaps without recording the losses on their books even though the face value of the certificates would be considerably less than the outstanding balance on the mortgages.

Alternative mortgage instruments

High and volatile interest rates and sharply higher house prices have spurred participants in the mortgage market to turn to various techniques of "creative financing." This section first discusses several ad hoc devices that operate within the context of the standard fixed-payment mortgage (SFP). It then describes the features of the SFP that are responsible for much of the interest in developing alternatives to the SFP, and finally it discusses four of these alternatives that have been and are being developed. These alternatives are summarized in table 13.

Table 12.—Mortgage Loans Held by Savings and Loan Associations: Percent Distribution by Rate, as of September 1980

Rate	Percent distribution	
	Class	Cumulative
Under 5.50 percent	0.44	0.44
5.50 to 5.99	.81	1.25
6.00 to 6.49	1.75	3.00
6.50 to 6.99	1.62	4.62
7.00 to 7.49	4.04	8.66
7.50 to 7.99	5.47	14.13
8.00 to 8.49	5.44	19.57
8.50 to 8.99	17.44	37.01
9.00 to 9.49	15.47	52.48
9.50 to 9.99	14.19	66.67
10.00 to 10.49	7.80	74.47
10.50 to 10.99	6.49	80.96
11.00 to 11.49	4.52	85.48
11.50 to 11.99	4.79	90.27
12.00 to 12.49	2.94	93.21
12.50 and over	6.70	99.91

Source: U.S. League of Savings Associations.

24. See John A. Tuccillo, "Mortgages, Savings, and Expanded IRA's," *Federal Home Loan Bank Board Journal* 14 (May 1981): 14-19.

One of the ad hoc devices that is used in financing purchases of newly built houses is the "buy down" mortgage. With a buy-down mortgage, a borrower typically makes payments during the first few years as if the interest rate were one to three percentage points lower than it actually is. The difference between scheduled payments and payments by the borrower is made up by the builder. When the buy-down period ends, the borrower is responsible for all scheduled payments. Borrowers, of course, hope that their incomes rise sufficiently during the buy-down period to enable them to shoulder the increased payments, or that interest rates will fall and they will be able to refinance their loans at the end of the buy-down period. An April 1981 survey of builders by the National Association of Home Builders found that about one-half of the survey respondents "buy down" mortgage interest rates for their purchasers.

For previously occupied houses, some form of "creative financing" is currently involved in about 75 percent of the sales. The most common form involves the assumption of the seller's outstanding, low-rate mortgage by the purchaser. Sellers are fre-

quently willing to hold second trusts in order to enable the buyer to complete the purchase. Another device buyers can sometimes use to get below-market-rate financing is the "wraparound" mortgage, in which the old low-rate mortgage is assumed as part of a new, larger mortgage that carries an interest rate roughly equal to the weighted average of the rate on the old mortgage and the market rate on new loans.

When mortgage rates have been rising, of course, mortgage assumptions are not in the best interest of holders of mortgages. Holders, eager to get old loans off their books and to replace them with new loans, have tried to enforce the "due on sale" clauses that are included in most outstanding conventional mortgages. (FHA and VA mortgages do not contain such clauses.) Efforts to enforce these clauses have frequently wound up in court. About one-third of the States currently restrict the enforcement of the clauses.

The development of alternatives to the SFPM represents a more basic and longer term response to the high and volatile interest rates that have prevailed in recent years. Two features of the SFPM are responsible for

much of the interest in developing alternative mortgage instruments.²⁵ First, the SFPM exposes lenders to considerable risk when interest rates are volatile. Second, in an inflationary environment, an SFPM results in high real mortgage payments during the early years of the mortgage; this presumably decreases the demand for mortgages.

The major interest rate risk facing mortgage lenders arises because of the imbalance in the maturity structures of assets and liabilities at thrift institutions.²⁶ Long-term mortgages

25. See Donald R. Lessard and Franco Modigliani, "Inflation and the Housing Market," in Modigliani and Lessard, eds., *New Mortgage Designs for Stable Housing in an Inflationary Environment*, Conference Series No. 14 (Boston: Federal Reserve Bank of Boston, January 1975), pp. 14-26.

26. Other types of interest rate risk—ones that confront mortgage companies as well as thrift institutions—are generated by the lag between the time a commitment is made and the time the mortgage is "closed" and by the lag between the time a loan is closed and the time it is sold to the ultimate investor. In the former case, if interest rates rise during the period, the lender will incur a capital loss when the mortgage is sold. (If interest rates fall, on the other hand, the borrower probably will not take down the commitment.) Many lenders have addressed this asymmetry by shortening the commitment period, by charging higher, nonrefundable, commitment fees, and by using floating rates tied to some market indicator. Little use has been made of the financial futures market to hedge this risk, although this alternative has been open to mortgage companies and federally chartered thrift institutions for years.

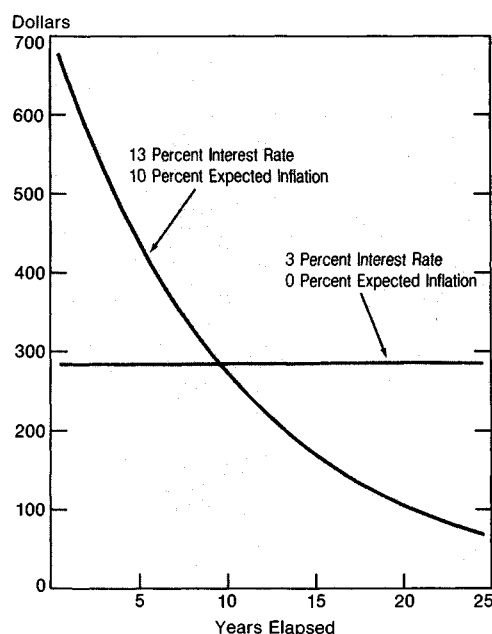
Table 13.—Summary of Alternative Mortgage Instruments

Instrument	Distinguishing feature	Status		Prevalence	Advantages compared with SFPM		Disadvantages compared with SFPM	
		Federally chartered thrifts	National banks		Borrowers	Lenders	Borrowers	Lenders
Variable rate mortgage (VRM).....	Mortgage rate is linked to a reference rate and may change during life of loan.	Authorized nationwide in 1973; restrictions relaxed in 1981.	Authorized nationwide in 1981.	Variants popular in California, Ohio, and Wisconsin.	Slightly lower interest rate; increased availability of funds.	Interest rate risk is reduced.	Increased interest rate risk.	Lack of standardization makes it difficult for investors to evaluate loans.
Graduated payment mortgage (GPM).....	Payments increase gradually in early years of loan and then level out.	Authorized nationwide in 1979.	Subject to State laws.	California, Florida, Texas, Colorado, and Arizona account for more than one-half of all FHA-insured GPM's.	Reduced payments in early years.		Payments may rise faster than income.	Negative amortization in early years.
Shared appreciation mortgage (SAM).....	Lender shares in appreciation of the property.	Regulations proposed in 1980; not yet authorized.	Subject to State laws.	Incipient; long used in non-residential mortgages.	Substantially lower interest rate.	Interest rate risk is reduced.	Reduction of capital gains on appreciation; need to pay large amount at end of loan period.	Uncertain return on investment; reduced cash flow in early years.
Price level adjusted mortgage (PLAM).....	Payments are constant in real terms.	Discussion stage.	Discussion stage.		Eliminates tilt in real payments stream.	Interest rate risk is reduced; certainty about the real value of payments.	Inflation-induced increase in equity is eliminated.	Reduced cash flow in early years.

constitute a large portion of the assets of these institutions, while short-term deposits are the dominant liability. When interest rates rise, thrift institutions frequently must raise the rate they pay to their depositors; at the same time, the interest that the institutions earn on their portfolios of the outstanding mortgages remains constant, or rises much slower than deposit rates as old mortgages are paid off and new mortgages are added to the portfolio. Moreover, the risk that rising rates constitute for mortgage lenders is not offset by a comparable opportunity to profit from interest rate declines, because borrowers can frequently refinance their mortgages at relatively little cost when rates drop. Variable rate mortgage (VRM's) are designed to reduce the interest rate risk that fluctuating rates pose for lenders.

Price level adjusted mortgages (PLAM's)—and, to a lesser extent, graduated payment mortgages (GPM's)—address a different shortcoming of the SFPM, namely the "tilt" in a mortgage's real payment stream that is induced by inflation. If the mortgage interest rate would be, say, 3 percent when the price level is expected to remain constant, it would be about 13 percent when inflation is expected to average 10 percent per year. In each case, the "real" discounted present values of the two payment streams would be identical and—if a house buyer's income kept up with the general price level—the aggregate amount of "real" payments would constitute the same percentage of aggregate income over the life of the mortgage. The time-pattern of real payments would be substantially different, however. Consider a \$60,000 mortgage with a 25-year term to maturity. At a 3-percent contract interest rate (corresponding to zero expected inflation), monthly payments would be \$287. At a 13-percent interest rate (10 percent expected inflation), monthly payments would be \$677. During the first year of the contract, when nominal payments and real payments are identical, real payments in the inflationary world are \$390 higher each month than in the noninflationary world. Inflation would gradually erode the real value of the \$677 payment, while the real value of the \$287 payment would

CHART 3
Real Value of Monthly Payments
on \$60,000, 25-Year Mortgage



U.S. Department of Commerce, Bureau of Economic Analysis

82-2-3

remain unchanged. These contrasting patterns are illustrated in chart 3.

If the demand for mortgages (and houses) depends in part on the time-pattern of real outlays, then inflation-induced higher real payments in the early years of the mortgage clearly depress demand.²⁷ The inflation-induced tilt in the real payments stream can be especially serious for young house buyers. Members of this group typically want a house that will serve a growing family. Also, they may reasonably expect real income to rise as they move up the life-cycle curve. Such house buyers may, therefore, prefer a mortgage loan with a rising real payment stream rather than the SFPM's declining stream.

Variable rate mortgage.—The distinguishing characteristic of VRM's is

27. Although inflation tilts an SFPM's real payments stream, depressing housing demand, one should not conclude that the overall effect of inflation is to depress demand. A number of considerations suggest that the net effect of inflation is to increase demand. First, tax-deductibility of mortgage interest payments mitigates the tilt itself. Furthermore, with an SFPM the real value of equity in a house can be expected to rise more rapidly in an inflationary environment than in an environment of stable prices. Finally, the tax treatment of capital gains from house sales constitutes an incentive for sellers to plow capital gains back into the purchase of another house, rather than to use the gains to acquire other assets.

that the interest rate may be adjusted during the life of the contract in order to keep the rate in line with some reference rate—such as an index of the cost of funds to lenders or the average rate on new mortgages. VRM's are taken here in their generic sense to include renegotiable rate mortgages (RRM's), adjustable mortgage loans (AML's), and escalator mortgages. Variants on the general VRM principle are many and relate to the number, frequency, size, and cumulative amount of interest rate adjustments; borrower options to extend the maturity of the loan when the rate is increased (to keep monthly payments unchanged); and assumability of the loan.

VRM's clearly offer considerable protection to the lender by shifting part or all of the risk associated with long-term interest rate trends to the borrower. (Default risk, on the other hand, is probably somewhat higher for a VRM than for an SFPM.) They may also smooth the demand for mortgage funds by reducing the interest rate elasticity of demand. Borrowers will have less incentive to postpone their borrowing when rates are high, or to accelerate borrowing when rates are low, because subsequent adjustments will affect outstanding mortgages as well as new ones. The reduction in risk to lenders may increase the supply of mortgage funds by traditional lenders and may induce traditionally short-term lenders to enter the mortgage market. Another benefit to borrowers is that the initial interest rate on a VRM is usually a little lower than on an SFPM.

These benefits to borrowers must be weighed against the increased interest rate risk to which the VRM's expose them. For three reasons, borrowers are less well equipped to deal with this risk than lenders. First, rather small asset portfolios make it difficult for most borrowers to diversify away risk the way many lending institutions—with their large portfolios—do.²⁸ Second, most borrowers do not have the expertise that lending institutions have to gather and ana-

28. With their new investment powers, S&L's can diversify more efficiently than in the past. Previously, S&L diversification was mainly limited to diversification within the class of mortgages.

lyze information on recent and prospective financial developments and what they portend for interest rates. Third, lending institutions can hedge against interest rate risk in the financial futures market; the very large size of minimum transactions in this market preclude all but the very wealthiest mortgage borrowers from availing themselves of it.

VRM's might also work to the disadvantage of borrowers if the mortgages tend to be tied to short-term interest rates. In this case, rates would fluctuate over a wider range than rates on SFPM's. The "tilt" problem would thus be more serious when rates are high.

Borrowers, of course, benefit from ceilings on the size, frequency, and cumulative amount of rate adjustments. It should be noted, however, that it may not be the ceiling on the size of rate adjustments, but the current mortgage commitment rate, that effectively limits rate adjustments. If an adjustment would bring the VRM rate up close to or above the rate on new SFPM's, borrowers might pay off their loans and refinance with SFPM's. Realizing this possibility, lenders may forego the interest rate adjustment when the new rate would be close to the prevailing rate on new SFPM's.²⁹

The refinancing option was undoubtedly an important consideration in the Federal Home Loan Bank Board's decision (in April 1981) to authorize federally chartered thrift institutions to offer VRM's unconstrained with regard to number, size, frequency, or cumulative amount of interest rate adjustments and to use almost any index—so long as it is outside the control of the lending institution and is readily verifiable by the borrower—as a reference rate. Previously, the Board had placed restrictions on all these elements.

Competition among lenders may result in some limits being placed on rate adjustments—at least initially, until borrowers become accustomed to VRM's—as will, perhaps, lenders' concern about default. On the other

hand, such limits would make VRM's less attractive to secondary market purchasers.

VRM's may have special appeal to borrowers with a short expected tenure. Because VRM's typically carry an interest rate marginally lower than SFPM's, and because the borrower expects to move before the VRM rate will be raised (or before it will be raised very much), the borrower is indifferent to the interest rate risk of VRM's that would be of concern to borrowers with long expected tenure.

VRM's have not been attractive to secondary market purchasers. The great variety of terms and conditions that have characterized VRM's have made it difficult for purchasers to evaluate the investment potential of a particular VRM. The same factor militates against the pooling of VRM's. If this heterogeneity were overcome, VRM's could presumably be offered successfully in secondary markets. Policies adopted in mid-1981 by FNMA and FHLMC to govern their purchases of VRM's may go far toward establishing standard types of VRM's and enhancing their secondary market appeal. In fact, a few public offerings of VRM-passthrough securities were made successfully even before those policies were adopted.

VRM's have gained considerable popularity in some areas, and many observers think that they will be the dominant mortgage instrument before long. State-chartered thrift institutions in California and New England began sizable amounts of VRM lending in 1975. (Federally chartered institutions were not authorized to extend VRM's at that time.) VRM's accounted for more than two-thirds of all new mortgage loans written by large State-chartered S&L's in California during 1975 and 1976. This proportion has fallen rather steadily since that time, going as low as one-fifth in 1980. Several factors explain the decline. First, high and rising mortgage rates since 1976 led some lenders to expect a reversal. In an attempt to "lock-in" prevailing rates, these lenders preferred to offer SFPM's with substantial prepayment penalties. Second, in January 1979, federally chartered S&L's in California were authorized to extend VRM's; this deprived the State-chartered institu-

tions of the competitive advantage they had previously enjoyed. (VRM authority was extended to the rest of the Nation's federally chartered thrifts 6 months later.) By mid-1981, two-fifths of all thrift institutions were offering VRM's and it was expected that the share would rise to two-thirds by the beginning of 1982.

Graduated payment mortgages.—GPM's tailor the pattern of mortgage payments to the borrower's expected income pattern by providing for mortgage payments that rise gradually for a period of years; during each year, monthly payments are fixed, but, from one year to the next, payments increase. After the period of graduation ends, payments are level until the mortgage is paid off. (For two mortgages of equal size, maturity, and interest rate, GPM payments must level off above SFPM payments so that the discounted present values of the two payments streams will be identical.)

GPM's can be explained in terms of the U.S. Department of Housing and Urban Development's Experimental Finance Program, the vehicle used to introduce the FHA-insured GPM.³⁰ Borrowers wishing a GPM under this program choose one of five plans. Table 14 lists these plans and also shows that Plan III—which provides for the lowest first-year payments and the fastest rate of increase—is by far the most popular.

For an SFPM, payments during the early years of the mortgage go overwhelmingly to the payment of interest. With the low initial payments of a GPM, none of the early payments goes to principal repayment; in fact, payments are insufficient even to cover interest due. The shortfall between interest due and interest paid—negative amortization—is added to principal outstanding.

Negative amortization was responsible for three obstacles to the development and acceptance of GPM's. First, at the time the GPM program was initiated, more than 30 States had usury laws that prohibited the collec-

29. See William C. Melton and Diane L. Heidt, "Variable Rate Mortgages," *Federal Reserve Bank of New York Quarterly Review* 4 (Summer 1979): 24.

30. The Housing and Community Development Act of 1974 authorized the Federal Housing Administration to insure GPM's. Subsequent legislation liberalized several features of FHA-insured GPM's and stimulated their use. The Housing and Community Development Act of 1977 made the program permanent.

Table 14.—FHA-Graduated Payment Mortgage Plans

Plan	Rate at which payments increase each year (percent)	Period over which payments increase (years)	Reduction in first year payments ¹ (percent)	Percent of sample total ²
I.....	2½	5	9	5.8
II.....	5	5	17	7.9
III.....	7½	5	25	86.2
IV.....	2	10	12	.1
V.....	3	10	17	(3)

1. Compared with a standard fixed-payment mortgage of the same amount, interest rate, and maturity.

2. Based on a sample of 56,496 loans insured during 1980 by the Federal Housing Administration under section 245 of the National Housing Act.

3. Less than .05 percent.

Source: U.S. Department of Housing and Urban Development.

tion of interest on interest. This obstacle was dealt with in the Housing and Community Development Act of 1977, which provided for a limited preemption of these State laws for FHA's GPM's.

Second, the original legislation provided that at no time could the principal of a GPM exceed the maximum insurable loan amount that could have been authorized for an SFPM at the time of origination. To prevent negative amortization from driving principal above this amount, GPM borrowers had to make substantially larger downpayments than did SFPM borrowers. The 1977 act lowered this obstacle by replacing the 1974 provision with one that permitted principal to rise to 97 percent of the original appraised value of the house being purchased. The Housing and Community Development Amendments of 1979 further relaxed this constraint by applying the 97-percent figure to the projected value of the house, which, for this purpose, is assumed to rise 2½ percent per year.

Third, negative amortization creates tax problems for lenders who use the accrual method of accounting. FHA-insured GPM's are fixed-rate loans. A lender's accrued income is, thus, the interest income that would be generated by a comparable SFPM. Because the lender's cash income is less than this, the lender is liable for taxes on income that has not been received.³¹

31. Although not an impediment to the spread of GPM's, the tax treatment of a GPM borrower might be noted here. For a borrower who uses—as most individuals do—the cash method of accounting, the entire amount of GPM payments is deductible as interest

Despite these problems, FHA's GPM program has grown rapidly; in 1980, FHA insured \$4.8 billion of GPM's, compared with \$9.5 billion of SFPM's (under Section 203(b)). Almost one-fourth of these GPM's were in California, a fact that complicates the comparison of national data on GPM's and SFPM's. (California is the only State where FHA-insured GPM activity exceeded FHA-insured SFPM activity in 1980.) It is clear, however, that GPM borrowers are generally younger than SFPM borrowers and have smaller incomes, but they take out larger mortgages and buy more expensive homes than SFPM borrowers (table 15). Moreover, a GPM borrower is more likely to purchase a newly built house than is an SFPM borrower; nationwide, 29 percent of GPM loans were made for the purchase of new houses, compared with only 12 percent of SFPM loans. (For California, the comparable figures are 26 percent and 21 percent, respectively.)

FHA's GPM program has stimulated the development of conventional GPM lending. Although no reliable data are available on the amount of conventional GPM lending, many observers seem to think that it is sub-

payments until such time as the outstanding principal falls below the original loan amount. For a GPM-III borrower with a \$30,000 mortgage, this occurs sometime in the eighth year of the mortgage. For the first 4 years of the GPM, interest deductions are smaller than for an SFPM with the same loan amount and interest rate. In years 5 through 8, deductions under the GPM are larger. If the income of the GPM borrower is rising over time—the presumption behind GPM's in the first place—then the borrower is moving into higher tax brackets and the value of a dollar's worth of deductions is increasing.

stantial and that a variation on the FHA theme has created the potential for even more rapid growth. The variation concerns the tax problems that negative amortization creates for lenders. Originators of conventional GPM's can finesse this problem rather simply by requiring that the borrowers place part of the loan proceeds in a pledged, interest-earning account at the lending institution. During the early years of the mortgage, funds are withdrawn from this account and used to prevent negative amortization. Lenders, therefore, receive a constant stream of payments and no wedge is driven between accrued and cash incomes. In addition, the device of the pledged account sidesteps State laws that prohibit the collection of interest on interest. (The Housing and Community Development Act of 1977 had preempted State laws in this regard only for FHA-insured loans.)

GPM's face no special problems on secondary markets and have been purchased by FNMA since shortly after they were introduced. Furthermore, the default rate on GPM's does not appear to differ much from the default rate on SFPM's, despite the

Table 15.—Selected Characteristics of FHA-Graduated Payment Mortgages and Standard Fixed-Payment Mortgages, 1980

Item	Graduated payment mortgage (GPM)	Standard fixed-payment mortgage (SFPM)
Total value of mortgage		
United States.....	\$1.45 billion	\$1.55 billion
California.....	.31 billion	.25 billion
Average mortgage size		
United States.....	\$52,302	\$50,567
California.....	56,872	54,647
Median acquisition cost		
United States.....	\$59,238	\$55,510
California.....	65,500	62,976
Median loan-to-value ratio		
United States.....	87.6 percent	92.6 percent
California.....	87.3 percent	91.6 percent
Average monthly mortgage payment ¹		
United States.....	\$518.07	\$570.65
California.....	539.07	635.57
Median borrower annual income		
United States.....	\$26,150	\$28,064
California.....	27,379	31,033
Average age of borrowers ²		
United States.....	29.8 years	31.3 years
California.....	31.0 years	32.8 years

1. Includes principal, interest, taxes, and insurance.

2. Married borrowers only.

NOTE.—Data are for new and proposed single-family home mortgages insured by FHA under section 245 (GPM's) and section 203 (SFPM's).

Source: U.S. Department of Housing and Urban Development.

obvious potential for GPM payments to rise faster than borrowers' incomes.

Shared appreciation mortgages.—As is suggested by their name, the distinguishing feature of shared appreciation mortgages (SAM's)—is that the lender shares in the appreciation of the property securing the mortgage. SAM's differ from SFPM's in three important respects. First, the interest rate on a SAM is lower—typically much lower—than on an SFPM. Second, in return for this lower interest rate, the lender obtains a share in any increase in the value of the property securing the mortgage. The lender's share is termed "contingent interest." Third, although monthly payments on a SAM are calculated on the basis of a long amortization period, the loan itself becomes due and payable in no more than 10 years.

The lower interest rate on a SAM can result in substantially lower monthly mortgage payments and can, therefore, substantially increase the number of households that qualify for a mortgage. Potential borrowers, however, will be concerned about the unknown but possibly quite large amount of contingent interest that will have to be paid in no more than 10 years. Consider a \$50,000 SAM, in which the lender's share is one-third, used to purchase a \$62,000 house that subsequently appreciates 10 percent per year. At the end of 10 years, the house will have appreciated \$99,600, so that the borrower will have to pay the lender a lump sum of \$33,200 plus the unpaid principal of the mortgage. Refinancing this amount probably would not be a major problem for a borrower whose income had kept pace with inflation.

SAM's may appeal to first-time housebuyers. First-time buyers may not be able to make large enough downpayments on an SFPM to get mortgage payments they can afford. The reduced monthly payments under a SAM, therefore, could be important to them. SAM's may also appeal to elderly people for whom the investment aspect of housing is relatively unimportant.

From the lender's viewpoint, the contingent interest feature of SAM's provides a hedge against inflation, at

Table 16.—Payments and Outstanding Balances for a Price Level Adjusted Mortgage and a Standard Fixed-Payment Mortgage

[Dollars]

Year	Standard fixed-payment mortgage (SFPM)			Price level adjusted mortgage (PLAM)		
	Monthly payment		Out-standing balance end of year	Monthly payment		Out-standing balance end of year
	Nomi-nal	Real		Nomi-nal	Real	
1	592	592	49,833	239	239	54,031
2	592	589	49,750	263	239	58,326
3	592	490	49,596	289	239	62,889
4	592	445	49,419	318	239	67,725
5	592	405	49,215	349	239	78,212
10	592	251	47,642	563	239	102,172
20	592	97	38,156	1,460	239	158,615
28	592	45	12,339	3,129	239	79,272
29	592	41	6,598	3,442	239	44,470
30	592	37	0	3,787	239	0

NOTE.—Both mortgages are for \$50,000. The interest rate on the SFPM is 14 percent; the interest rate on the PLAM is 4 percent. The inflation rate is assumed to average 10 percent during the 30-year term of each mortgage.

Source: Henry J. Cassidy, "Price-Level Adjusted Mortgages Versus Other Mortgage Instruments," *Federal Home Loan Bank Board Journal* 14 (January 1981): 4.

least to the extent that house prices mirror the general level of prices in the economy. Also, the 10-year maturity of SAM's would shorten the average maturity of a lender's portfolio, reducing interest rate risk somewhat. During its term, however, a SAM has poor cash flow compared with an SFPM. While SAM's would probably be attractive to borrowers during periods of high interest rates, it is precisely during such periods that SAM's would be least attractive to thrift institutions because income from SAM's—given their low interest rates—would not be sufficient to allow thrifts to pay competitive rates on deposits. Investors with longer term liabilities, on the other hand, may find SAM's an attractive outlet for funds.

There are several problems to the spread of SAM's. First, buyers in secondary markets need some assurance that the originators have not systematically overestimated the probable appreciation of the property backing the SAM. Perhaps requiring the originator to retain a significant share of SAM's placed in pools would help in this regard. Second, it will probably be difficult for a lender to determine differential rates of probable appreciation for properties in different neighborhoods, yet such a determination is crucial if the expected rate of return on various SAM's are to be equal. Further, even if this determination is made and different interest rates are applied to different SAM's, a lender may be vulnerable to a charge (valid or not) of unlawful discrimination.

A final problem with SAM's is related to improvements made in the property by the owner. The cost of capital improvements would probably be subtracted from gross appreciation in order to determine contingent interest. Many improvements, however, add less to the value of a house than they cost. Improvements, therefore, make lenders' returns on SAM's more uncertain.³²

Price level adjusted mortgages.—The final alternative mortgage instrument to be discussed—the price level adjusted mortgage (PLAM)—is still in the discussion stage. Its distinctive feature is that payments are constant in real terms. This result follows from two elements of the mortgage contract. First, the contract interest rate is set at the rate that would prevail if no inflation were expected and is held constant for the life of the mortgage. This element, by itself, results in low monthly payments. Second, the real value of the outstanding mortgage balance is maintained by raising the nominal value of the mortgage balance by a factor equal to the rate of inflation. This element insulates lenders from inflation.

Table 16 contrasts the monthly payments under a PLAM with the payments under a SFPM of equal amount and maturity. While the SFPM entails monthly payments that are constant in nominal terms, the PLAM's are constant in real terms. The

(continued on p. 58)

32. Joseph A. McKenzie, "Shared Appreciation Mortgages," *Federal Home Loan Bank Board Journal* 13 (November 1980) 13-14. Much of this discussion of SAM's is based on McKenzie's article.

Employment and Employee Compensation of U.S. Multinational Companies in 1977

Comprehensive data on employment and employee compensation of U.S. multinational companies (MNC's) were collected in BEA's 1977 benchmark survey of U.S. direct investment abroad, the results of which were released last year.¹ The data are important for analyzing the effect of U.S. MNC's on labor, both in the United States and abroad. In this article they are used to examine the distribution of total MNC employment between U.S. parents and their foreign affiliates; the proportion of all-U.S.-business employment accounted for by U.S. parents; the country and industry distribution of foreign affiliate employment, including the geographical concentration of employment; the distribution of parent and affiliate employment by employment size class; and affiliates' shares of total manufacturing employment in 10 developed countries. They are also used to examine and compare hourly compensation paid to production workers in manufacturing by U.S. parents and their majority-owned foreign affiliates, and to compare affiliate compensation rates with those for all manufacturing businesses in selected for-

eign countries. A subsequent article will discuss growth in affiliate employment (and assets) since 1966, the year covered by the previous benchmark survey.

The employment data are also of interest as a measure of the overall size of U.S. MNC operations. Although employment has some limitations as a measure of size, it has the advantage of being affected neither by methods of valuation (as are, for example, total assets, which are based on book values), nor by the sources and patterns of financing (as is, for example, the direct investment position).

Although the 1977 benchmark survey covered parents and affiliates in all industries, this article, like others in a series of BEA studies of U.S. MNC's based on that survey, covers only nonbank MNC's. A nonbank MNC consists of a nonbank U.S. parent that has at least one nonbank foreign affiliate, and its nonbank affiliate(s). In the 1977 survey, considerably more data were collected for nonbank parents and affiliates than for bank parents and affiliates, because the latter already were required to report most of the information needed for policy purposes to other U.S. Government agencies.

Highlights

- Worldwide employment of U.S. MNC's was 26,081,327; U.S. parents accounted for 72 percent, and their foreign affiliates for 28 percent, of the total. MNC's with U.S. parents in manufacturing accounted for about two-thirds of worldwide MNC employment.

- U.S. parents accounted for 35 percent of the employment of all U.S. business in industries covered by the Census Bureau's *Enterprise Statistics*. In petroleum and manufacturing, the parents' shares were over 50 percent.

- Affiliates classified in manufacturing accounted for just over two-thirds of total affiliate employment. Within manufacturing, affiliate employment was largest in "other manufacturing" and transportation equipment.

- More than two-thirds of foreign affiliates' total employment was in developed countries. Within the developed countries, 62 percent was in Europe. Within the developing countries, 62 percent was in Latin America.

- For all industries combined, four countries—the United Kingdom, Canada, Germany, and France—accounted for 44 percent of affiliate employment. Eight countries—the above four, plus Brazil, Japan, Mexico, and Australia—accounted for 65 percent. Among six major industries, the geographical concentration of employment was highest in finance (except banking), insurance, and real estate and in mining.

- For U.S. parents—and, to a lesser extent, for foreign affiliates—employment was skewed toward the larger companies. Parents having over 10,000 employees accounted for only 13 percent of the number, but for 78 percent of the total employment, of all parents.

- Among 10 developed countries for which reasonably comparable data could be obtained, the affiliate share of total foreign manufacturing employment was by far the highest in Canada, at 38 percent. It was the lowest in Denmark and Japan (2 percent each).

- For U.S. parents in manufacturing, hourly compensation of production workers was \$8.76; for foreign affiliates in manufacturing, it was \$4.92—about 56 percent of the parents' rate. In petroleum and coal products, the rate for parents was

1. U.S. direct investment abroad exists when one U.S. person (U.S. parent) has a direct or indirect ownership interest of 10 percent or more in a foreign business enterprise (foreign affiliate). U.S. MNC's are U.S. companies that have direct investment abroad; an MNC consists of the U.S. parent and all of its foreign affiliates. A brief description of the benchmark survey and highlights of the data were given in International Investment Division, "1977 Benchmark Survey of U.S. Direct Investment Abroad," *SURVEY OF CURRENT BUSINESS* 61 (April 1981): 29-37. Detailed data and a more complete methodology of the survey were published in U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad, 1977* (Washington, D.C.: U.S. GPO, April 1981).

NOTE.—Arnold Gilbert did the computer programming for most of the tables in this article and was responsible for the analysis-of-variance routine applied to foreign affiliate compensation rates. Ethel J. Wheeler provided statistical assistance.

Table 1.—Worldwide Employment of U.S. Multinational Companies, by Industry of U.S. Parent, 1977

	Amount			Distribution		
	Number of employees			Percent		
	Total	U.S. parents	Foreign affiliates	Total	U.S. parents	Foreign affiliates
All industries.....	26,081,327	18,884,636	7,196,691	100	72	28
Mining.....	106,484	65,342	41,142	100	61	39
Metal mining.....	48,368	21,796	26,572	100	45	55
Iron.....	(^b)	(^b)	(^b)	100	(^b)	(^b)
Copper, lead, zinc, gold, and silver.....	(^b)	(^b)	(^b)	100	(^b)	(^b)
Bauxite, other ores, and services.....	(^b)	100	(^b)	100	(^b)	(^b)
Coal and other nonmetallic minerals.....	58,116	43,546	14,570	100	75	25
Petroleum.....	1,315,506	890,511	424,995	100	68	32
Oil and gas extraction.....	85,147	68,964	16,183	100	81	19
Crude petroleum (no refining) and gas.....	46,405	37,340	9,065	100	80	20
Oil and gas field services.....	38,742	31,624	7,118	100	82	18
Petroleum and coal products.....	1,079,385	717,685	361,700	100	66	34
Integrated refining and extraction.....	(^b)	709,020	(^b)	100	(^b)	(^b)
Refining without extraction.....	(^b)	(^b)	(^b)	100	(^b)	(^b)
Petroleum and coal products, nec.....	(^b)	(^b)	536	100	(^b)	(^b)
Petroleum wholesale trade.....	95,915	57,638	38,277	100	60	40
Other.....	55,059	46,224	8,835	100	84	16
Manufacturing.....	17,097,913	11,775,031	5,322,882	100	69	31
Food and kindred products.....	1,500,662	1,016,702	483,960	100	68	32
Grain mill and bakery products.....	276,985	199,016	77,969	100	72	28
Beverages.....	183,559	122,782	60,777	100	67	33
Other.....	1,040,118	694,904	345,214	100	67	33
Chemicals and allied products.....	1,954,789	1,207,675	747,114	100	62	38
Industrial chemicals and synthetics.....	997,058	652,827	344,231	100	65	35
Drugs.....	479,357	253,902	225,455	100	53	47
Soap, cleaners, and toilet goods.....	302,106	167,363	134,743	100	55	45
Agricultural chemicals.....	26,985	21,277	5,708	100	79	21
Other.....	149,283	112,306	36,977	100	75	25
Primary and fabricated metals.....	1,942,214	1,484,236	457,978	100	76	24
Primary metal industries.....	1,275,533	990,625	284,908	100	78	22
Ferrous.....	855,335	732,657	122,678	100	86	14
Nonferrous.....	420,198	257,968	162,230	100	61	39
Fabricated metal products.....	666,681	493,611	173,070	100	74	26
Machinery, except electrical.....	2,308,887	1,546,343	762,544	100	67	33
Farm and garden machinery and equipment.....	126,924	90,583	36,341	100	71	29
Construction and related machinery.....	456,057	312,997	143,060	100	69	31
Office and computing machines.....	860,638	502,823	357,815	100	58	42
Other.....	865,268	639,940	225,328	100	74	26
Electric and electronic equipment.....	1,932,685	1,274,090	658,595	100	66	34
Household appliances.....	281,556	169,644	111,912	100	60	40
Radio, television, and communication equipment.....	409,987	320,321	89,666	100	78	22
Electronic components and accessories.....	263,910	157,109	106,801	100	60	40
Other.....	977,232	627,016	350,216	100	64	36
Transportation equipment.....	3,372,146	2,289,002	1,083,144	100	68	32
Motor vehicles and equipment.....	2,200,811	1,356,856	843,955	100	62	38
Other.....	1,171,335	932,146	239,189	100	80	20
Other manufacturing.....	4,086,530	2,956,983	1,129,547	100	72	28
Tobacco manufactures.....	174,893	97,993	76,900	100	56	44
Textile products and apparel.....	825,108	667,753	157,355	100	81	19
Lumber, wood, furniture, and fixtures.....	323,930	268,438	55,492	100	83	17
Paper and allied products.....	505,811	341,630	164,181	100	68	32
Printing and publishing.....	300,467	253,418	47,049	100	84	16
Rubber products.....	526,346	293,693	232,653	100	56	44
Miscellaneous plastics products.....	83,657	67,268	16,389	100	80	20
Glass products.....	201,082	131,090	69,992	100	65	35
Stone, clay, cement, and concrete.....	250,370	170,639	79,731	100	68	32
Instruments and related products.....	595,920	414,688	181,232	100	70	30
Other.....	298,946	250,373	48,573	100	84	16
Trade.....	2,925,779	2,471,642	454,137	100	84	16
Wholesale trade.....	377,044	270,993	106,051	100	72	28
Durable goods.....	176,495	129,879	46,616	100	74	26
Nondurable goods.....	200,549	141,114	59,435	100	70	30
Retail trade.....	2,548,735	2,200,649	348,086	100	86	14
Finance (except banking), insurance, and real estate.....	1,292,223	862,004	430,219	100	67	33
Finance, except banking.....	172,088	145,452	26,636	100	85	15
Insurance.....	1,002,387	694,844	307,543	100	69	31
Real estate.....	7,205	6,167	1,038	100	86	14
Holding companies.....	62,860	15,541	47,319	100	25	75
Individuals, estates, and trusts ¹	47,683		47,683	100		100
Other industries.....	3,343,422	2,820,106	523,316	100	84	16
Agriculture, forestry, and fishing.....	(^b)	24,644	(^b)	100	(^b)	(^b)
Construction.....	(^b)	283,471	(^b)	100	(^b)	(^b)
Transportation, communication, and public utilities.....	1,944,122	1,772,387	171,735	100	91	9
Transportation.....	(^b)	682,420	(^b)	100	(^b)	(^b)
Communication and public utilities.....	(^b)	1,089,967	(^b)	100	(^b)	(^b)
Services.....	901,896	739,604	162,292	100	82	18

^b Suppressed to avoid disclosure of data of individual companies.

1. Consists of U.S. parents that were individuals, estates, or trusts directly holding investments. None of these parents were required to report employment (or other financial and operating data) in the 1977 benchmark survey. No foreign affiliates are classified in this category; however, when affiliate data are classified by industry of U.S. parent, the data for affiliates of individuals, estates, and trusts are shown in this category.

only moderately higher than that for affiliates—\$9.06 compared with \$8.63.

- For affiliates, compensation rates were influenced independently by both the affiliates' country and industry; the country effects were considerably more systematic than the industry effects.

- In 27 of 30 countries examined, majority-owned foreign affiliates in manufacturing (including petroleum and coal products) paid production workers at higher rates than did all foreign manufacturing businesses combined. Nevertheless, among countries, variations in the affiliate rates tended to follow rather closely the variations in rates for all foreign businesses.

Worldwide MNC Employment

Table 1 shows worldwide MNC employment, as well as employment of U.S. parents and foreign affiliates separately. In this and subsequent tables, employment of a given parent or affiliate is measured by the average number of full- and part-time employees on its payroll during the year. Because the table focuses on the MNC as a whole, employment of both the U.S. parent and its foreign affiliates was classified in a single industry. Although it would have been desirable to base the classification on the worldwide consolidated activities of the MNC as a whole, no MNC-wide industry codes were available from the benchmark survey; instead, the industry of the U.S. parent was used.²

Worldwide employment of U.S. MNC's was 26,081,327. About two-thirds was in manufacturing. "Other industries"—agriculture, forestry, and fishing; construction; transportation, communication, and public utilities; and services—accounted for 13 percent. Trade accounted for 11 percent, and petroleum and finance (except banking), insurance, and real estate

for 5 percent each. Mining accounted for the remainder, less than 1 percent.

Among the major manufacturing industries, MNC employment was largest in "other manufacturing"—a residual category consisting of industries covered by 20 separate codes in the benchmark survey; this category accounted for nearly one-fourth of total manufacturing employment. Transportation equipment accounted for 20 percent, and the remainder was fairly evenly distributed among the other major manufacturing industries.

U.S. parents accounted for a much larger share of total MNC employment than did their foreign affiliates. Of the total, the parents accounted for 72 percent, and their affiliates for 28 percent. Among the six major industries, affiliate shares were above the 28-percent all-industries average in all but two—trade and "other industries," where affiliate shares were only 16 percent each. Within these industries, affiliate shares were particularly low in retail trade; transportation, communication, and public utilities; and services. The affiliate share was largest, at 39 percent, in mining. This reflected a particularly large share in metal mining; in coal and other nonmetallic minerals, the affiliate share was about the same as that in all industries combined.

In manufacturing, foreign affiliates accounted for 31 percent of MNC employment. Affiliate shares ranged from 24 percent in metals to 38 percent in chemicals.

U.S. Parent and All-U.S.-Business Employment Compared

U.S. parents accounted for a significant share of employment by all U.S. businesses, as measured by their shares in industries within the scope of the Census Bureau's *Enterprise Statistics* (table 2). The in-scope industries were mining, petroleum (selected subindustries), manufacturing, trade, and "other in-scope industries," which consists of construction and services (selected subindustries).³ Although,

for all U.S. businesses, the Census data are the most comparable of those available to the data for U.S. parents, some incomparability between the two data sets may exist because of differences in classification by industry or in consolidation of companies. Consequently, the comparisons discussed below should be regarded as providing rough orders of magnitude.

Of all-U.S.-business employment of 44,312,000 in the five major in-scope industries, U.S. parents accounted for 15,591,000, or 35 percent.⁴ In petroleum and manufacturing, parents' shares were over 50 percent; in mining, trade, and "other in-scope industries," their shares were much lower—under 20 percent.

In mining, the parent share was low partly because U.S. businesses classified in mining included many small, independent coal mining operators, who tended not to make direct investments abroad. Many of the U.S. companies that did make mining investments abroad were themselves primarily engaged, and classified, in industries other than mining.

The low parent shares in trade and "other in-scope industries" may also have reflected a relatively high incidence of small enterprises that generally lacked the resources or incentives to establish foreign operations. In addition, success in those industries depends upon intimate knowledge of local markets, which typically is obtained more readily by local than by U.S. (or other foreign) investors. In manufacturing and petroleum, in contrast, success often depends to a greater degree upon unique products

2. In the benchmark survey, the industry code assigned to a given parent or affiliate was that of the industry in which its sales were largest. In most cases, the MNC-wide industry code would have been the same as the parent's, because U.S. parents typically accounted for a considerably larger share of total MNC sales than did their foreign affiliates, and most affiliates were classified in the same industries as their parents. (Other tables show affiliate data classified by industry of the affiliate itself, indicating the industries of the foreign business enterprises for which the employees actually worked, rather than the industries of those enterprises' U.S. parents.)

3. The in-scope petroleum and service subindustries are listed in table 2, footnotes 2 and 3.

4. The Census *Enterprise Statistics* also contain data on wages and salaries (referred to as "annual payroll" in that publication). The data indicate that U.S. parents' share in wages and salaries paid by all U.S. businesses was higher than their share in employment—43 percent compared with 35 percent. This difference in shares indicates that wages and salaries per employee were higher for the parents. Data are not available at the enterprise level to determine to what extent the difference is due to differences in wages and salaries per hour worked or differences in hours worked per employee. In any event, the differences were relatively small except in petroleum. In that industry, wages and salaries per employee were probably depressed, relative to that of U.S. parents, by low wages and salaries of employees of retail service stations. Such employees accounted for a much larger share of all-U.S.-business employment, which included large numbers of employees of independent service station operators, than of U.S. parent employment, which was accounted for largely by employees of the major oil companies.

or processes, which have often enabled U.S. investors to penetrate foreign markets.

Within manufacturing, U.S. parents' shares of all-U.S.-business employment were by far the highest—97 and 86 percent, respectively—in chemicals and transportation equipment.⁵ Partly because of the importance of economies of scale, employment in both industries was highly concentrated among the largest firms, practically all of which had at least some direct investment abroad. The parents' share of U.S. business employment was lowest in "other manufacturing."

Industry and Country Distribution of Foreign Affiliate Employment

Industry distribution

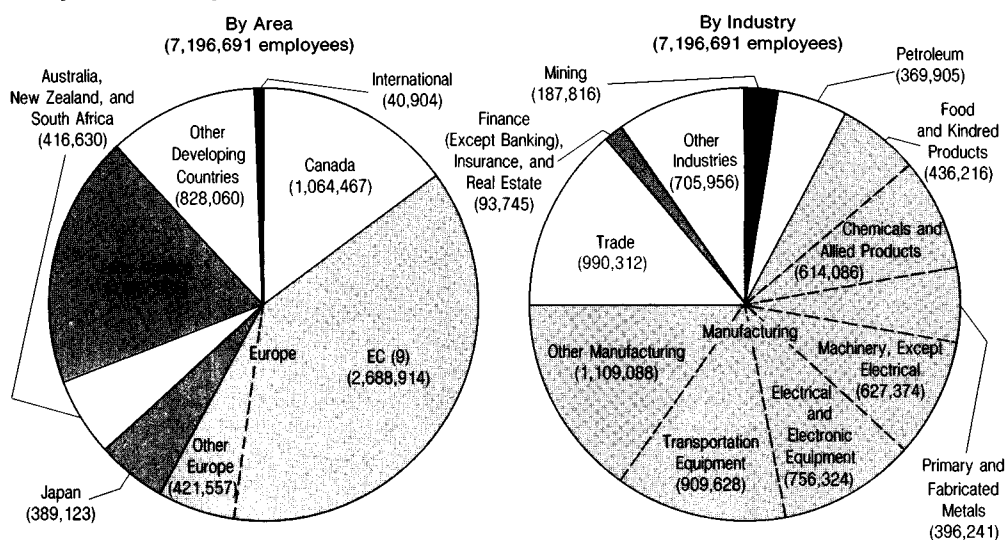
In table 3, and all subsequent tables that show data for foreign affiliates by industry, the data for affiliates are classified in the affiliates' own industries, rather than, as in table 1, in the industries of their U.S. parents. Of total affiliate employment, just over two-thirds was in manufacturing (chart 4). Trade accounted for 14 percent and "other industries" for 10 percent. Petroleum accounted for 5 percent, mining for 3 percent, and finance (except banking), insurance, and real estate for the remainder, about 1 percent.

Within manufacturing, affiliate employment was largest in "other manufacturing," which accounted for 23 percent of total manufacturing employment. Transportation equipment accounted for 19 percent, electrical machinery for 16 percent, and non-electrical machinery and chemicals for 13 percent each. Food and metals each accounted for less than 10 percent.

Among the major industries, the differences between affiliate employment classified on the two bases—by industry of affiliate and by industry of U.S. parent—were proportionately largest in mining, trade, and finance (except banking), insurance, and real estate. Employment of mining affiliates

CHART 4

Employment of Nonbank Foreign Affiliates of Nonbank U.S. Parents, 1977, by Area and by Industry



U.S. Department of Commerce, Bureau of Economic Analysis

82-2-4

ates was more than four and one-half times as large as the employment of affiliates whose U.S. parents were classified in mining. As noted earlier, a large share of U.S. direct invest-

Table 2.—Employment of U.S. Parents and All U.S. Businesses, 1977¹

	Thousands		U.S. parents as a percentage of all U.S. businesses
	U.S. parents	All U.S. businesses	
All industries.....	18,885	n.a.	n.a.
In-scope industries.....	15,591	44,312	35
Mining.....	65	409	16
Petroleum (selected subindustries) ²	849	1,448	59
Manufacturing.....	11,775	21,460	55
Food and kindred products.....	1,017	2,061	49
Chemicals and allied products.....	1,208	1,246	97
Primary and fabricated metals.....	1,484	2,762	54
Machinery, except electrical.....	1,546	2,306	67
Electrical and electronic equipment.....	1,274	2,103	61
Transportation equipment.....	2,289	2,671	86
Other manufacturing.....	2,957	8,311	36
Trade.....	2,472	16,384	15
Other in-scope industries ³	430	4,581	9
Partially in-scope industries ⁴	548	5,434	n.a.
Out-of-scope industries ⁵	2,745	n.a.	n.a.

n.a. Not available.

n.c. Not comparable.

1. All-U.S.-business data were obtained from U.S. Department of Commerce, Bureau of the Census, 1977 *Enterprise Statistics: General Report on Industrial Organization* (Washington, D.C.: U.S. GPO, 1981), table 4.

2. Includes oil and gas extraction, petroleum and coal products, petroleum wholesale trade, and gasoline service stations.

3. Includes construction; advertising; motion pictures, including television tape and film; and engineering, architectural and surveying services.

4. Includes service industries not listed in footnotes 3 or 5 as being in- or out-of-scope. These are industries for which U.S. parent data at the most disaggregated level contained both in- and out-of-scope industries. The major industries in the latter group were health (except dental laboratories), educational, and social services; U.S. businesses in these industries tended not to have significant direct investments abroad.

5. Includes petroleum industries not listed in footnote 2; finance (except banking), insurance, and real estate; agriculture, forestry, and fishing; transportation, communication, and public utilities; accounting, auditing, and bookkeeping services.

ment in mining was by parents not classified in mining. Generally, these parents either (1) did not have significant mining operations domestically, but used foreign mining affiliates as a source of raw materials, or (2) did have significant domestic mining operations, but were nevertheless classified in nonmining industries, such as petroleum and manufacturing, because their operations in those industries were even larger.

Employment of trade affiliates was more than twice as large as employment of affiliates whose U.S. parents were classified in trade. Many parents in nontrade industries, primarily manufacturing, used trade affiliates to sell goods produced by the parents or their nontrade foreign affiliates. Also, the employment data from the benchmark survey probably overstated actual employment of trade affiliates, due to a classification problem involving a large, highly diversified, minority-owned affiliate.⁶

Employment of affiliates in finance (except banking), insurance, and real estate, unlike that of mining and trade affiliates, was considerably smaller than employment of affiliates whose U.S. parents were classified in

6. When this affiliate's benchmark survey report was filed with BEA, information from its U.S. parent, which was classified in electrical machinery manufacturing, indicated that it was a wholesale trade affiliate; information obtained after the survey results had been published indicated that the affiliate probably should have been classified in electrical machinery manufacturing instead.

5. One or both of the above-mentioned comparability problems (i.e., possible differences in industry classification or company consolidation) may exist in chemicals, whose share may thus have been somewhat overstated.

that industry. One reason was that most of the employment of the foreign affiliates of a large, diversified U.S. parent classified in insurance was in electrical machinery manufacturing. Also, for U.S. parents, the finance (except banking), insurance, and real estate industry included parents classified as "individuals, estates, or trusts." There was no comparable industry category for affiliates; therefore, when employment was classified by industry of affiliate, affiliates whose parents were individuals, estates, or trusts appeared elsewhere.

Country distribution

Of total affiliate employment, 69 percent was in developed countries, 30 percent in developing countries, and 1 percent in "international." (Affiliates classified in "international" were those that had operations spanning more than one country and that were engaged in petroleum shipping, other water transportation, petroleum trading, or the operation of oil and gas drilling equipment that was moved from country to country during the year.)

Within the developed countries, 62 percent of affiliate employment was in Europe, 21 percent in Canada, and the remainder about evenly divided between Japan and Australia, New Zealand, and South Africa. The United Kingdom, Germany, and France accounted for just over two-thirds of affiliate employment in Europe.

Within the developing countries, 62 percent of affiliate employment was in Latin America, 24 percent in "other Asia and Pacific," and the remainder about evenly divided between "other Africa" and the Middle East. Brazil and Mexico alone accounted for 60 percent of affiliate employment in Latin America; Argentina, Venezuela, and Colombia accounted for an additional 20 percent.

Except for trade and "other industries," the distribution of affiliate employment among the six major industries was similar for the developed and developing countries. Trade accounted for a considerably larger share, and "other industries" for a considerably smaller share, of affiliate employment in developed than in developing countries.

The higher share of trade—both wholesale and retail—in developed countries may have reflected these countries' larger, more affluent markets. In addition, protectionist policies in some of the larger developing countries, particularly those in Latin America, may have made it difficult for U.S. MNC's to penetrate their markets through exports (which, in the importing countries, are often distributed by wholesale trade affiliates).⁷ The lower share of "other industries" in developed countries largely reflected agriculture's much lower share of affiliate employment in these countries than in the developing countries.

Manufacturing accounted for about the same shares of affiliate employment in developed and developing countries (68 and 66 percent, respectively). The distribution within manufacturing, however, differed significantly between the two groups. In particular, nonelectrical machinery and transportation equipment accounted for considerably larger shares, and food, chemicals, and electrical machinery for considerably smaller shares, of manufacturing employment in developed than in developing countries.

Geographical Concentration of Affiliate Employment

Table 4 shows the geographical concentration of affiliate employment by industry, measured by the percentage of employment in each industry accounted for by the four or eight countries in which employment was largest. The 55 industries at the lowest level of aggregation are ranked on the basis of both the four- and eight-country percentages, and the eight countries in which affiliate employment was largest are listed in descending order for each industry.

For all industries combined, four countries—the United Kingdom, Canada, Germany, and France—accounted for 44 percent of affiliate employment. (Canada and the United Kingdom alone accounted for 30 percent.) These four countries, plus

Brazil, Japan, Mexico, and Australia, accounted for 65 percent.

The high geographical concentration of employment in mining reflected a number of factors. First, economically exploitable mineral resources themselves were geographically concentrated. Second, several countries that had significant resources restricted, prohibited, or otherwise discouraged foreign investment in mining. Finally, in some countries, mining was conducted largely by affiliates that not only extracted ores, but also refined them into primary metal products. Because these affiliates' sales were largely or wholly of the refined products, the affiliates generally were classified in primary metals, rather than in mining. Employment in mining would have been somewhat less concentrated geographically if these affiliates had been classified in mining.

Among the six major industries, employment was most concentrated, based on the four-country measure, in finance (except banking), insurance, and real estate. Based on the eight-country measure, it was most concentrated in mining.

Compared with other industries, employment in finance (except banking), insurance, and real estate was much more highly concentrated in Canada and the United Kingdom, particularly the former. Whereas, in most countries, finance and insurance affiliates primarily served other parts of the same MNC, in Canada and the United Kingdom, several major affiliates primarily served individuals and unaffiliated companies. Employment of these affiliates tended to be considerably larger than that of affiliates whose operations were confined to providing services within the MNC. The concentration of these more labor intensive activities in Canada and the United Kingdom probably reflected the importance to such activities of a common language and the absence of cultural barriers, the restrictions on foreign ownership of insurance companies in a number of other countries, and the tendency for purchases of insurance to be high relative to national income in Canada.

Of the six major industries, employment was least concentrated in the heterogeneous "other industries" cat-

7. The higher share of trade in developed countries also reflected the classification problem involving a minority-owned affiliate that was mentioned in footnote 6.

Table 4.—Concentration Among Countries of Employment of Foreign Affiliates, 1977

	Number of employees	Employment accounted for by				Eight countries in which employment was largest ¹
		Four countries		Eight countries		
		Per-cent	Rank	Per-cent	Rank	
All industries	7,196,691	44.4		64.7		United Kingdom, Canada, Germany, France, Brazil, Japan, Mexico, Australia
Mining	187,816	61.8		79.2		Canada, Australia, Zambia, South Africa, Mexico, Peru, Brazil, Liberia
Metal mining	168,331	60.6		78.4		Canada, Zambia, South Africa, Australia, Peru, Mexico, Brazil, Liberia
Iron	36,994	92.3	1	99.7	1	Canada, Australia, Liberia, Brazil, Guatemala, Spain, Norway, Gabon
Copper, lead, zinc, gold, and silver	79,939	63.7	22	90.2	7	Zambia, Peru, Canada, South Africa, Mexico, Australia, Namibia, Argentina
Bauxite, other ores, and services	51,398	66.2	17	90.4	6	South Africa, Australia, Canada, Gabon, Jamaica, Botswana, Brazil, Dominican Republic
Coal and other nonmetallic minerals	19,485	87.4	2	95.6	4	Canada, Australia, Mexico, Iran, Spain, Brazil, Malaysia, Colombia
Petroleum	369,905	38.6		56.7		Canada, United Kingdom, Saudi Arabia, International, Germany, Japan, Indonesia, Trinidad and Tobago
Oil and gas extraction	96,207	43.9		61.5		Canada, Indonesia, International, United Kingdom, Libya, Norway, Iran, Nigeria
Crude petroleum (no refining) and gas	44,702	65.1	18	83.8	18	Indonesia, Canada, Libya, Trinidad and Tobago, United Kingdom, Netherlands, Norway, United Arab Emirates
Oil and gas field services	51,505	38.1	53	57.3	54	International, United Kingdom, Iran, Canada, Algeria, Norway, Saudi Arabia, Germany
Petroleum and coal products	185,613	54.8		75.4		Canada, Saudi Arabia, United Kingdom, Japan, Germany, France, Trinidad and Tobago, Italy
Integrated refining and extraction	106,088	81.5	5	98.0	2	Canada, Saudi Arabia, Germany, United Kingdom, Trinidad and Tobago, France, Bahrain, Colombia
Refining without extraction	73,427	49.0	36	65.7	47	Japan, Italy, Spain, United Kingdom, Germany, South Africa, South Korea, Netherlands
Petroleum and coal products, nec	6,098	69.0	11	82.7	20	United Kingdom, Australia, Mexico, Germany, Netherlands, South Africa, Canada, Japan
Petroleum wholesale trade	55,901	35.5	55	53.3	55	Australia, Sweden, United Kingdom, Japan, Brazil, South Africa, Ireland, Greece
Other	32,184	75.3	6	86.3	13	International, Germany, Netherlands, United Kingdom, Brazil, Canada, Lebanon, Israel
Manufacturing	4,848,957	46.8		67.8		United Kingdom, Canada, Germany, Brazil, France, Mexico, Japan, Spain
Food and kindred products	436,216	42.4		63.0		Canada, United Kingdom, Dominican Republic, Mexico, Brazil, Philippines, Germany, France
Grain mill and bakery products	90,050	45.4	45	69.4	42	Canada, United Kingdom, Italy, France, Mexico, Spain, Brazil, Australia
Beverages	56,198	40.8	51	66.8	46	Canada, Mexico, United Kingdom, Brazil, Philippines, South Africa, Thailand, Spain
Other	289,968	47.0	39	67.5	45	Canada, United Kingdom, Dominican Republic, Philippines, Mexico, Brazil, Germany, Venezuela
Chemicals and allied products	614,086	42.4		63.4		United Kingdom, Brazil, Canada, Mexico, Germany, France, India, Japan
Industrial chemicals and synthetics	223,900	48.3	38	70.3	39	Canada, Brazil, Mexico, United Kingdom, Germany, Japan, Netherlands, Belgium
Drugs	178,257	36.7	54	59.4	52	United Kingdom, Brazil, India, Mexico, Italy, France, Germany, Argentina
Soap, cleaners, and toilet goods	117,639	42.9	50	67.7	44	United Kingdom, Canada, Mexico, France, Brazil, Germany, Japan, Italy
Agricultural chemicals	27,794	51.9	34	71.5	38	India, Brazil, Canada, Australia, South Korea, Argentina, France, Netherlands
Other	66,496	52.9	31	73.5	32	United Kingdom, Canada, France, Brazil, Mexico, Japan, Belgium, Germany
Primary and fabricated metals	396,241	51.1		76.2		United Kingdom, Canada, France, Germany, Mexico, Spain, Brazil, Australia
Primary metal industries	171,915	53.0		75.1		United Kingdom, Spain, France, Canada, Mexico, Brazil, Germany, Australia
Ferrous	67,011	63.7	21	86.8	11	Spain, Canada, Mexico, Brazil, France, United Kingdom, Germany, Italy
Nonferrous	104,904	55.1	30	73.4	33	United Kingdom, France, Mexico, Australia, Canada, India, Surinam, Germany
Fabricated metal products	224,326	59.7	25	80.2	25	Canada, United Kingdom, Germany, Mexico, Brazil, France, Netherlands, Australia
Machinery, except electrical	622,374	58.7		81.2		United Kingdom, France, Germany, Canada, Brazil, Italy, Japan, Mexico
Farm and garden machinery and equipment	59,647	66.3	16	88.5	10	United Kingdom, Germany, France, Belgium, Brazil, Australia, Argentina, Mexico
Construction and related machinery	151,972	55.4	29	80.0	26	United Kingdom, France, Brazil, Germany, Japan, Canada, Italy, Australia
Office and computing machines	206,488	64.8	19	88.7	9	France, Germany, United Kingdom, Canada, Japan, Italy, Netherlands, Brazil
Other	209,267	59.1	26	83.0	19	United Kingdom, Canada, France, Brazil, Germany, Italy, Mexico, Japan
Electric and electronic equipment	756,324	38.3		62.1		United Kingdom, Canada, Germany, Brazil, Mexico, Taiwan, Spain, Italy
Household appliances	117,026	66.6	15	84.6	17	Canada, United Kingdom, Germany, Australia, Brazil, Mexico, Spain, Italy
Radio, television, and communication equipment	249,869	46.7	40	73.3	34	Germany, United Kingdom, Spain, Italy, Taiwan, Brazil, France, Belgium
Electronic components and accessories	219,036	46.3	42	68.8	43	Taiwan, Mexico, Malaysia, United Kingdom, Singapore, France, Hong Kong, Germany
Other	170,393	48.7	37	72.0	36	Brazil, Canada, United Kingdom, Mexico, India, Belgium, Spain, France
Transportation equipment	909,628	60.2		82.4		Germany, United Kingdom, Canada, France, Brazil, Australia, Japan, Mexico
Motor vehicles and equipment	838,041	58.7	27	82.6	21	United Kingdom, Germany, Canada, France, Brazil, Australia, Japan, Mexico
Other	71,587	85.5	3	97.6	3	Germany, Canada, Spain, France, Italy, Taiwan, Brazil, United Kingdom
Other manufacturing	1,109,088	47.1		66.6		Canada, United Kingdom, Brazil, Mexico, France, Germany, Japan, Australia
Tobacco manufactures	51,754	44.3	48	64.2	48	United Kingdom, Brazil, Pakistan, Netherlands, Germany, Canada, Venezuela, Mexico
Textile products and apparel	142,089	51.5	35	72.1	35	Canada, Philippines, United Kingdom, Mexico, Belgium, Venezuela, Brazil, France
Lumber, wood, furniture, and fixtures	57,779	64.3	20	79.9	27	Canada, United Kingdom, Philippines, Brazil, South Africa, Indonesia, France, Singapore
Paper and allied products	161,456	56.6	28	75.4	31	Canada, Brazil, United Kingdom, France, Mexico, Australia, Netherlands, Germany
Printing and publishing	33,971	70.0	8	85.2	14	United Kingdom, Canada, Mexico, Australia, Germany, France, Hong Kong, Italy
Rubber products	183,074	46.1	44	63.0	50	United Kingdom, Canada, Japan, Brazil, Mexico, Spain, France, Germany
Miscellaneous plastics products	38,694	44.3	47	71.2	37	Brazil, United Kingdom, Germany, Canada, France, Mexico, Belgium, Australia
Glass products	68,198	52.5	32	76.5	29	United Kingdom, Canada, Germany, Japan, Brazil, France, Venezuela, Argentina
Stone, clay, cement, and concrete	82,892	46.1	43	69.9	40	Canada, United Kingdom, Mexico, France, Italy, Germany, Brazil, Japan
Instruments and related products	176,720	61.6	24	81.6	23	United Kingdom, Germany, Canada, France, Japan, Italy, Brazil, Mexico
Other	112,461	46.7	41	69.5	41	Canada, United Kingdom, Mexico, Germany, Brazil, France, Hong Kong, Taiwan
Trade	990,312	59.1		74.9		Canada, Japan, United Kingdom, France, Germany, Australia, Mexico, Belgium
Wholesale trade	564,615	50.2		65.3		Japan, United Kingdom, Canada, Germany, France, Switzerland, Italy, Australia
Durable goods	341,035	39.5	52	58.9	53	United Kingdom, Canada, Germany, Japan, France, Switzerland, Australia, Belgium
Nondurable goods	223,580	67.3	13	76.3	30	Japan, United Kingdom, France, Germany, Canada, Iran, Switzerland, Brazil
Retail trade	425,697	72.0	7	89.7	8	Canada, United Kingdom, France, Mexico, Australia, Japan, Germany, Brazil
Finance (except banks), insurance, and real estate	93,745	63.5		76.7		Canada, United Kingdom, Austria, Japan, Australia, Germany, Brazil, Venezuela
Finance, except banking	24,273	69.9	9	85.0	15	Canada, United Kingdom, Australia, Japan, Germany, Venezuela, France, Brazil
Insurance	61,920	68.9	12	79.5	28	Canada, United Kingdom, Austria, Japan, Brazil, Germany, Australia, Netherlands
Real estate	1,527	67.0	14	84.8	16	Canada, Hong Kong, Dominican Republic, Bahamas, Australia, France, Indonesia, Spain
Holding companies	6,025	63.4	23	86.3	12	Venezuela, Hong Kong, United Kingdom, Belgium, Philippines, Canada, Panama, Switzerland
Other industries	705,966	35.6		49.3		Canada, United Kingdom, Brazil, France, Saudi Arabia, Germany, Liberia, Australia
Agriculture, forestry, and fishing	130,403	52.3	33	80.5	24	Liberia, Philippines, Honduras, Costa Rica, Indonesia, Panama, Guatemala, Mexico
Construction	179,447	43.7	49	64.0	49	Canada, Brazil, Saudi Arabia, Iran, France, United Kingdom, Australia, Italy
Transportation, communication, and public utilities	88,049	69.5		80.3		Canada, International, Germany, Spain, Colombia, Netherlands, United Kingdom, Dominican Republic
Transportation	48,098	69.2	10	82.3	22	International, Canada, Colombia, Germany, United Kingdom, Australia, Saudi Arabia, Brazil
Communication and public utilities	39,951	82.1	4	91.7	5	Canada, Germany, Spain, Dominican Republic, Netherlands, Barbados, Bolivia, Philippines
Services	308,057	44.7	46	60.3	51	Canada, United Kingdom, France, Germany, Brazil, Saudi Arabia, Australia, Mexico

1. Countries are listed in descending order of affiliate employment.

egory. Low concentration in that category primarily reflected concentration of the various subindustries in different countries, rather than low geographical concentration in individual subindustries. For instance, in agriculture, forestry, and fishing, none of the eight countries in which affiliate employment was largest were included in the analogous list of countries for construction. Aside from "other industries," employment was least concentrated in petroleum. U.S. MNC's in petroleum had extensive operations in many countries, including both developed countries, where affiliates were primarily engaged in refining and distribution, and developing countries, where they were primarily engaged in exploration for and extraction of crude oil. (In a few countries, such as Canada and the United Kingdom, affiliates conducted significant operations of both types.)

Within manufacturing, employment was most concentrated in transportation equipment and in nonelectrical machinery. The high concentration in these industries may have reflected the large scale of operations characteristic of the production of goods such as automobiles, farm and indus-

trial machinery, and computers. U.S. investment in the automobile manufacturing industry, for instance, was concentrated in a few countries that were large consumers of autos and possessed the various resources needed to produce them on an efficient scale.

Manufacturing employment was least concentrated in food products and chemicals. The low concentration in food may have partly reflected protectionist agricultural policies that, in many countries, have indirectly favored local processing of domestic agricultural products. It may also have reflected limited opportunities for economies of scale, and spoilage and high transportation cost that may have arisen if production had been more highly concentrated. In chemicals, especially pharmaceuticals, U.S. investors may have decided to produce in a number of countries partly to facilitate compliance with the particular regulatory requirements of each country. In petrochemicals, the low concentration may have reflected need for proximity to geographically dispersed petroleum resources or refineries.

Size Distribution of Employment

Table 5 shows, by industry, the number of parents and affiliates, and their respective employment, in each of several employment size classes, together with three summary statistics for total employment in each industry—the mean, median, and coefficient of variation. In this table, the "total" of U.S. parents and foreign affiliates refers only to the number that had employees. There were 3,058 parents and 20,670 affiliates that had employees, and 367 parents and 2,971 affiliates that had no employees.⁸

8. Practically all of the parents that had no employees were individuals, estates, or trusts, none of which were required to report employment (or any other financial and operating data) in the benchmark survey. The affiliates that had no employees were spread over a number of industries. When no employment was reported for an affiliate, BEA generally contacted the U.S. parent company to determine why. In many cases, it was found that labor services for the affiliate had been contracted out to another company, usually another of the parent's foreign affiliates. For instance, several affiliates engaged in oil and gas extraction did not carry employees on their own payrolls, but instead used the employees of affiliates in the oil and gas field services industry on a contractual basis.

Table 5.—Distribution of Employment Among U.S. Parents and

	Line	Size classes											
		Number											
		Total ¹		1-10		11-100		101-1,000		1,001-10,000		Over 10,000	
		Parents or affiliates	Employ- ees	Parents or affiliates	Employ- ees	Parents or affiliates	Employ- ees	Parents or affiliates	Employ- ees	Parents or affiliates	Employ- ees	Parents or affiliates	Employees
U.S. Parents													
All Industries	1	3,058	8,884,636	155	493	324	16,336	1,083	476,564	1,085	3,749,538	411	14,641,705
Mining	2	29	65,342	2	(^b)	5	200	8	4,936	13	(^b)	1	(^b)
Petroleum	3	157	890,511	16	63	27	1,199	46	19,182	47	155,487	21	714,580
Manufacturing	4	1,838	11,775,031	6	28	113	7,048	708	313,588	735	2,496,486	276	8,957,881
Food and kindred products	5	112	1,016,702	0	0	4	264	35	15,291	45	189,860	28	811,287
Chemicals and allied products	6	194	1,207,675	0	0	15	967	75	35,420	63	225,063	41	946,225
Primary and fabricated metals	7	277	1,484,236	0	0	24	1,467	110	48,007	112	423,945	31	1,010,817
Machinery, except electrical	8	320	1,546,343	0	0	19	1,318	137	60,420	135	435,235	29	1,049,370
Electric and electronic equipment	9	223	1,274,090	2	(^b)	9	(^b)	85	38,638	102	327,146	25	907,707
Transportation equipment	10	84	2,289,002	1	(^b)	3	(^b)	13	7,079	34	118,806	33	2,162,954
Other manufacturing	11	628	2,956,983	3	(^b)	39	(^b)	253	108,733	244	776,431	89	2,069,521
Trade	12	374	2,471,642	32	156	104	4,661	136	50,835	62	209,337	40	2,206,653
Finance (except banking), insurance, and real estate	13	244	862,004	84	177	31	1,280	49	22,330	58	217,434	22	620,783
Other industries	14	416	2,820,106	15	(^b)	44	1,948	136	65,693	170	(^b)	51	(^b)
Foreign Affiliates													
All industries	15	20,670	7,196,691	3,119	16,147	9,053	384,760	7,169	2,331,163	1,261	3,035,055	68	1,429,566
Mining	16	237	187,816	27	120	68	3,016	98	36,590	43	(^b)	1	(^b)
Petroleum	17	1,371	369,905	340	1,504	603	25,772	355	117,548	70	174,398	3	50,683
Manufacturing	18	9,437	4,848,957	416	2,447	3,324	162,854	4,749	1,612,416	900	2,140,792	48	930,448
Food and kindred products	19	823	436,216	30	170	258	12,601	439	156,381	93	210,228	3	56,836
Chemicals and allied products	20	2,192	614,086	92	524	886	42,648	1,090	334,492	123	(^b)	1	(^b)
Primary and fabricated metals	21	1,080	396,241	58	316	445	21,806	504	166,712	71	(^b)	2	(^b)
Machinery, except electrical	22	1,247	627,374	77	446	454	22,254	588	196,048	122	(^b)	6	(^b)
Electric and electronic equipment	23	976	756,324	33	232	252	13,572	539	213,024	142	360,301	10	169,195
Transportation equipment	24	458	909,628	14	72	84	4,410	245	97,319	94	295,382	21	512,445
Other manufacturing	25	2,661	1,109,088	112	687	945	45,563	1,344	448,440	255	557,304	5	57,094
Trade	26	5,505	990,312	1,404	7,961	3,069	110,291	908	238,173	114	291,087	10	342,800
Finance (except banking), insurance, and real estate	27	1,030	93,745	422	1,606	423	15,517	168	46,788	17	29,834	0	0
Other industries	28	3,090	705,956	510	2,509	1,566	67,310	891	279,648	117	(^b)	6	(^b)

¹ Less than 0.5 percent.

^b Suppressed to avoid disclosure of data of individual companies.

1. Refers only to parents and affiliates that had employees. There were 367 parents and 2971 affiliates that had no employees. See text for discussion.

U.S. parents

Employment of U.S. parents was highly skewed toward the larger companies. Parents having over 1,000 employees accounted for 97 percent of the employment of all parents, but for only about one-half of the number of parents. Parents in the largest employment size class—over 10,000 employees—accounted for 78 percent of the employment of parents, but for only 13 percent of the number. In every industry except mining, where the proportion was much lower, parents in the largest employment size class accounted for at least two-thirds of total employment. The proportion was highest, at 94 percent, in transportation equipment. The dominance of the larger companies in the U.S. parent data reflected the considerable technological, managerial, financial, and other resources ordinarily required to establish and sustain foreign operations.

Employment of all U.S. businesses, like that of U.S. parents, was also highly skewed toward the larger companies. However, the larger companies accounted for a much lower share of total employment for all U.S. businesses than for U.S. parents. Of

all U.S. businesses covered by *Enterprise Statistics*, those with at least 1,000 employees accounted for 43 percent, and those with at least 10,000 employees for 29 percent, of total employment; a negligible proportion of the number of U.S. businesses fell into each of these employment size classes.⁹

For all industries combined, mean, or average, employment of U.S. parents was 6,175. Among the six major industries, average employment was lowest in mining (2,253) and highest in "other industries" (6,779), followed closely by trade (6,609) and manufacturing (6,406). The high average employment in "other industries" was partly due to the very high employment of a few parents in communications.

Within manufacturing, average employment of U.S. parents was by far the highest—27,250—in transportation equipment, which contained most of the Nation's largest manufacturers of automobiles, trucks, aircraft, and

parts. It was lowest—4,709—in "other manufacturing."

The median employment of parents was 948, compared with the average employment of 6,175. The large difference reflected the above-mentioned highly skewed character of the universe. For each industry shown in table 5 as well, median employment was considerably lower than average employment.

Among the six major industries, median employment ranged from 180 in finance (except banking), insurance, and real estate to 1,242 in manufacturing. Within manufacturing, it ranged from 1,051 in nonelectrical machinery to 6,436 in transportation equipment.

The coefficient of variation—the ratio of the standard deviation to the mean—indicates the relative dispersion of parent or affiliate employment around the average; the larger the coefficient, the higher the dispersion. For all parents, the coefficient was about 2. Among the six major industries, it ranged from 1.5 in mining to 5.8 in "other industries." The high dispersion in "other industries" apparently reflected the diversity of activities included in that industry, rather than diversity among compa-

9. U.S. Department of Commerce, Bureau of the Census, 1977 *Enterprise Statistics: General Report on Industrial Organization* (Washington, D.C.: U.S. GPO, 1981), p. 146.

Foreign Affiliates, by Industry and Employment Size Class, 1977

Size classes												Summary statistics			Line
		Percent										Number of employees		Coefficient of variation	
Total		1-10		11-100		101-1,000		1,001-10,000		Over 10,000		Mean	Median		
Parents or affiliates	Employees	Parents or affiliates	Employees	Parents or affiliates	Employees	Parents or affiliates	Employees	Parents or affiliates	Employees	Parents or affiliates	Employees				
100	100	5	(*)	11	(*)	35	3	36	20	13	78	6,175	948	2.08	1
100	100	7	(b)	17	(*)	28	8	45	(b)	3	(b)	2,253	984	1.50	2
100	100	10	(*)	17	(*)	29	2	30	18	13	80	5,672	652	3.06	3
100	100	(*)	(*)	6	(*)	39	3	40	21	15	76	6,406	1,242	3.23	4
100	100	(*)	(*)	4	(*)	31	2	40	19	25	80	9,078	2,525	1.61	5
100	100	(*)	(*)	8	(*)	39	3	33	19	21	78	6,225	1,272	1.89	6
100	100	(*)	(*)	9	(*)	40	3	40	29	11	68	5,358	1,126	2.60	7
100	100	(*)	(*)	6	(*)	43	4	42	28	9	68	4,832	1,051	2.94	8
100	100	1	(b)	4	(b)	38	3	46	26	11	71	5,713	1,294	3.58	9
100	100	1	(b)	4	(b)	16	(*)	41	5	39	94	27,250	6,436	2.61	10
100	100	1	(b)	6	(b)	40	4	39	26	14	70	4,709	1,141	2.04	11
100	100	9	(*)	28	(*)	36	2	17	9	11	89	6,609	201	4.37	12
100	100	34	(*)	13	(*)	20	3	24	25	9	72	3,533	180	2.99	13
100	100	4	(b)	11	(*)	33	2	41	(b)	12	(b)	6,779	1,150	5.78	14
100	100	15	(*)	44	5	35	32	6	42	(*)	20	348	66	4.87	15
100	100	11	(*)	29	2	41	20	18	(b)	(*)	(b)	792	180	2.63	16
100	100	25	(*)	44	7	26	32	5	47	(*)	14	270	43	3.89	17
100	100	4	(*)	35	3	50	33	10	44	1	19	514	150	3.55	18
100	100	4	(*)	31	3	53	36	11	48	(*)	13	530	184	2.83	19
100	100	4	(*)	40	7	50	55	6	(b)	(*)	(b)	280	123	1.90	20
100	100	5	(*)	41	6	47	42	7	(b)	(*)	(b)	367	116	2.76	21
100	100	6	(*)	36	4	47	31	10	(b)	1	(b)	503	130	2.85	22
100	100	3	(*)	26	2	55	28	15	48	1	22	775	256	2.68	23
100	100	3	(*)	18	1	54	11	21	33	5	56	1,986	361	3.13	24
100	100	4	(*)	36	4	51	40	10	50	(*)	5	417	149	2.17	25
100	100	26	1	56	11	17	24	2	29	(*)	35	180	25	11.27	26
100	100	41	2	41	17	16	50	2	32	(*)	(*)	91	18	3.02	27
100	100	17	(*)	51	10	29	40	4	(b)	(*)	(b)	228	50	3.56	28

nies engaged in similar activities. Within manufacturing, the coefficient ranged from 1.6 in food to 3.6 in electrical machinery.

Foreign affiliates

Employment of affiliates, like that of parents, was skewed toward the larger companies, although not to the same extent.¹⁰ Also, foreign affiliates tended to have much lower employment than their U.S. parents. For the typical MNC, employment of the parent greatly exceeded the combined employment of its foreign affiliates, which was, in turn, usually spread among several individual affiliates.

More than 60 percent of affiliate employment was accounted for by affiliates that had over 1,000 employees; these affiliates accounted for only 6 percent of the total number of affiliates. The affiliates in the largest size class—over 10,000 employees—accounted for 20 percent of the employment, but for only a negligible proportion of the number, of all affiliates.

Among the six major industries, the proportion of employment accounted for by affiliates that had over 1,000 employees was highest—around 80 percent—in mining and lowest—less than one-third—in finance (except banking), insurance, and real estate. In manufacturing, the proportion was highest—nearly 90 percent—in transportation equipment and lowest—less than 40 percent—in chemicals. Although economies of scale were important in both industries, they appeared less so in chemicals. Also, much more labor intensive techniques were employed in transportation equipment than in chemicals, as can be seen by comparing the value of affiliates' net property, plant, and equipment per employee in the two industries. It was \$8,917 in transpor-

Table 6.—Employment in Manufacturing (Including Petroleum and Coal Products) by All Manufacturing Establishments and by Foreign Affiliates in 10 Developed Countries, 1977

[Thousands of employees, or percent]

	All manufacturing establishments	All affiliates in manufacturing	Majority-owned affiliates in manufacturing	Foreign affiliates as percentage of all manufacturing establishments	
				All affiliates	Majority-owned affiliates
Belgium.....	966	120	95	12	10
Canada.....	1,714	657	597	38	35
Denmark.....	468	11	9	2	2
France.....	10,467	368	298	4	3
Germany.....	8,383	498	439	6	5
Italy.....	4,910	175	151	4	3
Japan.....	12,066	202	40	2	*
Netherlands.....	1,060	100	75	9	7
Sweden.....	969	26	19	3	2
United Kingdom.....	13,462	829	723	6	5

*Less than 0.5 percent.

NOTE.—Estimates for manufacturing establishments were prepared by the Office of Productivity and Technology, Bureau of Labor Statistics, U.S. Department of Labor. Definition and coverage of employment by all manufacturing establishments differ slightly among countries.

tation equipment, compared with \$24,988 in chemicals.

Affiliates in the two smallest size classes (100 or fewer employees) accounted for only 6 percent of employment, although they accounted for nearly 60 percent of the total number of affiliates. The proportion of employment accounted for by affiliates in these size classes exceeded 10 percent in only two industries—finance (except banking), insurance, and real estate (18 percent) and trade (12 percent). Both industries contained many affiliates established to perform some limited function, requiring only a few employees, within the MNC.

Average employment for affiliates in all industries combined was 348. Among the six major industries, average employment ranged from 91 in finance (except banking), insurance, and real estate to 792 in mining. Within manufacturing, it ranged from 280 in chemicals to 1,986 in transportation equipment.

Reflecting the skewed distribution, median employment of affiliates, at 66, was considerably lower than average employment. Among the six major industries, median employment ranged from 18 in finance (except banking), insurance, and real estate to 180 in mining. Within manufacturing, it ranged from 116 in primary and fabricated metals to 361 in transportation equipment.

The coefficient of variation of employment for affiliates was 4.9, much higher than that for U.S. parents. The higher dispersion of affiliate em-

ployment reflected wider variation in market size for affiliates, which were spread among many countries, than for parents, which, by definition, were all in the United States. It may also have reflected wider variation among foreign countries than within the United States in several other determinants of company size—such as relative prices of factors of production, availability of skilled labor and trained management, ability to utilize available technology, government regulations, and infrastructure.

Among the six major industries, the coefficient of variation ranged from 2.6 in mining to 11.3 in trade.¹¹ Within manufacturing, it ranged from 1.9 in chemicals to 3.1 in transportation equipment.

Affiliates' Shares of Total Foreign Manufacturing Employment

In table 6, affiliate employment in manufacturing is compared with employment by all manufacturing establishments in 10 developed countries for which consistently defined, reasonably comparable data were readily available. To conform to the treatment in the data for all manufacturing establishments, the petroleum

10. Differences in skewness could not confidently be ascertained by inspection of table 5 alone because of the limited number of size classes and differences between parents and affiliates in average employment. Instead, Karl Pearson's measure of skewness was used. The measure is 3 multiplied by the difference between the mean and the median, all divided by the standard deviation. Positive values indicate positive skewness; negative values, negative skewness. By definition, the measure cannot exceed 3 in absolute value; in practice, values larger than 1 are said to be uncommon. The measure had a value of 1.22 for parents and 0.50 for affiliates. See Frederick E. Croxton and Dudley J. Cowden, *Practical Business Statistics* (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960), p. 259.

11. The coefficient for trade was significantly inflated by the previously mentioned misclassification of a minority-owned affiliate in wholesale trade. However, even if the affiliate's classification could have been corrected, trade would still have shown the most variable employment of any major industry.

and coal products industry, which is normally included in the petroleum industry in the MNC data, was included in manufacturing in this table.¹² One comparability problem that could not be resolved was that the data covering all foreign manufacturing were for *establishments* classified in manufacturing, whereas the data for affiliates were for *enterprises*, or companies, classified in manufacturing. (A given enterprise may have consisted of several establishments, not necessarily all in manufacturing.) Although the difference in classification is likely to have caused only minor problems at the all-manufacturing level, it more or less precluded detailed comparisons for industries within manufacturing.¹³

Table 6 shows affiliate employment both for all foreign affiliates and for majority-owned foreign affiliates (MOFA's)—i.e., affiliates that were owned over 50 percent by their U.S. parents and that were thus presumed to be unambiguously under parent control.¹⁴

The share of all affiliates in total foreign manufacturing employment was considerably higher in Canada, at 38 percent, than in any of the nine other countries. Both Canada's proximity to, and strong economic ties with, the United States probably contributed to the particularly high affiliate share. The next highest affiliate shares were in Belgium (12 percent) and the Netherlands (9 percent). The lowest shares were in Denmark and Japan (2 percent in each).

Shares for the MOFA's were highest and lowest in the same countries as shares for all affiliates. In most cases, the shares were only moderately lower for MOFA's than for all af-

filates, because MOFA's generally accounted for a large share of all-affiliate employment in manufacturing. A notable exception was in Japan, where the MOFA share of all-affiliate employment was only about 20 percent. The unusually low MOFA share in Japan largely reflected that country's restrictions, which had only recently been liberalized, on majority ownership by foreigners. It also reflected the existence of a few large minority-owned Japanese affiliates in which the purpose of U.S. parents' investment was primarily to further trading relationships, rather than to control the enterprises.

Although comparable data covering developing countries could not be obtained, rough estimates were made for a few countries using data published by the Bureau of Labor Statistics.¹⁵ The estimates were constructed by multiplying the number of persons in the labor force by the percentage of the labor force engaged in manufacturing. The estimates overstate manufacturing employment to the extent that the labor force data included unemployed persons. Also, inconsistencies in coverage and definitions appeared larger for these countries than for the 10 developed countries shown in table 6. Although none of these comparability problems can be quantified or corrected here, the estimates nevertheless roughly indicate the relative shares of affiliates in total manufacturing employment in developing countries. These shares were about 11 percent in Venezuela, 9 percent in Mexico, 4 percent in Taiwan, and 1 percent in both Israel and Korea.

Compensation Per Hour of Production Workers in Manufacturing

Table 7 shows compensation per hour worked (CPH) by production workers in manufacturing and in petroleum and coal products for both U.S. parents and their MOFA's.¹⁶

The compensation rates indicate comparative levels of employer labor costs. They do not reliably indicate relative living standards of workers for several reasons, including the fact that prices of goods and services, particularly those not traded internationally, vary greatly among countries. Also, it should be noted that CPH indicates only labor cost per unit of time worked, not per unit of output. The two measures may vary independently because of variations in productivity. Estimates of unit labor costs will be derivable after BEA has completed a project to estimate gross product originating in (i.e., value added by) U.S. parents and their MOFA's.

For U.S. parents in manufacturing, CPH of production workers was \$8.76. For parents in petroleum and coal products, it was slightly higher, at \$9.06. Within manufacturing, CPH ranged from \$6.50 in food to \$11.44 in transportation equipment.

For foreign affiliates in manufacturing, CPH of production workers was \$4.92. For affiliates in petroleum and coal products, it was markedly higher, at \$8.63. Within manufacturing, CPH ranged from \$3.42 in food to \$6.14 in transportation equipment.

In every industry shown in table 7, CPH was lower for foreign affiliates than for U.S. parents. This probably reflected the tendency for overall compensation rates in most foreign countries to be lower than in the United States, whether the comparison is restricted to U.S. MNC's or not.

In manufacturing, affiliate CPH was 56 percent of that for U.S. parents. In petroleum and coal products, it was 95 percent of the parent rate; the average rate for affiliates in this industry was boosted by the very high compensation of employees who possessed specific scarce skills, for which the market was effectively international, or who were willing to work under difficult or hazardous conditions, often in remote areas. Within manufacturing, affiliate CPH as a percentage of parent CPH ranged from 49 percent in electrical machinery to 71 percent in nonelectrical machinery. The higher percentage in nonelectrical machinery largely reflected the particularly high concentration of affiliate employment in that industry in developed countries where, as noted below, rates were

12. Because of the importance of petroleum affiliates in the direct investment universe and the need for analyzing the petroleum industry as a whole, the various stages of petroleum production—exploration, extraction, refining, and distribution—usually are treated as components of a single major industry group (petroleum) in direct investment statistics. In most other statistics, the various stages are classified in different groups—extraction is included in mining, refining in manufacturing, and so forth.

13. See Betty L. Barker, "A Profile of U.S. Multinational Companies in 1977," SURVEY 61 (October 1981): 42-45.

14. The coverage of the data for MOFA's was restricted to those having assets, sales, or net income of at least \$3 million; this restriction facilitated comparisons with other data in the benchmark survey that were collected only for these affiliates. The coverage lost by this restriction was small (only about 3 percent of total MOFA employment).

15. U.S. Department of Labor, Bureau of Labor Statistics, *Handbook of Labor Statistics* (Washington, D.C.: U.S. GPO, December 1980), table 177.

16. Data needed to compute CPH in other industries were collected in the benchmark survey, but they were not considered to be of publishable quality (see *U.S. Direct Investment Abroad, 1977*, p. 12). Because the number, hours worked, and compensation of production workers were not collected for minority-owned affiliates, CPH of their production workers could not be computed.

Table 7.—Compensation per Hour of Production Workers of U.S. Parents and Majority-Owned Foreign Affiliates in Manufacturing, 1977, Country by Industry

[Dollars per hour]

	Manufacturing								Addendum—petroleum and coal products
	Total	Food and kindred products	Chemicals and allied products	Primary and fabricated metals	Machinery, except electrical	Electric and electronic equipment	Transportation equipment	Other manufacturing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
U.S. parents	8.76	6.50	8.45	10.05	8.59	7.36	11.44	7.16	9.06
Foreign affiliates, all countries	4.92	3.42	5.10	5.67	6.13	3.60	6.14	4.70	8.63
Developed countries	6.34	5.46	6.53	6.81	6.86	5.88	6.71	6.00	9.57
Canada	8.31	6.95	8.27	9.81	9.03	7.15	9.29	7.80	10.72
Europe	5.89	4.97	6.26	5.70	6.57	5.76	6.17	5.37	8.98
European Communities (9)	5.95	5.09	6.42	5.68	6.53	5.86	6.28	5.37	(^b)
Belgium	8.00	7.30	10.44	7.04	9.30	8.22	(^b)	(^b)	13.08
Denmark	6.42	4.92	(^b)	(^b)	(^b)	7.51	(^b)	(^b)	(^b)
France	7.04	6.40	6.11	6.50	7.89	6.80	7.73	6.19	(^b)
Germany	8.42	7.38	8.97	7.49	9.08	7.51	8.90	8.06	12.66
Ireland	3.36	2.61	5.06	2.68	3.22	2.90	(^b)	3.40	(^b)
Italy	5.83	5.92	6.25	5.42	6.41	5.89	5.93	5.28	9.17
Luxembourg	8.97	(^b)	(^b)	(^b)	8.04	(^b)	(^b)	(^b)	(^b)
Netherlands	8.14	7.92	9.05	7.29	8.59	6.98	(^b)	(^b)	13.50
United Kingdom	3.84	3.58	3.85	3.73	4.27	3.90	3.88	3.59	5.17
Other Europe	5.30	3.72	4.95	6.02	7.23	5.33	4.81	5.37	(^b)
Austria	6.58	4.36	(^b)	(^b)	(^b)	(^b)	(^b)	8.31	(^b)
Greece	2.73	(^b)	3.80	(^b)	(^b)	2.68	(^b)	2.48	(^b)
Norway	9.16	(^b)	7.83	(^b)	(^b)	(^b)	(^b)	8.50	(^b)
Portugal	2.39	2.30	(^b)	(^b)	(^b)	(^b)	(^b)	2.47	(^b)
Spain	4.82	3.83	4.92	4.79	4.45	5.07	4.90	4.44	(^b)
Sweden	9.13	(^b)	10.11	8.04	11.00	(^b)	8.45	(^b)	(^b)
Switzerland	7.24	(^b)	7.49	(^b)	8.80	7.87	(^b)	7.06	(^b)
Turkey	2.99	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other	2.26	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Japan	7.37	6.58	6.11	7.91	8.61	6.07	(^b)	5.93	(^b)
Australia, New Zealand, and South Africa	4.55	3.91	4.85	3.80	4.81	3.69	5.31	3.99	7.42
Australia	6.10	6.14	6.25	5.35	6.45	6.20	6.18	5.79	12.21
New Zealand	3.12	2.89	3.10	(^b)	4.19	2.65	(^b)	(^b)	(^b)
South Africa	1.80	1.24	2.06	2.10	2.95	1.55	(^b)	(^b)	4.14
Developing countries	1.74	1.00	2.52	2.36	2.53	1.10	2.91	1.77	6.67
Latin America	2.17	1.16	2.73	2.39	2.96	1.63	3.00	2.17	4.45
South America	2.47	1.88	2.78	2.54	3.05	1.82	2.97	2.27	(^b)
Argentina	2.28	1.22	2.16	2.37	3.25	1.66	3.29	1.93	(^b)
Brazil	2.37	1.91	3.03	2.25	3.02	1.75	2.69	1.99	(^b)
Chile	2.30	(^b)	4.12	1.97	(^b)	(^b)	(^b)	(^b)	(^b)
Colombia	2.00	1.78	1.61	(^b)	(^b)	(^b)	(^b)	2.59	(^b)
Ecuador	1.94	1.92	1.62	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Peru	2.24	1.65	1.82	(^b)	(^b)	1.50	(^b)	2.75	(^b)
Venezuela	3.63	2.75	4.11	3.28	(^b)	2.89	4.42	3.97	(^b)
Other	2.50	1.02	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Central America	1.93	(^b)	2.57	1.96	2.59	1.42	3.13	(^b)	4.45
Mexico	2.06	1.60	2.68	1.96	2.59	1.46	3.15	2.04	(^b)
Panama	2.13	(^b)	2.56	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other	1.08	(^b)	1.59	1.91	(^b)	1.10	(^b)	(^b)	3.82
Other Western Hemisphere	.51	(^b)	3.19	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Bahamas	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Bermuda	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Netherlands Antilles	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Trinidad and Tobago	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other	(^b)	(^b)	4.54	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other Africa	1.30	.43	1.84	(^b)	(^b)	1.17	(^b)	(^b)	(^b)
Saharan	3.63	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	4.21	(^b)
Egypt	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Libya	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other	4.02	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	4.21	(^b)
Sub-Saharan	1.16	.43	1.86	(^b)	(^b)	1.17	(^b)	(^b)	(^b)
Liberia	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Nigeria	2.05	(^b)	2.21	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other	(^b)	.42	1.35	(^b)	(^b)	.84	(^b)	(^b)	(^b)
Middle East	4.08	(^b)	3.98	(^b)	(^b)	3.13	(^b)	(^b)	10.32
Israel	4.70	(^b)	4.70	(^b)	(^b)	3.44	(^b)	(^b)	(^b)
OPEC	2.93	(^b)	3.21	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Iran	(^b)	(^b)	3.28	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other	1.19	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Other Asia and Pacific	.82	.55	1.37	(^b)	(^b)	.77	1.57	.74	3.07
Hong Kong	1.27	(^b)	3.29	(^b)	.66	1.28	(^b)	1.43	(^b)
India	.88	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
Indonesia	.78	(^b)	1.06	(^b)	(^b)	.45	(^b)	1.01	(^b)
Malaysia	.67	(^b)	1.74	(^b)	(^b)	.58	(^b)	(^b)	(^b)
Philippines	.57	.48	1.23	(^b)	(^b)	.48	(^b)	(^b)	(^b)
Singapore	.97	(^b)	(^b)	(^b)	1.78	.80	(^b)	(^b)	4.41
South Korea	1.39	(^b)	(^b)	(^b)	(^b)	1.47	(^b)	(^b)	(^b)
Taiwan	.68	1.15	(^b)	(^b)	(^b)	.62	(^b)	.65	(^b)
Thailand	.65	.82	1.61	(^b)	(^b)	(^b)	(^b)	1.09	(^b)
Other	.88	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)	(^b)
International									
Addendum—OPEC	2.91	2.68	3.22	3.24	(^b)	1.51	4.42	3.05	(^b)

^bSuppressed to avoid disclosure of data of individual companies.

generally much higher than in developing countries.

For all affiliates in manufacturing, CPH was much higher in developed countries than in developing countries—\$6.34 compared with \$1.74. CPH also varied considerably among the countries within each area group, but there was relatively little overlap in rates between the groups; thus, only a few of the highest rates for individual developing countries exceeded

Table 8.—Analysis of Variance of Compensation Per Hour of Production Workers of Majority-Owned Foreign Affiliates in Manufacturing, 1977

Source of variation	Line	Sum of squares	Degrees of freedom	Mean square ¹	F ratio ²
All countries					
Total.....	1	7,408	308		
Mean, rows, and columns.....	2	6,987	63		
Partial analysis of mean-row-column variation: ³					
Increment supplied by rows (countries).....	3	2,031	56	36.27	21.10
Increment supplied by columns (industries).....	4	61	6	10.08	5.87
Residual.....	5	421	245	1.72	
Developed countries					
Total.....	6	6,268	147		
Mean, rows, and columns.....	7	6,004	29		
Partial analysis of mean-row-column variation: ³					
Increment supplied by rows (countries).....	8	741	22	33.67	15.05
Increment supplied by columns (industries).....	9	35	6	5.81	2.60
Residual.....	10	264	118	2.24	
Developing countries					
Total.....	11	1,140	161		
Mean, rows, and columns.....	12	989	40		
Partial analysis of mean-row-column variation: ³					
Increment supplied by rows (countries).....	13	216	33	6.54	5.24
Increment supplied by columns (industries).....	14	32	6	5.33	4.27
Residual.....	15	151	121	1.25	

Note.—Data are from table 7.

¹ Sum of squares divided by degrees of freedom.

² Ratio of row or column mean square to residual mean square.

³ Because some cells in table 7 contain no data, it is not possible to factor the mean-row-column variation neatly into mean effects, row effects, and column effects. See Franklin A. Graybill, *An Introduction to Linear Statistical Models*, Vol. I (New York: McGraw-Hill Book Co., Inc., 1961), Chapter 13 ("Two-Way Classification with Unequal Numbers in Subclasses").

ed the lowest rates for individual developed countries.

In petroleum and coal products, the rates were much closer together—\$9.57 and \$6.67, respectively. In the developing countries, many employees in petroleum had been recruited from developed countries, because workers with their specific skills were not available locally. Thus, their compensation rates did not reflect local labor market conditions but rather buoyant conditions in an international market for workers with such skills. Often the rates these workers were paid included a premium needed to induce them to work in a foreign country. This appeared particularly true of the Middle East, which accounted for a large share of employment of affiliates in petroleum and coal products.

Inspection of table 7 suggests that the differences in CPH among countries for all manufacturing industries combined also extended across industries within manufacturing. Thus, they were not exclusively due to differences in the extent to which employment was concentrated in high- or low-wage industries. For example, CPH was higher in Canada than in the United Kingdom in all seven manufacturing industries shown in the table. Although the difference in any given industry may have reflected differences in mix among subindustries, the overall pattern more likely reflected the fact that labor was not homogeneous internationally, and that world markets were not sufficiently integrated to eliminate inter-country differences in prices of the various factors of production, including labor.

Table 7 also suggests, although more tentatively, that differences in CPH among manufacturing industries tended to extend across country lines. One reason may be that, because of differences in technology or other factors, workers in some industries were more likely to be highly skilled (or, in some instances, highly organized) than those in other industries, regardless of the country in which they were employed.

To confirm and quantify these country and industry effects on CPH, statistical analysis of variance (AOV) was applied to the rates shown in table 7 for individual countries and for individual industries within man-

Table 9.—Compensation Per Hour of Production Workers in Manufacturing (Including Petroleum and Coal Products) in Selected Countries, 1977

[Dollars]		
	All foreign businesses	Majority-owned foreign affiliates
Selected developed countries:		
Canada.....	7.55	8.42
Belgium.....	8.38	8.11
Denmark.....	7.28	6.67
France.....	5.42	7.09
Germany.....	7.70	8.53
Ireland.....	3.24	3.38
Italy.....	5.13	5.98
Luxembourg.....	8.31	8.97
Netherlands.....	8.11	8.28
United Kingdom.....	3.34	3.87
Austria.....	5.19	6.58
Greece.....	1.91	2.73
Norway.....	8.49	9.48
Portugal.....	1.58	2.39
Spain.....	3.19	4.82
Sweden.....	8.85	9.13
Switzerland.....	6.87	7.24
Turkey.....	.80	3.18
Japan.....	4.03	7.37
Australia.....	5.77	6.19
New Zealand.....	3.24	3.11
Selected developing countries:		
Brazil.....	1.46	2.37
Mexico.....	1.75	2.06
Venezuela.....	2.20	3.63
Hong Kong.....	.99	1.27
India.....	.32	.88
Israel.....	2.68	4.70
Singapore.....	.82	1.07
South Korea.....	.63	1.39
Taiwan.....	.66	.69

Note.—Estimates for all foreign businesses are unpublished ones prepared by the Office of Productivity and Technology, Bureau of Labor Statistics, U.S. Department of Labor.

ufacturing.¹⁷ The AOV results indicated the existence of country differences in CPH over and above those that might have been due to differences among countries in the industry distribution of employment. This is shown by the highly significant F

(continued on p. 60)

17. The routine used was one specifically applicable to a table such as table 7, in which some of the cells contain no data. See Franklin A. Graybill, *An Introduction to Linear Statistical Models*, Vol. I (New York: McGraw-Hill Book Co., Inc., 1961), Chapter 13 ("Two-Way Classification with Unequal Numbers in Subclasses").

The hypotheses tested using AOV were (1) that the row (country) means computed from table 7 were equal to one another, and (2) that the column (industry) means were equal. (Subtotals were excluded in computing the means.) If, for instance, the hypothesis of equal row (country) means were accepted, then systematic differences among countries in CPH in each industry would have been ruled out as an explanation for differences at the all-industries level, and the presumption would have been that these differences resulted from differences in industry mix. If, however, the hypothesis were rejected (as was in fact the case), then one would have concluded that, whatever the effect of industry mix, systematic differences among countries in CPH in each industry had an effect on the differences at the all-industries level.

Pollution Abatement and Control Expenditures, 1972-80

REAL spending for pollution abatement and control (PAC) showed almost no change in 1980, compared with a 1-percent increase in 1979 and a 5-percent average annual rate of increase during 1972-79 (chart 5). According to the PAC fixed-weighted price index, prices for goods and services increased 13 percent in 1980, more than in any year since 1974.

This article discusses real PAC spending and prices in 1980 and evaluates the limited data available for 1981. It also presents revised estimates of PAC spending for 1972-79, and discusses trends in real spending since 1972.

PAC expenditures are for the reduction of pollutant emissions and the collection and disposal of solid wastes by means acceptable to Federal, State, and local authorities. PAC expenditures consist of those for pollution abatement (PA), which reduce pollutant emissions directly, plus expenditures for regulation and monitoring and for research and development, which lead indirectly to the reduction of emissions. Expenditures for other aspects of environmental control, such as expenditures for natural resource conservation or protection of endangered species, are excluded. Pollutants are defined as substances and other emissions (e.g., noise) that degrade the quality of air or water shared by all.

Real PAC spending in 1980.—In sharp contrast to the increase in each of the previous 9 years for which estimates are available, real spending for PAC showed almost no change in 1980. Air PAC spending increased 7 percent, to \$11.2 billion, and solid waste PAC spending increased 1 per-

cent, to \$4.5 billion. Water PAC spending fell to \$10.9 billion, a 7-percent decrease.

Most of the \$0.8 billion increase in air PAC spending was for purchases of motor vehicle emission abatement devices. This change in purchases of abatement devices is shown in table 1 as increases in personal consumption expenditures for durables and in business expenditures on capital account; it appears in table 2 under business capital account, and in table 6 under mobile sources. Although unit sales of motor vehicles decreased, relatively expensive improvements in abatement devices caused a near-record increase in spending for them. The improvements were in both catalytic and noncatalytic devices on 1980 model year cars and light-duty trucks. Even more expensive improvements, including the addition of computer-like electronic equipment that regulates engine operation, were made on many 1981 model year cars, which

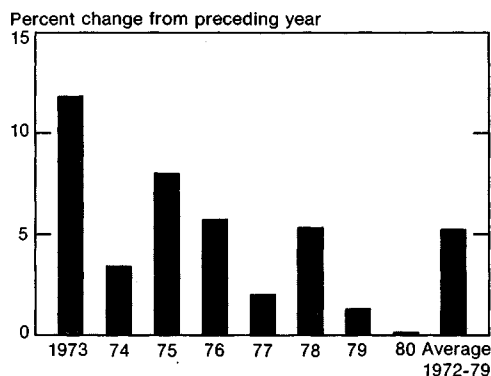
were sold in the fourth quarter of 1980.¹

The remaining increase in air PAC spending was for industrial plant and equipment and spending by business on current account. The only significant decrease in air PAC spending was in personal consumption expenditures for nondurables (operation of emission abatement devices on motor vehicles).

Most of the increase in solid waste PAC was in current-account expenditures (labor, materials, and services).² Small increases in spending for capital and for regulation and monitoring were more than offset by a decrease in State and local government spending for solid waste collection and disposal.

Of the \$0.8 billion decrease in water PAC spending, one-half was in construction of public sewer systems. This change in spending for sewer construction is shown as a decrease in government enterprise fixed capital in table 1, is shown separately in table 2, and is shown in table 7 as part of spending for public sewer systems and private connectors. This decrease occurred despite a 1979 increase in Federal funding (table 4). State and local long-term borrowing for public sewer systems decreased in

CHART 5
Percent Change in Real PAC Expenditures



U.S. Department of Commerce, Bureau of Economic Analysis

82-2-5

1. Catalytic devices use noble metal (e.g., rhodium) catalysts to decrease carbon monoxide and hydrocarbon emissions; advanced devices also decrease nitrogen oxide emissions.

2. Solid waste PAC, i.e., the collection and disposal of solid waste by acceptable means, is contrasted in table 8 with related solid waste series. For further discussion, see Gary L. Rutledge and Susan L. Trevathan, "Pollution Abatement and Control Expenditures, 1972-79," *SURVEY OF CURRENT BUSINESS* 61 (March 1981): 27.

1978 and decreased sharply in 1979, the result of persistently high interest rates.

More than one-half of the remaining decrease in water PAC spending

was to install private septic systems and connectors to public sewers (residential systems), shown in table 2. This change in residential system spending reflects the decrease in resi-

dential construction activity in 1980. The remainder of the decrease was in industrial plant and equipment spending for PA and spending on current account to operate PA plant and

Table 1.—Expenditures for Pollution Abatement and Control in Current and Constant Dollars and Selected Implicit Price Deflators ¹

	Line	1972 ^r					1973 ^r					1974 ^r				
		Total	Air	Water	Solid waste	Other and unallocated ²	Total	Air	Water	Solid waste	Other and unallocated ²	Total	Air	Water	Solid waste	Other and unallocated ²
Millions of current dollars																
Pollution abatement and control.....	1	18,434	6,482	8,727	3,462	-236	21,930	8,321	10,089	3,745	-225	26,261	10,446	11,634	4,373	-193
Pollution abatement ³	2	17,245	5,808	8,440	3,421	-424	20,537	7,572	9,731	3,697	-463	24,678	9,665	11,235	4,311	-533
Personal consumption.....	3	1,536	1,536				2,065	2,065				2,667	2,667			
Durable goods.....	4	476	476				670	670				690	690			
Nondurable goods and services.....	5	1,060	1,060				1,395	1,395				1,977	1,977			
Business.....	6	10,960	4,153	4,957	2,277	-428	13,097	5,378	5,770	2,419	-470	15,527	6,840	6,354	2,870	-537
On capital account.....	7	5,399	2,366	2,723	310		6,766	3,264	3,158	344		7,436	3,810	3,205	421	
On current account.....	8	5,561	1,787	2,235	1,967	-428	6,331	2,114	2,612	2,075	-470	8,091	3,029	3,149	2,450	-537
Private.....	9	4,838	1,764	1,107	1,967		5,459	2,085	1,299	2,074		6,994	2,973	1,572	2,450	
Government enterprise.....	10	1,151	23	1,128	(*)	(*)	1,342	29	1,313	(*)	(*)	1,635	56	1,577	(*)	2
Costs recovered.....	11	-428				-428	-470				-470	-538				-538
Government.....	12	4,749	119	3,483	1,144	3	5,375	129	3,961	1,278	6	6,484	158	4,881	1,441	4
Federal.....	13	139	56	75	5	3	203	47	133	16	6	294	56	196	39	4
State and local.....	14	1,311	(*)	171	1,140	(*)	1,433	(*)	171	1,262	(*)	1,591	(*)	189	1,403	(*)
Government enterprise fixed capital.....	15	3,299	63	3,237			3,738	82	3,657			4,598	102	4,496		
Regulation and monitoring.....	16	367	143	144	14	66	490	165	190	18	117	595	183	247	27	138
Federal.....	17	200	48	79	9	64	278	50	99	14	115	346	52	135	22	138
State and local.....	18	167	95	66	5	2	212	115	91	4	2	248	131	112	5	(*)
Research and development.....	19	823	531	142	27	122	903	583	168	30	122	988	599	153	35	202
Private.....	20	519	411	64	12	32	569	451	73	10	35	608	492	57	13	46
Federal.....	21	205	104	34	6	62	269	126	62	11	69	342	100	78	17	146
State and local.....	22	99	17	44	10	28	65	6	33	9	18	39	7	18	5	9
Millions of constant (1972) dollars																
Pollution abatement and control.....	23	18,434	6,482	8,727	3,462	-236	20,603	7,832	9,459	3,489	-177	21,307	8,092	9,659	3,640	-85
Pollution abatement ³	24	17,245	5,808	8,440	3,421	-424	19,298	7,130	9,124	3,445	-401	19,951	7,428	9,315	3,587	-378
Personal consumption.....	25	1,536	1,536				1,965	1,965				2,116	2,116			
Durable goods.....	26	476	476				670	670				651	651			
Nondurable goods and services.....	27	1,060	1,060				1,295	1,295				1,465	1,465			
Business.....	28	10,960	4,153	4,957	2,277	-428	12,330	5,042	5,441	2,254	-407	12,372	5,186	5,182	2,387	-382
On capital account.....	29	5,399	2,366	2,723	310		6,435	3,124	2,981	330		6,200	3,164	2,683	353	
On current account.....	30	5,561	1,787	2,235	1,967	-428	5,895	1,918	2,460	1,925	-407	6,172	2,022	2,499	2,034	-382
Private.....	31	4,838	1,764	1,107	1,967		5,039	1,893	1,221	1,925		5,259	1,996	1,230	2,034	
Government enterprise.....	32	1,151	23	1,128	(*)	(*)	1,263	25	1,239	(*)	(*)	1,296	26	1,269	(*)	1
Costs recovered.....	33	-428				-428	-407				-407	-383				-383
Government.....	34	4,749	119	3,483	1,144	3	5,002	123	3,683	1,190	6	5,463	127	4,133	1,200	3
Federal.....	35	139	56	75	5	3	190	45	124	16	6	245	44	165	32	3
State and local.....	36	1,311	(*)	171	1,140	(*)	1,330	(*)	155	1,175	(*)	1,305	(*)	137	1,168	(*)
Government enterprise fixed capital.....	37	3,299	63	3,237			3,482	78	3,404			3,913	82	3,831		
Regulation and monitoring.....	38	367	143	144	14	66	456	154	177	17	109	515	157	214	23	121
Federal.....	39	200	48	79	9	64	259	47	92	13	107	303	45	118	19	121
State and local.....	40	167	95	66	5	2	197	107	85	3	2	212	112	96	4	(*)
Research and development.....	41	823	531	142	27	122	849	548	158	28	115	840	507	130	30	173
Private.....	42	519	411	64	12	32	535	424	69	9	33	512	415	48	11	39
Federal.....	43	205	104	34	6	62	253	118	59	11	65	294	86	67	15	126
State and local.....	44	99	17	44	10	28	61	6	31	8	17	34	6	16	4	8
Selected implicit price deflators ⁴																
Pollution abatement and control.....	45	100.0	100.0	100.0	100.0	100.0	106.4	106.2	106.7	107.3	112.4	123.3	129.1	120.4	120.1	129.8
Pollution abatement.....	46	100.0	100.0	100.0	100.0	100.0	106.4	106.2	106.7	107.3	115.4	123.7	130.1	120.6	120.2	140.4
Personal consumption.....	47	100.0	100.0				105.1	105.1				126.0	126.0			
Business.....	48	100.0	100.0	100.0	100.0	100.0	106.2	106.7	106.1	107.3	115.5	125.5	131.9	122.6	120.3	140.6
On capital account.....	49	100.0	100.0	100.0	100.0		105.1	104.5	105.9	104.5		119.9	120.4	119.4	119.2	
On current account.....	50	100.0	100.0	100.0	100.0	100.0	107.4	110.2	106.2	107.8	115.5	131.1	149.8	126.0	120.5	140.6
Government.....	51	100.0	100.0	100.0	100.0	100.0	107.4	105.2	107.5	107.4	106.7	118.7	125.1	118.1	120.1	121.3
Regulation and monitoring.....	52	100.0	100.0	100.0	100.0	100.0	107.4	107.5	107.3	107.2	107.4	115.4	116.2	115.5	115.0	114.3
Research and development.....	53	100.0	100.0	100.0	100.0	100.0	106.4	106.4	106.2	106.5	106.3	117.6	118.2	116.9	117.1	116.7
Addendum: Business capital consumption allowance (millions of dollars) ⁵																
Valued at replacement cost in current dollars.....	54	1,831					2,195					2,839				
Valued at replacement cost in constant (1972) dollars.....	55	1,831					2,094					2,391				

^r Revised.

^p Preliminary.

^{*} Less than \$500,000.

¹ Includes expenditures for air and water pollution abatement and control. Includes expenditures for solid waste collection and disposal by means acceptable to Federal, State, and local authorities. Excludes agricultural production of crops and livestock except feedlots.

² "Other" includes expenditures for abatement and control of noise, radiation, and pesticide pollution; "unallocated" includes business expenditures not assigned to media.

³ Expenditures are attributed to the sector that performs the air or water pollution abatement or solid waste collection and disposal.

⁴ Current-dollar estimates divided by constant-dollar estimates.

⁵ To facilitate conversion of expenditures to a cost basis.

equipment. The only significant increases in water PAC spending were current-account spending by government enterprises and spending for regulation and monitoring; together these increased almost \$0.1 billion.

Prices in 1980.—Prices of PAC goods and services, according to both the chain and fixed-weighted price indexes, increased 13.5 percent in 1980,

compared with 12.8 percent in 1979 (table 3). The acceleration of price change in 1980 was general, i.e., across most goods and services purchased for PAC.

Both the chain and fixed-weighted indexes are measures of pure price change in that they do not allow the composition of purchases to change and possibly obscure the effect of

price movement. The chain index is based on the composition of PAC purchases in the immediately preceding year and the fixed-weighted index is based on their composition in 1972.

Prices of air PAC goods and services increased substantially more than those for other types of PAC in 1980, reflecting a relatively high concentration of energy purchases in air

Table 1.—Expenditures for Pollution Abatement and Control in Current

	Line	1975 ^r					1976 ^r					1977 ^r				
		Total	Air	Water	Solid waste	Other and unallo- cated ²	Total	Air	Water	Solid waste	Other and unallo- cated ²	Total	Air	Water	Solid waste	Other and unallo- cated ²
Millions of																
Pollution abatement and control	1	30,923	12,840	13,561	4,741	-219	34,681	14,162	15,513	5,286	-280	37,962	15,581	16,838	5,828	-285
Pollution abatement ³	2	29,167	12,053	13,117	4,666	-669	32,677	13,279	15,006	5,220	-828	35,652	14,536	16,268	5,750	-903
Personal consumption	3	3,463	3,463				3,994	3,994				4,311	4,311			
Durable goods	4	1,361	1,361				1,821	1,821				2,166	2,166			
Nondurable goods and services	5	2,102	2,102				2,173	2,173				2,145	2,145			
Business	6	18,134	8,403	7,349	3,075	-692	20,335	9,029	8,653	3,539	-887	22,761	9,930	9,862	3,933	-965
On capital account	7	8,832	4,790	3,627	415		9,469	4,774	4,229	466		10,101	4,956	4,625	520	
On current account	8	9,302	3,613	3,722	2,660	-692	10,866	4,255	4,424	3,074	-887	12,660	4,975	5,237	3,413	-965
Private	9	8,100	3,568	1,872	2,659		9,533	4,197	2,262	3,074		11,022	4,915	2,694	3,413	
Government enterprise	10	1,896	45	1,850	(*)	1	2,221	58	2,162	(*)	1	2,603	60	2,543	(*)	1
Costs recovered	11	-693				-693	-887				-887	-966				-966
Government	12	7,570	188	5,768	1,591	23	8,348	256	6,353	1,681	59	8,580	295	6,406	1,817	62
Federal	13	432	88	271	50	23	472	105	257	52	59	490	106	279	43	62
State and local	14	1,752	1	210	1,541	(*)	1,834	1	204	1,629	(*)	1,963	1	188	1,774	(*)
Government enterprise fixed capital	15	5,387	100	5,287			6,042	150	5,892			6,128	188	5,939		
Regulation and monitoring	16	653	206	279	32	136	725	203	328	28	167	833	241	370	39	182
Federal	17	381	66	153	26	136	402	69	151	21	162	429	80	146	26	177
State and local	18	272	139	126	6	(*)	323	135	177	7	5	404	161	224	14	5
Research and development	19	1,103	581	165	43	315	1,279	680	180	39	381	1,478	803	200	39	436
Private	20	608	464	69	22	52	706	543	78	20	65	849	653	92	21	83
Federal	21	448	108	77	15	248	528	131	84	14	299	578	144	90	14	330
State and local	22	47	8	19	6	14	45	6	18	4	17	51	7	18	4	23
Millions of constant																
Pollution abatement and control	23	23,008	9,119	10,300	3,672	-83	24,325	9,546	10,985	3,902	-108	24,800	9,805	11,031	4,065	-101
Pollution abatement ³	24	21,644	8,514	9,952	3,613	-435	22,868	8,912	10,613	3,854	-511	23,230	9,104	10,641	4,012	-527
Personal consumption	25	2,589	2,589				2,857	2,857				2,945	2,945			
Durable goods	26	1,184	1,184				1,489	1,489				1,683	1,683			
Nondurable goods and services	27	1,405	1,405				1,368	1,368				1,262	1,262			
Business	28	13,057	5,793	5,340	2,378	-454	13,789	5,884	5,850	2,610	-555	14,315	5,977	6,165	2,740	-568
On capital account	29	6,662	3,596	2,758	308		6,762	3,425	3,008	329		6,760	3,357	3,063	340	
On current account	30	6,395	2,197	2,582	2,070	-454	7,027	2,459	2,842	2,281	-555	7,555	2,621	3,103	2,400	-568
Private	31	5,520	2,177	1,273	2,070		6,138	2,433	1,424	2,281		6,550	2,595	1,555	2,400	
Government enterprise	32	1,330	20	1,309	(*)	(*)	1,444	26	1,418	(*)	1	1,574	25	1,548	(*)	1
Costs recovered	33	-455				-455	-555				-555	-569				-569
Government	34	5,998	133	4,612	1,235	19	6,221	171	4,763	1,243	44	5,970	181	4,476	1,271	42
Federal	35	332	61	214	38	19	339	68	189	38	44	323	61	191	30	41
State and local	36	1,344	(*)	147	1,197	(*)	1,349	1	142	1,206	(*)	1,359	1	117	1,242	(*)
Government enterprise fixed capital	37	4,322	71	4,251			4,534	103	4,432			4,288	120	4,169		
Regulation and monitoring	38	517	162	221	26	109	538	149	242	21	126	577	166	255	27	129
Federal	39	305	53	122	21	108	303	52	114	16	122	304	57	103	18	126
State and local	40	213	109	99	5	(*)	234	98	128	5	3	274	109	152	9	3
Research and development	41	847	443	127	33	244	920	485	130	28	277	993	535	135	26	297
Private	42	461	352	52	17	40	501	385	55	14	46	562	433	61	14	55
Federal	43	348	84	60	11	192	385	95	61	10	218	394	98	61	10	225
State and local	44	38	6	15	5	11	35	5	14	3	13	37	5	13	3	17
Selected implicit																
Pollution abatement and control	45	134.4	140.8	131.7	129.1	141.3	142.6	148.4	141.2	135.5	149.1	153.1	158.9	152.6	143.4	159.0
Pollution abatement	46	134.8	141.6	131.8	129.1	151.3	142.9	149.0	141.4	135.5	158.0	153.5	159.7	152.9	143.3	168.5
Personal consumption	47	133.8	133.8				139.8	139.8				146.4	146.4			
Business	48	138.9	145.1	137.6	129.3	152.4	147.5	153.5	147.9	135.6	159.9	159.0	166.1	160.0	143.5	169.9
On capital account	49	132.6	133.2	131.5	134.8		140.0	139.4	140.6	141.6		147.4	147.6	151.0	152.9	
On current account	50	145.5	164.4	144.2	128.5	152.4	154.6	173.0	155.7	134.7	159.9	167.6	189.8	168.8	142.2	169.9
Government	51	126.2	141.4	125.1	128.9	124.0	134.2	149.3	133.4	135.2	134.0	143.7	162.7	143.1	142.9	149.0
Regulation and monitoring	52	126.2	127.1	126.3	125.7	125.0	134.8	136.0	135.3	134.1	132.6	144.2	145.3	145.1	143.1	141.3
Research and development	53	130.3	131.2	129.5	129.8	129.1	139.0	140.1	138.2	138.5	137.4	148.9	150.1	148.1	148.1	147.1
Addendum: Business capital consumption																
Valued at replacement cost in current dollars	54	3,578					4,282					5,061				
Valued at replacement cost in constant (1972) dollars	55	2,713					3,066					3,413				

See footnotes on page 51.

PAC. The largest increase was in air PAC prices of nondurables, which include gasoline. Prices of all other energy goods and services continued to increase at high rates in 1980; prices of PAC goods other than energy accelerated moderately.

The implicit price deflator for PAC increased 13.1 percent in 1980, com-

pared with 12.9 percent in 1979. It measures the average price of PAC purchases in each year and changes in it reflect not only changes in prices but also shifts in the composition of purchases from year to year.

Real PAC spending in 1981.—The limited information available as of January indicates that the level of

real spending, and also the pattern of component changes, in 1981 were about the same as in 1980. A large increase in air PAC spending in 1981 once again offset a large decrease in water PAC. The increase was mainly for the purchase of the expensive improvements in motor vehicle emission abatement devices on model year 1981

and Constant Dollars and Selected Implicit Price Deflators ¹—Continued

1978 ^a					1979 ^a					1980 ^a					Line
Total	Air	Water	Solid waste	Other and unallocated ²	Total	Air	Water	Solid waste	Other and unallocated ²	Total	Air	Water	Solid waste	Other and unallocated ²	
current dollars															
43,015	17,132	19,671	6,605	-394	49,188	20,517	21,610	7,658	-596	55,661	25,435	22,324	8,671	-769	1
40,433	15,925	19,047	6,515	-1,055	46,390	19,217	20,944	7,533	-1,304	52,592	24,058	21,569	8,517	-1,552	2
4,649	4,649				5,475	5,475				7,020	7,020				3
2,412	2,412				2,741	2,741				3,643	3,643				4
2,237	2,237				2,734	2,734				3,378	3,378				5
25,409	10,993	11,011	4,479	-1,075	29,571	13,374	12,267	5,289	-1,359	34,020	16,560	13,039	6,031	-1,610	6
10,809	5,261	4,966	582		12,039	6,026	5,290	724		13,085	7,103	5,149	833		7
14,599	5,732	6,045	3,897	-1,075	17,531	7,348	6,977	4,566	-1,359	20,935	9,457	7,890	5,198	-1,610	8
12,626	5,660	3,069	3,897		15,363	7,242	3,556	4,566		18,465	9,309	3,958	5,197		9
3,048	72	2,976	(*)	(*)	3,528	106	3,421	(*)	1	4,080	148	3,932	(*)	(*)	10
-1,075				-1,075	-1,360				-1,360	-1,610				-1,610	11
10,375	283	8,036	2,036	20	11,344	368	8,677	2,244	55	11,552	478	8,530	2,486	58	12
472	90	316	47	19	548	103	347	48	50	504	100	298	56	50	13
2,208	(*)	218	1,989	1	2,459	(*)	257	2,196	6	2,731	(*)	293	2,430	8	14
7,695	193	7,502			8,338	265	8,073			8,318	378	7,940			15
949	276	405	55	213	1,067	300	425	86	257	1,297	340	528	111	318	16
507	93	186	28	201	593	100	232	37	225	786	125	330	51	280	17
442	183	219	28	12	474	200	193	49	32	511	215	198	60	38	18
1,633	931	219	35	449	1,731	1,001	241	39	451	1,772	1,037	227	43	465	19
985	777	99	16	93	1,099	888	103	11	96	1,124	900	110	15	99	20
592	146	104	16	326	564	105	118	24	317	570	130	90	25	325	21
57	8	17	4	29	69	8	19	4	38	79	7	27	4	41	22
(1972) dollars															
26,108	10,065	11,851	4,342	-150	26,438	10,406	11,718	4,501	-188	26,468	11,185	10,945	4,538	-200	23
24,474	9,313	11,451	4,284	-574	24,765	9,648	11,315	4,426	-623	24,728	10,410	10,516	4,451	-649	24
2,990	2,990				2,990	2,990				3,304	3,304				25
1,740	1,740				1,833	1,833				2,255	2,255				26
1,250	1,250				1,158	1,158				1,049	1,049				27
14,867	6,160	6,353	2,941	-586	15,327	6,465	6,391	3,124	-653	15,406	6,877	6,031	3,176	-678	28
6,729	3,352	3,031	347		6,813	3,517	2,908	388		6,775	3,799	2,577	399		29
8,138	2,808	3,322	2,594	-586	8,514	2,948	3,483	2,735	-653	8,631	3,078	3,454	2,777	-678	30
7,022	2,780	1,648	2,594		7,383	2,916	1,732	2,735		7,481	3,039	1,666	2,777		31
1,703	28	1,675	(*)	(*)	1,783	32	1,751	(*)	(*)	1,828	39	1,788	(*)	(*)	32
-587				-587	-653				-653	-678				-678	33
6,617	163	5,098	1,344	12	6,448	192	4,924	1,303	30	6,019	229	4,485	1,275	29	34
288	48	198	30	11	297	48	194	28	27	249	44	149	30	25	35
1,417	(*)	102	1,314	1	1,392	(*)	115	1,275	3	1,365	(*)	116	1,245	4	36
4,913	115	4,798			4,759	144	4,615			4,405	185	4,220			37
620	179	263	36	142	652	181	259	52	160	736	191	300	62	183	38
340	62	125	19	134	372	63	145	23	141	455	72	191	30	162	39
280	116	139	17	8	280	118	114	29	19	281	118	109	33	21	40
1,014	574	137	22	282	1,021	578	144	24	275	1,004	584	129	25	266	41
604	476	61	10	57	628	508	59	6	55	630	505	61	8	56	42
373	92	65	10	206	349	65	73	15	196	328	75	52	14	187	43
38	5	11	3	19	43	5	12	2	24	46	4	16	2	24	44
price deflators ⁴															
164.8	170.2	166.0	152.1	171.3	186.0	197.2	184.4	170.1	188.7	210.3	227.4	204.0	191.1	211.8	45
165.2	171.0	166.3	152.1	182.9	187.3	199.2	185.1	170.2	207.3	212.7	231.1	205.1	191.4	235.7	46
155.5	155.5				183.1	183.1				212.5	212.5				47
170.9	178.5	173.3	152.3	183.3	192.9	206.9	191.9	169.3	208.3	220.8	240.8	216.2	189.9	237.4	48
160.6	157.0	163.9	167.9		176.7	171.3	181.9	186.3		193.1	187.0	199.8	208.8		49
179.4	204.1	181.9	150.2	183.3	205.9	249.2	200.3	166.9	208.3	242.6	307.2	228.4	187.2	237.4	50
156.8	173.4	157.6	151.5	163.7	175.9	191.4	176.2	172.3	185.3	191.9	208.5	190.2	195.0	197.0	51
153.2	154.8	154.0	153.5	149.7	163.5	165.6	163.7	165.1	160.3	176.2	178.3	176.2	177.9	173.6	52
161.0	162.3	159.9	159.3	159.0	169.6	173.2	166.8	164.8	163.9	176.5	177.7	175.6	174.5	174.7	53
allowance (millions of dollars) ⁵															
5,939					7,066					8,332					54
3,746					4,067					4,369					55

passenger cars and light-duty trucks, although business private purchases on current account also increased. The large decrease in water PAC resulted largely from the continued decline in construction of public sewer systems. Business spending on capital account for water decreased for the third consecutive year. Solid waste collection and disposal spending increased, but was largely offset by a decrease in "other and unallocated" spending.

Revisions in real spending, 1972-79.—The PAC spending series is revised annually to incorporate improvements in methods and, less frequently, in sources. This year's revisions are upward and average about 1

percent of total PAC spending (table 5). They are largely due to the substantial improvement in estimates of the net stocks of industrial plant and equipment for air and water PA. These estimates, to be published separately by BEA later this year, have been used to reestimate air and water PA spending on current account by "other nonmanufacturing" (table 2).³ The most significant of several other improvements is the incorporation of revised estimates of plant and equip-

ment expenditures for air and water PA.⁴

Real PAC spending during 1972-80.—Almost all components of real PAC spending exhibit a lower growth rate for 1975-80 than for 1972-75. Total PAC spending grew at an average annual rate of 8 percent during 1972-75 and at a rate of 3 percent during 1975-80. Consumer spending for durables grew at a 35-percent annual rate during 1972-75 and at a 14-percent rate during 1975-80. The

3. This PA spending is assumed to have the same relationship to the "other nonmanufacturing" net stock of plant and equipment for air and water PA as manufacturing air and water PA spending on current account has to the manufacturing stock of similar plant and equipment.

4. Preliminary revised figures for new plant and equipment expenditures for air and water PA were incorporated in the previous article on PAC expenditures in March 1981. Final estimates, first published in June 1981, are incorporated in the present article.

Table 3.—Percent Change From Preceding Year in Pollution Abatement and Control Expenditures (Total and Selected Components) in Current and Constant Dollars, Implicit Price Deflators, and Price Indexes

	1972-79 average annual rate ¹	1973 ^r	1974 ^r	1975 ^r	1976 ^r	1977 ^r	1978 ^r	1979 ^r	1980 ^p
Pollution abatement and control—total:									
Current dollars.....	15.0	19.0	19.8	17.8	12.2	9.5	13.3	14.4	13.2
1972 dollars.....	5.2	11.8	3.4	8.0	5.7	2.0	5.3	1.3	.1
Implicit price deflator.....	9.2	6.4	15.9	9.0	6.1	7.4	7.6	12.9	13.1
Chain price index.....		6.5	16.0	9.8	6.2	7.3	7.7	12.8	13.5
Fixed-weighted price index.....	9.4	6.5	15.9	9.8	6.3	7.4	7.8	12.8	13.5
Pollution abatement and control—air:									
Current dollars.....	17.8	28.4	25.5	22.9	10.3	10.0	10.0	19.8	24.0
1972 dollars.....	6.9	20.8	3.3	12.7	4.7	2.7	2.7	3.4	7.5
Implicit price deflator.....	10.2	6.2	21.6	9.1	5.4	7.1	7.1	15.9	15.3
Chain price index.....		6.5	21.7	10.8	5.7	7.3	7.0	15.9	17.4
Fixed-weighted price index.....	10.8	6.5	22.5	10.9	5.7	7.7	7.0	16.1	17.8
Business capital—air:									
Current dollars.....	14.2	37.9	16.7	25.7	—3	3.8	6.2	14.5	17.9
1972 dollars.....	5.8	32.0	1.3	13.6	—4.7	—2.0	—2	4.9	8.0
Implicit price deflator.....	7.9	4.5	15.2	10.6	4.7	5.9	6.4	9.1	9.2
Chain price index.....		4.5	15.7	11.7	5.3	6.5	6.8	9.2	10.1
Fixed-weighted price index.....	8.5	4.5	16.0	11.9	5.2	6.7	6.6	9.4	10.5
Business current account, private—air:									
Current dollars.....	22.3	18.2	42.6	20.0	17.6	17.1	15.2	28.0	28.6
1972 dollars.....	7.4	7.3	5.4	9.1	11.8	6.7	7.1	4.9	4.2
Implicit price deflator.....	13.8	10.1	35.3	10.0	5.2	9.8	7.5	22.0	23.4
Chain price index.....		10.2	37.2	10.4	5.6	9.4	7.5	21.5	22.8
Fixed-weighted price index.....	13.9	10.2	37.2	10.5	5.5	9.9	8.0	19.4	20.0
Pollution abatement and control—water:									
Current dollars.....	13.8	15.6	15.3	16.6	14.4	8.5	16.8	9.9	3.3
1972 dollars.....	4.2	8.4	2.1	6.6	6.6	.4	7.4	—1.1	—6.6
Implicit price deflator.....	9.1	6.7	12.8	9.4	7.2	8.1	8.8	11.1	10.6
Chain price index.....		6.7	13.0	9.6	7.0	7.5	8.8	10.8	10.6
Fixed-weighted price index.....	9.1	6.7	12.9	9.7	7.2	7.6	9.1	10.8	10.5
Business capital—water:									
Current dollars.....	9.9	16.0	1.5	13.2	16.6	9.4	7.4	6.5	—2.7
1972 dollars.....	.9	9.5	—10.0	2.8	9.1	1.8	—1.0	—4.1	—11.4
Implicit price deflator.....	8.9	5.9	12.7	10.1	6.9	7.4	8.5	11.0	9.8
Chain price index.....		6.0	12.7	10.6	6.8	7.1	8.1	10.9	10.5
Fixed-weighted price index.....	9.0	6.0	12.3	10.6	7.5	7.4	8.1	11.3	10.8
Business current account, private—water:									
Current dollars.....	18.1	17.4	21.0	19.1	20.8	19.1	13.9	15.9	11.3
1972 dollars.....	6.6	10.3	.7	3.5	11.9	9.2	5.9	5.1	—3.8
Implicit price deflator.....	10.8	6.4	20.1	15.1	8.0	9.1	7.5	10.2	15.7
Chain price index.....		6.3	20.2	15.2	7.6	8.8	7.4	10.1	16.1
Fixed-weighted price index.....	10.6	6.3	20.0	15.1	7.6	8.8	7.4	10.0	15.7
Pollution abatement and control—solid waste:									
Current dollars.....	12.0	8.2	16.8	8.4	11.5	10.3	13.3	15.9	13.2
1972 dollars.....	3.8	.8	4.3	.9	6.3	4.2	6.8	3.7	.8
Implicit price deflator.....	7.8	7.3	11.9	7.5	5.0	5.8	6.1	11.8	12.3
Chain price index.....		7.3	12.0	7.5	4.9	5.8	6.2	11.8	12.3
Fixed-weighted price index.....	7.8	7.3	12.0	7.4	4.9	5.9	6.2	11.8	12.4

^r Revised. ^p Preliminary.

1. Compounded annually; not calculated for chain because it is defined for adjacent years only.

Table 4.—Federal Grants-in-Aid to State and Local Governments for

	Line	1972					1973					1974 ^r					1975 ^r				
		Total	Air	Water	Solid waste	Other and unallocated	Total	Air	Water	Solid waste	Other and unallocated	Total	Air	Water	Solid waste	Other and unallocated	Total	Air	Water	Solid waste	Other and unallocated
		Millions of																			
Pollution abatement and control.....	1	923	56	821	15	31	1,057	49	975	13	19	2,242	52	2,172	8	10	2,870	56	2,788	11	15
Pollution abatement.....	2	758	(*)	755	3	(*)	916	(*)	913	3	(*)	2,112	(*)	2,110	1	(*)	2,721	1	2,718	3	(*)
Regulation and monitoring.....	3	66	39	21	3	2	76	43	30	2	2	91	45	44	2	(*)	102	47	52	3	(*)
Research and development.....	4	99	17	44	10	28	65	6	33	9	18	39	7	18	5	9	47	8	19	6	14
		Millions of																			
Pollution abatement and control.....	5	923	56	821	15	31	983	46	906	12	18	1,906	45	1,846	7	9	2,304	44	2,240	9	12
Pollution abatement.....	6	758	(*)	755	3	(*)	851	(*)	848	2	(*)	1,794	(*)	1,793	1	(*)	2,186	(*)	2,184	2	(*)
Regulation and monitoring.....	7	66	39	21	3	2	71	40	28	2	2	78	39	37	2	(*)	79	37	40	2	(*)
Research and development.....	8	99	17	44	10	28	61	6	31	8	17	34	6	16	4	8	38	6	15	5	11

^rRevised.^pPreliminary.

*Less than \$500,000.

1. Constant-dollar estimates are derived using measures of price change of goods and services purchased by State and local governments for pollution abatement and control.

Table 5.—Revisions of Constant-Dollar Spending for Pollution Abatement and Control, 1972-79

[Millions of constant (1972) dollars]			
Year	Total pollution abatement and control		
	Previously published	Revisions	Revised
1972.....	18,220	214	18,434
1973.....	20,530	73	20,603
1974.....	21,113	194	21,307
1975.....	22,941	67	23,008
1976.....	24,187	138	24,325
1977.....	24,503	297	24,800
1978.....	25,771	337	26,108
1979.....	26,112	326	26,438

declining rate was due to the smaller increases in the average expenditures per vehicle for emission abatement devices in the later period, except in 1980. Spending by consumers for non-durables grew at an average annual rate of 10 percent during 1972-75 and fell at an average rate of 6 percent during 1975-80. The fall was due to decreases in engine maintenance costs and increases in the efficiency of fuel use following the introduction of catalytic emission abatement devices in 1974.

Business spending on capital account grew at an annual rate of 7 percent during 1972-75 and at a rate of less than 1 percent during 1975-80. The largest component of business capital spending, industrial plant and equipment for air and water PA, actually decreased at an average annual rate of 3 percent in the later period, compared with average increases of

Table 6.—Constant-Dollar Spending for Abatement of Air Pollutant Emissions from Mobile and Stationary Sources¹

[Millions of constant (1972) dollars]									
	1972 ^r	1973 ^r	1974 ^r	1975 ^r	1976 ^r	1977 ^r	1978 ^r	1979 ^r	1980 ^p
Total.....	6,230	7,130	7,428	8,544	8,912	9,104	9,313	9,648	10,411
Mobile sources².....	2,196	2,869	3,315	4,119	4,579	4,820	5,033	5,127	5,741
Devices.....	701	1,008	1,070	1,853	2,276	2,583	2,715	2,853	3,513
Cars.....	588	843	865	1,578	1,942	2,236	2,352	2,489	3,105
Catalytic.....	0	0	200	917	1,086	1,187	1,204	1,266	1,436
Noncatalytic.....	588	843	665	660	856	1,049	1,148	1,223	1,669
Trucks.....	113	165	205	276	335	347	364	365	408
Operation of devices.....	1,495	1,861	2,245	2,266	2,303	2,237	2,318	2,274	2,227
Cars.....	1,348	1,658	1,886	1,784	1,668	1,475	1,404	1,228	1,049
Trucks.....	147	203	359	481	635	762	913	1,046	1,178
Stationary sources.....	4,034	4,261	4,113	4,425	4,333	4,284	4,280	4,521	4,670
Facilities.....	2,626	2,864	2,827	3,027	2,740	2,576	2,491	2,640	2,726
Industrial.....	2,563	2,786	2,745	2,956	2,638	2,457	2,376	2,496	2,541
Manufacturing.....	1,142	1,453	1,595	1,640	1,254	1,095	1,155	1,177	1,086
Nonmanufacturing.....	1,421	1,332	1,150	1,316	1,384	1,362	1,222	1,319	1,455
Other ³	63	78	82	71	103	120	115	144	185
Operation of facilities.....	1,408	1,397	1,286	1,398	1,592	1,708	1,789	1,880	1,944
Industrial.....	1,329	1,328	1,216	1,317	1,498	1,621	1,713	1,800	1,860
Manufacturing.....	772	745	686	756	883	942	980	1,005	1,007
Nonmanufacturing.....	557	582	529	560	615	679	733	796	854
Other ⁴	79	69	70	82	95	87	77	80	84

^rRevised.^pPreliminary.

1. The Clean Air Act classifies sources of pollutants as either mobile, such as passenger cars, or stationary, such as factories.

2. Excludes spending to reduce emissions from mobile sources other than cars and trucks; such spending was insignificant during 1972-80.

3. Consists of spending for fixed capital of government enterprises such as the Tennessee Valley Authority.

4. Consists of spending to operate government enterprises and all spending by government; separate data on spending to acquire and operate government pollution abatement facilities are not available.

11 percent for air PA and 10 percent for water PA during 1972-75.

Government spending for PA showed almost no change between 1975 and 1980 after increasing at an average annual rate of 8 percent during 1972-75. Spending for regulation and monitoring (R&M), all by government, increased at an average annual rate of 12 percent during 1972-75 and 7 percent during 1975-80—following the trend for total PAC spending. Research and development (R&D) spending by government and industry ran counter to the general

trend. It grew at an average annual rate of 1 percent during 1972-75 and 3 percent during 1975-80.

Three additional exceptions to the general trend were business spending for solid waste capital, capital spending for residential systems, and business spending on current account. Business spending for solid waste capital was almost unchanged during 1972-75 and increased at an average annual rate of 5 percent during 1975-80. The increase in the later period was probably due to increasing concern over hazardous wastes and the

Pollution Abatement and Control in Current and Constant Dollars ¹

1976 ^r					1977 ^r					1978 ^r					1979 ^r					1980 ^p					Line
Total	Air	Water	Solid waste	Other and unallocated	Total	Air	Water	Solid waste	Other and unallocated	Total	Air	Water	Solid waste	Other and unallocated	Total	Air	Water	Solid waste	Other and unallocated	Total	Air	Water	Solid waste	Other and unallocated	
current dollars																									
3,386	56	3,298	11	22	4,061	62	3,956	15	28	4,150	71	4,012	25	42	5,205	81	5,004	44	76	5,303	91	5,075	51	87	1
3,189	1	3,184	4	(*)	3,815	1	3,809	6	(*)	3,879	(*)	3,871	7	1	4,905	(*)	4,892	7	6	4,971	(*)	4,954	9	8	2
151	48	96	3	5	194	55	129	6	5	214	63	124	15	12	231	73	93	33	32	254	84	94	38	38	3
45	6	18	4	17	51	7	18	4	23	57	8	17	4	29	69	8	19	4	38	79	7	27	4	41	4
constant (1972) dollars																									
2,546	41	2,481	8	16	2,847	42	2,775	10	20	2,644	45	2,556	16	28	2,976	48	2,855	26	46	2,817	50	2,690	27	49	5
2,401	1	2,398	3	(*)	2,679	1	2,675	4	(*)	2,471	(*)	2,466	4	(*)	2,796	(*)	2,788	4	3	2,631	(*)	2,623	5	4	6
110	35	69	2	3	132	37	87	4	3	136	40	78	9	8	137	44	55	19	19	139	46	51	21	21	7
35	5	14	3	13	37	5	13	3	17	38	5	11	3	19	43	5	12	2	24	46	4	16	2	24	8

passage of the Resource Conservation and Recovery Act of 1976. Spending for residential systems decreased at an average annual rate of 14 percent during 1972-75 and increased at a rate of 1 percent during 1975-80. This is a volatile component of PAC spending and fluctuates with residential construction activity. Business spending on current account grew at a rate of 5 percent during 1972-75 and 6 percent during 1975-80. Current-account spending increases reflect the operation of a growing capital stock.

The composition of PAC spending by type (e.g., air PAC), function (e.g., R&M), and sector shifted during the 1972-80 period. Air PAC increased as a percent of total PAC (from 34 percent in 1972, to 38 percent in 1975, and to 40 percent in 1980), and water PAC decreased (from 45 percent, to 43 percent, and to 39 percent). Solid waste PAC fluctuated moderately (18 percent, 15 percent, and 16 percent). By function, the composition of PAC spending has not changed much: PA spending continues to account for the largest portion of PAC (about 94 percent) and composition shifts between R&M and R&D were small. By sector, the majority of PAC expenditures continue to be made by business (64 percent in 1972, 60 percent in 1975, and 62½ percent in 1980). Government spending first increased (from 28 percent to 29 percent in 1975) and then decreased (to 25½ percent), largely reflecting variations in spending for public sewer systems. Personal consumption spending increased (from 8 percent, to 11 percent, to 12 percent).

Table 7.—Constant-Dollar Spending for Abatement of Water Pollutant Emissions From Point Sources ¹

[Millions of constant (1972) dollars]

	1972 ^r	1973 ^r	1974 ^r	1975 ^r	1976 ^r	1977 ^r	1978 ^r	1979 ^r	1980 ^p
Total.....	7,551	8,214	8,535	9,298	9,916	9,923	10,722	10,581	9,861
Facilities.....	5,436	5,831	6,078	6,711	7,098	6,845	7,421	7,130	6,489
Industrial.....	1,411	1,585	1,596	1,945	2,138	2,050	1,928	1,810	1,711
Manufacturing.....	626	838	852	999	1,173	1,164	801	725	624
Nonmanufacturing.....	785	746	744	947	964	886	1,127	1,084	1,088
Public sewer systems, private connectors to them, and other.....	4,025	4,246	4,482	4,765	4,960	4,795	5,493	5,321	4,778
Public sewer systems and private connectors.....	3,993	4,193	4,418	4,717	4,906	4,739	5,409	5,263	4,731
Other ²	32	54	64	49	54	56	84	58	47
Operation of facilities.....	2,115	2,384	2,457	2,586	2,818	3,077	3,301	3,451	3,373
Industrial.....	912	1,021	1,023	1,062	1,210	1,337	1,426	1,504	1,433
Manufacturing.....	591	655	646	671	760	843	892	933	885
Nonmanufacturing.....	321	366	376	392	450	494	534	571	548
Public sewer systems, private connectors to them, and other.....	1,203	1,363	1,435	1,524	1,609	1,740	1,875	1,947	1,940
Public sewer systems, and private connectors.....	1,124	1,234	1,264	1,304	1,413	1,542	1,669	1,745	1,783
Other ³	79	129	171	220	196	198	206	202	157

^r Revised.^p Preliminary.

1. The Federal Water Pollution Control Act defines point sources as facilities that discharge to a body of water through a pipe or ditch.

2. Consists of spending by owners of animal feedlots and spending for fixed capital of government enterprises such as the Tennessee Valley Authority.

3. Consists of spending by owners of animal feedlots, spending to operate government enterprises, and spending by government except highway erosion control; separate data on spending to acquire and operate government pollution abatement facilities are not available.

Table 8.—Constant-Dollar Spending by Business and Government for Solid Waste Collection and Disposal and Related Series

	Line	1972 ^r	1973 ^r	1974 ^r	1975 ^r	1976 ^r	1977 ^r	1978 ^r	1979 ^r	1980 ^p
Millions of constant (1972) dollars										
Solid waste collection and disposal by means acceptable to Federal, State, and local authorities.....	1	3,416	3,429	3,554	3,575	3,816	3,982	4,254	4,398	4,421
Solid waste management.....	2	4,680	4,687	4,854	4,897	5,206	5,413	5,770	5,976	6,039
Pollution abatement.....	3	887	994	1,162	1,260	1,438	1,619	1,897	2,170	2,333
Other ¹	4	3,792	3,693	3,693	3,637	3,769	3,795	3,873	3,806	3,706
Percent change from preceding year										
Solid waste collection and disposal by means acceptable to Federal, State, and local authorities.....	5		.4	3.6	.6	6.7	4.4	6.8	3.4	.5
Solid waste management.....	6		.1	3.6	.9	6.3	4.0	6.6	3.6	1.1
Pollution abatement.....	7		12.1	16.9	8.4	14.1	12.6	17.2	14.4	7.5
Other ¹	8		-2.6	0	-1.5	3.6	.7	2.1	-1.7	-2.6

^r Revised.^p Preliminary.

1. Consists of spending for the avoidance of the slowing of production or consumption activity due to the accumulation of solid waste and for other purposes except pollution abatement.

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withholding change was a permanent one, overwithholding as a proportion of total collections continues to be larger than it was before 1972.

The imposition of mandatory withholding, as well as other actions intended to increase the operational efficiency of a tax, has been treated as an administrative change. Such actions nonetheless can have a visible effect on the growth of a tax; a withholding system results in more tax dollars than a system that requires only annual filing. Some of the increases recorded in 1966-69 were the result of imposition of mandatory withholding in States (notably California) where income taxes were previously paid at filing or where withholding was optional.

Information about legislative actions affecting local income taxes are not readily available, especially before 1970, and therefore the percent due to legislative actions shown in table 5 are not comprehensive. Among the major identifiable actions in the mid-1960's were the imposition of income taxes in New York City, Baltimore, and in a number of Maryland counties. Much of the 1971-72 increase in-

Table 6.—Change in Selected State and Local Government Tax Receipts

Year	Change in selected taxes (billions of dollars)		Change due to legislative actions as a percentage of total change
	Total	Due to legislative actions	
1962.....	2.6	1.4	52
1963.....	2.2	1.2	52
1964.....	3.0	1.3	45
1965.....	3.3	1.6	47
1966.....	4.0	1.8	44
1967.....	4.6	1.5	32
1968.....	7.7	2.7	35
1969.....	7.1	2.0	28
1970.....	7.4	1.8	25
1971.....	7.9	1.2	15
1972.....	11.0	1.1	10
1973.....	7.9	-2.0	(*)
1974.....	7.1	-2.6	(*)
1975.....	8.5	-1.3	(*)
1976.....	13.0	.3	2
1977.....	13.4	-.8	(*)
1978.....	9.8	-9.0	(*)
1979.....	7.9	-13.3	(*)
1980.....	14.1	-7.2	(*)

*Effects of legislative action negative.

involved further actions in New York City, and the major 1977 legislative increase was in Philadelphia.

Summary

Table 6 shows total annual changes for the seven types of taxes discussed, and the part due to legislative actions (including, for this purpose, changes

in assessment/market ratios for property taxes). Legislative actions accounted for a substantial part—between 24 percent and 52 percent—of receipts growth in most years from 1962 to 1972. After 1972, legislative actions held down receipts growth in 7 of the 8 years. (It seems likely—on the basis of data now available, largely relating to sales and personal income taxes—that legislative actions in 1981 added slightly to the increase in receipts.) Conversely, while economic activity and inflation accounted for more than one-half of growth in these taxes in 1962-72, they accounted for virtually all such growth after 1972.

Moreover, the negative effects of legislative actions after 1972 appeared largely in receipts of local governments, specifically in property taxes. At the State level, the net effect of legislative actions, although small, was generally positive. Growth in State receipts due to increases in economic activity and to inflation occurred without the countering effects of legislative actions, such as occurred in local receipts. The result was a shift in fiscal resources toward State governments and away from localities.

(continued from p. 36)

PLAM's monthly payments start at only \$239, 60 percent lower than payments for the SFPM, and, assuming an inflation rate of 10 percent, remain lower through the first 10 years of the loan. (A GPM-III, in contrast, would carry initial monthly payments of \$461, 22 percent lower than the SFPM's and almost double the PLAM's.) If mortgage lenders use a 25-percent payment-to-income rule, an SFPM borrower would need an income of \$28,400 to qualify for a \$50,000 mortgage, while a PLAM borrower would need an income of only \$11,500.

There are two clear drawbacks to the PLAM from the borrower's point of view. First, of course, is the danger that income will not keep pace with inflation and that, as a result, payments as a percentage of income will rise, perhaps to an onerous level. Second, equity accumulates much more slowly with a PLAM than with a SFPM. If house prices rise 10 percent per year, for example, the SFPM borrower in table 16 will have \$114,467 of equity in the house after 10 years, but the PLAM borrower will have equity of only \$59,937. (Of course, the PLAM borrower will have made smaller outlays—monthly pay-

ments totaling \$45,600—than the SFPM borrower—monthly payments totaling \$71,000.)

From the lender's point of view, the chief advantages of a PLAM are the elimination of interest rate risk and certainty about the real value of payments. The biggest disadvantage is the reduced cash flow associated with PLAM's in their early years, which, as with SAM's, would make it difficult for lenders profitably to offer competitive rates on deposits. Also, PLAM's would probably entail the same kind of tax problems that are associated with negative amortization under GPM's.

Constant-Dollar Inventories, Sales, and Inventory-Sales Ratios for Manufacturing and Trade

Tables 1, 2, and 3 present constant-dollar inventories, sales, and inventory-sales ratios, respectively, quarterly and monthly. Table 4 presents quarterly constant-dollar fixed-weight inventory-sales ratios, i.e., ratios obtained by weighting detailed industry ratios by 1972 sales. Table 5 presents monthly inventories by stage of fabrication; these were introduced in "Constant-dollar Manufacturing Inventories" in the November 1981 SURVEY OF CURRENT BUSINESS.

Table 1.—Manufacturing and Trade Inventories in Constant Dollars
Seasonally Adjusted, End of Period

[Billions of 1972 dollars]

	1981						
	III ^r	IV ^p	Aug.	Sept. ^r	Oct.	Nov.	Dec. ^p
Manufacturing and trade.....	268.5	269.4	267.1	268.5	269.7	270.4	269.4
Manufacturing.....	147.7	147.5	146.9	147.7	148.1	148.1	147.5
Durable goods.....	100.9	100.7	100.2	100.9	101.1	101.1	100.7
Primary metals.....	14.0	14.0	13.8	14.0	14.0	14.0	14.0
Fabricated metals.....	11.6	11.5	11.6	11.6	11.7	11.6	11.5
Machinery, except electrical.....	24.8	24.7	24.6	24.8	24.8	24.9	24.7
Electrical machinery.....	15.4	15.4	15.3	15.4	15.5	15.5	15.4
Transportation equipment.....	18.0	18.4	17.9	18.0	18.3	18.2	18.4
Other durable goods ¹	17.0	16.7	16.9	17.0	16.9	16.9	16.7
Nondurable goods.....	46.8	46.9	46.7	46.8	47.0	47.0	46.9
Food and kindred products.....	12.0	11.7	12.0	12.0	11.9	11.8	11.7
Nonfood.....	34.8	35.1	34.8	34.8	35.1	35.2	35.1
Paper and allied products.....	4.4	4.5	4.3	4.4	4.4	4.5	4.5
Chemicals and allied products.....	9.0	9.0	8.9	9.0	9.0	9.1	9.0
Petroleum and coal products.....	3.3	3.2	3.3	3.3	3.2	3.2	3.2
Rubber and plastic products.....	3.1	3.0	3.1	3.1	3.1	3.1	3.0
Other nondurable goods ²	15.1	15.4	15.1	15.1	15.3	15.4	15.4
Merchant wholesalers.....	54.5	55.5	53.9	54.5	54.7	55.5	55.5
Durable goods.....	36.4	37.0	36.0	36.4	36.5	37.1	37.0
Nondurable goods.....	18.1	18.5	17.9	18.1	18.2	18.4	18.5
Groceries and farm products.....	7.0	7.3	6.9	7.0	7.2	7.2	7.3
Other nondurable goods.....	11.0	11.3	11.0	11.0	11.0	11.2	11.3
Retail trade.....	66.4	66.3	66.3	66.4	66.9	66.8	66.3
Durable goods.....	30.7	30.3	31.0	30.7	30.8	30.6	30.3
Auto dealers.....	15.3	14.8	15.6	15.3	15.2	14.9	14.8
Other durable goods.....	15.4	15.5	15.4	15.4	15.6	15.6	15.5
Nondurable goods.....	35.7	36.0	35.3	35.7	36.1	36.2	36.0
Food stores.....	7.2	7.2	7.1	7.2	7.2	7.2	7.2
Other nondurable goods.....	28.5	28.8	28.2	28.5	28.9	29.0	28.8

See footnotes to table 4.

Table 2.—Manufacturing and Trade Sales in Constant Dollars
Seasonally Adjusted Total at Monthly Rate

[Billions of 1972 dollars]

	1981						
	III ^r	IV ^p	Aug.	Sept. ^r	Oct.	Nov.	Dec. ^p
Manufacturing and trade.....	158.5	153.2	158.2	158.4	153.4	153.4	152.9
Manufacturing.....	73.9	70.2	73.8	73.4	70.8	69.8	69.9
Durable goods.....	40.8	38.1	40.9	40.4	38.4	38.0	37.9
Primary metals.....	4.7	4.1	4.7	4.6	4.3	4.1	3.8
Fabricated metals.....	4.6	4.2	4.6	4.5	4.4	4.1	4.1
Machinery, except electrical.....	8.7	8.6	8.7	8.7	8.4	8.7	8.7
Electrical machinery.....	6.4	6.2	6.4	6.4	6.1	6.1	6.3
Transportation equipment.....	8.8	7.7	8.9	8.6	7.8	7.5	7.7
Other durable goods ¹	7.7	7.4	7.5	7.6	7.5	7.3	7.3
Nondurable goods.....	33.2	32.1	33.0	33.0	32.4	31.9	32.0
Food and kindred products.....	10.9	10.7	10.8	11.0	10.8	10.5	10.7
Nonfood.....	22.2	21.4	22.2	22.1	21.6	21.3	21.3
Paper and allied products.....	2.8	2.7	2.7	2.8	2.7	2.7	2.8
Chemicals and allied products.....	5.8	5.7	5.8	5.8	5.6	5.8	5.8
Petroleum and coal products.....	2.2	2.1	2.2	2.2	2.2	2.1	2.1
Rubber and plastic products.....	1.8	1.7	1.8	1.8	1.8	1.6	1.7
Other nondurable goods ²	9.7	9.1	9.6	9.5	9.3	9.1	9.0
Merchant wholesalers.....	38.2	38.1	37.6	38.4	37.8	38.5	37.9
Durable goods.....	17.5	17.2	17.5	17.2	16.9	17.4	17.2
Nondurable goods.....	20.6	20.9	20.1	21.1	20.8	21.1	20.7
Groceries and farm products.....	11.0	11.4	10.6	11.5	11.2	11.4	11.6
Other nondurable goods.....	9.7	9.5	9.4	9.6	9.6	9.7	9.2
Retail trade.....	46.4	45.0	46.8	46.6	44.9	45.1	45.1
Durable goods.....	15.9	14.6	16.1	16.1	14.6	14.6	14.7
Auto dealers.....	8.9	7.9	9.2	9.2	7.9	7.9	8.0
Other durable goods.....	7.0	6.7	6.9	7.0	6.7	6.7	6.7
Nondurable goods.....	30.5	30.4	30.7	30.5	30.3	30.5	30.4
Food stores.....	9.7	9.7	9.8	9.7	9.6	9.8	9.7
Other nondurable goods.....	20.8	20.7	20.9	20.8	20.7	20.6	20.7

See footnotes to table 4.

Table 3.—Constant-Dollar Inventory-Sales Ratios for Manufacturing and Trade, Seasonally Adjusted

[Ratio, based on 1972 dollars]

	1981						
	III ^r	IV ^p	Aug.	Sept. ^r	Oct.	Nov.	Dec. ^p
Manufacturing and trade.....	1.69	1.76	1.69	1.70	1.76	1.76	1.76
Manufacturing.....	2.00	2.10	1.99	2.01	2.09	2.12	2.11
Durable goods.....	2.47	2.64	2.45	2.50	2.63	2.66	2.66
Primary metals.....	2.99	3.42	2.91	3.07	3.25	3.40	3.68
Fabricated metals.....	2.54	2.73	2.54	2.57	2.68	2.82	2.77
Machinery, except electrical.....	2.86	2.87	2.82	2.84	2.95	2.84	2.84
Electrical machinery.....	2.40	2.50	2.40	2.42	2.55	2.53	2.46
Transportation equipment.....	2.06	2.40	2.01	2.09	2.35	2.42	2.40
Other durable goods ¹	2.22	2.27	2.25	2.24	2.26	2.31	2.29
Nondurable goods.....	1.41	1.46	1.42	1.42	1.45	1.48	1.47
Food and kindred products.....	1.10	1.10	1.11	1.10	1.11	1.13	1.10
Nonfood.....	1.57	1.64	1.57	1.58	1.62	1.65	1.65
Paper and allied products.....	1.58	1.62	1.58	1.58	1.61	1.63	1.62
Chemicals and allied products.....	1.54	1.58	1.54	1.54	1.60	1.58	1.56
Petroleum and coal products.....	1.53	1.50	1.50	1.52	1.45	1.52	1.56
Rubber and plastic products.....	1.71	1.79	1.73	1.74	1.76	1.91	1.80
Other nondurable goods ²	1.56	1.69	1.57	1.58	1.65	1.69	1.71
Merchant wholesalers.....	1.43	1.46	1.43	1.42	1.45	1.44	1.47
Durable goods.....	2.08	2.16	2.06	2.11	2.15	2.14	2.15
Nondurable goods.....	.88	.89	.89	.86	.88	.87	.90
Groceries and farm products.....	.64	.64	.64	.61	.65	.63	.63
Other nondurable goods.....	1.14	1.19	1.17	1.15	1.14	1.16	1.23
Retail trade.....	1.43	1.47	1.42	1.42	1.49	1.48	1.47
Durable goods.....	1.93	2.07	1.93	1.90	2.11	2.09	2.06
Auto dealers.....	1.72	1.87	1.70	1.67	1.92	1.89	1.86
Other durable goods.....	2.21	2.30	2.22	2.21	2.33	2.33	2.30
Nondurable goods.....	1.17	1.19	1.15	1.17	1.19	1.19	1.18
Food stores.....	.73	.74	.72	.74	.75	.73	.74
Other nondurable goods.....	1.37	1.39	1.35	1.37	1.40	1.40	1.39

See footnotes to table 4.

Table 4.—Fixed-Weight Constant-Dollar Inventory-Sales Ratios for Manufacturing and Trade, Seasonally Adjusted

[Ratio, based on 1972 dollars]

	1981			
	I	II	III ^r	IV ^p
Manufacturing and trade.....	1.63	1.66	1.69	1.78
Manufacturing.....	1.96	1.95	2.00	2.12
Durable goods.....	2.40	2.37	2.46	2.65
Nondurable goods.....	1.45	1.46	1.46	1.50
Merchant wholesalers.....	1.34	1.40	1.43	1.48
Durable goods.....	1.93	2.02	2.07	2.15
Nondurable goods.....	.86	.88	.89	.92
Retail trade.....	1.31	1.38	1.39	1.44
Durable goods.....	1.74	1.97	1.92	2.05
Nondurable goods.....	1.09	1.08	1.12	1.14

^r Revised.

^p Preliminary.

1. Includes lumber and wood products; furniture and fixtures; stone, clay, and glass products; instruments and related products; and miscellaneous manufacturing industries.

2. Includes tobacco manufacturers; textile mill products; apparel products; printing and publishing; and leather and leather products.

NOTE.—Manufacturing inventories are classified by the type of product produced by the establishment holding the inventory. Trade inventories are classified by the type of product sold by the establishment holding the inventory.

Table 4: The I-S ratios shown in this table were obtained by weighting detailed industry I-S ratios by 1972 sales. For manufacturing, 20 industries were used; for merchant wholesalers, 20 kinds of business; and for retail trade, 8 kinds of business.

Table 5.—Manufacturing Inventories by Stage of Fabrication in Constant Dollars, Seasonally Adjusted End of Period

(Billions of 1972 dollars)

	Materials and supplies 1981					Work-in-process 1981					Finished goods 1981				
	Aug.	Sept. ^r	Oct.	Nov.	Dec. ^p	Aug.	Sept. ^r	Oct.	Nov.	Dec. ^p	Aug.	Sept. ^r	Oct.	Nov.	Dec. ^a
Manufacturing	51.3	51.7	51.7	51.8	51.9	50.9	51.1	51.1	51.2	50.8	44.7	44.9	45.3	45.1	44.8
Durable goods.....	32.3	32.6	32.6	32.7	32.6	43.8	44.0	44.1	44.2	43.8	24.1	24.3	24.4	24.3	24.3
Primary metals.....	5.5	5.6	5.6	5.6	5.6	5.0	5.1	5.1	5.1	5.1	3.3	3.3	3.3	3.3	3.3
Fabricated metals.....	4.6	4.7	4.7	4.7	4.6	4.2	4.2	4.2	4.2	4.2	2.8	2.7	2.7	2.7	2.7
Machinery, except electrical.....	7.1	7.2	7.2	7.2	7.0	10.7	10.7	10.7	10.7	10.7	6.8	6.9	6.9	6.9	7.0
Electrical machinery.....	4.6	4.6	4.6	4.6	4.6	7.5	7.5	7.5	7.5	7.5	3.2	3.3	3.3	3.3	3.3
Total transportation equipment.....	4.2	4.2	4.2	4.2	4.5	11.7	11.8	11.9	11.9	11.7	2.1	2.1	2.2	2.1	2.2
Other durable goods ¹	6.2	6.3	6.3	6.3	6.2	4.7	4.7	4.6	4.6	4.7	6.0	6.0	5.9	5.9	5.9
Nondurable goods.....	19.1	19.1	19.1	19.1	19.3	7.1	7.1	7.0	7.0	7.0	20.6	20.6	20.8	20.9	20.6
Food and kindred products.....	4.1	4.2	4.1	4.1	4.1	1.1	1.1	1.0	1.1	1.0	6.8	6.8	6.8	6.7	6.6
Paper and allied products.....	2.4	2.4	2.4	2.4	2.4	.5	.5	.5	.5	.5	1.5	1.5	1.6	1.6	1.6
Chemicals and allied products.....	3.4	3.4	3.4	3.4	3.4	1.3	1.3	1.2	1.2	1.2	4.3	4.3	4.4	4.5	4.4
Petroleum and coal products.....	.9	.9	.9	.9	.9	.8	.8	.8	.8	.8	1.6	1.6	1.6	1.6	1.5
Rubber and plastic products.....	1.2	1.2	1.2	1.2	1.2	.5	.5	.5	.5	.6	1.4	1.3	1.4	1.3	1.3
Other nondurable goods ²	7.1	7.1	7.2	7.2	7.4	2.9	2.9	3.0	2.9	2.9	5.1	5.0	5.1	5.2	5.1

See footnotes to table 4.

(continued from p. 49)

ratio—essentially a ratio of systematic to unsystematic variation—for rows (countries) in line 3 of table 8.

The results also indicated the existence of industry differences in CPH over and above those that might have been due to differences among industries in the geographical distribution of employment. This is shown by the highly significant F ratio for columns (industries) in line 4 of table 8. Although highly significant, this ratio was significant at a much lower level than the ratio for rows (countries). Thus, although CPH was influenced independently by both the affiliates' country and industry, the country effects were considerably more systematic than the industry effects.

The results of applying AOV to data for developed countries and developing countries separately are shown in lines 6-10 and 11-15, respectively, of table 8. Although markedly lower than for all countries combined, the F ratios for rows (countries) were still statistically significant for both developed and developing countries separately. This confirmed that country effects on CPH existed within each of the two groups of countries, and were not confined to differences between the groups.¹⁸

18. AOV was applied to data for developed and developing countries separately in order to investigate country effects. In addition, it may be noted that the F

Affiliate and All-Foreign-Business Compensation Rates Compared

Table 9 compares CPH of production workers of MOFA's in manufacturing (including petroleum and coal products) with unpublished Bureau of Labor Statistics estimates for all foreign manufacturing businesses (including affiliates of U.S. companies) in 30 countries. (Petroleum and coal products was included in manufacturing in the affiliate data to conform to its treatment in the BLS estimates.) Affiliates tended to pay comparatively high CPH; in 27 of the 30 countries, CPH of affiliates exceeded that of all foreign businesses. The data needed to determine definitively the extent to which the higher CPH for affiliates at the all-manufacturing level might have been due to differences in industry mix were not readily available. However, examination of CPH in a few industries within manufacturing that were similarly defined in the two data sets suggested that differences in

ratios for columns (industries) were lower (although still significant at the 5-percent level) for the two country groups than for all countries combined. The reasons for, and implications of, this result were not obvious; the result would, however, have been consistent with the existence of greater similarity in the mix of subindustries among countries within the two country groups than between them.

industry mix were probably not the only reason for the higher affiliate rates, because, in most of the individual industries, affiliate rates also tended to be higher than the rates for all foreign businesses.

Instead, the differences in CPH could have reflected differences in the nature of the operations of affiliates, compared with those of other foreign businesses. U.S. companies that have direct investments abroad are widely regarded as being among the most technologically advanced in the world. To the extent that they are, their foreign operations may have required more highly skilled, and thus more highly paid, labor than was required by most purely local foreign businesses.

CPH for affiliates, although generally higher than that for all foreign businesses, nevertheless followed rather closely the substantial variations among countries in the all-foreign-business rates. (The simple linear correlation between the two compensation rates for the 30 countries was 0.96; it was even slightly higher if Turkey, which had a wide difference in rates but very low affiliate employment, was eliminated.) This suggested that, although affiliation with a U.S. company apparently had an effect on CPH, local labor market conditions were probably the principal determinant of the rates paid by affiliates.

Unless otherwise stated in footnotes below, data through 1978 and descriptive notes are as shown in the 1979 edition of BUSINESS STATISTICS

	1979	1980	1980	1981												1982
	Annual		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
COMMODITY PRICES—Continued																
PRODUCER PRICES—Continued (U.S. Department of Labor Indexes)—Continued Seasonally Adjusted																
By durability of product:																
Total manufactures 1967=100..			273.3	(*)												
Durable manufactures do.....			261.2	(*)												
Nondurable manufactures do.....			285.9	(*)												
PURCHASING POWER OF THE DOLLAR																
As measured by:																
Producer prices 1967=\$1.00..	0.459	0.405	0.389	0.383	0.380	0.376	0.372	0.371	0.370	0.368	0.368	*0.368	0.365	0.364	0.363	0.360
Consumer prices do.....	0.460	0.406	0.387	0.384	0.380	0.377	0.375	0.372	0.369	0.364	0.362	0.358	0.357	0.356	0.355	0.354

CONSTRUCTION AND REAL ESTATE

CONSTRUCTION PUT IN PLACE																
New construction (unadjusted), total mil. \$..	230,781	230,273	19,696	16,882	16,184	18,020	19,254	19,978	21,297	21,498	21,407	21,834	*21,261	*20,057	18,640	
Private, total # do.....	181,691	174,897	15,413	13,190	12,689	14,182	15,088	15,565	16,355	16,440	16,409	16,363	*16,261	*15,522	14,752	
Residential do.....	99,030	87,261	7,480	6,623	6,178	6,924	7,584	7,883	8,001	7,814	7,610	7,359	*7,099	*6,690	5,955	
New housing units do.....	78,587	63,139	5,424	4,920	4,668	5,242	5,524	5,613	5,810	5,694	5,541	5,384	*5,031	*4,613	3,902	
Nonresidential buildings, except farm and public utilities, total # mil. \$..	47,298	52,434	4,536	4,110	4,042	4,450	4,614	4,716	5,073	5,333	5,511	5,527	5,635	*5,498	4,996	
Industrial do.....	14,950	13,837	1,228	1,093	1,063	1,252	1,239	1,283	1,370	1,492	1,621	1,651	1,684	*1,611	1,480	
Commercial do.....	24,924	29,945	2,548	2,324	2,283	2,457	2,609	2,698	2,875	3,028	3,065	3,031	3,087	*3,067	2,791	
Public utilities:																
Telephone and telegraph do.....	6,343	6,733	545	456	455	588	557	566	611	590	602	645	696	626		
Public, total # do.....	49,090	55,376	4,283	3,693	3,496	3,839	4,166	4,414	4,941	5,058	4,998	5,470	4,999	*4,535	3,888	
Buildings (excluding military) # do.....	15,857	18,864	1,620	1,499	1,361	1,508	1,493	1,507	1,553	1,601	1,615	1,745	1,528	*1,571	1,472	
Housing and redevelopment do.....	1,211	1,648	152	150	140	147	159	158	155	146	150	129	125	*139	141	
Industrial do.....	1,411	1,788	174	180	135	178	170	191	187	183	157	230	112	*159	204	
Military facilities do.....	1,647	1,880	149	140	170	135	168	181	182	180	145	163	164	168	160	
Highways and streets do.....	11,996	13,785	824	664	594	653	880	1,061	1,465	1,530	1,469	1,563	1,414	*1,121	729	
New construction (seasonally adjusted at annual rates), total bil. \$..			245.4	259.0	254.5	250.3	246.5	235.9	234.0	233.9	229.8	230.9	*229.9	*231.6	229.3	
Private, total # do.....			187.9	193.9	193.2	189.6	189.9	184.1	181.8	182.3	180.6	178.6	178.2	*179.2	177.2	
Residential do.....			98.9	100.7	99.7	96.3	95.2	89.7	86.0	82.9	80.5	78.5	78.2	*78.1	78.9	
New housing units do.....			70.4	74.2	75.1	73.0	72.9	67.7	64.3	60.5	58.1	55.9	*52.8	*51.0	50.4	
Nonresidential buildings, except farm and public utilities, total # bil. \$..			54.3	58.2	58.4	58.3	58.1	56.8	58.4	60.5	61.4	61.2	61.2	*62.1	59.8	
Industrial do.....			14.3	15.3	15.1	15.4	15.5	15.5	16.2	17.2	18.3	18.3	18.6	*18.4	17.2	
Commercial do.....			30.8	33.0	33.4	33.3	33.4	32.4	32.4	34.0	33.7	33.4	33.0	*34.5	33.8	
Public utilities:																
Telephone and telegraph do.....			6.2	7.1	7.3	7.1	6.9	7.0	6.5	6.8	6.7	7.1	7.2	7.4		
Public, total # do.....			57.6	65.2	61.3	60.6	56.6	51.8	52.2	51.6	49.3	52.2	51.6	*52.4	52.0	
Buildings (excluding military) # do.....			20.4	20.7	19.7	20.4	18.6	17.9	17.6	17.4	17.5	18.5	*17.5	*18.9	18.7	
Housing and redevelopment do.....			1.8	2.3	1.9	1.9	2.0	1.9	1.8	1.5	1.8	1.4	1.4	*1.6	1.6	
Industrial do.....			2.2	2.3	1.9	2.0	2.0	2.2	2.0	2.1	1.8	2.4	1.6	*2.2	2.6	
Military facilities do.....			1.7	1.8	2.2	1.7	2.1	2.1	2.3	2.1	1.6	1.8	2.1	2.0	1.9	
Highways and streets do.....			13.1	19.4	17.8	16.2	15.1	12.4	13.3	13.2	12.2	12.5	11.5	*12.5	11.3	
CONSTRUCTION CONTRACTS																
Construction contracts in 50 States (F.W. Dodge Division, McGraw-Hill):																
Valuation, total mil. \$..	168,446	*148,393	*12,214	10,467	10,405	13,904	14,378	13,350	14,919	13,651	12,289	12,868	12,328	9,722	11,577	
Index (mo. data seas. adj.) 1972=100..	*186	*162	193	192	177	183	172	160	170	153	156	159	157	142	172	
Public ownership mil. \$..	46,646	*41,717	*3,167	3,242	3,007	3,649	3,703	3,236	3,407	3,292	3,336	3,965	3,541	2,406	2,862	
Private ownership do.....	121,800	*106,676	*9,046	7,225	7,399	10,255	10,675	10,113	11,512	10,360	8,953	8,903	8,787	7,316	8,715	
By type of building:																
Nonresidential do.....	50,206	*52,492	*4,471	4,122	4,085	5,345	5,272	5,050	5,560	5,572	5,270	5,125	5,287	4,380	4,445	
Residential do.....	74,557	*63,668	*5,540	4,207	4,206	5,929	6,569	5,887	5,904	5,853	4,894	4,844	4,872	3,737	3,739	
Non-building construction do.....	43,683	*32,234	*2,203	2,139	2,114	2,630	2,537	2,413	3,454	2,227	2,126	2,898	2,169	1,605	3,393	
New construction planning (Engineering News-Record) \$ do.....	135,005	149,143	13,071	14,991	12,449	11,212	15,545	14,093	11,684	12,897	11,890	11,999	16,597	15,492	17,516	13,920
HOUSING STARTS AND PERMITS																
New housing units started:																
Unadjusted:																
Total (private and public) .....thous..	1,760.0	1,312.6	96.3	85.2	72.4	108.9	124.0	110.6	107.0	101.1	87.3	90.9	88.1	*64.9	*60.8	
Privately owned do.....	1,745.1	1,292.2	95.9	84.5	71.9	107.8	123.0	109.9	105.8	99.9	86.3	84.1	87.2	*64.6	*60.2	47.5
One-family structures do.....	1,194.1	852.2	56.6	48.0	48.0	70.5	83.6	73.8	72.5	69.5	57.0	58.3	49.9	*40.1	*34.7	29.1
Seasonally adjusted at annual rates:																
Total privately owned do.....			*1,457	*1,585	*1,294	*1,318	*1,301	*1,172	*1,046	*1,040	*946	*899	*854	*860	*899	894
One-family structures do.....			*927	*974	*835	*863	*868	*776	*705	*696	*614	*623	*507	*554	*559	588
New private housing units authorized by building permits (16,000 permit-issuing places):																
Monthly data are seas. adj. at annual rates:																
Total .....thous..	1,552	1,191	1,249	1,214	1,165	1,153	1,186	1,167	963	913	865	850	722	723	*789	836
One-family structures do.....	982	710	753	715	677	678	689	654	567	528	494	453	398	401	*454	456
Manufacturers' shipments of mobile homes																
Unadjusted .....thous..	277.4	*221.6	16.0	*15.9	*17.4	*21.6	*24.1	22.9	*23.1	*21.8	*22.4	21.5	20.2	15.7	14.2	
Seasonally adjusted at annual rates do.....			*239	*232	*254	255	265	*262	*256	*267	*238	*232	*208	*207	206	

See footnotes at end of tables.

Unless otherwise stated in footnotes below, data through 1978 and descriptive notes are as shown in the 1979 edition of BUSINESS STATISTICS	1979	1980	1980	1981												1982
	Annual		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
TRANSPORTATION AND COMMUNICATION																
TRANSPORTATION																
Air Carriers (Scheduled Service)																
Certificated route carriers:																
Passenger-miles (revenue)	bil.	262.02	254.18	20.22	19.35	17.00	19.84	20.26	21.82	22.86	24.46	24.50	19.72	20.16		
Passenger-load factor	percent.	63.0	59.0	57.8	54.8	54.2	56.8	58.4	61.0	60.8	60.8	68.2	57.6	57.7		
Ton-miles (revenue), total	mil.	33,390	32,487	2,590	2,437	2,214	2,591	2,603	2,776	2,876	3,057	3,023	2,566	2,673		
Operating revenues (quarterly) #	mil. \$.	27,227	*33,267	8,388			8,367			9,416			9,729			
Passenger revenues	do.	22,792	*22,791	6,997			7,108			7,963			8,195			
Cargo revenues	do.	2,211	*2,427	637			577			625			625			
Mail revenues	do.	464	621	172			157			159			161			
Operating expenses (quarterly) \$	do.	*27,018	*33,462	8,372			8,536			9,292			8,600			
Net income after taxes (quarterly) \$	do.	331	*2,90	122			-217			3			73			
Domestic operations:																
Passenger-miles (revenue)	bil.	*208.89	200.09	16.34	15.75	14.08	16.49	16.42	17.41	17.82	18.94	18.64	15.15	15.97	*12.69	*14.27
Cargo ton-miles	mil.	3,466	3,274	248	245	246	286	278	289	292	297	273	289	308		
Mail ton-miles	do.	853	944	108	84	78	86	85	81	77	78	75	78	85		
Operating revenues (quarterly) \$	mil. \$.	21,652	26,376	6,740			6,964			7,542			7,463			
Operating expenses (quarterly) \$	do.	21,523	*26,383	6,625			6,993			7,409			7,442			
Net income after taxes (quarterly) \$	do.	222	*156	263			-65			41			-12			
International operations:																
Passenger-miles (revenue)	bil.	*53.13	54.09	3.88	3.60	2.92	3.36	3.84	4.41	5.04	5.52	5.86	4.57	4.19		
Cargo ton-miles	mil.	2,498	2,458	170	145	162	204	184	194	191	207	196	199	232		
Mail ton-miles	do.	372	392	43	28	28	31	31	31	29	29	29	29	32		
Operating revenues (quarterly) \$	mil. \$.	5,575	*6,891	1,648			1,403			1,627			1,932			
Operating expenses (quarterly) \$	do.	5,505	*7,079	1,746			1,543			1,641			1,859			
Net income after taxes (quarterly) \$	do.	109	*246	-140			-152			-36			61			
Urban Transit Systems																
Passengers carried, total	mil.	8,130	8,228	681	647	644	726	690	676	693	615	625	645	693	643	652
Motor Carriers																
Carriers of property, large, class I, qtrly.:																
Number of reporting carriers		100	100	100			100			100			100			
Operating revenues, total	mil. \$.	*15,051	15,538	4,273			*3,921			*4,264			4,301			
Net income, after extraordinary and prior period charges and credits	mil. \$.	312	284	105			*25			*92			78			
Tonnage hauled (revenue), common and contract carrier service	mil. tons.	215	183	49			*46			*47			46			
Freight carried—volume indexes, class I and II intercity truck tonnage (ATA):																
Common and contract carriers of property (qtrly.)	average same period, 1967 = 100.	155														
Common carriers of general freight, seas. adj.	1967 = 100.	180.3	147.9	153.0	152.7	151.9	150.8	153.2	152.2	151.9	153.7	148.5	145.1	139.4	*136.6	*128.8
Class I Railroads ‡																
Financial operations, qtrly. (AAR), excl. Amtrak:																
Operating revenues, total #	mil. \$.	25,352	28,254	7,514			7,660			7,582			7,966			
Freight	do.	23,576	26,350	7,022			7,182									
Passenger, excl. Amtrak	do.	382	439	118			121									
Operating expenses	do.	24,093	26,352	6,807			6,960			7,179			7,331			
Net railway operating income	do.	858	1,337	540			469			274			430			
Net income (after taxes)	do.	*840	*1,131	545			636			341			498			
Traffic:																
Ton-miles of freight (net), total, qtrly	bil.	928.7	933.1	239.4			236.1			229.8			227.1			
Revenue ton-miles, qtrly. (AAR)	do.	913.7	918.6	236.0			236.6			222.5			227.5			
Price index for railroad freight	1969 = 100.	243.4	285.5	300.5	313.8	317.7	321.4	321.0	321.4	324.3	333.2	333.5	333.6	337.6	337.8	337.5
Travel																
Hotels and motor-hotels:																
Restaurant sales index same month 1967 = 100.		170	182	186	158	176	198	191	200	214	214	192	191	215		
Hotels: Average room sale \$	dollars.	45.69	49.48	52.56	56.71	56.17	58.11	57.28	56.29	54.90	56.05	49.44	55.55	59.56		
Rooms occupied	% of total.	72	65	44	62	68	74	73	73	72	69	68	67	74		
Motor-hotels: Average room sale \$	dollars.	32.36	35.30	34.94	35.95	37.61	37.42	38.14	38.00	40.15	39.42	38.79	38.56	38.85		
Rooms occupied	% of total.	71	66	51	56	64	72	71	70	73	76	76	67	68		
Foreign travel:																
U.S. citizens: Arrivals	thous.	9,259	*9,010	564	681	587	735	692	760	789	672	989	715	746	622	
Departures	do.	9,681	*9,971	758	700	670	735	792	863	988	985	904	831	752	658	
Aliens: Arrivals	do.	9,886	*11,252	910	871	692	819	975	993	1,036	1,293	1,369	1,040	938	778	
Departures	do.	7,814	*9,285	707	752	552	618	755	785	789	873	1,198	913	830	726	
Passports issued	do.	3,170	3,020	158	233	237	338	335	317	363	323	272	225	196	172	*210
National parks, visits	do.	56,922	59,081	2,167	2,017	2,092	2,622	3,556	5,237	7,892	10,955	11,226	6,865	5,032	2,719	2,023
COMMUNICATION																
Telephone carriers:																
Operating revenues #	mil. \$.	50,604	56,738	4,970	5,135	5,048	5,307	5,275	5,303	5,503	5,714	5,772	5,816	5,838	5,806	
Station revenues	do.	21,967	24,333	2,130	2,201	2,236	2,244	2,272	2,288	2,330	2,338	2,360	2,415	2,466	2,463	
Tolls, message	do.	22,389	22,983	2,006	2,071	1,931	2,144	2,102	2,076	2,199	2,319	2,340	2,310	2,354	2,264	
Operating expenses (excluding taxes)	do.	33,110	37,983	3,397	3,346	3,352	3,498	3,577	3,574	3,620	3,727	3,703	3,812	3,820	4,060	
Net operating income (after taxes)	do.	9,084	10,194	887	975	913	985	888	923	1,019	1,074	1,117	1,085	1,111	950	
Phones in service, end of period	mil.	155.1	159.9	159.9	164.2	164.5	164.7	165.0	164.8	164.8	164.8	164.6	165.3	165.3	165.1	
Telegraph carriers:																
Domestic:																
Operating revenues	mil. \$.	636.0	697.1	60.5	57.9	58.5	63.0	64.0	61.9	68.4	68.0	68.2	67.7	67.6	65.7	
Operating expenses	do.	519.2	561.5	49.0	48.8	48.2	49.3	50.0	48.6	54.9	55.5	53.0	56.0	56.8	53.1	
Net operating revenues (before taxes)	do.	80.2	95.9	7.8	5.9	7.1	10.3	10.8	7.3	9.3	8.9	11.4	7.8	7.7	9.1	
Overseas, total:																
Operating revenues	do.	491.1	*534.2	46.2	45.2	45.1	50.0	48.0	46.6	49.5	50.2	47.0	50.1	51.2	48.0	
Operating expenses	do.	326.2	*374.4	39.6	33.2	32.2	34.0	35.2	36.0	28.3	38.3	39.4	39.1	36.9	37.4	
Net operating revenues (before taxes)	do.	142.7	*137.4	5.1	9.8	10.8	13.7	10.7	8.5	11.1	9.9	5.4	8.7	12.1	8.5	

See footnotes at end of tables.

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ELECTRIC POWER AND GAS

ELECTRIC POWER																
Production:																
Electric utilities, total.....mil. kw.-hr.	2,246,808	2,286,034	195,589	205,192	179,624	185,435	172,369	177,656	202,694	220,164	210,245					
By fuels.....do.....	1,967,025	2,010,013	173,299	182,836	158,490	164,863	151,646	153,574	176,325	185,032	188,610					
By waterpower.....do.....	279,783	276,021	22,290	22,355	21,134	20,572	20,723	24,081	26,370	25,133	21,635					
Sales to ultimate customers, total (Edison Electric Institute) †.....mil. kw.-hr.	2,079,221	2,095,333	174,876	187,047	180,663	172,296	164,971	162,656	174,208	191,316	192,116	183,125	170,764			
Commercial and industrial:																
Small light and power \$.....do.....	493,494	509,547	41,869	43,944	42,615	41,114	39,710	40,392	44,501	48,909	48,848	47,192	43,184			
Large light and power \$.....do.....	815,586	791,241	66,331	65,189	65,632	66,251	66,000	66,040	67,497	68,847	69,198	68,491	66,677			
Railways and railroads.....do.....	4,245	4,292	381	379	365	367	339	331	335	332	326	325	322			
Residential or domestic.....do.....	694,266	720,784	60,279	71,063	65,789	58,402	53,024	49,978	55,789	67,078	67,472	61,040	54,522			
Street and highway lighting.....do.....	14,755	14,566	1,335	1,418	1,345	1,317	1,152	1,206	1,172	1,137	1,177	1,206	1,220			
Other public authorities.....do.....	49,481	48,426	4,138	4,466	4,340	4,242	4,175	4,125	4,332	4,442	4,481	4,284	4,288			
Interdepartmental.....do.....	7,394	6,477	543	589	578	602	571	584	581	572	614	587	550			
Revenue from sales to ultimate customers (Edison Electric Institute) †.....mil. \$.	77,691.5	91,618.7	7,910.2	8,586.6	8,324.3	8,061.0	7,653.8	7,987.2	8,948.2	10,094.0	10,197.1	9,609.9	8,799.8			
GAS																
Total utility gas, quarterly (American Gas Association):																
Customers, end of period, total.....thous.	46,708	47,263	47,263			47,840			47,760							
Residential.....do.....	43,027	43,528	43,528			44,016			43,963							
Commercial.....do.....	3,446	3,499	3,499			3,584			3,560							
Industrial.....do.....	189	188	188			191			189							
Other.....do.....	45	48	48			49			48							
Sales to customers, total.....tril. Btu.	15,440	15,409	13,974			5,312			3,458							
Residential.....do.....	5,083	4,823	1,288			2,151			789							
Commercial.....do.....	2,486	2,442	655			996			428							
Industrial.....do.....	7,555	7,862	1,951			2,068			2,182							
Other.....do.....	316	283	81			97			60							
Revenue from sales to customers, total.....mil. \$.	38,947	48,276	13,191			18,993			12,416							
Residential.....do.....	14,833	17,409	4,919			8,336			3,405							
Commercial.....do.....	6,624	8,149	2,322			3,725			1,678							
Industrial.....do.....	16,961	22,081	5,764			6,662			7,182							
Other.....do.....	530	637	187			269			152							

FOOD AND KINDRED PRODUCTS; TOBACCO

ALCOHOLIC BEVERAGES																
Beer:																
Production.....mil. bbl.	184.19	194.08	13.32	13.31	14.58	16.72	17.68	18.87	18.63	18.80	17.72	15.72	14.61	13.12		
Taxable withdrawals.....do.....	168.12	173.37	12.38	12.08	12.41	15.01	15.47	17.00	17.29	17.37	16.22	14.68	13.84	12.39		
Stocks, end of period.....do.....	13.29	13.96	13.96	13.98	14.95	15.12	15.26	15.78	15.24	14.98	14.53	14.42	13.99	13.38		
Distilled spirits (total):																
Production.....mil. tax gal.	186.68	140.53	14.96	14.42	14.30	16.68	14.75	12.73	11.82	6.38	7.93	11.43				
Consumption, apparent, for beverage purposes †.....mil. wine gal.	447.52	449.93	54.40	32.97	30.88	35.68	37.03	34.42	37.72	35.91	33.36	34.75	39.07			
Stocks, end of period †.....mil. tax gal.	645.67	578.02	578.02	615.58	625.77	571.04	633.18	623.93	637.85	621.26	618.00	612.74				
Imports.....mil. proof gal.	123.65	113.71	9.55	8.84	8.72	10.04	9.03	10.21	7.67	8.56	8.33	11.77	13.32	12.32	9.12	
Whisky:																
Production †.....mil. tax gal.	101.26	84.31	7.58	7.38	8.13	12.42	10.64	8.44	7.38	3.68	4.66	6.92				
Stocks, end of period †.....do.....	581.16	512.02	512.02	553.51	553.47	497.91	558.33	558.77	555.79	551.27	547.19	543.60				
Imports.....mil. proof gal.	95.40	86.00	7.06	6.51	5.06	7.64	6.88	7.56	5.30	6.52	5.83	9.32	10.00	9.30	6.62	
Wines and distilling materials:																
Effervescent wines:																
Production.....mil. wine gal.	23.48	26.20	3.11	1.87	2.42	2.85	2.42	2.36	3.05	2.47	2.30	2.04	3.80			
Taxable withdrawals.....do.....	22.40	25.29	2.94	1.27	1.03	1.63	1.73	1.98	2.42	1.68	2.26	2.11	4.52			
Stocks, end of period.....do.....	10.03	9.26	9.26	10.90	11.86	13.20	13.97	14.47	11.92	15.14	14.89	14.44	20.75			
Imports.....do.....	4.53	4.83	0.66	0.85	0.35	0.38	0.55	0.64	0.45	0.55	0.52	0.53	0.76	1.07	1.01	
Still wines:																
Production †.....do.....	434.01	508.97	23.47	7.86	5.04	5.87	5.43	5.62	4.45	5.84	74.37	202.16	101.90			
Taxable withdrawals †.....do.....	328.48	349.43	30.48	30.34	25.14	32.31	29.13	29.03	31.20	29.51	26.66	31.46	36.40			
Stocks, end of period †.....do.....	558.43	610.29	610.29	556.62	548.25	526.79	494.01	466.63	428.05	401.61	437.53	620.50	656.67			
Imports.....do.....	87.63	97.68	9.03	8.91	7.52	7.44	7.70	9.34	7.97	8.58	9.51	8.37	10.24	11.12	10.91	
Distilling materials produced at wineries.....do.....	254.36	224.38	10.29	5.51	3.52	2.81	2.94	5.96	5.24	2.96	35.12	67.97	32.05			
DAIRY PRODUCTS																
Butter, creamery:																
Production (factory) @.....mil. lb.	984.6	1,145.3	103.6	121.3	110.1	116.7	116.9	116.2	96.6	84.1	85.0	86.3	100.5	94.2	108.9	
Stocks, cold storage, end of period.....do.....	177.8	304.6	304.6	332.1	372.3	407.4	450.4	473.6	507.5	515.5	515.6	490.0	470.0	451.1	429.2	433.1
Price, wholesale, 92 score (N.Y.).....\$ per lb.	1.272	1.448	1.539	1.534	1.537	1.535										
Cheese:																
Production (factory), total @.....mil. lb.	3,717.2	3,983.1	354.4	342.8	316.5	365.4	371.2	386.9	385.9	347.1	333.7	324.5	338.8	326.3	365.4	
American, whole milk @.....do.....	2,189.9	2,374.6	204.8	212.2	198.1	224.5	237.5	253.5	243.6	217.9	202.8	188.2	198.4	191.3	217.0	
Stocks, cold storage, end of period.....do.....	512.1	578.8	578.8	601.7	596.3	591.1	631.9	649.8	685.7	714.2	720.9	694.3	682.4	677.5	709.6	717.3
American, whole milk.....do.....	406.5	479.6	479.6	504.7	508.6	501.4	539.4	555.6	585.0	615.7	617.7	598.6	591.3	590.4	623.0	632.0
Imports.....do.....	248.3	231.2	44.4	10.3	11.6	15.3	19.5	13.7	16.8	18.6	16.9	22.0	23.4	26.5	52.9	
Price, wholesale, American, single daisies (Chicago).....\$ per lb.	1.414	1.562	1.641	1.640	1.640	1.669	1.670	1.678	1.679	1.678	1.678	1.678	1.685	1.692	1.684	1.684

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FOOD AND KINDRED PRODUCTS; TOBACCO—Continued																
DAIRY PRODUCTS—Continued																
Condensed and evaporated milk:																
Production, case goods @	796.1	724.7	60.7	55.7	54.7	60.4	65.0	65.2	69.2	67.8	68.0	60.1	57.0	60.3	68.2	
Stocks, manufacturers', case goods, end of month or year	76.7	51.8	51.8	41.7	36.9	39.5	53.0	66.3	77.0	81.6	99.1	101.1	84.8	58.6	46.0	
Exports	42.3	43.4	5.0	2.8	3.4	2.9	2.1	2.8	3.2	2.7	2.4	3.0	2.9	3.1	3.7	
Fluid milk:																
Production on farms †	123,411	128,525	10,494	10,786	10,129	11,511	11,509	12,055	11,576	11,344	11,104	10,638	10,751	10,384	10,847	11,047
Utilization in mfd. dairy products @	66,038	71,687	5,997	6,212	5,903	6,718	6,863	7,052	6,830	6,456	6,179	5,837	5,902	5,530	6,155	
Price, wholesale, U.S. average	12.00	13.10	14.10	14.10	14.00	13.80	13.60	13.50	13.40	13.40	13.40	13.80	14.00	14.00	14.00	14.00
Dry milk:																
Production:																
Dry whole milk @	85.3	82.7	6.9	6.8	6.0	6.8	8.0	8.5	6.4	7.0	7.6	8.4	9.2	8.6	8.8	
Nonfat dry milk (human food) @	908.7	1,160.7	89.6	92.0	95.3	110.0	122.9	135.3	132.6	120.0	114.8	94.5	90.4	88.2	109.6	
Stocks, manufacturers', end of period:																
Dry whole milk	4.3	5.3	5.3	6.6	4.8	3.9	4.0	4.0	3.6	3.3	2.9	3.0	2.8	4.3	6.0	
Nonfat dry milk (human food)	92.6	85.0	85.0	80.6	92.8	96.9	102.0	116.5	116.3	99.1	104.5	87.5	84.4	75.8	86.7	
Exports, whole and nonfat (human food)	73.3	176.2	17.5	16.9	7.2	11.4	14.6	24.2	31.4	26.3	30.9	17.0	8.2	7.9	2.0	
Price, manufacturers' average selling, nonfat dry milk (human food)	0.800	0.887	0.939	0.938	0.936	0.937	0.939	0.939	0.939	0.938	0.938	0.939	0.944	0.942	0.940	
GRAIN AND GRAIN PRODUCTS																
Exports (barley, corn, oats, rye, wheat)	3,640.3	3,914.4	382.9	348.0	341.8	361.9	326.1	289.8	289.9	295.7	301.2	358.8	369.6	312.8	318.6	
Barley:																
Production (crop estimate) †	382.8	361.0														478.3
Stocks (domestic), end of period, total †	365.6	303.4	303.4			203.4		137.3				451.0				332.5
On farms †	246.4	185.6	185.6			113.4		74.4				303.0				230.7
Off farms	119.2	117.8	117.8			90.0		62.8				148.0				101.8
Exports, including malt \$	34.5	68.9	9.1	6.4	11.5	4.8	3.5	0.1	1.5	6.7	12.4	12.0	16.5	8.7	7.7	
Prices, wholesale (Minneapolis):																
No. 2, malting	2.67	(°)														
No. 3, straight	2.61	(°)														
Corn:																
Production (crop estimate, grain only) † ..	27,938.8	26,644.8														28,201.0
Stocks (domestic), end of period, total † ..	6,886.2	5,858.8	5,858.8			3,987.2		2,774.2				1,034.0				6,900.0
On farms †	5,041.7	4,141.5	4,141.5			2,641.1		1,818.3				490.1				4,966.0
Off farms	1,844.5	1,717.3	1,717.3			1,346.1		955.9				543.8				1,934.1
Exports, including meal and flour	2,333.5	2,485.3	238.6	208.3	199.8	222.2	185.3	207.6	157.7	147.2	139.2	150.0	194.6	175.0	172.4	
Price, wholesale:																
Weighted avg., selected markets, all grades \$ per bu.	2.42	(°)														
Oats:																
Production (crop estimate) †	526.6	458.3														508.1
Stocks (domestic), end of period, total † ..	476.8	391.0	391.0			256.1		176.9				457.8				364.7
On farms †	400.8	329.3	329.3			211.7		148.9				384.0				313.6
Off farms	76.0	61.7	61.7			44.4		28.0				73.7				51.1
Exports, including oatmeal	4.8	9.1	0.9	0.7	1.5	0.8	2.5	1.9	0.6	1.4	0.8	0.9	0.6	0.5	0.3	
Price, wholesale, No. 2, white (Minneapolis) \$ per bu.	1.57	(°)														
Rice:																
Production (crop estimate)	131.9	146.2														185.4
California mills:																
Receipts, domestic, rough	2,721	3,582	342	354	253	333	351	317	218	168	219	92	473	293	287	
Shipments from mills, milled rice	1,800	2,711	339	216	271	268	303	346	186	67	238	106	90	79	97	
Stocks, rough and cleaned (cleaned basis), end of period	249	231	231	283	224	226	203	120	107	174	114	98	326	426	510	
Southern States mills (Ark., La., Tenn., Tex.):																
Receipts, rough, from producers	9,247	10,831	1,358	436	830	749	274	142	85	182	1,503	3,308	1,696	848	768	
Shipments from mills, milled rice	6,019	6,795	761	590	635	852	660	492	499	389	511	673	738	660	654	
Stocks, domestic, rough and cleaned (cleaned basis), end of period	2,503	2,969	2,969	2,686	2,604	2,342	1,853	1,456	1,008	772	1,232	2,722	3,091	2,906	2,763	
Exports	4,978	6,620	730	533	613	809	688	794	497	371	453	470	532	583	458	
Price, wholesale, No. 2, medium grain (Southwest Louisiana)	0.173	0.225	0.265	0.270	0.270	0.275	0.275	0.280	0.280	0.280	0.265	0.250	0.225	0.213	0.195	
Rye:																
Production (crop estimate) †	22.4	16.5														18.6
Stocks (domestic), end of period †	17.7	9.3	9.3			6.9		4.1				14.5				7.8
Price, wholesale, No. 2 (Minneapolis)	2.51	(°)														
Wheat:																
Production (crop estimate), total †	2,134	2,374														2,793
Spring wheat †	533	479														695
Winter wheat †	1,601	1,895														2,099
Distribution, quarterly @	2,051	2,191	570			575		340				1,049				561
Stocks (domestic), end of period, total † ..	1,716.2	1,903.2	1,903.2			1,328.6		988.8				2,733.9				2,173.9
On farms †	773.9	753.4	753.4			538.9		414.3				1,204.9				954.8
Off farms	942.2	1,149.7	1,149.7			789.8		574.5				1,529.0				1,219.2
Exports, total, including flour	1,265.1	1,344.5	133.4	132.2	128.8	134.0	134.5	80.0	130.0	140.4	148.7	195.8	157.6	127.8	137.8	
Wheat only	1,222.5	1,309.5	131.9	129.9	124.4	128.8	127.7	76.0	124.5	138.1	145.4	194.1	156.9	127.5	137.4	
Prices, wholesale:																
No. 1, dark northern spring (Minneapolis) \$ per bu.	4.08	(°)														
No. 2 hd. and dk. hd. winter (Kans. City) ..	4.03	(°)														
Weighted avg., selected markets, all grades \$ per bu.	3.73	(°)														

See footnotes at end of tables.

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	Annual	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	
FOOD AND KINDRED PRODUCTS; TOBACCO—Cont.																
MISCELLANEOUS FOOD PRODUCTS—Cont.																
Sugar (United States):																
Deliveries and supply (raw basis): \$																
Production and receipts:																
Production..... thous. sh. tons..	4,733	^a 4,713	1,127	758	487	232	153	201	138	82	86	128	603	1,132	.....	.....
Deliveries, total..... do....	10,788	10,838	^a 946	754	743	1,004	878	943	1,031	997	985	1,099	861	842	.....	.....
For domestic consumption..... do....	10,714	10,149	815	697	675	836	785	815	914	877	853	986	783	766	.....	.....
Stocks, raw and ref., end of period..... do....	3,503	2,970	2,970	3,330	3,472	3,195	2,807	2,755	2,285	1,928	1,602	1,416	1,579	^a 2,416	^a 3,264	.....
Exports, raw and refined.....sh. tons..	14,924	608,029	123,950	26,370	55,765	134,737	80,412	83,266	115,336	88,501	122,452	91,131	68,370	65,210	47,605	.....
Imports, raw and refined..... thous. sh. tons..	4,810	4,127	272	387	289	313	255	398	312	347	313	424	653	462	902	.....
Prices, wholesale (New York):																
Raw..... \$ per lb..	¹ 0.164	0.306	0.291	0.303	0.266	0.231	0.200	0.163	0.191	0.198	0.185	0.154	0.160	0.163	0.167	.....
Refined (excl. excise tax)..... do....	0.228	0.405	0.403	0.432	0.383	0.344	0.315	0.266	0.295	0.285	0.295	0.236	0.261	0.261	0.261	.....
Tea, imports..... thous. lb..	174,690	184,786	15,936	12,891	18,354	14,696	19,220	18,990	17,736	14,586	19,128	13,205	15,855	13,473	12,121	.....
FATS, OILS, AND RELATED PRODUCTS																
Baking or frying fats (incl. shortening):																
Production.....mil. lb..	4,206.4	4,177.8	367.6	331.4	325.2	354.5	347.3	345.9	356.8	336.0	329.0	385.7	402.3	^a 404.8	371.7	.....
Stocks, end of period @..... do....	131.9	130.7	130.7	125.2	122.0	118.9	126.8	129.0	117.4	114.9	132.7	123.6	116.3	^a 113.3	120.3	.....
Salad or cooking oils:																
Production..... do....	5,075.6	5,167.2	411.2	404.1	409.5	474.5	438.2	459.3	473.9	480.6	478.6	456.2	440.5	^a 432.7	421.7	.....
Stocks, end of period @..... do....	141.2	122.5	122.5	137.9	131.6	127.6	129.2	137.9	117.0	112.5	112.6	99.7	113.9	^a 117.4	110.1	.....
Margarine:																
Production..... do....	2,553.2	2,592.8	264.6	235.5	214.4	231.6	196.3	182.1	214.3	184.7	192.5	223.3	220.9	^a 232.6	254.8	.....
Stocks, end of period @..... do....	80.5	74.2	74.2	62.2	68.3	76.8	66.1	74.2	87.0	79.8	87.7	75.4	62.5	^a 64.2	60.9	.....
Price, wholesale (colored; mfr. to wholesaler or large retailer; delivered)..... \$ per lb..	0.549	0.603	0.624	0.637	0.637	0.637	0.637	0.637	0.637	0.637	0.637	0.637	0.637	0.637	0.637	.....
Animal and fish fats:																
Tallow, edible:																
Production (quantities rendered).....mil. lb..	904.8	1,042.7	96.0	97.1	87.4	100.4	91.2	90.5	93.7	89.8	92.2	96.5	103.6	^a 92.3	95.1	.....
Consumption in end products..... do....	765.7	714.9	62.9	62.4	64.0	69.9	66.9	63.1	64.5	67.5	58.7	64.5	66.6	61.1	57.4	.....
Stocks, end of period @..... do....	56.6	55.9	55.9	68.1	53.8	51.1	47.5	39.8	40.6	37.8	36.5	36.2	40.2	^a 48.3	54.0	.....
Tallow and grease (except wool), inedible:																
Production (quantities rendered)..... do....	5,836.3	6,284.0	541.8	533.3	480.6	517.5	514.3	479.3	498.7	502.1	474.6	518.0	541.9	^a 513.9	551.7	.....
Consumption in end products..... do....	3,083.4	2,922.2	233.5	254.5	241.0	253.1	256.3	261.9	249.1	255.7	239.7	244.4	251.0	^a 234.4	222.9	.....
Stocks, end of period @..... do....	390.4	413.0	413.0	436.0	436.9	443.6	449.2	437.5	431.9	419.0	426.6	422.1	408.7	^a 435.4	462.6	.....
Vegetable oils and related products:																
Coconut oil:																
Production, refined.....mil. lb..	595.6	644.7	62.5	65.5	66.0	61.8	53.5	63.7	58.1	57.0	58.4	56.5	59.9	^a 52.4	47.5	.....
Consumption in end products..... do....	748.4	693.5	58.3	67.7	65.0	71.1	68.3	64.0	70.4	58.0	70.4	66.7	73.2	^a 59.8	52.3	.....
Stocks, refined, end of period @..... do....	40.1	49.6	49.6	47.4	50.6	44.7	33.9	39.4	38.0	40.1	45.9	42.2	35.9	^a 35.3	40.7	.....
Imports..... do....	979.8	889.3	116.0	110.1	139.2	79.1	39.8	90.5	81.2	107.8	55.9	84.7	86.3	76.3	86.2	.....
Corn oil:																
Production: Crude..... do....	743.5	810.6	59.0	65.8	63.6	76.2	69.6	74.3	76.1	76.2	76.4	77.8	81.4	69.2	66.5	.....
Production: Refined..... do....	589.4	638.2	59.7	61.9	65.6	61.2	59.7	64.4	63.2	57.7	59.5	64.7	65.4	69.6	66.8	.....
Consumption in end products..... do....	555.0	595.3	61.5	56.9	52.1	56.6	43.3	50.3	52.5	48.0	45.6	52.8	50.5	^a 56.3	58.4	.....
Stocks, crude and ref., end of period @..... do....	65.2	76.3	76.3	72.4	80.3	77.0	82.0	71.4	72.6	68.5	77.8	75.8	89.1	^a 69.1	63.7	.....
Cottonseed oil:																
Production: Crude..... do....	1,260.5	1,447.1	122.3	131.7	118.9	115.4	100.8	88.7	77.4	69.6	62.1	60.9	111.2	^a 153.5	161.9	.....
Production: Refined..... do....	1,140.8	1,370.2	125.1	131.3	99.6	102.1	113.0	82.9	79.1	73.7	56.9	53.1	78.6	^a 120.6	133.5	.....
Consumption in end products..... do....	618.2	698.3	49.5	38.0	44.5	47.1	44.2	50.6	48.0	39.0	43.4	46.5	44.8	^a 58.6	55.1	.....
Stocks, crude and ref., end of period @..... do....	144.3	170.1	170.1	183.6	200.1	202.4	165.9	160.2	121.7	113.1	109.5	80.0	102.5	^a 127.2	132.6	.....
Exports (crude and refined)..... do....	633.0	785.4	47.1	77.0	29.3	66.7	82.1	72.2	85.7	46.9	35.9	46.5	42.2	37.4	80.5	.....
Price, wholesale (N.Y.)..... \$ per lb..	0.369	0.261	0.338	0.334	0.320	0.335	0.354	0.350	0.365	0.380	0.355	0.300	0.290	0.293	0.290	.....
Soybean oil:																
Production: Crude.....mil. lb..	11,504.1	12,097.2	1,024.3	1,010.6	887.8	991.3	954.2	914.9	830.7	815.8	827.2	855.6	1,125.3	1,017.8	1,069.6	.....
Production: Refined..... do....	9,110.1	8,982.2	763.1	741.6	706.3	833.9	741.2	754.9	812.9	765.4	813.3	812.1	833.6	840.9	805.2	.....
Consumption in end products..... do....	8,656.4	8,585.2	738.8	698.7	680.8	775.1	722.3	728.7	774.1	763.1	755.2	796.4	796.8	^a 783.5	752.8	.....
Stocks, crude and ref., end of period @..... do....	1,030.1	1,737.8	1,737.8	1,900.1	1,976.3	2,016.7	2,118.5	2,166.3	2,138.6	2,024.4	1,783.1	1,736.1	1,790.2	^a 1,884.4	2,017.5	.....
Exports (crude and refined)..... do....	2,370.6	2,314.6	120.5	116.0	113.8	202.8	76.1	109.6	108.8	93.1	291.7	97.9	174.3	135.1	179.0	.....
Price, wholesale (refined; N.Y.)..... \$ per lb..	0.327	0.289	0.286	0.282	0.265	0.281	0.285	0.265	0.268	0.292	0.266	0.249	0.260	0.253	0.241	.....
TOBACCO																
Leaf:																
Production (crop estimate).....mil. lb..	^a 1,527	^a 1,786	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	^a 2,048	.....
Stocks, dealers' and manufacturers', end of period @.....mil. lb..	4,974	4,850	4,850	.....	.....	4,624	.....	.....	4,285	.....	4,697	.....	.....	.....	.....	.....
Exports, incl. scrap and stems.....thous. lb..	561,756	591,518	66,563	44,809	32,831	53,728	49,414	44,571	40,142	31,277	27,398	45,510	63,222	86,775	55,577	.....
Imports, incl. scrap and stems..... do....	377,203	365,622	22,342	33,973	44,274	31,753	24,274	28,796	22,347	22,171	32,153	32,372	27,889	22,946	12,970	.....
Manufactured:																
Consumption (withdrawals):																
Cigarettes (small):																
Tax-exempt..... millions..	93,150	94,256	8,204	9,868	9,248	7,592	6,891	6,341	8,031	6,766	7,555	7,636	8,141	7,447	.....	.....
Taxable..... do....	613,830	620,565	43,762	53,048	51,474	54,224	53,670	50,678	56,519	51,064	58,716	58,150	56,635	49,658	.....	.....
Cigars (large), taxable..... do....	3,356	^a 3,291	238	258	211	291	257	274	336	242	261	313	300	267	.....	.....
Exports, cigarettes..... do....	79,717	81,998	6,781	6,958	8,289	8,534	6,046	6,621	6,214	6,231	6,468	7,149	7,300	8,058	4,713	

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	Annual		Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.
LEATHER AND PRODUCTS																
HIDES AND SKINS																
Exports:																
Value, total #	991,707	693,678	58,493	57,458	64,390	64,187	56,901	58,209	55,976	60,702	51,763	50,062	53,804	59,316	66,835	
Calf and kid skins	2,321	2,495	202	242	264	263	227	278	264	184	216	194	277	330	289	
Cattle hides	23,731	19,568	1,711	1,536	1,749	1,737	1,565	1,545	1,560	1,775	1,496	1,521	1,561	1,723	1,936	
Imports:																
Value, total #	138,800	88,200	6,800	7,600	8,200	7,300	8,700	8,400	10,100	8,900	11,200	7,900	7,200	8,200		
Sheep and lamb skins	15,529	9,027	248	546	1,289	926	1,341	1,484	1,381	1,446	1,694	946	1,092	1,254	839	
Goat and kid skins	2,444	519	10	67	34	68	132	59	79	117	45	61	104	21	32	
Price, producer:																
Calfskins, packer, heavy, 9 1/2-15 lb	1.687	1.098	1.100													
Hides, native steer heavy	614.4	385.9	420.6	375.1	344.1	356.1	405.8	385.8	364.9	351.7	*373.6	344.3	347.7		343.4	
LEATHER																
Exports:																
Upper and lining leather	187,665	192,597	13,641	19,633	14,418	19,717	17,678	18,016	18,692	13,921	10,918	15,393	12,682	19,464	11,660	
Price, producer:																
Sole, bends, light	329.6	283.8	283.2	317.1	302.7	308.5	317.1	318.5	298.4			284.7				
LEATHER MANUFACTURES																
Footwear:																
Production, total	398,872	396,851	29,514	31,441	30,660	34,345	33,025	31,926	30,361	26,968	30,703	32,887	*35,040	30,320		
Shoes, sandals, and play shoes, except athletic	305,564	299,131	23,139	22,937	22,866	25,673	24,795	24,124	22,251	20,618	22,351	24,545	*25,196	22,548		
Slippers	72,779	73,337	4,327	6,179	5,598	6,282	5,676	5,551	5,798	4,645	6,200	6,362	*7,631	6,035		
Athletic	20,529	24,383	2,048	2,325	2,196	2,390	2,554	2,251	2,312	1,705	2,152	1,980	*2,213	1,737		
Other footwear	3,651	3,271	278	270	275	259	219	217	224	246	257	397	303	265		
Exports	7,581	9,781	877	710	804	1,180	913	729	976	551	785	640	663	1,121	615	
Prices, producer: *																
Men's leather upper, dress and casual			100.0	100.6	102.0	102.6	103.0	102.7	103.5	103.6	103.8	103.8	103.5	103.7	103.6	
Women's leather upper	192.9	211.7	215.7	216.3	217.9	214.0	214.1	214.5	213.4	214.0	*213.6	216.4	217.1	216.2	216.2	
Women's plastic upper			100.0	100.5	101.8	102.8	102.8	103.0	102.9	102.9	*101.0	98.4	96.3	93.5	93.5	
LUMBER AND PRODUCTS																
LUMBER—ALL TYPES #																
National Forest Products Association:																
Production, total	'37,061	'31,885	2,329	2,523	2,542	2,818	2,780	2,651	2,588	2,483	2,554	2,307	2,379	1,831		
Hardwoods	7,317	'7,220	500	520	579	614	598	592	560	545	572	542	527	441		
Softwoods	29,744	24,665	1,829	2,003	1,963	2,204	2,182	2,059	2,028	1,938	1,982	1,765	1,852	1,390		
Shipments, total	'36,514	'31,422	2,350	2,424	2,379	2,752	2,755	2,633	2,765	2,395	2,431	2,260	2,382	2,045		
Hardwoods	6,942	'6,584	492	501	557	592	579	626	560	498	546	518	514	441		
Softwoods	29,572	24,838	1,858	1,923	1,822	2,160	2,176	2,007	2,205	1,897	1,885	1,742	1,868	1,604		
Stocks (gross), mill, end of period, total	5,342	5,805	5,805	5,883	6,065	6,098	6,123	6,213	6,015	6,103	6,232	6,284	6,285	6,075		
Hardwoods	1,171	1,807	1,807	1,819	1,843	1,872	1,891	1,871	1,839	1,886	1,918	1,947	1,964	1,968		
Softwoods	4,171	3,998	3,998	4,064	4,222	4,226	4,232	4,342	4,176	4,217	4,314	4,337	4,321	4,107		
Exports, total sawmill products	1,447	1,655	127													
Imports, total sawmill products	11,513	9,859	799	756	848	966	980	991	934	842	465	659	754	728	590	
SOFTWOODS																
Douglas fir:																
Orders, new	8,388	6,791	453	601	486	698	598	538	566	486	466	483	536	476	459	
Orders, unfilled, end of period	529	499	499	549	514	594	601	540	505	510	458	455	458	477	429	
Production	8,427	6,815	495	576	562	622	601	576	533	521	546	526	533	403	396	
Shipments	8,412	6,821	519	551	521	618	591	599	601	481	518	486	533	457	507	
Stocks (gross), mill, end of period	918	912	912	937	978	982	992	969	901	941	969	1,009	1,009	955	844	
Exports, total sawmill products	519	540	37	51	49	43	51	47	43	31	51	43	29	38	47	
Sawed timber	156	117	8	9	9	9	13	8	13	6	14	14	9	6	19	
Boards, planks, scantlings, etc	363	422	29	42	39	35	38	39	30	25	37	29	20	31	28	
Price, wholesale:																
Dimension, construction, dried, 2" x 4", R.L.	277.24	223.42	217.12													
\$ per M bd. ft.																
Southern pine:																
Orders, new	'7,950	6,559	439	617	463	587	602	508	535	546	448	463	498	461		
Orders, unfilled, end of period	523	419	419	456	447	493	486	474	440	441	407	402	399	430		
Production	'7,938	6,758	515	569	492	552	604	546	559	557	512	485	488	364		
Shipments	'7,932	6,663	493	580	472	541	609	520	569	545	482	468	501	430		
Stocks (gross), mill and concentration yards, end of period	1,175	1,270	1,270	1,259	1,279	1,290	1,285	1,311	1,301	1,313	1,343	1,360	1,347	1,281		
Exports, total sawmill products	209,793	280,243	20,878	14,763	11,781	26,059	19,198	19,919	21,226	20,898	21,048	16,719	19,043	21,334	15,032	
Prices, wholesale (indexes):																
Boards, No. 2 and better, 1" x 6", R.L.																
1967 = 100	366.2	337.2	320.0													
Flooring, C and better, F. G., 1" x 4", S.L.																
1967 = 100	301.4	324.7	330.2													

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LUMBER AND PRODUCTS—Continued																
SOFTWOODS—Continued																
Western pine:																
Orders, new.....mil. bd. ft.	9,630	7,730	516	688	605	747	637	573	761	627	569	538	573	489	428	
Orders, unfilled, end of period.....do.	403	326	326	418	414	442	426	355	369	377	314	291	264	243	219	
Production.....do.	9,780	7,613	635	659	631	736	681	684	679	616	656	511	582	436	390	
Shipments.....do.	9,696	7,807	605	596	609	719	653	644	747	619	632	561	600	510	452	
Stocks (gross), mill, end of period.....do.	1,379	1,185	1,185	1,248	1,270	1,287	1,315	1,355	1,287	1,284	1,308	1,258	1,240	1,166	1,104	
Price, wholesale, Ponderosa, boards, No. 3, 1" x 12", R.L. (6' and over).....\$ per M bd. ft.	317.26	287.55	340.83													
HARDWOOD FLOORING																
Oak:																
Orders, new.....mil. bd. ft.	93.4	(²)														
Orders, unfilled, end of period.....do.	7.0	1.9	1.9	1.5	1.9	2.5	3.7	3.2	3.0	3.6	3.0	3.1	2.1	2.4	2.8	
Production.....do.	99.8	(³)														
Shipments.....do.	96.6	78.0	5.8	6.4	6.7	8.0	9.0	7.5	7.3	6.5	7.1	6.6	7.0	5.7	5.2	
Stocks (gross), mill, end of period.....do.	5.4	12.4	12.4	10.9	9.3	9.7	9.3	8.6	9.2	7.6	8.7	8.8	7.9	7.7	10.1	
METALS AND MANUFACTURES																
IRON AND STEEL																
Exports:																
Steel mill products.....thous. sh. tons.	2,818	4,101	324	256	213	260	291	259	279	218	194	228	233	244	227	
Scrap.....do.	11,054	11,168	763	578	683	442	694	677	628	348	450	395	532	480	509	
Pig iron.....do.	105	73	(²)	2	1	2	2	1	2	1	1	1	2	1	1	
Imports:																
Steel mill products.....do.	17,518	15,495	1,536	1,281	1,234	1,142	1,761	1,772	1,665	1,663	2,226	1,748	1,872	1,921	1,613	
Scrap.....do.	760	558	58	38	41	53	52	62	52	37	59	56	33	43	45	
Pig iron.....do.	476	400	72	18	10	5	36	61	59	36	38	30	34	42	64	
Iron and Steel Scrap																
Production.....thous. sh. tons.	152,219	142,207	3,820	3,774	3,750	4,240	4,078	4,001	3,876	3,689	3,631	3,591	*3,353	3,010		
Receipts, net.....do.	147,048	140,954	3,961	3,769	3,604	4,261	4,018	4,162	3,817	3,454	3,564	3,542	*3,496	3,081		
Consumption.....do.	98,901	83,710	7,386	7,486	7,435	8,379	8,137	8,184	7,657	7,168	7,116	7,116	*6,833	6,065		
Stocks, end of period.....do.	8,724	8,018	8,037	7,939	7,856	8,004	8,015	8,175	8,287	8,245	8,383	8,408	*8,418	8,433		
Prices, steel scrap, No. 1 heavy melting:																
Composite.....\$ per lg. ton.	98.07	92.17	101.86	96.34	94.28	98.74	101.44	96.13	88.63	87.07	91.37	89.74	84.24	78.01	76.01	
Pittsburgh district.....do.	101.50	96.17	106.00	103.50	101.00	109.00	112.00	105.50	99.00	99.00	107.50	102.50	95.50	86.00	85.50	
Ore																
Iron ore (operations in all U.S. districts):																
Mine production.....thous. lg. tons.	185,716	169,613	5,913	5,964	6,052	6,751	6,280	7,265	7,525	7,112	6,860	6,382	5,731	3,910		
Shipments from mines.....do.	186,218	169,594	6,009	2,800	1,545	2,035	3,938	8,906	9,625	9,703	9,300	8,133	7,112	5,048		
Imports.....do.	33,776	25,058	1,809	1,292	1,075	1,165	1,794	2,901	3,879	3,059	4,113	2,595	2,555	2,029	1,585	
U.S. and foreign ores and ore agglomerates:																
Receipts at iron and steel plants.....do.	115,892	87,188	7,625	4,162	2,686	3,794	6,233	11,520	11,924	12,350	12,159	9,927	9,070	7,241	5,579	
Consumption at iron and steel plants.....do.	115,014	89,397	8,326	8,667	8,126	9,293	8,793	8,841	8,162	8,022	8,024	7,708	6,913	6,370	6,038	
Exports.....do.	4,455	5,073	563	33	2	63	625	2,967	634	530	607	391	315	8,358	685	
Stocks, total, end of period.....do.	55,753	56,066	56,066	54,536	53,154	50,786	49,781	51,411	53,744	56,356	58,755	59,574	60,387	60,144		
At mines.....do.	11,266	10,636	14,265	17,477	21,990	26,736	29,336	27,700	25,601	23,019	20,586	18,837	17,515	16,429		
At furnace yards.....do.	38,969	35,706	31,088	25,554	19,972	17,286	19,885	23,480	27,904	31,931	34,062	36,137	36,939	36,203		
At U.S. docks.....do.	5,416	6,095	6,095	5,971	5,610	4,078	3,159	3,826	4,663	5,433	6,238	6,675	6,735	6,776	6,571	
Manganese (mn. content), general imports.....do.	850	795	69	22	76	55	70	111	78	68	55	72	51	67	49	
Pig Iron and Iron Products																
Pig iron:																
Production (including production of ferroalloys).....thous. sh. tons.	86,975	*68,721	6,489	6,603	6,108	7,193	6,755	6,938	6,408	6,268	6,259	5,889	5,419	4,782	4,750	
Consumption.....do.	87,458	*69,053	6,507	6,647	6,209	7,316	6,927	7,108	6,589	6,508	*6,521	6,029	5,527	4,840		
Stocks, end of period.....do.	881	*889	925	891	894	881	846	831	779	817	*786	817	812	840		
Price, basic furnace.....\$ per sh. ton.	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00	203.00	213.00	213.00	213.00		
Castings, gray and ductile iron:																
Orders, unfilled, for sale, end of period.....thous. sh. tons.	974	964	964	942	952	968	882	845	846	848	843	833	781	722		
Shipments, total.....do.	15,402	11,799	890	1,034	1,011	1,140	1,170	1,114	1,079	984	951	956	986	823		
For sale.....do.	7,949	6,457	502	562	548	634	657	630	619	577	570	548	555	454		
Castings, malleable iron:																
Orders, unfilled, for sale, end of period.....thous. sh. tons.	54	22	22	46	45	43	42	40	44	40	46	36	31	34		
Shipments, total.....do.	715	450	36	37	40	43	42	38	40	31	33	33	35	26		
For sale.....do.	376	206	16	17	18	20	20	19	18	14	17	15	18	12		
Steel, Raw and Semifinished																
Steel (raw):																
Production.....thous. sh. tons.	136,341	111,835	10,180	10,590	10,028	11,744	11,243	11,423	10,451	10,160	10,120	9,618	9,003	7,962	7,672	
Rate of capability utilization.....percent.	87.2	72.8	77.8	79.9	83.7	88.6	87.7	86.2	81.5	77.6	77.3	75.9	68.7	62.8	58.6	
Steel castings:																
Orders, unfilled, for sale, end of period.....thous. sh. tons.	1,039	605	605	668	586	558	540	525	501	489	489	469				
Shipments, total.....do.	2,039	1,878	148	158	163	173	154	150	151	127	137	146	144			
For sale, total.....do.	1,848	1,701	135	144	147	155	137	132	132	114	121	131	129			

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PULP, PAPER, AND PAPER PRODUCTS—Continued																
PAPER AND PAPER PRODUCTS—Cont.																
Paper and board—Cont.																
Producer price indexes:																
Paperboard 1967=100..	202.1	234.6	239.6	250.2	252.8	225.1	255.7	258.8	259.2	259.4	*260.6	262.5	262.6	261.6	259.3	
Building paper and board	182.4	206.2	219.7	219.7	225.7	227.9	232.5	237.3	237.4	235.5	*234.2	233.7	232.5	231.5	227.7	
Selected types of paper (API):																
Groundwood paper, uncoated:																
Orders, new..... thous. sh. tons..	1,519	*1,475	115	129	113	126	103	128	107	125	130	*118	117	*95	118	
Orders, unfilled, end of period	149	110	110	122	124	132	111	117	106	119	122	134	117	90	98	
Shipments..... do.....	1,509	*1,498	124	129	114	122	127	121	120	111	126	110	133	*117	111	
Coated paper:																
Orders, new..... do.....	4,547	*4,753	395	394	377	427	409	405	406	407	424	409	448	396	337	
Orders, unfilled, end of period	385	391	391	365	352	345	324	320	313	341	340	*317	324	*319	296	
Shipments..... do.....	4,527	4,673	405	426	391	438	405	411	411	387	422	434	439	*389	383	
Uncoated free sheet papers:																
Orders, new..... do.....	7,836	*7,694	618	693	603	710	664	698	612	639	633	627	*677	*570	571	
Shipments..... do.....	8,195	*8,326	671	690	656	744	731	731	695	645	675	688	*713	*656	578	
Unbleached kraft packaging and industrial converting papers:																
Shipments..... thous. sh. tons..	3,934	*3,788	293	322	309	345	348	342	317	298	330	*318	*311	*326	269	
Tissue paper, production..... do.....	4,520	*4,375	345	372	352	395	372	386	374	347	395	372	*390	*375	350	
Newsprint:																
Canada:																
Production..... thous. metric tons..	8,756	8,625	691	751	702	766	772	770	748	726	677	707	815	769	743	
Shipments from mills..... do.....	8,780	8,622	735	695	684	769	782	744	776	738	652	708	795	773	*800	
Stocks at mills, end of period	165	165	165	221	238	235	225	251	223	211	236	235	255	252	194	
United States:																
Production..... do.....	3,685	4,239	338	379	356	399	391	402	404	405	426	400	420	412	359	
Shipments from mills..... do.....	3,689	4,234	357	374	357	395	392	400	395	401	421	410	417	407	367	
Stocks at mills, end of period	16	21	21	26	25	29	29	30	39	43	48	38	41	46	38	
Consumption by publishers ¶..... do.....	10,197	10,089	880	781	761	860	867	897	814	*791	*827	*839	*922	*907	874	
Stocks at and in transit to publishers, end of period	628	732	732	768	807	827	846	847	902	952	928	944	959	*947	980	
Imports..... thous. sh. tons..	7,223	7,279	596	584	587	620	584	622	568	568	502	513	649	624	557	
Price, rolls, contract, f.o.b. mill, freight allowed or delivered..... Index, 1967=100..	249.4	*279.3	298.3	301.9	301.9	301.9	301.9	301.9		301.9	*309.3	320.0	320.0	314.4	316.8	
Paperboard (American Paper Institute):																
Orders, new (weekly avg.)§..... thous. sh. tons..	613	(*)														
Orders, unfilled..... do.....	1,393	(*)														
Production, total ¶..... do.....	31,429	*30,952	2,313	2,709	2,539	2,842	2,747	2,854	2,666	2,509	2,737	2,590	2,628	*2,482	2,035	
Paper products:																
Shipping containers, corrugated and solid fiber shipments..... mil. sq. ft. surf. area..	250,643	243,228	19,313	21,161	20,044	21,383	21,583	19,808	20,933	20,486	20,434	21,094	21,867	18,189	17,600	
Folding paper boxes, shipments..... thous. sh. tons..	2,716	(*)														
mil. \$.	2,417	(*)														

RUBBER AND RUBBER PRODUCTS

RUBBER																
Natural rubber:																
Consumption..... thous. metric tons..	739.00	586.15	48.69	*48.98	*52.59	*55.44	*55.06	*53.93	*59.52	*56.36	*51.07	52.13	57.32			
Stocks, end of period	132.12	126.67	126.67	*128.01	*125.44	*122.83	*127.56	*124.05	*119.51	*113.53	*111.22	114.37	122.97			
Imports, incl. latex and guayule thous. lg. tons..	747.68	598.31	45.06	30.06	86.64	53.38	67.62	66.36	50.47	41.59	43.40	62.76	69.42	56.23	49.13	
Price, wholesale, smoked sheets (N.Y.).... \$ per lb..	0.651	0.730	0.730	0.713	0.690	0.650	0.590	0.580	0.570	0.560	0.540	0.504		0.456	0.483	
Synthetic rubber:																
Production..... thous. metric tons..	2,534.50	2,009.04	193.69	*193.53	169.68	*200.37	180.94	175.92	158.18	161.50	159.72	168.90	170.44			
Consumption..... do.....	2,340.62	1,854.10	155.13	*152.95	*166.68	*194.00	*144.88	*167.10	*154.13	*144.69	*164.99	156.72	168.24			
Stocks, end of period	402.86	341.77	341.77	*364.50	*354.60	*346.99	*365.86	*368.29	*359.79	*369.44	*353.40	333.47	352.57			
Exports (Bu. of Census)..... thous. lg. tons..	385.11	422.78	32.31	31.21	31.65	38.73	31.77	32.00	28.55	26.27	21.97	24.40	23.94	22.49	21.65	
TIRES AND TUBES																
Pneumatic casings, automotive:																
Production..... thous..	206,687	159,263	13,346	15,463	15,641	16,834	15,466	15,183	15,406	14,277	14,902	15,851	16,534	13,750	11,855	
Shipments, total..... do.....	213,929	177,063	12,926	15,622	14,323	18,617	18,835	18,619	19,324	17,380	17,583	17,982	18,179	13,992	13,544	
Original equipment..... do.....	58,072	40,227	2,707	3,228	3,206	4,301	4,154	4,292	4,538	3,026	2,813	3,123	3,537	2,758	2,363	
Replacement equipment..... do.....	150,780	131,271	9,767	11,916	10,537	13,607	14,160	13,851	14,290	13,901	14,407	14,503	14,168	10,823	10,820	
Exports..... do.....	5,077	5,565	452	478	580	709	521	476	496	453	363	356	474	411	361	
Stocks, end of period	44,873	33,298	33,298	40,188	43,258	43,686	42,393	40,615	38,570	37,116	36,709	36,088	36,556	41,112	40,863	
Exports (Bu. of Census)..... do.....	6,572	9,058	946	797	1,081	1,055	1,224	1,072	1,040	830	1,134	725	653	990	485	
Inner tubes, automotive:																
Exports (Bu. of Census)..... do.....	3,576	4,557	317	206	358	335	374	252	250	350	337	259	268	208	231	

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STONE, CLAY, AND GLASS PRODUCTS																
PORTLAND CEMENT																
Shipments, finished cement	thous. bbl.	'451,383	'404,569	28,181	20,665	20,782	30,229	35,165	34,181	38,074	38,872	37,489	37,303	36,266	29,590	23,495
CLAY CONSTRUCTION PRODUCTS																
Shipments:																
Brick, unglazed (common and face)																
mil. standard brick..	7,708.1	6,335.2	463.4	385.6	361.4	515.0	528.8	501.1	484.1	477.3	445.4	440.6	429.6			
Structural tile, except facing.....	thous. sh. tons..	59.0	101.5	9.7	6.4	11.1	9.7	7.1	8.8	6.8	7.0	6.0	7.3	10.6		
Sewer pipe and fittings, vitrified.....	do.....	855.3	721.8	45.5	36.8	34.3	50.4	45.0	38.9	35.8	42.8	41.1	41.7			
Facing tile (hollow), glazed and unglazed																
mil. brick equivalent..	54.0	45.4	3.6	2.7	2.4	3.2	3.2	3.0	3.6	3.2	2.7	3.0	3.2			
Floor and wall tile and accessories, glazed and unglazed.....	mi. sq. ft..	312.8	297.6	23.1	20.6	21.7	27.1	25.6	24.1	24.5	25.6	25.2	25.3	23.7		
Price index, brick (common), f.o.b. plant or N.Y. dock	1967 = 100..	263.1	280.8	286.3	290.2	289.6	299.3	300.1	301.3	302.4	302.8	*302.8	304.2	304.1	304.8	305.1
GLASS AND GLASS PRODUCTS																
Flat glass, mfrs.' shipments.....	thous. \$.	858,130	868,459	247,797			233,439			248,658			243,260			
Glass containers:																
Production	thous. gross..	321,999	327,022	21,122	25,961	25,470	28,207	27,851	28,209	29,532	27,751	29,449	25,943	*29,305	23,840	
Shipments, domestic, total.....	do.....	316,024	323,816	23,561	23,367	23,160	29,337	27,434	26,817	30,223	29,172	27,342	26,478	*25,865	23,832	
Narrow-neck containers:																
Food	do.....	24,531	24,808	1,770	2,090	2,238	2,676	2,256	2,426	2,675	2,589	2,727	2,812	*2,297	1,928	
Beverage	do.....	57,150	61,032	4,343	3,952	3,727	5,194	5,554	5,188	6,476	6,325	5,724	4,809	*4,596	4,465	
Beer	do.....	113,875	122,678	8,563	7,768	8,040	9,892	10,695	10,625	11,327	11,459	9,657	8,733	8,487	8,175	
Liquor and wine	do.....	24,306	24,574	2,080	2,013	1,879	2,598	2,123	1,840	2,146	1,795	1,827	1,937	2,124	1,892	
Wide-mouth containers:																
Food (incl. packer's tumblers, jelly glasses, and fruit jars)	thous. gross..	66,517	61,212	4,909	5,045	4,874	6,301	4,450	4,627	5,165	4,904	5,247	5,616	*5,955	5,214	
Narrow-neck and wide-mouth containers:																
Medicinal and toilet	do.....	25,856	26,250	1,715	2,213	2,157	2,359	2,138	1,889	2,172	1,902	1,941	2,339	*2,172	*2,040	
Chemical, household and industrial	do.....	3,789	3,262	181	286	245	317	218	222	262	198	219	232	*234	*118	
Stocks, end of period	do.....	45,935	46,676	46,676	50,069	51,651	49,755	49,836	51,053	50,255	48,478	49,633	48,163	*50,420	50,274	
GYPSUM AND PRODUCTS																
Production:																
Crude gypsum (exc. byproduct)	thous. sh. tons..	'14,630	'12,376	1,081	987	892	939	1,003	977	1,008	1,054	891	1,030	866	924	
Calcined	do.....	'14,543	'11,848	924	1,026	885	1,005	1,080	1,067	976	838	986	970	924	778	
Imports, crude gypsum	do.....	7,773	7,365	590	721	487	456	593	715	710	812	630	642	623	703	
Sales of gypsum products:																
Uncalcined.....	do.....	5,603	'5,544	531	309	306	308	419	441	487	411	435	521	452	419	
Calcined:																
Industrial plasters	do.....	379	409	31	30	33	36	34	32	36	32	29	31	36	29	
Building plasters:																
Regular basecoat	do.....	121	217	15	16	17	19	18	16	16	20	19	19	21	18	
All other (incl. Keene's cement)	do.....	283	161	13	13	12	16	17	15	14	13	12	13	12	9	
Board products, total	mil. sq. ft..	16,865	14,131	1,149	1,260	1,068	1,239	1,353	1,102	1,164	1,234	1,146	1,127	1,133	982	
Lath	do.....	125	78	5	7	6	6	6	4	5	5	5	4	4	4	
Veneer base	do.....	444	339	29	31	24	29	34	26	29	32	27	27	25	21	
Gypsum sheathing	do.....	218	190	16	17	14	18	22	19	17	19	17	19	17	15	
Regular gypsum board	do.....	12,556	9,923	809	884	734	857	928	740	782	827	763	748	752	655	
Type X gypsum board	do.....	3,272	3,266	265	293	260	296	322	271	292	313	295	291	297	258	
Prefabricated wallboard	do.....	249	105	8	10	9	9	11	11	11	11	11	10	10	9	
5/16 mobile home board	do.....	(*)	229	16	19	21	24	30	31	28	27	28	28	28	20	

TEXTILE PRODUCTS

FABRIC																
Woven fabric, finishing plants: *																
Production (finished fabric).....	mil. linear yd..	8,065	8,420	*736	629	684	*891	683	686	*663	519	659	*609	*668	828	
Cotton	do.....	3,107	3,531	*286	244	265	*341	268	267	*335	188	251	*306	*256	236	
Manmade and silk fiber	do.....	4,957	4,990	*450	385	420	*550	415	419	*528	331	408	*502	*412	391	
Inventories held at end of period	do.....	828	769	769	785	801	786	778	777	730	747	789	776	*780	794	
Cotton	do.....	351	339	339	341	343	338	343	341	315	318	325	333	*329	334	
Manmade and silk fiber	do.....	477	430	430	444	458	448	435	436	415	429	464	443	*451	459	
Backlog of finished orders.....	do.....	9,408	8,495	660	790	827	809	832	839	761	770	745	715	*687	642	
Cotton	do.....	4,838	4,577	342	428	451	441	444	446	375	376	369	364	*348	343	
Manmade and silk fiber	do.....	4,569	4,219	318	362	376	368	388	393	386	394	376	351	*339	300	
COTTON																
Cotton (excluding linters):																
Production:																
Ginnings †	thous. running bales..	*14,262	*10,826	*9,873							44	427	1,725	5,539	10,157	13,502
Crop estimate	thous. net weight bales \$.	*14,629	*11,122				11,122									15,570
Consumption	thous. running bales..	6,140	6,135	*475	435	446	*539	435	441	*531	385	429	*517	448	*403	*395
Stocks in the United States, total, end of period #	thous. running bales..	12,933	9,261	9,261	8,328	7,201	5,938	5,007	4,109	3,217	2,595	16,970	16,327	15,628	14,907	13,777
Domestic cotton, total.....	do.....	12,929	9,260	9,260	8,326	7,200	5,937	5,006	4,108	3,216	2,594	16,969	16,326	15,627	14,907	13,776
On farms and in transit	do.....	3,937	2,502	2,502	1,534	1,054	606	460	278	81	25	14,669	13,692	10,906	7,170	3,752
Public storage and compresses	do.....	8,160	5,927	5,927	5,846	1,509	4,227	3,469	2,808	2,202	1,687	1,491	1,940	4,059	7,064	9,268
Consuming establishments.....	do.....	832	831	831	946	1,037	1,104	1,770	1,022	933	882	899	694	662	673	756

See footnotes at end of tables.

FOOTNOTES FOR PAGES S-1 THROUGH S-36

General Notes for all Pages:

- r Revised.
- p Preliminary.
- e Estimated.
- c Corrected.

Page S-1

1. Estimates (corrected for systematic biases) for Oct.-Dec. 1981 and Jan.-Mar. 1982 based on planned capital expenditures of business. Planned capital expenditures for the year 1981 appear on p. 30 of the Dec. 1981 SURVEY.

† The estimates for plant and equipment expenditures have been revised. An article describing that revision and containing revised estimates for 1947-77 begins on p. 24 of the Oct. 1980 SURVEY.

¶ Data for the individual durable and nondurable goods industries appear in the Mar., June, Sept., and Dec. issues of the SURVEY.

Page S-2

† Revised series. Estimates of personal income have been revised as part of the 1980 benchmark revision of the national income and product accounts. An article describing that revision appears in the Dec. 1980 SURVEY. Data for 1976-79 are available in a special supplement to the SURVEY. Pre-1976 data are available in *The National Income and Product Accounts of the United States, 1929-76: Statistical Tables*.

‡ Includes inventory valuation and capital consumption adjustments.

* New series. Detailed descriptions begin on p. 18 of the Nov. 1979 SURVEY. See note "†" for this page for information on historical data.

§ Monthly estimates equal the centered three-month average of personal saving as a percentage of the centered three-month moving average of disposable personal income.

Includes data for items not shown separately.

Page S-3

1. Based on data not seasonally adjusted.

Includes data not shown separately.

‡ Revised series. For wholesale see note "†" for p. S-9. For manufacturing see note "†" for p. S-4. For retail see note "†" for p. S-10.

† See note "†" for p. S-4.

§ See note "†" for p. S-10.

@ See note "†" for p. S-9.

* New series. Data back to 1967 are available from the National Income and Wealth Division, Bureau of Economic Analysis.

Page S-4

1. Based on data not seasonally adjusted.

‡ Revised series. For wholesale see note "†" for p. S-9. For manufacturing see note "†" for this page. For retail see note "†" for p. S-10.

† Revised series. Data have been revised back to 1972. A detailed description of this revision and historical data appear in the report "Manufacturers' Shipments, Inventories, and Orders" M3-1.10 (1972-1980), available from the Bureau of the Census, Washington, D.C. 20233.

§ See note "†" for p. S-10.

@ See note "†" for p. S-9.

* New series. Data back to 1967 are available from the National Income and Wealth Division, Bureau of Economic Analysis.

¶ Effective September 1981 SURVEY, data for Manufacturers' Export Sales and Orders of Durable Goods have been discontinued due to both budgetary limitations and a continuing deterioration in the quality of the data.

Includes data for items not shown separately.

Page S-5

1. Based on data not seasonally adjusted.

† See note "†" for p. S-4.

Includes data for items not shown separately.

‡ Includes textile mill products, leather and products, paper and allied products, and printing and publishing industries; unfilled orders for other nondurable goods industries are zero.

¶ For these industries (food and kindred products, tobacco, apparel and other textile products, petroleum and coal, chemicals and allied products, and rubber and plastics products) sales are considered equal to new orders.

Page S-6

1. Based on unadjusted data.

2. This series has been discontinued.

‡ Compiled by Dun & Bradstreet, Inc.

Includes data for items not shown separately.

§ Ratio of prices received to prices paid (parity index).

¶ Revisions, back to 1975 for some commodities, are available upon request.

Page S-7

1. Annual average computed by BEA.

2. Indexes are no longer available.

§ For actual producer prices of individual commodities see respective commodities in the Industry section beginning p. S-22. All data subject to revision four months after original publication.

† Revised series. Stage-of-processing producer price indexes have been revised back to 1976 to reflect updated industry input-output relationships and improved classification of some products.

Includes data for items not shown separately.

‡ Effective Feb. 1981, data have been revised back to 1976 to reflect new seasonal factors.

Page S-8

1. Computed from cumulative valuation total.

2. Data shown here are based on 1980 seasonal factors. Effective Jan. 1981, data are no longer seasonally adjusted.

Includes data for items not shown separately.

§ Data for Jan., Apr., July and Oct. 1981, Jan. 1982 are for five weeks; other months four weeks.

Page S-9

1. Index as of Feb. 1, 1982: building, 325.7; construction, 347.8.

¶ Home mortgage rates (conventional first mortgages) are under money and interest rates on p. S-15.

§ Data include guaranteed direct loans sold.

† Effective April 1981 SURVEY, wholesale trade data have been revised for Jan. 1973-Jan. 1981. Revised data are available upon request.

Page S-10

1. Advance estimate.

2. Effective Jan. 1979 data, sales of mail-order houses are included with department store sales.

† Effective April 1981 SURVEY, retail trade data have been revised for the years 1971-1980. Revised data and a summary of the changes are available from the Census Bureau, Washington, D.C. 20233.

Includes data for items not shown separately.

Page S-11

1. As of July 1.

2. The accounts receivable series have been discontinued.

Includes data for items not shown separately.

‡ Revisions for Jan. 1977-Oct. 1979 appear in "Current Population Reports," Series P-25, No. 870, Bureau of the Census.

† Effective July 1981 SURVEY, data have been revised to reflect new benchmarks and new seasonal adjustment factors. See "BLS Establishment Estimates Revised to March 1980 Benchmarks," in the July 1981 issue of *Employment and Earnings*.

¶ Effective with the February 1982 SURVEY, the labor force series have been revised back to 1970 to reflect the 1980 Census of Population. Seasonal adjustment factors were revised accordingly. Revised monthly series appear in the February 1982 issue of *Employment and Earnings*. Revised annual series will appear in the March 1982 issue of *Employment and Earnings*, U.S. Department of Labor, Bureau of Labor Statistics.

* New series. The participation rate is the percent of the civilian noninstitutional population in the civilian labor force. The employment-population ratio is employment as a percent of the total noninstitutional population, 16 years and over.

Page S-12

† See corresponding note on p. S-11.

§ Effective October 1978 SURVEY, includes data formerly shown separately under ordinance and accessories.

@ Formerly shown as Electrical equipment and supplies.

¶ Production and nonsupervisory workers.

‡ This series is not seasonally adjusted because the seasonal component is small relative to the trend-cycle and/or irregular components and consequently cannot be separated with sufficient precision.

Page S-13

† See note "†" on p. S-11.

§ See note "§" on p. S-12.

@ See note "@" on p. S-12.

‡ See note "‡" on p. S-12.

¶ Production and nonsupervisory workers.

Page S-14

† See corresponding note on p. S-11.

¶ Production and nonsupervisory workers.

‡ Earnings in 1967 dollars reflect changes in purchasing power since 1967 by dividing by Consumer Price Index.

§ Wages as of Feb. 1, 1982: Common, \$13.83; Skilled, \$17.99.

Includes data for items not shown separately.

@ Insured unemployment (all programs) data include claims filed under extended duration provisions of regular State laws; amounts paid under these programs are excluded from state benefits paid data.

@@ Insured unemployment as a percent of average covered employment in a 12-month period.

Page S-15

1. Average for Dec.
2. Average for the year.
3. Daily average.
4. Beginning Jan. 1981, data are for top-rated only. Prior data cover a range of top-rated and regional dealer closing rates.
 - # Includes data for items not shown separately.
 - § For demand deposits, the term "adjusted" denotes demand deposits other than domestic commercial bank and U.S. Government, less cash items in process of collection; for loans, exclusive of loans to and Federal funds transactions with domestic commercial banks and include valuation reserves (individual loan items are shown gross; i.e. before deduction of valuation reserves).
 - ¶ Adjusted to exclude domestic commercial interbank loans and Federal funds sold to domestic commercial banks.
 - * New series. Beginning Dec. 1978, data are for all investment account securities; comparable data for earlier periods are not available.
 - ‡ Rates on the commercial paper placed for firms whose bond rating is Aa or the equivalent. Data through Oct. 1979 show a maturity for 120-179 days. Beginning Nov. 1979, maturity is for 180 days.
 - @ Data through Oct. 1979 show a maturity for 150-179 days. Beginning Nov. 1979, maturity is for 180 days.

Page S-16

1. Data are for fiscal years ending Sept. 30 and include revisions not distributed to the months.
2. Beginning Oct. 1981, data represent the total deficit (budget deficit plus off-budget deficit).
 - # Includes data for items not shown separately.
 - § The Department of Health, Education, and Welfare was redesignated as the Department of Health and Human Services by the Department of Education Organization Act.

Page S-17

1. Total for Jan.-May and Oct.-Dec.
2. Total for 11 months; production not available for Aug.
3. M1-A has been discontinued. M1-B will now be designated "M1."
 - § Or increase in earmarked gold (-).
 - † Effective Feb. 1982 SURVEY, the money stock measures and components have been revised back to 1959. The Federal Reserve has redefined the monetary aggregates. The redefinition was prompted by the emergence in recent years of new monetary assets—for example, negotiable order of withdrawal (NOW) accounts and money market mutual fund shares—and alterations in the basic character of established monetary assets—for example, the growing similarity of and substitution between the deposits of thrift institutions and those of commercial banks. Monthly data from 1959 to date are available from the Banking Section of the Division of Research and Statistics at the Federal Reserve Board, Washington, D.C. 20551.
 - ‡ Composition of the money stock measures is as follows:
M1-A.—This measure is currency plus demand deposits at commercial banks. It is essentially the same as the old M1 except that it excludes demand deposits held by foreign commercial banks and official institutions.
M1-B.—This equals M1-A plus interest-earning checkable deposits at all depository institutions—namely NOW accounts, automatic transfer from savings (ATS) accounts, and credit union share draft balances—as well as a small amount of demand deposits at thrift institutions that cannot, using present data sources, be separated from interest-earning checkable deposits.
M2.—This measure adds to M1-B overnight repurchase agreements (RP's) issued by commercial banks and certain overnight Eurodollars (those issued by Caribbean branches of member banks) held by U.S. nonbank residents, money market mutual fund shares, and savings and small-denomination time deposits (those issued in denominations of less than \$100,000) at all depository institutions. Depository institutions are commercial banks (including U.S. agencies and branches of foreign banks, Edge Act corporations, and foreign investment companies), mutual savings banks, savings and loan associations, and credit unions.
M3.—This measure equals M2 plus large-denomination time deposits (those issued in denominations of \$100,000 or more) at all depository institutions (including negotiable CD's) plus term RP's issued by commercial banks and savings and loan associations.
L.—This broad measure of liquid assets equals M3 plus other liquid assets consisting of other Eurodollar holdings of U.S. nonbank residents, bankers acceptances, commercial paper, savings bonds, and marketable liquid Treasury obligations.
 - ‡‡ Includes ATS and NOW balances at all institutions, credit union share draft balances, and demand deposits at mutual savings banks.
 - * Overnight (and continuing contract) RP's are those issued by commercial banks to the nonbank public, and overnight Eurodollars are those issued by Caribbean branches of member banks to U.S. nonbank customers.
 - @ Small time deposits are those issued in amounts of less than \$100,000. Large time deposits are those issued in amounts of \$100,000 or more and are net of the holdings of domestic banks, thrift institutions, the U.S. Government, money market mutual funds, and foreign banks and official institutions.
 - # Includes data for items not shown separately.

Page S-18

1. Beginning Jan. 1981 data, U.S. Virgin Islands trade with foreign countries is included.
 - § Number of issues represents number currently used; the change in number does not affect the continuity of the series.
 - ‡ For bonds due or callable in 10 years or more.
 - # Includes data for items not shown separately.
 - @ Data may not equal the sum of the geographic regions, or commodity groups and principal commodities, because of revisions to the totals not reflected in the component items.

Page S-19

1. See note 1 for p. S-18.
 - # Includes data not shown separately.
 - § Data may not equal the sum of geographic regions, or commodity groups and principal commodities, because of revisions to the totals not reflected in the components.

Page S-20

1. See note 1 for p. S-18.
 - # Includes data not shown separately.

Page S-21

1. Domestic trunk operations only (averaging about 90 percent of domestic total).
2. Annual total; quarterly or monthly revisions are not available.
3. Before extraordinary and prior period items.
4. For month shown.
5. Beginning Jan. 1980 data, another company is included.
 - # Includes data for items not shown separately.
 - § Total revenues, expenses, and income for all groups of carriers also reflect nonscheduled service.
 - ‡ Beginning Jan. 1977, defined as those having operating revenues of \$50 million or more.
 - ¶ Average daily rent per room occupied, not scheduled rates.

Page S-22

1. Reported annual total; monthly revisions are not available.
2. Data withheld to avoid disclosing operations of individual companies.
3. Beginning Jan. 1979, data include chemically-treated fertilizer and sodium nitrate containing over 16.3% nitrogen by weight; not strictly comparable with data shown for earlier periods.
4. Annual total for monthly data where available; not comparable with earlier periods.
5. See note "¶" for this page.
6. Data beginning Jan. 1979 are for value of shipments and comprise three new product categories. Comparable data for these new categories are not available prior to Jan. 1979. However, the difference between total value of shipments and total factory sales (formerly shown) is considered statistically insignificant.
7. Beginning Jan. 1981, data represent gross weight (formerly phosphoric acid content weight) and are not comparable with data shown for earlier periods.
8. Represents solutions containing ammonia and ammonia nitrate/urea solutions; not comparable with other published data.
 - # Includes data for items not shown separately.
 - § Data are reported on the basis of 100 percent content of the specified material unless otherwise indicated.
 - ‡ Revisions, back to 1977 for some commodities, are available upon request.
 - ¶ Data for Jan. 1977-June 1979 exclude potassium magnesium sulfate; not strictly comparable with data shown for other periods.

Page S-23

1. Includes Hawaii; not distributed to the months.
2. Reported annual total, including Hawaii; monthly data are preliminary and subject to change.
 - § Data are not wholly comparable from year to year because of changes from one classification to another.
 - @ Revisions, back to 1978 for some commodities, are available upon request.
 - ‡ Revisions back to 1977 are available upon request.

Page S-24

1. See note "@@" for this page.
2. Crop estimate for the year.
3. Stocks as of June 1.
4. Stocks as of June 1 and represents previous year's crop; new crop not reported until June (beginning of new crop year).
5. Previous year's crop; new crop not reported until Oct. (beginning of new crop year).
6. Data are no longer available.
7. Crop estimate for 1981.
 - § Excludes pearl barley.
 - # Bags of 100 lbs.
 - ¶ Revised crop estimates back to 1975 are available upon request.
 - @ Revisions, back to 1977, for some commodities, are available upon request.
 - ‡ Revisions back to 1975 are available upon request.
 - @@ Data are quarterly except for June (covering Apr. and May) and Sept. (covering June-Sept.).

Page S-25

1. Average for 11 months; price not available for Dec.
2. Prices for Jan.-Mar. 1979 are estimated; actual price not available. Annual average for 1979 is based on actual price (Apr.-Dec.).
3. Average for nine months; index not available for Apr.-June.
4. Data are no longer available.
 - § Cases of 30 dozen.
 - ¶ Bags of 132.276 lbs.
 - ‡ Revisions for Jan.-July 1979 (back to 1975 for grindings of wheat) are available upon request.
 - @ Revisions back to 1977 are available upon request.
 - # Effective Apr. 1981 SURVEY, the wholesale price of smoked hams has been discontinued and has been replaced with the comparable price index. Annual indexes prior to 1979 and monthly indexes prior to Feb. 1980 are available upon request.

Page S-26

1. Beginning Sept. 1979, estimated prices are derived from a different source and are not comparable with prices shown for earlier periods. Annual average for 1979 represents Sept.-Dec.
 2. Crop estimate for the year.
 3. Reported annual total; not distributed to the months.
 4. Crop estimate for 1981.
- § Monthly data reflect cumulative revisions for prior periods.
 @ Producers' and warehouse stocks.
 ¶ Factory and warehouse stocks.
 ‡ Revisions back to 1975 are available upon request.

Page S-27

1. Annual total; monthly revisions are not available.
- * New series. Source: Bureau of Labor Statistics.
 # Totals include data for items not shown separately.

Page S-28

1. Annual data; monthly revisions not available.
2. Less than 500 short tons.
3. Effective Jan. 1980, data are no longer available.

Page S-29

1. Annual data; monthly revisions are not available.
2. For month shown.
3. Effective Jan. 1981, data are revised back to Jan. 1980. Inventory data formerly calculated by the Bureau of the Census are now based on the Steel Service Center Institute monthly Business Conditions report.

Page S-30

1. Annual data; monthly revisions are not available.
 2. Less than 50 tons.
 3. Data are for five weeks; other months 4 weeks.
 4. For month shown.
- ¶ Includes secondary smelters' lead stocks in refinery shapes and in copper-base scrap.
 @ All data (except annual production figures) reflect GSA remelted zinc and zinc purchased for direct shipment.
 ‡ Source for monthly data: American Bureau of Metal Statistics. Source for annual data: Bureau of Mines.
 # Includes data not shown separately.
 † Effective July 1980 SURVEY data are revised and shown on a new base. The sample size has been restored to 100 firms and the base has been changed to 1977=100. The revised series are not comparable to previously published data.
 * New series. These indexes are based on shipments of hydraulic and pneumatic products reported by participating members of the National Fluid Power Association. Data back to 1959 are available upon request.

Page S-31

1. Reflects revisions not available by months.
 2. Effective Jan. 1980, total stocks for bituminous coal and lignite exclude residential and commercial stocks and are not comparable with data shown for earlier periods.
 3. Data are available back to Oct. 1977.
 4. Beginning Jan. 1979, data reflect coverage of additional processing facilities; not strictly comparable with data shown for earlier periods.
 5. Beginning 1981, data are for quarterly intervals.
 6. Based on new 1981 stock level. See also note "‡" for this page.
- # Includes data for items not shown separately.
 @ Beginning July 1977, data are representative of those manufacturers reporting and are not an average of the total industry; they are not directly comparable with earlier data.
 * New series. Annual data prior to 1978 and monthly data prior to April 1979 are available upon request.
 § Includes nonmarketable catalyst coke.
 ¶ Includes small amounts of "other hydrocarbons and hydrogen refinery input," not shown separately.
 † Revisions for 1978 are available upon request.
 ‡ Effective with 1981 petroleum data, the Energy Information Agency has changed some definitions and concepts to reflect recent developments in refining and blending practices. These changes include adding a category for gasohol production to motor gasoline production and accounting more precisely for distillate and residual fuel oil processed further after initial distillation. A description of these changes appears in the May 1981 issue of *Monthly Energy Review*, U.S. Department of Energy, Energy Information Administration.

Page S-32

1. Less than 50 thousand barrels.
 2. See note 4 for p. S-31.
 3. Reported annual totals; revisions not allocated to the months.
 4. See note "¶" for this page.
 5. Effective April 1981, price represents simple average of Platt's/Lundberg special retail gasoline prices for 48 cities; not strictly comparable with prices shown for earlier periods which represent weighted average price.
 6. See note 6 for p. S-31.
 7. Simple averages of prices are no longer available.
- ¶ Prices are mid-month, include taxes, and represent full service; comparable prices prior to Jan. 1979 are not available.
 # Includes data for items not shown separately.
 * New series. See note "¶" for this page.
 ‡ Except for price data, see note "‡" for p. S-31.

Page S-33

1. Reported annual total; revisions not distributed to the months.
 2. Effective Jan. 1980, data are no longer available.
 3. Average for 11 months; no price for Aug.
- ¶ Consumption by 525 daily newspapers reporting to the American Newspaper Publishers Association.
 § Monthly data are averages of the 4-week periods ending on the Saturday nearest the end of the month; annual data are as of Dec. 31.
 ‡ Data are monthly or annual totals. Formerly weekly averages were shown.

Page S-34

1. Reported annual total; revisions not allocated to the months.
 2. Crop for the year.
 3. Data cover five weeks; other months, four weeks.
 4. Cumulative total for the 1980 crop.
 5. Data are not available prior to Jan. 1980.
 6. Shipments of wide-mouth containers for "chemicals, household and industrial" are included in shipments for "medicinal and toilet" containers.
- * New series. Data for finishing mills have replaced data for weaving mills, which are no longer available.
 # Includes data for items not shown separately.
 ¶ Cumulative ginnings to the end of month indicated.
 § Bales of 480 lbs.

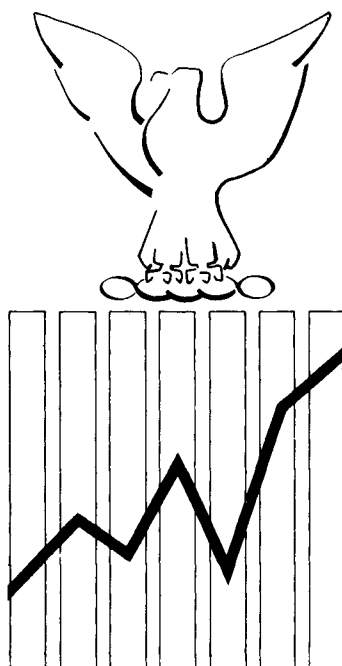
Page S-35

1. Effective Jan. 1, 1978, includes reexports, formerly excluded.
 2. Annual total includes revisions not distributed to the months.
 3. Average for crop year; Aug. 1-Jul. 31.
 4. For five weeks; other months four weeks.
 5. Monthly average.
 6. Average for 11 months; no price for Oct.
 7. Less than 500 bales.
 8. Effective Aug. 1981 SURVEY data are restated to represent millions of square yards.
- § Bales of 480 lbs.
 ¶ Based on 480-lb. bales, preliminary price reflects sales as of the 15th; revised price reflects total quantity purchased and dollars paid for the entire month (revised price includes discounts and premiums).
 # Includes data not shown separately.

Page S-36

1. Annual total includes revisions not distributed to the months.
 2. Estimates of production, not factory sales.
 3. Effective Jan. 1980, passenger vans previously reported as passenger cars are now included with trucks.
 4. Effective Jan. 1979, data are not directly comparable with data shown for earlier periods because of the inclusion of Volkswagens produced in the U.S.
 5. Monthly data for 1980 exclude exports for off-highway trucks; not strictly comparable with data shown for other periods.
- # Total includes backlog for nonrelated products and services and basic research.
 § Domestic comprise all cars assembled in the U.S. and cars assembled in Canada and imported to the U.S. under the provisions of the Automotive Products Trade Act of 1965. Imports comprise all other cars.
 ¶ Courtesy of R.L. Polk & Co.; republication prohibited. Because data for some states are not available, month-to-month comparisons are not strictly valid.
 ‡ Excludes railroad-owned private refrigerator cars and private line cars.
 † Revisions, back to 1967 for some commodities, are available upon request.
 @ In the 1979 BUSINESS STATISTICS, 4th Qtr. 1977 should read "13,946" mil. \$.
 ‡‡ In the 1979 BUSINESS STATISTICS, annual data for 1977 should read "2,604.8" mil. \$.
 ## Revisions back to 1977 are available upon request.

the National Income & Product Accounts of the United States, 1929-76 Statistical Tables



Comprehensive GNP Estimates

The national income and product accounts estimates that resulted from the comprehensive revision completed in December 1980 are now available in two reports: *The National Income*

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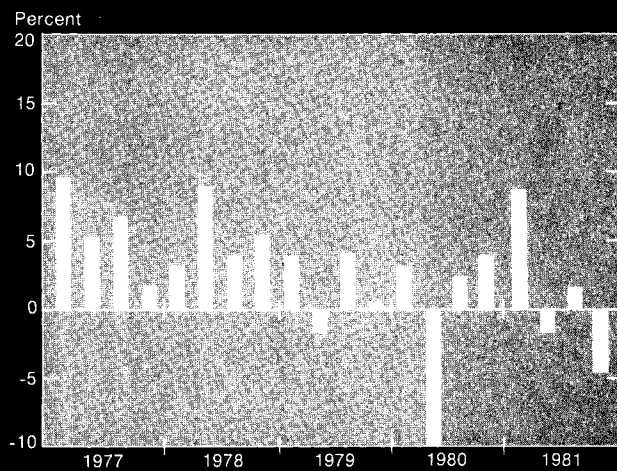
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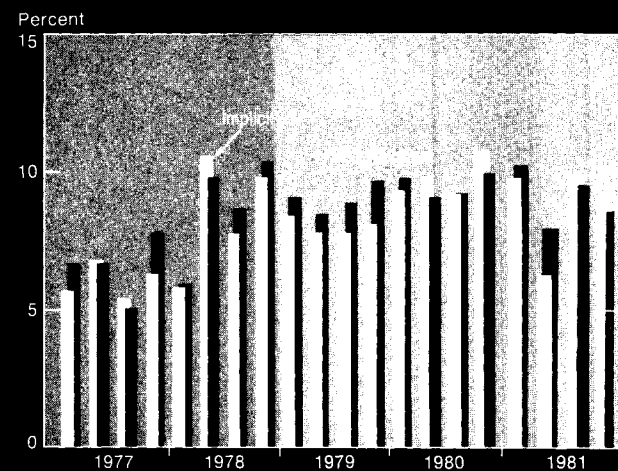
In the fourth quarter

- Real GNP declined $4\frac{1}{2}$ percent
- GNP fixed-weighted price index increased $8\frac{1}{2}$ percent
- Real disposable personal income increased $1\frac{1}{2}$ percent

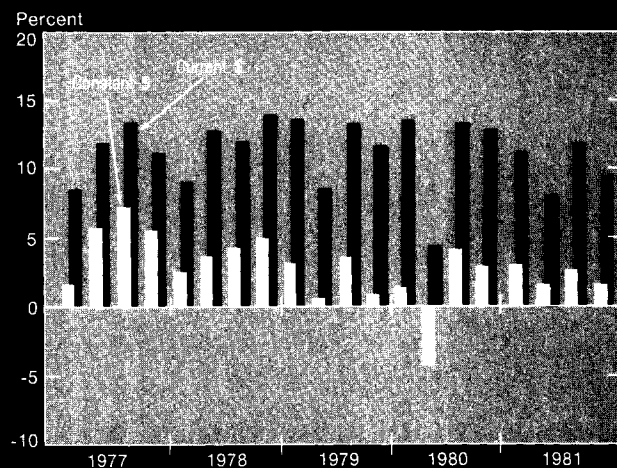
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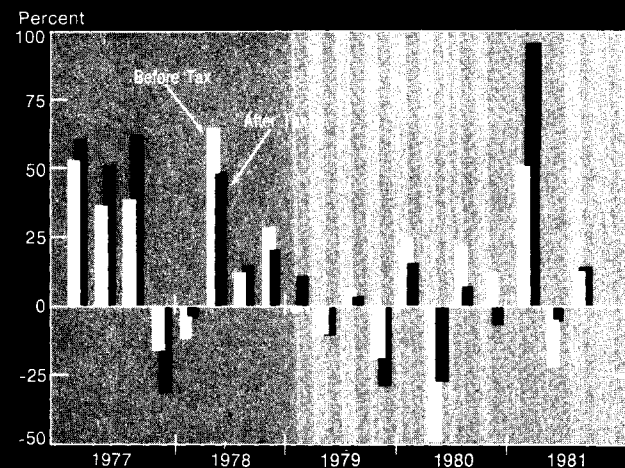
GNP Prices



Disposable Personal Income



Corporate Profits With IVA and CCAdj



Percent change from preceding quarter—seasonally adjusted at annual rates