

economic review

AUGUST 1964

IN THIS ISSUE

Personal Income—
Patterns and Trends
in the Fourth District 3

U. S. Merchandise
Trade by Geographical
Area, 1950-196316

Recently Published23

FEDERAL RESERVE BANK OF CLEVELAND

Additional copies of the ECONOMIC REVIEW
may be obtained from the Research Department,
Federal Reserve Bank of Cleveland, Cleveland,
Ohio 44101. Permission is granted to reproduce
any material in this publication.

PERSONAL INCOME —

PATTERNS AND TRENDS IN THE

FOURTH DISTRICT

Monthly estimates of personal income prepared by the U. S. Department of Commerce are used frequently to measure consumer income and purchasing power. These estimates also help to reveal structural changes in the economy that result from variations in the distribution and composition of income. Furthermore, among the aggregate measures of economic activity personal income is the only measure for which regional and state data are available. Therefore, it is the most comprehensive measure of economic activity on a regional or state basis.

Briefly, total personal income includes all payments received by individuals, unincorporated businesses and nonprofit institutions in the form of wages and salaries, profits, rent, interest, dividends, and transfer payments. The only item deducted in arriving at personal income estimates are contributions to social insurance funds.

During the postwar period all the states have experienced continuous increases in personal income; however, the rates of growth have differed significantly among various regions of the country. Consequently, the geographic distribution and patterns of personal income have undergone important changes. These changes are principally an outgrowth of shifts in the nation's industrial complex and changes in population location.

NATIONAL PATTERNS

Relative shifts in the distribution of personal income during the postwar period have resulted in further reductions in regional differences. In general, the proportion of total personal income accounted for by the Southeast, Southwest, Rocky Mountain and Far West regions increased between 1948 and 1963 while the proportion accounted for by the New England, Mideast, Great Lakes, and

ECONOMIC REVIEW

Plains regions declined.¹ The largest increase occurred in the Far West, where the share of personal income increased from 11.5 percent to 14.3 percent. At the same time, the personal income of that region increased 177 percent as compared with a 122 percent increase in the nation. In contrast, in the Plains region the income share declined from 9.3 percent to 7.9 percent and total personal income increased by less than 90 percent.

The increases or decreases in the proportion of personal income accounted for by the various regions have not all been accompanied by similar changes in personal income per capita. For example, in the fastest growing region, the Far West, per capita income in 1963 exceeded the average for the entire nation but the margin was lower than in 1948. On the other hand, the proportion of personal income accounted for by New England de-

clined between 1948 and 1963 but the margin by which average per capita income exceeded the U. S. average increased. These diverse trends in total personal income and per capita income are principally the result of shifts in population distribution among the various regions.

DISTRICT PATTERNS

In the four states included in the Fourth Federal Reserve District, increases in personal income failed to keep pace with the rate of gain for the entire nation between 1948 and 1963.² The rate of increase for the four states combined during the fifteen-year period was 96 percent, as compared with 122 percent for the nation.

As Table I indicates, personal income in Ohio increased 109 percent, the largest absolute and percentage gain among the four states. At the same time, personal income increased 104 percent in Kentucky, 88 percent in Pennsylvania and 53 percent in West Virginia, the smallest relative gain and only roughly half the rate for the nation.

As a result of the relatively smaller rate of expansion, the proportion of the nation's personal income accounted for by the four states also declined from 1948-63. For example, as shown in Table II, in 1963 the four states combined accounted for 13.5 percent of total U. S. personal income as compared with 15.4 percent in 1948.

¹ The eight regions of the United States referred to in this study are comprised of the following states:

| | | | |
|--------------------|----------------------|-----------------------|-----------------|
| New England | Mideast | Great Lakes | Plains |
| Maine | New York | Michigan | Minnesota |
| New Hampshire | New Jersey | Ohio | Iowa |
| Vermont | Pennsylvania | Indiana | Missouri |
| Massachusetts | Delaware | Illinois | North Dakota |
| Rhode Island | Maryland | Wisconsin | South Dakota |
| Connecticut | District of Columbia | | Nebraska |
| | | | Kansas |
| Southeast | Southwest | Rocky Mountain | Far West |
| Virginia | Oklahoma | Montana | Washington |
| West Virginia | Texas | Idaho | Oregon |
| Kentucky | New Mexico | Wyoming | Nevada |
| Tennessee | Arizona | Colorado | California |
| North Carolina | | Utah | Alaska |
| South Carolina | | | Hawaii |
| Georgia | | | |
| Florida | | | |
| Alabama | | | |
| Mississippi | | | |
| Louisiana | | | |
| Arkansas | | | |

² The Fourth Federal Reserve District includes Ohio, 19 western counties of Pennsylvania, 6 northern counties of West Virginia, and 56 eastern counties of Kentucky. In this article the entire four-state region is referred to as the Fourth District.

TABLE I

Personal Income in the U. S. and the Fourth District, 1948-63 (in millions of dollars)

| | United States | Kentucky | Ohio | Pennsylvania | West Virginia | Fourth District States Total |
|-----------------|---------------|----------|----------|--------------|---------------|---------------------------------|
| 1948 | \$207,414 | \$2,719 | \$12,227 | \$14,876 | \$2,176 | \$31,998 |
| 1949 | 205,452 | 2,624 | 11,736 | 14,771 | 2,050 | 31,181 |
| 1950 | 225,473 | 2,834 | 12,891 | 16,477 | 2,203 | 34,405 |
| 1951 | 252,960 | 3,318 | 14,892 | 18,038 | 2,439 | 38,687 |
| 1952 | 269,050 | 3,524 | 15,908 | 18,922 | 2,540 | 40,894 |
| 1953 | 283,140 | 3,644 | 17,316 | 20,145 | 2,547 | 43,652 |
| 1954 | 285,339 | 3,627 | 17,241 | 19,572 | 2,414 | 42,854 |
| 1955 | 306,598 | 3,782 | 18,589 | 20,706 | 2,586 | 45,663 |
| 1956 | 330,380 | 4,022 | 19,901 | 22,410 | 2,878 | 49,211 |
| 1957 | 348,724 | 4,203 | 20,906 | 25,525 | 3,082 | 53,716 |
| 1958 | 357,498 | 4,347 | 20,494 | 23,582 | 2,974 | 51,397 |
| 1959 | 381,326 | 4,563 | 21,977 | 24,757 | 3,060 | 54,357 |
| 1960* | 399,028 | 4,672 | 22,722 | 25,539 | 3,099 | 56,032 |
| 1961* | 414,954 | 5,005 | 23,090 | 25,946 | 3,123 | 57,164 |
| 1962* | 439,661 | 5,276 | 24,154 | 26,887 | 3,210 | 59,527 |
| 1963* | 460,580 | 5,536 | 25,263 | 27,923 | 3,329 | 62,051 |

*Alaska and Hawaii Included

Source: U. S. Department of Commerce

Table III shows that, in terms of per capita personal income, the pattern among the four states was mixed. Ohio had a per capita personal income of \$2,483 in 1963, the largest among the four states, and 1.6 percent above the national average. In contrast, per capita income in Kentucky in 1963 was \$1,789, the lowest among the four states, and only three-quarters as large as average per capita income in Ohio and the nation.

UNDERLYING FACTORS

Recently the U. S. Department of Commerce released additional data that permit intensive analysis of the role of industrial forces in the distribution of a large segment of personal income among the various states between 1948 and 1962.³ The remainder of

this article makes use of these data to explain the impact of industrial activity on income patterns in the four states of which all or a part are included in the Fourth Federal Reserve District.

For purposes of analysis personal income is divided into three categories. The first category is *participation income*, which is received as a result of participation in current production; namely, wage and salary disbursements, other labor income, and proprietors' income (see Table IV). The two remaining categories are *property income* (dividends, interest, and rent), and *transfer payments*.

Table IV shows that in 1962 approximately four-fifths of personal income in the U. S. was classified as participation income. Similarly, in Kentucky, Ohio, Pennsylvania, and West Virginia the largest proportion of personal income was acquired from participation in current production.

³ Graham, Robert E., Jr., "Factors Underlying Changes in the Geographic Distribution of Income," *Survey of Current Business*, U. S. Department of Commerce, April 1964.

TABLE II

Percentage Distribution of Personal Income

| | Ken- tucky | Penn- sylvania | Ohio | West Virginia | Fourth District |
|---------------|---------------|-------------------|-------|------------------|--------------------|
| 1948 | | | | | |
| 4th District | 8.4% | 46.5% | 38.2% | 6.8% | |
| United States | 1.3 | 7.2 | 5.9 | 1.0 | 15.4% |
| 1949 | | | | | |
| 4th District | 8.4 | 47.4 | 37.6 | 6.6 | |
| United States | 1.3 | 7.2 | 5.7 | 1.0 | 15.2 |
| 1950 | | | | | |
| 4th District | 8.2 | 47.9 | 37.5 | 6.4 | |
| United States | 1.2 | 7.3 | 5.7 | 1.0 | 15.2 |
| 1951 | | | | | |
| 4th District | 8.6 | 46.6 | 38.5 | 6.3 | |
| United States | 1.3 | 7.1 | 5.9 | 1.0 | 15.3 |
| 1952 | | | | | |
| 4th District | 8.6 | 46.3 | 39.0 | 6.2 | |
| United States | 1.3 | 7.0 | 5.9 | 0.9 | 15.2 |
| 1953 | | | | | |
| 4th District | 8.3 | 46.1 | 39.7 | 5.8 | |
| United States | 1.3 | 7.1 | 6.1 | 0.9 | 15.4 |
| 1954 | | | | | |
| 4th District | 8.5 | 45.7 | 40.2 | 5.6 | |
| United States | 1.3 | 6.9 | 6.0 | 0.8 | 15.0 |
| 1955 | | | | | |
| 4th District | 8.3 | 45.3 | 40.7 | 5.7 | |
| United States | 1.2 | 6.8 | 6.1 | 0.8 | 14.9 |
| 1956 | | | | | |
| 4th District | 8.2 | 45.5 | 40.4 | 5.8 | |
| United States | 1.2 | 6.8 | 6.0 | 0.9 | 14.9 |
| 1957 | | | | | |
| 4th District | 7.8 | 47.5 | 38.9 | 5.7 | |
| United States | 1.2 | 7.3 | 6.0 | 0.9 | 15.4 |
| 1958 | | | | | |
| 4th District | 8.4 | 45.9 | 39.9 | 5.8 | |
| United States | 1.2 | 6.6 | 5.7 | 0.8 | 14.4 |
| 1959 | | | | | |
| 4th District | 8.4 | 45.5 | 40.4 | 5.6 | |
| United States | 1.2 | 6.5 | 5.8 | 0.8 | 14.3 |
| 1960* | | | | | |
| 4th District | 8.3 | 45.6 | 40.6 | 5.5 | |
| United States | 1.2 | 6.4 | 5.7 | 0.8 | 14.0 |
| 1961* | | | | | |
| 4th District | 8.8 | 45.4 | 40.4 | 5.5 | |
| United States | 1.2 | 6.2 | 5.6 | 0.8 | 13.8 |
| 1962* | | | | | |
| 4th District | 8.9 | 45.2 | 40.6 | 5.4 | |
| United States | 1.2 | 6.1 | 5.5 | 0.7 | 13.5 |
| 1963* | | | | | |
| 4th District | 8.9 | 45.0 | 40.7 | 5.4 | |
| United States | 1.2 | 6.1 | 5.5 | 0.7 | 13.5 |

*Alaska and Hawaii included

Note: Figures not additive due to rounding

Source: U. S. Department of Commerce

Therefore, the following analysis is chiefly concerned with the factors that affect participation income and with the principal causes of variations among selected regions. According to data provided by the Department of Commerce there are three principal factors associated with regional changes in participation income. The first is assumed to be the same for all regions and the two remaining factors are responsible for the differences in the growth of income among various regions.⁴

The first factor is simply the overall growth of the entire economy or the *national growth effect*. It is assumed that if there were no differences in the characteristics of the respective regions, they would be affected uniformly by national economic growth and, therefore, there would be no change in the relative share of income received by each region. Column A in Table V shows the increase in participation income that is accounted for by national growth in the U. S., Kentucky, Ohio, Pennsylvania, and West Virginia and the total for the four states between 1948 and 1962.

The national growth element was computed by the Department of Commerce by applying to participation income in each state in 1948 the national percentage increase in participation income between 1948 and 1962. This, in effect, is the growth in participation that would be expected if each state had gains or losses proportional to the nation as a whole.

The second determinant of the expansion of participation income in a region, and the first that helps to explain differences in rates

⁴ See Dunn, Edgar S., Jr., "A Statistical and Analytical Technique for Regional Analysis," *Papers and Proceedings of the Regional Science Association*, Volume 6, 1960.

of growth among regions, is the *industry-mix effect*. If a region contains a large proportion of "slowly growing industries" it will experience a below average expansion of income. Conversely, a region that contains a large segment of "rapidly growing industries" will experience an increase in income at an above average rate. The industry-mix effect is measured by applying to each industry the difference between the national growth rate of participation income in that particular industry and the national all-industry growth rate between 1948 and 1962. In those instances where the rate of increase in income in a particular industry exceeds the all-industry growth rate it is classified as an above average industry (rapidly growing industry); its importance to a region depends, of course, upon the proportion of the industry located in the region. Where the industry rate of growth is below the all-industry rate of expansion it is classified as a below average industry (slowly growing industry) and has a "drag effect" on a region; however, even though an industry shows a negative figure, it is still making a contribution to the total income of the region. The industry-mix measure, as shown in column B of Table V, is thus merely a device to explain the regional differences in income growth rates and the relative share of income that can be accounted for by differences in the industrial composition of various regions.

The third factor affecting income growth, and another explanation of differences among regions, is termed the *regional-share effect*. It measures the influence of industries whose contributions to income occur in a region at a slower or faster rate than occurs nationally.

TABLE III

Per Capita Personal Income (in dollars)

| | United States | Kentucky | Ohio | Pennsylvania | West Virginia |
|------|---------------|----------|---------|--------------|---------------|
| 1948 | \$1,420 | \$ 965 | \$1,552 | \$1,446 | \$1,146 |
| 1949 | 1,382 | 921 | 1,472 | 1,422 | 1,062 |
| 1950 | 1,491 | 958 | 1,614 | 1,566 | 1,095 |
| 1951 | 1,649 | 1,116 | 1,870 | 1,733 | 1,215 |
| 1952 | 1,727 | 1,191 | 1,958 | 1,790 | 1,274 |
| 1953 | 1,788 | 1,224 | 2,032 | 1,892 | 1,278 |
| 1954 | 1,770 | 1,221 | 1,931 | 1,804 | 1,224 |
| 1955 | 1,866 | 1,264 | 2,070 | 1,903 | 1,316 |
| 1956 | 1,961 | 1,339 | 2,184 | 2,027 | 1,456 |
| 1957 | 2,027 | 1,372 | 2,255 | 2,112 | 1,554 |
| 1958 | 2,064 | 1,453 | 2,159 | 2,133 | 1,582 |
| 1959 | 2,163 | 1,514 | 2,286 | 2,204 | 1,635 |
| 1960 | 2,217 | 1,532 | 2,331 | 2,255 | 1,675 |
| 1961 | 2,263 | 1,625 | 2,330 | 2,283 | 1,726 |
| 1962 | 2,367 | 1,711 | 2,406 | 2,362 | 1,787 |
| 1963 | 2,443 | 1,789 | 2,483 | 2,444 | 1,872 |

Source: U. S. Department of Commerce

That is, the second determinant considers the dynamism of the industries in a region as compared with the same industries nationally.

The regional-share effect is determined by applying the difference between the percentage change in participation income contributed by the segment of an industry located in a particular region and the percentage change in the same industry nationally between 1948 and 1962. Where the industry growth rate in a region is below that for the industry nationally, its effect on income growth in that region is negative. Conversely, where a particular industry experiences a growth rate in excess of the national rate for the industry, it has a positive influence on the income growth of a region. The result of the regional-share effect on participation income in the Fourth District states individually and collectively is shown in column C of Table V.

The sum of these three factors, as shown in column D of Table V, equals the total change

TABLE V

Components of Change in Income from Participation in Current Production, 1948-62

(in millions of dollars)

| | Changes due to effect of: | | | | |
|---------------------------|---------------------------|----------------------|------------------------|----------------------|-----------------------------|
| | A National Growth | B Industry Mix | C Regional Share | D Total Change | E Net Relative Change |
| United States | \$173,667 | | | \$173,667 | |
| Kentucky | 2,283 | -\$589 | -\$173 | 1,867 | -\$416 |
| Ohio | 10,232 | 744 | -1,896 | 9,080 | -1,152 |
| Pennsylvania | 12,391 | 15 | -4,025 | 8,381 | -4,010 |
| West Virginia | 1,876 | -638 | -649 | 589 | -1,287 |
| Fourth District | 26,782 | -468 | -6,397 | 19,917 | -6,865 |

Source: U. S. Department of Commerce

in participation income in the nation and the Fourth District. Column E is the sum of the industry-mix effect and the regional-share effect (columns B and C) for the four states individually and collectively, and it helps to explain the net relative change in participation income in each of the states and the District.

Even a cursory analysis of Table V reveals the significance of the industry-mix effect and the regional-share effect in the loss of the relative share of participation income among the four states. Column E of Table V shows that each of the four states experienced a net relative decline in participation income between 1948 and 1962. Furthermore, it is obvious that the regional-share effect played the dominant role except in Kentucky. With the exception of West Virginia, however, the effect of industry mix on relative income changes ran counter to the regional-share effect. For example, Ohio and Pennsylvania both experienced a net gain due to industry mix, but in both instances it was more than offset by a decline in regional share. The opposite occurred in Kentucky, with the net

relative decline in participation income resulting from industry mix.

Tables VI and VII provide a more detailed analysis of both the industry-mix effect and the regional-share effect. Table VI provides an industrial breakdown of income changes due to industry mix and divides all industries into two groups, those with an above average rate of growth and those with a below average rate of growth. Table VII displays the industrial breakdown of income changes resulting from the regional-share effect during the same period.

INDUSTRY-MIX EFFECT

Collectively the four states experienced a net decline in the relative share of participation income as a result of industry mix, as shown in Table VI. The relative loss of income resulting from industries located in the District with below average growth rates exceeded the relative increase of income associated with above average growth rates by approximately \$468 million. The below average industries that provided the most serious

Federal Reserve Bank of Cleveland
Cleveland, Ohio

ERRATA

ECONOMIC REVIEW, August 1964

Page 10

TABLE V

Components of Change in Income from Participation in Current Production, 1948-62

(in millions of dollars)

| | Changes due to effect of: | | | | |
|---------------------------|---------------------------|----------------------|------------------------|----------------------|-----------------------------|
| | A National Growth | B Industry Mix | C Regional Share | D Total Change | E Net Relative Change |
| United States | \$173,667 | | | \$173,667 | |
| Kentucky | 2,283 | -\$586 | \$ 173 | 1,870 | -\$ 413 |
| Ohio | 10,232 | 744 | - 1,894 | 9,082 | - 1,150 |
| Pennsylvania | 12,391 | 12 | - 4,022 | 8,381 | - 4,010 |
| West Virginia | 1,876 | - 635 | - 648 | 593 | - 1,283 |
| Fourth District | 26,782 | - 468 | - 6,391 | 19,923 | - 6,859 |

Source: U. S. Department of Commerce

TABLE VI

Industrial Breakdown of Income Change Due to Industry-Mix Effect—1948-62

(in millions of dollars)

| | United States | Kentucky | Ohio | Pennsylvania | West Virginia | Total of Fourth District States |
|--|---------------|----------|------|--------------|---------------|---------------------------------|
| INDUSTRIES WITH ABOVE AVERAGE RATES OF GROWTH | | | | | | |
| Manufacturing Payrolls | | | | | | |
| Non-metallic mining payrolls | \$ 55 | \$ 1 | \$ 3 | \$ 4 | \$ * | \$ 8 |
| Paper | 640 | 1 | 48 | 48 | 2 | 99 |
| Printing | 419 | 3 | 28 | 31 | 2 | 64 |
| Chemicals | 1,202 | 9 | 75 | 88 | 44 | 216 |
| Rubber | 123 | 0 | 43 | 5 | * | 48 |
| Stone, clay, and glass | 84 | 1 | 12 | 13 | 5 | 31 |
| Ordinance, primary and fabricated metals | 855 | 7 | 124 | 156 | 13 | 300 |
| Instruments and miscellaneous | 392 | 2 | 24 | 27 | 1 | 54 |
| Electrical machinery | 3,322 | 13 | 382 | 422 | 17 | 834 |
| Non-automotive transportation equipment | 2,572 | 4 | 128 | 232 | 9 | 373 |
| Participation Income** | | | | | | |
| Construction | 2,914 | 34 | 163 | 181 | 25 | 403 |
| Communication and public utilities | 1,433 | 15 | 73 | 102 | 20 | 210 |
| Service | 9,067 | 96 | 446 | 574 | 66 | 1,182 |
| Finance | 5,693 | 45 | 265 | 365 | 31 | 706 |
| Government | | | | | | |
| State and local | 11,990 | 127 | 590 | 694 | 121 | 1,532 |
| Civilian | 2,799 | 32 | 112 | 162 | 14 | 320 |
| Military | 2,741 | 93 | 56 | 79 | 10 | 238 |
| Other | 112 | 1 | 5 | 4 | * | 10 |
| INDUSTRIES WITH BELOW AVERAGE RATES OF GROWTH | | | | | | |
| Mining Payrolls | | | | | | |
| Metal | -136 | 0 | * | -1 | 0 | -1 |
| Anthracite | -499 | 0 | 0 | -499 | 0 | -499 |
| Bituminous | -2,289 | -276 | -106 | -535 | -732 | -1,649 |
| Crude petroleum | -67 | -1 | -1 | -2 | -1 | -5 |
| Manufacturing Payrolls | | | | | | |
| Food | -1,081 | -18 | -52 | -70 | -5 | -145 |
| Tobacco | -44 | -3 | -1 | -8 | -1 | -13 |
| Textiles | -3,368 | -8 | -41 | -408 | -8 | -465 |
| Apparel | -1,326 | -12 | -39 | -135 | -3 | -189 |
| Lumber and furniture | -1,535 | -24 | -59 | -52 | -12 | -147 |
| Petroleum refining | -469 | -2 | -19 | -66 | -4 | -91 |
| Leather | -600 | -4 | -24 | -43 | -2 | -73 |
| Motor vehicles and equipment | -166 | * | -14 | -4 | * | -18 |
| Machinery (except electrical) | -10 | * | -2 | -1 | 0 | -3 |
| Participation Income** | | | | | | |
| Agriculture | -23,358 | -575 | -827 | -475 | -141 | -2,018 |
| Transportation | -4,504 | -75 | -278 | -373 | -55 | -781 |
| Trade | -5,524 | -60 | -299 | -357 | -42 | -758 |
| Other | -1,655 | -12 | -71 | -146 | -9 | -238 |
| TOTAL | -218 | -586 | +744 | +12 | -635 | -465 |

*Indicates \$500,000 or less

**Includes payrolls, other labor income, and proprietors' income

Source: U. S. Department of Commerce

ECONOMIC REVIEW

TABLE VII

Industrial Breakdown of Income Change Due to Regional-Share Effects—1948-62
in millions of dollars

drag on District income expansion (those industries that experienced a below average rate of growth and are relatively important in the Fourth District states) were agriculture, bituminous coal mining, transportation, trade, and textile manufacturing. The principal industries located in the District with an above average rate of growth were state and local government, service industries, and electrical machinery manufacturing.

Among the four states only Kentucky and West Virginia suffered a relative decline resulting from industry-mix effects. In West Virginia, the net loss of income share resulting from the industry-mix was more than accounted for by a decline in bituminous coal mining, although significant losses were also experienced in agriculture, transportation and trade, lumber and furniture manufacturing, and textiles.

In the case of Kentucky, agriculture accounted for approximately 90 percent of the net decline in income share associated with the industry-mix effect. In addition, bituminous coal production, transportation and trade also acted as a drag on income in Kentucky during the 1948-62 period.

In both Kentucky and West Virginia, the only significant source of participation income with an above average rate of growth was state and local government.

REGIONAL-SHARE EFFECT

The major reason for the decline in the share of participation income accounted for

| | Kentucky | Ohio | Pennsylvania | West Virginia | Fourth District States |
|---|----------|--------|--------------|---------------|------------------------|
| Mining | | | | | |
| Payrolls | | | | | |
| Metal | 0 | * | +8 | 0 | +8 |
| Anthracite | 0 | 0 | 0 | 0 | 0 |
| Bituminous | +14 | +15 | -32 | -1 | -4 |
| Crude | | | | | |
| Petroleum | -2 | +4 | -24 | -4 | -26 |
| Non-metallic mining | | | | | |
| | * | -1 | -15 | -1 | -17 |
| Manufacturing | | | | | |
| Payrolls | | | | | |
| Food | -7 | -28 | -9 | -6 | -50 |
| Tobacco | +29 | -6 | -30 | -3 | -10 |
| Textiles | * | +17 | -112 | -4 | -99 |
| Apparel | +21 | -53 | +77 | +2 | +47 |
| Lumber and furniture | -11 | -24 | +9 | -15 | -41 |
| Petroleum refining | +4 | +16 | -65 | -7 | -52 |
| Leather | * | -7 | +20 | -1 | +12 |
| Motor vehicles and equip. | +23 | +193 | -13 | -1 | +202 |
| Machinery (exc. elect.) | +63 | -213 | -80 | +9 | -221 |
| Paper | +10 | -31 | -38 | -2 | -61 |
| Printing | +4 | -2 | -29 | -2 | -29 |
| Chemicals | +41 | -21 | -64 | -16 | -60 |
| Rubber | +4 | -92 | +22 | +2 | -64 |
| Stone, clay and glass | +2 | -59 | -123 | -59 | -239 |
| Ordnance, primary and fabricated metals | -17 | -406 | -705 | -24 | -1,152 |
| Instruments and misc. | -4 | -20 | +11 | -1 | -14 |
| Electrical machinery | +59 | -484 | -316 | -23 | -764 |
| Non-automotive transportation equip. | -1 | +42 | -307 | -14 | -280 |
| Participation Income | | | | | |
| Agriculture | +26 | -176 | -94 | -52 | -296 |
| Transportation | -57 | -56 | -243 | -38 | -394 |
| Trade | -28 | -153 | -678 | -99 | -958 |
| Construction | +50 | -210 | -292 | -68 | -520 |
| Communication and public utilities | +10 | +5 | -39 | -25 | -49 |
| Services | -38 | -94 | -262 | -72 | -466 |
| Finance | +8 | -10 | -193 | -14 | -209 |
| Government | | | | | |
| State and local | +40 | -54 | -298 | -78 | -390 |
| Federal civilian | +6 | +18 | -24 | -14 | -14 |
| Military | -75 | -13 | -87 | -14 | -189 |
| Other | +1 | +9 | +3 | -3 | +8 |
| Total of all industries | +173 | -1,894 | -4,022 | -648 | -6,391 |

*Under \$500,000

Source: U. S. Department of Commerce

TABLE VIII

Total Military Prime Contract Awards, by State

| | W.W. II | | Korean Conflict | | Fiscal year 1961 | |
|---------------------------|-----------------------|-----------|-----------------------|-----------|------------------|-----------|
| | Fiscal years 1941-45* | | Fiscal years 1951-53* | | Fiscal year 1961 | |
| | (millions) | % of U.S. | (millions) | % of U.S. | (millions) | % of U.S. |
| Kentucky | \$ 211 | 0.5% | \$ 81 | 0.3% | \$ 46 | 0.2% |
| Ohio | 3,441 | 8.3 | 2,008 | 6.3 | 1,004 | 4.6 |
| Pennsylvania | 2,831 | 6.8 | 1,434 | 4.5 | 804 | 3.6 |
| West Virginia | 217 | 0.5 | 61 | 0.2 | 63 | 0.3 |
| Fourth District | 6,700 | 16.1 | 3,584 | 11.3 | 1,917 | 8.7 |
| United States | 41,523 | 100.0 | 31,697 | 100.0 | 22,112 | 100.0 |

*Annual averages

Source: Office of Secretary of Defense

by Fourth District states resulted from the fact that roughly four-fifths of the industries in the District suffered reductions in their share of industry totals, as shown by Table VII.

Although declines were the general rule, only a few industries were responsible for the bulk of the loss, namely, primary and fabricated metals manufacturing, electrical and nonelectrical machinery manufacturing, trade, construction, services, transportation, stone, clay and glass manufacturing, agriculture, state and local government, and non-automotive transportation equipment. It is notable that a number of the principal industries in the District suffered a decline in their share of the industry total despite the fact that they were ranked as above average growth industries in Table VI. This occurred, for example, in electrical machinery manufacturing, construction, services, and stone, clay and glass manufacturing. This indicates that the rapidly expanding segments of these industries were not located in the Fourth District.

Conversely, the only industry in the District that experienced a substantial gain in the share of industry totals was motor vehicles

and equipment manufacturing, and that particular industry was ranked as a below average rate of growth industry nationally. Thus, the segment of the motor vehicles and equipment manufacturing industry located in the Fourth District apparently expanded at a rate that exceeded the rate experienced by the entire industry.

Among the four states in the District, only Kentucky experienced a relative increase in income due to the regional-share effect. The industry groupings in Kentucky that were primarily responsible for the increase in regional share were electrical and nonelectrical machinery, construction, chemicals, and state and local government. Conversely, virtually every industry grouping located in West Virginia suffered a decline in regional share in the 1948-62 period. The largest declines in West Virginia occurred in the trade, services, stone, clay and glass manufacturing, construction, and state and local government categories.

Pennsylvania experienced the largest relative decline in income due to the regional-share effect. The loss in Pennsylvania was more than twice as large as Ohio's and ac-

ECONOMIC REVIEW

counted for approximately 70 percent of the total decline in the District.

The income losses due to the regional-share effect in Ohio and Pennsylvania, however, were centered in similar industry groupings. For example, a large part of the loss in income share in both states resulted from a below industry average rate of expansion in primary and fabricated metals manufacturing, electrical and nonelectrical machinery manufacturing, construction, trade, agriculture, services, and state and local government.

On the other hand, there were several diverse trends between Ohio and Pennsylvania. For example, in Ohio the motor vehicles and equipment industry experienced a substantial increase in industry share, while in Pennsylvania a small decline was registered in the same industry grouping. Similarly, in nonautomotive transportation equipment manufacturing, petroleum refining and textile manufacturing categories, Ohio experienced a modest increase while Pennsylvania suffered a large decline. At the same time, however, Ohio suffered a loss in income share as a result of declines in rubber, apparel, leather, and lumber and furniture manufacturing categories while Pennsylvania experienced increases in income share in the same industries.

IMPORTANCE OF DEFENSE SPENDING

One of the most important factors influencing the industry-mix and the regional share in the Fourth District is the changing nature of defense spending. During World War II and the Korean conflict the largest share of

military spending was for conventional weapons and equipment, e.g., small firearms, tanks, and wheel vehicles. Because of a concentration of industries capable of manufacturing such equipment, the Great Lakes, Mideast and New England regions accounted for a substantial share of the income generated by defense spending.

In the post-Korean period, however, the nature of defense spending has turned away from emphasis on mass production weapons toward small quantity production of missiles and electronics and substantial expenditures for research and development. For example, in fiscal year 1961 only 12 percent of prime contract awards were for conventional equipment, as compared with 50 percent in fiscal year 1953, the final year of the Korean conflict.⁵ Thus, the geographic impact of defense spending has also changed.

Table VIII indicates that the four states of which all or a part are included in the Fourth District have received a decreasing share of defense expenditures since the close of World War II. During the 1941-45 period roughly 16 percent of prime contract awards were received by industries in these four states. During the Korean conflict the share was reduced to 11 percent, and in fiscal year 1961 the share had declined to less than 9 percent. Nearly all of this loss occurred in Ohio and Pennsylvania.

The shifting of defense expenditures did not bring about a wider distribution among the states. As a matter of fact, prime contract awards became more heavily concentrated in

⁵ "The Changing Nature of Defense Procurement," *Office of the Secretary of Defense*, Washington, D. C., June 1962.

fewer states. For example, the six states that received the largest share of military contract awards during World War II collectively accounted for 50 percent of total contracts as compared with 55 percent in 1961. Moreover, the three states with the largest share of contracts accounted for 30 percent of the total during World War II as compared with 41 percent in 1961. At the same time, Ohio dropped from third to the sixth in volume of prime defense contracts, and Pennsylvania declined from sixth to seventh position.

The impact of changing defense expenditures explains, in large part, the loss of regional share by selected industries in both Ohio and Pennsylvania. For example, in Table VI the electrical machinery industry is classified in the above average rate of growth category. In fact, it experienced the largest growth in terms of increased participation income in the United States among all manufacturing industries and was fourth largest among all categories. In terms of regional share in Ohio and Pennsylvania, however, electrical machinery experienced a below average growth. For example, in Ohio between 1948 and 1962 electrical machinery manufacturing accounted for the largest loss of income due to a decline in regional share among all categories; in Pennsylvania it was the third largest. This development reflects the fact that the segment of the electrical machinery industry based in Ohio and Pennsylvania is engaged

primarily in the production of electrical appliances and other conventional products rather than the newly developed electronics segment of the industry that has experienced rapid growth largely as a result of defense spending.

SUMMARY

Although there are several important determinants of personal income that have not been considered in this study, the foregoing analysis clearly suggests the significance of changes in industrial activity to the distribution of participation income. Furthermore, the new data on underlying factors affecting income reveal that the declining share of personal income accounted for by the Fourth District is not as closely associated with declining or slowly growing industries as it is a result of a changing growth pattern within particular industries. Although the Fourth District includes several industries that are experiencing above average growth, the growth frequently is not uniform in all segments of these particular industries. Moreover, data provided on regional shares between 1948 and 1962 indicate that rapidly advancing sectors of industries are not located in the Fourth District. Thus, an important key to industrial development in the District is to identify the factors that determine the location of the growth sectors of particular industries.

U. S. MERCHANDISE TRADE BY GEOGRAPHICAL AREA, 1950-1963

The purpose of this article is to review the geographical distribution of U. S. merchandise trade during 1950-63. This is done against a background in which U. S. exports and imports represented the largest single category in the U. S. balance of international payments, accounting for more than one-half of all U. S. international transactions. Moreover, in each year throughout the 1950-63 period, the United States maintained a favorable trade balance, i.e., an excess of exports over imports. This article touches upon some of the factors that have been associated with the trade surplus as well as with the increase in U. S. merchandise trade that carried exports to \$22.3 billion in 1963, and imports to \$17.2 billion (see Illustration 1).¹

¹ Reexports are included in the export figures. The import data include imports for immediate consumption plus entries into bonded warehouses. For the 1950-63 period, the increase in exports amounted to 128 percent and in imports to 93 percent.

NORTH AMERICA

In the period under review U. S. exports to North America increased more than 70 percent (see Illustration 2).²

Such exports showed little change from 1951-54, but then rose sharply to an all-time high of \$6.1 billion in 1957. With little tendency to vary since that time, exports totaled \$5.8 billion in 1963.

United States imports from North America fluctuated less, yet expanded at a faster rate than exports. In 1963 imports amounted to \$5.4 billion, and represented the largest amount from any geographical area. The United States has maintained a favorable trade balance with North America since 1950 (see Illustration 2).

² Export data by geographical area exclude "special commodities," for security reasons, and reexports.

Canada has accounted for nearly three-quarters of U. S. trade in North America. The expansion of economic activity in Canada between 1954 and 1957 was accompanied by large U. S. direct investments and a substantial rise in imports of industrial and construction machinery from the U. S. Following a decline in Canadian business activity and U. S. direct investments, imports from the U. S. declined and remained relatively stable during the 1958-62 period. In addition, the Canadian exchange crisis of 1962 and special import restrictions acted as a restraint upon Canadian imports from the U. S. In 1963, however, U. S. exports to Canada increased principally because of an elimination of import restrictions, a sharp rise in Canadian business activity, and increased foreign exchange holdings from the sale of agricultural products in world markets.

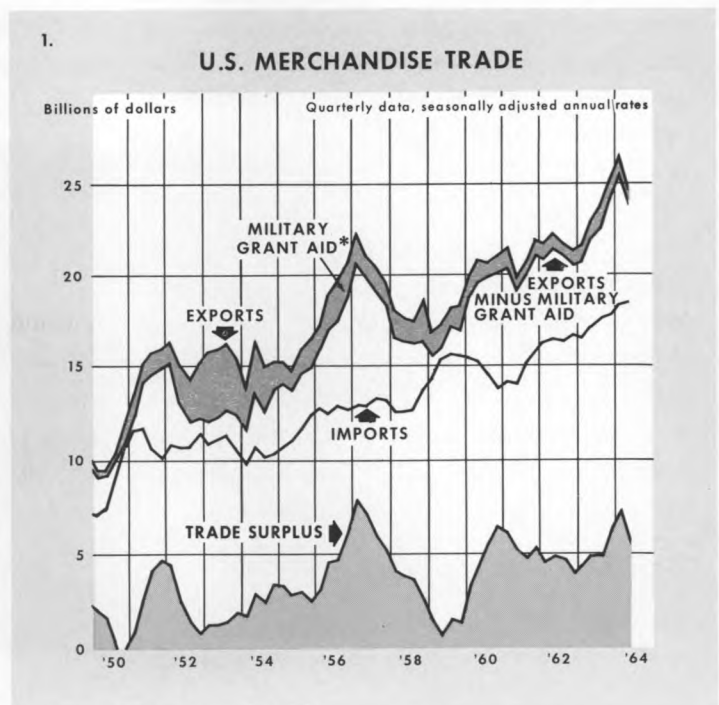
U. S. imports from Canada from 1950-63 fluctuated mainly as a result of variations in imports of raw materials such as metals and wood products. Imports of these items are affected by changes in the pace of economic activity in the United States and account for a significant proportion of Canadian exports to this country.

EUROPE

U. S. exports to Europe nearly doubled between 1950 and 1963 (see Illustration 2). The overall expansion was the result of several factors, including a rise in business activity in Western Europe, U. S. foreign aid programs, and U. S. private direct

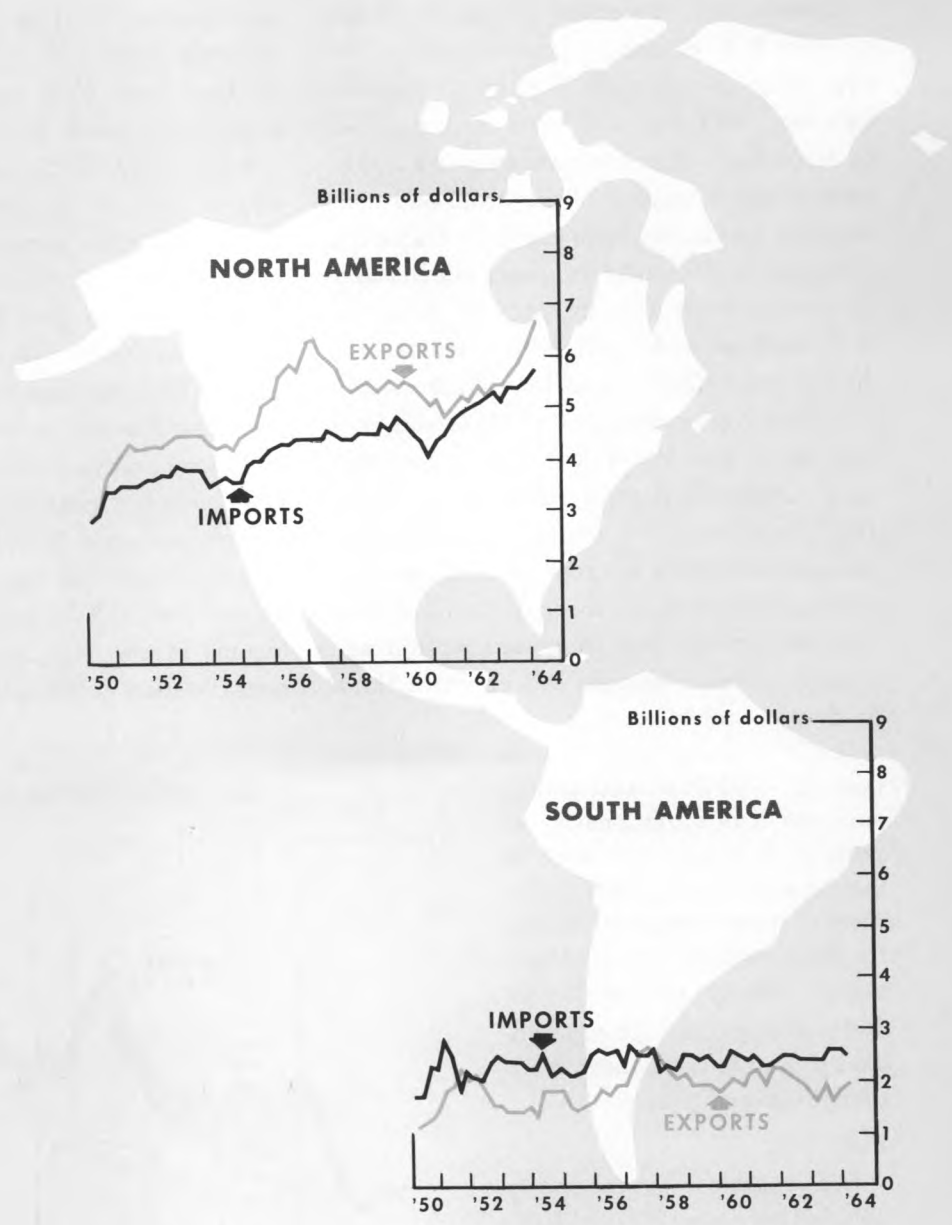
investment. The largest expansion occurred between 1956 and 1957 when exports increased from \$2.9 billion to \$5.8 billion, largely as a result of the Suez crisis.

After 1957 U. S. exports to Europe declined because economic activity in the United Kingdom began to lag, and because of the termination of the Suez controversy. In addition, the European Economic Community (EEC) and the European Free Trade Association (EFTA) reduced tariffs among member countries thereby placing the United States at a comparative disadvantage with respect to a number of commodities.³ During 1960-62 exports averaged \$6.5 billion annually. Another increase was registered in 1963 when exports totaled \$7.1 billion, the highest level for any of the six geographical areas under consideration in this article.

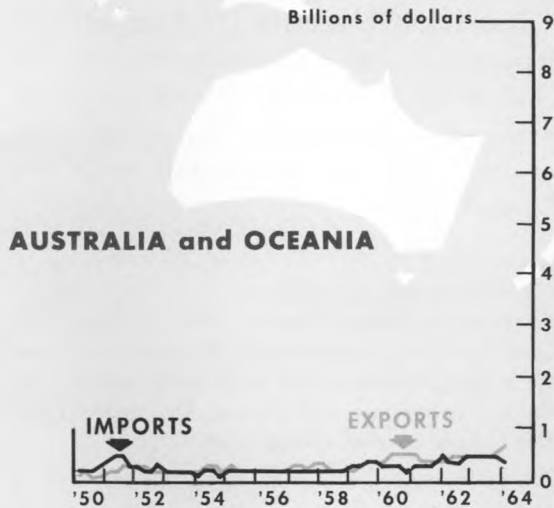


* Estimated first and second quarters of 1950
Source of data: U. S. Department of Commerce

MERCHANDISE TRADE WITH GEOGRAPHICAL AREAS



Note: Security commodities are excluded from geographical export data for security reasons



The rise in exports in 1963 was due partially to the high level of business activity and rising prices in Western Europe. The latter factor may have contributed to the rise in shipments of machinery and industrial materials, two categories that together account for over 60 percent of U. S. exports to Western Europe.

Imports from Europe during 1950-63 closely reflected economic activity in the United States. In the period under review imports increased almost two and one-half times. This increase was accounted for, in large part, by the rapid industrial development of several Western European countries, which in turn permitted these countries to compete vigorously in U. S. markets for aircraft, automobiles and auto parts, machinery and steel products.

Between 1959 and 1963 U. S. imports from Europe averaged \$4.5 billion; however, the U. S. trade surplus with Europe during the same period averaged \$1.7 billion, the largest of any of the six geographical areas (see Illustration 2).

³ In 1958 the EEC was established to pool the economic resources of Belgium, France, West Germany, Italy, Luxembourg, and the Netherlands. Within 12 to 15 years the member nations plan to move goods, workers and capital freely across their borders. The members also plan to have common external tariffs.

Two years later seven other European countries, namely Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the United Kingdom formed the EFTA, the purpose of which is to abolish, in stages, tariffs and quantitative restrictions between member countries and to promote sustained economic expansion, full employment, and higher standards of living. Common external tariffs are not envisaged.

ASIA

The U. S. trade balance with Asia remained favorable throughout the 1950-63 period. U. S. exports to Asia showed little change until 1956 when exports began to expand rapidly reaching a high of \$4.8 billion in 1963, more than double the 1955 level (see Illustration 2).

The expansion in exports to Asia after 1955 included primarily increased sales of industrial goods to Japan, particularly computers, machinery and testing equipment. Japan is the second largest individual market for U. S. products — after Canada.

India also participated in the rise of U. S. exports to Asia as a result of large purchases of machinery and materials to aid in the establishment and expansion of manufacturing plants. However, a significant proportion of India's purchases from the U. S. were financed by U. S. foreign aid, loans from the International Bank for Reconstruction and Development (World Bank), and loans from the International Development Association.

U. S. imports from Asia showed little change until 1958. However, in 1963 U. S. purchases from Asia totaled \$3.2 billion, 60 percent higher than in 1958. As is the case with North America and Europe, imports from Asia are determined largely by the pattern of economic activity in the United States. Moreover, in recent years Japan has accounted for approximately fifty percent of U. S. imports from Asia.

SOUTH AMERICA

A decade ago the less developed countries of South America were expected to begin rapid rates of growth. Large sums of development capital were expected to flow into these countries from U. S. foreign aid programs and international agencies, and later from private investors in the advanced nations of the world. For the most part these expectations failed to materialize and as a result U. S. merchandise trade with this geographical area has remained at a low level.

United States imports from South America showed no trend during the period under review, amounting to \$2.5 billion in 1963, or about the same as in 1950 (see Illustration 2). These imports, including foodstuffs and certain minerals, were apparently not affected by changes in the economic activity of the United States. The demand for petroleum imports was also somewhat insensitive to U. S. economic activity although this was to some extent a result of quantitative import restrictions and bilateral purchasing arrangements.

Another reason for the failure of U. S. imports from South America to expand is related to U. S. technological progress; synthetic materials were developed to substitute for a number of natural products and new processes were found to economize on raw materials.

Exports to South America also showed no upward movement between 1950 and 1963. In 1963 these sales, which consisted of a myriad of manufactured goods, amounted to \$1.8 billion. Exports failed to expand mainly because of the shortage of foreign exchange in the less developed nations and the fact that political difficulties caused some of the South

American governments to restrict imports. Moreover, during the period under review, the less developed nations experienced a deterioration in their terms of trade (the ratio of export prices to import prices) that tended to keep U. S. exports at a low level. That is to say, while prices of industrial goods sold by the United States tended to rise, prices of foodstuffs and other primary products exported by the less developed nations tended to fall. Thus, merchandise trade between the United States and the less developed countries of South America suffered from an imbalance in the international exchange of primary products for manufactured goods. As shown by Illustration 2, there was a deficit in our trade balance with South America in the 1950-63 period.

AFRICA

U. S. merchandise trade with Africa showed little change from 1950 to 1957; however, between 1958 and 1963 exports to Africa increased from \$600 million to \$1.0 billion. This expansion occurred mainly because of the economic development of a number of independent nations in Africa. Exports also increased as a result of United States and other foreign aid programs, which included U. S. shipments of grains and other foodstuffs to North Africa.

There also were substantial increases in exports to a number of countries in Middle Africa, particularly in Nigeria, Liberia, and Ghana, where U. S. companies promoted exports, and where foreign investors showed increased interest in investment opportunities. A rise in public and private investment throughout Africa resulted in increased U. S.

ECONOMIC REVIEW

exports of machinery, food products, iron and steel, textiles, automobiles, and chemicals.

U. S. imports from Africa also increased, although not as fast as exports. In 1963, for example, U. S. purchases from Africa amounted to \$800 million, 30 percent higher than in 1958.

Metals and coffee were among most important commodities in U. S. imports from Africa. Imports of metal were accounted for primarily by uranium purchases from the Union of South Africa. Imports of precious stones also showed a substantial rise among products purchased from Africa.

Although political tension depressed economic conditions in some important African markets, economic development progressed at an encouraging pace over most of the continent. A number of countries diversified their trade patterns and expanded commercial and financial relations with the United States. Steps were also taken to encourage foreign investment. Several nations signed investment guarantee agreements with the United States, and a number of countries passed investment laws specifically designed to encourage foreign private investment.

AUSTRALIA AND OCEANIA

U. S. merchandise trade with Australia and Oceania was the smallest of any of the six geographical areas (see Illustration 2). Although U. S. trade with this area increased between 1958 and 1963, exports and imports each totaled only \$500 million in 1963. The principal reason for the relatively low level of merchandise trade with this area is the sparse population.

Australia accounts for the largest share of merchandise trade in this area. In the past five years U. S. exports to Australia more than doubled primarily because of rapid economic advances in that country and elimination of import licensing restrictions by the Australian Government. The principal exports to Australia were construction and mining machinery, tobacco, rubber products, and synthetic fibers.

Principal U. S. imports from Australia were meat products, wood, metals, hides and skins, and steel products. The value of imports from Australia more than tripled in the past five years; however, they were strongly affected by the pattern of economic activity in the United States.

SUMMARY

U. S. merchandise trade expanded rapidly between 1950 and 1963 principally as a result of trade with the industrialized areas of the world. Trade relationships with these areas also accounted for a major portion of the U. S. trade surplus.

United States exports to the industrialized countries consisted primarily of finished manufactured products; however, these exports fluctuated widely as a result of changes in economic activity, capital flows, and reserves of foreign exchange.

U. S. imports from the industrialized nations were more diversified—ranging from crude materials to finished manufactured goods. Imports also fluctuated as a result of changes in economic activity in the United States.

RECENTLY PUBLISHED

**BOARD OF GOVERNORS OF THE
FEDERAL RESERVE SYSTEM,
WASHINGTON, D. C.**

FLOWS THROUGH FINANCIAL INTERMEDIARIES
Federal Reserve Bulletin, May 1964

**FEDERAL RESERVE SECURITIES TRANSACTIONS,
1954-63**
Federal Reserve Bulletin, July 1964

**FEDERAL RESERVE BANK OF
CHICAGO, ILLINOIS**

WHY UNEMPLOYMENT AMIDST UNFILLED JOBS?
Business Conditions, July 1964

**FEDERAL RESERVE BANK OF
NEW YORK, NEW YORK**

NEW CENTRAL BANKS
Monthly Review, July 1964

**FEDERAL RESERVE BANK OF
PHILADELPHIA, PENNSYLVANIA**

WHAT ATTRACTS TODAY'S GROWTH INDUSTRIES?
Business Review, July 1964

**FEDERAL RESERVE BANK OF
RICHMOND, VIRGINIA**

THE LONDON GOLD MARKET
Monthly Review, August 1964

**FEDERAL RESERVE BANK OF
SAN FRANCISCO, CALIFORNIA**

HOW THE WEST GROWS
Monthly Review, July 1964

