Chemicals Bring Changes to the Southeast

The economic fabric of the Southeast has been undergoing profound structural changes in recent years. The relentless march of industrialization has brought with it dramatic gains in several capital-intensive industries, at the relative expense of labor-intensive sectors that once dominated the economic scene. Apparel, which requires a relatively large labor input, still clings to its first-place position among manufacturing employees in the states making up the Sixth Federal Reserve District (Alabama, Florida, Georgia, Louisiana, Mississippi, and Tennessee). In terms of value added (value of shipments minus cost of production materials), apparel ranks sixth and accounts for less than 7 percent of the total.

The biggest contributors to value added are chemicals and food processing, number one and number two, respectively. Both of these sectors are of very low labor intensity. About 15 percent of all value added is in chemicals and allied products, but employment-wise, the chemical sector is outpaced by six other industries.

Chemicals are perhaps the outstanding example of what has been happening to the Southeast's industrial economy. During the last twelve years, production of chemicals has increased by two and a half times its 1957-59 level and has modernized processes and developed new products at an extremely fast rate.

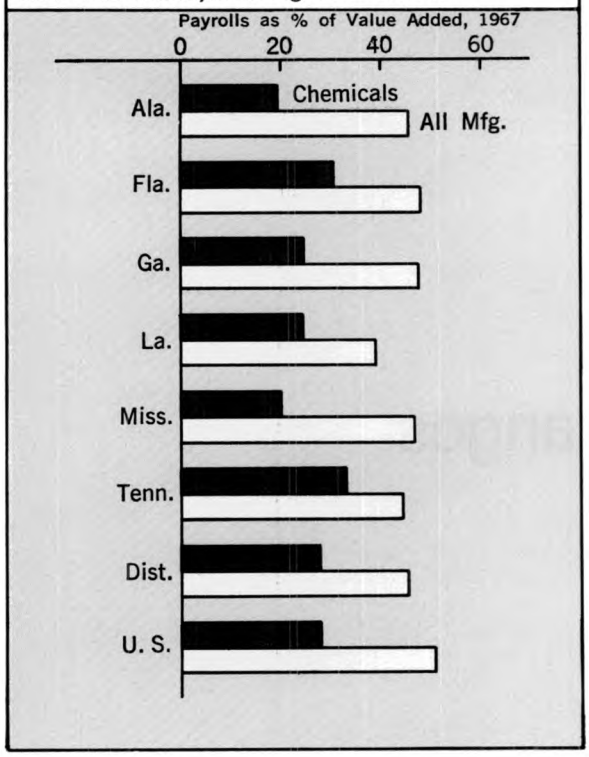
Importance of Chemicals

There are 140,000 persons working in chemicals and allied products in the District. This is about 7 percent of total factory employment. And in addition to holding the number one position in value added, the industry ranks high in value of shipments. In 1967, chemicals moved nearly $6 billion worth of goods, being surpassed only by food processing, which shipped $8.5 billion of merchandise in the same year.

Also, chemicals have fairly consistently been the most impressive investor in plant and equipment. In 1967, such expenditures in the District amounted to $750 million compared with less than $200 million for food processing, the runner-up.

In this region, chemicals are relatively more important than they are in the nation. While the District accounts for only about 8.5 per-

The chemical industry is far less labor intensive than manufacturing as a whole.



cent of total value added in U. S. manufacturing, it accounts for about 13.5 percent of total value added in chemicals and allied products. The most important chemicals here and in the nation are basic organic and inorganic industrial chemicals, along with plastics and synthetics. But in Alabama and Florida, agricultural chemicals predominate, and altogether the region produces about 40 percent of U. S. value added in this industry. This region also predominates in gum and wood chemicals, although the total regionally and nationally is diminutive.

A Heterogeneous Conglomeration

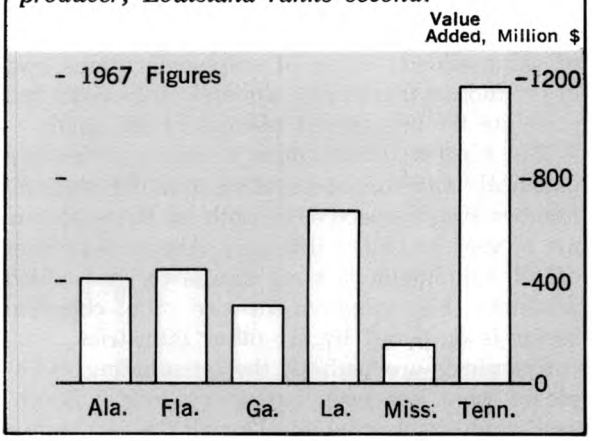
Attempts at defining chemicals must have been the undoing of more than one lexicographer. Any definition must be vague enough to include everything from a bag of fertilizer to a bar of soap, with enough leeway for charcoal briquets and sulphuric acid to be included. So generalization by product type is meaningless. Equally vague is classification by market sector served; basic chemicals firms are probably one another's best customers. However, they also serve diverse categories of industrial, agricultural, governmental, and foreign users.

If the industry is to be defined at all, it must be in terms of the production processes involved. Basic chemicals and chemical products are put together by processes that can only be defined as peculiarly chemical in nature. The SIC manual breaks down chemicals into three major categories:

1. Basic chemicals, i.e., acids, alkalies, salts, and organic chemicals (compounds containing carbon atoms in a form similar to those found in plant and animal matter),
2. Chemical products to be used in further manufacture, i.e., synthetic fibers, plastics materials, dry colors, and pigments,
3. Finished chemical products to be used for ultimate consumption, i.e., drugs, cosmetics, and soaps; or to be used as materials or supplies in other industries such as paints, fertilizers, and explosives.

In this region (especially Tennessee), the predominant chemicals are organic and inorganic industrial chemicals (basic chemicals), such as alkalies, chlorine, industrial gases, dyes, and pigments. The second most important chemicals are plastics and synthetics, and these are found primarily in Tennessee but are not insignificant in Louisiana. These chemicals are also produced in Georgia; however, disclosure problems make it impossible to quantify precisely. Agricultural chemicals run a close third in the District and

Tennessee is the region's leading chemical producer; Louisiana ranks second.



are the predominant chemical product in Alabama and Florida.

Tennessee is the largest producer in the region and shipped more than one-third of the District's chemical output in 1967. Louisiana ranks second and is rapidly closing the gap, producing a little less than one-fourth of the region's total. Alabama, Florida, and Georgia are also important chemical producers, but each accounts for less than one-sixth of the total. The industry is least important in Mississippi, which accounts for only about 5 percent of total shipments.

A Natural for Chemicals

To the extent that the presence of natural deposits is a key location factor for manufacturing, there are parts of the South that lend themselves particularly well to a number of chemical products. This is especially true in Louisiana, where petroleum and natural gas are abundant and provide the basic ingredient for most plastics and synthetics. Also, but to a much lesser extent, petroleum is a factor in Tennessee, and the presence of coal mining is important there as well, since coal tar derivatives are the raw material for several basic chemicals. Market factors are also important in Tennessee because nearby textile plants, especially those in South Carolina and Georgia, are big customers for synthetic fiber and staple.

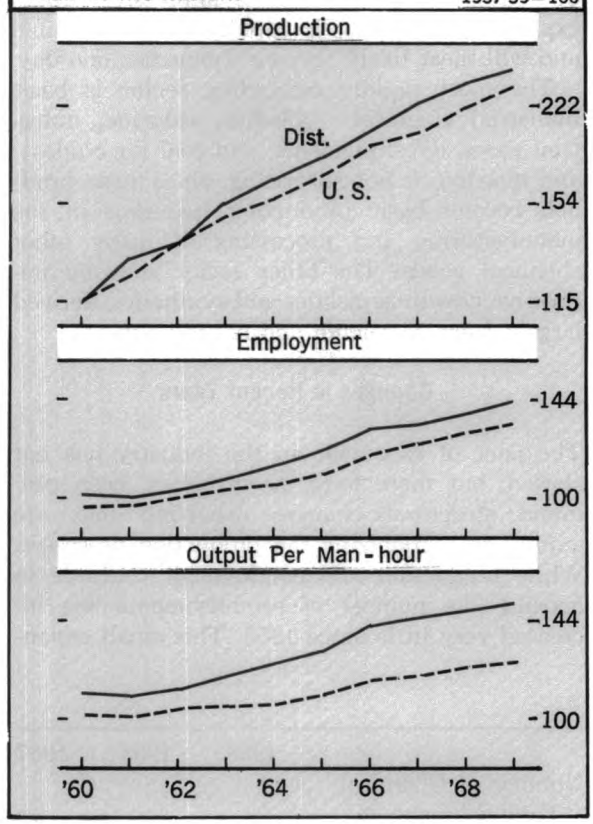
Sulphur, a basic input for the production of the workhorse chemical sulphuric acid, is found in Louisiana and Mississippi. Sulphur is also obtained as a by-product of copper refining, some of which is located in Tennessee. Phosphate rock, a significant agricultural chemical raw material, is found in Florida and Tennessee.

In some instances, a seaport location becomes important when large quantities of production materials must be brought in from other regions, e.g., sulphur from the Texas gulf coast or potassium from South America. The presence of large quantities of water is also an essential consideration because of the requirements of steam generation and cooling. This helps to explain the heavy concentration of plants along the Mississippi River in southern Louisiana.

South Pulling Ahead

Both the nation and the Southeast have shown phenomenal growth in chemicals, but the Southeast has grown more rapidly. First, chemicals employment in the District has nearly doubled since 1950, whereas in the nation it has risen about 65 percent.

When measured in terms of production, employment, and productivity, the chemical industry in the District has grown more rapidly than in the nation.



At the same time, the productivity or output per man-hour has risen sharply in both the region and the nation, with the region holding a slight edge. The net effect of all this is that the District's output growth has outpaced the nation's.

Expansion of chemical production, both regionally and nationally, has been made possible by massive investment in plant and equipment. In 1967, 14 percent of all factory investment at the national level was in chemicals and allied products. This was exceeded only by primary metals, amounting to 15 percent. At the District level, chemicals investment was a whopping 30 percent of the manufacturing total, reflecting the South's relative advantage in the industry. Chemicals investment was 25 percent of value added, whereas in the nation it was 12 percent.

The largest expansion in District chemicals

has occurred in Louisiana, and this is quite natural if the extent of the petroleum resource base in that area is considered. Tennessee is still by far the District's largest producer of chemicals, but Louisiana, because of its impressive capital expansion programs, is rapidly gaining ground and will most likely surpass Tennessee one day.

The most rapidly expanding sector is basic industrial chemicals (alkalies, chlorine, industrial gases, dyes, pigments, and coal tar crudes), and this, too, is not surprising, since these products become basic production materials in the manufacturing and processing of many other chemical goods. The other sector showing impressive growth is plastics and synthetics, derived largely from petroleum and natural gas.

Changes in Recent Years

The pace of expansion in the industry has not slowed, but there have, nevertheless, been profound structural changes occurring that are quietly revolutionizing the production processes. While production and employment continue to expand, the number of establishments has increased very little since 1958. This small expansion in the number of plants has been accompanied by a small growth in average employment per establishment. Value added per plant, on the other hand, has climbed from about $1.3 million in 1958 to $2.4 million in 1967. All this is reflected in the output per man-hour, commonly called productivity, which has jumped about 60 percent in the last decade.

	1958	1963	1967
Number of Chemical Establishments in the Sixth District states	1105	1251	1324

	1958	1963	1967
Average Employment Per Establishment	82	77	91
Average Production Worker Employment Per Establishment	58	54	63

	1958	1963	1967
	(millions of dollars)		
Average Value Added Per Plant	1.3	1.7	2.4

Patterns of Competition

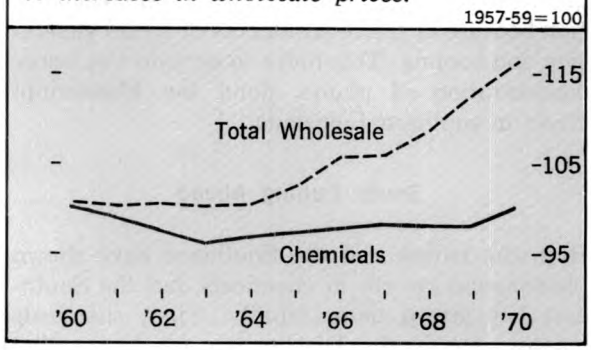
During the last decade, District chemicals production rocketed 126 percent, whereas man-hour utilization rose only 39 percent. This underscores the vital role of an accelerating technology in an industry that had a low labor intensity even in 1960.

This progress in efficiency, along with a degree of price competition in chemicals, has in the last ten years helped bring about a two-percent decline in national chemicals prices. This is in sharp contrast to the all-commodity index, which has risen more than 15 percent. There is every reason to believe that District chemical prices are behaving the same as nationally. Productivity has been increasing regionally and nationally at about the same rate.

Price cutting has become a fact of life among some industrial chemicals, especially the organics. This practice is generally associated with excess capacity, new entrants, and attempts at broadening markets.

Chemicals face their stiffest competition from other chemicals, other processes, and other industries. Firms generally attempt to cope with

Chemical prices have been a major exception to increases in wholesale prices.

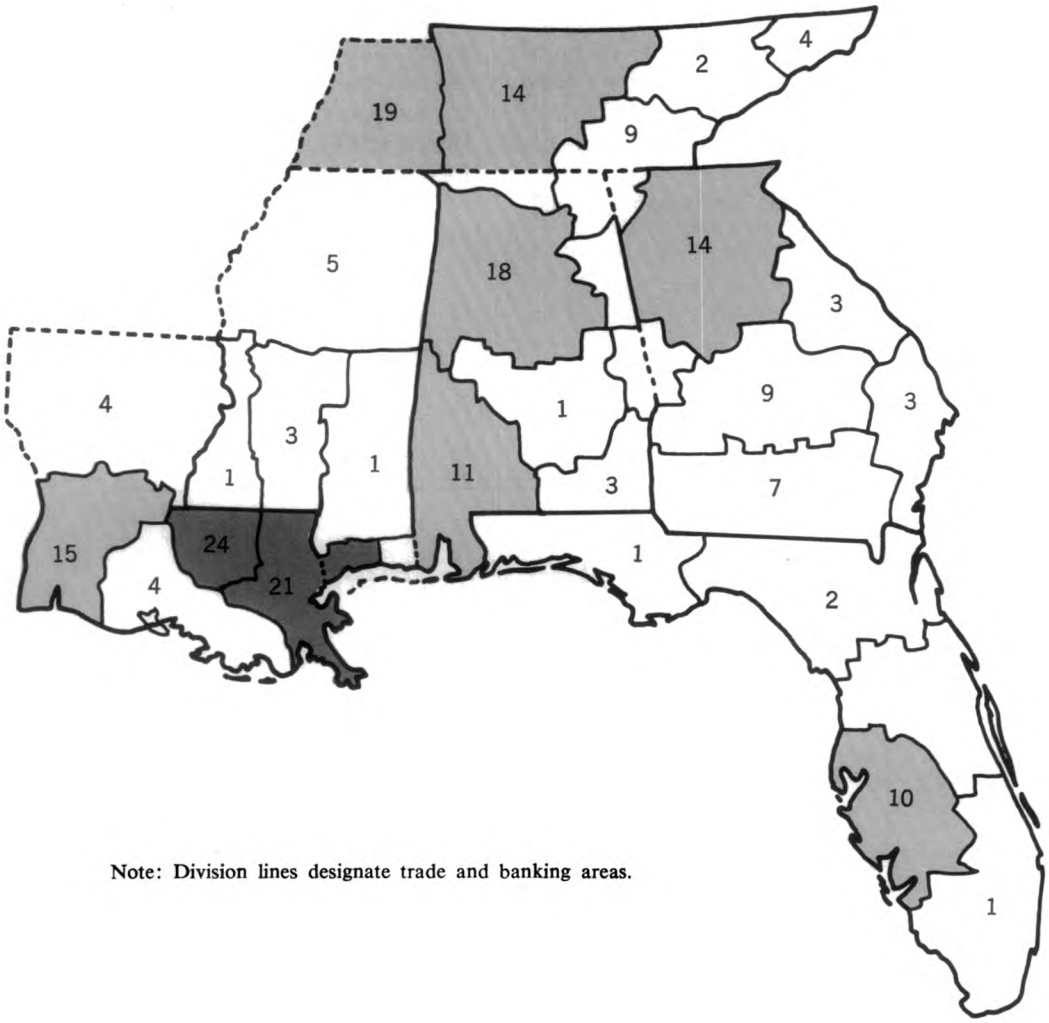


such problems via nonprice competition and emphasize technical services, quality, and product improvement through research and development. In some products, such as synthetic fibers, brand names become important.

A Boon for the Balance of Payments

While the chemical industry is facing increasing competition in foreign markets, the exports of chemicals and allied products are increasing more

NUMBER OF CHEMICAL FIRMS EMPLOYING MORE THAN 100 PERSONS, 1967



Note: Division lines designate trade and banking areas.

rapidly than total merchandise exports. Chemical imports are rising at an even faster rate, but in dollar terms, chemical exports are still growing more rapidly. Because of this, the trade surplus in chemicals continues to widen.

Borrowing Outside the District

The region's chemical industry borrows a great deal of funds from banks outside the region. In 1969, even though chemicals (and chemicals and rubber combined) were relatively more important in the District than in the nation, loans by large District member banks to chemical and rubber concerns made up 9 percent of total manufacturing loans, compared with 11 percent nationally. And the District's share of loans to the chemical industry was only 2 percent of the nation's total loans to this industry. In contrast, total District manufacturing loans were 3 percent of the national total.

In general, chemical firms are capable of generating large sums of funds internally for seasonal working capital needs as well as for long-term uses. And in those cases where bank financing is used, there seems to be little problem in procuring either short-term or intermediate-term credit for capital expansion.

Loans made by Sixth District banks show a seasonal pattern that recurs in a regular fashion: Loans outstanding generally increase sharply in early spring and then decline irregularly until about year-end. Typically, the peak seasonal lending comes in the spring, when such lending increases about 5 percent. A seasonal decline, amounting to about 5 percent, follows late in the year. This seasonal pattern of loan demand is superimposed on a rising trend of bank lending to chemical firms that has doubled since 1964. Should the region's chemical industry continue to grow as expected, there is little reason to doubt that it will be an increasingly important customer for District banks.

ROBERT E. WILLARD

Bank Announcements

On October 1, **Livingston State Bank & Trust Co.,** Denham Springs, Louisiana, a nonmember bank, began to remit at par for checks drawn on it when received from the Federal Reserve Bank.

A newly organized nonmember bank, **Florida Southern Bank,** Palm Springs, Florida, opened for business on October 9. Officers are James K. Siebrecht, chairman of the board; Carleton S. Lucius, president and director; and J. T. Jones, executive vice president and cashier. Capital is $450,000; surplus and other capital funds, $250,000.