

Steel Production And Import Trends In the Southeast

by **Frederick R. Strobel**

Imports, construction, and mini-mills are the key words which best characterize recent trends in Southeastern steel. First, the six-state area is a net importer of steel products from both domestic and foreign sources. Second, the steel-consuming industries' mix and import patterns point strongly toward the construction sector as the major consumer of steel products. Finally, since the Southeast's demand for steel products should grow (given present economic trends), a substantial portion of that demand will likely be met by the smaller mini-mills and by foreign imports.¹

Steel-Consuming Industries

A major boost in regional steel demand has come from expansion of the Southeast's construction industry. As Chart 1 shows, total construction more than doubled its 1967 base level during 1972. The U.S., in contrast, showed a two-thirds increase over the same period. While a major portion of this expansion has been residential construction, nonresidential construction—consisting primarily of industrial and office buildings—has also increased at a more rapid pace than the nation's. Similarly, nonbuilding construction, such as streets and highways, dams and reservoirs, and communications, has shown a markedly stronger-than-national gain over this period.

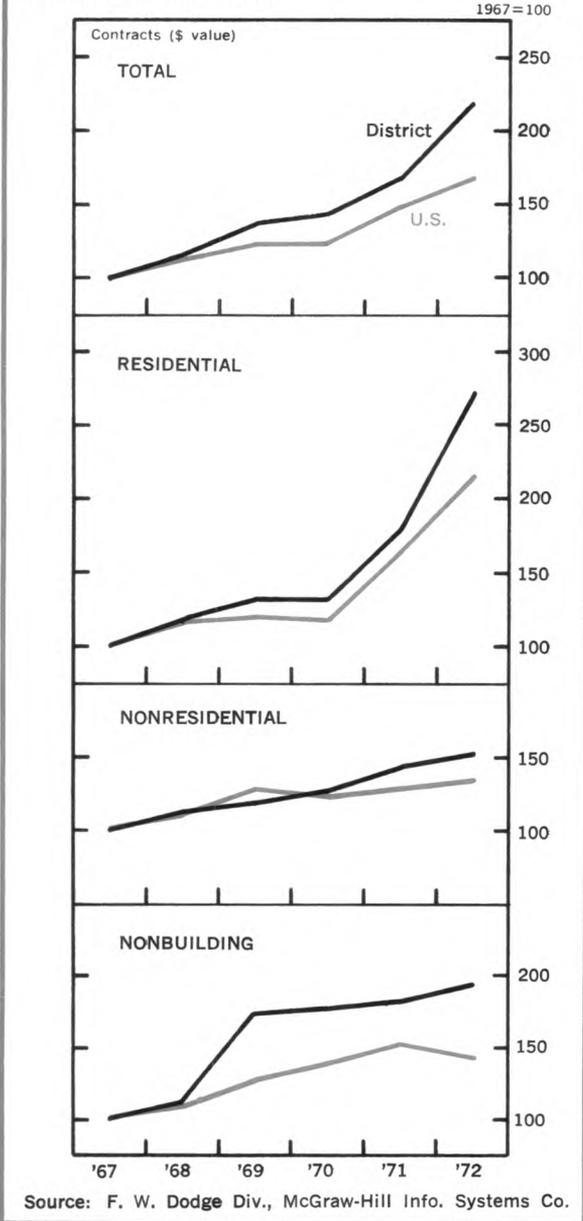
The region's type of residential construction and heating and air-conditioning requirements lends itself especially to high steel consumption. For example, much of Florida's recent condominium building boom requires steel-reinforced

¹The "Southeast" in this article refers to the Sixth District states of Alabama, Florida, Georgia, Louisiana, Mississippi, and Tennessee.

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CHART I

In the Southeast, construction, a leading steel user, outdistances the nation.



concrete for high-rise construction because of that state's vulnerability to hurricanes. These requirements have stimulated both local production of concrete-reinforcing bars and imports of these bars through Florida ports.

The area's climatic conditions, with a higher mean temperature than the nation's norm, have encouraged central air conditioning not only in commercial and industrial buildings but in residential structures as well. This has created a large demand for coated sheet steel for duct work in air-conditioning systems.

Along with rapid expansion in construction has been a rapid growth in the Southeast's metal-fabricating and machinery industries. While the nation's fabricated metals industry showed a 15-percent gain in output between 1967 and September 1972, metal fabricating in this region increased 32 percent. Similarly, both electrical and nonelectrical machinery production in the same period increased by over 60 percent in the Southeast but in the nation by only 10 percent and 7 percent, respectively.

Industry Form and Structure

Eight major companies, which account for about three-fourths of all domestic steel production, dominate the national steel industry. These large producers are vertically integrated from raw materials to finished mill products. They operate iron ore, coal and limestone mines, often large transportation facilities, coke ovens, iron and steel-making furnaces, rolling mills for processing raw steel into varied intermediate products, and, sometimes, fabricating them into end products.

The largest steel consumer in the United States is construction, accounting for approximately 25 percent of all domestic steel shipments. About 20 percent is consumed by the second major market, automobiles and trucks. The other major steel users are machinery and equipment manufacturers, the railroads, and the container and gas industries.

The Birmingham, Alabama, area is the Southeast's major steel-producing center. Alabama contains branch plants of two of the eight major national companies, a United States Steel plant in Fairfield near Birmingham and a Republic Steel plant in Gadsden. The third major steel-producing area in the Southeast is Atlanta, where a medium-size steel mill, Atlantic Steel Company, operates to serve markets principally in Georgia and several nearby states. Atlantic Steel, an older mill, operates with a capacity of over 400,000 tons. Like United States Steel and Republic Steel, Atlantic carries a more complete line of steel products than the mini-mill.

Mini-mills produce the balance of District steel production. Table 1 shows the location and

TABLE 1

"Mini" Steel Plants in the Southeast

Location	Name	Capacity	
		Net Tons	Per Year
Alabama			
Birmingham	Connors Steel, Division H. K. Porter Co.	200,000	
Birmingham	Southern Electrical Steel (CECO STEEL)	85,000	
Florida			
Indiantown	Florida Steel	90,000	
Tampa	Florida Steel	90,000	
Tennessee			
Harriman	Tennessee Forging Steel	120,000	
Knoxville	Knoxville Iron Company	100,000	
Mississippi			
Jackson	Mississippi Steel Company	80,000	
Louisiana			
Amite	Ross Steel Works	100,000	

Source: *The Magazine of Metals Producing*, March 1971

capacity of these mills. The major criteria for such a plant are that the products are not specialty steels, flat-rolled, or forgings exclusively and that the raw steel-making capacity is not more than 400,000 net tons per year. The mini-mill serves a local market and generally operates with a limited product line.

Steel-Making Technology and Economics

Blast furnace reduction of iron ore to molten iron is the first step in the conventional steel-making process. If the molten iron is cast at this point, the product is then called pig iron, which may be further reduced to steel ingots. The latter process is done in the open-hearth furnace or, more recently, in the Basic Oxygen Furnace (BOF). The BOF is newer and more efficient, combining higher steel output per furnace with lower labor costs. Another process is the electric furnace which produces steel directly from steel scrap. Its major advantage is flexibility and efficiency at a wide range of sizes. But, in comparison, the larger the BOF, the more efficient it is.

The electric furnace makes all types of steel and all stainless steel and more sophisticated alloys. The electric furnace is widely used in the scrap reduction process of steel making and is the only type of furnace capable of operating on a 100-percent scrap charge.²

²Charge is defined as the content of the steel-producing material loaded into the furnace, i.e., ingots, scrap, pellets, etc.

The proximity of the necessary iron ore, coal, and limestone resources or the steel-consuming industries or both tends to determine the location of major integrated steel producers. Such is the case in Alabama. After most of Alabama's iron- and steel-making capacity was destroyed during the Civil War, the 1870's witnessed a rapid rebuilding of the industry. Fundamental to this was the proximity of low-grade iron ore to coal and flux (limestone). In 1871, the City of Birmingham was founded in an area close to both coal and iron ore deposits. This same nearness to natural resources was primary in establishing the iron- and steel-producing area in Gadsden.³

Hence, in Alabama, the major steel-producing industries were initially located near raw materials and subsequently attracted metal and steel-fabricating industries. Distinguishing the South from the major steel-producing U.S. areas, however, is a lack of steel fabrication for automobiles and trucks.

One steel expert has described the Southern steel industry's development, until 1955, as one of concentration into large plants.⁴ Thereafter, steel-making capacity diffused, but blast furnace capacity for pig iron production remains concentrated. In other words, large Southern steel mills which produce pig iron may have reached a natural limit on size, given the nature of the area's steel-consuming industries. Thus, absence of a large consumer of sophisticated steel products, such as automobile manufacturing, may have slowed down expansion of the major mills.

This region has generally followed a pattern of decentralization in steel production mainly for the construction market. Construction requires a wider variety of steel products. Many of these are relatively lighter than those needed to make autos and trucks.

Accordingly, two directions for Southeastern steel seem likely. First, steel production for local markets by smaller mills will probably increase. This is especially true with the advent of the electric furnace and the increased supply of available scrap steel. Because steel is expensive to ship, it may be more feasible to produce steel locally with a less sophisticated product line and in smaller lot sizes for construction. Second, again considering transportation costs plus the Southeast's several major ports, foreign imports should remain prominent in this region's steel markets.

³Today, however, local iron ore has been largely depleted, so that it must be imported.

⁴Hogan, William J., *Economic History of the Iron and Steel Industry in the United States*, Vol. 4, (Lexington, D.C. Heath and Company, 1971), p. 1473.

Technology also figures in the import picture. In many cases, relatively simple products can be imported which do not require a close customer-seller relationship. Thus, transportation costs and relatively small individual orders for less sophisticated steel products have combined to produce an expansion of both imports and local steel production by smaller mills. Therefore, it is no accident that Southeastern mini-mills have expanded greatly in recent years in view of their ability to serve local markets. Except the major mills in Fairfield and Gadsden, Alabama, all have electric furnaces. A strong demand for steel-

reinforced concrete, commonly used for construction and often a major mini-mill product, has enhanced their profitability.

Production Patterns and Imports

Steel production has lately kept pace with national output. Table 2 indicates recent trends in steel shipments. Production spurted in 1971 in response both to booming construction activity and a threatened steel strike during that summer. These same conditions also prompted a sharp rise in imports through Savannah, Miami, Tampa, Mobile, and New Orleans.

The data in Table 3 underscore the importance of these steel imports. During 1971, three Customs Districts increased their national share. New Orleans increased its steel tonnage by over 65 percent, and Savannah and Mobile by 45 percent each. Tampa and Miami were below the U.S. rise of 34 percent in 1971.

Import Trends in the Southeast

Table 4 illustrates the pattern of steel imports and how it compares with domestic production. Regional and national steel mills in recent years have reduced their production of wire products. Supporting evidence is the large (relative to domestic production) importation of wire products in general and wire rods in particular. Several factors explain these large imports of wire rods for domestic wire production. First, many wire consumers have recently found it more economical to

TABLE 2

Shipments of Steel Products
(Millions of Net Tons)

Year	United States	Southeastern States *	Southeast % of U.S.
1968	91.9	6.2	6.7
1969	93.9	5.0	5.3
1970	90.1	4.7	5.1
1971	87.0	5.7	6.5

* Alabama, Florida, Georgia, Louisiana, Mississippi, and Tennessee

TABLE 3

Domestic Shipments and Imports of Steel Products

Year	United States		U.S. Imports Percent of U.S. Shipments	Southeast		S.E. Imports Percent of S.E. Shipments
	Shipments (Net Tons, Mil.)	Imports		Shipments	Imports	
1968	91.9	18.5	20.1	6.2	2.7	43.5
1969	93.9	14.6	15.5	5.0	2.1	42.0
1970	90.1	14.0	15.5	4.7	1.9	40.4
1971	87.0	18.9	21.7	5.7	2.8	49.1

TABLE 4

**IMPORTS AND DOMESTIC PRODUCTION OF STEEL PRODUCTS
1971**

	Percent of Total Steel Imports			Percent of Total Domestic Production	Major Use
	District ¹ Ports	District Ports Less New Orleans	All U.S. Ports	United States	
Wire Rods	12.6	17.5	8.4	1.8	Production of Wire*
Wire Products	6.2	8.4	5.2	3.3	Construction*
Structural Shapes	11.2	13.5	8.1	6.0	Construction*
Plates	11.6	6.9	8.6	9.1	Heavy Machinery*-Shipbuilding*-Construction*
Concrete Reinforcing Bars	2.6	3.7	2.8	5.2	Construction*
Bar Shapes Under 3"	4.2	6.4	3.0	9.4	Automotive-Machinery*-Construction*
Bars—Hot Rolled	4.6	5.1	4.4		Automotive-Machinery*-Construction*
Pipe and Tubing	11.3	11.4	10.1	8.6	Construction* and Furniture*
Sheets—Hot Rolled	8.8	4.5	14.6	13.5	Automotive
Sheets—Cold Rolled	15.0	5.6	20.2	17.1	Automotive-Equipment*-Appliances*
Sheets—Coated	8.3	11.7	7.7	7.2	Construction*
Other	3.4	5.3	6.9	18.8	
**Total	100.00	100.00	100.00	100.00	

*Major use in Southeast

¹Customs Districts of Savannah, Miami, Tampa, Mobile, and New Orleans

Source: American Iron and Steel Institute

**Totals may not agree because of rounding.

buy wire-drawing machines and make their own wire from rods. This development has encouraged purchases from foreign rather than domestic sources. Wire and wire rods are low technology items without the critical specifications which might give a domestic mill an advantage. This trend to import wire rods shows up in total imports of wire products. The latter make up 8.4 percent of total dollar value of steel mill products for District ports (less New Orleans) but only 5.2 percent nationally. U.S. production of wire products has dropped, making up only 3.3 percent of total domestic steel output.

Structural steel shapes, used mainly in heavy construction, have also shown in recent years a substantial increase in imports. They now command a larger percentage of U.S. imports than of domestic production. In the Southeast, the import of structural shapes as a percent of the total

import mix is even more prominent. Structural shapes have increased at all District ports but especially in New Orleans. Some of these shipments go further inland via the Mississippi River and are not necessarily for the Southeast. However, even if we disregard New Orleans, District imports of structural steel are significant.

Concrete-reinforcing bars is one market in which Southeastern steel producers have competed effectively with imports. As mentioned, much regional construction, particularly in Florida, requires reinforced concrete. Local steel producers have become increasingly competitive, both on a price and service basis. Some producers also fabricate bars, cutting and bending them to specific orders. Florida mills have been particularly aggressive in seeking out the construction market on a special order basis. Consequently, the imports of these bars have fallen dramatically in the

Southeast. In 1967, 133,000 tons were imported, falling to 108,000 tons in 1969 and to 68,000 tons in 1971 despite the region's construction boom.

Pipe and tubing is another construction-related import. The main variety of pipe imported into Southeastern ports is structural (i.e., used for supports and columns but not necessarily made to pressure specifications such as pipe which handles liquid or gas). Metal tubing is commonly used for metal furniture production.

Sheet metal imports again point to the construction industry. As Table 4 indicates, hot and cold rolled sheets make up over 23 percent of total steel imports when considering all District ports. If imports through New Orleans are subtracted, they fall to just over 10 percent. This figure implies that hot and cold rolled sheets, like structural shapes, are shipped further inland for automotive uses.

Turning to the category of coated sheets such as galvanized steel, District ports allot an 8.3-percent share of all steel imports to it. If New Orleans is left out, this share rises to 11.7 percent—a pattern consistent with greater-than-national emphasis on duct-type central heating and air-conditioning systems in residential construction.

From the foregoing, one can see that the Southeast's import mix, when compared with the nation's import and production mix, reinforces the conclusion that construction is the major market for Southeastern steel. Southeastern

construction directly consumes about 43 percent of the regional steel market; nationally, construction consumes about 16 percent. Adding the portion of shipments which go first to steel service centers (intermediate distribution firms), the figure would probably approach 50 percent. The total national construction market would be about 25 percent, including steel shipped from service centers. Assuming a favorable outlook for construction, further expansion both of regional imports and production via smaller mills for local markets is likely.

Industrial Use of Steel

In addition to construction's growing steel demand, the Southeast has witnessed, as already noted, above-average growth rates in fabricated metals and electrical and nonelectrical machinery. Florida's metal-fabricating sector has shown large output gains since 1967, and so has Mississippi's smaller industry.³ Tennessee and Alabama, with well established metal-fabricating facilities, have also expanded solidly in recent years.

Already leading the District states in 1967, Tennessee's production of nonelectrical machinery has almost doubled since then. In nonelectrical

³As measured by kilowatt hour consumption

TABLE 5

Imports of Iron and Steel Into Southeastern Ports and U. S.

	000 Tons					% Change	
	1960	1965	1968	1970	1971	'60-70	'60-71
Savannah	41.3	100.0	207.1	193.0	280.5	366.9	578.4
Tampa	235.7	515.5	415.3 240.7	337.0	390.2	208.4	245.4
Miami				154.3	188.3		
Mobile	81.1	311.3	477.5	258.3	376.4	218.6	364.2
New Orleans	317.5	843.6	1,539.6	1,019.8	1,658.9	221.2	422.5
*District Total	675.7	1,770.5	2,880.3	1,962.4	2,894.4	190.4	328.4
United States	4,087.6	11,963.7	19,563.2	14,609.4	19,611.3	257.4	379.8
District—% of U.S.	16.5	14.8	14.7	13.4	14.8		

Source: American Iron & Steel Institute

* Totals may not agree because of rounding.

machinery, Tennessee has maintained its number-one ranking, while all District states have shown marked advances. Florida, whose output has grown from about one-third of Tennessee's in 1967 to over half its level in 1971, headed gains in electrical machinery. Additionally, the packaging industry is using a sizable amount of steel. Therefore, even though construction is still king in steel consumption, the growth of these other industries has served to diversify regional steel demand. While further growth in construction will tend to benefit the smaller mills and imports, expansion in industrial uses will help the larger mills.

Port Activity

Notable shifts have taken place in District steel imports, which generally have grown slower than nationally. Despite Florida's construction boom, steel imports through Miami and Tampa have trended downward, suggesting increased reliance of construction on local domestic steel sources (see Table 5). Part of Savannah's increased overall tonnage in recent years has resulted from a marked rise in steel imports. Hence, the threat of foreign competition is definitely present—especially when one considers the jump in total District steel imports during 1971—although Southeastern producers have been, to some

extent, successful in competing with imports.

A Look at the Future

Recent trends in regional steel consumption have favored imports and the smaller producer, but there is no evidence that major producers are giving up on the Southeastern market. Its largest producer, U.S. Steel, has announced plans for installing two Q-BOP steel-making furnaces. The Q-BOP is a more technologically advanced version of the Basic Oxygen Furnace. These will replace 12 existing open-hearth furnaces, enlarge capacity, and meet existing and anticipated air and water pollution regulations.

Regionally and nationally, steel producers face common problems of import competition and costly pollution control requirements. Larger Southeastern mills may have an edge over smaller ones in that the larger the mill, the smaller the percentage pollution control equipment is of total investment. Both large and small producers should benefit from increased industrial activity which should serve to diversify steel demands. Some regional producers have succeeded in meeting foreign competition. Should this success spread, it would bode well for the Southeastern steel industry. A continuance of this region's faster-than-national economic growth would also be a plus for steel. ■