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## THE COMPETITIVE POSITION OF SOUTHERN COMMODITIES: SOME TRENDS AND UNDERLYING FORCES

Daniel A. Sumner

My assignment is to ask what has been happening to the position of southern agriculture in national and world markets, and why. I do not have to answer the whole "why" question because the part of the answer relating to marketing institutions and policy is being handled by the other panelists. But I am sure you will agree that even the left-over bits are more than can be treated—at least by me—in a single paper.

The rationale for papers and discussion in this session is to help understand the forces that have determined the patterns of agricultural production and trade in the South. If the papers are to be useful, they must help explain what is likely to happen in the future and even what might be done to affect these patterns. But again, this task is far too large for a few academic papers.

One of the purposes of this paper, in the context of the others in the session, is to provide some of the basic economic background useful to discussing trading patterns. One may view the other papers as elaborating on reasons for deviations from the patterns of trade that might be predicted by theory and evidence on costs and demand conditions.

Not being a trade theorist, I hesitate even to mention the technical term "comparative advantage." I have not used the term in my title; a few remarks may be useful to clarify why.

A loose definition of comparative advantage may be stated in terms of autarky prices. A region has a comparative advantage in a good,  $y$ , if in absence of trade the price of  $y$  is lower than the price of  $y$  elsewhere. Complications arise in precisely defining "price" (relative to what?) and "elsewhere" (see, for example, Chacholiades, Paarlberg et al., and

*Speaking of Trade*). I know just enough to know that the "Law of Comparative Advantage" is a dangerous beast and is not nearly as obvious as our intuition may suggest. I hope I may be forgiven an extended quotation about the law from a recent authority:

*... This proposition, like other more recent theorems of trade theory, has proven somewhat difficult to extend beyond the simple models in which it was first formulated. Three examples would suffice to illustrate this difficulty. First, when Jones extended the doctrine of comparative advantage to a classical model with many goods and countries, he was forced to restate the concept of comparative costs in a form that lacked most of the simplicity and intuitive appeal of the original. Second, in the context of the Heckscher-Ohlin model, Melvin showed that if there are more goods than primary factors of production, then the indeterminacy of the structure of production, that had been noted previously by Samuelson, implies that any good may be exported by any country. This, it would seem destroys altogether any determinate relationship between the pattern of trade and anything else. And third, Travis has argued that the introduction of impediments to trade, and particularly of tariffs, can alter the pattern of trade, causing goods that would appear to have been exported to be imported, and vice versa. Thus, it appears that if the two-commodity, two-country, free-trade model is extended or modified in plausible ways, it then ceases to be possible to explain the pattern of trade by simple comparisons of autarky prices. Most recently, this im-*

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*possibility has been shown by Drabicki and Takayama (Deardorff, pp. 941-2).*

In the rest of the paper I have usually avoided the term "comparative advantage." The main reason is that I do not really know what comparative advantage means in the context of a many-factor, many-good, many-country world in which goods and factors are traded. Therefore, I may avoid offending trade theorists by misusing what I take to be a concept from a pure theory.

## BASIC RELATIONSHIPS

The underlying competitive position of a region is influenced by its cost of production. The relevant costs is that on the margin, so the output level at which one chooses to evaluate cost may affect relative positions. To study whether some good is imported or exported, analysts examine the marginal cost at the output level for which local quantity demanded equals production.

To examine what we mean by a region's underlying competitive position, it is useful to specify some notation for the supply and demand conditions for a commodity. A simple static framework will serve our purposes. Let the total marginal cost function for commodity  $Q$  be given as:

$$(1) C' = C'(P_x, P_y, Z, T, Q_s),$$

where  $P_x$  represents variable input prices that are not tradeable across regions,  $P_y$  represents variable input prices for inputs that are tradeable,  $Z$  represents quantities of fixed factors of production, and  $T$  represents particular technologies or other shifters that may affect costs.

To make matters simple, consider the case of a "small" region, by which I mean one that takes the price of output as exogenous to the local production or demands. Let this exogenous price for output  $Q$  be given by  $P_q$ . The competitive regional demand function may then be written as:

$$(2) Q_d = Q_d(P_q, P_o, I, D),$$

where  $P_o$  is the regional price of other goods,  $I$  is income, and  $D$  represents other demand shifters.

The competitive output level of commodity  $Q_s^*$  is given by setting equation (1) equal to  $P_q$ :

$$(3) P_q = C',$$

and solving for  $Q_s$ .

The quantity demanded in the region,  $Q_d^*$ , is given by equation (2). Barring impediments, if  $Q_s^* > Q_d^*$ , the region would export  $Q$ , and if  $Q_s^* < Q_d^*$ , the region would import  $Q$ . Focusing on cost conditions, if

$$(4) C'(Q_d^*) < P_q$$

(that is, if marginal costs evaluated at the demanded quantities are less than world price), then the region exports.

Using the notation just established, production patterns in a region are determined by the factors that influence the level of the marginal cost function ( $P_x, P_y, Z, T$ ) and by  $P_q$ . Trading patterns are determined by these plus those factors that affect local demand,  $P_o, I$ , and  $D$ . Questions about what has happened or what may happen to the underlying competitive position of southern commodities may be rephrased in terms of shifts in the factor prices, technologies, and fixed factors relative to the world market prices of these commodities and to local demands.

Two very brief examples are useful. The broiler industry in the South has expanded dramatically in the last three decades. This increase has occurred because of a general expansion of the national industry and because of shifts in technology and factor prices that have favored the South relative to other regions. In this case, a large expansion in production has occurred and shipments out of the region have increased because local quantities demanded, while expanding, have not kept up with the shifts in the supply function. The soybean industry is also a case of major expansion. In 30 years, soybeans went from being a minor crop in the South to being the second largest producer of cash receipts. During the same period, the South went from producing 12 to 29 percent of the United States soybean revenue. But, as demand for soybeans expanded in the South (due to relative expansions in the livestock industry), there was much less net change in trading patterns. Southern production growth has been hard pressed to keep up with southern demand from the growing livestock industry and overseas shipments.

## WHAT ARE SOUTHERN COMMODITIES?

The title of this session refers to "southern commodities" and I thought it would be useful, therefore, to consider which commodities might be considered southern. There are two or three senses in which we might

TABLE 1. RANK AND SHARES OF CASH RECEIPTS IN THE SOUTH AND U. S. AND THE U. S. SHARE OF WORLD PRODUCTION AND EXPORTS, SELECTED COMMODITIES, 1982

Commodity	Rank	South <sup>a</sup>	Rank <sup>b</sup>	United States <sup>a</sup>	Southern <sup>a</sup> share	U.S. Production share	U.S. Export share
		Percent of receipts		Percent of receipts			
Cattle ...	1	20.6	1	20.7	29.3		
Soybeans	2	8.4	4	8.6	28.6	65.1	86.2
Broilers <sup>c</sup>	3	7.9	8	3.1	74.7	24.1	20.1
Cotton ..	4	7.3	7	3.2	67.9	17.6	26.8
Tobacco	5	7.3	11	2.3	92.9	13.2	18.9
Dairy ....	6	7.2	2	12.7	16.7		
Wheat ...	7	5.4	6	6.8	23.3	15.7	41.8
Hogs .....	8	3.8	5	7.3	15.2		
Eggs .....	9	3.6	10	2.4	44.4		
Rice .....	10	3.0	13	1.2	75.4	1.7	18.1
Nursery..	11	3.0	9	2.6	33.3		
Corn .....	12	2.7	3	9.3	8.5		
Oranges	13	2.3	16	0.9	72.4		
Peanuts	14	1.7	24	0.6	88.1	9.2	30.0
Sorghum	15	1.6	15	1.1	43.8		
Forest ...	16	1.4	20	0.7	59.3		
Cane .....	17	1.4	25	0.5	73.7		
Turkeys..	18	1.1	18	0.9	38.4		
Tomatoes	19	1.0	19	0.8	36.5		

<sup>a</sup>Ranking percentages are based on cash receipts from commodity sales in the following states: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia.

<sup>b</sup>The following commodities, followed by their rank in parentheses, are not shown in the table because they are quite unimportant in the South: hay (12), potatoes (14), grapes (16), sugar beets (21), barley (22), and apples (23).

<sup>c</sup>For U. S. production and export share; the figures in this row are for 1981, all poultry.

Sources: Alston; USDA (a) - (f) and (h) - (p).

usefully use the phrase. First, we might speak of those commodities that are particularly important in southern agriculture.

Table 1 lists, in order of importance (by cash receipts in southern states), nineteen "southern" commodities from the list of the twenty-five most important commodities in the United States. I have used the USDA ((f), (h), and (i)) measure of cash receipts, and have added across the fourteen states noted in the footnote to Table 1. I use 1982 to avoid considering the PIK program. Of course, the South is not homogeneous, so the pattern would look quite different if we look only at parts of the South. Some breakdowns are interesting. For example, Oklahoma and Texas account for well over half the cattle and calves but this commodity would still rank number one if these states were excluded. Soybeans and broilers are quite widely distributed, but two-thirds of the cotton is produced in Texas and Mississippi. There are six states for which tobacco is important, but North Carolina and Kentucky account for about 70 percent of the sales.

The next two columns of Table 1 include the rank and share of receipts for the nation.

Cattle and soybeans have about the same share of United States agriculture as they have of southern agriculture, although soybeans fall to fourth position behind dairy products and corn.

A second group of "southern" commodities includes those for which production in the South is particularly important in national or world markets. Column 5 of Table 1 lists the share of national cash receipts produced in southern states for each commodity. If we are willing to call a commodity "southern" when the South produces over half the sales, then eight of our top nineteen commodities would be listed as southern. The South is also dominant in a number of commodities that are important locally but are not in the top 25 nationally. These include horses (Kentucky), sweet potatoes (North Carolina), and mohair (Texas) among many others. Of these, only horses are among the top five revenue earners in any state.

The next two columns of Table 1 show the United States production and export share for a few of our nineteen commodities for which international trade may be significant. Notice that there are now no southern commodities in the sense that over half of output or exports are produced in the South. The small-region assumption used previously seems not to bad in light of these share figures. In soybeans and broilers, the South reaches nearly 20 percent of world production. In all the rest, the southern share is even lower. Interregional trade is more important than international trade for most commodities, though for some (such as tobacco) the trade occurs after processing.

Tables 2, 3, and 4 repeat Table 1 for earlier decades. This allows us to examine trends in commodity shares and rankings, though there is a problem of randomness by using single years in each decade. The big gainers for the South have been soybeans and broilers. Both of these commodities have grown steadily in national rank and share but have grown even faster in the South. Soybeans went from a rank of fifteenth with 1 percent of southern receipts and a southern share of 12 percent in 1952, to a current rank of second with more than 8 percent of receipts and more than 28 percent southern share. According to our 50 percent cut-off, broilers have long been a southern commodity but the southern share has risen over time as national broiler production and relative importance have increased significantly.

TABLE 2. RANK AND SHARES OF CASH RECEIPTS IN THE SOUTH AND U. S. AND THE U. S. SHARE OF WORLD PRODUCTION AND EXPORTS, SELECTED COMMODITIES, 1972

Commodity	South <sup>a</sup>		United States <sup>a</sup>		Southern <sup>a</sup> share	U.S. Production share	U.S. Export share
	Rank	Percent of receipts	Rank <sup>b</sup>	Percent of receipts			
Cattle ...	1	28.0	1	30.0	26.7		
Soybeans	6	6.4	4	7.2	26.0	70.3	84.5
Broilers <sup>c</sup>	5	6.8	9	2.7	74.1	33.8	10.9
Cotton ..	2	7.8	7	3.0	74.6	22.1	25.1
Tobacco	3	7.6	10	2.4	93.0	17.3	25.9
Dairy ....	4	7.6	2	11.8	18.6		
Wheat ....	4	1.4	6	3.8	10.3	12.2	48.2
Hogs .....	7	5.0	3	8.9	16.3		
Eggs .....	8	4.6	8	3.0	44.8		
Rice .....	10	2.4	17	0.8	83.6	1.3	20.6
Nursery..	15	1.2	11	1.5	23.2		
Corn .....	13	1.8	5	6.0	8.9		
Oranges	11	2.4	13	0.9	74.5		
Peanuts	9	2.9	16	0.8	99.0	9.4	18.4
Sorghum	12	2.2	12	1.2	49.9		
Forest ...	17	1.0	18	0.5	57.3		
Cane .....	16	1.0	19	0.5	60.6		
Turkeys..	18	0.9	14	0.9	30.7		
Tomatoes	19	0.9	15	0.9	28.5		

<sup>a</sup>Ranking percentages are based on cash receipts from commodity sales.

<sup>b</sup>The National rankings are based only on the commodities listed in the table.

<sup>c</sup>For U. S. production and export share; the figures in this row are for all poultry.

Sources: Alston; USDA (a) - (f) and (h) - (p).

Cotton has been a major declining commodity nationally and especially in the South. Nationally, the fall was from a rank of fourth and a share of 9 percent of all receipts to a rank of seventh and about 3 percent of receipts. The share of cotton in southern receipts was down from about 20 percent to 7 percent.

These changes have occurred fairly steadily over three decades. Soybeans and broilers have gained in each decade, while cotton has lost share in each decade. The rate of change was somewhat slower in the most recent period except for broilers. The broiler industry gained least in the decade of the 1960s.

Given the changes in revenue shares exhibited in tables 1, 2, 3, and 4, what can we say about changes in the competitive position of the South in these commodities? For some commodities—for example, tobacco, dairy, and peanuts—farm policies determine the amount and geographic distribution of production. The underlying forces of market supply and demand are muted for these crops. The top three commodities in the South are not so directly affected by programs, so the regional trends are more likely to reflect underlying competitive forces.

The South has maintained its cattle industry for 30 years and there has even been some

increase in southern share. The share of cattle receipts in all agriculture boomed during 1960s but declined in the 1970s. There is little in these trends to suggest that we are in the middle of any major trends for the southern cattle industry relative to the total national market. Soybean expansion in terms of importance to the South and southern share continued from 1972 to 1982, and may continue as it has for three decades. A similar story seems to apply to the broiler industry.

The next commodity in Table 1 without direct program involvement is hogs. Here, there has been some loss in the last decade and some changes within the South as North Carolina has expanded its production and revenues relative to other states. The importance of the egg industry has been declining nationally and in the South but the southern share, which doubled during the 1950s and 1960s, seems to have stabilized.

In looking for commodities not on the list that may be expanding as soybeans or broilers did during the last few decades, I see no commodities that have made large gains in the last decades that may be projected into the next decade. Of course, there are many commodities that are significant in local areas. These minor crops have become more important in the last decade but still account for only 10 percent of southern receipts. It

TABLE 3. RANK AND SHARES OF CASH RECEIPTS IN THE SOUTH AND U. S. AND THE U. S. SHARE OF WORLD PRODUCTION AND EXPORTS, SELECTED COMMODITIES, 1962

Commodity	South <sup>a</sup>		United States <sup>a</sup>		Southern <sup>a</sup> share	U.S. Production share	U.S. Export share
	Rank	Percent of receipts	Rank <sup>b</sup>	Percent of receipts			
Cattle ...	2	17.5	1	22.7	22.6		
Soybeans	8	2.9	8	4.1	20.6	64.9	c
Broilers..	5	6.7	10	2.9	67.0		
Cotton ..	1	18.7	4	7.2	76.3	31.6	21.5
Tobacco	3	11.6	9	3.7	93.0	26.8	27.8
Dairy ....	4	8.3	2	13.5	18.1		
Wheat ...	9	2.6	5	5.8	12.9	11.8	39.6
Hogs .....	7	3.9	3	8.8	13.1		
Eggs .....	6	5.3	7	4.7	33.1		
Rice .....	13	1.6	15	0.9	54.4	1.3	15.3
Nursery..	14	1.5	11	2.0	22.3		
Corn .....	15	1.5	6	5.0	8.7		
Oranges	11	2.2	14	0.9	72.1		
Peanuts	12	1.8	18	0.5	99.0	5.8	1.0
Sorghum	10	2.4	12	1.2	57.5		
Forest ...	16	1.4	17	0.6	61.6		
Cane .....	19	0.6	19	0.2	100.0		
Turkeys..	18	0.6	13	1.0	19.3		
Tomatoes	17	0.7	16	0.8	23.8		

<sup>a</sup>Ranking percentages are based on cash receipts from commodity sales.

<sup>b</sup>The National rankings are based only on the commodities listed in the table.

<sup>c</sup>Soybean export data are not available for 1962.

Sources: Alston; USDA (a) - (f) and (h) - (p).

TABLE 4. RANK AND SHARES OF CASH RECEIPTS IN THE SOUTH AND U. S. AND THE U. S. SHARE OF WORLD PRODUCTION AND EXPORTS, SELECTED COMMODITIES, 1952

Commodity	Rank	South <sup>a</sup>		United States <sup>a</sup>		U. S. Production share	U. S. Export share
		Percent of receipts	Rank <sup>b</sup>	Percent of receipts	Southern <sup>a</sup>		
Cattle ...	2	15.3	1	19.2	22.2		
Soybeans	15	1.0	9	2.4	12.1	44.2	c
Broilers ..	6	4.8	10	2.4	56.5		
Cotton ..	1	26.7	4	9.3	80.7	42.3	31.9
Tobacco	3	11.0	8	3.3	92.2	31.2	33.6
Dairy ....	4	8.2	2	14.2	16.4		
Wheat ...	8	3.1	5	6.6	13.1	17.5	32.3
Hogs .....	5	5.5	3	10.8	14.2		
Eggs .....	7	4.1	6	5.8	19.6		
Rice .....	9	2.6	13	0.9	79.1	1.9	16.0
Nursery..	13	1.1	11	1.8	17.1		
Corn .....	12	1.2	7	3.5	9.6		
Oranges	14	1.1	15	0.6	55.8		
Peanuts	10	1.6	16	0.4	99.3	6.4	c
Sorghum	17	0.7	17	0.3	65.0		
Forest ...	11	1.6	14	0.7	65.4		
Cane .....	18	0.5	18	0.1	1.0		
Turkeys	18	0.9	12	1.0	23.4		
Tomatoes <sup>d</sup>							

<sup>a</sup>Ranking percentages are based on cash receipts from commodity sales.

<sup>b</sup>The National rankings are based only on the commodities listed in the table.

<sup>c</sup>Soybean and peanut export data are not available for 1952.

<sup>d</sup>Individual data for this commodity are not available for 1952.

Sources: Alston; USDA (a) - (f) and (h) - (p).

is probably safe to say that none of these commodities will become a major revenue source in the next decade.

## BUDGETS, COST OF PRODUCTION, PRODUCTIVITY AND THE COMPETITIVE POSITION OF SOUTHERN COMMODITIES

### Budgets

The framework set out in the first section compared the local marginal cost of production of the commodity,  $C'$ , to the price,  $P_q$  (which depends on costs in other production regions). It may be tempting to discuss the competitive position of southern commodities by comparing the budgeted or estimated levels of marginal costs across regions. Since the USDA and state extension specialists make such cost estimates readily available, the temptation may in fact become overwhelming (McElroy and Gustafson; *Economic Indicators of The Farm Sector: Costs of Production, 1984*; and Tweeten). However, making this comparison is a dangerous game. My colleague, E. C. Pasour, Jr. and others have recommended skepticism toward assessments of the opportunity costs of comparisons among producers. The reason for this is that given any non-marketed inputs, the internal valuation may depend on the

individual producer. On a practical basis, the problems are even greater. For example, when our extension group produces a "budget" showing the cost of producing soybeans, they imputed values for the time of the farmer, the equipment, and other factors that may be fixed in a short run. They also use rental rates for cropland that may be "market" prices that depend to some extent on the price of soybeans. Further, when "costs" depend on the output price, we must be very careful in making comparisons across regions. In a sense, this is just saying that marginal costs and average costs are different and it is a particular marginal cost that is relevant to trade patterns.

These points may be clearer by reviewing recent USDA soybean budgets. I base this discussion on "production costs" in dollars per planted acre divided by yields for the United States, the Southeast, and the Lake States and Corn Belt, as given in the (USDA (f), (h), and (i); McElroy and Gustafson). In 1975 and again in 1982, the Lake and Corn Belt region had lower budgeted costs—compared to the Southeast—in every major category except land rent and total fixed expenses. In both 1975 and 1982, "total variable costs" per bushel in the Southeast were twice the level of the Lake States and Corn Belt. "Total economic costs" were 20 percent higher in 1975 and 11 percent higher in 1982. In 1975, the price was well above "total economic costs" per bushel but only about 2 percent higher in the Southeast. In 1982, the "total economic costs" were well above the average market price in all regions, and the Southeast enjoyed only a 5 percent advantage. These same basic patterns also hold for the Lake States and Corn Belt relative to the Delta States.

Despite these budgets, during the 1970s soybean production was continuing its rapid expansion nationally and from 1972 to 1982 soybeans went from sixth to second in terms of gross receipts among southern commodities. The share of the South in United States soybean output rose from 26 percent in 1972 to almost 29 percent in 1982.

Using budget cost figures to try to predict which regions would expand seems fruitless. Soybeans make a nice case because there seem to be no policy or marketing problems that account for the expansion in the South. The answer to the puzzle is probably that soybeans were the best alternative for an increasing amount of southern acreage. This

is not a criticism of the USDA efforts to carefully collect and analyze budget data. The fact that such a careful and competent job was and is done by those involved only underscores the problems of trying to use measured costs (measured by people outside the firm, that is) to predict the subtle forces of economic change. International examples that may present similar problems are contained in Pearson and Meyer, and Jabara and Thompson.

### Productivity Indices

This section compares some changes in southern farm productivity to changes in the rest of the country. A region with faster productivity growth in an industry may be said to be gaining in competition with other regions. Of course, this omits reasons for the productivity growth and particularly changes in factors prices. This section represents an attempt to see if the productivity data reveal any useful patterns for understanding regional output shifts.

Total factor productivity growth reflects improvements in agricultural technology, input qualities, and managerial performance. Year-to-year changes also depend on temporary factors such as weather. Table 5 exhibits the changes between the average total factor productivity index for 1947, 1948, and 1949 and for the years 1980, 1981, and 1982. The averaging smooths some variations caused by random or temporary factors so that underlying changes in technology and so forth are more likely to be reflected. The table shows the growth for the four southern

regions, as compared to the Corn Belt, the Pacific, and the United States average.

Two of the southern regions experienced faster-than-average growth in total factor productivity and two had a slower growth. Appalachia and the Southern Plains had growth similar to that of the Corn Belt while the Delta and Southeast had growth like that of the Pacific region.

Compared to these patterns, it is interesting to note that the southern share of agricultural receipts has been nearly constant for 30 years. The only region to gain has been the Southeast, on the strength of output gains in Florida.

Figures 1-3 show growth in labor productivity for livestock, crops, and all agriculture for the South as compared to the United States. Again, these use 1977 as the base year and do not represent absolute differences in output per hour of work. The South has lower dollars of receipts per hour than the rest of the nation in each category.

For 1982, the output per unit of labor is:

	South	United States
Livestock .....	47.17	61.47
Crops .....	25.61	31.35
All .....	26.75	35.82

Source: USDA, (a) and (g).

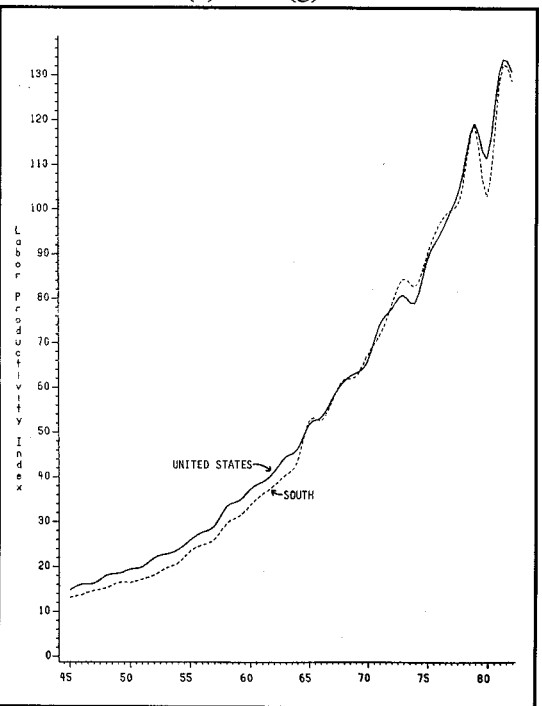


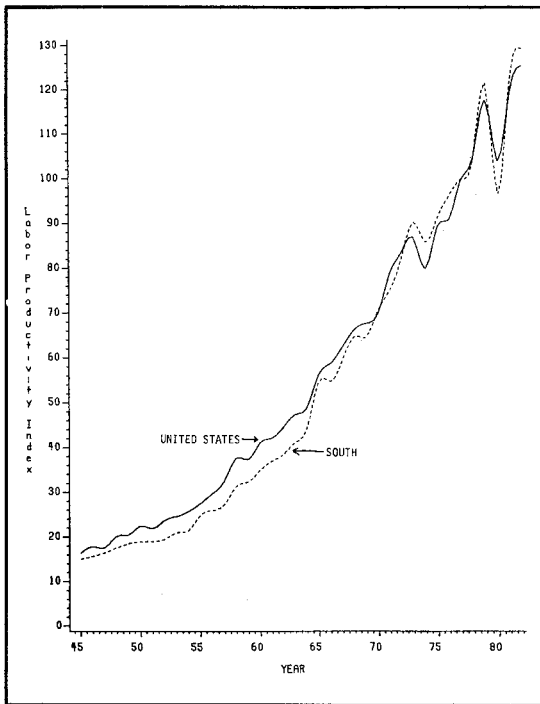
Figure 1: Farm Labor Productivity Growth in the South and the U. S.

TABLE 5. TOTAL FACTOR PRODUCTIVITY GROWTH IN THE SOUTH AND THE UNITED STATES.

Region	Average* 1947- 1949	Average 1980- 1982	Differ- ence	Percent change
Appalachian (North Carolina, Tennessee, Virginia, West Virginia, Kentucky) .....	67	111	44	66
Southeast (Georgia, Florida, South Carolina, Alabama) .....	61	119	58	94
Delta (Arkansas, Louisiana, Mississippi) .....	52	103	51	98
Southern Plains (Texas, Oklahoma) .....	60	99	39	65
Corn Belt .....	64	109	45	70
Pacific .....	59	115	56	95
United States .....	61	110	49	80

\*These index numbers are scaled such that the value for 1977 = 100.

Source: USDA (f) and (h).



**Figure 2: Crop Labor Productivity Growth in the South and the U. S.**

Since the crop and livestock enterprise mix differs across regions, these numbers do not measure productivity at identical activities.

Figure 3 shows that southern livestock output per hour grew slightly faster than the national average from 1945 through the early 1960s, then matched the nation until the mid-1970s. Since then the South seems to have lagged slightly in growth of livestock labor productivity. For crops, Figure 2 has much more variability but the South has tended to have slightly faster growth in output per hour than the nation as a whole. All agriculture shows faster growth for the South in the first two decades and about the same in the last two decades Figure 1.

For the labor productivity trends exhibited in the figures, changes in output mix also affect the patterns. So, if southern crop production were to move away from tobacco and toward soybeans, we would see faster growth in the labor productivity index than for each crop alone.

Figure 4 shows yield growth in the South relative to the rest of the nation; yield in this case means dollar value of crop output per acre of cropland used for crops. There has been considerable year-to-year variation in these series. From 1945 through the early 1960s, the South and the United States had

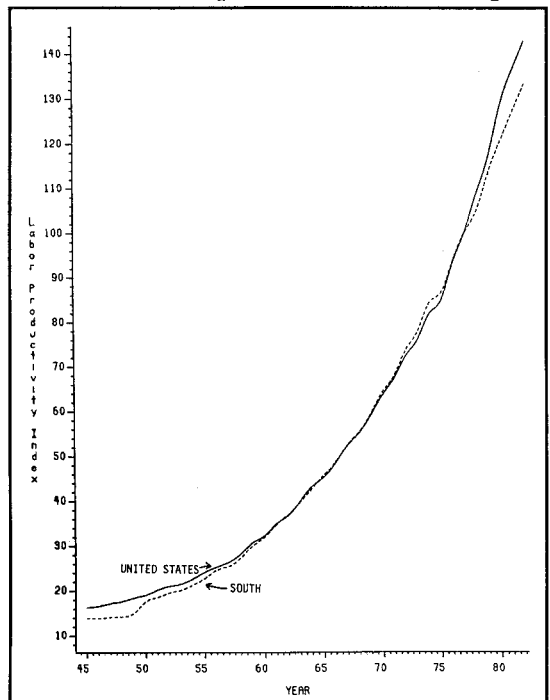
similar patterns. Then southern growth was faster for most of the 1960s. For the final 15 years, output per acre has been very erratic, but generally has been slower in the South than in the nation as a whole.

The amount of southern cropland has fallen over time while total United States cropland remains more stable. Both fell more in the 1960s but the rest of the nation's cropland rebounded much more in the 1970s than did southern cropland.

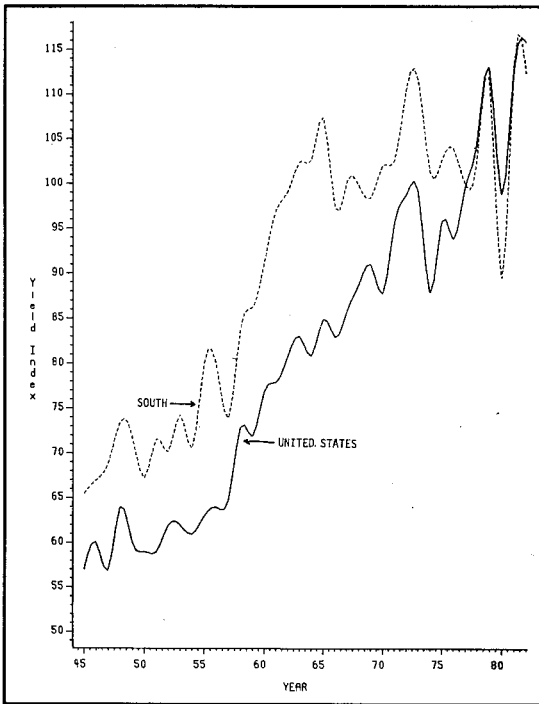
These figures provide further background but do not really provide a key to shifts in the underlying competitive position. More disaggregation by commodity and studies of particular technological change would be more productive.

### REMARKS ABOUT THE POTENTIAL FOR PARTICULAR INDUSTRIES

The previous sections have discussed some basic concepts and presented some rather broad trends. In this section, the underlying competitive position of the southern region for three commodities will be discussed. Careful projection of production levels or trading patterns for a region even for a single commodity would require a major research effort. These remarks are not a result of such an effort. One can view the following as (a) an outline of important issues that require



**Figure 3: Livestock Labor Productivity Growth in the South and the U. S.**



**Figure 4: Crop Yield Growth in the South and the U. S.**

further study and (b) a listing of some tentative assessments.

### Tobacco

The tobacco industry and the program that regulates it are much maligned and much misunderstood. To clear the air, it is useful to state a few basic facts.

The several major types of tobacco are not perfect substitutes in production or consumption. Of two major types produced in the South—flue-cured and burley—the first is a Piedmont and Coastal Plain crop with the majority of production being in North Carolina. The second is grown further west, with the majority being in Kentucky. The rule of thumb has been that there was little potential substitution of one for the other in cigarettes and also little substitutability of these American types for oriental tobacco, which is the third major type that goes into a blended cigarette. When costs, prices, and projected demand are to be compared, the different types of tobacco should not be considered a single market.

Tobacco markets have been expanding. Contrary to the common impression that the industry is dying, world tobacco production

and consumption are growing along with population and incomes. In the wealthy countries, consumption per capita has been falling recently, but not enough to overcome the growth elsewhere.

The tobacco program does not generally subsidize production of tobacco. The program reduces output and increases the price of tobacco products. There is no direct conflict between policies to ban advertising for cigarettes or publish health information about smoking and policies to support the tobacco program. Both sorts of policies discourage the use of tobacco products.

Recent work has been documented that without a program, the tobacco industry would expand as the industry moved out the demand function (Sumner and Alston). Output may go up by 50 to 100 percent, but given price declines, revenue would not expand nearly so much.

There seems to be more potential for expansion in the flue-cured tobacco industry than in burley because of more flexibility in both the demand and the supply conditions. Most of the expansion comes at the expense of foreign competitors by increasing exports and reducing imports. Little expansion in tobacco product consumption would follow from deregulation.

These results are the simple consequence of considering the effect of binding marketable quotas for a product that is traded internationally. One issue not considered is the potential movement of the United States industry out of the South if geographic restrictions were lifted. We have no direct evidence on the potential for production outside the traditional belts. However, several factors suggest that a migration of the industry would be difficult. First, in the areas outside the United States where location is not restricted, industry experts attempt to find conditions that are similar to those in the Southeastern United States. Second, tobacco makes intense demand on managerial talent and quality is very sensitive to growing and curing practices. There seem to be clear gains to experience and, in the United States, almost all the experienced growers are in the South. Third, all the major tobacco marketing and processing facilities are currently located in the South. It would add to buying, transportation, and other costs to deal with growers outside the traditional area. It seems likely that even without restrictions the South has an advantage in tobacco production.

## Peanuts

The peanut industry is much smaller than the tobacco industry, but these crops share some programs and other characteristics. Both commodities produce high value per acre, both are restricted primarily to the South, and both have quotas. For the last several years, however, peanut quotas have only restricted domestic marketing (at above-world-market prices). Unlike tobacco, peanut imports are restricted and exports are allowed to sell at below-domestic prices. This has allowed an expansion of United States exports for peanuts and demonstrates the ability of southern growers to produce for the world market.

In the world market, United States peanuts compete with soybeans and other oil crops. Thus, whereas for tobacco several distinct markets must be separated, for peanuts some other non-peanut crops are close substitutes; for some purposes, then, aggregation is appropriate. This also applies to soybeans in the world and domestic markets.

If the recent experience under the two-price policy is a guide, then we might expect a little expansion in the peanut industry and even an ability to compete if the program and import restrictions were to be removed.

## Dairy

While different in most regards, dairy policy is similar to tobacco and peanuts, in that the policy seems to have affected the places where milk is produced. In 1952, the South produced 16.4 percent of the dairy receipts in the United States. By 1972, this share had risen to 18.6 percent, but by 1982 had fallen back to only 16.7 percent. Within the South, there has been remarkably little change in the ranking of states in terms of dairy production. The exception has been the Florida dairy industry, which has steadily expanded (along with population) and rose from about 5 percent of southern dairy receipts in 1952 to about 11 percent in 1982.

Without the dairy program, some reorganization of the dairy industry would follow. Holding in place import restrictions and bans on reconstituted milk, the share of class II milk would fall while milk for fluid use would expand. This follows because a significant share of manufactured milk products is now taken by the government and because the dairy policies increase the price of fluid milk

to consumers. There are implied geographic shifts. Those areas with high proportions of fluid use would expand relative to those regions that produce milk for manufacturing uses. This means further growth in Florida relative to Kentucky and Tennessee.

Given high transportation costs for fluid milk, the South might remain a major milk producer even under less regulation than we now have. It also seems that if imported manufactured dairy products were not restricted, it would affect mostly states in the North with lower class I utilizations. The major potential threat to most of the southern dairy industry seems to be reductions in transportation costs. If shipping costs for fluid milk were to fall—whether through reconstituted milk or other means—the southern class I utilization would have to compete more effectively with northern states. Such competition would seem difficult if current prices are a guide to costs.

## CONCLUSIONS

This short paper has outlined some of the issues related to the underlying competitive position of southern commodities in national and world markets. I have pointed out the basic relationships, looked at some patterns over the last 30 years, presented a caution about using budgets and other productivity measures, and considered three commodities in a bit more detail. There are some important points left out of this discussion, however, that may be mentioned here.

Going back to equations (1), (2), and (3), we can solve for a reduced-form relationship for the amount of net exports of a region for some commodity under restricted conditions. Still in the static model, the reduced form will be a function of the local factor prices, technology endowments, and demand variables. It will also depend on the external market price of the commodity,  $P_q$ , which itself is a function of supply and demand conditions outside the region.

This net export equation provides the framework for econometric analysis or simulation of trading patterns. It also points to the important variables to examine for potential changes that affect trade flows.

I can be a little more specific. The southern region shares many of the same factors, factor prices, technology, and demand variables with the rest of the United States and indeed with

the rest of the world. It also has some "inputs"—such as climate or basic terrain—that will remain nearly constant. Therefore, in order to forecast, we should focus on how changes on the horizon may affect the South *differentially*. New technologies and changes in factor prices affect regions differently when cost shares differ. So cheaper pesticides and fertilizers, for example, are likely to favor the southern soybean industry, just as cheaper irrigation water favored western cotton production a generation ago.

What changes are pending for southern agriculture? We don't know, but we have

some clues. For example, we have all heard at least a little about the results from biotechnology techniques that have been applied to the dairy industry. These may favor one region over another, but that is not obvious. In crop agriculture, the expansion of technologies that make double cropping more feasible seem to have helped wheat production in the Southeast. In general, it will take in-depth studies of specific commodities to obtain a clear understanding of the regional effects of technological and economic changes.

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