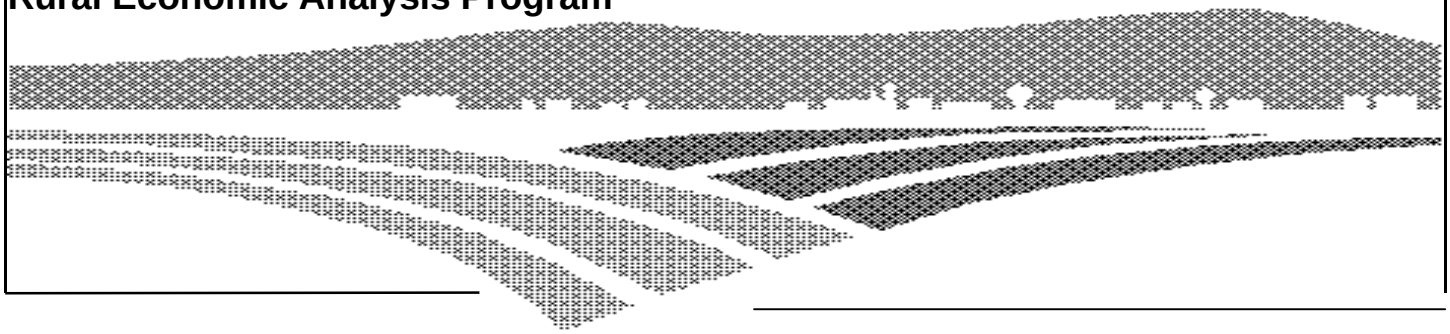
TOBACCO'S IMPORTANT ROLE IN THE ECONOMY OF SOUTHSIDE VIRGINIA

William Wise and Dixie W. Reaves

Virginia's
Rural Economic Analysis Program



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INTRODUCTION

Tobacco production and the tobacco-related industries are unquestionably of great importance to the Commonwealth's economy. Tobacco's economic significance has been examined most recently in *Tobacco in Virginia* by Knapp (1995) and as part of a larger study in the REAP publication, *The Economic Impact of Agriculture in Virginia*, by Johnson and Wade (1994). Other recent REAP publications, *Potential Changes Facing Virginia Tobacco Producers* by Wise and Reaves (1995) and *The Virginia Tobacco Industry in a World of Change* by Purcell (1994), have examined current issues and policy aspects of the tobacco trade. This paper focuses on the economic contribution of tobacco production and tobacco-related industries to a rural region, Southside Virginia. Statewide studies are usually dominated by urban Richmond-area tobacco-related activities, primarily cigarette manufacturing. By focusing on Southside Virginia, this study can examine and measure tobacco's unique forms of economic contribution excluding cigarette manufacturing. In particular, the focus will be on tobacco production, tobacco auction warehouses, tobacco stemming and redrying processing, and other supporting businesses. The importance of these industries to Southside Virginia will be assessed, noting the potential impact on the region given some possible adjustments in the industry.

Southside Virginia

While Southside Virginia traditionally refers to an area in Virginia south of the James River, this study will use the name to refer to a six-county region located in the heart of the larger area. The counties of Brunswick, Charlotte, Halifax, Lunenburg, Mecklenburg, and Pittsylvania have been chosen for the study area, primarily because they are the largest flue-cured tobacco producing counties in Virginia (Figure 1). Included in the study region are the two independent cities of Danville and South Boston. This area borders North Carolina and its major tobacco producing region.

Demographic Information

Pittsylvania and Halifax counties are the two most populous counties, boosted by the inclusion of the independent cities of Danville and South Boston in the totals provided (Table 1). The population of Danville is 60,053, and South Boston's population is 6,997. These two cities constitute just over 31 percent of the total population of 213,093 in the study region. Nine additional towns in the study region with a population greater than 1,000 account for another 8 percent of the region's population, or 16,563 residents. More than half of the residents in the study region are residents of rural areas or towns of less than 1,000 residents.

Figure 1. Southside Study Area

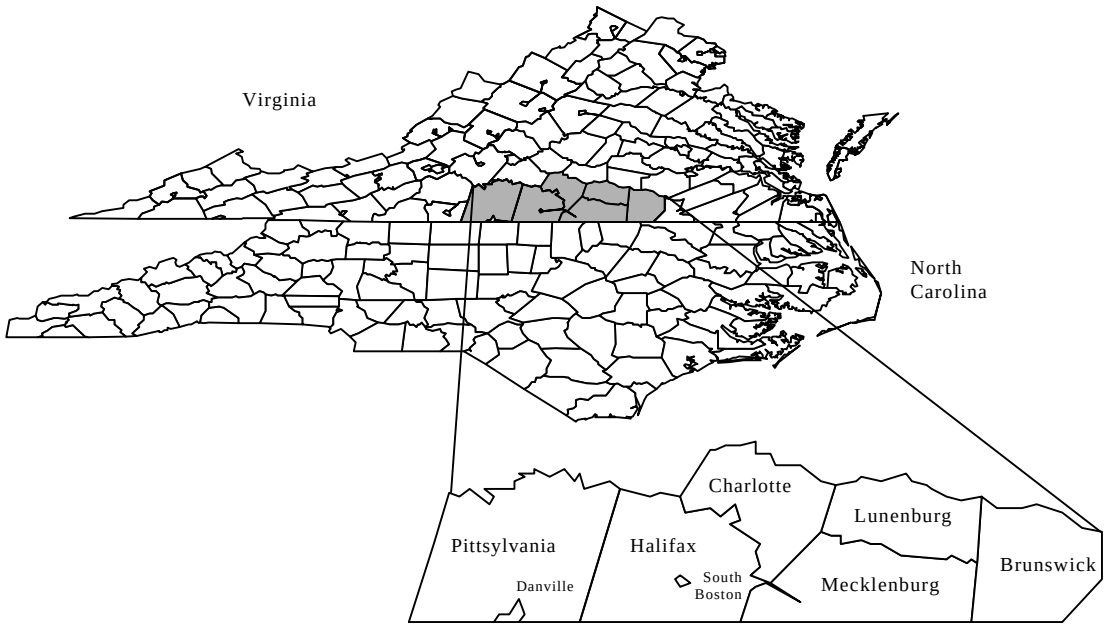


Table 1. Total Population and Farm Population Comparison for Southside Virginia, 1990

County or County and City	Farm Population	Total Population	Farm Population Share (%)
Brunswick	832	15,987	5.2
Charlotte	733	11,688	6.3
Halifax and South Boston	2,176	36,030	6.0
Lunenburg	827	11,419	7.2
Mecklenburg	1,247	29,241	4.3
Pittsylvania and Danville	3,606	108,728	3.3
Southside Region Total	9,421	213,093	4.4
Virginia	80,560	6,187,358	1.3
Southside Region / Virginia	11.7 %	3.4 %	

Source: U.S. Bureau of the Census, *County and City Data Book: 1994*, Table B. Counties, p. 578, 587, 592, 601, 606, 615

The farm population makes up almost 4.5 percent of the region's total population. Counties, such as Lunenburg County, without larger cities or towns have a higher percentage of their population participating in farming. Although the Southside Virginia farm population is a relatively small percentage of the total, it is still higher than the 1.3 percent measured for the entire Commonwealth of Virginia.

In general, the population of the study region tends to be older than the population of the rest of the Commonwealth. The region also has a lower level of educational attainment, on average, than found for the Commonwealth, as measured by the percentage of the population that are high school graduates. One contributing factor to both of these statistics is an on-going out-migration of younger and better-educated residents. Three other statistics indicate that many residents of the region are less wealthy than an average resident of the Commonwealth: a higher percentage of persons in poverty, a higher unemployment rate, and a lower per capita income.

While the quality of life for many Southside residents may be quite good, the general conclusion can be drawn that the region has a less robust economy than Virginia on average, with less opportunity for Southside residents. Given this situation, any negative shocks to the regional economy could have a more severe impact on Southside residents than an equivalent shock in other regions. This assumes other regions with more robust economies have a greater capacity to absorb a negative adjustment. One purpose of this paper is to assess whether tobacco-related segments of the Southside economy are significant enough to deliver a severe shock.

Southside Study Region Economic Base

Sectors of the 1992 Southside economy were aggregated based on the first digit of the Standard Industrial Classification (SIC) codes. These aggregated sectors were then broken down into nine different "industry" categories (Table 2). Seven different economic measures were evaluated for each category. Total industry output (TIO), value added, and employment in jobs were examined in detail. TIO for Southside Virginia is almost $7 billion. Value added is a measure of the total output of the region after subtracting the use of intermediate inputs and imports in the creation of output. It reflects labor inputs to production and returns to capital. The value added portion of total industry output for Southside Virginia is over $3 billion. Employment related to the output is over 100,000 jobs, but not all are full-time equivalents.

Table 2. 1992 Southside Economy by First-Digit of the SIC Code

Industry	Base Year Final Demand	Base Year TIO	Employ. Comp. Income	Prop. Income	Total PoW Income	Total Value Added	Employ-ment
	----------$ Million----------						number
Agriculture, forestry and fisheries	163.51	235.36	25.22	88.41	113.62	116.75	8,022
Mining	13.27	13.63	4.38	3.17	7.55	8.21	163
Construction		556.48	448.43	94.66	222.50	224.30	7,503
Manufacturing		3638.60	3089.76	481.30	1186.96	1215.93	27,045
Transportation, communications and utilities		280.59	97.43	66.36	143.92	157.76	2,788
Wholesale and retail trade	442.26	531.06	233.62	64.53	298.16	384.64	17,897
Finance, insurance, and real estate	445.34	519.90	53.77	185.43	239.20	321.06	3,248
Services	618.91	739.10	335.05	143.48	478.53	487.95	21,016
Government	403.47	436.53	379.13	22.48	401.61	401.63	15,599
Inventory valuation adjustment	0	-3.95	0	-3.95	-3.95	-3.95	0
Total	5722.38	6947.29	1942.21	1145.87	3088.08	3314.28	103,281

Source: IMPLAN 9A1 Report.
Note: "TIO" is Total Industry Output, "Employ. Comp. Income" is Employee Compensation Income, "Prop. Income" is Property
PoW Income" is the sum of employee compensation and property income.

Seven industry categories are used to compare the regional TIO to that of the United States (Figures 2A and 2B, respectively). The "Other" category includes mining; transportation, communications, and utilities; and finance, insurance, and real estate. Manufacturing is approximately half of Southside's economy for TIO, with the other categories fairly evenly allocated. Agriculture is the smallest category in this classification scheme. Manufacturing is a much smaller proportion of the United States economy than it is for the economy of the Southside study region. Two industries account for a large part of the difference. "Services" and "finance, insurance and real estate" are each more than 7 percent larger in the United States economy than in the Southside economy. This comparison of the TIO measure shows that Southside is less diversified than the United States economy as a whole, with more dependence on manufacturing industries.

Figure 2. Southside and United States, Total Industry Output

Figure 2A. Southside Virginia

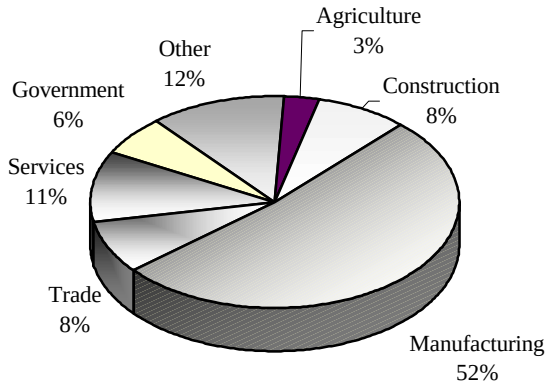
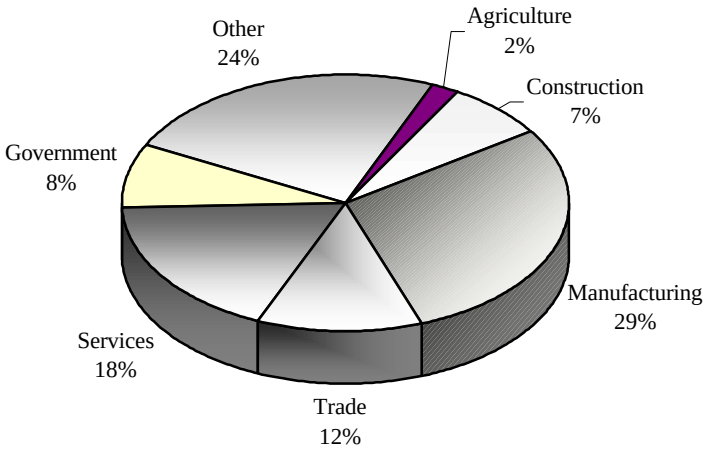
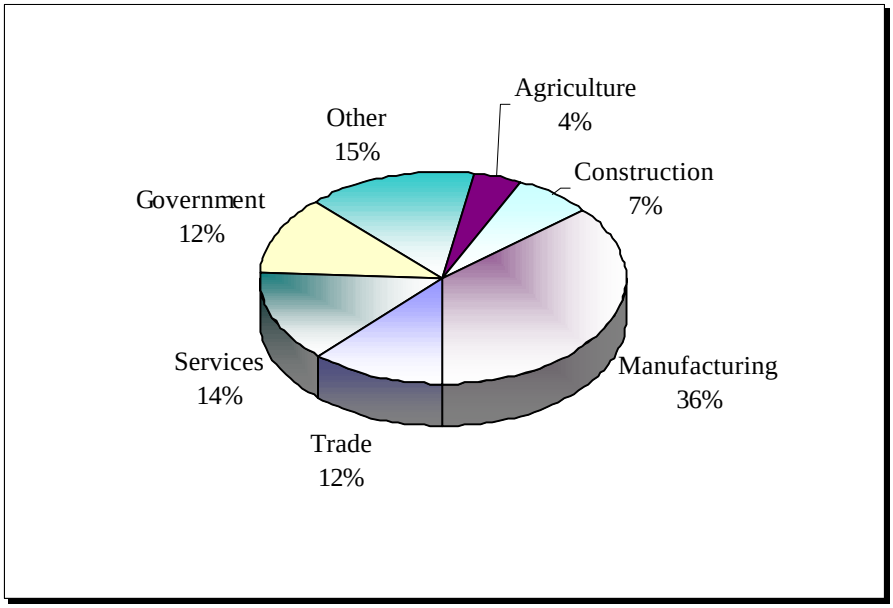


Figure 2B. United States



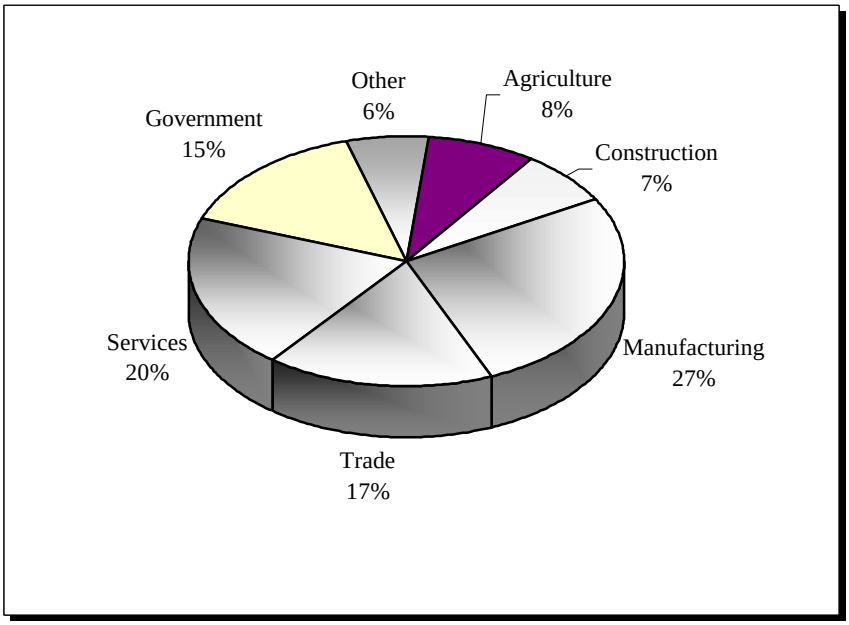
When value added is examined, the Southside economy appears more diversified than indicated by the TIO measure (Figure 3). Manufacturing now represents a smaller share of the economy. This smaller share is possible because manufacturing in the TIO measure includes a significant portion for intermediate inputs to production that are not produced in the region.

Figure 3. Southside Economy, Value Added



Unlike the TIO and value added measures, employment in agriculture is not the smallest measure of Southside's economy (Figure 4). However, the employment measure does not comment on the quality or duration of the jobs created.

Figure 4. Southside Economy, Jobs



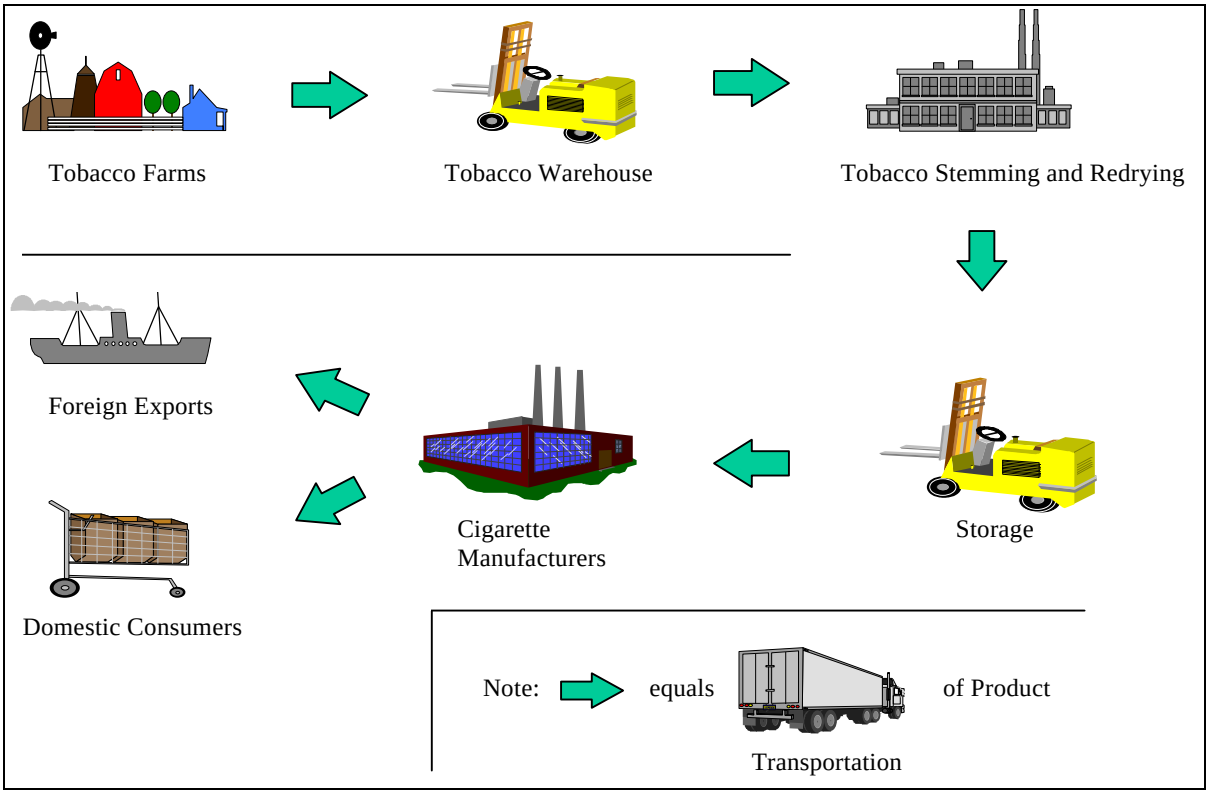
Several tobacco-related industries are significant to the statistics provided for the region. In a classification of the economy into 528 industries, the Tobacco Stemming and Redrying industry has the second largest sector in terms of TIO (Broadwoven Fabric Mills and Finishing is the largest). Tobacco Stemming and Redrying accounts for $725 million or over 10 percent of 1992 TIO in the region. It also ranks fourth in value added with over 5 percent of the regional total. The tobacco sector, representing tobacco producers, ranks third in employment contribution at over 5 percent of total employment or more than 5,000 jobs directly provided. These two industries provide a significant direct economic contribution to the region.

SOUTHSIDE VIRGINIA TOBACCO-RELATED INDUSTRIES

One common path tobacco takes from the time of production until its final product sale is shown by Figure 5. The arrow represents the transportation of either the tobacco leaf or leaf product to the next stage in the process. In this example, the end product is cigarettes that are either exported or consumed domestically.

The first three stages shown are the most significant tobacco-related operations for the Southside Virginia economy: tobacco farms or producers, tobacco auction warehouses, and the tobacco stemming and redrying processors.

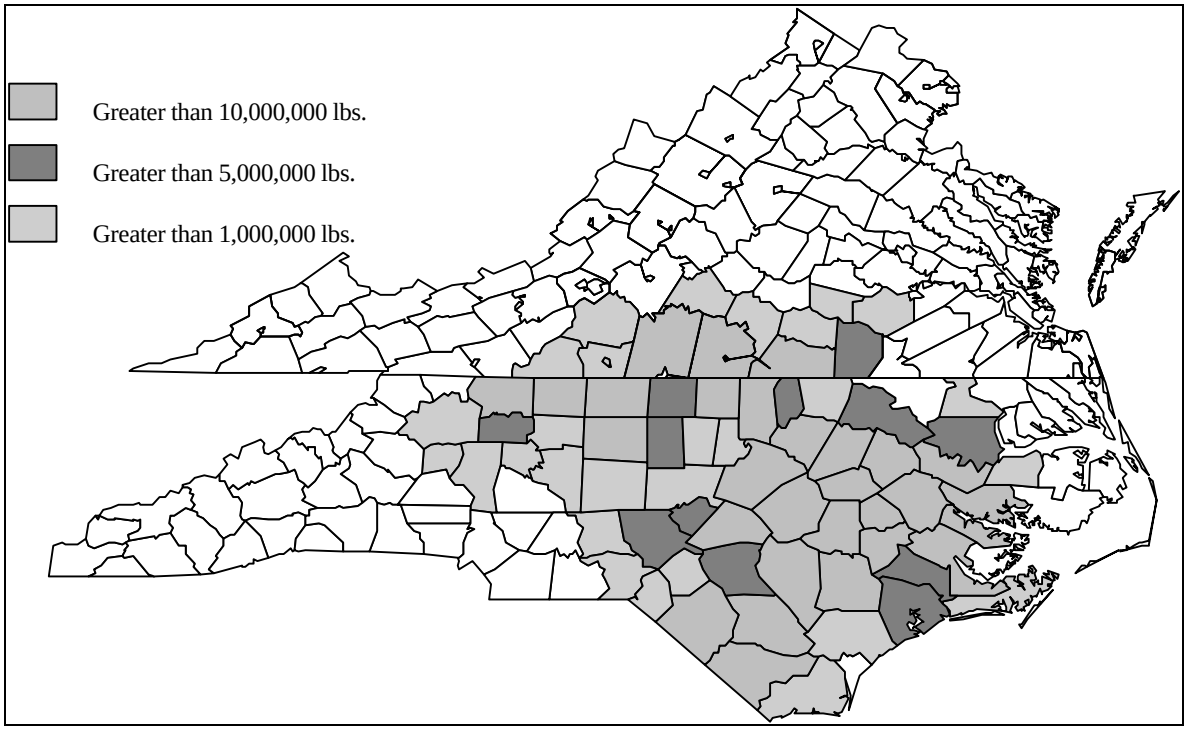
Figure 5. Simplified Tobacco Industry Schematic



Tobacco Producers and Production

Flue-cured tobacco is the mainstay of tobacco producers in Southside Virginia, accounting for nearly 98 percent of tobacco production or 56 million pounds in 1993. This production represents nearly 77 percent of the total flue-cured tobacco production in the Commonwealth. Neighboring North Carolina, however, has the greatest flue-cured tobacco production in the United States. Flue-cured tobacco production levels by county for 1993 for both Virginia and North Carolina are presented in Figure 6.

Figure 6. 1993 Flue-cured Tobacco Production in Virginia and North Carolina by County



In 1992, of the farms with sales over $10,000, tobacco sales accounted for 68 percent of Southside's total agricultural sales. Farms with sales less than $10,000 represent 23 percent of the farms producing tobacco, but they account for just over 2 percent of total tobacco sales (1992 Census of Agriculture, pp. 343-352).

The production of tobacco is an involved process requiring a significant number of inputs. Some of the general description that follows was obtained from the Virginia Cooperative Extension's annual *Flue-cured Tobacco Production Guide*. Tobacco production can be divided into four stages: seedling preparation, preharvest practices, harvest, and curing.

The first production stage involves raising the tobacco seedlings either in outdoor plant beds or greenhouses. In 1994, more than 33 percent of Virginia flue-cured tobacco seedlings were raised in greenhouses (Reed, et al., p. 26). Inputs required for raising seedlings depend on the process used, particularly with the development of the plant float system for greenhouse production. Regardless of the process selected, fertilizer, chemicals, and labor inputs are required.

At the proper time, tobacco seedlings are transplanted in the field. Care for the plant from this point to harvest is the preharvest stage. Prior to transplanting the seedlings, the field must be prepared. Inputs during the preharvest stage will include plowing, fertilizer, possibly irrigation, and pesticides for disease, weed, and insect control. Labor is involved in the application of all of these inputs. The requirements for two additional procedures during this time will vary depending on whether "nonflowering" or flowering varieties of tobacco are grown, although most Southside producers still plant the flowering variety. In general these two procedures, sucker control and "topping" (removal of the flower), require labor inputs. However, there is also a chemical that can be applied to reduce sucker growth. A final elective input prior to harvest is an application of a chemical to start the process of yellowing the leaves in the field.

Harvest is the third stage. Unlike many commodities, the entire plant is usually not harvested at one time. Instead, as they mature, leaves are harvested starting from the base of the plant. Clauson and Grise use five categories to classify harvest methods: walking primers, riding primers, one-row mechanical harvester, two-row mechanical harvester, and once-over mechanical harvester (p. 22). These methods reflect the continuum from an all-labor to a completely mechanized process. A mechanized harvest method requires an initial capital investment in the equipment and recurring operating and maintenance costs. Most Southside producers still use an exclusively manual harvest method. The harvest stage also includes preparation of the leaves for curing. Clauson and Grise categorize leaf preparation by six methods: hand loop on sticks in field or barn, machine tie on sticks in field or at barn, bulk rack at barn, bulk rack in field, fill big boxes at barn, and fill big boxes in field (p. 22). Each of these methods has different labor and capital requirements.

Curing, the process that brings the leaf its distinctive golden color, is the last stage. Tobacco placed on sticks is usually cured in conventional barns (wooden structures), while tobacco on racks or in boxes is usually cured in bulk barns (steel containers) (Clauson and Grise, p. 21). Curing involves a period of time where the tobacco is placed in an environment controlled for temperature and humidity. This process requires large amounts of fuel. To cure 3,000 pounds of tobacco typically requires 225 gallons of fuel oil or 260 gallons of LP gas (Reed, et al., p. 89).

There are, thus, a wide range of possibilities in the methods and inputs used in tobacco production. Differences in production methods mean each operation will incur different costs and returns. However, a "typical budget" for Virginia is prepared by the Central District Farm Management division of the Virginia Cooperative Extension. The expenditures listed in Table 3 generally correspond to the inputs explained in the production process. The various expenditures in the budget suggest the number of different suppliers that sell or manufacture inputs. Since Table 3 is a "typical budget," the Central District Farm Management provides other production options to assist producers in creating their own budgets.

An important item in this budget is "returns to land (quota), overhead, and management." Obviously, land is a required input in the process, and all land has alternative uses or can be sold. Thus, the returns to land component should reflect the possible returns from alternative uses of the land or the land rent paid if the land is not owned by the producer. Land rented to produce tobacco usually includes a premium for the rights to the marketing quota. This rental is known as a "quota rental." (See *Potential Changes Facing Virginia Tobacco Producers* by Wise and Reaves (1995) for more explanation about marketing quota rights.) Although quota rental rates will vary, if an average rental rate of $0.35 per pound is used, then based on this budget, $875 of this $1220 returns to land, overhead, and management pertains to the quota rental. Many producers own some, if not all, of the

quota they use for production. However, approximately 30 percent of production is based on quota rental, some of which is paid to non-resident quota owners.

Table 3. Virginia flue-cured tobacco budget per acre, based on 50 acres total

	$
Plant Bed:	
Tobacco seed	7.08
Fumigant	17.48
Plastic cover	7.65
Remay cover	10.32
Straw	1.00
12-6-6	5.79
16-0-0	0.47
Fungicide	0.59
Insecticide	0.65
Subtotal : Plant Bed	51.03
Field:	
Lime	14.06
PPI: Herbicide	4.38
PPI: Fungicide	42.72
PPI: Nematicide	173.62
FRow Fertilizer (6-12-18)	82.62
TPW : Insecticide	10.15
Sidedress (15-0-14)	20.55
Insecticide	26.26
Sucker control	57.77
Federal crop and hail insurance	168.00
Cover Crop : Rye Seed	14.00
Tobacco curing fuel	165.38
Building insurance and electric	32.50
Marketing charges	169.50
Tractor, equipment, fuel, and repairs	375.49
Hired labor	884.40
Subtotal Field	2,241.40
Annual Operating Capital	69.30
Total Operating Costs	2,361.73
Machinery and Equipment Fixed Costs	743.09
Returns to Land (Quota), Overhead, and Management	1,220.18
Expected Cash Receipts	4,325.00

This budget assumes a yield of 2,500 pounds of tobacco. Expected cash receipts are based upon an average price of $1.73 per pound.
Note: Some items of the original budget are combined and others are reordered in this presentation.

Overhead, another part of this budget line item, covers an allocation for miscellaneous fixed costs. These fixed costs are not dependent on the level of production or the amount of tobacco planted. Not included in these fixed costs are machinery and equipment fixed costs which are detailed separately. The budget assumes that some of the labor is provided by the producer, as evidenced by the

management portion of the budget total for the returns to land (quota), overhead, and management. The magnitude of this return to the producer depends on the price ultimately received for the tobacco. Given the previously assumed quota rental rate ($875), if $200 is allocated to overhead, then only $145 or a 3.4 percent return on sales goes to the producer.

Not all labor is provided by the producer; a significant amount is hired labor. Labor requirements will vary widely, depending on the production methods used. Clauson and Grise provide a variety of labor statistics segregating preharvest and harvest, and showing variation by region, acreage, and harvest methods. Average labor per acre for all farms is 33.9 hours for preharvest and 85 hours for harvest (pp. 19, 25). The Piedmont region, a larger region encompassing Southside Virginia, exceeds both averages at 36.6 and 103 hours, respectively (pp. 18, 24).

Determining the amount of these labor hours provided by residents of the region is more difficult. In an informal survey, three Southside county extension agents estimated that 30 percent of hired labor is provided by residents of the region, 20 percent is seasonal (migrant), and 50 percent is H2A (non-citizen laborers). As a result of the large percentage of hired workers that are not residents of Southside Virginia, less of the earnings of these laborers are spent in the region than if only resident laborers are hired. This exporting of wages results in a loss of economic benefits to the Southside region, assuming resident labor is available. Nevertheless, the economic benefits to the region from consumption by both hired laborers and tobacco producers is significant. In addition, there are 2,141 tobacco farms in the region (1992 census) with 1995 sales of nearly $92 million for flue-cured tobacco, and 1995 production was below normal levels.

Tobacco Auction Warehouses

After all the hard work and expense involved in producing tobacco, tobacco producers are usually eager to market their crop as quickly as possible. While some producers may hold back part of their production from immediate sale if they have expectations of a higher price later in the marketing season, most producers will want to sell their marketing quota allotment before the marketing season is over. The marketing season for flue-cured tobacco in Southside Virginia runs from approximately August to November. The actual marketing of the tobacco takes place at a tobacco warehouse, but the tobacco is normally not stored there for any great length of time. Tobacco producers must designate their warehouse choice before the start of the marketing season and are required to market their tobacco at the designated warehouse for the entire marketing season. This requirement is necessary in order to impose the quota controls. Although the basic marketing process is the same at every warehouse, the owners of warehouses can take steps to differentiate their establishments, including commissions charged.

Marketing Process

The marketing of tobacco, or the auction system, has changed little in the past few decades. Producers are responsible for transporting the tobacco to the warehouse, although larger producers may hire outside services. Producers are also responsible for a preliminary sorting of their tobacco by grade prior to bringing the tobacco to the warehouse. At the warehouse the tobacco is unloaded, weighed, registered, ticketed, and piled on protective sheets in long rows on the warehouse floor. Warehousemen often provide laborers to assist in moving the tobacco and the clerical and sales personnel for

registration, which includes record keeping for quota control. Before the auction commences, the tobacco is graded by USDA personnel, and the ticket for each pile is so marked. Usually, the warehouse operator or manager, and sometimes additional warehouse sales staff, participate in the auction that follows.

The auction is run by an outside auctioneer and ticket marker who earn separate commissions. The tobacco is auctioned by pile as the auctioneer and buyers proceed quickly down the rows. The traditional heaviest buyer gets the best position in the line of buyers. The ticket marker follows everyone and marks the ticket with price and buyer. The buyer will often have his/her own employee following behind to add a marking indicating for whom the tobacco was purchased. The producer is paid the day of the sale by the warehouse operator, who is then responsible for collecting from the buyer.

Almost immediately after the sale, the tobacco is sorted by buyer, bulked, and loaded onto trucks. Buyers usually hire companies that specialize in this service. The buyer pays from $3 to $3.50 per 100 pounds of tobacco for this service, generating revenues of approximately $3 million in Southside Virginia. Trucking companies hired by the buyer haul the tobacco to its next destination.

Tobacco Markets

There are 26 flue-cured tobacco warehouses in Virginia, all of which are located within the Southside study area. These warehouses are grouped into seven markets for statistical purposes by the Virginia Agricultural Statistics Service. The Chase City, Clarksville, Danville, Kenbridge, Lawrenceville, South Boston, and South Hill markets are used to report flue-cured Type 11 tobacco sales data (Table 4 and Figure 7). Fifteen markets for flue-cured Type 11 tobacco exist in North Carolina, all but 4 within 30 miles of the Virginia-Carolina border.

Caution must be exercised in using sales by market as a representation of regional production because some cross-border sales between Virginia and North Carolina occur. The Consolidated Farm Service Agency tracks these "across belt movements." The volume and percentages of production of Virginia flue-cured tobacco sold in North Carolina and the volume of North Carolina production sold in Virginia and its share of Virginia sales is given in Table 5. These estimates indicate that Virginia tobacco warehouse operators gain more volume than North Carolina operators with this trade. Significantly, in 1995, North Carolina-produced flue-cured tobacco accounted for 21.2 percent of sales in Virginia warehouses.

Southside Virginia Tobacco Warehouse Survey

All 26 Virginia warehouse operators were surveyed by REAP personnel. Although only half of them responded to the survey, they sold 97,804,368 pounds of tobacco in Southside Virginia (including resales), the equivalent of 46.7 percent of total tobacco sales Based on this percentage of sales, it was assumed that the respondents could be considered representative of this segment of the industry.

The number of employees, the nature of their work, and the period and intensity of their employment at each warehouse were included in the survey questions asked. There were 159 employees who worked an average of 39 hours per week for 16 weeks, reflecting the seasonal marketing pattern of flue-cured

tobacco (Table 6). Extrapolating these responses to the non-responding warehouses indicates that approximately 214,550 hours of employment is generated by the flue-cured tobacco warehouses in Southside Virginia. Assuming a wage rate of $5.00 per hour for all jobs, the payroll generated is $1,072,750, which is conservative, given that local wage rates are greater than $5.00 per hour.

Table 4. Markets for Virginia and North Carolina Flue-cured Type 11 Tobacco

Key[1]	Market	County	Number of Warehouses	1994 Producer Sales
				pounds
		Virginia		
4	Chase City	Mecklenburg	3	3,275,385
3	Clarksville	Mecklenburg	3	7,318,768
1	Danville	Pittsylvania	6	44,046,331
5	Kenbridge	Lunenburg	2	1,203,589
7	Lawrenceville	Brunswick	3	6,352,945
2	South Boston	Halifax	5	15,698,828
6	South Hill	Mecklenburg	4	8,279,622
Total, Virginia			26	86,175,468
		North Carolina		
22	Aberdeen	Moore		2,207,155
21	Carthage	Moore		7,039,124
19	Fuquary-Varina	Wake		19,260,062
14	Henderson	Vance[2]		11,748,755
18	Louisburg	Franklin		20,311,173
13	Oxford	Granville[2]		10,475,678
20	Sanford	Lee		6,066,616
15	Warrenton	Warren[2]		7,582,910
17	Burlington-Mebane	Alamance		4,008,518
10	Madison	Rockingham[2]		6,149,182
8	Mt. Airy	Surry[2]		10,876,082
11	Reidsville	Rockingham[2]		14,406,046
12	Roxboro	Person[2]		13,362,581
9	Stoneville	Rockingham[2]		3,420,645
16	Winston-Salem	Forsyth		32,448,550
Total, North Carolina				169,363,229

Source: 1994 Virginia Agricultural Statistics, p. 47, and other sources. North Carolina Department of Agriculture, Agricultural Statistics Division, Internet address: *http://www.agr.state.nc.us/stats/crop_fld/fldtwsyr.html.*

[1] "Key" refers to the number on map in see Figure 7.

[2] County is located on the Virginia - North Carolina border.

Table 5. Flue-cured Tobacco Cross-Border Sales between Virginia and North Carolina

Year	Virginia Production, Sales in North Carolina	Percentage of Total Virginia Production	North Carolina Production, Sales in Virginia	Percentage of Total Virginia Sales
	1,000 pound	%	1,000 pound	%
1992	8,521	10.7	21,259	22.9
1993	8,191	10.5	21,241	23.3
1994	6,907	9.5	20,244	23.5
1995	7,616	8.3	19,505	21.2

Source: Annual Consolidated Farm Service Agency internal reports.

Figure 7. Flue-cured Type 11 Tobacco Markets

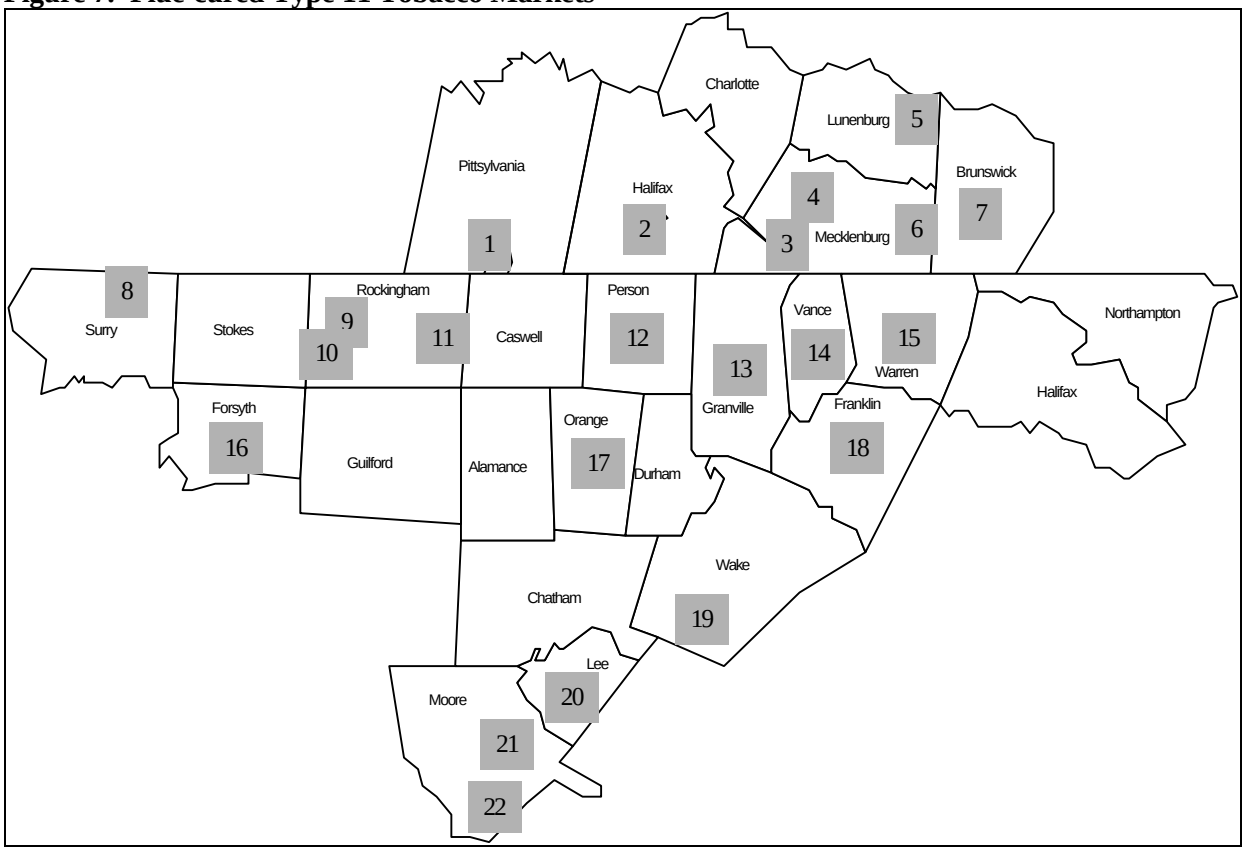


Table 6. 1995 Southside Warehouse Employment

Job Category	Number	Average Hours per Week	Average Number of Weeks
Management	25	42.1	20.3
Office Workers	39	26.1	15.0
Laborers	84	43.2	15.2
Other	11	50.0	22.0
Total	159	39.3	16.4

Source: Survey results.
Note: It appears that a few owner/operators did not include themselves in the employee roster, so the management numbers maybe low in this regard.

Economic Contribution

As previously noted, the estimated payroll contribution of tobacco warehouses in the Southside region is over $1 million. These warehouses also have other expenses and owner profits, both of which are expected to further contribute economically to the region. One way to estimate this larger contribution is to examine warehouse revenues, primarily earned in commissions. The warehouse commission at one warehouse is 2.5 percent of gross sales. When this commission rate is applied to 1995 producer sales for the entire Southside region, the warehouses earned commissions estimated to be over $4 million. Given these revenues, warehouses, along with tobacco handling services, are clearly important to the economy of a tobacco-producing region.

The tobacco loaded onto trucks following auction can have a number of different destinations, depending on who the buyer is. Some of the tobacco will be transported to a storage center to await further processing. Other tobacco may be exported immediately with no further processing. However, it is likely that the majority of the tobacco is transported directly to a stemming and redrying facility for further processing. Therefore, transportation services provided after the warehouse sales are also likely to generate significant revenues.

Tobacco Stemming and Redrying Processing

The purpose of stemming and redrying processing is to remove the tobacco leaf from the stem, sort the leaf by size, bring it to a uniform moisture content, and store it under pressure. The process begins with forklift loads of tobacco being fed into the production line. At the start of the line, machinery breaks up the load of tobacco and places it on a conveyor belt. The first stop is usually a huge conditioning drum that is similar to the drum on a cement truck. The purpose of the conditioning drum is to wet the tobacco and remove sand and dirt. After the conditioning drum, the tobacco continues on the conveyor belt. At this stage there may be some production line laborers who view the passing tobacco to pick out foreign matter. This "pick" procedure occurs at various stages in the production process. Various attempts have been made to automate this procedure, but human intervention is still more efficient.

The next stage is the threshing process. The leaf goes through a number of threshers that remove the leaf from the stems. The objective is to maximize the leaf, or *lamina*, and minimize waste. The lamina and stems are fed by conveyor to various air separation chambers. These chambers will blow the lighter-weight leaf out to other conveyors and feed the stems to their own conveyor. The leaf will then pass over shaker tables with different sizes of screens to remove undersize pieces. Both stems and undersize pieces are usually boxed separately by the stemming and redrying processors and sent to other facilities for further processing.

After all the sorting processes, the leaf moves by conveyor through the redrying ovens. It is at this stage that the tobacco is adjusted to the desired moisture content according to customer specifications. The processing of the tobacco ends at this stage. All that remains is to package the tobacco under pressure in containers specified by the customer. These containers may be the traditional wooden hogshead, cardboard boxes, or shrink wrap. Samples are taken prior to packaging in order to conduct various quality control tests in the factory laboratory. The boxed tobacco is usually shipped off the plant floor fairly quickly after production. However, the tobacco is not yet ready to be used in the production of cigarettes. Normally, the tobacco must be aged from 12 to 15 months before it is used. Large warehouse complexes exist for this purpose. The stemming and redrying operator may provide this service, or the tobacco may be aged at buyer or other facilities.

Stemming and Redrying Operators

Flue-cured tobacco is only redried in two states: Virginia and North Carolina. There are 12 processing plants, owned by 5 different companies (Table 7 and Figure 8). Only two stemming and redrying plants are located in Southside Virginia.

Table 7. Flue-cured Stemming and Redrying Plants

Key[1]	Location	"Operating" Name	Parent Company[2]
2	Danville, Va.	Southern Processors, Inc.	Universal Corporation
1	Pittsylvania Co., Va.	Dibrell Brothers, Incorporated (pre-merger)	DIMON Incorporated
3	Brook Cove, N. C.[3]	R. J. Reynolds Tobacco Company	RJR Nabisco, Inc.
9	Farmville, N. C.	Monk-Austin, Inc. (pre-merger)	DIMON Incorporated
10	Greenville, N. C.	Eastern Carolina Leaf Processing Company	50 % DIMON Inc. and 50 % Intabex-Hail and Cotton International Company
5	Henderson, N. C.	J.P. Taylor Company, Inc.	Universal Corporation
12	Kinston, N. C.	Monk-Austin, Inc. (pre-merger)	DIMON Incorporated
4	Oxford, N. C.	General Processors, Inc. (related to W. A. Adams Co.)	Standard Commercial Corporation
6	Rocky Mount, N. C.	Thorpe and Ricks, Inc.	Universal Corporation
11	Smithfield, N. C.	K.R. Edwards Leaf Tobacco Co., Inc.	Universal Corporation
7	Wilson, N. C.	Tobacco Processors, Inc.	Universal Corporation
8	Wilson, N. C.	Standard Commercial Tobacco Co., Inc.	Standard Commercial Corporation

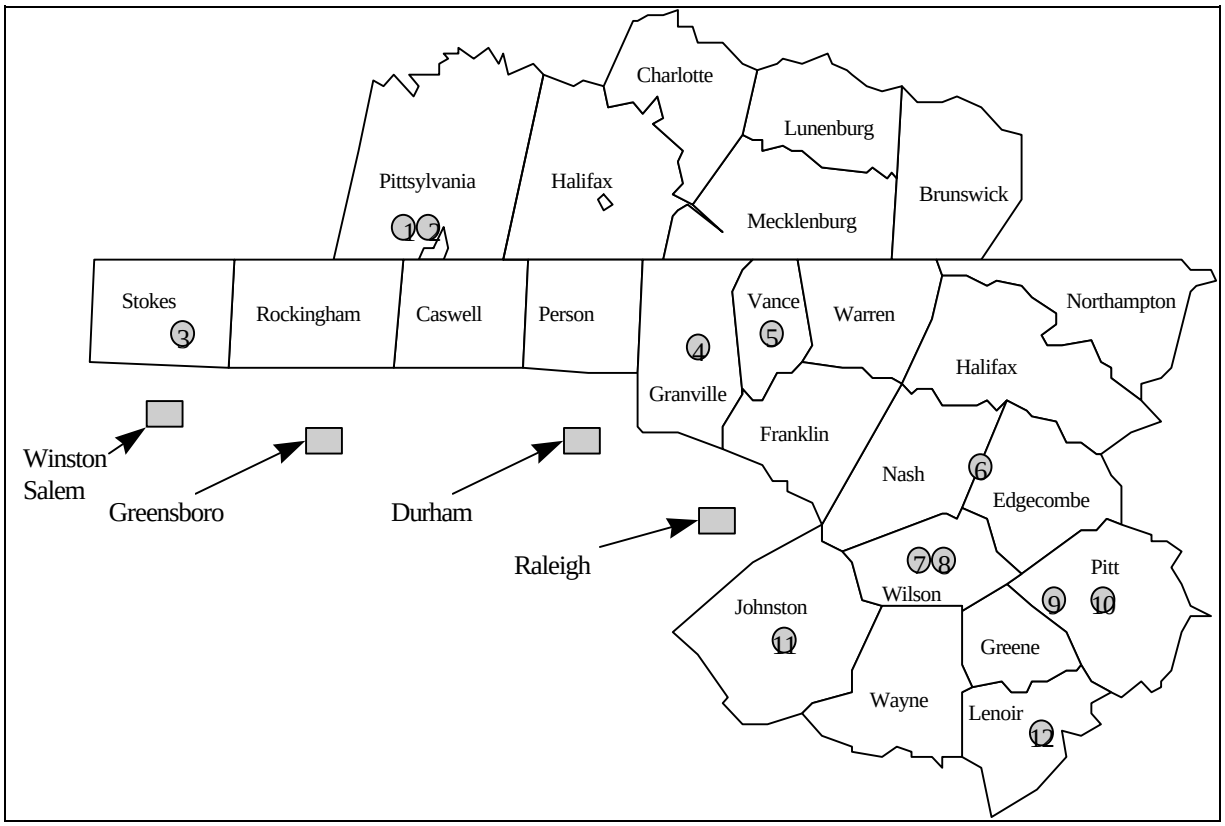
Source: Outlined after a discussion with a tobacco industry specialist. Further elaboration is made possible by International Trade Publications Ltd.: World Tobacco Directory, 43rd Edition 1995, and various annual reports and SEC Form 10-K's of the parent companies.

[1] "Key" refers to the number on the associated map - see Figure 8.

[2] "Parent Company" refers to the final consolidated parent company. For example, rather than the Universal Corporation, its subsidiary, Universal Leaf Tobacco Company is the parent of some of these entities.

[3] Brook Cove is not a town per the last census. It is located near Walnut Cove in Stokes County, North Carolina.

Figure 8. Location of Flue-cured Tobacco Stemming and Redrying Operations



Flue-cured tobacco may not be processed in the facility closest to where the tobacco is grown, primarily for two reasons. First, the seasonality of tobacco production across regions combined with regional production capacity may create the need to ship some tobacco elsewhere. Second, processing contracts may dictate where the tobacco goes; all of the tobacco purchased by a buyer may go primarily to one company's stemming and redrying plant (or plants). Fortunately for Southside Virginia, the stemming and redrying plants process much more tobacco than is grown in the region. Part of the additional processing results from both Southside plants also processing burley tobacco, which is harvested later than flue-cured tobacco.

Southside stemming and redrying operators were surveyed about the amount of tobacco they processed in 1995 (Table 8). They usually process 60 percent flue-cured tobacco and 40 percent burley and other types. Approximately 115 million pounds of flue-cured tobacco is processed compared to the almost 51 million pounds of flue-cured tobacco that is grown in Southside, Virginia. That is not to say that all that is grown in Virginia is, in fact, processed in the state.

Table 8. 1995 Southside Stemming and Redrying Survey - 1995 Processing of Tobacco Inputs

Type of Tobacco	Processor 1	Processor 2	Total	Processor 1	Processor 2	Total
	----------1,000 pounds-------			----------%----------		
Flue-cured	47,000	67,584	114,584	55.3	59.2	57.6
All other	38,000	46,515	84,515	44.7	40.8	42.4
Total	85,000	114,099	199,099	100.0	100.0	100.0

Note: The names of the stemming redrying processors are not disclosed to preserve confidentiality.

It is difficult to determine how much of the flue-cured tobacco processed in Southside Virginia plants was purchased at Southside markets. However, given the volume of North Carolina flue-cured tobacco production bordering Southside Virginia and other industry relationships, it is believed that less than 40 percent of the flue-cured tobacco processed is purchased in Southside markets. Taking into account the cross-border flow of tobacco produced in North Carolina sold in Virginia and other types of tobacco processed, it is estimated that approximately 15 percent of the tobacco processed in Southside Virginia is grown in the region. Thus, the Southside region gains considerably from processing tobacco from other regions, much more than it loses, even though it is estimated that only 50 to 60 percent of the region's production is processed in the region.

Southside stemming and redrying operators were also surveyed about their employment contribution to the region (Table 9). Over 1,100 people are employed directly by the stemming and redrying operators. Over 900 of these are employed for approximately 35 weeks of the year.

Table 9. 1995 Southside Stemming and Redrying Survey: Employment

Job Category	Number Employed	Average Hours per Week	Number of Weeks
Year-round salaried	142	45	52
Year-round hourly	90	42	52
Seasonal hourly	920	44	35
Total	1,152	44	39

TOBACCO-RELATED INDUSTRIES TOTAL ECONOMIC CONTRIBUTION

To this point, the selected production and employment information provided only evaluate the direct contribution made by the industries in each stage. A more complete assessment measures important indirect contributions made possible by the presence of these three industries in the regional economy.

Tobacco-related operations, particularly tobacco production, purchase inputs from a wide range of industries. An increase in production by tobacco-related operations creates an associated increase in inputs purchased. These additional purchases will stimulate input-supplying industries, beginning a positive multiplier effect throughout the regional economy, to the extent the inputs are supplied locally. When measured, this stimulus is called an "indirect effect" or "indirect contribution." Labor is a special case that can also be seen as an input in this way. When more labor is required, there is also a stimulus to the economy as the new jobs contribute to expanded consumer spending. Note that the opposite situation occurs when tobacco-related industries decrease their production and associated purchase of inputs.

Input-Output Analysis

One tool that is used to measure both the direct and indirect effects in a regional economy resulting from an economic change is input-output analysis. IMPLAN, perhaps the most widely used input-output package and database for this purpose, was selected for this analysis. Appropriate caution must be used in interpreting the estimates generated. Input-output analysis and IMPLAN require a number of assumptions on economic behavior in order to produce the estimates. The extent to which these assumptions hold true will influence the accuracy of the results. In general, the base IMPLAN model data for the region was found to be similar to the information collected by the study. One exception was the input purchase mix for the tobacco sector. This study changes the purchase mix to reflect regional flue-cured production, rather than an average of differing national input purchase mixes for several types of tobacco.

In order to estimate the total economic impact of tobacco-related industries in Southside Virginia, IMPLAN requires an estimate of final demand attributed to these industries. Estimates of 1995 regional output for the Tobacco and Tobacco Stemming and Redrying sectors were made for this purpose. These estimates were converted to 1992 dollars to remain consistent with the 1992 IMPLAN model.

Efforts were made to correctly distribute the expenditures generated by personal consumption from wage and other income in order to estimate the associated indirect effects properly. A conservative approach was taken, reducing income actually spent by payroll deductions and by savings and income unlikely to be spent in the region. This approach included adjustments for spending patterns of laborers and marketing-quota owners not residing in the region.

Based on government reports of non-resident marketing-quota ownership, it was estimated that approximately 11.3 percent of marketing-quota owners reside outside Southside Virginia. Regional economic losses attributed to quota ownership outside the region is estimated to cause industry output to decrease $1.17 million, total value added to decrease $0.74 million, and approximately 24 fewer jobs to exist in the region. All of these measures are less than 0.5 percent of their respective estimated total regional contribution from tobacco-related industries.

Tobacco-related Industry Direct and Indirect Economic Contribution

Total regional output created by tobacco-related industries, including both direct and indirect effects, is $756 million. The value added portion of the output is nearly $251 million, associated with over 6,800 jobs. However, many of these jobs are seasonal in nature. All these figures can be stated in terms of the regional economy as a whole, generating nearly 11 percent of TIO, over 7 percent of value added, and more than 6 percent of all jobs. Clearly, the industry is a significant component of the regional economy. The economic stimulus generated is found to be spread over a wide-range of the Southside economy: nearly every business in the region generates some of its commerce either directly or indirectly from the tobacco trade.

Potential Tobacco Industry Adjustments

Given the significant contribution of tobacco-related industries to the Southside economy, three different potential adjustments were estimated for some possible situations that could be encountered. The first of these reflects a 10 percent decrease in tobacco production or decrease in the marketing quota. Such an adjustment results in a 10 percent decrease in the total economic contribution made by tobacco-related industries or approximately $76 million less in total output, $25 million less in value added, and 686 fewer jobs.

The second adjustment looks at the impact of a 10 percent decrease in the price of tobacco without a decrease in production levels or other compensating changes in the economy. This scenario has significantly less impact on the regional economy than the first adjustment. All measures decrease by less than 2 percent of total tobacco-related industry economic contribution: total output decreases by nearly $5 million, value added is almost $3 million lower, and approximately 98 jobs are lost.

A third adjustment demonstrates that the stemming and redrying industry is the leading contributor to total tobacco-related economic contribution for the output and value added measures. The adjustment analyzed was a 10 percent increase in the production level of the stemming and redrying industry without any change in the tobacco quota levels and hence, no change in the regional tobacco production levels. The increase in market share results in an approximately $64 million increase in output, an $18 million increase in value added, and 212 new jobs.

Each of these adjustments can be interpreted in the opposite direction. For example, a 10 percent decrease in the production level of the stemming and redrying industry leads to a decrease in output of $64 million, in value added of $18 million, and in 212 jobs lost. Care must be taken in interpreting these results. Any adjustment that may occur will likely be a combination of these or other adjustments and at different levels of change. However, the significance of the industry and sensitivity of change in the regional economy is clearly demonstrated by these estimates.

CONCLUSION

By focusing on Southside Virginia, significant forms of industry and economic activity tied to tobacco, other than cigarette manufacturing, have been examined. Tobacco producers, tobacco auction warehouses, and tobacco stemming and redrying processors are important industries and contribute significantly to the economic activity in the region. The direct and indirect effects of tobacco and tobacco-related industries to Southside's total regional output is $756 million for the year studied. The value added portion of that output is nearly $251 million, associated with over 6,800 jobs. In terms of the regional economy as a whole, the tobacco sector contributes nearly 11 percent to the total industry output, more than 7 percent to value added, and over 6 percent of the jobs, thus confirming the importance of the economic contribution of these industries to the regional economy. Due to the size of these industries and the structure of the Southside economy, negative adjustments in the industry will have wide-reaching negative impacts on the regional economy.

In assessing the impacts, a number of socioeconomic groups account for a large part of the adjustment, with the level of adjustment varying with each change being measured. First are the tobacco producers, mostly rural-dwelling households located throughout the region. Labor hired by the tobacco producers is a second group that, more often than not, is hired from areas outside the region. Another social group impacted is tobacco stemming and redrying factory workers, mostly African-Americans residing in proximity to Danville. A last group that is impacted by adjustments is largely undefined, but is expected to include at least some retired tobacco producers. This group consists of the tobacco quota owners who reside in the region, but who do not produce tobacco.

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