Vulnerable Workers, Businesses, and Communities

While many workers, businesses, and regions will be able to switch to other activities that can replace lost tobacco income, others will have a more difficult time. Economists use the concept of "economic rent" to measure the extent of economic losses due to reallocation of resources. Economic rent is the difference between what a factor of production earns in its current employment (wages, interest or rental payments) and the factor's opportunity cost (what it could earn in its best alternative use). Workers, land, machines, or other factors that are specialized in tobacco production or farmers who have made large investments to increase their farms' productivity will have much higher earnings in tobacco production than they would in an alternative occupation. For example, seniority, training, and experience on the job make workers more productive and more highly paid in a particular job than they would be elsewhere. If the experience and skills are not transferable to other industries, then economic rent is high, and workers' "welfare loss" is large if they are forced to shift to another activity. Workers with general skills that are demanded by nontobacco industries and businesses and communities experiencing income growth from nontobacco sources will have small economic rents and welfare losses. In the discussion that follows, we identify the types of workers, businesses, farms, and communities that are most vulnerable to loss of tobacco income.

Which Workers Will Be Affected?

Based on the economic rent criterion, cigarette-manufacturing employees are the one easily identifiable class of employees beyond the farm gate earning significant rents from tobacco. The roughly 20,000 cigarette-manufacturing workers are among the highest paid workers in the manufacturing sector. According to Bureau of Labor Statistics data, 1998 cigarette-manufacturing wages averaged $24.34 per hour. The average wage for all manufacturing was $13.49. If we estimate the economic rent to a manufacturing worker as the difference in wages ($24.34 - $13.49 = $10.85 per hour, or $21,700 per year, based on 2,000 hours per year), the total loss to these workers would be $434 million per year if the tobacco industry disappeared. On the other hand, workers in cigar (SIC 2121), chewing and smoking tobacco (SIC 2131), and stemming and redrying (SIC 2141) manufacturing earn several thousand dollars less than the average for all manufac-

turing workers. Similarly, workers in the tobacco wholesale trade (SIC 5194) earn less than the average for all wholesale industry workers. Retail outlets that sell tobacco products generally pay at or slightly above the minimum wage, and many jobs are part-time. Annual wages per employee at grocery stores and gasoline stations (the two leading outlets for cigarettes) averaged $9.83 and $7.83 per hour, respectively, in 1998. Wages in tobacco stores and stands (SIC 5993) are exactly equal to the average for all retailing. These figures suggest that few tobacco industry employees outside of cigarette manufacturing earn economic rents from the manufacture and distribution of tobacco.

Owners of Tobacco Quota

As discussed above, the policy of cutting quotas while keeping price supports high tends to insulate owners of tobacco quota from the effects of falling demand because quota rental payments rise. However, quota owners would bear much of the impact if prices were allowed to fall or if the tobacco program were eliminated, because the economic rents accruing to quota owners would disappear. These rents can be measured by the rental rates paid for tobacco quota. Official statistics on quota leasing are not regularly reported. We analyzed 1995 Farm Cost and Returns (FCRS) data for burley tobacco and 1996 Agricultural Resource Management Study (ARMS) data (see box, "Data Used in This Report," p. 3.) for flue-cured tobacco to look at regional variation in quota leasing.[9] The weighted average quota lease rate for burley tobacco in 1995 was 33 cents per pound; and flue-cured quota rented for a weighted average of 37 cents per pound in 1996.[10] However, lease rates vary considerably due to differences in production costs and the relative supply and demand for quotas in different counties. In 1995, burley quota rented for an average of 45 cents per pound in Kentucky, but only 20 cents per pound in Tennessee (table 6). In a few counties (mostly in Tennessee), production of tobacco has become uneconomic, and quota goes unused. Flue-cured lease rates (for 1996) varied less across regions (see Appendix 2,

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[9]Burley farm data are for 1995, and flue-cured farm data are for 1996 because special surveys of those farm types were conducted in those years.

[10]These average lease rates are weighted by pounds of production. Larger farms tend to report higher lease rates, so the averages reported here are higher than a simple unweighted average. These averages are broadly consistent with quota rents reported by Brown, Snell, and Tiller.

"Tobacco-Growing Regions"). The weighted averages were 34 cents per pound in the Piedmont of North Carolina-Virginia, 35 cents per pound in the Pee Dee-Lumber River region of eastern North and South Carolina, 38 cents per pound in Georgia, and 39 cents per pound in the Coastal Plain of North Carolina.

Of the total 325,000 tobacco quotas, about 250,000 are for burley and 42,000 are for flue-cured, with the remainder for chewing, smoking, and cigar tobaccos. Many owners of quota are growers, but many retired farmers and other individuals receive rental income from tobacco quotas. The proportion of quota rented varies across regions, from about three-fourths in the Pee Dee-Lumber River and Coastal Plain regions to 51 percent in the Piedmont region (table 6).

A tobacco quota can be viewed as a financial asset that yields a stream of future income through its rental. If a quota is expected to yield 35 cents per pound annually forever, its capitalized value is $5.83, assuming a 6 percent rate of return on competing investments. However, market values for tobacco quota reflect heavy discounting of future rental receipts due to the uncertainty of those receipts (Gardner). Capitalized values of tobacco quota tend to be around 4.5 times the annual rental rate. In comparison, an annuity discounted at 6 percent interest would have a capitalized value 16.7 times its annual return. Flue-cured quota sales prices averaged $1.70 in 1991 (when lease rates averaged 33 cents) and $1.09 in 1987 (when lease rates were 27 cents) (Clauson and Grise, 1994). Womach (1998) reported an estimate of $1.87 for bur-

ley quota in Kentucky. By comparison, discussions of tobacco settlement legislation in 1998 included provisions for tobacco quota buyouts of $8 per pound, much higher than either capitalized value or actual sales prices (Womach, 1998).

Proposals to end the tobacco farm program have usually included compensation for quota owners and growers through a buyout of tobacco quotas funded by excise tax revenues or cigarette industry assessments and other compensation to growers who do not own quota. Gardner (1997) estimated that a $3-per-pound buyout of quota would cost $4.8 billion, which could be raised by a 2-cent-per-pack cigarette tax over 10 years. Gardner recommended that a buyout be offered on a county-by-county basis to allow for geographic differences in value of quota. The November 1998 settlement prompted negotiations between cigarette manufacturers and tobacco growers for a side agreement whereby manufacturers would make compensatory payments to quota owners and growers in exchange for a reduced price for tobacco leaf.

Tobacco Growers

Tobacco farms vary considerably in size, location, yields, financial condition, and management characteristics. A particular farm's production costs, potential for expansion, and availability of alternative opportunities are important determinants of its prospects for remaining viable as a tobacco producer. Farms with low production costs due to good soils, good management, and other factors, will be in a good position to survive if prices decline. Large producers can take advantage of size economies to reduce per-unit production costs. Larger acreage and production makes investments in machinery, greenhouses, irrigation, and other equipment and technology feasible, because the large fixed costs of such investments can be spread over a greater volume of output. The labor intensity of tobacco production tends to keep tobacco farms relatively small, and the tobacco program's restrictions on quota transfers across county lines have prevented the consolidation and increase in tobacco farm size that have occurred in most other types of farming. Farms that have already made investments in equipment will be in position to expand further. Expansion potential will become more important if the tobacco program is eliminated.

In this section, we report characteristics of flue-cured and burley tobacco farms for 1995-96 (the most recent year for which data are available) estimated from the

Table 6—Tobacco quotas by region, 1995-96

Region	Average rental rate[1]	Quota rented[2]
	Cents per pound	*Percent*
Burley, 1995	33	56
Kentucky	45	61
Tennessee	20	54
Flue-cured, 1996	37	65
Piedmont	34	51
Coastal Plain	39	74
Pee Dee-Lumber River	35	75
Georgia	38	D

D = Data insufficient for disclosure.

[1]Average is weighted by pounds of tobacco quota rented.

[2]Percent of quota rented for cash or shares.

Source: ERS analysis of 1995 Farm Costs and Returns Survey for burley tobacco and 1996 Agricultural Resource Management Study for flue-cured tobacco. Coefficients of variation (C.V.'s) of estimates are less than 25 percent unless indicated otherwise. The C.V. is computed by dividing the estimate's standard error by the estimate and multiplying by 100. The lower the C.V., the more reliable is the estimate.

FCRS/ARMS data that reflect the diversity of tobacco farm characteristics across tobacco types. Important regional differences are highlighted, which suggest greater vulnerability in the burley-growing regions of Tennessee and Kentucky and the Piedmont flue-cured region (see Appendix 2, "Tobacco-Growing Regions"). We report on financial conditions of tobacco farms, income, land use, farm size, diversification, and operator characteristics. These data provide indicators of how vulnerable tobacco growers are to changes in the tobacco industry.

Most tobacco farms are in relatively good financial condition. Farms were classified on the basis of whether they generated positive net farm income and whether their ratio of debts to assets exceeded 40 percent in 1995/96. Eighty-one percent of both burley and flue-cured tobacco farms were in "favorable" financial condition (they had positive net farm income and debt-asset ratios under 40 percent) (table 7). By comparison, only 54 percent of all U.S. farms were classified in favorable financial condition in 1995 (Sommer and others). The percentage of tobacco farms in favorable financial position varied across tobacco-growing regions, reaching as low as 67 percent in Georgia and as high as 90 percent in the Piedmont flue-cured region. Debt-asset ratios were also healthy for tobacco farms. FCRS/ARMS data indicate that debt averaged only 13 percent of the value of flue-cured farm assets in 1996, and only 7 percent of burley farm assets in 1995. The average value of assets per farm was over $500,000 for flue-cured farms and $250,000 for burley farms.

Net farm income for Tennesse tobacco farms, averaging $3,800 in 1995, was significantly lower than the national average of $10,400 for all farms (table 7). Average net farm income for Kentucky burley farms ($13,100) was slightly above the national average, and average income for flue-cured farms was far above the national average in each region. Table 7 shows that net farm income on flue-cured farms in 1996 averaged $45,100 in the Piedmont, and was much higher on the larger farms in the Coastal Plain ($84,600), Pee Dee-Lumber River area ($99,400), and Georgia ($61,300).

Glaze and McElroy compared characteristics of high-, mid-, and low-cost burley tobacco farms, using the 1995 FCRS data. One characteristic that stands out in Glaze and McElroy's analysis is the connection between low cost and higher yields per acre. Higher yields permit fixed costs to be spread over more units of output, reducing the cost per pound. Yields follow

Table 7—Financial performance of tobacco farms, by region, 1995-96

Tobacco type/region	Favorable financial position[1]	Average net farm income
	Percent	*Dollars*
All U.S. farms, 1995	54	10,400
Burley, 1995	81	9,800
Kentucky	83	13,100
Tennessee	76	3,800*
Flue-cured, 1996	81	72,300
Piedmont	90	45,100
Coastal Plain	79	84,600
Pee Dee-Lumber River	81	99,400
Georgia	67	61,300*

[1]Debt-asset ratio 0.4 or less and positive net farm income.
* Coefficient of variation is between 25 and 50 percent.
Note: percentages may not add to 100 due to rounding.

Source: ERS analysis of 1995 Farm Costs and Returns Survey for burley tobacco and 1996 Agricultural Resource Management Study for flue-cured tobacco. Coefficients of variation (C.V.'s) of estimates are less than 25 percent unless indicated otherwise. The C.V. is computed by dividing the estimate's standard error by the estimate and multiplying by 100. The lower the C.V., the more reliable is the estimate.

regional patterns. The highest flue-cured yields are in the Coastal Plain, Pee Dee-Lumber River, northern Florida, and southeastern Virginia (fig. 4). Yields are lower (and presumably costs per unit are higher) in the Piedmont of North Carolina, most of southern Virginia, and Georgia. This is another sign of vulnerability in the Piedmont flue-cured region. Burley yields tend to be highest in central and western Kentucky, and lower in Tennessee and most mountainous Appalachian counties.

Tobacco accounts for a small proportion of acreage, but a large share of income on most farms that grow it. This is due to the labor intensity of tobacco, quota restrictions, and requirements that participants in the tobacco program plant less than half of their cropland in tobacco. The average flue-cured farm devoted 38 of its total 442 acres to tobacco; and the average burley farm harvested tobacco from only 5 of its 154 total acres (table 8). Flue-cured farms are particularly diversified—many have large nontobacco enterprises. Forty-four percent of burley producers produced only tobacco, compared with only 18 percent of flue-cured farms. Forty-two percent of flue-cured farms produced four or more commodities. About half of flue-cured farms grew corn and/or soybeans, 22 percent raised cattle, 17 percent grew cotton, and 12 percent grew peanuts (table 9). The value of production of these commodities was significant, ranging from an average of $23,500 per farm for corn to $162,800 per farm for

Figure 4
Tobacco yield, by county, 1997

Yield (lbs. per acre)

- ■ Under 1,755
- ■ 1,755-1,940
- ■ 1,941-2,125
- ■ 2,126-2,290
- ■ 2,291 or higher
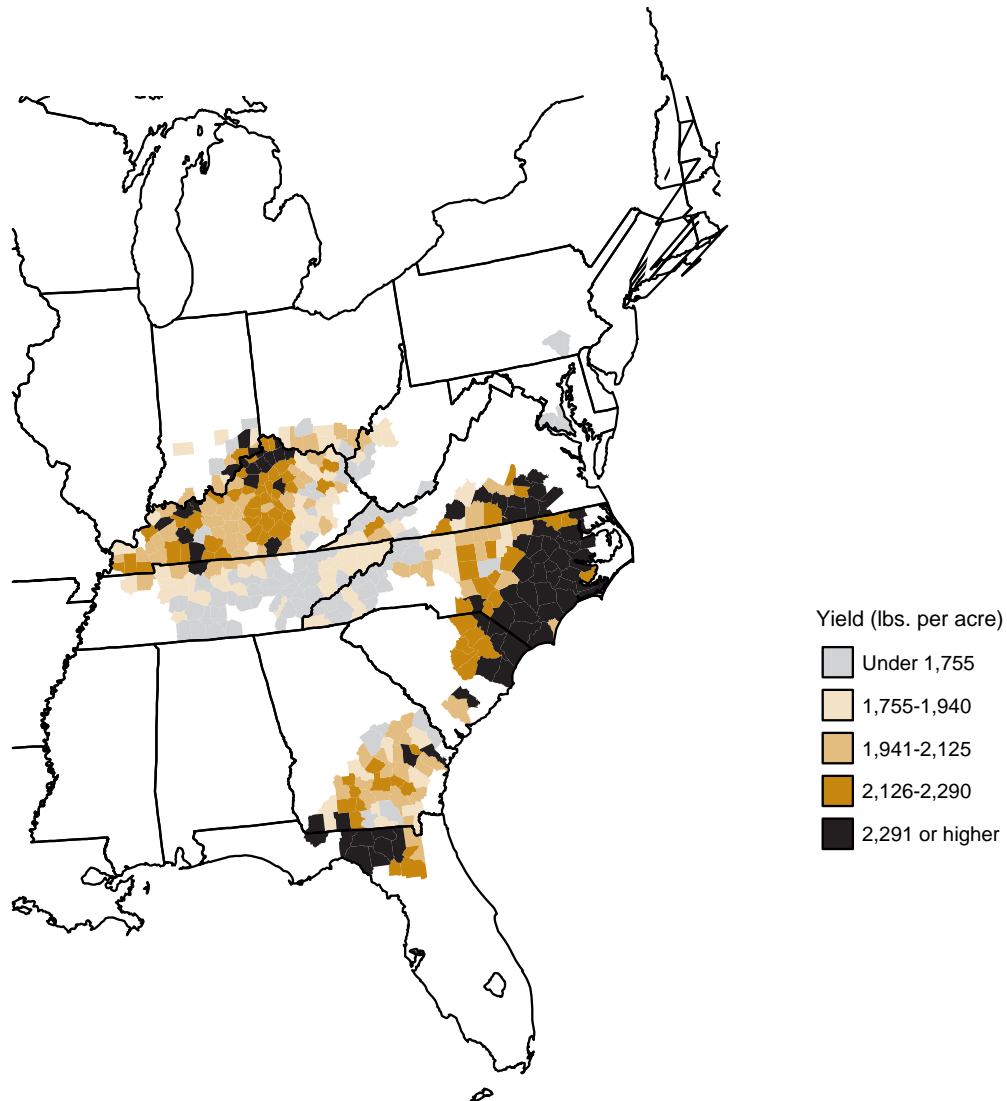
Source: Compiled by ERS from USDA/NASS county production estimates.

cotton. (Some flue-cured farms raised hogs and poultry or grew fruits and vegetables, but there were not enough farms in the survey sample to produce reliable estimates.) By comparison, relatively few burley farms had crop enterprises. Most burley farms had beef cattle, but cattle sales generated relatively little income, averaging only $8,400 in production. Six percent of burley farms had a dairy enterprise, which generated an average of $66,700 in production. Census of Agriculture data indicate that tobacco growers devoted 6 percent of their acreage to tobacco in 1997, but obtained 79 percent of their gross income from tobacco (fig. 5). Census data for 1997 also indicate that about 13 percent of land on tobacco farms was
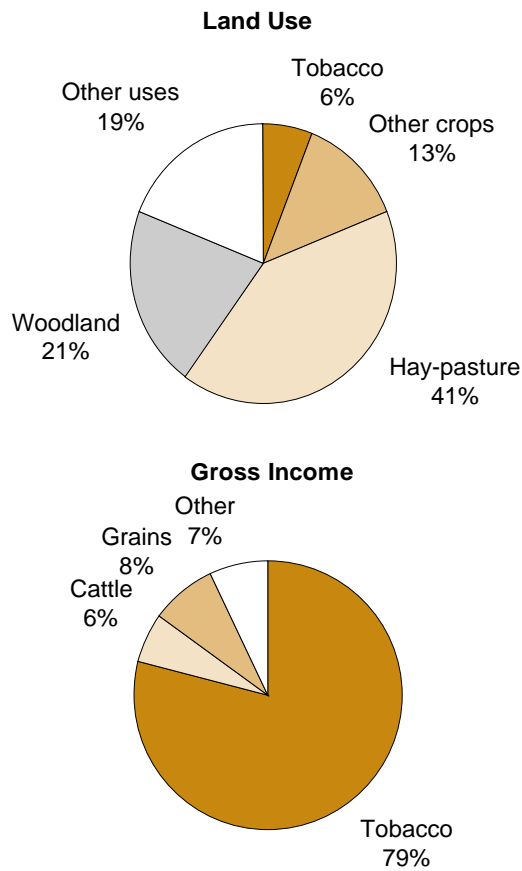
devoted to growing other crops, about 41 percent was in hay or pastureland, 21 percent was in woodland, and 19 percent was idled, enrolled in conservation programs, or in houselots and ponds.[11] Nontobacco acres produced relatively little income.

We used FCRS/ARMS cost-of-production data to compare per-acre returns from tobacco with returns from corn, cotton, peanuts, and soybeans in the tobacco-growing region. Table 10 shows two measures

_____
[11]The definition of a tobacco farm used for the census data is a farm that obtains at least half of its sales from tobacco. USDA ARMS/FCRS data are for all farms that grow tobacco.

Figure 5
Land use and source of gross income by tobacco farms, 1997

Land Use

- Other uses 19%
- Tobacco 6%
- Other crops 13%
- Hay-pasture 41%
- Woodland 21%

Gross Income

- Other 7%
- Grains 8%
- Cattle 6%
- Tobacco 79%

Note: Includes only farms obtaining at least 50 percent of sales from tobacco.
Source: Calculated by ERS using data from *1997 Census of Agriculture.*

of returns per acre for tobacco and other crops. The first is the difference between gross value of production and cash expenses for variable and fixed costs, a measure of the amount of cash returns typically generated by these enterprises. Table 10 shows that burley and flue-cured tobacco each generated an average of about $2,000 over cash expenses per acre in 1995-96. Cotton was the nearest competitor to tobacco, but its cash returns averaged only $267 per acre, followed closely by peanuts at $261 per acre. Cash returns were $174 per acre for corn and $89 for soybeans. The second measure of returns shown in table 10, the residual returns to management and risk, takes into account the

Table 8—Diversification of tobacco farms, 1995-96

	Burley farms, 1995	Flue-cured farms, 1996
	Acres per farm	
Average total acres per farm	154	442
Average tobacco acres per farm	5	38
	Percent of farms	
Number of commodities sold:		
Only tobacco	44	18
Two commodities	31	19
Three commodities	15	21
Four or more commodities	9*	42

Note: columns may not add to 100, due to rounding.
* Coefficient of variation is between 25 and 50 percent.

Source: ERS analysis of 1995 Farm Costs and Returns Survey for burley tobacco and 1996 Agricultural Resource Management Study for flue-cured tobacco. Coefficients of variation (C.V.'s) of estimates are less than 25 percent unless indicated otherwise. The C.V. is computed by dividing the estimate's standard error by the estimate and multiplying by 100. The lower the C.V., the more reliable is the estimate.

Table 9—Importance of other commodities on tobacco farms, by tobacco type, 1995-96

	Farms with production		Average value of production[1]	
Commodity	Burley	Flue-cured	Burley	Flue-cured
	Percent of farms		*Thousand dollars*	
All commodities combined	100	100	30.4	329.2
Tobacco	100	100	16.7	154.0
Soybeans	4*	52	41.5	23.5
Corn	5	49	37.0	38.7
Cattle	47	22	8.4	4.7
Cotton	L	17	D	162.8
Peanuts	L	12	D	57.7
Dairy	6	D	67.2	D

[1]Average value of production for those reporting production of the commodity.
*Estimate's coefficient of variation is between 25 and 50 percent.
L=Less than 1 percent of farms have this commodity.
D=Data insufficient for disclosure.

Source: ERS analysis of 1995 Farm Costs and Returns for burley tobacco and 1996 Agricultural Resource Management Study for flue-cured tobacco. Coefficients of variation (C.V.'s) of estimates are less than 25 percent unless indicated otherwise. The C.V. is computed by dividing the estimate's standard error by the estimate and multiplying by 100. The lower the C.V., the more reliable is the estimate. Data for hogs, poultry, vegetables, fruits, and nuts could not be reported, due to insufficient data for disclosure.

full economic "opportunity costs" of labor, land, and other capital. This measure subtracts imputed wages, rent, and interest that could have been earned by employing factors of production in other activities, and again shows much higher returns for tobacco than for other crops. In 1995-96, residual returns to management were $661 per acre for flue-cured tobacco and $407 for burley tobacco. These returns are again much higher than the returns to the other crops shown in the table, which ranged from $132 per acre for cotton to $6 for soybeans. These data reflect the significantly higher returns earned by tobacco compared with other crops. Returns from livestock and other land uses are also generally much lower. Indeed, on many tobacco farms, the income from tobacco subsidizes other enterprises that generate no net income. The small proportion of acreage devoted to tobacco and low returns from alternative land uses suggest that prospects for replacing tobacco with income from other crops are poor. Indeed, without the acreage restrictions imposed by the quota system, many operators would try to expand tobacco acreage, since returns from tobacco are so much higher than returns from other crops.

Apart from the effects of the quota system, tobacco acreage expansion is limited by the cost and availability of labor, curing barns, mechanized equipment, irrigation, and management skill to plant, cultivate, and harvest large acreages. The topography and relatively dense settlement of mountainous Appalachian areas and the hilly Piedmont region make mechanization and farm expansion relatively difficult for farms in those

regions. Expansion of acreage would require investment in new equipment, irrigation, curing, and other facilities. Obtaining credit for such investments could be a barrier for many farmers. Lenders would be less inclined to lend for tobacco investments in the absence of a tobacco program, since prices would decline and income would fluctuate more from year to year. Expansion would also require additional seasonal labor, which would likely be supplied by migrants.

Human resources will also have an important influence on how tobacco growers respond to changes in the industry. The management objectives, age, and education of farmers will be important influences on whether farmers choose to remain in tobacco farming, make new investments to expand their operations, retire, or switch to off-farm employment. Table 11 shows that burley tobacco farmers are less likely than flue-cured farmers to be involved in farming as their principal occupation. Only 43 percent of burley farmers said farming was their principal occupation, compared with 89 percent of flue-cured farmers. In Tennessee, only 26 percent said farming was their principal occupation, compared with 53 percent of Kentucky farmers. About 30 percent of Tennessee tobacco farmers said they were retired in 1995, while only a few tobacco farmers in other regions said they were retired. The percentage who said farming was their principal occupation was over 80 percent in each of the four flue-cured regions. Nationally, less than half of farm operators report farming as their principal occupation (Sommer et al.), so flue-cured tobacco farming households are much more likely to be involved in farming full-time than most other farm households.

Like other U.S. farmers, a large share of tobacco growers are at advanced ages, especially in Tennessee, where the average age of operators was 54. The average age of tobacco farmers was 51 for burley and 52 for flue-cured farms (table 11). While these averages seem high, they are actually lower than the average age for all farm operators of 54.3 reported in the *1997 Census of Agriculture*. The profitability of tobacco has attracted a relatively large number of young farmers. Census data indicate that 10 percent of tobacco farm operators were under age 35 in 1997, compared with 7.8 percent of all farm operators. Younger farmers are more inclined to make new investments to expand their tobacco operations or begin a new enterprise if capital is available to them. Many older operators will continue to grow tobacco on small farms with older, depreciated equipment and buildings, even in the

Table 10—Returns for major field crops in the tobacco production zones, 1996

	Gross value of production less cash expenses[1]	Residual returns to management and risk[2]
	Dollars per planted acre	
Burley tobacco	2,165	407
Flue-cured tobacco	1,951	661
Corn	174	52
Cotton[3]	267	132
Peanuts	261	44
Soybeans	89	6

[1]Returns above variable and fixed cash costs.

[2]Accounts for the full economic costs and returns. The opportunity costs for labor, land, and other capital are included in expenses. The opportunity cost of owned land is derived from a composite of the cash and share rental rates. The opportunity cost of unpaid labor is computed using the agricultural wage rate. For nonland capital, the 6-month Treasury Bill rate is used to measure opportunity costs.

[3]Excludes Government payments.

Source: Cost-of-production accounts, USDA/ERS.

Table 11—Characteristics of tobacco farm operators

	Farming principal occupation	Average age	High school or higher education	At least some college
	Percent	*Years*	*Percent*	*Percent*
Burley, 1995	43	51	67	11
Kentucky	52	50	74	D
Tennessee	26	54	53	D
Flue-cured, 1996	89	52	77	34
Piedmont	84	53	72	D
Coastal Plain	93	53	75	35
Pee Dee-Lumber River	88	49	82	D
Georgia	86	51	87	D

D=Data insufficient for disclosure.

Source: ERS analysis of 1995 Farm Costs and Returns for burley tobacco and 1996 Agricultural Resource Management Study for flue-cured tobacco. Coefficients of variation (C.V.'s) of estimates are less than 25 percent unless indicated otherwise. The C.V. is computed by dividing the estimate's standard error by the estimate and multiplying by 100. The lower the C.V., the more reliable is the estimate.

absence of the tobacco program, because they have limited alternatives and relatively low cash costs.

Flue-cured operators tended to have higher levels of education than burley operators. More educated farmers may have better access to information, new management techniques, and better alternatives outside of farming. Only two-thirds of burley farm operators had completed high school, less than the 79 percent of all farm operators reported by Sommer and others. The 77 percent of flue-cured farmers with a high school education or higher is comparable to the national average. The share of tobacco farmers with high school degrees varies across regions. Only 53 percent of Tennessee tobacco growers had completed high school, while the share of Kentucky farmers (74 percent) was closer to the national average. Among flue-cured farmers, the percent with a high school degree was lowest in the Piedmont (72 percent) and Coastal Plain (75 percent) regions, and higher in the Pee Dee-Lumber River (82 percent) and Georgia (87 percent) regions. About one-third of flue-cured operators had some education beyond high school, compared with only 11 percent of burley operators.

## Regional Impacts of Tobacco Manufacturing

Tobacco manufacturing is a large sector that provides highly paid jobs. This section identifies counties where tobacco manufacturing is important and evaluates their vulnerability to loss of tobacco manufacturing employment. Our analysis of U.S. Bureau of the Census, County Business Patterns data shows that 76 counties nationwide had tobacco-manufacturing establishments in 1996. While manufacturing is concentrated in relatively few southern counties, small establishments can

be found throughout the Nation (fig. 6). Richmond, VA, is the largest manufacturing center, followed by Winston-Salem, NC, and Macon, GA, with each location having more than 5,000 tobacco-manufacturing jobs in 1996. Other large cigarette-manufacturing operations are in Louisville, KY, Concord, NC, and Guilford and Rockingham Counties, NC. Smaller cigarette manufacturers are located in several counties of North Carolina, Virginia, and Kentucky. Additionally, Philip Morris headquarters employs some people in New York City. Twenty counties had at least 10 workers employed in tobacco stemming and redrying in 1996, led by Wilson, NC, with more than 1,000 workers. Chesterfield and Pittsylvania Counties in Virginia and Vance County, North Carolina, are other centers of stemming and redrying employment. Six counties employ between 100 and 1,000 workers in cigar manufacturing: three in Florida, two in Alabama, and one in Pennsylvania. Nine counties in Kentucky, Illinois, Tennessee, North Carolina, West Virginia, and Tennessee employ between 100 and 1,000 employees in the manufacture of chewing and smoking tobacco.

Tobacco manufacturing is a major part of the local economy in the biggest cigarette-manufacturing centers and in a handful of other counties that have important tobacco leaf markets. Cigarette manufacturing accounts for between 5 and 10 percent of all personal income in five counties, including Forsyth, Cabarrus, and Rockingham Counties, NC; Richmond County, VA; and Bibb County, GA. Seven counties derive between 1 and 3 percent of personal income from tobacco manufacturing. Tobacco manufacturing's share of local personal income is less than 1 percent in all other counties. These data suggest that a handful of local economies (those with cigarette-manufacturing

Figure 6
Counties with tobacco-manufacturing employment, 1996

Tobacco-manufacturing jobs

- Less than 100
- 100-999
- 1000 or more
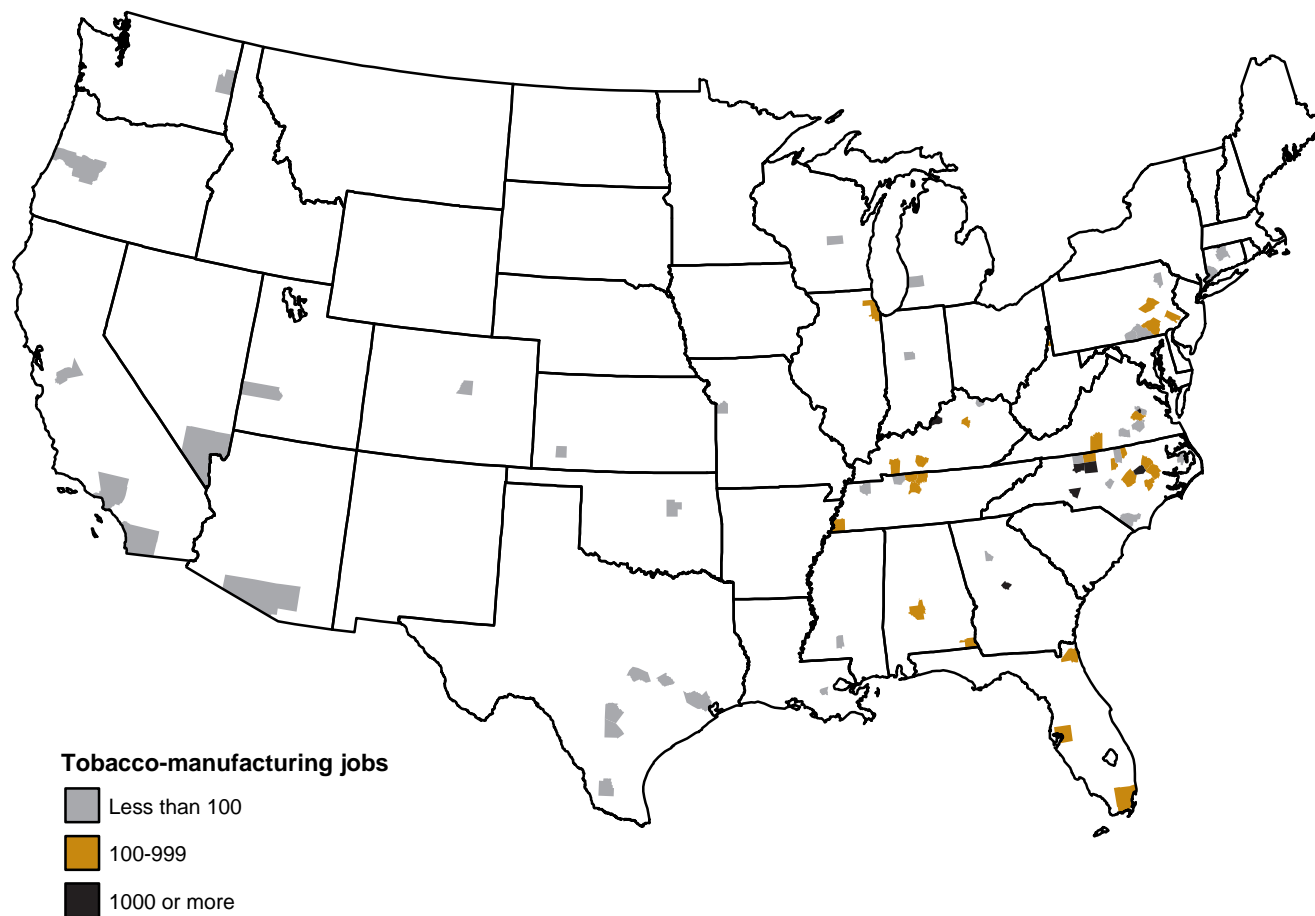
Source: Compiled by ERS using data from U.S. Bureau of the Census, 1996 County Business Patterns.

operations and leaf markets that have large stemming and redrying operations) would be significantly affected by a decline in tobacco manufacturing.

Bureau of Labor Statistics data show that cigarette-manufacturing employment has declined steadily in recent years. After peaking at about 46,000 in 1983, cigarette-manufacturing employment fell to less than 26,000 in early 1999 (fig. 7). Jobs in other types of tobacco manufacturing (tobacco stemming and redrying, cigars, chewing and smoking tobacco) fell steeply from the 1950's until 1990, as worker productivity rose and demand for cigars and smoking tobacco fell. Resurgent growth in demand for cigars in the 1990's may have helped stabilize noncigarette tobacco-manufacturing employment in recent years. Following the 1998 tobacco settlement, manufacturers and other processors appear to be downsizing in anticipation of falling demand for their product. In 1998, Philip

Morris announced plans to shrink its U.S. work force by 16 percent. This included plans to close its Louisville, KY, plant, eliminating 130 jobs, and large cuts at its Richmond, VA, facility. Some of the job cuts are to be accomplished through early retirement incentives, and some employees will be transferred to the company's newer, efficient operation in Concord, NC, but significant layoffs are also expected. Dimon, Inc., the second-largest leaf dealer, also announced plans in 1999 to close a Kinston, NC, processing plant to consolidate work at its Danville, VA, plant. This was expected to cut 100 full-time jobs and 600 seasonal jobs in Kinston, and possibly add some jobs to the 130 full-time and 600 seasonal jobs in the Danville plant.

If tobacco demand continues to fall, additional job cuts and plant closures will likely occur. Across-the-board job losses at each plant are unlikely. Some locations may actually gain employment as total tobacco-manu-

Figure 7

Tobacco-manufacturing employment, 1950-98

Employees (1,000)
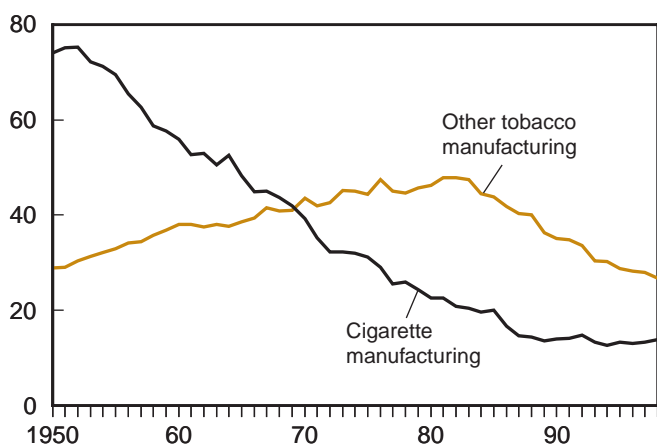
Source: Compiled by ERS from Bureau of Labor Statistics data.

facturing jobs fall, since companies generally consolidate manufacturing activities in the most efficient plants while closing the least efficient plants. For those areas where large numbers of high-paying tobacco jobs could be lost, there is concern about how the local economy might be affected. The number of jobs and income directly provided by tobacco manufacturing might understate the importance of the industry to the local economic base, or "primary sector." Tobacco manufacturers provide business for local companies that supply materials, machinery, inputs, and business services (secondary sectors). The spending of income earned by tobacco employees also supports local retail, service, and real estate business (tertiary sectors). This is the "multiplier effect," whereby primary sectors (such as tobacco) bring in dollars from outside the region, which supports spending, income, and jobs in secondary and tertiary sectors. Projections of local economic impact of losing or gaining an industry often use multipliers obtained from input-output models of the local economy to predict that a decline in income earned in a primary sector will lead to an even larger impact on total income. However, Johnson (pp. 68-69) points out that the size of actual effects is usually not as large as portrayed by multiplier studies. Elimination of $100 million in tobacco-manufacturing personal income would not necessarily lead to a loss of more than $100 million in total income and thousands of jobs for a county.

We compared the estimated and actual impacts of the 1980's closure of a Petersburg, VA, cigarette plant for a case study of the effects of lost tobacco income.

Prior to the closure of the city's large Brown & Williamson Co. manufacturing plant, cigarette manufacturing accounted for about 18 percent of personal income and 14 percent of employment in the Petersburg economy. As the plant was gradually shut down in the mid-1980's, the Petersburg area lost several thousand of its highest paid jobs. The local economy of Petersburg had experienced decline in other manufacturing industries during the 1970's, so there was little local economic growth to replace the lost tobacco jobs. The highly tobacco-dependent Petersburg economy's experience should be instructive for other towns concerned about the future impacts of lost tobacco jobs on their economies.

Analysts often use input-output models to predict impacts on employment and income of events such as plant closures. We used IMPLAN (a commonly used regional input-output modeling system) to predict the impact of eliminating tobacco manufacturing from Petersburg's economy during the mid-1980's.[12] We compared the IMPLAN predictions with the actual performance of the Petersburg economy over the period of the closure to assess the accuracy of the predictions. According to the IMPLAN analysis, the cigarette plant's closure should have reduced total personal income in Petersburg by 22 percent, and employment should have fallen by 23 percent (table 12). This includes not only the direct loss of income and employment from the cigarette-manufacturing plant, but also indirect losses in supporting industries, and induced effects as lower incomes lead to lower consumer spending. The multiplier is surprisingly small. According to the IMPLAN analysis, each dollar of income lost directly from the cigarette plant would have led to an additional loss of 17 cents in income elsewhere in the Petersburg economy. The model predicts that for every 100 jobs lost in the plant, another 54 jobs elsewhere in the economy would have been lost. Most of the additional job and income losses would have been in retail trade and services, supported by spending by the plant's employees.

We compared the IMPLAN estimates with the actual performance of the Petersburg economy over the period of the plant closure. While the loss of tobacco income had an important negative impact on the economy, its multiplier effect appeared to be less than that predicted by input-output analysis. Over the period 1982-86, total

[12]The 1982 IMPLAN data and the 1982 structural matrices were used, since these data correspond to the timing of the actual event.

Table 12—Predicted and actual impacts on local income due to loss of tobacco manufacturing, Petersburg, VA, 1982-86

Sector	Predicted by IMPLAN	Actual, 1982-86
	Percent	
Employment	-23	-0.4
Local personal income	-22	-5
By sector:		
Construction	-9	119
Nontobacco manufacturing	-4	6
Transportation, communications, public utilities	-13	-11
Wholesale and retail trade	-2	23
Finance, insurance, and real estate	-21	9
Services	-11	20
Government	-3	7

Note: values are adjusted for inflation.

Source: Analysis of 1982 IMPLAN model, and unpublished Bureau of Economic Analysis data.

Figure 8

Total personal income and personal income from tobacco manufacturing and other manufacturing, Petersburg, VA, 1970-95

Percent of 1970 level

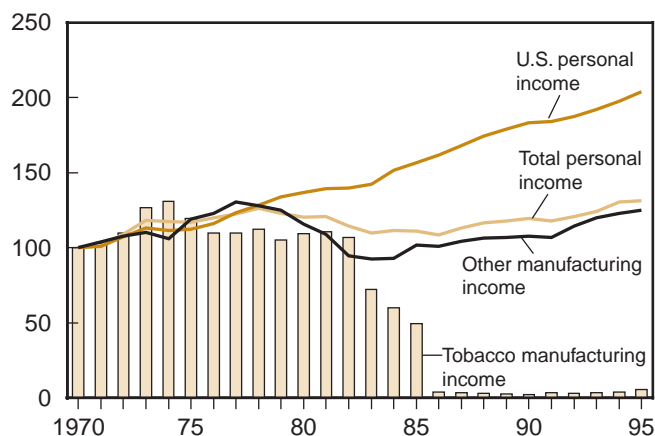Source: ERS analysis of data from Bureau of Economic Analysis.

inflation-adjusted personal income fell by 5.4 percent, much less than the 22-percent decline predicted by the IMPLAN estimates. Employment declined by less than 1 percent, again much less than the predicted 23-percent decline. Loss of highly paid tobacco jobs apparently did not devastate the local retail industry as might have been expected. Retail income grew steadily over the 1982-86 period as it recovered from losses experienced during the preceding 5-year period. The only major sectors that lost income were transportation, communications, and public utilities.

The impact of losing tobacco jobs seems to have been much less severe than an earlier decline in other Petersburg manufacturing industries during the 1970's. Nontobacco manufacturing in the city fell sharply during the late 1970's and early 1980's, accompanied by a decline in total personal income during that period (fig. 8). (Real income from tobacco manufacturing in Petersburg was fairly constant during these years.) A recovery of total income coincided with renewed growth of nontobacco manufacturing in Petersburg during the 1980's, despite the loss of tobacco dollars. This suggests that nontobacco manufacturing sectors have stronger local linkages than the cigarette-manufacturing sector. This is supported by inspection of the IMPLAN data, which indicate that only a small share of income earned by cigarette manufacturing stayed in the local Petersburg economy, and that relatively few materials and inputs were bought locally. From this case study, we can conclude that loss of tobacco manufacturing will probably affect local economies less than expected. The performance of the Petersburg

economy indicates a surprising degree of resilience with regard to the ability of local economies to shift resources from one sector to another, even in the short run, in an economy where tobacco manufacturing is a large part of the economic base. In the 1990's, cities with tobacco-manufacturing activity had more vibrant economies than did Petersburg in the 1980's. While there will be difficult individual adjustments for businesses and workers who earn income from tobacco and for governments that derive tax revenue from tobacco-manufacturing plants, major impacts on local economies resulting from a decline in tobacco sales seem unlikely.

Tobacco Farming Communities

Many tobacco-farming communities are concerned about how they will be affected by loss of tobacco farm income. Many communities are well positioned to absorb tobacco income loss, but others are more vulnerable (Gale, 1998). In this section, we discuss the impacts of tobacco decline and identify the most vulnerable tobacco counties. Tobacco-farming communities that offer few alternatives to tobacco production will be the most vulnerable to a decline in tobacco income. As tobacco production falls, regional income will decline as receipts from tobacco decline. Payments to warehouses, local hired labor, repair shops, interest paid to local banks, and rental payments to owners of land and quota will also decline. Spending at retail stores and service businesses will
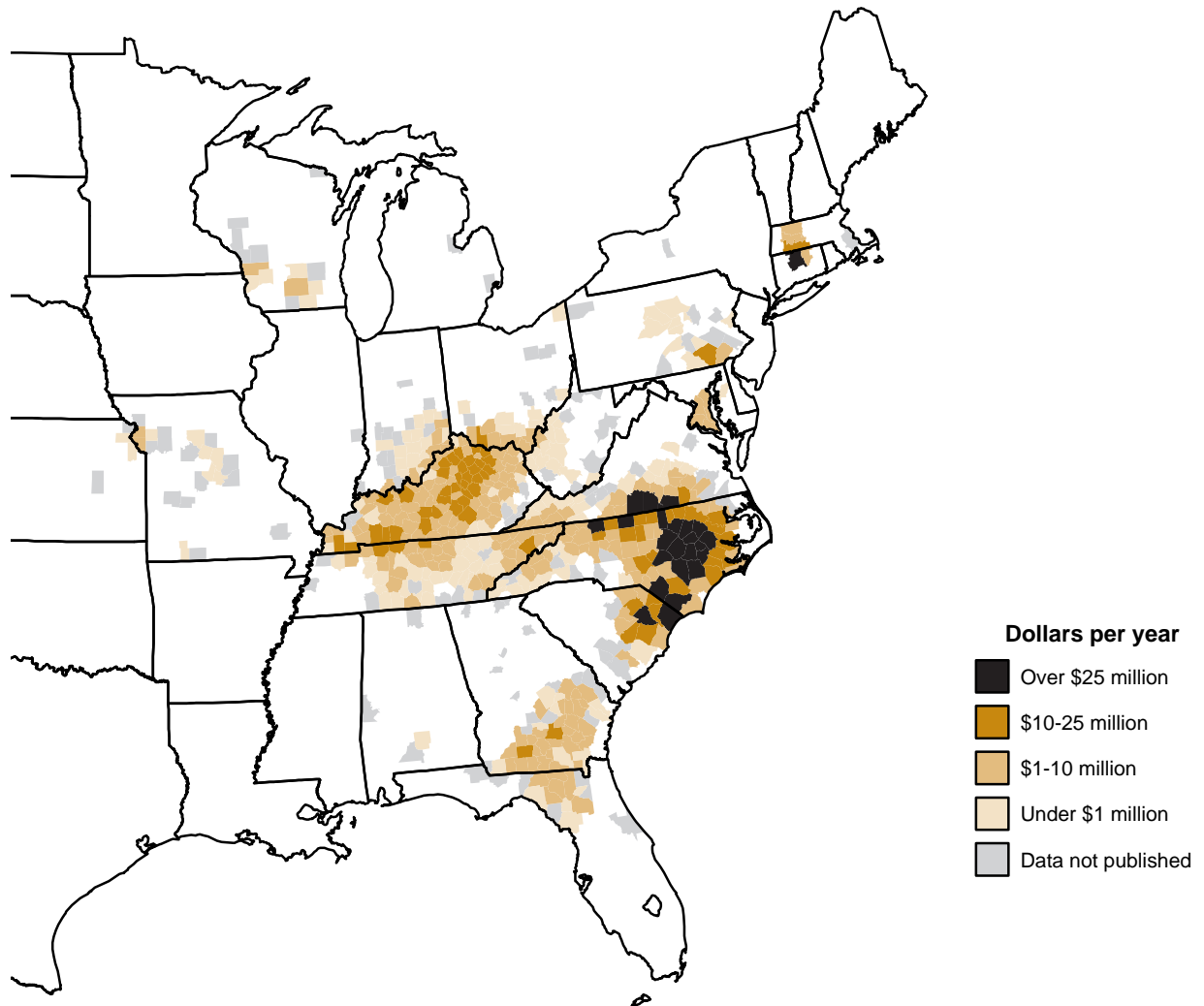
fall as income of growers and quota owners falls. Farm and other real estate values could fall in communities where tobacco is an important source of income. However, as with the national economy, declining spending on tobacco inputs could be partly offset by increased purchases of inputs to expand other farm enterprises. Similarly, injections of income, such as payments to growers or economic development spending resulting from tobacco settlement funds, could cushion the effect on local retail businesses and real estate. If economic development assistance spurs infrastructure improvements, construction jobs could also be created. Further, if the tobacco program were eliminated, regional shifts in production could mean little actual change in the amount of tobacco dollars flowing to the Coastal Plain, Pee Dee-Lumber River, and

Georgia flue-cured regions, where production could expand by up to 40 percent. Thus, the local economic impact on tobacco-growing communities may be less severe than many expect. Another mitigating factor is that a significant portion of tobacco income "leaks" out of the local economy through spending on physical inputs (fertilizer, chemicals, fuel, vehicles, machinery, and other items) manufactured outside the tobacco-growing region and payments to landowners, quota-owners, and migrant workers who live outside the county. The loss of that income will not affect the economy of the tobacco-growing community.

In contrast to income from tobacco manufacturing, which is concentrated in a handful of cities, income from tobacco farming is more broadly distributed across 568 counties, mostly in the Southeast. Tobacco

Figure 9

Value of tobacco production, by county, 1997

Dollars per year

- ■ Over $25 million
- ■ $10-25 million
- ▨ $1-10 million
- ▫ Under $1 million
- ▨ Data not published

Note: Data were not published for 120 counties to prevent disclosure of individual operations.
Source: Compiled by ERS from U.S. Bureau of the Census, 1997 Census of Agriculture data.

is grown in most counties of Kentucky, North Carolina, and Tennessee (fig. 9). Other major growing areas, where tobacco is considered to be an important part of both the economic and social fabric of the community, include southern Virginia; the Coastal Plain of South Carolina, Georgia, and Florida; and the southern parts of Indiana, Ohio, and Maryland. The largest flows of tobacco income are in the Coastal Plain of North Carolina. Most of the top 20 counties in 1997 tobacco sales, according to the *Census of Agriculture*, were in this region. Farm sales of tobacco in these counties generally run between $20 million and $50 million per year, and several of the counties also obtain significant income from stemming and redrying. Tobacco sales are between $1 million and $9 million in most other tobacco-growing counties.

Tobacco has an important historical role in the agrarian past of many southern communities, but its importance declined as other sectors of the economy grew. To illustrate this, we compared growth in tobacco income, as reported by USDA, with growth in total personal income and farm income reported by the U.S. Dept. of Commerce's Bureau of Economic Analysis (fig. 10). Since 1970, total personal income (in constant dollars) earned in the Nation's tobacco-growing counties has risen fairly steadily, with a cumulative increase of nearly 150 percent. Over that same period, tobacco sales have remained fairly constant in nominal dollars ($2-3 billion), and have declined in constant dollars. Using gross tobacco sales as a proxy for the amount of income brought into the region by tobacco,

Figure 10
Income trend in tobacco-growing counties, 1970-97

Index (1970=100)
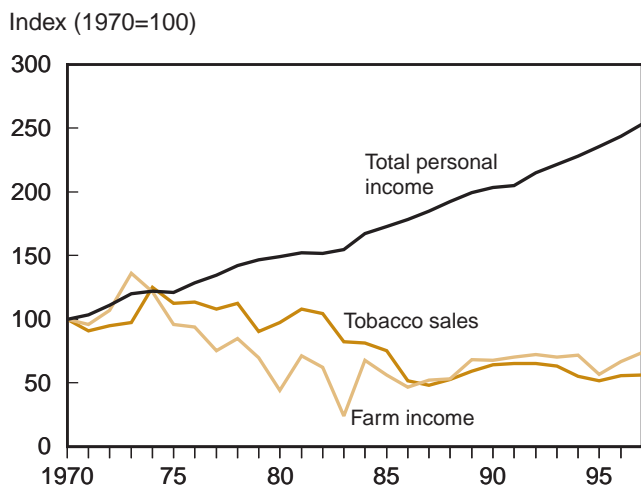
Source: Bureau of Economic Analysis data, adjusted for inflation.

we find that the ratio of tobacco sales to total personal income fell from 3 percent in 1970 to 0.7 percent in 1997. There are no data on personal income derived from tobacco farming at the county level, but personal income from all types of farming is available. Farm income (in constant dollars) in tobacco-growing counties fell along with tobacco sales, and the share of all personal income derived from farming in those counties fell from 5 percent in 1970 to 1 percent in 1997 (Gale, 1999).

Most tobacco is produced in or near growing metropolitan areas, whose proximity translates to greater opportunities for nonfarm jobs, rising land values, and a customer base for fruits, vegetables, pick-your-own, or other on-farm businesses, such as paid fishing or hunting. We classified tobacco-growing counties on the basis of their degree of urbanization using a set of Urban Influence Codes developed by ERS (Ghelfi and Parker, 1997). There are 125 tobacco counties located in small metro areas (populations under 1 million), and 185 tobacco counties are adjacent to small metro areas. Counties in or adjacent to small metro areas account for 73 percent of estimated tobacco receipts. These small metro areas are attached to cities such as Richmond and Petersburg, VA; Raleigh, Durham, and Winston-Salem, NC; Lexington and Louisville, KY; and Knoxville, TN. A number of smaller cities, such as Danville, VA; Rocky Mount, Greenville, and Goldsboro, NC; Florence, SC; and Hopkinsville, KY, lie in the heart of tobacco-growing areas. Thirty-five tobacco counties accounting for 5.7 percent of tobacco receipts lie in or adjacent to large metropolitan areas, including Cincinnati, Washington, DC, and Kansas City. A large number of tobacco counties (193) are not adjacent to any metro area, but they account for only about one-fifth of tobacco receipts.

Policymakers are interested in identifying the areas most vulnerable to the loss of tobacco farm income. This report presents two updated measures previously reported by Gale (1994; 1997; 1999), which assess the importance of tobacco farm income to total income in county economies. The first measure is the ratio of tobacco gross income to local personal income:

$$RATIO = TOBINC/TLPI.$$

In this report, TOBINC is the county-level value of tobacco production reported in the 1*997 Census of Agriculture*, and TLPI is total labor and proprietors' income by place of work per county for 1997, reported

by the U.S. Dept. Commerce, Bureau of Economic Analysis. TLPI measures income earned within a county. It excludes income earned by county residents who commute to jobs in other counties. TLPI also excludes income from dividends, interest, rent, and transfer payments. Gross tobacco income is used to compute this ratio since there are no geographic data on net income earned from tobacco. Gross tobacco income overstates the amount of income earned by tobacco growers, but it is a reasonable measure of the total amount of economic activity related to tobacco in a county. While growers keep only a fraction of gross earnings from tobacco, many of their expenses are paid to local landlords, quota owners, laborers, and local businesses, such as farm supply and equipment

dealers, warehouses, and financial institutions. Note that this measure does not include income from tobacco processing or manufacturing activity, which was covered in an earlier section.

Of 568 counties with tobacco production in 1997, 28 had tobacco-personal income ratios exceeding 10 percent, and 52 counties had ratios of 5 to 10 percent.[13] Another 135 counties had ratios between 1 and 5 percent, and 353 had ratios under 1 percent (fig. 11).

_____

[13]Data on 1997 tobacco production for 120 counties were suppressed by the *Census of Agriculture* to prevent disclosure of individual farm operations. These counties are not shown in fig. 11, but we estimate that the ratio of tobacco sales to personal income would be less than 1 percent in nearly all of them.

Figure 11

Ratio of tobacco receipts to total local earnings, 1997

Ratio

- 10 percent or higher
- 5-10 percent
- 1-5 percent
- Under 1 percent
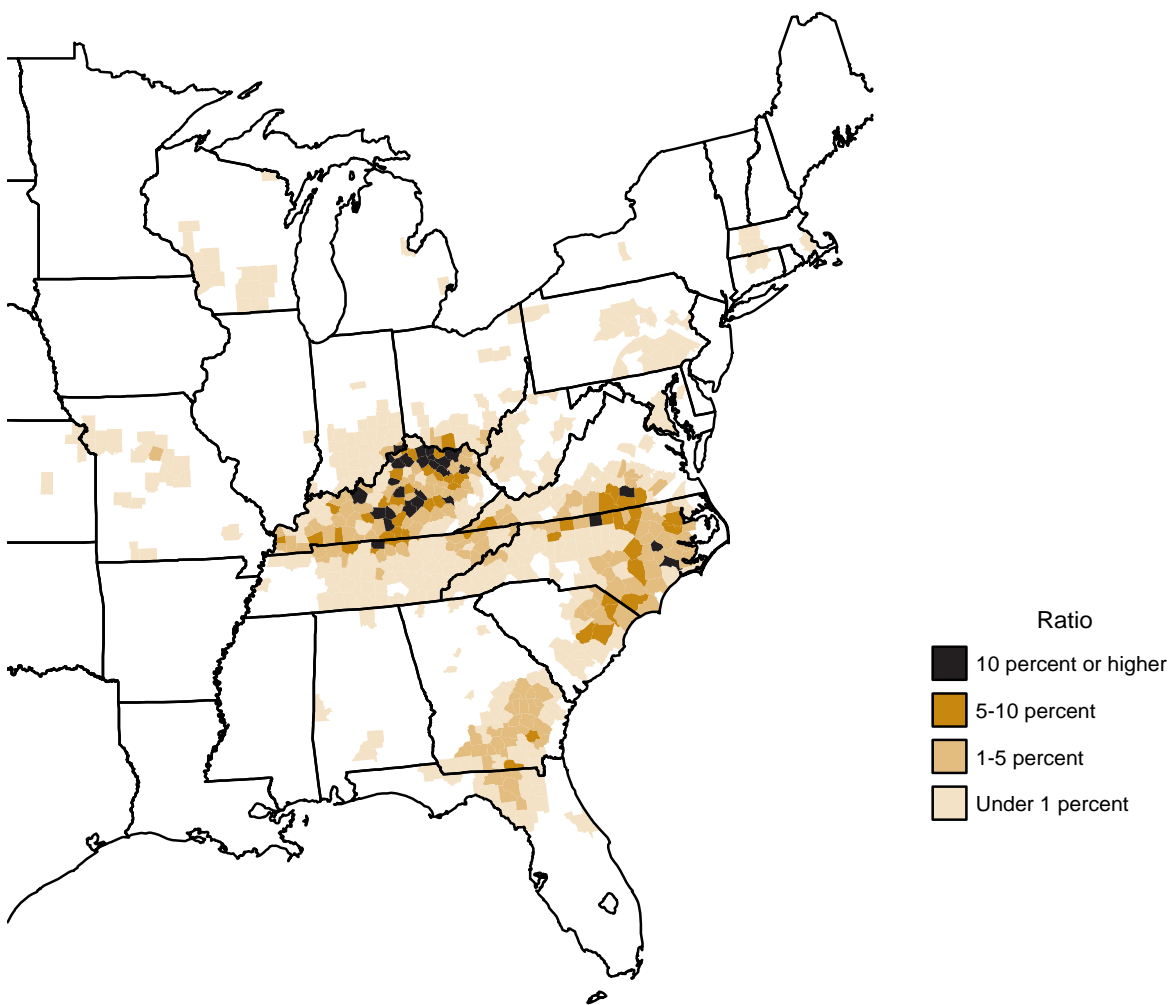
Note: Total local earnings refers to total labor and proprietors' income. Shows counties for which market value of tobacco production was reported in the *1997 Census of Agriculture*.
Source: Calculated by ERS using data from U.S. Bureau of the Census, *1997 Census of Agriculture* and Bureau of Economic Analysis, Regional Economic Information System.

This suggests that there are few counties where tobacco farming accounts for a large share of the local economy.[14] Farming, in general, is a relatively small part of local economies in most tobacco-growing areas. Based on the ERS definition of "farm dependency" (counties where farm earnings are 20 percent or more of total earnings), only 28 tobacco-growing counties are farm-dependent.

The counties with the highest tobacco income are not necessarily the most dependent on tobacco. Only a few of the leading tobacco counties in eastern North Carolina and southern Virginia are among the counties with the highest tobacco-personal income ratios. Of the 28 counties with ratios over 10 percent, 22 are in Kentucky, and all but three had tobacco sales of less than $20 million in 1997. North Carolina had three counties with tobacco-personal income ratios over 10 percent, while Virginia, Tennessee, and Indiana each had one. The most dependent counties accounted for 17 percent of tobacco farms and 12 percent of tobacco production in 1997.

[14]The personal income measure (total local personal income) used in the denominator of this ratio includes only income earned within the county. Using total personal income, which includes income earned outside the county (by commuters), transfer payments, dividends, interest, and rent, yields even lower ratios. See Gale (1999) for more discussion of this measure.

Table 13 shows basic economic data for counties in the same four tobacco income ratio classes shown in fig. 11. In 1997, farming provided nearly one-fourth of jobs in the most dependent tobacco counties, much higher than the share in other tobacco counties, indicating a lack of nonfarm alternatives in counties highly dependent on tobacco. Per capita income was also much lower in the most dependent counties, averaging $15,900, compared with $23,900 in the least dependent tobacco counties.

Real local earnings and employment also grew more slowly in the most dependent counties than in other tobacco counties, a further sign that adjustments to loss of tobacco income will be particularly difficult in those regions. Counties with a tobacco-personal income ratio of 10 percent had average total employment growth of 7.5 percent between 1991 and 1997, much lower than the 14- to 15-percent average employment gains in counties that were less dependent on tobacco. Personal income growth also lagged behind in the most dependent tobacco counties. Not only do the most dependent tobacco counties have the poorest alternatives to tobacco, but many of them are also among the most likely to lose tobacco farms and income. A number of highly dependent counties are in the Piedmont flue-cured and eastern Kentucky regions, where production costs tend to be higher, yields lower, and farms smaller and with less potential for expanding production. These counties appear to be the most vulnerable to declining tobacco sales.

Table 13—Economic characteristics of counties by degree of tobacco reliance

			Tobacco-personal income ratio[1]			
		All tobacco counties[2]	10 percent or higher	5-10 percent	1-5 percent	1 percent or less
Counties	Number	568	28	52	135	233
Share of tobacco farms, 1997	Percent	100	17	21	40	22
Share of tobacco production, 1997	Percent	100	12	25	45	18
Farm share of local personal income, 1997	Percent	3	25	11	6	2
Per capita personal income, 1997	$1,000	23.0	15.9	18.1	18.5	23.9
Total employment growth, 1991-97	Percent	14.3	7.5	14.0	15.6	14.1
Real personal income growth, 1991-97	Percent	3.5	2.4	4.0	3.7	3.3

[1]Ratio of total value of tobacco production to total personal income per county, 1997.

[2]Categories do not always add to totals because tobacco-personal income ratios could not be computed for 120 counties for which tobacco production was not published in the *1997 Census of Agriculture*.

Source: Calculated by ERS using data from *1997 Census of Agriculture* and Bureau of Economic Analysis, Regional Economic Information System.