

# **ECONOMIC IMPACTS FROM GOVERNMENT SUPPORT PROGRAMS**

Archie Flanders

Center for Agribusiness and Economic Development, University of Georgia

## **Introduction**

Commodity support programs for field crops are acknowledged for their importance in enhancing the incomes of agricultural producers. Communities benefit as increased farmer incomes purchase goods and services that lead to impacts throughout the economy. However, if the viability of farms is dependent upon commodity support programs, the complete quantification of economic impacts extends to the farm enterprise, and is not limited to personal income accruing to producers.

This report attempts to estimate the extent of economic impacts that are derived from government support programs. A model representing the Georgia cotton industry is applied for evaluating net returns and economic impacts of production. There are three objectives of this analysis. The first objective is to determine the impacts from multiplier effects of cotton production in the economies of Georgia and the U.S. Secondly, impact analysis measures the tax revenues generated from cotton production. After economic impacts and tax revenues are calculated, the final objective is to investigate the importance of government support programs to the viability Georgia cotton production.

## **Industry Model for Cotton Production**

A simulation model for the Georgia cotton industry includes operating costs and fixed costs of production. Payments of debt for equipment are considered as wealth transfers that increase farmer equity, but have no economic impact after purchase. Annual economic impacts derive from operating expenses as the farm enterprise acquires operating inputs for production and stimulates economic activities associated with the inputs.

Variable costs in Table 1 and annual fixed costs in Table 2 are estimated from crop enterprise budgets developed by the Department of Agricultural and Applied Economics of the University of Georgia. Costs are estimated aggregates of Bt and Bt/RR varieties, as well as non-irrigated and irrigated acreage. Model assumptions for yield and commodity prices (NASS), LDP rates, base acreages and base yields (FSA), and the average world price for cotton (FAS) are presented in Table 3. Impacts are derived for the Georgia cotton industry by first estimating the impact from 800 acres of production, calculating the impact per acre and then expanding to 1.3 million acres.

Revenues in Table 4 are from lint marketed, value of cottonseed, and government payments. Government payments for 800 acres total \$109,531 from direct payments, counter cyclical payments, and loan deficiency payments. Total revenue less variable

costs and fixed costs result in net returns to land and management of \$40,744 for 800 acres of production. With net returns of \$51 per acre, aggregate net returns total \$66.3 million.

### **Economic Impacts**

Impact analysis evaluates the effects, or economic benefits, of a production enterprise on industrial sectors. IMPLAN (MIG) is an economic input-output modeling program applied for impact estimation. IMPLAN can interpret the effects of an enterprise in a number of ways including output (sales), labor income (employee compensation and proprietary income), employment (jobs), and tax revenue. An IMPLAN model can be constructed for the economy of a single county, multi-county, state, or a national region. In general, input-output models work by separating the economy into various industrial sectors, such as agriculture, construction, manufacturing, trade, and services. The model then calculates how a change in one industry changes output, labor income, and employment in other industries. These changes, or impacts, are expressed in terms of direct, indirect, and induced effects.

- *Direct effects* represent the impact on the economy of some feature (i.e. construction or operations) of an enterprise.
- *Indirect effects* are changes in other industries caused by direct effects of an enterprise.
- *Induced effects* are changes in household spending due to changes in economic activity generated by both direct and indirect effects.

Thus, the total economic impact is the sum of direct, indirect, and induced effects.

Economic impacts for Georgia in Table 5 consist of total effects for 800 acres of production which are expanded to an aggregated industry total. Cotton production represents \$1.38 billion of economic output in Georgia which leads to 16,250 part-time and full-time jobs. Income totals \$374.2 million for farmers and the 16,250 employees impacted by cotton production. Excluding farm property taxes, cotton production creates \$21.9 million in state revenues and an additional \$9.7 million for local governments in Georgia.

Impacts from cotton production in Georgia are not limited to the state, but multiply throughout the U.S. economy. Table 6 presents U.S. economic impacts that result from cotton production in Georgia. Economic output totals \$2.3 billion, which impacts 22,750 part-time and full-time jobs, or 6,500 jobs outside of Georgia. Income of \$273.6 million outside of Georgia calculates to a total U.S. income impact of \$647.8 million. Federal, state, and local taxes total \$204.8 million for governments in the U.S.

Aggregate U.S. tax revenues in Table 6 calculate to revenues of \$126,046 from 800 acres of Georgia cotton production. This compares to government payment receipts of \$109,531 in Table 4. Thus, for every dollar of Federal government payments received

by Georgia cotton farmers, \$1.15 of tax revenues are returned to Federal, state, and local treasuries of governments in the U.S.

Impacts from cotton production indicate economic benefits for Georgia and U.S. economies that extend beyond the agricultural sector. The importance of government payments may be evaluated by determining the viability of cotton farming without government payments. Net returns to land and management of \$40,744 for 800 acres of cotton production were previously discussed. Total government payments of \$109,531 in Table 4 show that net returns without government payments would be -\$68,787, or -\$86 per acre. This level of negative net returns makes it unlikely that Georgia cotton production would remain a viable industry without support programs.

### **Summary**

Cotton production in Georgia has a total economic output effect of \$2.3 billion for the U.S. economy. This leads to 22,750 jobs and \$648 million in income throughout industrial sectors of the economy. Tax revenues received by federal, state, and local governments due to Georgia cotton production are greater than commodity support payments received by Georgia cotton farmers. Negative returns without support from commodity programs make it unlikely that cotton production would be a viable enterprise and economic benefits to the Georgia and U.S. economies would be lost.

### **References**

Minnesota IMPLAN Group, Inc. *IMPLAN Professional, Version 2.0 User's Guide, 3<sup>rd</sup> Edition*. Stillwater, MN, 2004.

U.S.D.A., Foreign Agricultural Service. "Market and Trade Data." Internet site: <http://www.fas.usda.gov/currwmt.asp>

U.S.D.A., Farm Services Agency. "2002 and 2003 Direct and Counter-Cyclical Program Enrollment Results." Internet site: [http://www.fsa.usda.gov/pas/farbill/2002\\_2003\\_enroll.htm](http://www.fsa.usda.gov/pas/farbill/2002_2003_enroll.htm)

U.S.D.A., Farm Services Agency. "Price Support Division Reports." Internet site: <http://www.fsa.usda.gov/dafp/psd/LoanRate.htm>.

U.S.D.A., National Agricultural Statistics Service. Internet site: <http://www.nass.usda.gov/index.asp>

University of Georgia, Agricultural and Applied Economics, *Crop Enterprise Cost Analysis, South Georgia*. Athens, GA (March 2004).

Table 1. Cotton Variable Costs

| Input                         | \$/Acre |
|-------------------------------|---------|
| Seed                          | 44.93   |
| Lime                          | 7.26    |
| Fertilizer-Custom Application | 57.59   |
| Herbicides                    | 25.00   |
| Insecticides: In-Furrow       | 11.03   |
| Insecticides: Spray           | 12.65   |
| Growth Regulator              | 7.98    |
| Boll Opener and Defoliant     | 15.32   |
| Scouting                      | 7.00    |
| Fuel and Lube                 | 18.30   |
| Labor                         | 23.88   |
| Repairs, Maintenance          | 27.80   |
| Irrigation                    | 13.86   |
| Crop Insurance                | 18.33   |
| Ginning                       | 68.45   |
| Warehouse, Marketing          | 20.84   |
| BWEP                          | 3.75    |
| Total Operating Expenses      | 290.93  |
| Interest, Operating Capital   | 10.55   |
| Total Variable Costs          | 394.51  |

Table 2. Cotton Fixed Costs

| Input               | \$      |
|---------------------|---------|
| Taxes and Insurance | 10,670  |
| Capital Interest    | 26,676  |
| Capital Recovery    | 48,017  |
| Other               | 18,885  |
| Total               | 104,248 |

Table 3. Simulation Assumptions

| Variable    | Unit      | Value  |
|-------------|-----------|--------|
| Yield       | lbs./acre | 700    |
| Acres       | number    | 800    |
| GA Price    | cents/lb. | 0.56   |
| U.S. Price  | cents/lb. | 0.55   |
| AWP         | cents/lb. | 0.48   |
| GA LDP Rate | cents/lb. | 0.5285 |
| DP Acres    | number    | 800    |
| DP Yield    | lbs./acre | 690    |
| CCP Acres   | number    | 800    |
| CCP Yield   | lbs./acre | 700    |

Table 4. Cotton Revenue

| Source                   | \$      |
|--------------------------|---------|
| Lint                     | 313,600 |
| Seed                     | 37,469  |
| Government Payments      | 109,531 |
| Direct Payment           | 31,296  |
| Counter Cyclical Payment | 51,075  |
| Loan Deficiency Payment  | 27,160  |
| Total Revenue            | 460,600 |

Table 5. Georgia Cotton Farming: Annual Economic Benefits to Georgia

|                               | Direct<br>Effect | Indirect<br>Effect | Induced<br>Effect | Total<br>Effect | Aggregate<br>Total |
|-------------------------------|------------------|--------------------|-------------------|-----------------|--------------------|
| Output (\$)                   | 460,600          | 263,418            | 127,704           | 851,722         | 1,384,048,044      |
| Labor Income (\$)             | 33,012           | 154,292            | 42,947            | 230,251         | 374,158,542        |
| Employment                    | 3                | 6                  | 1                 | 10              | 16,250             |
| State Taxes (\$)              |                  |                    |                   | 13,478          | 21,902,551         |
| Local Taxes <sup>1</sup> (\$) |                  |                    |                   | 5,989           | 9,732,801          |
| Sum Taxes <sup>1</sup> (\$)   |                  |                    |                   | 19,468          | 31,635,352         |

<sup>1</sup>Excludes farm property taxes.

Table 6. Georgia Cotton Farming: Annual Economic Benefits to the U.S.

|                                     | Direct<br>Effect | Indirect<br>Effect | Induced<br>Effect | Total<br>Effect | Aggregate<br>Total |
|-------------------------------------|------------------|--------------------|-------------------|-----------------|--------------------|
| Output (\$)                         | 460,600          | 559,777            | 396,358           | 1,416,735       | 2,302,195,073      |
| Labor Income (\$)                   | 33,012           | 235,551            | 130,055           | 398,619         | 647,755,504        |
| Employment                          | 3                | 8                  | 3                 | 14              | 22,750             |
| Federal Taxes (\$)                  |                  |                    |                   | 78,894          | 128,203,147        |
| State/Local Taxes <sup>1</sup> (\$) |                  |                    |                   | 47,151          | 76,620,904         |
| Sum Taxes <sup>1</sup> (\$)         |                  |                    |                   | 126,046         | 204,824,051        |

<sup>1</sup>Excludes farm property taxes.