

***The Economic Impact of RAFI-USA's
Tobacco Communities Reinvestment Fund
since 2008***

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May 2011

About The Researcher

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Executive Summary

Beginning with the 2008-09 program year, the Rural Advancement Foundation International has adopted a statewide orientation in its grant-making activities. Since then, its Tobacco Communities Reinvestment Fund (TCRF) has awarded 367 grants to farms, farm enterprises, and community projects throughout rural North Carolina. The total amount awarded is nearly \$3.6 million, implying an average award of \$9,748. In this study, I calculate the economic impact of the TCRF in the three most recent program years.

The economic impact of the TCRF has two components, an investment impact resulting from grantees' spending on new equipment, buildings, etc.; and an operational impact resulting from the expansion of grantees' farm operations.

I calculate the total economic impact of the TCRF on North Carolina's "final demand" to be between \$101 million and \$102 million in the 2008-09 program year, between \$301 million and \$303 million in the 2009-10 program year, and between \$330 million and \$335 million in the 2010-11 program year. This can be expressed in terms of jobs as well. The TCRF supported the creation of between 578 and 583 new jobs in 2008-09, between 1,708 and 1,721 new jobs in 2009-10, and between 1,861 and 1,890 new jobs in 2010-11. In the three years analyzed for this report, the TCRF created or induced the creation of over 4,100 new jobs in North Carolina.

1. Introduction

North Carolina's Rural Advancement Foundation International-USA has awarded grants to farms and farm enterprises since the late 1990s, soon after the Master Settlement Agreement changed the face of the American tobacco industry and affected a large swath of North Carolina's agricultural sector. RAFI-USA's Tobacco Communities Reinvestment Fund (TCRF) was created to reinvest in North Carolina agriculture and in particular to address dislocations among the state's farmers.

The TCRF, which is supported by a grant from the North Carolina Tobacco Trust Fund Commission, focuses on building capacity among the state's farmers and helping them diversify their operations and develop new products and markets. Grants are made in amounts up to \$10,000 for individual producers and \$30,000 for community projects. RAFI-USA usually requires a degree of cost-sharing by grantees, so its grants do not normally fund the entire proposed project.

Beginning with the 2008-09 program year, the TCRF went statewide. Awards are made in four regions: Coastal, Central, Western Piedmont, and Western North Carolina. Since its statewide reorientation, the TCRF has made a total of 367 grants, totaling nearly \$3.6 million. The average award is \$9,748, which includes both producer and community grants. Of the 367 grants, 89% have been awarded to individual producers.

There are undoubtedly far-reaching social and economic effects of a rural grant program like the TCRF, including building community cohesion and providing rural populations with options other than moving to an urban area. In addition, each of the capital projects funded by the TCRF has the potential to become a large business in the

future. Such effects are either hard to measure or speculative, and therefore this study focuses on the measurable and more tangible metric of *economic impact*.

The TCRF is a part of the rural economy in that it injects funding for new projects. Its grantees make purchases and employ people, and that mercantile activity generates additional value, as each person hired or dollar spent generates a ripple effect of additional hiring and spending in the local economy. In the regional-economics literature, these ripples are referred to as *multiplier effects*, and they are the focus of this economic-impact analysis (EIA). This study has measured the various multiplier effects of the operations of the TCRF in three recent program years.

2. Methodology

An EIA takes a specified level of initial economic activity, expressed in terms of job creation, direct revenue, or direct expenditures, and calculates the short-run effects of that activity on a specified regional economy. The initial activity generates additional spending and employment in the region, which are calculated by tracing the linkages between the economic sector in which the initial activity takes place and all other sectors. In this report, I express the economic impacts of the Tobacco Communities Reinvestment Fund in terms of final demand (comparable to aggregate gross sales revenues) and employment.

Economic impacts are categorized as follows:

- Direct effect: The number of people directly employed, or the amount of money directly spent, by TCRF grantees.
- Indirect effect: The employment or spending generated by businesses that trade with TCRF grantees.
- Induced effect: The employment or spending generated by businesses serving households of employees of TCRF grantees.

The “direct effect” is another term for the initial economic activity, which in this study is either the giving of a grant or the creation (by a grantee) of a new job. The direct effect generates the indirect and induced effects, i.e. the multiplier effects. The sum of direct, indirect, and induced effects is the economic impact.

TCRF grants generate economic impacts along two separate avenues. First, they involve investments in equipment and structures. Second, they expand farm operations and hence farm income. This is reflected in grantees’ expectation of increased hiring resulting from the increased capacity funded by the grants. In this study, I assume that the increase in operations occurs in the same year in which the grant is awarded. The expanded operations presumably persist for years, but for purposes of this study I calculate the impact in the grant year only.

The analysis in this report was conducted using the IMPLAN (for “impact planning”) software in conjunction with regional economic data produced by Minnesota IMPLAN Group, Inc.¹ Data on TCRF grants and grantees were provided by RAFI-USA.

3. TCRF Grants

The program’s goal is to support innovative, replicable ideas of entrepreneurial farmers, so there is no “typical” project. Some grants are used to purchase equipment, some to purchase building materials, and some simply to operate the grantee’s farm at an expanded level. I consulted project descriptions provided to me by RAFI, and to each of the 367 grants I assign an “industry,” or more accurately an IMPLAN industry sector.

¹ The data are from 2009, the latest year for which IMPLAN data are available.

Table 3.1 aggregates some of these sectors, resulting in broader descriptions of funded activities over the three years of statewide TCRF grants.

Table 3.1: TCRF Grants since 2008-09, by Type

Type of activity	Number	Percent
Agriculture and support activities	36	9.8%
Construction or purchase of buildings	13	3.5%
Farm machinery and equipment	156	42.5%
Other machinery and transportation	22	6.0%
Building and garden materials	108	29.4%
Marketing and professional services	32	8.7%
Total	367	100.0%

Source: RAFI, analysis by the author

For example, “Marketing and professional services” corresponds to IMPLAN sectors 368 (accounting and bookkeeping), 369 (architecture and engineering), and 377 (advertising and related), while “Farm machinery and equipment” corresponds to IMPLAN sector 203 alone. The 367 grants are spread across 21 different IMPLAN sectors, either as commodities purchased or industries changed.²

According to Table 3.1, seven of every 10 grants funded purchases of either farm machinery/equipment or building supplies (e.g. to put up a greenhouse or vegetable stand). A small number of projects appeared to hire a builder. Nearly 10% of the grants expanded farm operations, which implies that farming was itself the funded activity; and 6% were to obtain other kinds of machinery, mostly related to food manufacturing.

² Many grants pay for more than one activity, e.g. a piece of equipment and a marketing plan. Because I do not know the intra-grant breakdown, I base my assignment on what appears to be the primary activity in each project.

Table 3.2 breaks the data down by grant amount and program year:

Table 3.2: TCRF Grants since 2008-09, by Year

Year	Number	(L) Amount	Cost Share	(U) Total	Share / Grant
2008-09	67	\$ 456,646	\$ 503,879	\$ 960,525	110%
2009-10	119	\$1,190,513	\$1,482,051	\$2,672,563	124%
2010-11	181	\$1,930,201	\$3,515,030	\$5,445,231	182%
Total	367	\$3,577,359	\$5,500,960	\$9,078,319	154%

Source: RAFI, analysis by the author

An economic-impact analysis can reasonably include other spending as direct spending, if the other spending would not have taken place in the absence of the entity being analyzed. In Table 3.2, grantees matched well more than a dollar-for-dollar over the three years. Should the direct impact over those three years be the \$3.577 million in column L or the \$9.078 million in column U? That is, should it be the grants alone or grantees' total spending on their projects? Would those projects have proceeded in the absence of financial support from RAFI? Firm answers would be obtainable only by interviewing all 367 grant recipients, so I treat the grant-only and total-spending figures as lower and upper bounds (hence columns "L" and "U") of the direct impact of this analysis. This essentially allows the reader to decide whether to include grantees' cost-shares in the analysis.

The preceding discussion addresses the investment component of TCRF grants. There is also an operational component in which the increase in farm capacity allows grantees to expand operations and increase farm income. RAFI asks grantees how many jobs they expect to create as a result of the grant (it also does follow-up work to confirm these figures). Table 3.3 outlines the employment data related to TCRF grants:

Table 3.3: Projected Employment Resulting from TCRF Grants

Year	Jobs	Agriculture & Support Activities	Difference
2008-09	188	13	175
2009-10	531	15	516
2010-11	578	19	559
Total	1,297		1,250

Source: RAFI, analysis by the author

The column “Agriculture and support activities” corresponds to the row in Table 3.1. Those grants do not involve a capital investment, hence they fund farming activities directly. As a result, the grant amount already captures the operational impact, and consequently I subtract these jobs from the calculation of the operational impacts in order to avoid double-counting. The rightmost column of Table 3.3 has the number of jobs used for that calculation.

4. The Impact Region

An EIA must specify a region in which to measure the economic impacts. The impact region for this study is the state of North Carolina. Table 4.1 provides some vital statistics for the state in 2009, via the IMPLAN data system:

Table 4.1: Regional Indicators for North Carolina

Indicator	Value
Area (square miles)	48,718
Population	9,380,884
Employment	5,178,695
Number of Households	3,760,969
Total Personal Income (millions)	\$323,204
Average Income per Household	\$85,936

Source: IMPLAN data

After years of low unemployment in the 1990s, North Carolina experienced higher rates in the wake of the 2001 recession, and then a dramatic increase in unemployment rates in 2008, when the recession that started in December 2007 deepened in the wake of the financial crisis. The following table illustrates the recent unemployment picture in the state.

Table 4.2: Unemployment Rates (%)

Year	N.C.	U.S.
2000	3.7	4.0
2001	5.6	4.7
2002	6.6	5.8
2003	6.5	6.0
2004	5.5	5.5
2005	5.3	5.1
2006	4.8	4.6
2007	4.7	4.6
2008	6.2	5.8
2009	10.8	9.3
2010	10.6	9.6

Source: North Carolina Employment Security Commission

The North Carolina rate was a seasonally adjusted 9.7% in March 2011.

5. The Impact of TCRF

As noted above, there are two avenues of economic impact: an investment impact reflecting the direct spending of funds received from RAFI through its TCRF grants; and an operational impact reflecting the increase in farm employment resulting from grantees' investments. The total economic impact of the TCRF program is the sum of these two sub-impacts.

Investment impact: Table 3.2 provides a concise outline of this impact calculation. For each year, I allocate the values in column L to specific IMPLAN sectors

to serve as the lower bound for the direct impact; the values in column U serve as the upper bound. Table 5.1 summarizes the results of the analysis for program year 2008-09 (all monetary figures in this report are expressed in 2011 dollars):

Table 5.1: Investment Impacts of TCRF, 2008-09

Impact	Bound	Direct	Indirect	Induced	Total
Final demand (\$ thousands)	Lower	333.3	97.4	126.0	556.7
	Upper	707.9	207.4	263.1	1,178.5
Employment (jobs)	Lower	2.2	0.7	1.1	4.0
	Upper	4.5	1.5	2.3	8.3

Source: IMPLAN analysis by the author

The economic impact in terms of final demand (or output) for the 2008-09 program year was between \$556,700 and \$1.178 million when expressed in 2011 dollars. The employment impact from grantees’ investments made this year was between 4.0 and 8.3 additional jobs throughout the state.

Table 5.1 reveals an important and often misunderstood fact about economic-impact analysis. The dollar amount of grants awarded in 2008-09 was roughly \$456,600, which at first blush makes it hard to see how the lower-bound direct effect of \$333,300 can be correct. Should not that number match the dollar amount of grants? As it happens, it should not, because of the geography of economic-impact analysis. Few products we buy originate entirely within our county or even our state. The local content can vary from nearly zero for a piece of imported machinery to nearly 100% for a locally provided service. From the standpoint of this EIA, all value generated outside North Carolina is a leakage from the model.

If a piece of equipment made in Virginia is purchased from a dealer in rural North Carolina, a portion of that expenditure stays in North Carolina. But the rest leaks to Virginia. Table 5.1 shows that in 2008-09, roughly \$123,300 (which equals the grant

total of \$456,600 minus the direct effect of \$333,300) leaked out of North Carolina. The remaining \$333,300 was able to generate spillovers within the North Carolina economy.

The implied multiplier on final demand in Table 5.1 is either 1.66 or 1.67, for the upper and lower bounds, respectively. This is obtained by dividing the total impact by the direct impact in each row. Every dollar of grants (that didn't leak outside the state) generated multiplier effects of another 66 or 67 cents on top of that. However, that multiplier looks less robust if the total impact on the first line (\$556,700) is divided by the total grant amount (\$456,600). The grant amount is what is of most interest to RAFI. But if these projects would not have been possible without TCRF funding, then it is reasonable to calculate a multiplier by dividing the upper-bound total impact (\$1.178 million) by the total dollar amount of grants for that year. This yields a multiplier of 2.58, which is quite large. It implies that every dollar of TCRF grants in 2008-09 generated another \$1.58 of economic activity in North Carolina, even accounting for leakages from the state.

The economic impacts for 2009-10 are summarized in the following table:

Table 5.2: Investment Impacts of TCRF, 2009-10

Impact	Bound	Direct	Indirect	Induced	Total
Final demand (\$ thousands)	Lower	950.5	282.8	316.4	1,549.7
	Upper	2,159.3	648.0	728.5	3,535.8
Employment (jobs)	Lower	5.3	1.9	2.8	10.0
	Upper	12.4	4.4	6.4	23.1

Source: IMPLAN analysis by the author

Again, we see evidence of leakage, in that the lower-bound direct effect on final demand is \$950,500, or about \$240,000 lower than the dollar amount of grants awarded in 2009-10. As above, however, if TCRF funding was essential for these projects, then the upper bound total impact of \$3.5 million can be divided by the grant total of roughly \$1.2

million to get a fiscal multiplier of 2.97. The employment impact is between 10 and 23 jobs statewide.

Finally, Table 5.3 presents the results for 2010-11:

Table 5.3: Investment Impacts of TCRF, 2010-11

Impact	Bound	Direct	Indirect	Induced	Total
Final demand (\$ thousands)	Lower	1,696.2	527.9	599.6	2,823.7
	Upper	4,775.1	1,470.0	1,548.5	7,793.6
Employment (jobs)	Lower	9.7	3.7	5.2	18.6
	Upper	24.9	9.9	13.5	48.4

Source: IMPLAN analysis by the author

According to this, the 2010-11 program is generating a final-demand impact of between \$2.8 million and \$7.8 million, and an employment impact of between 19 and 48 jobs. Again assuming that the funded projects were impossible without TCRF funding, the resulting fiscal multiplier for 2010-11 is a whopping 4.04. Even with leakage, the presence of cost-sharing implies that each grant dollar paid out by RAFI generated over \$3 in additional economic activity.

Operational impact: This impact calculation is based on the number of new jobs created by farmers once the grant-funded investment expand their farm’s earning capacity. For this, I assign the self-reported number of jobs to the appropriate agricultural sector in IMPLAN. Some of hiring corresponds to grants whose project descriptions fail to specify the type of farming, and those I allocate across IMPLAN sectors in a weighted average. The results of this analysis appear on the following page:

Table 5.4: Operational Impacts of TCRF, by Year

Year	Impact	Direct	Indirect	Induced	Total
2008-09	Final demand (\$ thousands)	50,102.6	24,121.1	26,424.8	100,648.5
	Employment (jobs)	175.0	166.8	232.4	574.2
2009-10	Final demand (\$ thousands)	150,152.5	72,162.7	77,363.2	299,678.5
	Employment (jobs)	516.0	501.6	680.3	1,697.9
2010-11	Final demand (\$ thousands)	165,382.0	79,402.7	82,883.8	327,668.5
	Employment (jobs)	559.0	554.1	728.8	1,841.9

Source: IMPLAN analysis by the author

Note that the direct employment effects in this table (e.g. 175 jobs in 2008-09) correspond to the rightmost column in Table 3.3. According to these calculations, the fiscal impacts increased as the scope of the TCRF widened, from \$100.6 million in 2008-09 to \$327.7 million in 2010-11. The employment impacts have also grown significantly, rising from 574 jobs in 2008-09 to 1,842 jobs in 2010-11. The implied employment multipliers are striking, at about 3.3 for each year. The interpretation is that for every 100 farm jobs created by the grant program, another 230 are created throughout the state as spillover effects.

6. Summary

Table 6.1 combines the investment and operational impacts that are calculated in this report:

Table 6.1: Summary of Economic Impacts

Program Year	Final Demand (\$ thousand)		Employment (jobs)	
	Lower	Upper	Lower	Upper
2008-09	101,205	101,827	578	583
2009-10	301,228	303,214	1,708	1,721
2010-11	330,492	335,462	1,861	1,890
Total	732,925	740,503	4,147	4,194

Source: IMPLAN analysis by the author

The operational impacts are clearly much bigger than the investment impacts, and as a result the distinction between upper and lower bounds of the latter become less important when the two impacts are added together.

As a rule, one should not simply add up dollar amounts over time. It is generally preferable to calculate a present value that takes into account interest rates and the time value of money. But because real interest rates have been close to zero, simple addition is a sensible first approximation to the true present value. Consequently, the economic impact of the TCRF grant program on the state of North Carolina over the last three years is between \$733 million and \$741 million (expressed in 2011 dollars). These figures no doubt understate the true impact, because they track the operational impact of each year's grants for only that one year, whereas expanding farm capacity should increase farm incomes for years.

Jobs can also not be added across years, because a two jobs last year and three jobs this year does not necessarily imply five jobs. But this is a legitimate calculation in this table because the figures represent new jobs created. In the last three years, the TCRF has created between 4,147 and 4,194 new jobs in North Carolina. In March there were 435,000 unemployed people in the state, so the TCRF has not single-handedly solved the unemployment problem. But it has made a good start and has done it in the rural counties of the state, which have been especially hard-hit by the recession and by North Carolina's ongoing structural changes.