

Assessing Economic Impacts of Agricultural Cooperatives

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Abstract

Agricultural cooperatives are different than other types of business because they exist to provide value to their members through collective marketing and/or collective purchasing opportunities. Cash patronage and equity payments and single-level taxation are other unique aspects of cooperative businesses. This paper describes the development of an economic impact model incorporating these business characteristics. The largest component of most agricultural cooperatives' revenue is a pass-through of agricultural commodities. Many supply sales are a backward link in the commodity production, so the commodity sectors in IMPLAN (MIG 2004, 2012) are modified to avoid double counting of inputs purchased under the cooperatives' collective marketing purpose while still accounting for sales of household purchases, such as garden supplies at retail value. Cooperative status is simulated by modifying the income sources in the cooperative model to limit payments to investors and multi-level taxation (Folsom 2003). A portion of other property income, which is subject to corporate-level taxation and revenue leakages, is specified as proprietors' income in IMPLAN's agricultural commodity sectors. The non-cooperative model follows the default IMPLAN distribution of proprietors' income and other property income. The difference between the two models estimates the value of the cooperative status. Due to sustained demand by individual cooperatives, an economic impact program has been standardized and implemented across Texas.

Assessing the economic impact of cooperatives

1. Introduction

Agriculture is an important component of the Texas economy. While production agriculture makes up less than percent of the state's contribution to GDP, production underpins the state's larger 8.9 percent contribution (McCorkle, et al. 2012). Most commodity producers are members of at least one agricultural cooperative.

Cooperatives are formed to pool the marketing and/or purchasing power of individual farmers. However, as farms have gotten bigger and technology has allowed farmers to source inputs globally, cooperatives have faced increased competition from other firms. At the same time, cooperatives' structure and value are often misunderstood. Cooperatives are member-owned businesses that return profits to members through patronage payments and dividends. Members also have a say in the governance of the organization. Cooperatives receive tax benefits such as single level taxation as opposed to paying corporate tax.

Cooperative leaders have recognized that if they fail to explain their benefits to the public, they may lose both market power and political sway (Park, Baros, and Dudensing 2009), particularly as agriculture's share of the economy decreases (McCorkle, et al. 2012) and the membership of the state and federal legislatures shifts to urban areas. In 2007, the Texas Agricultural Cooperative Council (TACC) approached the Roy B. Davis Cooperative Program of the Texas A&M AgriLife Extension Service to conduct an economic impact analysis of the agricultural cooperatives in Texas. Initially, locally-owned cooperatives were surveyed to determine economic impact across the state. The study found that 96 participating cooperatives generated 2,000 jobs and \$232.4 million in GDP contribution to the Texas economy in 2007 (Park, Baros, and Dudensing 2009). Regional cooperatives were included in a subsequent survey. In 2011, individual cooperatives began requesting economic impact analysis to communicate their value locally at membership meetings and to obtain grant funding from local community and economic development corporations.

This paper describes the methods used to analyze the economic impact of cooperatives relative to corporations and other non-cooperative firms in the same industry and the creation of a standardized method to provide impact estimates to cooperatives through the state Extension service. The paper is organized as follows: Section 2 includes a review of the literature surrounding economic impacts of cooperatives, Section 3 discusses the methods for assessing economic impact of cooperatives, Section 4 describes the process for conducting standardized impact analyses of local cooperatives through Extension and provides an example of a cooperative impact analysis, and Section 5 concludes.

2. Literature Review

Most previous studies of cooperatives were conducted in the upper Midwest. Coon and Leistritz (2001) surveyed North Dakota cooperatives. They averaged expenditures by category and cooperative type (agricultural processing, credit, etc.) for the 70 respondents and extrapolated the averages across the all the state's cooperatives by type. They modeled cooperatives' extrapolated expenditures using the North Dakota Input-Output model. They found that agricultural processing cooperatives had the largest expenditures, primarily because of the large quantity of raw commodity purchased within the state. The economic impact of all cooperatives was \$6.1 billion, including \$2.2 in personal income.

Zeuli et al. (2003) surveyed 798 cooperatives in Wisconsin and used employment, income, and cash patronage refund data in a social accounting matrix (SAM) model to estimate impacts of the state's cooperatives. They found that agricultural marketing cooperatives, the largest group of cooperatives, supported \$263.1 million in income and almost 8,300 jobs across the economy. Farm supply and service cooperatives supported \$254.1 million in income and almost 8,200 jobs in Wisconsin. Cash patronage refunds and dividends paid by all types of cooperatives (not just agriculture and farm supply) contributed 4,600 jobs, more than \$114 in income, and more than \$500 million in GDP (gross domestic product or value-added).

The SAM model was not adjusted to reflect cooperative status. In fact, the researchers noted that the study did not differentiate cooperatives from other organizational structures and thus did not account for unique relationships between the cooperative and the regional economy, including the potential for cooperatives to purchase a higher share of inputs locally.

Zeuli et al. noted that economic impact analysis is only one measure of an enterprise and fails to capture other aspects of cooperative benefit, including the formation of leadership (human capital). The study also did not measure the savings that cooperatives afford their members or how those savings might be spent in the local economy. The study did report the value of taxes paid by cooperatives.

Folsom (2003) noted that research including the two previously reviewed studies assume that if the cooperative did not exist, no economic activity would ensue. Thus, Folsom accounted not only for the value of economic activity but also the portion of that activity directly attributable to cooperative status. He attributed cooperatives' economic contribution to single-level (non-corporate) taxation and the ability to retain economic benefits locally in the form of profits (patronage) and dividends paid within the region as opposed to corporate dividends paid to shareholders outside the region. He accounted for single-level taxation and local ownership in the IMPLAN model by treating all other property income as proprietors income. Other property income in the IMPLAN model includes rents and dividends, which have leakages outside the study region, whereas proprietors income is generally paid within the local economy. A second model used default IMPLAN other property income and proprietors income and served as a baseline to measure the value of cooperative status.

Folsom estimated a contribution of \$10.9 billion in gross sales and more than 79,000 jobs from 311 responding Minnesota cooperatives and 185 credit unions. Local ownership and single-level taxation accounted for \$600 million. The 189 responding agricultural cooperatives contributed \$8.4 billion in sales. Folsom estimated that all of the state's agricultural cooperatives contributed \$17.3 billion in gross sales with \$647 million attributable to their cooperative status.

Folsom also noted that IMPLAN has been used to measure the impact of single cooperatives. However, none of the preceding studies discussed the possibility of double counting sales if a commodity is marketed and inputs are supplied. For example, Coon and Leistriz (2001) identified 100 farm supply cooperatives and 110 grain handling cooperatives among North Dakota's 405 cooperatives in 2004. The implicit assumption relevant to impact analysis is that that grain handling cooperatives do not sell inputs to grain production. While this may be appropriate in North Dakota, the assumption does not hold in Texas where 28 of 34 locally-owned cooperatives with grain sales in 2007 also had supply sales (Park, Baros, and Dudensing 2009).

3. Methods

For the initial study of local cooperatives, researchers designed a questionnaire that was promoted by the Texas Agricultural Cooperative Council (TACC) to its members. The questionnaire (Appendix A) had

two themes: questions related to economic contribution and 2) questions about its membership. Cooperative managers were asked to provide information about their sales by category.

Questionnaires were sent to 105 locally-owned cooperatives, but nine were not currently operating and declined to participate in the study. The other 96 cooperatives responded, providing a nearly 100 percent response rate, which was possible through the efforts of TACC leadership. Categorized expenditures for each cooperative were summed because all locally-owned cooperatives were represented and there was no need to extrapolate results to a larger population.

The direct sales were characterized into retail operations and total sales value. Retail operations included the sale of fuel, fertilizer, farm supply, garden supply, tire services, etc. Overall sales included the value of the commodities that passed through the cooperatives. For example, cooperatives reported the value of wheat sold or cotton ginned, but the cooperatives themselves generated only storage, handling, and ginning fees and in some cases a sales margin; most of the value of the commodity sale was due to production by cooperative members. Furthermore, adding the value of commodities and the value of inputs would result in double counting of sales in an input-output model.

Sales by expenditures category were modeled using IMPLAN (MIG 2004), which models backward linkages in the economy. For example, the sale of cotton results in sales of seed, fertilizer, pesticide, diesel fuel, labor, etc. Input suppliers such as seed dealers then purchase inputs from other businesses (indirect effects), and laborers spend their income to purchase supplies such as food and clothing (induced effects). While cooperative's seed, fuel, and fertilizer sales represented revenue distinct from that of commodity sales, including both final commodity sales and input sales in the IMPLAN model would result in double-counting of sales within the regional economy. To prevent double-counting, the value of seed, fuel, and fertilizer needed based on IMPLAN use coefficients was estimated and subtracted from the reported sales value of each of inputs. The value of commodity sales and the remaining value of the retail sales (including the full value of other sales categories) were estimated

Following Folsom (2003), cooperative status was modeled by converting other property income to proprietors income in the IMPLAN model. Because income is retained among agricultural producers participating in the cooperative, only the income distributions of agricultural commodity sectors were adjusted. For most crops, including cotton, the default IMPLAN value for other property income was replaced with a "0" value and added to the default proprietors income. Researchers determined that for Texas grain production, it was more appropriate to treat only half of other property income as proprietors income to recognize the significant value of income that accrued to absentee landlords. Models run with default IMPLAN values for other property income and proprietors income served as the baseline to determine the value of cooperative status based on local profits and single-level taxation. Four IMPLAN scenarios were created: a cooperative model and a default model for the retail operations case and the total sales case. One reason for not modeling patronage and dividends themselves is that not all organizations made payments; some cooperatives retained the funds to support expansion or other operations. While value was generated by the cooperative, it would not be captured by payments.

Texas locally-owned agricultural cooperatives were found to have \$362 million in retail operations contributing \$232 million to GDP and 2,000 jobs across the state's economy. When the value of commodities sold was included in the analysis (less the cost of production inputs), the cooperatives contributed \$826 million and almost 20,900 full-and part-time jobs, and value of the 96 respondents' cooperative status was \$86 million in GDP and almost 1,200 Texas jobs. The results of this study are detailed in Park, Baros, and Dudensing (2009). Result summary tables are provided in Appendix B. A second study was completed using the same methodology but including regional cooperatives.

4. Standardized Impact Analysis for Local Cooperatives

Following participation in the state-level impact studies, cooperatives began to request analyses of their individual impacts. Initially, Extension economists conducted full analyses similar to the state-level studies using current IMPLAN data (MIG 2012), providing multi-page reports with multiple study areas (e.g., immediate county and larger service territory) as a free service. However, by late 2012 several factors required the program to be formalized and simplified:

- The volume of reports requested had tripled.
- Extension personnel had to communicate with cooperative managers by e-mail and/or telephone several times to get the information needed for the analysis.
- Cooperative managers often provided one or more years' audits, and Extension specialists sifted through the audits (which are different for each organization) to determine categorized sales.
- Managers frequently requested reports with a short turn-around for annual meetings.
- Annual meetings tended to be clustered within short time spans in the spring and fall.
- A several page report and several hours of work were being boiled down to a bullet or two on a placemat at the meetings.

Extension specialists created a data entry form for managers to provide categorized sales, service territory, number of employees, and year of data (Appendix C). Specialists also built an Excel template to simplify data entry, including adjustments to other property income and proprietors income and compensation for input use to avoid double counting (Appendix D). The methodology for analyzing the impact of the individual cooperative remains the same as described in Section 3 except that cooperatives often employ fewer people on a full and part-time basis than the IMPLAN model suggests so employment and wages are modified in the retail operations sectors. Results are reported on a standardized one-page MS Word template (Appendix E).

While cooperative managers were interested in the value of cooperative status, they were reporting the larger value of their retail operations and/or total sales on their placemats. Thus, the spreadsheet template is set up to calculate the difference between cooperative status and IMPLAN default models. However, that difference is not provided in the report, and the default models need not be run.

Only one region, usually the service territory, is modeled. In addition to saving time on the analysis, limiting the analysis to one region avoids impacts in the sub-region being greater than impacts in the full region, which can occur (and has) when a ZIP-code level region has a lower share of income leakage than does a county-level region.

5. Conclusion

The formalized process has simplified and shortened the analysis and reporting process for Extension personnel. The data collection process is also easier for both Extension specialists and cooperative managers, although data still often needs clarification. However, less information is provided than in the previous, lengthier reports.

As noted by Zeuli et al. (2003), the methods used in this study fail to capture the savings to members or the local benefit of improved member profitability. Neither the state-level study nor the individual analyses report the value of taxes paid by the cooperatives, although evidence in other Texas projects has indicated that these taxes are substantial; cooperatives often have one of the highest property tax levies in their home county (although this benefits primarily one county--and one school district--and not the

overall service territory). Furthermore, the Texas studies do not capture the important role that many cooperatives play in fostering leadership, offering scholarships, and promoting a sense of community.

References

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Appendix

Reprint of the TACC Survey

AN ASSESSMENT OF THE LOCAL FARMER COOPERATIVE IMPACT IN TEXAS **By the Texas Agricultural Cooperative Council**

The Texas Agricultural Cooperative Council is coordinating a member-driven initiative to collect data and develop a profile – in aggregate form – to tell a more accurate story of the economic and rural community impact farmer – owned and controlled businesses have in Texas and in regions of the state. Today, there is no such information. In the end, we envision producing a brochure describing this collective information and what it means to agriculture, cooperatives, and rural Texas. As an example, we arbitrarily hear that co-ops handle nearly 65% of the cotton south of IH-10 and in West Texas about 55% of the crop in that region. We hope to eliminate guesstimates with this information and at the same time, allow industry representatives to provide more timely services to cooperatives.

1. List the counties where your co-op conducts business:
2. Give a definition of the radius of your membership from your headquarters (i.e., 25 miles south, 50 miles east, 10 miles north, and 20 miles west):

_____ miles north	_____ miles east
_____ miles south	_____ miles west

3. Location of branch locations (if any):
4. Number in the membership:

_____	stockholders
_____	active members
_____	non-members

5. Approximate number of acres your co-op services:

	ROW CROP	_____ PASTURELAND
_____	Cotton	
_____	Grain Sorghum	
_____	Corn	
_____	Wheat	
_____	Other: _____	
_____	Other: _____	

6. Year the co-op was chartered: _____

7. Co-op fiscal year end: _____
8. Number of co-op employees: _____ full-time _____ part-time / seasonal (at peak season)
9. Regarding labor in your co-op, what is your most difficult task
(Place an A, B, or C priority next to each blank with "A" denoting "most difficult".
Do not rank the listing, but instead rate each one):
- ___ finding people that can run a gin
 ___ finding help that can run a grain elevator
 ___ finding CDL drivers
 ___ finding drug free, clean – driving record personnel
 ___ finding good office managers / bookkeepers / accountants
 ___ other: _____
 ___ other: _____
10. One of the keys to this survey is the economic impact a co-op has on a given community.
With this said:
What are your total employee compensation expenses (salaries, insurance, benefits)?
Approximately what percent of your total co-op expenses are total employee compensation expense?
11. Tax rank contributor in the community (i.e., largest, top 5, etc.) _____
12. Usual monthly date of board meetings (i.e., 2nd Tuesday of every month):

13. Usual date of co-op annual meeting (i.e., last Thursday in April):

14. Size of the co-op board (i.e., 7 members): _____
15. Cost of co-op membership: _____
16. Three year average: _____ gross sales
(complete those applicable to your operation) _____ bales ginned
_____ bushels handled
17. Total equity invested by members into the co-op: _____
18. Length of oldest stock (in years): _____

APPENDIX

19. What co-op services are you in and what are the percent overall sales of each:

SERVICE	APPROXIMATE % OF OVERALL SALES
Cotton Gin	_____
Grain Elevator	_____
Fertilizer / Chemicals	_____
Fuel	_____
Feed and Seed	_____
Farm Supply (parts, tools, fencing, lubricants, plows, bolts, clothes, etc.)	_____
Nursery / Home & Garden	_____
Other: _____	_____
Other: _____	_____

Name of Co-op _____



Appendix B: Summary Tables from Park, Baros, and Dudensing (2009).

Table 1. Contribution from Retail Operations, 2007.

	Output (Sales)	Value-Added	Income	Employment
Direct	\$362M	\$96M	\$46M	769
Indirect	\$203M	\$99M	\$53M	717
Induced	<u>\$66M</u>	<u>\$38M</u>	<u>\$20M</u>	<u>515</u>
Total	\$631M	\$232M	\$117M	2,001

Table 2. Total Contribution, Including Commodity Sales, 2007.

	Output (Sales)	Value-Added	Income	Employment
Direct	\$985M	\$388M	\$336M	15,522
Indirect	\$468M	\$252M	\$128M	2,815
Induced	<u>\$327M</u>	<u>\$186M</u>	<u>\$100M</u>	<u>2,542</u>
Total	\$1,781M	\$826M	\$564M	20,879

Table 3. Contribution of Cooperative Status, including Member Commodity Sales.

Output (Sales)	Value-Added	Income	Employment
\$151M	\$86M	\$255M	1,172



Economic Contribution Statement Request

This form is for the request of a simplified statement on the economic contribution of your cooperative. This statement is suitable for communication with members in a newsletter or annual meeting. Please allow 2 weeks for completion of your statement. This service is provided free of charge to Texas cooperatives. For a more complex statement or for one required for a loan or grant, a fee will be assessed and a greater lead time will be required.

Name of cooperative:

Counties in service area:
Please list all counties that you serve, including those outside of Texas.

Year of data provided:

Total number of employees:

Total number of members:

Total annual sales:

← Please include a full time equivalent of part time employees in your calculation.

Grain sales:

Cotton sales:

Fuel:

Chemicals:

Fertilizer:

Feed:

Garden supply:

Retail farm supply:

Other (please specify):

Other (please specify):

Other (please specify):

Other (please specify):

← Combined category sales should equal **Total annual sales**. If you are uncertain where to account for some of your sales, go ahead and break them out into separate categories. It is easier for us to combine these later if needed.

Correspondence Information

Person submitting request:

Position:

Email:

Phone:

Return this completed form to:

Dr. John Park
Texas A&M AgriLife Extension Service
john.park@tamu.edu
Office: 979-845-8982
Fax: 979-845-0678

This service is provided through the Roy B. Davis Cooperative Management Program and the Community Economic Development group, both of Texas A&M AgriLife Extension Service.

Appendix D: Images of Excel Template for Cooperative Impact Analysis.

The screenshot displays the Microsoft Excel interface with the following data in the spreadsheet:

Row	Category	Value
1	Data from Co-op's Info Sheet	
2	Grain sales:	\$4,662,344
3	Cotton sales:	\$5,718,821
4	Fuel:	\$2,328,044
5	Chemicals:	\$464,940
6	Fertilizer:	\$962,372
7	Feed:	
8	Garden supply:	
9	Seed-Not on form	
10	Other (please specify): Trucking	\$426,200
11	Other (please specify): Tire, Battery & Auto	\$523,980
12	Other (please specify): Retail Farm Supply	\$1,137,725
13	Other (please specify):	
14		
15	Total	\$16,224,426
16	check	\$16,224,426 OK
17		
18	Retail Sales	\$5,843,261
19		
20	Production-Adjusted Retail Sales	\$14,301,113.15
21	check	\$14,301,113.15 OK
22		
23		
24		
25		
26		

Note in row 18: check that the summed rows are correct (i.e., supply sales and not another commodity)

Example Cooperative Template - Microsoft Excel

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Cooperative Adj Production Adj Results

Assessing the econo... Microsoft Excel - Eaa...

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Grain Sales

Proprietor Income \$91,629
 Other Property Income \$5,526,151

Adjusted²
 \$2,854,705
 \$2,763,076

Default¹
 \$296,982
 \$7,776,543

Adjusted²
 \$8,073,525
 \$0

Default¹
 \$296,982
 \$7,776,543

Proprietor Income \$296,982
 Other Property Income \$7,776,543

Adjusted²
 \$8,073,525
 \$0

Default¹
 \$296,982
 \$7,776,543

Cotton Sales

Proprietor Income \$296,982
 Other Property Income \$7,776,543

Adjusted²
 \$8,073,525
 \$0

Default¹
 \$296,982
 \$7,776,543

Adjusted²
 \$8,073,525
 \$0

Default¹
 \$296,982
 \$7,776,543

Proprietor Income \$296,982
 Other Property Income \$7,776,543

Adjusted²
 \$8,073,525
 \$0

Default¹
 \$296,982
 \$7,776,543

1-Copy default PI and OPI for the sector from IMPLAN model-Customize-Study Area Data
 2-For grain, half of OPI is rolled back into PI. For cotton or other crops, all OPI is rolled back into PI.
IMPLAN instructions:
 12 Make a copy of the IMPLAN model, save under a new name noting that the new model includes patronage adjustments.
 13 Enter the Adjusted PI and OPI values into IMPLAN model-Customer-Study Area Data for each commodity.
 14 You need to re-construct the model. Go to Options-Construct-Multipliers and rerun.
 16 Run the models (w/ and w/o patronage) for the retail operation and then for the grain and production-adjusted (grain + retail) case
 17 Enter the results in the top rows of data on the results sheet to the right.

Example Cooperative Template - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Acrobat Simetar

Clipboard Paste Cut Copy Format Painter

Font Calibri 11 A Bold Italic Underline

Alignment Wrap Text Merge & Center

Styles Conditional Formatting as Table Cell Cell Styles

Cells Insert Delete Format Insert Delete Format

Editing AutoSum Fill Clear Sort & Find & Filter Select

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Grain Sales					Cotton Sales										
2																
3		Default ¹	Adjusted ²			Default ¹	Adjusted ²									
4	Proprietor Income	\$91,629	\$2,854,705		Proprietor Income	\$256,982	\$8,073,525									
5	Other Property Income	\$5,526,151	\$2,763,076		Other Property Income	\$7,776,543	\$0									
6	check	5617780	5617780	OK	check	8073525	\$8,073,525	OK								
7																
8		1-Copy default PI and OPI for the sector from IMPLAN model-Customize-Study Area Data														
9		2-For grain, half of OPI is rolled back into PI. For cotton or other crops, all OPI is rolled back into PI.														
10		IMPLAN Instructions:														
11		12 Make a copy of the IMPLAN model, save under a new name noting that the new model includes patronage adjustments.														
12		13 Enter the Adjusted PI and OPI values into IMPLAN model-Customer-Study Area Data for each commodity.														
13		14 You need to re-construct the model. Go to Options-Construct-Multipliers and rerun.														
14		15														
15		16 Run the models (w/ and w/o patronage) for the retail operation and then for the grain and production-adjusted (grain + retail) case)														
16		17 Enter the results in the top rows of data on the results sheet to the right.														
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Economic Contribution of Example Cooperative

Four types of multiplier effects are reported in the contribution analyses. The *employment* contribution measures jobs attributable to the direct economic activity. Contribution to *labor income* measures the effect of final demand spending on the incomes of households in the region and indicates the benefit to local residents. The *value-added contribution* measures contribution to gross regional product and is a measure of regional welfare. *The output or gross sales contribution* measures economic activity (total spending) in the region. Labor income is a subset of value added which is part of output, so these contributions cannot be summed.

The Texas A&M AgriLife Extension Service’s Roy B. Davis Cooperative Management Program estimates that Example Cooperative’s \$5.8 million in supply sales contributed \$6.5 million in total output across its six-county service territory. Included in that output was \$1.1 million in value added (GDP contribution), \$339,600 in labor income and 25 full-and part-time jobs.

Table 1. Economic Contribution of Example Cooperative Sales to the Texas Service Area Economy

Impact Type	Output	Value Added	Labor Income	Employment
Direct Effect	\$5,843,300	\$725,700	\$169,500	20.0
Indirect Effect	\$483,100	\$257,400	\$114,300	2.8
Induced Effect	\$185,300	\$112,000	\$55,800	1.7
Total Effect	\$6,511,700	\$1,095,100	\$339,600	24.5

When members’ commodity production is included, the co-op’s total employment contribution is estimated at 391 jobs, and output is estimated at \$20.8 million, including \$7.6 million in value-added and \$4.4 million in labor income.

Table 2. Economic Contribution of Example Cooperative Sales to the Texas Service Area Economy —Including Member Grain and Cotton Sales

Impact Type	Output	Value Added	Labor Income	Employment
Direct Effect	\$14,301,100	\$3,842,400	\$2,746,500	338.8
Indirect Effect	\$4,152,100	\$2,276,500	\$927,900	29.9
Induced Effect	\$2,389,800	\$1,446,600	\$718,000	22.2
Total Effect	\$20,843,000	\$7,565,600	\$4,392,400	390.9