

THE IMPACT OF COLLECTIVE BARGAINING  
ON GROWER RETURNS AND PROCESSOR  
EFFICIENCY IN THE OHIO CONCORD GRAPE INDUSTRY

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Many potential economic benefits are hypothetically attributed to collective bargaining by farmers. A case study measured magnitudes and sources of pecuniary gains associated with voluntary collective bargaining in the grape industry. Results show positive integrative gains associated with price stability, modest distributive gains and no improved grower-handler coordinative efficiencies.

Keywords: Collective Bargaining, Marketing, Grapes

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INTRODUCTION

Interest in collective bargaining by farmers with the first handlers of their products over prices and other terms of trade has been evidenced for several years. Such interest is a general manifestation of the trend away from an "open market" agriculture to a system increasingly dominated by large-scale buyers and characterized by production contracts, private treaty sales and other forms of specification buying. This has resulted in a decline in the use of open, spot markets as the primary method of exchange and price negotiation. As a result, many have looked to collective bargaining as a means for improving the equity position of farmers in a system characterized by thin open markets, unbalanced market power and low returns to farmers.

This interest has generated a substantial body of literature, much of it authored by agricultural economists, that examines hypothetically the potential benefits and costs associated with collective bargaining by farmers (See Breimyer, Babb et al., Barr, Knutson, Shaffer and Torgerson, French, Shaffer, and Henderson, for examples). Much of this literature discusses at some length the nature and sources of economic gains that are potentially achievable, ad nauseum. These long lists of potential gains, however, can be categorized into two basic areas: distributive and integrative (sometimes referred to as "pain" and "gain", or "disruptive" and "facilitative"). The essential difference between these two categories is logical and straightforward: distributive gains are those

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that farmers achieve at a cost to someone else, such as out of the profits of handlers or higher consumer prices, while integrative gains are those that are achieved at a cost to no one, that is, they result from improved operating and coordinative efficiencies. It has been suggested that integrative gains may include such things as improved product quality, decreased price uncertainty, reduced product waste and improved seller-buyer coordination.

Unfortunately, the preponderance of literature contains little empirical evidence of the size (magnitude) or source (distributive vs. integrative) of economic gains that have actually been achieved through collective bargaining efforts by farmers. Yet, such evidence would appear to be rather important, particularly as input into the public policy debate over legislation to facilitate such collective action. Clearly, the ratio of distributive-to-integrative gains bulks upon the extent to which society at large benefits from such legislation, just as the actual magnitude of pecuniary gains realized by farmers bulks on their willingness to press for such legislation.

#### OBJECTIVES AND PROCEDURE

The purpose of our research was to examine the extent to which integrative and/or distributive gains have been achieved through the collective bargaining efforts of farmers. That is, we set forth to determine if farmers achieved any significant pecuniary gains as a result of collective bargaining and, if so, the magnitude and source(s) of these gains, that is, integrative or distributive.

We were intrigued not only by the scope and nature of pecuniary gains associated with farmer bargaining, but also by the task of developing a method by which such gains could realistically be measured. In order to accomplish our research goals, it was necessary to examine situations in which changes in pecuniary returns to members of a bargaining association could, first, be segmented into two categories: 1) those changes attributable to collective

bargaining, and 2) those occurring for other reasons, and second, to segment gains in the first case, i.e. those associated with collective bargaining, into the subcategories of distributive and integrative.

The case study approach was selected as the experimental design most likely to isolate the impact of bargaining on pecuniary returns to growers from changes not related to bargaining. The case selection criteria reflected this need. Thus, we looked for a situation in which a grower association was well established as the bargaining agent for growers selling to a given handler whose volume represented a relatively small share of the industry total. The rationale for these criteria is straightforward. If the association is successful in influencing price and other terms of exchange with a specific handler, but that handler's volume is small compared to the size of the industry, then any price gains achieved by the bargaining association for these growers would have relatively little influence on the overall industry price level. Therefore, pecuniary gains to growers associated with collective bargaining could be determined by measuring changes in the ratio of prices received by these growers to the average industry price. The variable R used to test this relationship could be constructed using the equation:

$$R_i = \frac{BP_i}{IP_i}$$

where:  $R_i$  = the test statistic, or relative returns to the subset of growers who sell to the case handler in the  $i$ th time period,

$BP_i$  = the average per unit price paid by the case handler to growers in the  $i$ th time period, and

$IP_i$  = the average per unit price received by all growers in the industry in the  $i$ th time period.

Changes in the test statistic,  $R_i$ , measures changes in pecuniary returns to growers selling to the handler with which the association bargains, relative to industry-wide returns. This becomes a proxy for pecuniary gains associated

with collective bargaining, exclusive of changes occurring due to shifts in supply-demand conditions in the industry not associated with collective bargaining, provided of course that the industry-wide supply-demand conditions are not influenced by collective bargaining elsewhere. If this test revealed pecuniary gains to growers associated with collective bargaining, the analysis would be extended to examine the nature of such gains, that is, distributive or integrative.

#### THE RESEARCH SETTING

The great lakes concord grape industry provided a situation closely meeting our selection criteria. Concord grapes enjoy a modicum of distinction from other varieties grown in the U.S. as this is the preferred variety for most jams, jellies and sweet juices, whereas wines are the primary market for other varieties. Over 90 percent of the concords are grown in the eastern great lakes states: New York, Pennsylvania, Ohio and Michigan, plus Washington (see Schmelzer, ch. 3 for greater detail). New York dominates the eastern pool with about 60 percent of the annual production. Ohio production is small relative to the industry total, generally accounting for 5-6 percent of the annual harvest.

The concord industry is highly concentrated at the first handler level. Welch, a large processing and marketing cooperative in western New York, accounts for an estimated 70 percent of the first handler volume. As a producer cooperative, grower terms are established on a participation basis rather than through collective bargaining. Small processors handle the balance of the industry volume. There is just one major processor in Ohio, a subsidiary of the Coca Cola Company, that generally processes the equivalent to 1/3 to 1/2 of Ohio's crop, or about 2-3 percent of the total eastern pool. The Tri-County Grape Growers Association (TCGGA), an affiliate of the Ohio Agricultural Marketing

Association (OAMA), bargains on the collective behalf of growers who ship to the Coca Cola plant.

While all of the Coca Cola growers are not members of Tri-County, once the association and the handler have reached an agreement on contract terms, those terms are offered to all of Coca Cola's growers. Thus, this situation represents the desired case--one where the bargaining association influences returns to an identifiable group of growers but where the total volume so negotiated is small relative to the industry total and therefore has little if any influence on the aggregate industry price. Additionally, the industry meets most of the conditions generally considered conducive to collective bargaining: a highly perishable crop, extensive use of contracts, no viable open market, and few market alternatives for growers. Furthermore, TCGGA has been in existence since 1956 and OAMA has been its bargaining agent since 1967, thus providing a historical record of bargaining performance.

#### ANALYSIS AND RESULTS

The first analysis conducted was to determine if the collective bargaining activities had influenced  $R$ , the pecuniary returns to growers represented by the association relative to industry-wide returns. Data were collected for the variables BP and IP on an annual basis for each year from 1950 through 1973, the most recent price data available due to the delay in determining industry-wide prices where these are based upon participation plans. Unfortunately, data for the variable BP for the years 1953 through 1956 could not be located. Therefore, values for the test statistic,  $R$ , could not be calculated for those years.

The data were partitioned into three time periods that correspond with discrete sets of collective bargaining activities:  $t_1$  includes 1950 through 1956, a period when there was no organized bargaining activity;  $t_2$  is 1957

through 1967, inclusive, the period when TCGGA was organized and gaining recognition by the handler but during which little organized bargaining occurred; and  $t_3$ , 1968 to 1973, inclusive, the period within which organized bargaining has occurred under the auspices of OAMA.

The test statistic,  $R$ , was then partitioned into groups that correspond to these time periods. The hypothetical relationship was:

$$\bar{R}_{t_1} < \bar{R}_{t_2} < \bar{R}_{t_3}$$

Where:  $\bar{R}_{t_1}$  is the mean price ratio in time period  $t_1$ ,  
 $\bar{R}_{t_2}$  is the mean price ratio in time period  $t_2$ , and  
 $\bar{R}_{t_3}$  is the mean price ratio in time period  $t_3$ .

A one-way analysis of variance was used to determine if there were statistically significant differences among the three mean values. The F-ratio test revealed differences that were statistically significant at the 0.01 level. Scheffe's general method S test was then used for multiple comparisons between each pair of mean values.<sup>1/</sup> This test indicated the following relationships:

Significant at the 0.05% level:  $\bar{R}_{t_1} > \bar{R}_{t_2}$

$$\bar{R}_{t_3} > \bar{R}_{t_2}$$

Insignificant at the 0.10% level:  $\bar{R}_{t_3} > \bar{R}_{t_1}$

Thus, these results are somewhat different from the expected relationship. Instead of confirming pecuniary gains associated with early collective bargaining efforts, they indicate a relative pecuniary loss for growers during the period of initial organization and operation of TCGGA. However, that loss was recovered when the bargaining unit, OAMA, became involved in collective negotiations.



There are at least two possible explanations for the contrary-to-expectation finding. First, the missing data from the  $t_1$  period may have biased upward the value of  $\bar{R}_{t_1}$ , thus distorting the results. Second, the growers may have been subjected to "handler backlash" and were penalized with somewhat lower prices during the organizational period of TCGGA.

Confirmation of the expected pecuniary gains associated with the bargaining activities of OAMA does suggest, however, that the type and size of the bargaining organization, and its method of operation, may be important variables in determining the magnitude of gains achievable through collective negotiations. OAMA was able to bring both improved market-wide information and more experienced negotiators to bear on the bargaining process. However, both TCGGA and OAMA have consistently bargained from a relatively weak position, having exclusive marketing rights to only about 40 percent of Coca Cola's total annual purchases. Thus, the threat to withhold supplies in the case of negotiation deadlock, which is the ultimate leverage point in any collective bargaining process, has probably not been a viable bargaining tool in this situation.

#### INTEGRATIVE VS. DISTRIBUTIVE GAINS

Although the results of the analysis of relative prices received by growers represented by the bargaining association were only partially as hypothesized, the significant differences between  $\bar{R}_{t_2}$  and  $\bar{R}_{t_3}$  indicated that further analysis was warranted. The relevant question is, to what extent are the higher relative returns in the latter time period attributable to improved efficiency and other integrative gains as opposed to a simple redistribution of income.

Because the bargaining association had direct control over less than half of the handler's volume, it may not have had sufficient bargaining leverage to extract large distributive gains. Rather, because the contract terms negotiated between the association and the handler are generally accepted by all

growers who ship to Coca Cola, members and nonmembers alike, it may be that those contract terms are such that integrative gains result. Thus, the analysis was extended to determine to what extent the pecuniary gains in period  $t_3$  relative to period  $t_2$  were due, in part, to two measures of integrative gains: improved processor efficiency resulting from a more orderly product flow and improved grower-handler coordination, and improved resource allocation through reduced price uncertainty resulting from greater price stability.

To analyze the impact of collective bargaining on processor efficiency, the test statistic ER was constructed where  $ER_i$  was specified as the ratio of the average daily grape tonnage processed in the  $i$ th year to the average daily plant capacity in the  $i$ th year. The rationale for this measure was that, if grower-processor coordination is improved as a result of collective bargaining, then the average daily utilization of the processing facility would increase. The data were partitioned into two time periods identified, a posteriori, as relevant to organizational changes in collective bargaining:  $t_2$ , the 1957-1967 pre OAMA period<sup>2/</sup>; and  $t_3$ , 1968-1973, during which OAMA has negotiated contract terms with the handler. The earlier time period  $t_1$ , the period prior to the initial organization of TCGGA, was not included in this analysis as data on daily plant utilization rates were not available for that period.

The hypothetical relationship was:

$$\overline{ER}_{t_2} < \overline{ER}_{t_3}$$

Where:  $\overline{ER}_{t_2}$  is the mean plant utilization ratio in time period  $t_2$ , and

$\overline{ER}_{t_3}$  is the mean plant utilization ratio in time period  $t_3$ .

Subjecting the test statistics to an analysis of variance and F-test revealed no significant differences between the mean utilization ratios

achieved prior to, and following, OAMA bargaining, at the 0.10 percent confidence level. This analysis, therefore, provides no evidence of significant gains in the operational efficiency of the processing plant that are directly attributable to the bargaining association. Quite possibly the handler has achieved the available coordinative efficiencies through grower contracts that allow his field men to coordinate harvesting activities rather than through any activity of the association. That is, coordinative gains may be a function of contracting rather than bargaining, per se.

To analyze the impact of collective bargaining on price stability, the test statistic CV was constructed to measure the variance in prices received by Coca Cola growers relative to the variance in industry-wide prices over time. The supporting logic is this: if the collective bargaining association generates more stable prices for its growers over time, then the coefficient of variation in grower prices relative to industry-wide prices should be smaller during the period of active group bargaining than when the growers were not engaged in collective negotiations.

For this analysis, the data were partitioned into 3 time periods of 6 years each: the first two,  $t_{2a}$  and  $t_{2b}$ , correspond with 6-year time periods for which data were available prior to bargaining by OAMA, 1957 through 1962 and 1962 through 1967, respectively. The third time period,  $t_3$ , corresponds to the period of OAMA bargaining, 1968 through 1973. The six year groupings were used to equalize the number of observations between the pre-OAMA and post-OAMA data, thus eliminating the influence of different numbers of observations on the total variance within the time periods.

The hypothetical relationships were:

$$CV_{t_{2a}} < CV_{t_3}, \text{ and}$$

$$CV_{t_{2b}} < CV_{t_3}$$

Where:

$CV_{t_{2a}}$  is the coefficient of variation in grower to industry prices in time period  $t_{2a}$ ,

$CV_{t_{2b}}$  is the coefficient of variation in grower to industry prices in time period  $t_{2b}$ , and

$CV_{t_3}$  is the coefficient of variation in grower to industry prices in time period  $t_3$ .

The actual coefficients of variance confirm that, as hypothesized, there was a smaller variance in the ratio of grower to industry prices, 0.10, during the period of OAMA bargaining than in either of the previous time periods (0.21 in  $t_{2a}$  and 0.30 in  $t_{2b}$ ). This analysis, therefore, tends to confirm the expected relationship between collective bargaining and price stability. As Chayat, et. al., have demonstrated, increased price stability results in both direct benefits to producers in terms of higher incomes or reduced losses over time, and reduced social costs as price risk is reduced and resource allocation improved. Overall, therefore, our analysis indicates that voluntary collective bargaining, such as in this case, shows potential for modest distributive gains when the bargaining agent is a skilled and knowledgeable negotiator, at least to the extent of a nuisance payment. However, integrative economic gains associated with improved price stability may be its most desirable product.

#### CONCLUDING COMMENTS

Our effort to shed empirical light on some of the theoretical benefits frequently argued for collective bargaining by farmers has shown a modicum of success. Using a case study approach and examining a situation in which collective negotiation is voluntary, some clarification has been gained into the magnitude and sources of actual economic gains associated with such bargaining.

The magnitude of pecuniary gains to producers for which the association is bargaining is not large. However, a significant gain was evidenced when the

growers contracted with a larger and more experienced bargaining unit to represent them in collective negotiations with the handler. This suggests that there may be some important size advantages in bargaining associations, particularly in their ability to procure more, relevant information and the skill with which they can use this in the bargaining process. At the same time, it became apparent that, with no more than 40 percent of the handler's supply firmly committed to the bargaining association, the association did not have enough leverage to extract large distributive gains from the handler, that is, higher prices for growers at the expense of the handlers profits or higher costs passed through to consumers. An important question remaining unanswered is, what share of the handler's volume need the association represent to generate more substantial distributive pecuniary gains for its growers? Clearly, 40 percent is not sufficient.

In the case studied, gains of an integrative nature also accrued to producers. However, there was no evidence that these resulted from specific improvements in the coordination of product movement from growers to the handler. That type of coordinative efficiency gain appears largely a function of contracting, not collective bargaining, per se. Rather, the integrative gains were due primarily to improved price stability. While more stable prices do lead to both social and producer benefits, such benefits accrue rather circuitously, thus, are difficult to verify and may provide little direct support for voluntary collective bargaining efforts.

Little light has been shed on the question of mandatory vs. voluntary collective bargaining. This study is suggestive that mandatory action may be necessary if collective bargaining is to achieve significant distributive-

type pecuniary gains for farmers. Likewise, the extent to which integrative gains could be enhanced by mandatory bargaining remains moot. Nonetheless, the results of our study suggest that the strongest rationale for mandatory bargaining lies in the potential for distributive rather than integrative gains.

#### FOOTNOTES

1/ There are several multiple comparison procedures, of which Scheffe's S offered the greatest appeal in this analysis. The more common least significant difference (lsd) procedure, while accurate for unequal numbers of observations within treatments, cannot be used to test all possible combinations of treatment means. Duncan's, Turkey's and the Student-Newman-Keuls procedures allow for comparison of all possible sets of means but are not accurate for treatments with unequal numbers of observations. The S test, however, is appealing because it can be used in conjunction with the F-test, permits comparisons of all possible sets of means and is an accurate test of significance for means that contain unequal numbers of observation.

2/ Data were not available on daily utilization rates for the years 1957 and 1958. Therefore, only data from the years 1959 through 1967, inclusive, are included in time period  $t_2$  for purposes of the analysis of processor efficiency.

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