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The Proceedings of Economic and Policy Implications of Structural Realignments in Food and Ag Markets

**A Case Study Approach
(Proceedings Include Revisions)**

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What Can We Learn From The ADM Global Price Conspiracies

A DISCUSSION

by

Richard L. Kilmer

John Connor's paper is an excellent paper given its in depth description and detail of the citric acid price fixing case involving ADM and others. I will use this information to discuss the structural realignments that have taken place in the citric acid market and the their effects on farmers, consumers, and citric acid market participants. This objective is in keeping with the stated objectives of this conference.

Structural Changes in the Citric Acid Market

The citric acid market in the U.S. (U.S.) was a duopoly until Cargill entered the market in the spring of 1990. Before then, Pfizer, Inc. and Bayer were the only companies manufacturing citric acid in the U.S. With the entry of Cargill into the citric acid market, ADM decided to enter the market by buying Pfizer's plants and technology (August 1990). Bayer sold its plants to Tate & Lyle/A.E. Staley (May 1998). As of today, the citric acid industry has gone from a duopoly to a triopoly.

The citric acid industry before 1990 was using technology that was less efficient than the new technology being introduced by the new industry entrant, Cargill. Over a two year period, ADM update the plants it purchased. Staley will likely do the same to the plants it purchased in 1998. Therefore, after Staley updates its plants, the technology used by the U.S. citric acid industry will be updated and more efficient than the technology employed by the duopoly before the entry of Cargill in 1990.

Before 1990, Pfizer and Bayer were buying corn as feedstock from the U.S. corn refining industry to make citric acid. With ADM, Cargill, and Staley being major players in the corn refining industry, these firms integrated forward into the citric acid industry. Connor indicates that the reduction in the production costs of citric acid due to vertical integration were on the order of five to ten percent compared to the costs of the duopoly who purchased feedstock from other firms.

Finally, imports into the U.S. which declined during the price fixing era appear to be on the rebound. Imports will play an important part in disciplining the price setting ability of the newly formed triopoly in the citric acid industry. The citric acid market is a world market. The extent of competition in the domestic market cannot be evaluated in isolation from the world market. The U.S. domestic competitors appear to be efficient enough to be competitive in the world market.

Effects of Structural Change on the Citric Acid Market

The structural adjustments in the U.S. citric acid industry since 1990 include all new firms, a more efficient technology, and backward integration into the feedstock used to produce citric acid. These adjustments were initiated by the entry of Cargill into the U.S. industry and the price fixing case brought about by the U.S. Department of Justice. These structural adjustments resulted in an estimated cost of production of \$0.50 per pound in Cargill's new plant (Connor). These reduced costs resulted from vertical integration into the feedstock for citric acid and the new technology used in the citric acid plant. The downside of this is that entry into the citric acid industry will now be more costly. This has the potential of creating entry barriers that may have an effect on the competition in the industry.

Prices for citric acid in 1998 are lower than during the duopoly years. Cargill entered the industry in July 1990 with a price of \$0.63 per pound (Connor). The contract prices are now between \$0.70 and \$0.75 per pound (Connor). This is lower than the pre-Cargill prices of the duopoly of \$0.80 per pound.

The citric acid industry has more sellers than before the entry of Cargill. The firms forming the duopoly have exited the industry and were replaced with three new competitors. These new competitors are familiar with one another as they are competitors in other industries such as corn milling. They appear to be efficient enough to be able to compete in the world market.

Imports and exports have been increasing since the demise of the duopoly. Exports of citric acid have increased from 46.8 million pounds in 1991 to an estimated 61.6 million pounds in 1998 (Connor). Export prices have been variable, but generally in the range \$0.75 per pound. Citric acid imports increased from 50 million pounds in 1991 to an estimated 100.8 million pounds in 1998 (Connor). Import prices have trended downward from \$0.66 per pound in 1993 to an estimated \$0.59 per pound in 1998 (Connor).

In summary, the U.S. citric acid market is more efficient and more competitive than during the duopoly era. If prices of imports stay lower than U.S. domestic prices, more buyers will likely switch to purchasing imports which will cause the U.S. domestic price to decline in order to keep U.S. domestic producers competitive with imports into the U.S. market.

Effects of Structural Change on the Firms in the U.S. Citric Acid Market

Sellers in the U.S. citric acid market are not likely to overtly fix prices after firms were caught and fined for fixing prices. The sellers may expand to countries where price fixing is not prosecuted. There appears to be an uneven pursuit of price fixing in countries around the world. Within the U.S., however, there may be some implicit price coordination among firms in the citric acid industry. ADM, Cargill, and Staley are familiar with each other's practices because they are competitors in other markets. On the other hand, familiarity may enhance competition because firms can be more precise with their competitive strategies given the additional knowledge they have about their competitors.

Imports into the U.S. will play an important role in moderating the U.S. domestic price of citric acid. ADM, Cargill, and Staley will likely realize increased profitability in the short-run compared to the duopoly. In the long-run, a decrease in profits will depend on the price and quantity of imports entering the U.S. citric acid market and the degree of competition among the three sellers. Buyers, on the other hand, will have more U.S. and international firms to buy from.

Effects of Structural Change on the U.S. Farmers

The structural changes in the U.S. citric acid industry will keep farm prices for corn and other feedstock for citric acid from falling. The new sellers composed of ADM, Cargill, and Staley seem to be efficient enough to be able to compete in the world market for citric acid. This will allow citric acid to be produced in the U.S. Feedstock for U.S. firms will be purchased from U.S. farmers. If the U.S. citric acid industry were to cease production, the U.S. demand for citric acid would be supplied from imports into the U.S. This would mean that the demand for feedstock from farmers in the form of corn and other products would not exist. Thus, the citric acid demand for U.S. corn and other products would decline which would lower the prices received by farmers. Thus, the structural changes that have occurred in the citric acid industry have and will have a positive effect on farmers.

Effects of Structural Change on Consumers

The structural changes in the U.S. citric acid industry have likely had a small impact on the consumer prices of products that have citric acid as an ingredient. The contract prices have fallen about six percent between 1987 and 1997. Assuming that this reduction in prices were passed on to the consumer, consumer prices may have declined. In the longer run, if imports into the U.S. continue to increase at prices around \$0.60 per pound, the U.S. prices for domestically produced citric acid will likely decrease further. Thus, U.S. prices will likely decrease more than they have currently.

Effects of Structural Change on Policy

The structural changes in the U.S. citric acid industry have pointed out the need for a coordinated world policy on price fixing. Some countries are prosecuting producers of citric acid and others are not. There appear to be some countries where price fixing is not illegal.

U.S. firms need to be able to compete in the world market, not just the domestic market. ADM, Cargill, and Staley have reduced the citric acid costs of production. They represent an oligopoly in the U.S. domestic citric acid market but are three of 10 firms in the world market for citric acid. Domestic anti-trust policy enforcers must consider the moderating effects of imports into the U.S. when considering the degree of competition that exist in the domestic markets.

Finally, structure and competition are dynamic. Cargill spent millions of dollars on a citric acid plant and entered the market previously occupied by a duopoly. Many if not most non-competitive markets do not exist over long periods of time. High

profits and/or inefficiencies due to technology and/or management entice new firms into the market which lower market prices.