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Report to Congressional Requesters

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DAIRY COOPERATIVES

Role and Effects of the Capper-Volstead Antitrust Exemption

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Economic Development Division

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The Honorable Howard M. Metzenbaum
Chairman, Subcommittee on Antitrust,
Monopolies and Business Rights,
Committee on the Judiciary
United States Senate

The Honorable Bill Bradley
United States Senate

In response to your request of August 4, 1989, and the subsequent agreements with your offices, this report discusses the limited antitrust exemption provided to agricultural cooperatives by the Capper-Volstead Act, particularly as it pertains to the dairy industry. It addresses dairy farmers' continued need for this exemption, the effect of the exemption on dairy prices, and the adequacy of oversight of cooperative pricing activities provided by the U.S. Department of Agriculture.

The report recommends that the Secretary of Agriculture take actions to actively monitor such activities and provides matters for the Congress to consider if such monitoring does not occur.

As agreed with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report for 7 days from the date of this letter. At that time, we will send copies to the Secretary of Agriculture and other interested parties.

This work was done under the direction of John W. Harman, Director, Food and Agriculture Issues, who can be reached at (202) 275-5138. Other major contributors are listed in appendix V.

J. Dexter Peach
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Executive Summary

Purpose

Since the early 1900s, the Congress has provided farmer-owned agricultural cooperatives with a limited exemption from antitrust legislation to address the imbalance of market power between farmers operating relatively small farms and the firms that purchase farm products. However, many changes occurring in the agricultural industry since then have affected this balance of power. These changes have led competitors of cooperatives and others to question whether the exemption is still necessary and whether the exemption has allowed farmers, through their cooperatives, to restrict competition and raise prices.

As a result of these concerns, the Subcommittee on Antitrust, Monopolies and Business Rights, Senate Committee on the Judiciary, and Senator Bill Bradley requested GAO to study several issues pertaining to this antitrust exemption. As agreed with the requesters' offices, GAO focused its study on the dairy industry, which represents the largest segment of cooperative business volume. Specifically, GAO agreed to (1) examine how changes in the agriculture industry, specifically in the dairy sector, may have affected the need for the antitrust exemption and (2) review economic research results to determine whether dairy cooperatives have exercised market power in setting prices for their goods and the effect of such market power on consumers and the government. In addition, GAO agreed to examine how well USDA has carried out its responsibilities for assuring that agricultural cooperatives do not abuse their antitrust exemption. Because most aspects of GAO's study were limited to dairy cooperatives, any conclusions made cannot be assumed to apply to all agricultural cooperatives and do not address more general questions about the effects of the antitrust exemption.

Background

To preserve farmers' ability to organize cooperatives to jointly market their products, the Congress, in the Capper-Volstead Act (1922) and other legislation, granted agricultural cooperatives a limited exemption from federal antitrust laws. The Capper-Volstead act also provided that the Secretary of Agriculture would investigate cooperative activities to ensure that they did not monopolize or restrain trade to the extent that the price of any agricultural product would be unduly increased.[1] In addition to the monitoring responsibility authorized by Capper-Volstead, the Federal Trade Commission has also monitored agricultural cooperatives as part of its overall responsibility.

[1] In its last report on agricultural cooperatives, Family Farmers Need Cooperatives—But Some Issues Need to be Resolved (CED-79-106, July 26, 1979), GAO questioned the adequacy of USDA's monitoring and oversight activities.

Results in Brief

Several changes in the dairy industry, including technological advances and federal support for and regulation of dairy prices, have helped increase the relative market strength of dairy farmers, acting independently, over what it was at the time the Capper-Volstead Act was passed. However, dairy farms, in general, remain relatively small compared to processing and distribution firms that, in the absence of cooperatives, would purchase milk directly from dairy farmers. These firms have also become more concentrated and therefore have the potential for increased market strength. Without cooperatives, many dairy farmers, because of the size of their operations, would continue to be in a relatively weak bargaining position. Therefore, to the extent that the increased market strength of processing and distribution firms and of dairy farmers offset each other, the premise of the Capper-Volstead antitrust exemption for cooperatives—that farmers cannot effectively bargain independently because their operations are too small—remains.

Because cooperatives often sell their milk at prices above legally mandated minimums, concern exists that they are exercising market power. However, research on whether cooperatives have actually influenced milk prices has produced mixed results.

Examination of USDA's oversight of cooperative activities provides little additional insight on questions concerning cooperative market power. USDA has not implemented a prior GAO recommendation to establish an active oversight program. As a result, it has little information on cooperative pricing activities and provides little assurance that cooperatives are not inappropriately increasing prices for their goods.

Principal Findings

The Effects of Industry Changes on Dairy Farmers' Relative Market Power

Technological improvements in milk production and transportation are among the changes that have helped increase the individual dairy farmer's relative market strength over what it was in the 1920s. For example, improved refrigeration techniques allow farmers to transport their products longer distances to take advantage of the best possible prices. Additionally, in the 1930s and 1940s, the federal government initiated major dairy programs intended to protect farmers from severe fluctuations in milk prices by, in effect, guaranteeing that milk prices will not fall below certain minimum levels. These changes have limited the ability of processing and distribution firms to exert market power at

the expense of dairy farmers. Dairy farms, however, generally remain small relative to these firms. For example, about 45 percent of dairy farmers have fewer than 30 milk cows on their farms. In addition, there are now fewer fluid milk processing plants, which may give the remaining plants more market strength. For example, in 1964, there were 3,836 independent fluid milk processing plants, and by 1988 this number had declined to about 600 plants. Thus, because many dairy farmers would remain in a relatively weak bargaining position if required to market their products independently, they may still need the option to form cooperatives to attain an equal bargaining position.

Research on Cooperative Pricing Power Inconclusive

While processing and distribution firms may now be able to exert more market power, so may the dairy cooperatives because the cooperative share of all milk delivered to processors and distributors has increased. Several university- and government-affiliated dairy economists have examined the relationship between a dairy cooperative's market share and its ability to obtain higher prices for its products. A strong positive correlation between the two might indicate that part of the higher prices obtained by cooperatives is a result of their market power. The results of such studies have been mixed: while some analyses have found evidence of significant positive correlations, others have not. Therefore, GAO cannot conclude, on the basis of available studies, whether, or to what extent, dairy cooperatives have exercised their market power in setting prices.

Even if market power allows cooperatives to receive higher prices from firms that purchase their milk, this market power may be necessary to give dairy farmers equal bargaining strength with those firms. The effect on consumer prices is uncertain and would depend on the relative market power of cooperatives and the firms that purchase their products.

Higher prices that cooperatives might receive, due to market power, (and pass along to their member farmers) would most likely encourage dairy farmers to increase production. This, in turn, can increase dairy surpluses, thereby increasing government cost associated with the purchase of surplus milk under the dairy price support program.

Limited USDA Oversight of Cooperative Activities

USDA oversight, which was established under Section 2 of the Capper-Volstead Act to prevent undue price enhancement (unjustifiably increased prices) by cooperatives has changed little since GAO's 1979

report on agricultural cooperatives. GAO reported that USDA was not actively monitoring cooperative pricing activities. Further, GAO reported on concerns about whether USDA could at the same time effectively regulate cooperatives and promote their growth and development. Although USDA has since clarified the separation of its oversight and promotion activities, it still has no active monitoring system and, to satisfy its oversight requirements, it simply investigates complaints as they are received. Further, the Federal Trade Commission's role in overseeing agricultural cooperatives has been reduced by the Federal Trade Commission Improvements Act of 1980. Thus, even less federal oversight of cooperatives may occur now than when we made our previous review.

Recommendation to the Secretary of Agriculture

Given the uncertainties surrounding the market power and pricing activities of agricultural cooperatives, GAO continues to believe in the need for more active oversight. Therefore, GAO recommends that the Secretary of Agriculture direct his contingency committee responsible for Capper-Volstead oversight to actively monitor cooperative pricing activities.

Matters for Congressional Consideration

GAO believes that the role of monitoring cooperative pricing activities is very valuable and, if USDA does not initiate active monitoring of cooperative activities, the Congress should consider assigning regulatory responsibility for cooperative pricing activities to the Federal Trade Commission.

Agency Comments

GAO discussed the information in this report with responsible USDA officials who disagreed with our view that active oversight of agricultural cooperative pricing activities is necessary. They believe the present system of responding to complaints received is adequate especially since it is supplemented with antitrust law enforcement by the Department of Justice and lawsuits initiated by private individuals. GAO continues to believe that active oversight of agricultural cooperative pricing activities is important because of the uncertainties surrounding these pricing activities.

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Related GAO Products

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Abbreviations

cwt	hundredweight
CCC	Commodity Credit Corporation
FTC	Federal Trade Commission
GAO	General Accounting Office
M-W	Minnesota-Wisconsin
USDA	U.S. Department of Agriculture

Introduction

In the late 1800s and early 1900s, independent farms were typically too small and too numerous to deal effectively with the much larger firms operating in the supply, processing, and marketing sectors of the agricultural economy. Farmers tried to overcome this imbalance of market power by organizing cooperative associations to jointly market their products and buy farm supplies and services. However, in the early 1900s, some state courts sustained antitrust charges against agricultural cooperatives. As a result, all states enacted legislation authorizing cooperatives' existence. To preserve farmers' ability to organize cooperatives, the Congress enacted legislation in 1914 and 1922 to provide agricultural cooperatives with a limited exemption from federal antitrust laws. This limited exemption remains in effect to this day. However, changes affecting the agricultural industry since 1922 have raised the possibility that this exemption is no longer as necessary to farmers' economic success as in the past. Furthermore, the large growth of some cooperatives—both in absolute size and in market share—has raised the concern that this exemption allows farmers to restrict competition, thereby raising consumer prices.

Legislative Background

The three basic antitrust laws are the Sherman Antitrust Act, enacted in 1890; the Clayton Act, enacted in 1914; and the Federal Trade Commission Act, also enacted in 1914. These acts are generally designed to prohibit anticompetitive practices.

As larger marketing and bargaining associations of producers were formed, agriculture leaders started to question the application of the Sherman Antitrust Act to such associations. The Clayton Act of 1914 clarified the role of farm cooperatives under the Sherman Act. Section 6 of the Clayton Act exempted the existence and operation of agricultural organizations from antitrust laws if they were established for mutual help, did not have capital stock, and were not for profit. The Capper-Volstead Act of 1922 conferred the limited exemption upon a larger, but more specifically defined, class of agricultural associations. Section 1 of this act authorized producers of agricultural products to act together in associations, corporate or otherwise, with or without capital stock, to (1) collectively process, prepare for market, handle and market their products in interstate and foreign commerce and (2) have marketing agencies in common. However, Section 2 required oversight by the U.S. Department of Agriculture (USDA) to ensure that cooperatives did not abuse their limited exemption.

While the above legislation has regulated cooperative activity, other legislation and government regulations have promoted agricultural cooperatives since the early part of the century. The Cooperative Marketing Act of 1926 (7 U.S.C. 455) authorized farmers and their cooperatives to acquire, exchange, interpret, and disseminate crop, market, statistical, economic, and other similar information by direct exchange or through common agents. The Agricultural Adjustment Act of 1933 was reenacted and amended by the Agricultural Marketing Agreement Act of 1937. As amended, this act (7 U.S.C. 601, 608c) provides for establishing marketing orders for specific fruits, vegetables, nuts, and milk.[1] It authorizes cooperatives to vote on behalf of their members on marketing orders. Further, through the Internal Revenue Code, cooperatives are provided special tax treatment. Most cooperative net income, unlike corporate income, is taxed only once, as income either to the cooperative or to its members.

U.S. Cooperative Activity

Cooperative businesses are like other corporate business organizations in their physical appearance, functions or services performed, and business operations. Some distinctive features of cooperatives are that they have democratic member-user control, provide goods and services at cost, provide limited returns on money that members invest in the cooperatives, and are owned and financed by members.

U.S. agricultural cooperatives can generally be categorized as (1) those that market primarily farm products; (2) those that purchase farm production supplies for members; (3) those that provide services, such as trucking, fertilizer application, and feed mixing; and (4) combinations of these types. Appendix I shows that products marketed by marketing cooperatives include dairy products, fruits and vegetables, poultry and eggs, and grain and soybeans. Appendix II shows the types of supplies handled by farm supply cooperatives, including feed, seed, petroleum, and fertilizer.

In 1988 there were 2,988 predominantly marketing cooperatives, 1,836 predominantly farm supply cooperatives, and 113 predominantly service cooperatives in the United States. These 4,937 cooperatives had a net business volume (excluding business between cooperatives) of about

[1]Marketing orders are marketing plans that the producers and handlers of a particular agricultural industry design and operate to work out solutions to general industry problems regarding supply and demand. Marketing orders are voluntary. That is, producers must vote to have a marketing order apply to their area before the order becomes effective.

$66 billion in 1988. Farmers held 4.2 million memberships in these cooperatives. Marketing cooperatives accounted for 46 percent of membership in 1988; farm supply cooperatives accounted for 51 percent; and related service cooperatives accounted for 3 percent.

Cooperatives market a wide range of products. However, dairy cooperatives, which are the focus of this report, represent the largest share of cooperative business—36 percent of marketing business volume in 1988. The 287 cooperatives that marketed dairy products in 1988 represented about $19.3 billion in gross business volume. Other farm products representing large portions of net cooperative marketing business volume in 1988 were grains and soybeans (26 percent) and fruits and vegetables (13 percent).

Federal Milk Marketing Orders

Federal milk marketing orders, which apply only to milk eligible for fluid use, set minimum milk prices, acceptable marketing practices, and terms and conditions of sale. Federal milk marketing orders evolved from provisions of the Agricultural Adjustment Act of 1933 as reenacted and amended by the Agricultural Marketing Agreement Act of 1937. Orders are intended to (1) promote orderly market conditions in fluid milk markets, (2) ensure consumers (both locally and nationally) an adequate supply of good quality milk, (3) stabilize milk prices, and (4) improve farmers' income.

Each marketing order contains two basic provisions. One fixes the minimum prices that must be paid by milk handlers.[2] This provision requires plants to base the value of the milk on the milk's end use and to use price adjustments or differentials based on butterfat content and on the location at which delivery of the milk is made. The other basic provision specifies how the returns from milk sales are to be distributed among dairy farmers.

Milk marketing orders use a system known as classified pricing to establish minimum prices that handlers must pay for grade A milk.[3] Under the classified pricing system, milk is classified according to its end use, and different minimum prices are set for each class. Most marketing

[2]Milk handlers are defined as anyone who handles grade A milk from dairy farmers for distribution in the market.

[3]Grade A milk is referred to as fluid grade milk because it is the only milk that can be used for fluid purposes. Grade A milk producers must adhere to higher sanitation standards than those of grade B milk. Grade B milk is referred to as manufacturing grade milk because it can be used only for manufacturing purposes.

orders have three classes of milk. Class I milk is used for fluid consumption and includes whole milk, skim and low-fat milk, and milk drinks. In orders with three classes, milk used to manufacture soft products, such as ice cream and cottage cheese, is considered class II, while milk used to manufacture hard products, such as butter, cheese, and nonfat dry milk, is considered class III. Some orders that have only two classes of milk put all milk except fluid milk into class II.

Class III minimum prices are the same in all orders, but minimum class I prices vary among orders, largely according to an order's distance from the Upper Midwest.[4] The class III price in each order is set equal to the Minnesota-Wisconsin (M-W) price,[5] which is the average price manufacturers pay in Minnesota and Wisconsin to purchase grade B milk. The price of grade B milk is not regulated by federal milk marketing orders. However, it is influenced by the federal dairy price support program, which is intended to establish a floor on grade B milk prices.[6]

The class I minimum price in each order is set by adding an amount known as the class I differential to the M-W price from 2 months earlier. Class I prices were set higher than class III prices to ensure an adequate supply of fluid milk. The differentials were intended to give farmers economic incentives to upgrade their operations to meet the higher sanitary standards required for fluid milk and to make it profitable to transport milk from surplus milk-producing areas to deficit areas. Therefore, when a national pricing system for milk used in fluid products was established in the 1960s, the smallest differential was established in the Upper Midwest because that region was considered the nation's major source of surplus milk. Higher differentials were established elsewhere to reflect the cost of transporting milk from the Upper Midwest.

Objectives, Scope, and Methodology

The Subcommittee on Antitrust, Monopolies and Business Rights, Senate Committee on the Judiciary, and Senator Bill Bradley requested that we study several issues concerning the antitrust exemption provided to

[4]Because most orders use three classes, we will refer to the class III price as the price for milk used for manufacturing purposes.

[5]The M-W price calculation and use are described in Milk Pricing: New Method for Setting Farm Milk Prices Needs to Be Developed (GAO/RCED-90-8, Nov. 3, 1989).

[6]In orders with three classes, the class II price is determined by adjusting the latest available M-W price with a formula based on dairy product prices and then adding a differential that yields class II prices that in most orders are about 10 cents per hundredweight above the class III price. Because of the relatively small amount of milk in class II and the closeness of the class II and class III prices, in this report we will focus on class I and class III prices.

agricultural cooperatives under the Capper-Volstead Act. Even though cooperatives are important in many agriculture sectors, at the subcommittee's and Senator Bradley's request dairy cooperatives are the focus of this study. First, this industry represents the largest segment of cooperative business volume. Also, because of the federal dairy price support program and the incentives provided by the federal milk marketing order program, the government has incurred substantial costs in purchasing surplus dairy products. Further, dairy industry data are readily available. Because most aspects of our work were limited to dairy cooperatives, any conclusions made cannot be assumed to apply to all agricultural cooperatives and do not address more general questions about the effects of Capper-Volstead.

Specifically, we were asked to identify (1) changes in the dairy industry since the enactment of the Capper-Volstead exemption and the implications of these changes on farmers' continued need for this exemption; (2) whether dairy prices are being increased because of this exemption, thus affecting consumer and government costs; and (3) the adequacy of USDA's oversight of the exemption.[7] In addition, the requesters asked us to examine an issue not directly related to the Capper-Volstead exemption—the effect of federal milk marketing orders on consumer dairy product prices.

In addressing the first objective, we relied to a great extent on historical data on the dairy industry presented in prior GAO reports. These reports are listed at the end of this report under "Related GAO Products." We also obtained information from other sources such as the Agricultural Cooperative Service, the National Agricultural Statistics Service, and various dairy-related publications. The results of our work appear in chapter 2.

In addressing the second objective, we performed a literature search to identify theoretical and empirical analyses that have been performed to address these concerns. Our work was limited to a brief conceptual analysis and a summarization of the results of the empirical studies. We performed no original empirical analysis. The results of our work appear in chapter 3.

In addressing the third objective, we identified changes that have been made since we last reported on the Capper-Volstead oversight activities

[7]Our evaluation of the adequacy of USDA oversight applies to agricultural cooperatives in general.

in a 1979 report[8] through discussions with USDA, Department of Justice, and Federal Trade Commission (FTC) officials. These changes are discussed in chapter 4.

Because our final objective is not directly related to Capper-Volstead, we address it in Appendix III.[9] We relied heavily on the report of the American Agricultural Economics Association's Task Force on Dairy Marketing Orders for both the theoretical analysis and the literature search discussed in this appendix.[10]

We were assisted in our review of the Capper-Volstead issue by two agricultural economists: Dr. Edward Jesse and Dr. Ronald Knutson. Dr. Jesse is Professor of Agricultural Economics and Chairman of the Agricultural Economics Department at the University of Wisconsin-Madison, and Agricultural Policy Specialist with the Cooperative Extension Service, University of Wisconsin-Extension. Dr. Knutson is Professor of Agricultural Economics, Extension Economist, and Director of the Agricultural and Food Policy Center at Texas A&M University, formerly Administrator of the Farmer Cooperative Service, and Chairman of the 1972 USDA Milk Pricing Advisory Committee. Their assistance should not be interpreted as an indication that these economists necessarily concur with all of the findings, conclusions, and recommendations contained in this report.

We conducted our review from December 1989 to March 1990 in accordance with generally accepted government auditing standards. We discussed the accuracy of the information presented in this report with responsible USDA officials and have incorporated their views where appropriate. However, as requested, we did not obtain official agency comments.

[8]Family Farmers Need Cooperatives—But Some Issues Need to be Resolved (CED-79-106, July 26, 1979).

[9]We addressed many issues concerning federal milk marketing orders in two earlier reports: Milk Marketing Orders: Options For Change (GAO/RCED-88-9, Mar. 21, 1988) and Federal Dairy Programs: Insights Into Their Past Provide Perspectives On Their Future (GAO/RCED-90-88, Feb. 28, 1990).

[10]Federal Milk Marketing Orders: A Review of Research on Their Economic Consequences, Occasional Paper No. 3, American Agricultural Economics Association Task Force on Dairy Marketing Orders (June 1986).

Premise of Capper-Volstead Exemption for Dairy Cooperatives May Remain Despite Industry Changes

Since the passage of the Capper-Volstead Act, from the perspective of dairy farmers, the dairy production industry has changed significantly. Changes that have improved dairy farmers' production efficiency, increased their product transportation capabilities, and provided a safety net for milk prices have helped increase dairy farmers' relative market strength. These factors have limited the ability of the firms that would purchase milk from dairy farmers, in the absence of cooperatives, to exert market power at the expense of dairy farmers.

Nonetheless, in general, dairy farms remain relatively small compared to the processing and distribution firms that, in the absence of cooperatives, would purchase their products. Their relative smallness suggests that, despite the limits to the ability of firms to exert market power, many dairy farmers would continue to be in a relatively weak bargaining position if required to act independently. Furthermore, those firms that would purchase milk from dairy farmers in the absence of cooperatives have become more concentrated, a situation which may reduce competition among purchasers, thereby increasing the market power of the remaining firms. This increase in firms' relative market power arising from increased concentration may offset any increase in dairy farmers' relative market strength due to wider marketing opportunities and reduced price risk. To the extent that this offset occurs, the premise that led to the Capper-Volstead Act, at least with respect to the dairy industry, is as valid today as in 1922.

Some Changes Have Expanded Dairy Farmers' Marketing Opportunities and Reduced Their Price Risk

Technological improvements in areas such as transportation, refrigeration, and dairy animal feeding and breeding have allowed dairy operations to grow in size and have offered dairy farmers expanded marketing opportunities. In addition, federal milk price intervention through the federal dairy price support program and the federal milk marketing order program have reduced dairy farmers' risks.

Technological Changes Have Expanded Dairy Farmers' Marketing Opportunities

Major technological changes in the dairy industry since the early part of the century have allowed dairy farmers to increase the size of their operations and to ship milk to greater distances. Such changes potentially provide dairy farmers with increased marketing opportunities. These increased opportunities can reduce the ability of milk handlers,

processors, and manufacturers to exert market power at the expense of individual dairy farmers.[1]

The availability of electricity and technological improvements in equipment have contributed to the efficiency of milk production. This increased efficiency has allowed farms to become larger and capable of producing larger quantities of milk. In the 1930s and earlier, milking was a manual operation because most farms did not have electricity. Therefore, milk production was labor intensive and dairy herds were generally small. With the introduction of electricity came the widespread adoption of milking machines, which allowed an individual farmer to milk cows faster than before and, thus, to maintain a somewhat larger herd. The increased size of the farming operation may increase the potential market strength of farmers acting independently.

Other technological improvements, improved feeding and breeding of cows, and better management have led to a dramatic increase in milk production per cow in the past 60 years or so. In 1930, average annual milk production per cow in the United States was about 4,500 pounds per year. By 1989, production per cow had increased to about 14,200 pounds per year.

Extensive improvements also occurred in milk handling and transportation over the past 60 years. These milk handling and transportation improvements allow dairy farmers to move their milk greater distances to take advantage of better prices. In the 1920s and 1930s some milk was used on the farm for butter and some was skimmed on the farm to sell butterfat to creameries. If fluid milk was sold, it was placed in milk cans and cooled by ice or cold water and hauled to a nearby plant where it would be processed or consolidated for shipment to other plants. Long distance hauling was dominated by the railroad. Refrigeration improved the milk cooling and eventually bulk tanks largely replaced milk cans. In the late 1940s long distance shipment of bulk milk shifted from the rail to truck. With general use of farm bulk tanks and improved highway systems, refrigerated tank trucks could haul milk directly from the farm to the fluid milk processing, or manufacturing, plant. As a result, many small plants consolidated or ceased business. Cooperatives took over much more of the milk hauling when bulk handling became common.

[1] In this report we refer to plants that process milk for the fluid milk market as fluid milk processing plants. We refer to plants that manufacture milk into such products as cheese, butter, and nonfat dry milk as manufacturing plants.

The Increased Federal Role in the Dairy Industry Has Reduced Dairy Farmers' Price Risks

The federal role in regulating milk pricing expanded greatly in the 1930s and 1940s. In 1930 milk prices were not regulated by the federal or state governments. By the 1980s, the price of most milk produced in the United States was affected by federal or state regulation. Federal regulation took the form of the federal milk marketing order program and the federal dairy price support program which were established in the 1930s and 1940s. These programs, designed to lend stability and orderliness to milk markets, affect prices received by dairy farmers. These federal involvements in the industry reduce the price risk of dairy farmers and limit the ability of handlers, processors, and manufacturers to use their market power to lower the prices dairy farmers receive.

As discussed in chapter 1, federal milk marketing orders set minimum prices that handlers must pay for milk. In addition, the federal dairy price support program helps ensure dairy farmers a minimum price for milk they produce. This program provides for dairy farmers a price safety net that did not exist prior to the 1930s.

In the 1930s, the federal government purchased limited quantities of dairy products to support milk prices. Through the Agricultural Act of 1949 (P.L. 81-439, Oct. 31, 1949), the Congress permanently adopted the dairy price support programs it had created during World War II to preserve higher milk prices and farm purchasing power. The purpose of this program is to ensure an adequate supply of pure and wholesome milk by recognizing cost-of-production changes and keeping farm income high enough to maintain sufficient production capacity for meeting current and future needs. Under the program, USDA, through the Commodity Credit Corporation, purchases, at specified prices, all quantities of butter, cheese, or nonfat dry milk that are offered and meet USDA specifications. Such purchases reduce the supply of dairy products on the commercial market in times of surplus and help maintain the minimum milk price received by dairy farmers.

Relative Market Strength of Dairy Farmers Operating Independently Remains Limited

Many dairy herds remain relatively small, thereby limiting dairy farmers' bargaining strength. In addition, although technological changes and the increased federal role in the industry have limited the ability of firms that, in the absence of cooperatives, would purchase milk from dairy farmers to exert market power, those firms also have changed in ways that may increase their bargaining strength. These firms have become larger and fewer and, thus, more concentrated. Also, the role of the food retailer in the fluid milk processing industry has grown. Because these changes in firms could offset the changes that

have limited their potential market power, the question about whether the relative market strength of dairy farmers operating independently has changed since the 1920s is left unanswered. This suggests that dairy farmers may still need the option to form cooperatives to attain an equal bargaining position.

Many Dairy Farms Remain Relatively Small

Despite the changes that have allowed farms to increase in size and allowed farmers to gain some potential for increased market strength, dairy herds remain relatively small, thereby leaving the farmers in a relatively weak bargaining position. As shown in table 2.1, about 45 percent of dairy herds consisted of fewer than 30 dairy cows in 1988. According to USDA's 1989 estimated average value of U.S. milk production per cow, a herd of 30 dairy cows would generate about $58,600 in annual gross income.

Table 2.1: Size of U.S. Milk Cow Operations in 1988

Number of milk cows	Percent of herds
1-29	44.7
30-49	22.7
50-99	23.2
100+	9.4

Source: Cattle, USDA, (July 1989).

Firms That Would Purchase Milk From Dairy Farmers Have Become More Concentrated

The declining number of fluid milk processing plants has resulted in increased concentration over the past 60 years or so. With fewer plants there may be less competition, and thus the market strength of these firms may have increased. Several large national fluid milk processing companies were formed through a series of over 2,300 mergers and acquisitions, most of which occurred in the 1920s and 1930s. Since that time, most of the companies left the fluid milk processing business for various reasons, including the government antimerger policy. The fluid milk facilities were either abandoned or sold to local and regional companies.

Table 2.2 shows that the total number of fluid milk processing plants (cooperatives and noncooperatives) in the United States dropped from 9,600 in 1934 to 1,066 in 1980. USDA estimates that this number has declined to under 700 in 1988. An examination of noncooperative plants during the period for which data by type of plant are available shows that the number of noncooperative plants (national, regional, and local)

decreased from 3,836 in 1964 to 954 in 1980. USDA estimates this number could be about 600 in 1988. From 1934 to 1980, the percent of fluid milk sales made by noncooperative plants decreased from about 96 percent to about 85 percent.

Table 2.2: Number of Fluid Milk Processing Plants and Percentage of Sales by Type of Firm (Selected Years)

	Number of plants					
	1934	1950	1957	1964	1970	1980
National firms and regional firms	[a]	[a]	[a]	335	253	173
Local firms	[a]	[a]	[a]	3,463	1,727	716
Integrated supermarkets	3	12	21	38	51	65
Subtotal	[a]	[a]	5,667	3,836	2,031	954
Cooperatives	[a]	[a]	520	267	185	112
Total	9,600	8,195	6,187	4,103	2,216	1,066
	Percentage of sales[b]					
	1934	1950	1957	1964	1970	1980
National firms and regional firms	38	26	34	32	31	29
Local firms	58	67	58	55	49	39
Integrated supermarkets	[c]	[c]	[c]	3	9	17
Subtotal	96	93	92	90	89	85
Cooperatives	5	7	8	10	11	15

[a]Data not available.

[b]Columns may not add to 100 due to rounding.

[c]Included in the firms' percentage.

Source: Alden C. Manchester, The Public Role in the Dairy Economy—Why and How Governments Intervene in the Milk Business (Westview Press, Inc., 1983).

The average size of the fluid milk processing plants has increased significantly. In 1934, the average volume of fluid milk processed by commercial processing plants was about 1.9 million pounds. This had increased to 4.3 million pounds by 1950 and to 51.8 by 1981.

Milk product manufacturing plants have also become more concentrated. Both cooperative and proprietary plants that manufacture butter and cheese have declined in number because advanced technologies have increased average plant size and reduced labor cost. In comparing 1944 and 1982 numbers, we found that butter plants declined from 4,022 to 231, and cheese plants declined from 2,144 to 457. In 1977, the four largest companies manufacturing each product manufactured 30 percent of butter and 38 percent of cheese. This concentration was higher at the subsequent handling stage in which some large companies

buy butter and cheese from other manufacturers to be cut, packaged, and distributed.

The increased importance of food retailers in fluid milk processing and distribution may expand their market power, particularly that of large chainstores. During the past 50 years, home-delivered milk sales have become nearly nonexistent. More recently, chain stores have gained an increased importance in fluid milk distribution, and there has been a trend toward chain-owned and -operated fluid milk-processing plants. For example, as shown in table 2.2, information for the period for which data by type of plant are available indicates that the number of integrated supermarket fluid milk processing plants increased from 38 in 1964 to 65 in 1980. The percentage of sales by type of plant shows a similar pattern. Integrated supermarkets show an increase in percentage of sales from about 3 percent in 1964 to about 17 percent in 1980.

Price Enhancing Effects of Capper-Volstead Are Uncertain

Since passage of the Capper-Volstead Act, many dairy cooperatives have grown very large. Such growth has raised the concern that dairy cooperatives can exercise market power to raise prices farmers receive and that higher farm-level prices may also lead to higher consumer prices. These cooperatives often charge and receive prices for their milk that exceed the minimums required by milk marketing orders. The differences between the prices charged and the marketing order minimums are known as over-order payments. The percentage of orders with over-order payments has tended to increase over time.

Many factors may explain over-order payments. Portions of these payments compensate for services that cooperatives provide while other portions may occur because minimum fluid milk prices may not accurately reflect transportation and production cost differences between production areas. A certain portion of these payments also may result from the exercise of market power by cooperatives. However, cooperative market power may be necessary to give dairy farmers bargaining strength equal to that of proprietary milk handlers, and may not lead to higher consumer prices unless the market power of the cooperatives exceeds that of other milk handlers.

As discussed in chapter 1, the Capper-Volstead exemption allows farmers to jointly market their products through cooperatives, without fear of being in violation of antitrust laws. However, as described in Section 2 of Capper-Volstead, cooperatives can be found in violation of the Act if, through monopoly or restraint of trade, they unduly enhance prices. A strong positive correlation between cooperatives' market share and the size of the over-order payments may indicate that by giving agricultural cooperatives a limited antitrust exemption, Capper-Volstead is partly responsible for higher prices.[1] These higher prices may lead to higher production surpluses and therefore higher government costs through the purchase of those surpluses under the federal dairy price support program.

Several university- and government-affiliated dairy economists who have studied over-order payments have attempted to determine the role that cooperatives' market power plays in setting the level of over-order payments. Their analyses have focused on the relationship between over-order payment levels and cooperative market share, as a measure of potential market power. Mixed empirical evidence from studies we

[1] As discussed in app. III, milk marketing orders, in addition to over-order payments, may contribute to higher prices.

reviewed makes it difficult to reach conclusions about the price enhancing effect of Capper-Volstead. Nonetheless, according to the results of a 1978 survey, both cooperatives and processors include the bargaining power of cooperatives and the percentage of milk volume they control among the most important determinants of the level of over-order payments.[2]

Cooperatives Have Grown and Changed Over Time

Since the passage of the Capper-Volstead Act, dairy cooperatives have played an increasingly important role in milk marketing. As shown in table 3.1, dairy cooperatives' share of all milk delivered to other handlers, processors, and manufacturers grew substantially between 1957 and 1973 but has remained relatively constant since then—76 percent in 1987.

Table 3.1: Cooperative Share of Milk Delivered to Other Handlers, Processors, and Manufacturers

Year	Percentage of share[a]
1957	59
1964	67
1973	76
1980	77
1987	76

[a]Share includes milk handled by cooperatives serving only as bargaining agents.
Source: Marketing Operations of Dairy Cooperatives, USDA (Nov. 1989).

The number of dairy cooperatives has decreased from 2,458 in 1930 to 287 in 1988, in part due to mergers and consolidations. During the late 1960s and early 1970s, for example, a period of major cooperative consolidation occurred which led to several large regional cooperatives, such as the Associated Milk Producers, Inc., Dairymen, Inc., Mid-America Dairymen, Inc., and Milk Marketing, Inc. This pattern of mergers gave some cooperatives very high market shares in multiple markets. The development of large regional cooperatives reflects the expanding geographic scope of milk markets.

The role of dairy cooperatives has also changed over time as they have become more involved in milk processing. Cooperatives' share of fluid milk sales increased from about 5 percent in 1934 to about 15 percent in 1980 and has held steady or declined slightly since then. As shown in

[2]E.M. Babb and D.A. Bessler, Factors Affecting Over-Order Payments in Federal Milk Marketing Orders, 1965-80, Indiana Exp. Sta. Research Bulletin No. 977 (Purdue University, June 1983).

table 3.2, the share of some dairy products manufactured by cooperatives has also increased substantially. This increase in the cooperatives' share of milk processing and manufacturing adds to the potential for increased cooperative market power.

Table 3.2: Percentage of U.S. Production of Selected Dairy Products Manufactured by Cooperatives (Selected Years)

	Products		
Year	Butter	Dry milk products	Cheese
1957	58	57	18
1964	65	72	21
1973	66	85	35
1980	64	87	47
1987	83	91	45

Source: Marketing Operations of Dairy Cooperatives, USDA (Nov. 1989).

Plants owned by supermarket chains and other proprietary firms have become specialized fluid milk plants. They contract with cooperatives to provide their milk supply. By doing so, the cooperatives perform the function of managing the raw milk supply by balancing the seasonal and day-to-day fluctuations in milk supply.

Many Factors May Explain Over-Order Payments Including Dairy Cooperatives' Increased Market Power

Dairy economists who have studied over-order payments suggest that the payments may be compensating cooperatives for costs of many services that cooperatives, rather than other milk handlers, now often provide. These services are associated with distributing milk among areas and class uses. These economists also point out, however, that some portion of payments may reflect the market power obtained by cooperatives.

Percentage of Orders With Over-Order Payments Has Increased

Data for selected years presented in table 3.3 suggest that the percentage of marketing orders with over-order payments has been increasing over time. However, this trend may also reflect the consolidation of orders over time which has reduced the number of orders from more than 70 in the late 1960s to only 41 in 1989. The data on payments as a percentage of minimum prices suggest that, following a period of federal order merger activity in the early 1970s, the level of payments has generally been increasing.

Table 3.3: Frequency and Size of Over-Order Payments

Year	Percentage of orders with payments	Payment as a percentage of minimum class I price
1966	33.8	5.0
1967	41.1	5.6
1968	54.8	4.2
1969	59.7	4.3
1970	64.5	3.0
1971	61.3	3.2
1972[a]	35.5	1.8
1973[a]	41.0	4.0
1974	75.4	7.1
1975	93.4	6.4
1976	92.3	2.8
1977	91.5	2.9
1978	93.6	2.7
1979	95.7	3.4
1980	93.6	3.9
1981	91.7	3.8
1982	93.9	3.6
1983	93.5	3.1
1984	93.3	3.3
1985	90.9	4.3
1986	93.2	4.1
1987	93.0	4.4
1988	95.2	5.7
1989[b]	97.6	5.3

[a]The definition of over-order payments was changed temporarily for 1972-73, specifically to exclude reported service charges. Consequently, data for those years are not comparable with that of other years.

[b]Preliminary figures.

Source: Dairy Division, Agricultural Marketing Service, USDA.

Payments as Responses to Changes in Costs of Milk Product Allocations

Over-order payments can be compensation for some services now provided by cooperatives that were previously provided by other milk handlers, including

- processor- and manufacturer-specific services such as performing quality control work, paying dairy farmers, guaranteeing a daily market outlet, providing insurance programs, and pricing milk at the location of the receiving plant, and

- marketwide services such as finding outlets for milk in excess of fluid uses (balancing), promoting fluid milk sales, and performing market analysis.

Payments also can arise to facilitate the transfer of milk from surplus uses or production areas to deficit markets. In such situations, the payments collected by cooperatives are compensation for

- charges manufacturing plants require to compensate them for profits foregone on manufactured products that are not produced when milk is diverted by the cooperative from manufacturing to fluid uses, or
- charges dairy farmers in surplus production areas require to supply a deficit area with additional milk because the current class I differential may not accurately reflect the transportation cost and/or any production cost differences between deficit and surplus production areas.

Payments also may arise as a compensation for imperfections in milk pricing. For example, class I prices are set equal to the M-W price from 2 months earlier, plus the class I differential. Using a 2-month-old price as a basis for current price is inherently imperfect since the current price will not reflect current supply and demand conditions. Payments, however, are a mechanism by which current supply shortage conditions may be incorporated into the class I price.

Payments Also May Reflect Cooperatives' Market Power With Possible Consequences for Consumers and the Government

With the assistance of Capper-Volstead, cooperatives are a vehicle for organizing dairy farmers to increase the bargaining or market power of individual dairy farmers relative to that of proprietary milk handlers. Should the market power of either the dairy farmers or the handlers exceed that of the other, then the potential exists for the party with the greater power to exercise it and receive a disproportionate share of any industry profits.[3] Cooperatives, then, insofar as they provide a means of obtaining market power, enable dairy farmers to deal with proprietary milk handlers on a more equal basis. However, one consequence of a shift in relative market power toward dairy farmers (cooperatives), may be a relative loss of handlers' market power reflected by the over-order payments they make to cooperatives.

[3]At some level over-order payments or price increases that result from dairy farmers exercising market power could be considered undue price enhancement and, consequently, a violation of antitrust laws, but only if they were enhanced as a result of monopoly or restraint of trade.

Evidence that cooperatives can take advantage of market power to obtain higher prices for farmers than the farmers could obtain independently does not necessarily imply that cooperatives are unduly enhancing prices. Cooperative market power may be necessary to balance the market power of the firms that purchase milk to allow farmers to obtain prices based on equal bargaining strength, which would more closely approximate prices determined in a competitive market. Furthermore, the prices cooperatives receive may represent, in part, payments for services cooperatives provide to other milk handlers and processors.

Regarding over-order payments as reflections of the transfer of market power from processors to cooperatives, a 1978 survey asked cooperatives and processors to rank the most important factors influencing the level of over-order payments.[4] Both cooperatives and processors ranked among the three most important factors the "bargaining power of cooperatives and the percentage of milk volume they control," an expression we interpret as cooperative market power. The two other highly-ranked factors were the supply-demand balance and the cost of milk from alternative sources. Factors that were ranked lower in importance included the farm cost of milk production and any misalignment of federal order minimum prices to the extent that the minimum prices do not reflect production and transportation cost differences across orders.

For consumers, the consequences of a shift in relative market power in favor of cooperatives depend, in part, on whether cooperatives, after the shift, are in a stronger bargaining position than proprietary handlers. If the bargaining position obtained by dairy farmers through cooperatives is not stronger than that of proprietary milk handlers, then cooperatives would be unlikely to obtain a level of over-order payments that might result in increases in consumer prices for milk products. In this case, over-order payments may serve only to reallocate industry profits between cooperatives and proprietary handlers with no consequences for retail markets. However, in the unlikely event that these handlers, prior to their loss of relative market power, had been passing along to the consumers some portion of the cost savings they achieved by virtue of their prior market power advantage over dairy farmers, then consumer prices might increase in response to over-order payments.

If, on the other hand, cooperatives gain market power in excess of that of proprietary milk handlers, then the exercise of that power in the form

[4]Babb and Bessler, pp. 20-21.

of payments could result in increasing consumer prices. In this situation, the cooperatives would, through over-order payments, be attempting to extract profits in addition to those previously available in the industry. The necessary consequence of such profits would be to drive up consumer prices. To sustain high payments, however, cooperatives would find it necessary to somehow curtail the supply of fluid milk.

Compared to consequences for consumers, the consequences for government of a shift in relative market power in favor of dairy farmers are more straightforward. Government costs are likely to increase as dairy farmers gain market power relative to proprietary handlers, irrespective of whether dairy farmers achieve more or less market power than these handlers. As cooperatives gain and exercise market power in the form of over-order payments, then, by definition, farmers will receive higher average prices, which would most likely encourage them to increase production.[5] Additional production may add to the milk product surpluses that the government is obligated to purchase under the dairy price support program, thus increasing government costs.

Relationship Between Cooperative Market Share and Over-Order Payments Is Unclear

Some dairy economists have attempted to determine empirically whether cooperative market power has been responsible for at least some portion of over-order payments. Their research has involved a variety of methodologies and has produced a variety of results. Although this research has looked at the possible influence of cooperative market power on over-order payments, it has not attempted to identify any portion of over-order payments as undue price enhancement or as an abuse of market power on the part of cooperatives. On reviewing this literature, we find that the results, to date, are mixed.

There are several important considerations in conducting an empirical analysis of the relationship between cooperative market power and the size of over-order payments. These include being able to (1) adequately measure cooperative market power; (2) identify and measure other factors that may contribute to over-order payments, such as those described above; and (3) select the appropriate type of data with which to estimate relationships. In our review of the literature, we found that the reported results were not sensitive to the measures of cooperative market power used. However, the results may have been sensitive to

[5]This assumes that cooperatives pass on the higher prices to their member dairy farmers, and that cooperatives are able to sustain higher average prices by restricting the supply of milk to the fluid market. However, that portion of over-order payments which compensates cooperatives for services they provide to other handlers would not provide incentives for increased production.

how the effects of other factors influencing over-order payments are accounted for in the empirical analysis and the type and/or sample period of data used to estimate relationships. Our review is summarized below and presented in greater detail in appendix IV.

Different measures of cooperative market power were examined in several of the studies we reviewed. In general, the studies concluded that the results concerning any relationship between cooperative market power and over-order payments were not sensitive to the particular measure of cooperative market power used. Among the different measures of cooperative market power examined were the percentage of all dairy farmer milk deliveries in a market (order) made by all cooperatives in that market, the percentage of dairy farmer milk deliveries in a market by the four largest cooperatives, the percentage of dairy farmer deliveries in the market by the largest cooperative, and the percentage of all market dairy farmers who belong to the four largest cooperatives. It is unclear, however, how adequately cooperative market power is represented by any of these measures. They do not, for example, account for (1) whether different cooperatives within a market are competing or acting in concert, although attempts were made to account for the existence of federations of cooperatives, or (2) whether there is competitive pressure from dairy farmers outside the market area.

Attempts to estimate the effect on over-order payments of cooperative market power should also account for the possible influence on payments of factors other than cooperative market power. The studies we reviewed took into account a number of other factors, although no study included all of the factors identified by the collection of studies we examined. Specific factors accounted for in the reviewed analyses primarily included those factors, described above, that are associated with changes in costs of milk product allocations. Additional factors accounted for included milk production cost, processor market power, and a 1975 Department of Justice consent decree in which a major regional cooperative agreed not to engage in exclusionary or predatory acts or practices.

Data on payments and measures of cooperative market power and other factors are available both across orders (markets) and over time. Different studies we examined attempted to estimate the relationship between payments and cooperative market power from one or more of the different perspectives of the data: across orders but for only one time period at a time (cross-section analysis), across time but for only one order at a time (time-series analysis), or across both time periods

and orders all at once (pooled time-series and cross-section analysis). No one perspective of the data is clearly superior to the others. For example, although pooling maximizes the use of available information, there are many different pooling methodologies and consequently many different interpretations of pooled estimation results.

The results for several different studies using cross-section analysis suggest no significant relationship between cooperative market power and over-order payments in most recent years. Nor was a significant relationship consistently found in the one study that examines time-series data and accounts for factors that could affect over-order payments in addition to cooperative market power. However, recent studies using pooled time-series and cross-section analysis have produced mixed results. The most recent, and among the most thorough of the studies we examined, found a positive and statistically significant relationship between cooperative market power and over-order payments.[6] This result conflicts with results from an earlier study conducted using a similar methodology.[7]

Conclusions

Since the studies we reviewed did not consistently find evidence of a relationship between market share and over-order payments, we see no basis for reaching a definitive conclusion concerning the effect of Capper-Volstead on either consumer prices or government costs. Theoretically, it is possible that cooperatives, with the assistance of Capper-Volstead, may obtain sufficient market power, relative to that of proprietary milk handlers, to charge over-order payments. These payments may occur even if the market power of cooperatives is no greater than that of other handlers and may or may not result in increasing consumer prices for milk products. However, over-order payments that more than compensate for cooperative-provided services will most likely encourage dairy farmers to increase production with a possible consequence of increasing dairy surpluses and, thus, increasing government costs associated with the purchase of surplus milk under the dairy price support program.

[6]E.M. Babb, Over-Order Payments in Federal Milk Marketing Orders, 1970-87, Staff Paper 371, Food and Resource Economics Department (University of Florida, Nov. 1989).

[7]Babb and Bessler.

Limited Federal Oversight of Agricultural Cooperatives

Under Section 2 of the Capper-Volstead Act, the Secretary of Agriculture is responsible for ensuring that cooperatives do not abuse their antitrust exemption. More specifically, USDA is responsible for restraining cooperatives when it believes they are "unduly enhancing" (unjustifiably increasing) prices charged for their products. In 1979, we reported that USDA had not adequately carried out its Section 2 responsibilities.[1] For example, it was not actively monitoring cooperative pricing activities. Further, we reported on concerns about whether USDA could at the same time effectively regulate cooperatives and promote their growth and development. Although USDA has since clarified the separation of its oversight and promotion activities, it has taken only limited actions to improve its oversight of Capper-Volstead since our earlier review. Although the Department of Justice and the Federal Trade Commission have general responsibility for enforcing antitrust laws, the Congress restricted FTC's authority to review some issues relating to possible market abuses by cooperatives. Thus, many of the problems we identified in 1979 remain.

USDA's Oversight Responsibilities

Section 2 of the Capper-Volstead Act gives USDA the responsibility for preventing cooperatives from exploiting the public through unwarranted price increases. Once USDA determines that Section 2 may have been violated—that a cooperative may have monopolized or restricted trade to such an extent that its prices are unduly enhanced—USDA is responsible for (1) informing the cooperative that it is suspected of violating Section 2, (2) holding a hearing during which the cooperative states its point of view, and (3) reaching a conclusion on whether or not the cooperative unduly enhanced prices. If USDA finds that the cooperative has monopolized or restricted trade to such an extent that its prices are unduly enhanced, USDA is to issue an order to the cooperative directing it to stop the monopolization or restraint of trade. If the cooperative does not stop, USDA can then file in the relevant district court a copy of the order together with a petition asking that the order be enforced. If the court supports USDA, the case is given to the Department of Justice for enforcement.

[1] Family Farmers Need Cooperatives—But Some Issues Need to Be Resolved (CED-79-106, July 26, 1979).

Past Recommendations for Improved Oversight of Cooperatives

In our 1979 report, we concluded that USDA had not done all that it should to oversee cooperative activity and, as a result, provided little assurance that potentially powerful agricultural cooperatives were not abusing their Capper-Volstead exemption. Accordingly, we recommended that USDA establish a more active oversight program, which would include (1) the active monitoring of cooperative pricing activities and (2) the placement of the Capper-Volstead oversight and enforcement responsibilities in an agency whose function was separate from USDA's responsibility to promote agricultural cooperatives.

In examining USDA's oversight activities, our 1979 report concluded that USDA had no active monitoring program. Instead, it relied solely on outside complaints as a basis for starting each of its inquiries of possible Section 2 violations. At the time of our 1979 review, we identified five complaints that USDA had received, none of which was determined to be an instance of undue price enhancement. We expressed concern that USDA reached conclusions on these complaints without criteria that would help it identify undue price enhancement. We noted that the need for such criteria had been highlighted by the National Commission for the Review of Antitrust Laws and Procedures (National Commission).[2]

Our past report also noted a potential conflict of interest between USDA's responsibilities under the Capper-Volstead Act and its responsibilities under the Cooperative Marketing Act of 1926. Under the Capper-Volstead Act, USDA is responsible for ensuring that cooperatives do not violate the restraint of trade provisions of Section 2. Under the Cooperative Marketing Act, USDA is tasked with promoting cooperatives and providing extensive services for them. We agreed with the National Commission, which questioned whether USDA could both effectively regulate and promote cooperatives, and recommended that the Secretary separate the responsibilities.

USDA Has Done Little to Improve Its Oversight Activities

USDA has made a few attempts to improve its oversight activities since our 1979 report. These attempts, which are summarized below, have been short-lived or inadequate.

- In 1980, the USDA Capper-Volstead Study Committee created a plan for establishing a department within the Office of the Secretary which

[2]The National Commission for the Review of Antitrust Laws and Procedures was established in 1977 to study and make recommendations on (1) the resolution of antitrust cases and (2) the desirability of retaining antitrust exemptions.

would monitor selected markets and investigate instances of potential cooperative abuse. The committee also created broad criteria for determining when prices could be considered unduly enhanced. However, according to present and former USDA officials, the incoming Reagan administration did not wish to follow up on the committee's plans.

- In 1981, USDA placed responsibility for overseeing Capper-Volstead with a contingency committee consisting of the Assistant Secretary for Economics, the Office of General Counsel, and the Assistant Secretary for Marketing and Inspection Services. However, to date USDA has not actively monitored cooperative pricing activities. It continues to simply investigate complaints as they are received.

Since our prior work, we found evidence of three additional complaints related to Capper-Volstead, all of which were dismissed. Thus, in the 68 years since the law was passed, USDA has received and investigated eight complaints of potential violations of Section 2 and has dismissed all of them. USDA officials offered a number of reasons for the lack of incoming complaints.

- The public lacks awareness of Section 2. A senior USDA official stated that low public awareness about Section 2 explains much of the lack of Section 2 activity.
- Other legal avenues can be used. People can and have used the court system as an alternative for resolving concerns over possible abuses by agricultural cooperatives. For example, since the passage of the Capper-Volstead Act, the courts have reviewed more than 50 cases concerning the rights and responsibilities of cooperatives in such areas as monopolization, organizational combinations, and cooperative size. People might choose the court system because they face a lower burden of proof (it is not necessary to determine that restraint of trade resulted in undue price enhancement) and they may be awarded treble damages.
- Few cases of market abuse exist. Senior USDA officials have suggested that cooperatives have seldom had both the market power and the opportunity to exploit the public by increasing prices. Consequently, the small number of complaints may indicate that there are few cases of market abuse.

FTC Oversight Restrictions.

At the time of our previous review, FTC monitored agricultural cooperatives as part of its overall responsibilities for monitoring levels of market competition in all business sectors. Since that time, however, its role in overseeing cooperatives has been reduced. As a result, there now may be even less oversight than when we made our previous review.

Section 20 of the Federal Trade Commission Improvements Act of 1980 barred FTC from examining cooperative conduct that is exempted under the Capper-Volstead Act. The Congress added Section 20 to the Federal Trade Commission Improvements Act to reaffirm USDA's Section 2 responsibilities and eliminate perceived operational conflicts between FTC and USDA.

Conclusions

USDA has done little to improve its oversight of cooperatives since our 1979 review. Further, FTC's role in overseeing agriculture cooperatives has been reduced since our earlier work. Consequently, uncertainty remains as to whether or not agricultural cooperatives are unduly enhancing prices for their products.

We continue to believe in the need for more active oversight because of the uncertainties surrounding pricing activities of agricultural cooperatives. However, USDA's lack of progress toward active oversight raises questions about the priority it places on Section 2 responsibility. Therefore, we believe, as we did in 1979, that USDA should implement an active oversight program. Further, we believe that the Congress should closely monitor USDA actions and, if USDA does not initiate active monitoring of cooperative activities, the Congress should consider assigning regulatory responsibility for cooperative pricing activities to the FTC.

Recommendation to the Secretary of Agriculture

Given the uncertainties surrounding the pricing activities of agricultural cooperatives, it continues to be important to have an active oversight of agricultural cooperative pricing activities. Therefore, we recommend that the Secretary of Agriculture direct his contingency committee that oversees Capper-Volstead to actively monitor cooperative pricing activities.

Matters for Consideration by the Congress

We believe that the role of monitoring cooperative pricing activities is very valuable. Therefore, we suggest that the Congress closely monitor USDA actions and, if USDA does not initiate active monitoring of cooperative activities, the Congress should consider assigning regulatory responsibility for cooperative pricing activities to the FTC. If the Congress assigns this responsibility to the FTC, Section 20 should not be extended for subsequent fiscal years.

Views of Agency Officials

We discussed the accuracy of the information in this report with responsible USDA officials. They disagreed with the need for active oversight of agricultural cooperative pricing activities. They believe the most efficient oversight method is to respond to complaints received. Further, they believe there are adequate provisions in the form of antitrust law enforcement by the Department of Justice and lawsuits initiated by private individuals to ensure against impermissible activities by cooperatives.

We continue to believe that it is important to initiate active oversight of agricultural cooperative pricing activities because of the uncertainties surrounding these pricing activities.

Cooperatives' Share of Agricultural Products Marketed (Selected Years)

Commodity	Percentage of cooperatives' share				
	1951	1961	1971	1981	1988
Grain and soybeans	35	33	34	37	30
Milk and products	46	58	70	72	76
Livestock products	13	13	11	12	7
Fruits and vegetables	20	22	25	25	24
Cotton and products	10	19	25	30	41
Sugar crops	59	57	64	53	[a]
Poultry and eggs	7	9	11	9	[a]
Special crops	12	13	21	20	[a]

[a]Data not available.

Sources: Growth and Trends in Cooperative Operations, 1951-81, USDA (Sept. 1984) and Farmer Cooperatives, USDA (Mar. 1990).

Cooperatives' Share of Farm Supply Items Purchased by Farmers (Selected Years)

	Percentage of cooperatives' share				
Supplies	**1951**	**1961**	**1971**	**1981**	**1988**
Feed	18	18	17	18	18
Fertilizer	16	26	30	36	40
Petroleum	19	25	35	35	39
Chemicals	12	16	20	34	28
Equipment	4	5	6	6	[a]
Field seeds	17	16	15	15	17
General supplies	8	8	11	10	[a]

[a]Data not available.

Sources: Growth and Trends in Cooperative Operations, 1951-81, USDA (Sept. 1984) and Farmer Cooperatives, USDA (Mar. 1990).

Federal Milk Marketing Orders May Raise Milk Prices

Federal milk marketing orders, which apply only to milk eligible for fluid use, set legally binding minimum prices that handlers must pay dairy farmers and that, in turn, influence milk prices consumers pay for fluid milk and manufactured dairy products.[1] Although it is hard to determine what prices would prevail without milk marketing orders, conventional economic reasoning suggests that under the order system, the average prices dairy farmers receive for their milk are higher than they would likely be without marketing orders. Consumer prices for fluid milk are likely to be higher than they would be without marketing orders, but the prices consumers pay for manufactured dairy products are likely to be lower. Several empirical studies suggest a similar conclusion. In fact a recent USDA study suggests a larger effect of marketing orders on prices than had been found in previous analyses.

The first section of this appendix provides background on key pricing provisions of federal milk marketing orders. The second section discusses, from a theoretical perspective, whether orders are likely to cause higher prices and whether cooperatives might be able to maintain the existing price structure even without orders. The third section discusses the difficulties of quantifying the price effect of orders from direct comparison of prices with and without orders, while the fourth section discusses estimates of price effects obtained from economic models.

Pricing Provisions of Milk Marketing Orders

In setting minimum prices for milk according to how it is used, federal milk marketing orders assign the highest price to milk used for fluid consumption. Within an order, however, all dairy farmers or their cooperatives receive a uniform weighted average, or blend price.

Minimum Prices Are Based on How Milk Is Used

As described in chapter 1, federal milk marketing orders use a system known as classified pricing—setting prices on the basis of how the milk is used—to establish minimum prices that regulated handlers must pay for milk. Minimum prices for milk used in manufacturing hard dairy products (e.g., butter, cheese, and nonfat dry milk), class III milk, are the same in all orders, but minimum prices for milk used for fluid consumption, class I milk, vary. The class I minimum price in each order is set by adding an amount known as the class I differential to the M-W

[1] We addressed many issues concerning milk marketing orders in an earlier report: Milk Marketing Orders: Options For Change (GAO/RCED-88-9, Mar. 21, 1988).

price lagged 2 months. In general, each order's differential depends on the order's distance from the Upper Midwest.

Dairy Farmers Receive a Weighted Average Price

Although the minimum prices handlers must pay are based on how the milk they buy is used, all dairy farmers or their cooperatives receive a uniform weighted average or blend price for their milk.[2] (Cooperatives, however, need not pay their members the blend price.) The blend price depends on the minimum price for each class and the proportion of milk used in each class. If, for example, an order's class III price was $10.00 per hundredweight (cwt) and its class I price was $12.00 per cwt, and 50 percent of the milk in that order was used for products in each class, then the order's blend price would be a weighted average of the class prices, or $11.00 per cwt. For a given class I differential, the greater the share of raw milk used for fluid consumption, the higher the blend price. Similarly, for a given share used for fluid consumption, the higher the class I differential, the higher the blend price.

How Milk Marketing Orders Are Likely to Affect Milk Prices

Classified pricing yields higher average prices for dairy farmers than they would receive in a competitive market.[3] Compared to the prices that would result from a competitive market, classified pricing also results in higher consumer prices for fluid milk, but lower consumer prices for manufactured dairy products. It is unlikely that cooperatives would be able to enforce the same degree of classified pricing in all markets without milk marketing orders. This situation implies that, on average, orders are likely to cause higher prices.

[2]Adjustments are made to this uniform price to account for butterfat content and the location of the plant to which the milk is shipped.

[3]Even if classified pricing were eliminated, the dairy price support program would remain. Therefore, in analyzing the effects of milk marketing orders, we are comparing current prices with those that might exist without orders but with the continuation of price supports. In this context, a competitive market refers to a market structure in which the support price provides a floor under market prices, but above which level prices are determined by the interaction of supply and demand, with no one seller or buyer being able to influence the market price.

Classified Pricing May Raise Consumer Prices for Fluid Milk but Lower Prices for Manufactured Dairy Products

Classified pricing meets the economic definition of price discrimination because the price differences between classes do not reflect cost differences.[4] Conventional economic models of price discrimination show that by charging fluid customers a price higher than they charge manufacturing customers, dairy farmers can receive a blend price above the price that would prevail in a competitive market without discrimination, thereby enhancing their returns. These higher prices and returns occur because dairy farmers can effectively separate their market into two (or more) groups of customers and because the demand for fluid milk is less responsive to price changes than the demand for manufactured dairy products. Furthermore, classified pricing not only makes the blend price higher than the average price dairy farmers would receive in a competitive market,[5] but by definition makes the price in the highest class—the price for milk used for fluid consumption—even higher. On the other hand, under classified pricing, farmers, despite higher average prices, would receive lower prices for milk used for manufacturing purposes.

This analysis implies that marketing orders raise the prices handlers pay for fluid milk, as long as the price that handlers would pay for milk for fluid consumption in the absence of milk marketing orders (but with price supports and the Capper-Volstead exemption unchanged) was likely to be no higher than what it would be in a competitive market. If handlers pay higher prices, then consumer prices for fluid milk are also likely to be higher. This analysis similarly implies that consumer prices for manufactured dairy products are likely to be lower. However, because of Capper-Volstead, cooperatives in some markets might be able to maintain some form of classified pricing even without marketing orders. If they can, then even without marketing orders, prices handlers pay for milk used for fluid consumption might be above the competitive level, while the prices handlers pay for milk used for manufacturing purposes might be below the competitive level. In this case part (or all) of the difference between actual prices and the prices that would prevail in a competitive market would not be attributable to marketing orders.

[4]Different analysts include different cost elements in making this cost comparison. But even the largest estimated difference between the cost of producing milk eligible for fluid use and the cost of milk eligible only for producing manufactured dairy products is considerably less than the difference between minimum class I and class III prices, according to the report of the American Agricultural Economics Association Task Force on Dairy Marketing Orders.

[5]Strictly speaking, this is true in the long run only if, as is generally assumed, farmers in total cannot increase milk production without increasing the cost of dairy inputs, such as feed, cows, and dairy equipment.

Cooperatives Probably Need Milk Marketing Orders to Enforce Classified Pricing

Even when they are the dominant sellers in their markets, cooperatives would probably be less successful without milk marketing orders in enforcing in all markets the degree of classified pricing that exists today. Classified pricing existed before marketing orders were established. However, analysts at that time were convinced that marketing orders with legal authority to enforce agreements were necessary to maintain sufficient classified pricing needed for dairy farmers to receive substantial long-term benefits. Without this authority, if the fluid price were much higher than the price for milk used for manufacturing, then some independent dairy farmers could undercut the cooperatives, or cheaper milk might be imported from outside the market area. Furthermore, even a dominant seller's ability to raise prices above the level that would prevail if there were competitors may be constrained by the potential entry into the market by new competitors.

Therefore, because classified pricing raises average milk prices farmers receive and marketing orders are probably necessary to enforce the degree of classified pricing that exists today, economic reasoning suggests that average prices at the farm level under the order system are higher than they otherwise would likely be.

Quantifying the Price Effect of Orders From Direct Observation of Prices Is Difficult

Although economic reasoning suggests that milk marketing orders probably cause higher milk prices, quantifying this effect is difficult. According to the report of the American Agricultural Economics Association's Task Force on Dairy Marketing Orders, a comprehensive study that compared milk prices in the same locations before and after implementation of marketing orders would provide the best evidence of the effects of orders.[6] However, such a study would encounter difficulties in clearly separating the effects of introducing marketing orders in the late 1930s from the effects of the general economic recovery that began at that time. In any event, in its review of research on milk marketing orders the Task Force found no such study.

One study from the 1970s cited by the Task Force examined two cases in which milk marketing orders were terminated and then reinstated.[7] However, the Task Force concluded that these two cases were too short

[6]Federal Milk Marketing Orders: A Review of Research on Their Economic Consequences, Occasional Paper No. 3 (June 1986).

[7]W.D. Dobson and Boyd M. Buxton, Analysis of the Effects of the Federal Milk Orders on the Economic Performance of U.S. Milk Markets, Research Bulletin R2897 (University of Wisconsin, Oct. 1977).

and too transitory to clearly indicate how milk markets would operate in the absence of orders. A study from the 1960s compared prices between unregulated markets and those with orders and found that prices were higher under orders, but the difference was not statistically significant.[8] The Task Force suggested that more systematic extension of that type of comparison might provide evidence about the effects of orders.

Estimates From Economic Models Suggest That Milk Marketing Orders Have Raised Prices

Because of the difficulties of estimating the price effects of milk marketing orders from direct comparisons of situations with and without orders, most empirical evidence comes from economic models of the dairy sector of the economy. The bulk of this evidence suggests that milk marketing orders have raised fluid milk prices. In fact, a 1988 USDA study suggested larger effects than found by studies conducted in the 1970s.

Several studies using economic models found similar results, despite differences in their assumptions about (1) the extent to which dairy farmers respond to higher prices by increasing production and (2) the degree to which the demand for fluid milk

is less responsive to price changes than the demand for manufactured dairy products. For example, several studies estimated that in the 1970s, milk marketing orders raised the average price dairy farmers received by about 2 to 5 percent. None of the studies reviewed by the Task Force estimated that orders raised that price by more than 10 percent.[9]

In general, however, these studies estimated larger effects on the prices paid dairy farmers for milk used for fluid consumption. In relation to the prices that would prevail without price discrimination, classified pricing raises prices for milk used for fluid consumption and lowers prices for milk used for manufacturing. For example, one study that estimated a 4-percent increase in the average price paid to dairy farmers, estimated a 9-percent increase in the price paid for milk used for fluid consumption (accompanied by a 6-percent decline in the price

[8]Reuben Kessel, "Economic Effects of Federal Regulation of Milk Markets," Journal of Law and Economics, Vol. 10 (1967), pp. 51-78.

[9]The Task Force report suggests that the effects of milk marketing orders on consumer prices are likely to be fairly similar to the effects on prices received by dairy farmers.

paid for milk used for manufacturing).[10] Another study, which estimated less than a 1-percent change in average milk prices paid to dairy farmers due to milk marketing orders, estimated that orders increased the price paid for milk used for fluid consumption by 8 percent (while reducing the price paid for milk used for manufacturing by 9 percent).[11]

A 1988 study by USDA estimated substantially larger national effects than previous research had suggested and also estimated the effects on prices in different regions.[12] In this study, USDA economists developed a simulation model of the dairy sector to estimate the long-term effects of various policy changes, including eliminating classified pricing. This study estimated that eliminating classified pricing through, for example, eliminating the pricing provisions of milk marketing orders, could reduce the national average price dairy farmers receive for their milk by as much as 13 percent and could reduce the price paid for milk used for fluid consumption by as much as 20 percent.[13] In some regions the estimated effects were greater. For example, for the Northeast (New England, New York, and northern New Jersey), the corresponding estimated price reductions were as much as 17 percent for the average price and as much as 26 percent for the price for milk used for fluid consumption.

Summary

Classified pricing—pricing milk on the basis of its end use—enables dairy farmers to receive higher milk prices. Cooperatives probably need federal milk marketing orders to maintain the same degree of classified pricing that exists today. Therefore, marketing orders are likely to increase average milk prices paid to dairy farmers and consumer prices for fluid milk but to lower consumer prices for manufactured dairy products. Results of some attempts to quantify the effects of marketing

[10]R.A. Ippolito and Robert T. Masson, "The Social Cost of Government Regulation of Milk," Journal of Law and Economics, Vol. 21 (1978), pp. 33-65.

[11]Roger A. Dahlgran, "Welfare Costs and Interregional Income Transfers Due to Regulation of Dairy Markets," American Journal of Agricultural Economics, Vol. 62, No. 2 (May 1980), pp. 288-296.

[12]Howard McDowell, Ann M. Fleming, and Richard F. Fallert, Federal Milk Marketing Orders: An Analysis of Alternative Policies, USDA, Economic Research Service, Agricultural Economic Report Number 598 (Sept. 1988).

[13]USDA's estimates are based on a key assumption about price variability and risk. That is, USDA assumes that eliminating classified pricing would not, in the long run, increase price variability so much that farmers would reduce their production because of an increase in the perceived risk level. But as USDA recognizes, if eliminating classified pricing increases price variability, and if dairy farmers are adverse to risk, then the production level might fall somewhat and thereby reduce the estimated decline in prices.

orders suggest that marketing orders raise prices, particularly for milk used for fluid consumption.

Review of Empirical Analyses of the Relationship Between Over-Order Payments and Cooperative Market Power

The relationship between over-order payments and cooperative market power has been examined by a number of dairy economists over the past 15 years. We reviewed many of their studies, including both case studies and empirical analyses. The studies we examined covered a variety of different sample periods and used a variety of modeling and empirical analysis methodologies.

For a number of possible reasons, the different studies do not reach a consensus concerning the relationship between over-order payments and cooperative market power. For example, the nature of the relationship between over-order payments and cooperative market power may have changed over time, in such a way that the relationship is significant during the sample period of one study, but not during that of another.[1] Further, the different studies generally have not been consistent in their attempts to account for those factors, besides the cooperative market power factor, that are considered important determinants of over-order payments. This inconsistency may mean that some analyses inappropriately attribute some portion of the size of over-order payments to cooperative market power rather than to factors not included in the analyses. Also, the different studies are inconsistent in the manner in which those factors included in their analyses are measured or approximated by the available data.

In this appendix we summarize the studies we reviewed according to the order of their completion and evaluate what they suggest concerning the relationship between over-order payments and cooperative market power.

Summaries of Studies We Reviewed

The literature we reviewed identified many reasons over-order payments can occur. The primary objective of each study was to test whether these payments may reflect the exercise of monopoly power by cooperatives. According to other explanations recognized in the studies, payments can also be (1) for processor-specific services, such as quality control work, now performed by the cooperative rather than the processor; (2) for marketwide services, such as balancing, promotions, and market analysis; (3) to obtain adequate supplies for the marketing region on a supplemental or continuing basis; (4) to compensate manufacturing plants for profits lost when milk is diverted to fluid uses (give-

[1]We use the term "significant" here and throughout the appendix to refer to a statistically significant relationship, at the 95-percent or better confidence level, which is positive in sign, as expected according to economic theory.

up costs); and (5) to correct for imperfections in the methodology used to determine class I minimum prices, e.g., that the M-W price 2-months lagged, rather than current, is used. Only in the more recent studies were attempts made to account for nearly all of these factors in the empirical analyses of the determinants of over-order payments.

Studies Completed in the 1970s

The earliest study we reviewed was a 1976 report by the Capper-Volstead Committee.[2] Using regression analysis, the Committee concluded that for each of the periods 1974, 1974-75, 1975, and 1975-76, cooperative market power was not significant in affecting over-order payments. The Committee's model of over-order payments also accounted for distance from Eau Claire, Wisconsin, (the class I price differential basing point) and the extent to which local influences cause actual class I differentials to deviate from what they should be, according to the general formula (based on the M-W price and distance) used to establish class I minimum prices. That these factors were found significant in affecting over-order payments suggests that the payments serve to compensate dairy farmers (cooperatives) for inaccuracies in the class I differentials pertaining to transportation costs and any misalignments caused by local influences.

The results of the Capper-Volstead Committee report were not consistent with those of an unpublished 1977 Justice Department study.[3] The Justice study found that, for the years 1973-75, a positive and significant correlation between the size of the over-order payments and one measure of cooperative market power—the market share of the dominant cooperative. This result implies that market power is an important factor in determining the size of over-order payments.

The Justice Department study and the work of other dairy industry experts were reviewed in a 1977 study edited by MacAvoy.[4] The MacAvoy study examined the relationship between over-order payments and market power of cooperatives from many viewpoints,

[2]The Question of Undue Price Enhancement by Milk Cooperatives, Capper-Volstead Committee, USDA (Dec. 1976).

[3]"Statistical Analysis of Market Share and Over-Order Charges," U.S. Department of Justice, Antitrust Division, Economic Policy Office (1977). Our review of this study is based on reviews by Jesse and Johnson (1985) and MacAvoy (1977). Discussion of their studies, and citations, are presented below.

[4]Paul MacAvoy, ed., Federal Milk Marketing Orders and Price Supports, American Enterprise Institute (Washington, D.C., 1977).

including those of economic theory, dairy industry experts, and previous empirical studies and available raw data. On the basis of available evidence, MacAvoy concludes that, for the most part, over-order payments reflect the exercise of market power by cooperatives. MacAvoy also points out, however, that the exercise of that market power (attained with the assistance of Capper-Volstead) is made possible largely because of the classified pricing system and associated restrictions placed on the movement of milk as instituted through the marketing order system.

In suggesting that a significant relationship exists between over-order payments and cooperatives' market power, a later study by Masson and Eisenstat (1980) also supported the conclusions of MacAvoy and the Justice Department study results.[5] The authors examined the consequences of a 1975 consent decree of the Justice Department on payments in one market with a dominant cooperative. Using regression analysis on data for this market over time, they found that the consent decree was significant in reducing the size of over-order payments. This result implies that, prior to the decree, the dominant cooperative was exercising its market power in the form of higher payments. In their analysis, Masson and Eisenstat control for the influence of many factors (in addition to the consent decree) on the level of over-order payments, including class I utilization and price, fuel and feed costs, and the status of price controls.

Studies Completed After 1980

In comparison to the studies summarized above, studies completed after 1980 present more extensive empirical analyses. Specifically, each of the earlier studies that contain regression analyses examined only one type of data, either time-series data or cross-section data.[6] Each of the more recent empirical studies analyzes pooled (time-series and cross-section) data in addition to separate time-series and/or cross-section data.

[5]R.T. Masson and P. M. Eisenstat, "Welfare Impacts of Milk Orders and the Antitrust Immunities for Cooperatives," American Journal of Agricultural Economics (1980), pp. 270-278.

[6]Time-series analysis examines data with observations over time, but data for each marketing order must be analyzed separately. Cross-section analysis examines data with observations across marketing orders, but data for each time period must be analyzed separately. It is possible to conduct pooled time-series/cross-section analysis that examines data with observations across market orders and over time simultaneously.

Babb and Bessler's 1983 study was the first to present analyses of pooled data in addition to separate cross-section data.[7] Their data set covered all federal marketing orders for the period 1965-80. They modeled over-order payments as determined by the market power of cooperatives (which was measured in several ways). Their model took several factors into consideration: (1) the market power of proprietary milk handlers (some cross-section analyses only), (2) class I price relationships among federal orders to reflect production and transportation cost misalignments, (3) the percentage of milk in an order used for class I purposes to reflect the production/consumption balance in each order, (4) barriers to the movement of raw milk, and (5) return over cost of milk production to reflect the status of the price-cost squeeze on dairy farmers.

Using cross-section analysis, Babb and Bessler find a significant relationship between cooperative market power and the level of over-order payments during the period 1965-72. In contrast to the earlier Justice Department study, however, they do not find significance for the years 1973-75.[8] This inconsistency arises, in part, because the earlier Justice Department study did not control for the effects on payments of all the factors Babb and Bessler take into account.

Babb and Bessler's pooled data analysis presents more of an overall perspective on the issue of a significant relationship between over-order payments and cooperative market power. Their pooled data results suggest the relationship between over-order payments and cooperative market power is not significant.[9]

Babb and Bessler also present results from a survey of cooperatives and milk processors, in which each group was asked to rank, in order of importance, seven different factors that influence the size of over-order payments. Both cooperatives and processors ranked among the three most important factors: (1) the bargaining power of cooperatives and the percentage of milk volume they controlled, (2) the supply-demand

[7]E.M. Babb and D.A. Bessler, Factors Affecting Over-Order Payments in Federal Milk Marketing Orders, 1965-80, Indiana Exp. Stg. Research Bulletin No. 977 (Purdue University, June 1983).

[8]Babb and Bessler also present results of a simple regression analysis in which cooperative market power is the only explanatory variable of the level of over-order payments. This analysis shows significance for the 1973-74 period. These results are similar to those of the Justice Department study.

[9]We refer only to the portions of Babb and Bessler's pooled analysis that use both time and order intercept shifters because their analysis suggests both types of intercept shifters should be included in the model.

balance of milk, and (3) the cost of milk from alternative sources. In suggesting that cooperative market power is among the most significant determinants of the size of over-order payments, these survey results differ from those of Babb and Bessler's empirical analysis.

An empirical study similar to Babb and Bessler's was completed in 1985 by Jesse and Johnson, who analyze pooled data and separately analyze both cross-section and time-series data.[10] Their data set contained monthly data from 1973-80 covering 38 federal marketing orders. Jesse and Johnson model over-order payments as determined by (1) cooperative market power (as measured by a variety of proxy variables), (2) market power of proprietary milk handlers, (3) cost of alternative milk supplies (similar to Babb and Bessler's class I price relationships), (4) balancing costs (also measured with proxy variables), (5) change in direct milk production costs, (6) class I minimum price imperfections (two variables, one to cover price stickiness, the other to account for the fact that class I prices are determined according to a 2-month lag of the M-W price), and (7) the presence of a marketing federation of cooperatives.

The results of Jesse and Johnson's analyses of cross-section, time-series, and pooled data did not consistently suggest a significant relationship between over-order payments and cooperative market power. Specifically, their cross-section analysis suggests that this relationship is significant only for several months of 1974 and for a few months during 1979-80. Their time-series analysis suggests that over-order payments were significantly related to cooperative market power during 1974-80 in only 4 of 24 market orders analyzed. Finally, their analysis of pooled data mirrors their analysis of cross-section and time-series data in suggesting that at different times or in different regions the relationship between over-order payments and cooperative market power could range from significant and positive, as expected, to not significant, or even significant but negative.

The most recently completed empirical study we reviewed was Babb's 1989 update of the Babb and Bessler study.[11] For this update Babb changes the data set, from 1965-80 to 1970-87. He also changes the

[10]Edward V. Jesse and Aaron C. Johnson, Jr., An Analysis of Cooperative Over-Order Pricing of Fluid Milk, Technical Bulletin 1708, USDA (1985).

[11]E.M. Babb, Over-order Payments in Federal Milk Marketing Orders, 1970-89, Staff Paper 371, Food and Resource Economics Department (University of Florida, Nov. 1989).

model by adding two variables, one that reflects regional product concentration and one that replaces the return- over-cost variable with an estimate of the costs of cooperative services. His cross-section analysis shows a significant relationship between over-order payments and the market power of cooperatives for only a few years during the 1980s. Babb's pooled data analysis, however, suggests a significant relationship between over-order payments and cooperative market power. These findings are not consistent with those of Babb and Bessler.

Also in 1989, Babb completed a case study covering 31 marketing orders to determine the array of qualitative factors that may affect the size of over-order payments.[12] In general, he found that over-order payments in most federal orders are more complex to interpret and administer now than they were in the 1970s. Specifically, the use of competitive credits (credits against over-order payments that processors can receive if competing with other lower cost processors) may confuse the meaning of an over-order payment. Also, over-order payments sometimes are set for extended periods of time to enhance stability of milk prices and therefore are not as sensitive to factors such as supply and demand balance as they once were.

Babb's case study suggests that more recent data on over-order payments may not be comparable to data from the 1970s. This difference may mean that empirical analyses of data from the 1980s are likely to produce different results and require different interpretations than do analyses of earlier data.

Overall Evaluation of the Results Presented in the Literature

The weight of the evidence from the earlier studies suggests there is a significant relationship between over-order payments and cooperative market power. Nonetheless, these early studies are less credible, in our view, than the more recent studies. The earlier studies generally do not account for many of the other factors besides cooperative market power that are acknowledged in the literature as important determinants of over-order payments.

The results of the more recent studies are mixed in suggesting a significant relationship between over-order payments and cooperative market power. Specifically, the results of Babb's 1989 pooled data analysis are the exact opposite of the results obtained from Babb and Bessler's 1983

[12]E.M. Babb, Case Studies of Over-Order Payments in Federal Milk Marketing Orders, Staff Paper 557, Food and Resource Economics Department (University of Florida, May 1989).

pooled data analysis, although the methodologies of the two studies are nearly identical (albeit for different sample periods). Further, the results of the pooled analyses of both Jesse and Johnson, and Babb and Bessler, suggest relatively few occasions (periods of time, and/or specific market orders) have occurred when a significant relationship between over-order payments and cooperative market power existed. Nonetheless, Babb and Bessler's survey results show that processors and cooperatives believe that cooperative market power is one of the more important determinants of over-order payments.

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