CRITERIA FOR THE DEFINING OF FEDERAL MILK ORDER MARKET AREAS

With Special Reference to Markets In the Mideast

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EXECUTIVE SUMMARY

Federal milk order markets in the mideast region of the U.S. have operated with virtually the same marketing area boundaries for more than twenty years. Changes in assembly, processing, and distribution of fluid milk market call into question the definition of marketing area boundaries. Results indicate that large volumes of bulk and packaged fluid milk move between mideastern markets. These changes and interaction between separate milk order markets have created a much larger economic milk market arguing for consolidation. Criteria for the defining of Federal milk order marketing areas include: (1) The area where the same handlers compete for the sales of packaged fluid milk, and (2) An area where the same handlers and/or cooperatives compete for a supply of market milk. Differing market provisions, Class I utilizations, price levels, and market structures are directives for the intermarket movements of milk. These differences are given secondary consideration in the consolidation of existing marketing areas. Marketing areas having strong linkages through market area criteria and secondary considerations can be identified as "core" area markets in a merger study. Outlying marketing areas may have an affiliation with one or more core area markets. Therefore, a few options are given for the consolidating of mideastern Federal milk order marketing areas.
INTRODUCTION

The six Federal milk order (FMO) markets in the mideastern region of the U.S. have operated with virtually the same marketing area boundaries for more than twenty years (Refer to Figure 1.). These mideastern markets include the Ohio Valley (FMO 33); Eastern Ohio-Western Pennsylvania (FMO 36); Southern Michigan (FMO 40); and Indiana (FMO 49). In addition, Michigan Upper Peninsula (FMO 44) and Louisville-Lexington-Evansville (FMO 46) marketing areas have substantial ties to these markets and must be given consideration in any market area analysis.

During the past twenty years, major changes have occurred in the assembly of producer milk and the processing and distribution of fluid milk (Class I), soft products (Class II), and manufactured dairy products (Class III). Technological innovation in processing, transportation and refrigeration combined with economies of size has fostered increasingly distant distribution of packaged milk. As traditional city markets expand, large chain-store customers representing substantial volumes of sales require handlers or their vertically integrated subsidiaries to service increasingly distant markets. Failure to service a chain-store customer may result in handlers losing the sales account, thereby reducing plant volume. Any unused capacity results in higher costs, especially for large plants trying to take advantage of the economies of size.

As handlers continue to expand their sales territories, they enter into direct competition with other market order pool handlers. The intense competition for packaged milk sales may displace in-area sales to a point where some pool handlers are no longer competitive due to differences in Class I prices, over-order premiums, and lower plant costs associated with larger competitors. Continued export sales to out-of-area markets may increase so that a handler has enough sales in another marketing area to become regulated under that particular market. Depending upon blend price differences between the area of plant location and market area of regulation, the handler may have either a competitive advantage or disadvantage in the procurement of a local milk supply. Such occurrences create unstable and disorderly marketing conditions. Small local dairy producer cooperatives have merged, resulting in the establishment of a few regional milk marketing cooperatives with membership selling in different Federal order markets. A cooperative's ability to rebblend prices paid to members located across the adjacent market areas may correct or further aggravate disparities and disruptive conditions. By reblanding, member producers located in or near high blend price markets may terminate their cooperative membership for higher blend prices received from proprietary handlers pooled in a marketing area yielding the higher price.

All of these changes in the dairy market call into question the defined marketing area boundaries. The different Federal order markets vary somewhat in their provisions, class utilizations, price levels, producer and handler structures. In some situations, the differences in the Federal order markets can either encourage or discourage movements of both bulk and packaged fluid milk that would otherwise not occur if uniformity in regulation was in place across the larger economic milk market.
Figure 1. Mid-Eastern Federal Milk Order Marketing Areas
MARKET AREA CONCEPTS

The Agricultural Marketing Agreement Act of 1937 makes orderly marketing one of the primary objectives to be served by marketing orders and agreements. The primary purpose of the Act is stated in Section 602:

"... to establish and maintain such orderly marketing conditions ... as will provide, in the interest of producers and consumers, an orderly flow of supply thereof to market ... to avoid unreasonable fluctuations in supplies and prices."

The key objectives of the Act involve stable prices and insuring the public adequate supplies of pure and wholesome fluid milk. A classified pricing mechanism and pooling procedure was established to enhance price stability thereby leading to orderly marketing conditions. The legislative concept of orderly marketing and the dairy industry's interpretation continues to be the focal point of debate concerning milk order policy.

Determining what geographic area constitutes a marketing area is one of the most important issues underlying the regulation of a Federal milk order. In the establishment of a Federal milk order program, milk marketing areas became the primary avenue for promoting orderliness in a geographic dimension. Markets for milk and related dairy products have been in place long before the establishment of Federal milk order markets. Federal milk order marketing areas may be viewed as fluid milk sub-markets belonging to a much larger economic dairy market. Therefore, these milk order marketing areas are established on top of an already existing unregulated milk marketing area. These areas of regulation attempt to encompass the marketing activities of a fluid milk market.

In the regulation of fluid milk markets, the definition of a marketing area is very important since it is essentially the primary means of identifying the milk that is to be priced and pooled. Under the Agricultural Marketing Agreement Act of 1937, geographic areas of regulation are defined on the basis of either production or marketing areas. The Act allows for considerable flexibility in the defining of Federal milk order areas of regulation by placing no direct restrictions on the size or type of area. The USDA-AMS Dairy Division defines marketing areas on the basis of criteria involving an area where the same milk dealers compete with each other for sales of packaged fluid milk (Class I). The definition is similar to those found in basic textbook discussions which refer to a marketing area as "an arena wherein all buyers and sellers are highly sensitive to each other's transactions ... The law of market areas states that the territorial boundary between two or more markets or plants is a locus of points such that the final selling prices, including transportation costs, are equal for selling in each market" (Kohl et. al. 1990). Economic theory indicates that all participants in a competitive market should be sensitive to the price prevailing in the market or to the deals offered by other transactors. Thus a fluid milk marketing area is an area where all participants are sensitive to each others marketing activities.

Unlike the defining of markets by production area, handlers procure milk supplies from milkshed areas inside and outside the defined market without consideration of existing marketing area boundaries. Furthermore, Section 8(c)(5)(G) of the 1937 Act specifies that -- 'No marketing agreement or order applicable to milk and its products in any marketing area shall prohibit or in any manner limit ... the marketing in that area of any milk or product thereof produced in any
production area in the United States. Further obstruction or burden involving movements of both bulk and packaged fluid milk across both state and/or marketing boundaries in the normal channels of interstate commerce is prohibited under the Declaration of the Act.

RESEARCH OBJECTIVE

The primary purpose of the research is to comprehensively evaluate the performance and orderliness of the Federal order marketing areas in the mideastern regions relative to the 1990's and beyond. The research was conducted at the request of the Market Administrator of four mideast Federal milk order markets because there was continuing evidence that the markets were highly inter-related. Representatives from both handler and cooperative organizations indicated that inter-market movements of bulk and packaged fluid milk were creating substantial market disorder among the mideastern Federal milk order markets. The market administrator expressed concern regarding the difficulty and confusion that may exist in determining which Federal order market a handler should be regulated under based on the sales criteria.

The purpose of this report is to: (1) identify elements of the mideastern Federal milk order markets that may be factors in disorderly marketing, (2) review and investigate additional market area definition criteria necessary for defining market area boundaries, (3) examine patterns associated with the assembly of producer milk and distribution of packaged milk in the mideast markets thereby arguing for partial or total consolidation. In addition to examining Federal milk order data, the opinions and views of key buyers and sellers will be utilized in pursuing the objectives.

PAST MARKETING AREA CONSIDERATIONS

The increasing size of Federal order distribution areas lends itself to the establishment of a few regional orders. Federal milk order markets have declined from a peak of 83 in 1962, to the present 33 despite the larger volume and proportion of Grade A milk being subject to regulation. Therefore, the question arises as to what is the "real" size of a fluid milk marketing area? Section 608 (c)(11)(B) provides a loose interpretation of specifics that do not limit the extent of regulatory areas in milk orders. Therefore, the defining of milk order marketing areas has become somewhat arbitrary.

The Nourse Committee report indicates that before a milk order can be issued for a marketing area, a reasonable level of homogeneity in the conditions of supply and demand must exist. The market specifics are still vague considering that the report fails to explicitly reveal the USDA interpretation of "reasonably homogenous." Jacobson (1968) suggested: (1) encompassment of sales area of competing handlers, (2) uniform sanitary standards, (3) considerations of procurement area relationships, (4) general market organization, (5) general acceptance by cooperatives, and (6) Class II processing and distribution situation. It should be pointed out that each aspect of utilizing the above six criteria may result in each of the six
measures suggesting something different with respect to size of marketing area or area of consolidation. However, without priority given to any of the six, a balanced judgement can be made resulting in the most appropriate marketing area size. Manchester (1983) also suggested that Federal milk order marketing area size should be determined by the following conditions: (1) a Federal order that is carrying the surplus for unregulated or state-regulated areas should be expanded to include those areas, (2) orders should be merged when a large Federal order is carrying the surplus for a smaller Federal order market, (3) Federal orders with overlapping supply areas should be merged, (4) a Federal order market pool should be at least as large as the pool operated by the largest cooperative in the market, and (5) a Federal order market pool should be at least as large as the sales area of the largest handler in that market.

MARKET AREA CRITERIA

Two explicit criteria are deemed necessary for the defining of Federal milk order marketing areas. These criteria involve: (1) distribution area, and (2) overlapping procurement areas. These marketing area criteria are defined and rationalized in the proceeding paragraphs. The two criteria are inter-related, thereby creating the need to simultaneously consider each criterion when defining the market area. Consideration for defining of marketing areas on a geographically contiguous basis is an important implicit criterion. Priority is given to inter-market movements of milk because of the direct effect they have on the level of buyer and seller sensitivity. After all, the major objective of both buyers and sellers is to provide an uninterrupted flow of milk and its components, along with other supplies and services required to operate the organization. On average, milk comprises 76.6 percent of the raw material costs associated with fluid milk processing (Hanson et al. 1994). The high raw material cost combined with the differences between marketing area regulation establishes the fact that areas of distribution and procurement are primary marketing issues.

Distribution Criterion

A distribution area is an area where the same handlers compete for the sales of packaged fluid milk. Current distribution criterion specifications state that any sales area where at least two or more handlers consistently distribute packaged fluid milk on a monthly basis should be part of a defined marketing area which encompasses their distribution patterns. Any unregulated sales areas that may be supplied by two or more handlers should also be included in the specifications.

1Inter-market movements of milk refers to the overlap in distribution and/or procurement of milk rather than the transfer of packaged fluid milk from one Federal order market to another.
Therefore, any overlap in sales between and among order markets reflecting competition between two or more handlers constitutes evidence for the consideration of a market merger. Under the distribution criterion, changing distribution patterns may argue for merging portions of one marketing area now displaying a closer affiliation with another adjacent marketing area.

The area where the same handlers compete for Class I sales continues to be the fundamental measure of what comprises a fluid milk market. Evidence of sales area overlap is a direct indication of inter-market relationships or sensitivity that exist between buyers and sellers in these fluid milk market areas. By placing the primary emphasis on defining market areas through Class I sales territories, concern over unstable marketing conditions by many buyers and sellers is reduced. Therefore, a systematic use of this measure is the primary means for achieving the objective of orderly marketing.

**Opinions and Views Regarding Distribution**

Handlers responding to a survey indicated that they were dissatisfied with the current Federal milk order marketing areas because they do not properly encompass the current distribution patterns for packaged fluid milk competitors. One handler suggests that expanding distribution beyond current Federal milk order marketing area boundaries is evidence of the failure to address the marketing area question. Expansion of handler sales appears evident considering that half of the responding handlers indicated that they have future plans to expand into new areas in other Federal milk order markets. The primary reason given for these expansions involves the increased efficiencies in the transportation and refrigeration systems. At least half of the handlers indicated that expansion was also due to the following of chain-store customers combined with the opportunities to grow and profit along with their customers. A few handlers indicated sales expansion through increased business with foodservice and wholesale grocery distributors. Others indicated that expansion was likely due to the mature market conditions in their current distribution area. The presence of distant out of area competitors was enough incentive for some pool handlers to enter other distant milk order markets. Finally, requests for products and the introduction of UHT products is the reasoning behind expansion for a few handlers.

Over half of the handlers indicating no future plans for sales expansion cited reasons such as increased costs for further distribution and the demise of the small independent grocer customer. Furthermore, handlers satisfied with the current Federal milk order marketing area boundaries indicated that the majority of their sales are contained within the marketing area. The current marketing areas should not be expanded any further according to one handler. The handler contends that the current market size is appropriate because it allows both small and large handler voices to be heard.
Procurement Criterion

A procurement area is an area where the same handlers and/or cooperatives compete for a supply of market milk. Procurement area considerations should state that any county consistently supplying milk to two or more milk order markets on a monthly basis should consider those separate areas of distribution as one defined marketing area. Therefore, any milk order market(s) or unregulated area(s) having an affiliation with each other through a common milkshed region should be considered for a potential merger. The consideration of procurement is limited in that it recognizes overlapping areas of procurement as a basis for merging marketing areas, but it does not follow that the milkshed region should be in the defined fluid milk market area. The practice recognizes that distribution criterion is still the primary marketing criterion regardless of whether the distribution patterns encompass the milkshed region supplying the market(s).

The overlapping procurement criterion becomes a critical component in the merging of markets or the defining of a marketing area, especially when there is substantial milkshed overlap with the potential for market disorder due to the differences in producer pay prices. The criterion also adds substantially to the description of buyer and seller sensitivity in a fluid milk market. Justification for defining marketing areas with respect to overlapping procurement areas is based upon fostering stable and orderly marketing conditions.

Opinions and Views Regarding Procurement

Approximately one half of the handlers contend that Federal milk order regulations create both barriers and opportunities in milk procurement. For example, Class I differentials and utilization differences between markets can either be an opportunity or a barrier in milk procurement. Markets having low Class I utilization (surplus milk) tend to have lower blend prices in comparison to adjacent markets exhibiting a higher utilization. Handlers in the higher Class I utilization markets may have procurement advantages due to the higher blend price. Other inter-market milk movement barriers involve the lack of efficient performance pooling provisions that may increase milk costs. Also, differences in location adjustments between markets were cited as a barrier in the procurement of milk. Lack of uniformity in provisions regarding mono, multiple, and seasonal pricing was considered to be a barrier in procurement for some handlers. A state regulatory milk pricing agency may also create barriers in the procurement of milk. Over-order premiums established through cooperative bargaining and other market forces are also considered to be a barrier in the procurement of milk. Unregulated handlers were said to have an advantage in milk procurement.

SECONDARY MARKETING AREA CONSIDERATIONS

Pricing and pooling provisions, Class I utilization, and market structure may influence inter-market milk movement patterns, thereby dictating the boundaries of a defined fluid milk marketing area. These secondary factors are not considered to be a part of the marketing area.
criteria. They assist in further understanding the economic rationale behind the various movements of milk that essentially establish fluid milk market area boundaries. For example, differences in pricing and pooling provisions between marketing areas may create opportunities and/or barriers in the procurement and distribution of milk. Also, substantial differences in utilization percentages may foster inter-market movements of milk especially from a procurement standpoint due to the attraction of milk to the higher blend priced markets. The market structure and organization of various cooperatives and handlers may influence inter-market movements of milk due to the numerous combinations of balancing activities and vertically integrated marketing occurring within and between the markets. The changing individual supply and demand conditions of both cooperatives and handlers combined with the reciprocal processing and transportation arrangements among producer associations creates a catalyst for the inter-market movements of milk.

OPTIONS AND VIEWS REGARDING MARKET AREA CONSOLIDATION

Handlers

Nearly one half of the handlers responding to the survey favor a restructuring of current marketing areas. The vast majority of handlers favoring a restructuring cited reasons such as uniformity in pricing and other regulations, combined with the elimination of overlaps. Handlers indicate that it will allow them to compete for sales of packaged fluid milk on an even playing field. Price uniformity would also eliminate handlers losing independent producers located on the outer fringe of a defined marketing area due to the adjacent market(s) yielding a higher blend price. A restructuring would also allow producers to share equally in the Class I proceeds. Handlers contend that overlap in both distribution and procurement create disorderly marketing through the lack of uniformity in pricing regulation. Lack of uniformity in pricing may create an economic hardship for some handlers. For example, handlers pooled and priced in markets with over-order premiums and high Class I prices and utilization, may attract out of marketing area competition having lower procurement costs. Also handlers having higher Class I and blend prices cannot remain competitive in the distribution of packaged fluid milk in lower priced markets regardless of advantages in procurement.

Handlers against a restructuring of the current marketing areas contend that regulation should be done in the smallest geographic region possible. Others against restructuring indicate that any piecemeal regulation such as state orders should be eliminated.

Cooperatives

Two of the cooperatives responding to the survey are satisfied with the current Federal milk order marketing areas. Cooperatives that are satisfied indicate that the marketing areas maintain stability through the uniform alignment of Class I prices in northern Indiana, northwest Ohio, and southern Michigan.
The cooperatives dissatisfied with the current marketing areas contend that over-order premiums and blend prices are not aligned, especially between northern Indiana and southern Michigan. The high blend prices in some markets create procurement advantages while eroding the current Class I utilizations in adjacent surplus markets already yielding below average Class I utilization. The effect is magnified when high Class I utilization or deficit markets fail to share the burden of a low priced Class III-A utilization occurring in the surplus markets. Other reasons for dissatisfaction in marketing areas involve the inconsistency or misalignments of Class I differentials and location adjustments between markets. One cooperative contends that the varying density of milk production in comparison to fluid milk plant location creates the misalignments in Class I differentials.

Four of the responding cooperatives favor a restructuring of the current marketing areas. Cooperatives favoring a restructuring cite the elimination of misaligned Class I and blend prices as the primary reason for redefining market boundaries. Uniformity in producer prices would prevail due to the minimizing of inter-market milk movements which create overlaps. With the minimizing of overlaps, any advantages or disadvantages in milk procurement would be inconsequential. Another reason for a marketing area restructuring involves the attracting of milk where it is needed by defining markets based on Class I utilization. One cooperative indicated that Class I utilization is an effective method for moving bulk milk rather than establishing larger regional marketing areas with many zone prices. In terms of price zones, one cooperative favored a flat Class I price by eliminating location adjustments within a market area. Another cooperative is against a restructuring of marketing areas that involve a flat Class I price. They contend that a flat Class I price will lack the necessary economic incentives to move milk. In large market areas, a need for substantial price differences is essential in order to move milk from surplus regions to more milk deficit regions. Furthermore, the cooperative stated that economies of size for fluid milk plants do not reduce milk procurement costs to handlers. Supply and demand conditions dictate costs considering that a greater cost will be incurred for milk procured from increasingly distant milkshed regions.

OPTIONS FOR CONSOLIDATING MIDEAST MARKETING AREAS

A visual review of the six mideast order markets in Figure 1 reveals that they are geographically contiguous. In terms of natural geographic boundaries, both the Ohio Valley (FMO 33) and Eastern Ohio-Western Pennsylvania (FMO 36) are bound from the north by Lake Erie. Southern Michigan (FMO 40) is bound from the west by Lake Michigan, while also being bound from the east by Lakes Huron, and Erie in conjunction with the Canadian border. Similarly, the Michigan Upper Peninsula (FMO 44) is bound by Lake Superior to the north, Lake Michigan to the south, and Lake Huron to the east in conjunction with the Canadian border. No other political or natural geographic boundaries exist among the other four mideastern order markets that would otherwise dictate the defining of these marketing areas.
Eastern Ohio-Western Pennsylvania-Ohio Valley-Indiana

Distribution

In terms of distribution criterion, the Ohio Valley (FMO 33), Eastern Ohio-Western Pennsylvania (FMO 36), and Indiana (FMO 49) marketing areas exhibit considerable market linkages in the form of Class I sales. Substantial overlap in distribution prevails among these three markets currently being evaluated with respect to a market merger. Figure 2 indicates that the Ohio Valley market has strong distribution linkages to both the Eastern Ohio-Western Pennsylvania and Indiana markets.

![Figure 2. Federal Order 33 Fluid Milk Sales Out of Marketing Area](image)

Fluid milk sales by Ohio Valley handlers into these other marketing areas have occurred consistently on a monthly basis over a two year period from 1992-93. Sales linkages between the Eastern Ohio-Western Pennsylvania and Indiana markets are strong (Refer to Figure 3).

![Figure 3. Federal Order 36 Fluid Milk Sales Out of Marketing Area](image)
Handlers pooled under the Eastern Ohio-Western Pennsylvania market had consistent monthly sales into the Indiana market for the two year period. According to Figure 4, sales of fluid milk into the Eastern Ohio-Western Pennsylvania market by handlers pooled under the Indiana market occurred during 1992. These sales volumes were minimal given that the USDA reports them in combination with "other" out of market sales data.

![Figure 4. Federal Order 49 Fluid Milk Sales Out of Marketing Area](image)

Out-of-area sales into the northwestern portion of the Indiana market by Chicago Regional (FMO 30) market pool handlers is extensive. According to the survey results, distribution into Gary, Indiana by Chicago Regional pool handlers is almost exclusive and therefore should be consolidated into the Chicago market.

Distribution by Eastern Ohio-Western Pennsylvania, Ohio Valley, and Indiana pool handlers into unregulated areas has occurred on a monthly basis during the two year period ranging from 1992-93. Sales into unregulated areas by Eastern Ohio-Western Pennsylvania handlers occur primarily in areas east of the defined market. These areas involve portions of western Pennsylvania, western Maryland, and eastern West Virginia.

Overlaps in unregulated area distribution between Eastern Ohio-Western Pennsylvania and Ohio Valley handlers occur in the unregulated areas of north central and northwestern Ohio. The Ohio Valley handlers may also have additional distribution in unregulated areas located in eastern Kentucky. The distribution overlap for unregulated areas of northwestern Ohio includes handlers pooled in the Indiana market. Other sales into unregulated areas by Indiana pool handlers includes the unregulated areas of western Indiana. Distribution into these unregulated areas further enhances the evidence arguing for integrating these unregulated areas into their corresponding markets. Furthermore, the overlap in distribution in conjunction with overlap in procurement increases the economic validity for merging the Eastern Ohio-Western Pennsylvania, Ohio Valley, and Indiana marketing areas into a larger regional market.
**Procurement**

Further examination through the use of overlapping procurement criterion reveals that the markets are linked through the procurement from several common milkshed regions. For example, Table 1 indicates that numerous counties located in the Ohio Valley (FMO 33) and Eastern Ohio-Western Pennsylvania (FMO 36) supply milk to both of these markets.

<table>
<thead>
<tr>
<th>FMO Markets</th>
<th>Indiana</th>
<th>Kentucky</th>
<th>Michigan</th>
<th>Ohio</th>
<th>West Virginia</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 and 36</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>29</td>
<td>5</td>
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<td>36 and 49</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1. Number of Counties by State Supplying Milk to Both Ohio Valley, Eastern Ohio-Western Pennsylvania and/or Indiana Market Pool Handlers, January 1993

Similarly, the Ohio Valley and Indiana (FMO 49) markets also share a common milkshed region consisting of counties located in both of these markets. In addition, the Eastern Ohio-Western Pennsylvania market has procured milk from milkshed counties located in Indiana and vice-versa. Meanwhile all three of the milk order markets have shared a common milkshed region consisting of counties located in the western portion of the Ohio Valley market.

The Eastern Ohio-Western Pennsylvania market procures milk from numerous unregulated counties east of the market. Both the Eastern Ohio-Western Pennsylvania and Ohio Valley markets share a common milkshed region composed of unregulated counties in north central Ohio. The Ohio Valley market procures milk from unregulated counties located in northwestern Ohio and southern Michigan. The unregulated milkshed region is shared with the Indiana market. Results indicate that the Eastern Ohio-Western Pennsylvania market has procured milk from at least one of the unregulated counties located in this milkshed region. The Indiana market also procures milk from unregulated counties located in the western portions of Indiana. All of these overlapping procurement areas further indicate that the three markets along with numerous unregulated areas should be consolidated into one marketing area.
Secondary Considerations

Inter-market movements of milk between these marketing areas may be substantiated through the secondary indirect consideration for market structure and organization. As indicated in the results, differences in provisions between these markets are minimal and should not be viewed as barriers to a potential market merger. Like sanitary standards, uniformity of provisions between all milk order markets may become a realization of the milk order program.

In terms of cooperative involvement among the markets, four cooperatives or bargaining associations actively market a substantial volume of milk in the Eastern Ohio-Western Pennsylvania, Ohio Valley, and Indiana markets. These producer associations are integrated into the markets through producer membership and/or acting as handlers. Producer associations acting as handlers have either a manufacturing facility (supply plant) and/or distribution plant operating in one or more of the three markets currently being evaluated.

Survey results indicate that reciprocal arrangements involving transportation, balancing, and processing activities for these markets occur among the producer associations. Such reciprocal arrangements combined with overlaps in procurement are evidence that sellers (producer associations) between these marketing areas are sensitive to each others transactions as a result of inter-market movements of milk. Therefore, these inter-market movements of milk suggest a merger of the three marketing areas.

Similarly, some proprietary handlers have become integrated into the three marketing areas with respect to their distributing plant arrangements. For example, one national dairy firm operates several separate fluid milk processing facilities with three being located and pooled under the Eastern Ohio-Western Pennsylvania market, one located in the unregulated area of western New York and the other located and pooled under the Ohio Valley market. Another national dairy firm operating in a regional manner, has one or more fluid milk processing facilities located and pooled under the Eastern Ohio-Western Pennsylvania, Ohio Valley, and Indiana markets. Perhaps the most unique market structure linking these markets involves a handler physically located in the Eastern Ohio-Western Pennsylvania market while being pooled under the Ohio Valley market. The same handler also operates a plant that is located and pooled under the Indiana market. A regional chain-store also operates fluid milk facilities with one or more being located and pooled under the Ohio Valley or Indiana markets. These integrated handlers and their plants located and pooled among the three markets combined with overlap in distribution obviously creates a level of buyer (handler) sensitivity that is conducive to inter-market movements of milk.

At this juncture it would appear that market structure and organization as a secondary consideration, becomes further evidence for linking the three marketing areas together. Under the current merger evaluation involving these markets, the structure and organization criterion interfaces very well with the marketing area criteria. But ultimately the three market areas display such a high degree of inter-relationship that the market area criteria may be used to lift up sufficient evidence arguing for a merger of these markets regardless of market structure and organization.

An argument could be made that the relationship between the Indiana and Eastern Ohio-Western Pennsylvania markets is not nearly as strong as each markets relationship with the Ohio Valley market. In this case the geographically contiguous Ohio Valley market acts as a common
area of overlap therefore strengthening the existing linkages between the above two markets as a result of the market's strong encompassing inter-market relationships.

These three markets satisfy both marketing area criteria to where their strong linkages make it a basing point or a mideast "core" area for evaluating the merging of additional surrounding marketing areas to this area. For example, the complete set of criteria when applied to other surrounding mideastern marketing areas may simultaneously argue for and against a merger with the core area. Therefore, evidence for or against merging the core area with other surrounding marketing areas may be based on only one relevant criterion that takes precedent in the merger decision. These surrounding market areas may be viewed as outliers due to the weaker affiliation with the core area as a result of insufficient evidence in terms of marketing area criteria. Partial interfacing of criteria may suggest that these outlying market areas are affiliated with several core type markets. The question then arises as to which core area do these outlying markets have the strongest linkage with in terms of a potential merger.

Southern Michigan

Distribution

The Southern Michigan (FMO 40) market is geographically contiguous with the core area markets of Indiana (FMO 49) and Ohio Valley (FMO 33). In terms of the distribution criterion, Figure 5 indicates market linkages through packaged fluid milk sales.

![Figure 5. Federal Order 40 Fluid Milk Sales Out of Marketing Area](image-url)
Substantial overlap in distribution occurs among the Southern Michigan, Indiana, Ohio Valley, and Eastern Ohio-Western Pennsylvania (FMO 36) marketing areas. Out of marketing area sales by Southern Michigan pool handlers include the three mideast core area markets and unregulated areas in southern Michigan and northwestern Ohio. These out of area sales patterns occurred on a monthly basis during the 1992-93 period. An identical sales pattern prevails with the out of area sales into the Southern Michigan marketing area by handlers pooled in the three mideast core markets (Refer to Figures 2, 3, and 4). During the years 1992-93, sales into the Eastern Ohio-Western Pennsylvania market occurred on a monthly basis. These overlaps in sales along with the sharing of a common milkshed region creates strong evidence lending itself to merging the above markets.

**Procurement**

In terms of the procurement criterion, Table 2 indicates considerable overlap in procurement between handlers pooled in the Southern Michigan (FMO 40), Indiana (FMO 49), and Ohio Valley (FMO 33) markets.

<table>
<thead>
<tr>
<th>FMO Markets</th>
<th>Indiana</th>
<th>Kentucky</th>
<th>Michigan</th>
<th>Ohio</th>
<th>West Virginia</th>
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**Table 2. Number of Counties by State Supplying Milk to Both Southern Michigan and Other Market Pool Handlers, January 1993**

These markets share a rather large milkshed region spanning the southern third of Michigan and the northern third of Indiana. The shared milkshed region includes several unregulated counties in southern Michigan. Pool handlers under the Southern Michigan market do not procure in the northwestern Ohio milkshed region where both Ohio Valley and Indiana pool handlers overlap in procurement. The Ohio Valley pool handlers have extended their procurement area up into the east central portion of the Southern Michigan marketing area. In addition to the above market overlap in procurement, the Eastern Ohio-Western Pennsylvania (FMO 36) market plays a minimal role considering that the market has procured milk from the southeastern counties of Michigan.
Secondary Considerations

Inter-market movements of milk are indirectly affected by differing provisions in the form of multiple component pricing between the Southern Michigan and the midwest core markets. These differences in multiple component pricing provisions may foster a substantial degree of sensitivity among the buyers and sellers due to advantages and disadvantages in procurement. Uniformity in provision arrangements would prevent these artificial opportunities and barriers for the inter-market movements of milk which in turn dictates the defining of a fluid milk market.

The survey results indicate that the two producer associations pooled as handlers under the Southern Michigan market have substantial marketing activities in the Indiana marketing area. These activities include producer membership and/or reciprocal arrangements involving transportation, balancing, and processing among the other producer associations having strong affiliation with the midwest core area markets. The two producer associations pooled under the Southern Michigan market have manufacturing plants that are only located within the marketing area. Likewise, the four other affiliated producer associations have no manufacturing or distributing plants located within the Southern Michigan market area.

One Southern Michigan proprietary handler has become a part of the Ohio Valley and Indiana market by operating a pool distributing plant in those markets. Furthermore, a vertically integrated chain-store handler operates fluid milk plants in Southern Michigan, Indiana, and Ohio Valley order markets. Another Southern Michigan pool handler is owned by a national dairy firm that operates other fluid milk processing plants in all three of the midwest core area markets.

The market structure of the above producer associations and proprietary handlers along with the inter-market movements of milk creates a level of buyer and seller sensitivity that economically justifies merging the Southern Michigan market with the midwest core area consisting of the Ohio Valley, Indiana, and Eastern Ohio-Western Pennsylvania markets. Evidence for the merger is strong considering both marketing area criteria are satisfied. Priority is given to both distribution and overlapping procurement criteria in the merger evaluation. Market structure and organization criterion pertaining to producer associations and handlers is given secondary considerations due to the indirect impact they place on inter-market milk movements. Once again, the geographically contiguous Ohio Valley market acts as a common area of overlap for strengthening the linkages between the Southern Michigan and Eastern Ohio-Western Pennsylvania markets.

Michigan Upper Peninsula

Distribution

The Michigan Upper Peninsula (FMO 44) market area is related to the three mideast core area markets through the linkage with the Southern Michigan (FMO 40) marketing area. From a distribution criterion perspective, Figure 5 indicates that distribution by Southern Michigan pool handlers into the Michigan Upper Peninsula occurred on a monthly basis during the 1992-93
period. These sales patterns most likely suggest that overlap in distribution between handlers pooled under the Michigan Upper Peninsula and Southern Michigan marketing areas has occurred. Survey results indicate that Michigan Upper Peninsula pool handlers distribute packaged fluid milk into the Chicago Regional (FMO 30) marketing area. Evidence suggest that the affiliation may lead to the Michigan Upper Peninsula being merged with either one of the above marketing areas. Survey results suggest that both overlapping procurement and distribution patterns may be conducive to merging the eastern portion of the Michigan Upper Peninsula marketing area with Southern Michigan, while merging the remaining western half with the Wisconsin markets.

**Procurement**

In terms of the overlapping procurement criterion, survey results indicate that the Michigan Upper Peninsula pool handlers have procured substantial volumes of milk from market areas located in Wisconsin. Further examination through the use of both distribution and overlapping procurement criteria is unavailable due to the limited number of pool handlers. Considering the geographic nature of the Michigan Upper Peninsula marketing area, such limitations imply that perhaps the market is too narrowly defined.

**Secondary Considerations**

The individual handler pooling in the Upper Michigan Peninsula market may affect inter-market movements of milk, thereby indirectly affecting the defining of a market. Other secondary considerations for the inter-market movement of milk involve market structure. One producer association with primary membership and supply plants located in the Southern Michigan market also has membership located within the Michigan Upper Peninsula. The cooperative does not act as a handler and also has no manufacturing facilities (supply plant) located in the marketing area. The extent to which the cooperative has reciprocal transportation, balancing, and processing arrangements with Wisconsin producer associations is unknown. Potential for reciprocal arrangements between producer associations and a proprietary handler exist due to the handler operating a non-pool manufacturing plant. All of the handlers pooled under the Michigan Upper Peninsula market operate manufacturing and/or distributing plants exclusively within the marketing area.

Merger evidence revealed by using the marketing area criteria is limited due to restrictions placed on market information. The inter-market movements of milk by Southern Michigan pool handlers along with existing producer association membership, suggests that overlap between the Southern Michigan and Michigan Upper Peninsula marketing area prevails. The same degree of inter-market linkages may exist with upper midwest core area markets located in Wisconsin. Further evaluation is required to determine the extent of both buyer (handler) and seller (producer association) linkages between the Michigan Upper Peninsula, Southern Michigan, and Wisconsin marketing areas.
Given the small volume of milk that the market represents, the level of buyer and seller sensitivity may justify the current market area boundaries or perhaps a deregulation. Therefore, the option of merging the market with either Southern Michigan or Wisconsin markets is possible, along with consideration for deregulating the market.

**Louisville-Lexington-Evansville**

**Distribution**

The Louisville-Lexington-Evansville (FMO 46) market is geographically contiguous with the mideast core area markets of Indiana (FMO 49) and Ohio Valley (FMO 33). When considering the distribution criterion, substantial overlapping linkages prevail in the form of Class I sales between the Louisville-Lexington-Evansville, Indiana, and Ohio Valley marketing areas. According to Figure 6, Louisville-Lexington-Evansville pool handlers had sales into both the latter two markets and unregulated areas on a monthly basis during the 1992-93 period.

![Figure 6. Federal Order 46 Fluid Milk Sales Out of Marketing Area](image)

Sales into unregulated areas occurred in the counties situated to the north, east, and south of the Louisville-Lexington-Evansville marketing area. Fluid milk sales by Ohio Valley pool handlers into the Louisville-Lexington-Evansville market also occurred on a monthly basis during the 1992-93 period (Refer to Figure 2). Sales of packaged fluid milk into the Louisville-Lexington-Evansville market area by Indiana pool handlers was not as consistent (Refer to Figure 4). These sales occurred six months out of the year during 1992. During 1993, sales occurred on a monthly basis.
Through the use of the distribution criterion, substantial evidence on the overlapping distribution between the Louisville-Lexington-Evansville and the two mideast core area markets indicate that a merger would be appropriate. The overlapping distribution suggests that portions of these markets may need to be merged. One option involves merging the Indiana counties and the northeastern section of the Louisville-Lexington-Evansville market area with the three mideast core area markets. The extreme southern portions of the Ohio Valley marketing area would also become a part of a newly restructured market area located directly south of the mideast market. The rationale for such a restructuring involves consideration of possible overlapping distribution areas displaying a high degree of affiliation and proximity to these various existing marketing areas.

Procurement

Based on the extent of procurement overlap, the procurement criterion appears to have lifted up substantial evidence warranting a merger of the Louisville-Lexington-Evansville (FMO 46) marketing area with the mideast core area markets. By examining procurement evidence in these markets, Table 3 indicates overlap in procurement occurs between handlers pooled under the Lexington-Louisville-Evansville, Ohio Valley (FMO 33), and Indiana (FMO 49) markets.

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Table 3. Number of Counties by State Supplying Milk to Both Louisiana-Lexington-Evansville and Other Market Pool Handlers, January 1993

The milkshed region of common procurement includes counties located in western and southwestern Ohio. The Louisville-Lexington-Evansville and Ohio Valley pool handlers also share a common milkshed region consisting of several unregulated counties between the two marketing areas. Similarly, Louisville-Lexington-Evansville and Indiana pool handlers share in the procurement of milk from an unregulated county located in the southwest corner of the defined
Indiana marketing area. Overlap in procurement by both pool handlers in these markets occurs in several counties bordering the two markets.

**Secondary Considerations**

Inter-market movements of both bulk and packaged fluid milk may be affected indirectly by such secondary considerations as market structure and organization. Major differences in provisions prevail between the Louisville-Lexington-Evansville and the mideast core area markets. Pricing differences between these markets occur by season and components. These differences may affect the inter-market movements of milk which in turn affect marketing area definition.

From a market structure viewpoint, the cooperative or producer association affiliation among these markets is perhaps the most substantial piece of evidence arguing for a merger of the marketing areas. The same four producer associations having membership and/or acting as handlers in the mideastern markets of Eastern Ohio-Western Pennsylvania, Ohio Valley, and Indiana do so under the Louisville-Lexington-Evansville marketing area. Only one of the producer associations has manufacturing facilities (supply plant) located and pooled under the Louisville-Lexington-Evansville market. The very same producer association is affiliated through a joint-venture with a distributing plant located and pooled under the Indiana marketing area.

Survey results do not indicate the extent to which these producer associations have reciprocal arrangements involving marketing activities between the Louisville-Lexington-Evansville market and the mideast core area markets. The qualification as a pool handler suggests that market integration by producer associations is substantial enough to consider a merger of the marketing areas provided that inter-market movements of milk coexist.

The vertical integrated incidence of proprietary handlers located and pooled under the Louisville-Lexington-Evansville, Ohio Valley, and Indiana marketing areas is perhaps the most critical evidence linking these market together. A regional grocery chain has fluid milk processing facilities located and pooled under all three of the above areas. The chain's distributing plant located in the Louisville-Lexington-Evansville market and pooled under the market as a result of a lock-in which otherwise would have the plant pooled in the Ohio Valley market based on sales of packaged Class I milk. Similarly, a national dairy firm that is regionally structured has a fluid milk processing plant located and pooled under all three mideast core area markets including the Southern Michigan and Louisville-Lexington-Evansville marketing areas. Such market structure is conducive to further inter-market movements of milk between these marketing areas. The strong degree of inter-market movements and relationships between these buyers (handlers) and sellers (producer associations) reveals evidence that a substantial degree of sensitivity exists to warrant a merger of markets.

The lack of inter-market movements of milk and secondary relationships between the Eastern Ohio-Western Pennsylvania and Louisville-Lexington-Evansville marketing areas may stimulate criticism in a merger. Similar arguments may be heard due to the lack of inter-market relationships between the Southern Michigan and Louisville-Lexington-Evansville markets under a merger involving these two markets with the three mideast core area markets. Justification for
the potential mergers of the above marketing areas involves the geographically contiguous Ohio Valley market's central linkage pertaining to a common area of overlap with all of these markets.

Other Marketing Areas

Eastern Marketing Areas

The lack of substantial inter-market movements of milk discourage a merger between the three mideast "core" area markets and eastern marketing areas consisting of the New York-New Jersey (FMO 2), New England (FMO 1), and the Middle Atlantic (FMO 4). The above markets do exhibit linkages that involve being geographically contiguous, cooperative membership across the market areas and similar Class I utilizations from a blend price perspective. However, merging these particular marketing areas through secondary indirect considerations is economic unjustifiable. Future increases in inter-market movements of milk between these mideast and eastern marketing areas would be required in order to create substantial evidence arguing for a merger. Until such marketing activity occurs, the market regions are essentially two separate core areas.

Western Marketing Areas

A similar conclusion may be drawn regarding the inter-market movements of milk and other secondary relationships between the mideast core area markets and the marketing areas immediately to the west. A potential merger would require future increases in inter-market movements of milk between the mideast markets and the market areas involving the Chicago Regional (FMO 30), Central Illinois (FMO 50), and Southern Illinois-Eastern Missouri (FMO 32).

Consolidation Options

The following summarizes the options that may be exercised in the restructuring of the marketing areas located in the mideast.

OPTION 1 MERGES THE FOLLOWING:

Order Markets: Eastern Ohio-Western Pennsylvania, Ohio Valley, and Indiana marketing areas.
Includes: All contiguous and related unregulated areas.
Excludes: Area encompassing Gary, Indiana.
OPTION 2 MERGES THE FOLLOWING:

ALL OF OPTION 1
Order Market: Southern Michigan marketing area.
Includes: All contiguous and related unregulated areas.

OPTION 3 MERGES THE FOLLOWING:

ALL OF OPTION 2
Order Market: Michigan Upper Peninsula marketing area or the eastern half of the Michigan Upper Peninsula marketing area.
Includes: All contiguous and related unregulated areas.

OPTION 4 MERGES THE FOLLOWING:

ALL OF OPTION 3
Order Market: Northern portions of the Louisville-Lexington-Evansville marketing area.
Includes: All contiguous and related unregulated areas.
Excludes: Southern most portion of the Ohio Valley marketing area.

SUMMARY AND CONCLUSIONS

The midwest milk order market areas of the Ohio Valley (FMO 33), Eastern Ohio-Western Pennsylvania (FMO 36), Southern Michigan (FMO 40), Michigan Upper Peninsula (FMO 44), Louisville-Lexington-Evansville (FMO 46), and Indiana (FMO 49) have been regulated under the same marketing area boundaries for more than twenty years. The implementation of scale economies in conjunction with technological advances in assembly, processing, and distribution of fluid milk has surpassed the existing market area boundaries. Therefore, a much larger economic fluid milk market exists between these separate midwest Federal order markets. The overlaps in both distribution and procurement have created a substantial degree of market disorder through price instability.

A primary objective of the Agricultural Marketing Agreement Act of 1937 is to create stability in price, thereby establishing orderly marketing. In the dairy industry, the objective is served by the establishment and enforcement of milk marketing orders. In addition to orderly marketing, another primary objective of the milk order program is to insure the public an adequate supply of pure and wholesome milk. Orderliness in a geographic dimension is fostered through the establishment of Federal milk order marketing areas. The geographic defining of a Federal milk order marketing area is the first crucial issue in the promulgation and enforcement of a milk marketing order. A defined market becomes the primary means of identifying the milk that is to
be priced and pooled. The current explicit criteria utilized in defining a milk order marketing area involves an area where the same handlers compete for the sales of packaged fluid milk.

The research focuses on the milk marketing areas located in the mideastern region of the United States. The study objectives involved: (1) Identification of market disorder in the milk order markets due to regulatory differences, (2) Review and evaluate traditional market area criteria with consideration for new or additional alternative criteria for the defining of market boundaries, and (3) Examination of inter-market movements of both producer and packaged fluid milk that may argue for a market consolidation. Based on the research objectives, the essential question addresses the issue as to what constitutes a fluid milk market. By arbitrarily establishing market areas, many of the alternative pooling and pricing proposals fail to recognize the need for economic justification in defining marketing area boundaries. An economically sound set of marketing area criteria must be established and implemented prior to any consideration for future pooling and pricing policies.

Two explicit criteria involving distribution area and overlapping procurement areas are deemed necessary for the proper defining of Federal milk order marketing areas. These criteria are defined, and rationalized in the research discussion. Class I utilization along with market structure and organization are secondary considerations which indirectly affect the defining of a fluid milk market, given the distribution and overlapping procurement criteria. These considerations assist in further explaining the economic rationale behind the inter-market movement of milk which in turn influence marketing area boundaries.

Results indicate that a substantial degree of overlap in packaged fluid milk distribution prevails among the six mideast milk order marketing areas. Approximately one half of the handlers indicated that they were dissatisfied with the current mideast milk order marketing areas because they do not properly encompass today's distribution patterns for competing sales of packaged fluid milk. Survey results indicated that many of the mideast pool handlers have future plans to expand into new sales areas in other Federal milk order markets. Aside from the refrigeration and transportation technologies, handlers cited the following of chain-store customers as the primary reason for expansion.

In terms of procurement, the results show that pool handlers in each of the six mideast markets share a common milkshed region with at least one other mideast marketing area. Many of the mideast pool handlers indicated that current milk order provision differences create both opportunities and barriers in milk procurement. Inter-market movements of milk foster elements of market disorder through differing market pricing and pooling provisions. Regulatory provisions differing to some extent include handler pooling, component pricing, location adjustments, pool plant provisions, seasonal pricing, and partial regulation.

The vast majority of handlers favoring some type of mideast market consolidation cited reasons such as uniformity in pricing and other regulations combined with the reduction of both distribution and procurement overlaps. A few of the cooperatives indicated that they were satisfied with the current mideast milk order marketing areas. A reason for satisfaction involved the market area stability created through the uniform alignment of Class I prices, especially in northern Indiana, northwest Ohio, and southern Michigan. Cooperatives dissatisfied with the current marketing areas cited the opposite, stating that blend prices are not in alignment in the above marketing areas. A final summary indicated that four out of the five responding
cooperatives favored some type of marketing area consolidation in the mideast. The primary reason cited involved the elimination of misaligned Class I differentials, location adjustments, and blend prices.

Several merger options were identified when applying the marketing area criteria to the mideast order markets. The options represent the fact that market areas under consideration display characteristics that warrant a need for flexibility in defining the consolidated market. Future marketing area consolidations by the Dairy Division should allow for such flexibility if marketing area criteria suggest possible options. Options allow industry to play a key role in determining the final placement of market area boundaries through the milk order amendment process. The key issue in future defining of Federal milk order marketing areas may involve the degree of pro-activity initiated by the Dairy Division regarding the entire merger process.
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