MARKETING COOPERATIVES AND UNDUE PRICE ENHANCEMENT: A THEORETICAL PERSPECTIVE

by

Edward V. Jesse and Aaron C. Johnson, Jr.

WP-46   October 1980

MARKETING COOPERATIVES AND UNDUE PRICE
ENHANCEMENT: A THEORETICAL PERSPECTIVE

This analysis of the performance effects of agricultural marketing cooperatives was prepared in connection with a larger study to clarify the meaning of undue price enhancement under Section 2 of the Capper-Volstead Act.   The specific purpose of this analysis is to outline conditions under which a cooperative might be capable of elevating price above the competitive level.   Performance of marketing cooperatives in alternative market structure settings is compared with the performance of comparable private firms.   Producer and consumer welfare for both cooperative and private firm solutions are compared with a perfectly competitive norm.   Assumptions underlying the cooperative solutions are then relaxed to show what is required for open membership cooperatives to posses market power.

Market Structure and the Theory of Cooperatives

There have been numerous extensions of conventional price theory to markets involving cooperatives.   We will not summarize these; the interested reader is directed to a comprehensive critique of alternative approaches to cooperative theory by Vitaliano.   For our purposes, the theoretical work initiated by Helmberger and Hoos and extended by Youde can be most effectively utilized.   Details of what is hereafter denoted the Helmberger Model may be found in Helmberger and Hoos; Helmberger; Youde and Helmberger; Youde (1966); and Youde (1978).

Briefly, the Helmberger Model permits evaluation of price and output solutions for firms engaged in procuring a single raw agricultural product

for processing and subsequent sale. The term processing is general enough
to include such marketing functions as handling or merely assembling raw
product. Processing does imply firm management of handling facilities; that
is, operation on a conventional production function is assumed. Hence, the
model is not appropriate for bargaining cooperatives. Based on firms'
production functions, average and marginal revenue product functions may
be derived and used to specify optimal levels of raw product use, given
prices for output and other inputs used in the processing function.

Using model variants, Helmberger shows equilibrium raw product prices,
and firm receipts under different assumptions concerning market structure,
length of run, market composition in terms of private (profit-seeking) firms,
open membership cooperatives, and restricted membership cooperatives. We
shall review, amplify, and extend the Helmberger model for several market
structure conditions.

Our analysis is based on the following simplified view of the physical
marketing system for an agricultural commodity:

| Primary Producer | → | Processor | → | Distributor |
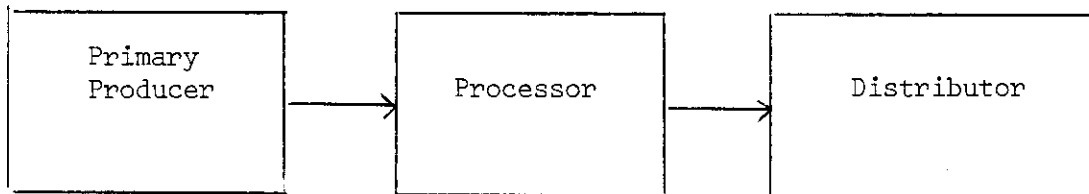
The cooperative operates in the second link of the simple marketing chain,
receiving a raw product from producer-members and selling the product, trans-
formed by whatever utility is created by its processing function, to the next
stage in the marketing system. The identity of the distributor link is im-
material to the analysis; it might be another processor, a wholesaler, or
even a final consumer in the case of complete vertical integration. What is
relevant is the structure of the two markets noted in the diagram, and more

specifically, the nature of competition on both the buying and selling sides of these markets.

If we assume that there are many primary producers, no one of which is large enough to influence the price for his output, we can reduce our range of consideration to the competitive organization of (1) buyers of raw product, (2) sellers of finished product, and (3) buyers of finished product. Looking solely at the competitive extremes of atomistic competition (A) and a single firm (S), eight market structure combinations can be identified as shown below:

Primary Producers	Processors	Distributors
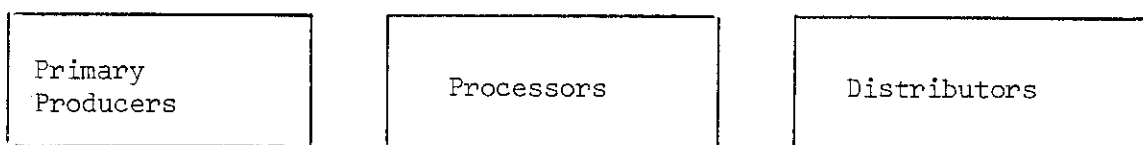
Group	Case	(1)		(2)	(3)
I	1	A		A	A
	2	A		A	S
II	3	A		S	A
	4	A		S	S
III	5	S		A	A
	6	S		A	S
IV	7	S		S	A
V	8	S		S	S

These eight combinations can be grouped according to similarities with respect to market price and output solutions. Five distinct groups are noted in the diagram. One of these, Group II, is not a realistic market structure

combination -- it is difficult to conceive of an atomistically organized group of processors, each of which is a monopolist seller of finished product. The remaining four groups are discussed in turn below. In each case, we make the following common assumptions:

- Private and cooperative firms are equally efficient in processing and have identical fixed plants. This results in identical cost functions for all firms, irrespective of business organization.

- The objective of private firms is to maximize firm profits. Cooperatives seek to maximize net returns to members per unit of raw product processed.

- The membership of an open membership (OM) cooperative will expand if cooperative net returns exceed the net returns offered by its competitiors (either private or cooperative); contract if below; and remain constant if equal to.[1] This applies in both the short and the long run.

- In the short run, the membership of a restricted membership (RM) cooperative will contract if cooperative net returns are less than offered by competitors (either cooperative or private) and remain constant if equal to or above. In the long run, the RM cooperative will reduce membership if by so doing it can increase unit returns to remaining members.

---

[1] We abstract from legal barriers to exit in the form of marketing agreements and assume instantaneous exit as well as entry.

Atomistic Input Procurement - Atomistic Output Sale

Cases 1 and 2 (group II) can be combined for purposes of evaluation, since the organization of output purchasers is not crucial to the solution. In these cases, numerous processors compete for raw product and each processor accepts a given finished product price.[2] Hence, the position of each firm's marginal and average revenue product curves is determined solely by technological factors.

Individual Firm Equilibrium

Firm revenue curves indicating average and marginal returns to raw product are shown in Figure 1A.[3] Average revenue product (ARP) indicates gross returns to raw product, given the firm's production function and fixed prices for other inputs. Net average revenue product (NARP) is ARP net of average fixed costs expressed in terms of units of raw product processed. The value of marginal product curve (VMP) indicates the additional contribution to total revenue of successive units of raw product processed.

For private firms, VMP below its intersection with ARP (represented by the parallel dashed line in figure 1A) is the raw product demand curve derived from the conventional profit-maximizing condition of marginal cost-marginal revenue equality. The firm would incur short-run losses for prices above P_1 and cease operation at prices above P_3.

Because of its nonprofit orientation, the cooperative does not possess a demand curve for raw product as such, but pays its members for all their

---

[2] Note that the finished product price may be different in cases 1 and 2, but is not influenced by the individual processors in either case.

[3] Here and elsewhere, these are the specialized relationships defined by Helmberger and Hoos whereby prices for productive inputs other than raw product are assumed fixed and their usage optimally determined for any level of raw product.

Figure 1.--Equilibrium Solution: Atomistic Input Procurement - Atomistic Output Sale

(A)
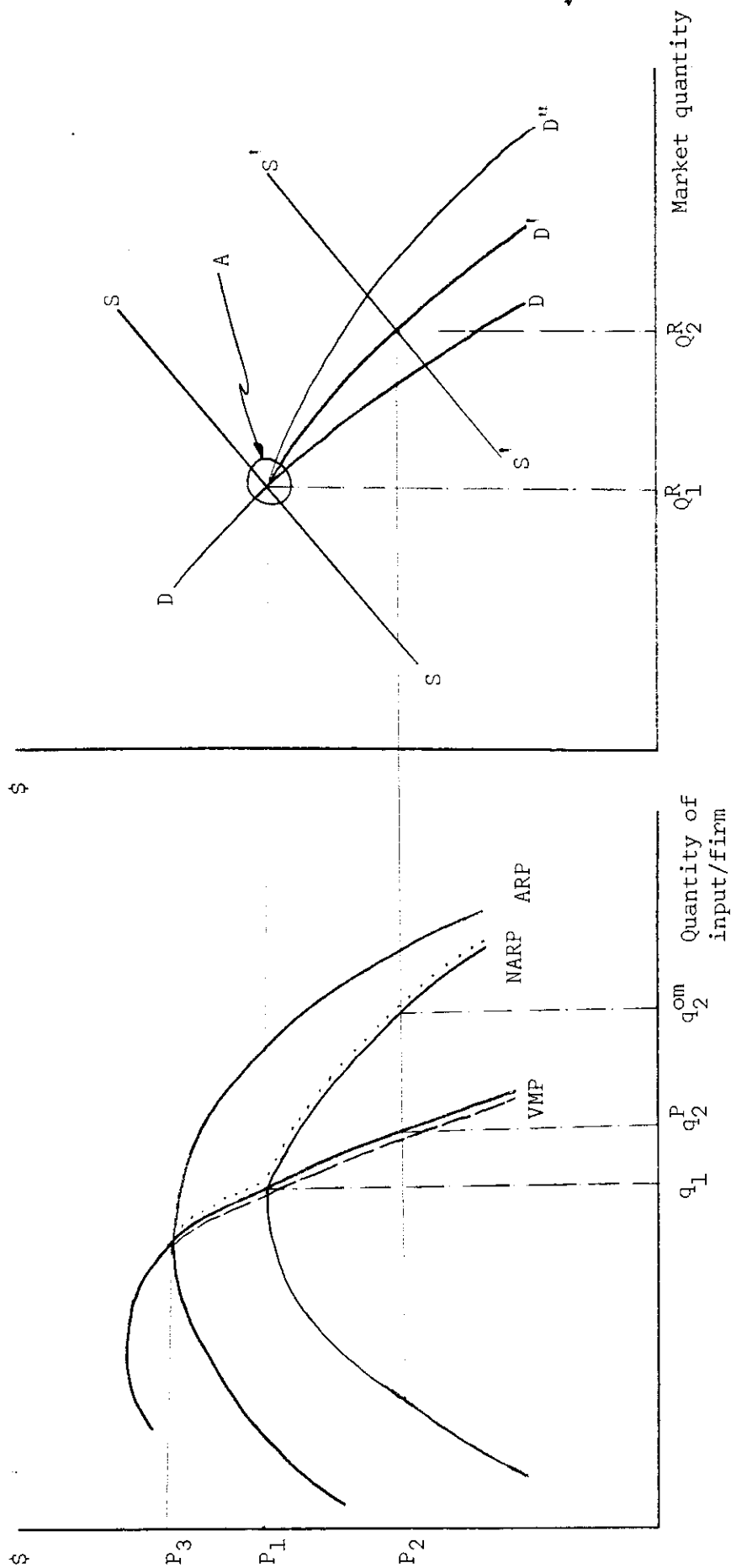
Firm Revenue Relationships

(B)

Market Raw Product Supply and Demand

6.

production according to its NARP curve.[4] The cooperative's NARP curve below

its intersection with VMP shows the cooperative's net return per unit of raw

product for each level of receipts. Above the intersection of NARP and VMP,

as Youde and Helmberger (page 608) show, the cooperative will operate as a

private firm, paying the competitive market price for raw product based on

the VMP curve between P_1 and P_3; it will cease operation above P_3. Hence,

the cooperative's complete net return function can be illustrated as the

portions of the VMP and NARP curves with a parallel dotted line in figure 1A.

Now, let us return to the role of the competitive market price for raw

product in cooperative enterprise, and more important, how the competitive

price is determined. Initially, assume that processors are either private

firms or OM cooperatives. Assume further that a short-run market price of

P_2 is observed by producers and private processors, ignoring, for the time

being, how this price might have come about. Private firms would purchase

q_2^P at price P_2 and enjoy excess profits. In contrast, the short run equilibrium

OM cooperative quantity is q_2^{OM} and the OM cooperative returns P_2 to its members.

The following logic underlies the equality of private firms' product price and

OM cooperatives' unit raw product return: If an OM cooperative's members wished

to produce more than q_2^{OM}, the cooperative would be unable to return P_2 based

on its NARP curve. Members would exit to seek the higher price offered by

private firm competitors of the cooperative. OM membership production less

than q_2^{OM} would permit the cooperative to return more than P_2 to its members,

and result in expanded membership. The raw product quantity processed by an

individual OM cooperative would thus expand or contract to precisely q_2^{OM} where

---

[4]To derive a cooperative's aggregate member production, Helmberger defines a
   member-specific supply schedule showing desired production at alternative
   levels of net return. But, as we shall demonstrate, this is only necessary
   in the case of an RM cooperative.

MARP is equal to P_2, the private firm price.

Raw Product Market Equilibrium

P_2, the price paid by private firms and the OM cooperative return to members for raw product, is established through aggregate supply and demand conditions in the raw product market, as demonstrated in figure 1B. Based on the argument above, we can determine total private firm, total OM cooperative, and hence, total market acquisition of raw product at any raw product price level. This yields a specialized market demand relationship for raw product, the form of which depends on the cooperative-private firm distribution of processors. Two extremes are shown in figure 1B, where DD represents all private firms and DD" represents all OM cooperatives. DD' depicts a roughly 50-50 combination. The intersection of this demand curve with the market supply curve for raw product establishes equilibrium input use and raw product price, as well as the distribution of receipts among private firms and OM cooperatives. In figure 1B, the supply curve, S'S', and demand curve, DD', yield total quantity Q_2^R and price P_2. Each private firm purchases q_2^P and each cooperative takes q_2^{OM}.

Finished Product Market Equilibrium

To appraise the possible effects of OM cooperatives on consumers, it is necessary to examine the price determination process for finished product, i.e., the output of processors. The various firm revenue curves in figure 1A are based on a constant finished product price, say P_0^F, which fixes their vertical position in the diagram. Output prices higher than P_0^F would shift the firm revenue curves up; lower prices would shift them down. Market equilibrium in the raw product market, then, depends on finished product price. With a fixed raw product supply curve, equilibrium raw product quantity

and price will increase with increasing finished product price irrespective of the private firm - OM cooperative composition of the processing sector.

We can diagram the processors' derived finished product supply schedule by converting raw product to finished product through the processors' production functions. While it is not necessary in deriving general results, we will assume that the processors depicted in figure 1B comprise the entire set of finished product sellers. In figure 2, P_0^F represents the finished product price underlying the firm and market raw product demand and revenue curves in figures 1A and 1B. With S'S' as the applicable raw product supply curve, finished product supply at P_0^F depends on the composition of the entire processing sector, varying positively with the OM cooperative/private firm ratio. For example, Q_1^F, Q_2^F, and Q_3^F might be quantities associated with the ratios represented by DD, DD', and DD" in figure 1B, respectively. As finished product price is increased above P_0^F, the deviation in finished product output between all private firm processors, and all OM cooperatives increases. Below P_0^F, the discrepancy narrows until no difference exists at P_1^F -- we are at point A in figure 1B at this finished product price and the raw product supply curve, S'S'. Examining equilibrium raw product output at all finished product prices permits tracing of complete finished product supply schedules, e.g., $S_F S_F$, $S_F S_F'$, and $S_F S_F"$ in figure 2.

The intersection of finished product demand with derived processor supply establishes finished product market equilibrium which, in turn, dictates equilibrium conditions in the raw product market. For example, if the ratio of OM cooperative to private processors results in finished product supply curve $S_F S_F'$, then the finished product demand curve $D_F D_F$ will yield a finished product price of P_0^F and output Q_2^F. P_0^F fixes the firm and market relationships in figure 1A and 1B and hence, the equilibrium raw product price

Figure 2.--Product Market Equilibrium, Atomistic Output Sale with Different
Levels of Open Membership Cooperative Activity
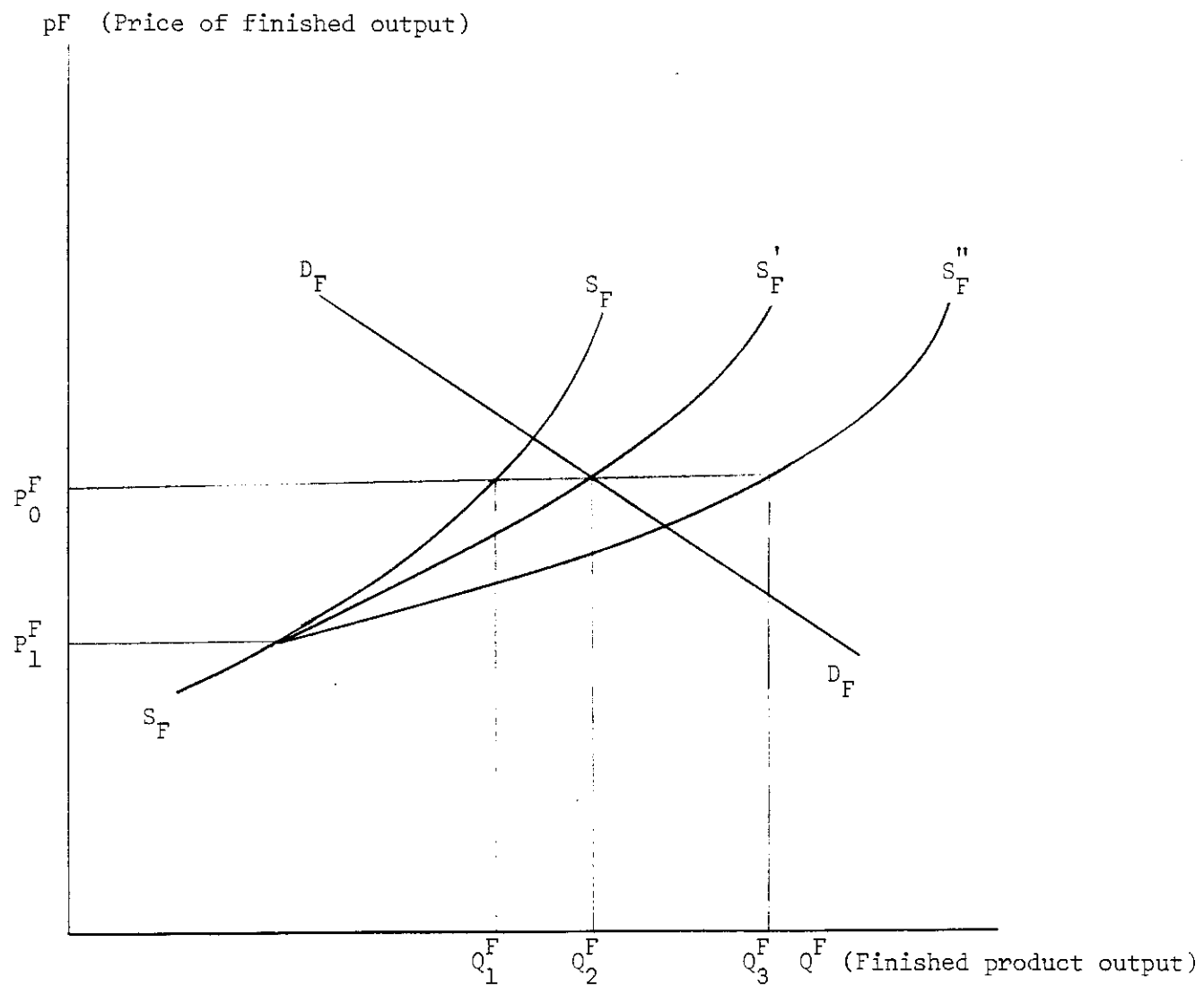
and the allocation of Q_2^F among private and OM cooperative firms.

If finished product market equilibrium occurs at a price greater than P_1^F in figure 2, then the existence of OM cooperative processors results in a lower finished product price and larger output of finished product than would prevail with only private firms. The magnitude of these differences depends on the proportion of total output produced by OM cooperatives. If finished product sales are to a monopsonist (case 2 from above), marginal input cost curves will replace supply curves in dictating finished product market equilibrium conditions, but the same comparative results apply.

Short Run OM Cooperative Effects

The more important short run effects of OM cooperatives in this setting can now be summarized. Relative to the all-private-firm solution, the existence of OM cooperative processors results in (1) higher raw product prices, (2) lower finished product prices, and (3) larger supplies of both raw and finished product whenever private firms enjoy excess profits. The greater the number of OM cooperatives relative to private firms, the greater the magnitude of these effects and the smaller are excess profits to private firm processors. In effect, producers (whether selling to private firms or through OM cooperatives) absorb excess profits by expanding production, increasing consumer welfare in the process.

Using the private firm solution as the perfectly competitive solution, as normally done in conventional economic analysis, OM cooperatives yield supracompetitive raw product prices and subcompetitive finished product prices. We have an unusual situation where both primary product producers and consumers of finished product prefer a solution deviating from perfect competition; i.e., their joint welfare exceeds that associated with the

perfectly competitive solution.

This phenomenon is observed only when the competitive solution yields short run excess profits. If private processor excess profits are zero or negative, OM cooperatives have no effect on market performance: Equilibrium raw product market quantity and price are the same with or without OM cooperatives, and individual processor receipts of raw product are identical. Consequently, finished product output and price are unaffected by the existence of cooperatives -- perfectly competitive raw and finished product market solutions are obtained.

Short Run RM Cooperative Effects

The zero-profit case conclusion can be extended to apply to RM cooperatives as well. With zero or negative profits, private firms and OM cooperatives returns to producers are equal to or exceed NARP. The RM cooperative cannot return more, and will lose members if it does not match its competitors. All firms, regardless of business organization, are operating at the same point on their VMP curves.

In contrast, the short run excess profit solution is indeterminant if some processors are RM cooperatives -- figures 1 and 2 are not applicable. In this case, the supply curves of the individual RM cooperative's members come into play. Different RM cooperatives would pay different returns to members depending on where the supply curves of their members intersect their ARP curves. However, due to the asymetric entry and exit assumptions, no RM cooperative would return less than the OM cooperative or (equivalent) private firm price. Raw product receipts of RM cooperatives would be, at most, equal to OM cooperative receipts and could be less than private firm receipts. The solution would depart from perfect competition, but the

direction of departure is not clear.

Long Run Cooperative Effects

The long run solution in this market structure setting is not particularly interesting. Since there are no fixed costs in the long run, the ARP - NARP distinction disappears. Similarly, long run excess profits are zero, and the raw product price will be at the peak of the identical firms' long run ARP curves (e.g., P_3 in figure 1B). Private firms, OM cooperatives, and RM cooperatives are indistinguishable in terms of raw product processed. The market solution is equivalent to that which would prevail with all private firms, that is, the perfectly competitive solution.

Summary

Analysis of this market structure setting has not shed much light on identifying undue price enhancement -- atomistically organized firms by definition have no market power (ability to control price). We have set the stage for evaluation of cases where market power is evident. More importantly, we have drawn a clear distinction between producer prices and consumer prices. Specifically, the presence of a cooperative in the market may result in producer returns higher than those which would obtain in a market involving only profit-seeking firms. But, at the same time, prices charged for finished product by the cooperative are lower. Higher producer prices are accompanied by output expansion, simultaneously causing a movement up the producer supply curve and down the consumer demand curve. This strongly supports the anticipated effect of cooperatives espoused by the framers of the Capper-Volstead Act, even in a structural setting not considered by proponents to be particularly disadvantageous to farmers. Specifically, sporadic excess profits to atomistically organized middlemen (processors)

could be reduced if some of the middlemen were open membership cooperatives, simultaneously benefitting both producers and consumers.

Monopsonistic Input Procurement - Atomistic Output Sale

In this setting, we assume barriers to entry in processing high enough to permit only a single processor, either private or cooperative. The firm acquires raw product from atomistically organized primary producers, but sells finished products in a competitive market. Hence, the processor possesses market power in the input market (monopsony), but not in the finished product market (monopoly). This situation is reasonably depictive of the competitive environment in which many agricultural marketing firms operate. The bulkiness and perishability of many raw agricultural products limit their area of procurement and number of processors. But after processing, these products are often sold in national markets. Canned fruits and vegetables and manufactured milk products are good examples.

Following Helmberger, we limit our analysis to the long run to demonstrate the impact of a cooperative on market performance. Also following Helmberger, we deny the existence of long run technological diseconomies to scale leading to the downward-sloping VMP and ARP curves noted in the multiple firm case. The monopsonist without monopoly power operates on constant cost VMP and ARP curves which become flat after some level of raw product input. The vertical position of these curves, as in the previous case, is positively related to finished product price, a "given" to the monopsonist selling in a competitive market.

Cooperative and Private Firm Solutions

Illustrative revenue curves are shown in figure 3 for a particular long

run equilibrium finished product price, say P_O^F. Because the processor is a monopsonist, the market revenue curves are the firm revenue curves. We can superimpose the market raw product supply curve, SS, to evaluate the private and cooperative monopsonist raw product market equilibrium solutions.

A profit-seeking monopsonist will equate VMP and marginal input cost (MIC), which is the curve marginal to the market supply curve. This yields a private firm solution of P_P^R, Q_P^R, and unit monopsony profits equal to the difference between ARP (at Q_P^R) and P_P^R. An OM cooperative monopsonist will pay members ARP per unit of raw product, yielding an equilibrium solution of Q_C^R and a cooperative unit return to members of P_C^R = VMP = ARP. Because the RM cooperative has no incentive to expand or to contract membership, the RM cooperative solution is identical to the OM cooperative solution.

The higher the finished product price, the greater the deviation between the private and cooperative solution. If the raw product supply curve is tangent to the ARP curve (reflecting a low finished product price or economies to scale which are not exhausted until a high level of output is reached), then excess profits are zero, and the private firm and cooperative solutions are identical. But as long as supply and revenue curves are positioned such that a profit-seeking monopsonist would obtain excess profits, the cooperative solution involves a larger quantity of raw product and a higher price to primary producers.

Product market equilibrium, dictating the finished product price and, hence, the position of the monopsonist's revenue curves, depends on the cooperative/private firm composition of all processors selling the finished product. Assume, for simplicity, that all such sellers are monopsonists in raw product procurement. Then, based on figure 3, the derived supply of

Figure 3. -- Equilibrium Solution: Monopsonistic Input Procurement - Atomistic
    Output Sale
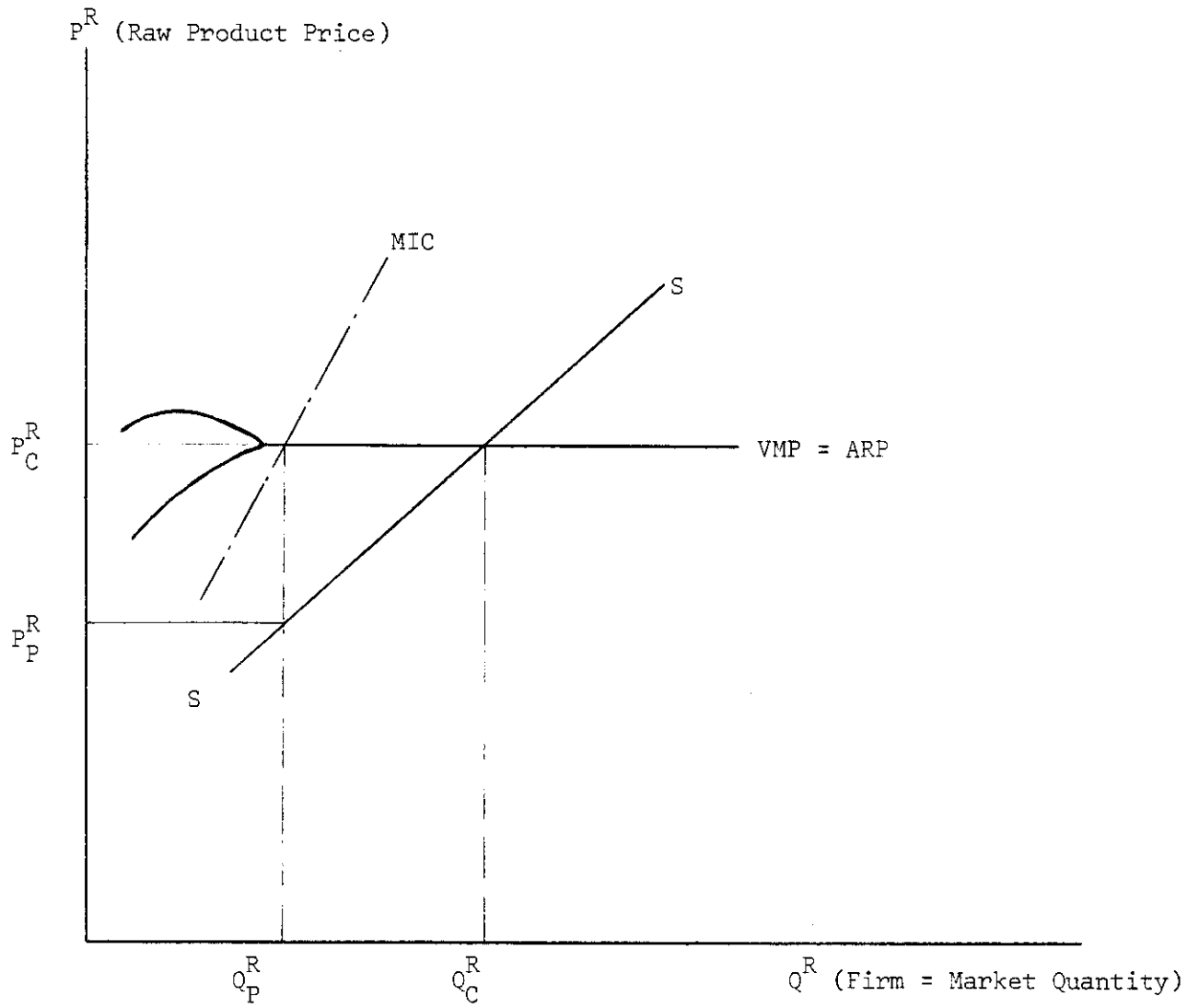
finished product will be larger at any given finished product price the larger
the cooperative/private firm ratio among sellers. The effect of cooperatives
on equilibrium finished product price and output is the same as illustrated
in figure 2; finished product price will be lower and output higher the
greater the number of cooperatives relative to private monopsonist processors.

Welfare Comparisons

We have shown that a cooperative acting as a monopsonist in raw product
procurement will (1) pay primary producers more, (2) charge customers less,
and (3) process more raw product than an equally efficient private monopsonist.
To make comparisons with perfect competition, we specifically define the com-
petitive raw product quantity as that which equates raw product price and
VMP.[5] Given this definition, the cooperative solution is the competitive
solution. The private firm solution yields a supracompetitive finished
product price and a subcompetitive raw product price.

Again, we have no basis for identifying undue price enhancement by
cooperatives in this structural setting; the cooperative has no market
power on the selling side, and OM and RM cooperatives are indistinguishable.
The tendency of cooperatives, both OM and RM, is to depress finished product
price relative to a private monopsonist and enhance producer returns. This
is the same effect noted for OM cooperatives in the short run excess profit
case where the raw product market was atomistically organized. Both cases
demonstrate the potential for cooperatives to simultaneously improve both
producer and consumer welfare.

---

[5] Since monopsony and perfect competition represent a contradiction in terms,
one cannot avoid discomfort in defining a perfectly competitive solution.
To avoid arguing how atomistically organized firms might behave in markets
where their existence is denied, we accept monopoly and monopsony as evidence
of substantial scale economies, with cost curves in the vicinity of equilib-
rium solutions that cannot be matched by potential competitors.

Monopolistic Output Sale - Atomistic Output Purchase

We now permit our processor to have market power as a seller as well as a buyer. But we depart from the Helmberger approach by separately considering the organization of finished product buyers. Presently, we examine equilibrium solutions for atomistically organized buyers (case 7), followed by the more complex case of monopsony (case 8). As in the previous case, we examine only long run equilibrium conditions.

A real life example of the present case might be a single fluid milk bottler selling to consumers in a market which is isolated or at least partly insulated from competition by distance or sanitary requirements. It might also represent the sole handler of a horticultural specialty selling direct to numerous wholesalers, retailers, and fabricators.

The monopolist processor faces the entire supply schedule of primary producers and the entire demand schedule of finished product buyers. This demand curve fixes the position of the processor's revenue curves. Since the processor influences finished product price through his output decision, marginal revenue will fall with increasing output, and we replace VMP with marginal revenue product (MRP). Assuming the same production function as in the previous procurement-monopsony case, MRP and ARP will begin to fall when technical economies to scale are outweighed by falling marginal revenue. ARP will cross the horizontal axis at the quantity of raw product associated with the finished product demand curve quantity intercept. Hence, each level of raw product is matched via the production function with a single finished product price.

Equilibrium price and output solutions for OM and RM cooperatives vis-a-vis the private firm solution depend on the relative positions of the

this supply and revenue curves. A range of solutions is possible, with the general case illustrated in figure 4.

Private Firm and Cooperative Equilibria

The profit-maximizing monopsonist/monopolist would equate MRP and MIC. Given the supply and revenue curve positions in figure 4, he would select Q_p as his level of raw product use, paying producers P_p. Both monopsony and monopoly profits are apparent. Monopsony profits are represented by the difference between MRP and P_p at Q_p; the private monopsonist pays producers less than the marginal return associated with raw product processed. Monopoly profits are represented by the difference between MRP and ARP at Q_p; the value of marginal product to the private monopolist exceeds marginal revenue product (marginal revenue multiplied by marginal product).[6]

The nonprofit OM cooperative will process Q_{OM} and return P_{OM} to members, based on the intersection of raw product supply and ARP. Compared to the private firm solution, this equilibrium has attractive welfare implications -- indeed, it is the perfectly competitive solution considering both the raw and finished product markets together. The price paid to raw product producers is equal to the value of (constant) marginal product of the processor's raw product input. The expansion in raw and finished product output relative to the private firm case is accompanied by a higher raw product price and a lower price for finished product.

The RM cooperative output decision is considerably less laudable. Given that it can increase ARP by reducing its membership, the RM cooperative would be expected to spin off members if its initial supply curve was the market

---

[6] In the setting under discussion, marginal and average product are constant in the relevant output range. Hence, ARP measures finished product output price multiplied by the constant marginal product, or the value of marginal product to the monopolist processor.

Figure 4. -- Equilibrium Solutions: Monopolistic Output Sale - Atomistic
          Output Purchase
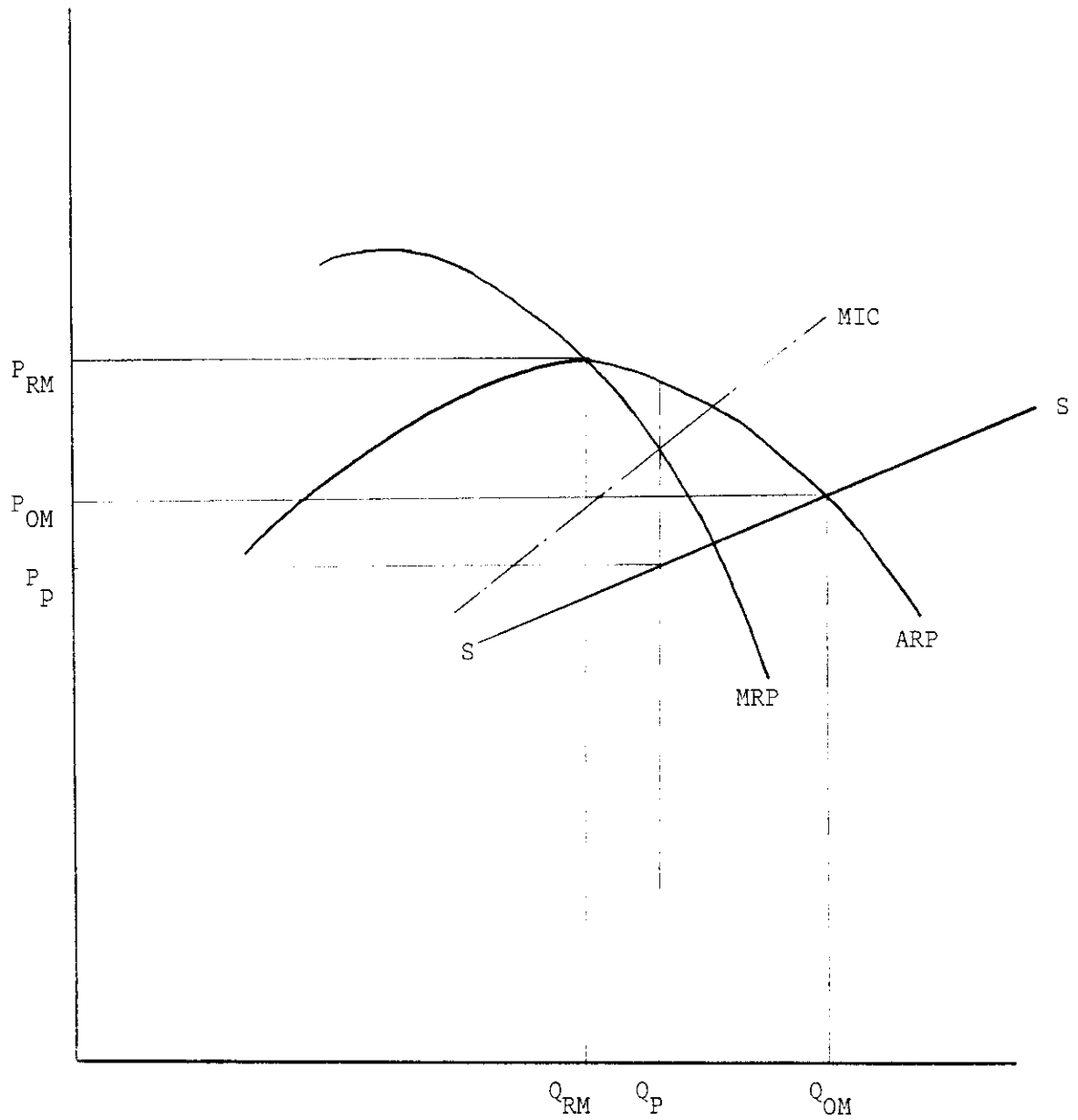
supply curve, SS, in figure 4. It would continue to reduce its membership rolls until the supply curve of retained members intersected ARP at its maximum value. With the revenue and supply curves shown in figure 4, this would yield Q_{RM}, P_{RM}, an equilibrium solution attractive only to those producers fortunate enough to be blessed with cooperative membership rights. Finished product output is below that in the private firm solution, with resulting higher finished product price. Raw product price is well in excess of the level which would prevail if all potential producers could locate markets.

The welfare-inferiority of the RM cooperative relative to the private firm solution is conditional on MIC crossing MRP to the right of maximum ARP. Otherwise, the private monopsonist/monopolist solution would involve a higher finished product price and a lower raw product price. As raw product supply is shifted to the left from its position in figure 4, equilibrium raw product quantities for the RM and OM cooperatives converge, while the private firm solution deviates further from both. The OM and RM cooperative solutions are identical when supply intersects ARP at or to the left of maximum ARP. Shifting supply to the left from its intersection with maximum ARP will result in a convergence of the cooperative and private solutions, until they are identical at the point of tangency of supply and ARP.

Price Enhancement Criteria

We now have a case wherein the processor can dictate finished product price through his output decision. He has market power in the finished product market. This should enable us to specify, given some norms, when the finished product price is set "too high," or unduly enhanced. Of course, this specification will critically depend on our norm.

Assume the market conditions noted in figure 4. If we are unwilling to accept anything less than maximum social welfare, then we must employ the perfectly competitive solution, which is also the OM cooperative solution, as a comparison standard. By this definition, raw product input less than Q_{OM} in figure 4 would result in an unduly enhanced price to purchasers of finished product. Both the RM cooperative and the private firm, in general, restrict processing receipts below this level.

If we are willing to tolerate output restrictions due to monopoly but not monopsony, then our quantity standard would be the level associated with the intersection of supply and MRP in figure 4 (raw product supply equals private processor demand), and our finished product price standard would be based on the reflection of this quantity on the finished product demand curve. Again, the RM cooperative and the private firm select raw product use levels inconsistent with the standard.

Other standards might be discussed, but two important points concerning undue price enhancement are already clear. First, enhancement of finished product price, which is the focus of Capper-Volstead Section 2, is not tied directly to enhancement of raw product price. In fact, an inverse relationship between raw and finished product price may exist in this market setting; substitution of an OM cooperative processor for a private processor simultaneously yields a higher raw product price and a lower finished product price.

This leads directly to the second point concerning price enhancement: finished product price enhancement is directly tied to finished product output restriction. A private monopsonist can exploit an upward-sloping supply curve by restricting raw product purchases, and consequently, output sales. A

private monopolist or an RM cooperative can exploit a downward-sloping demand curve by restricting sales, and consequently, raw product purchases. In contrast, an OM cooperative lacks the incentive to restrict output, absent the motive to maximize profits or benefits to selected producer members.

The apparent social welfare superiority of the OM cooperative stems from its assumed willingness to accept all raw product that actual or potential producers are willing to supply. This makes the cooperative a "quantity taker" in the same sense that a firm in perfect competition is a price taker. Even as a monopolist in the structural setting just discussed, the OM cooperative does not really dictate finished product price; it permits primary producers to do so through their individual production decisions. Hence, the cooperative does not possess market power in the conventional sense. As demonstrated later, different results are obtained if assumptions concerning OM cooperative operations are altered.

Monopolistic Output Sale - Monopsonistic Output Purchase

The final case we consider is bilateral monopoly in the finished product market. The assumption of monopsony in raw product procurement is retained, and for consistency with existing theoretical models of bilateral monopoly, we assume that the monopsonist finished product purchaser is a monopolist in sales. Again, we limit our analysis to the long run, in which private firm - cooperative distinctions are clearly evident.

While cases of bilateral monopoly in agricultural markets are rare, "almost" situations are less so, especially in fluid (bottled) milk. Moreover, these frequently include a dairy cooperative on the monopolist side, assembling dairy farmer member raw milk for subsequent bulk delivery and

sale to a private bottler with a large market share in some consuming area.[7]

Cost and Revenue Relationships

Emphasis on the finished product market requires a modification of the approach used thus far, wherein we have examined revenue functions and supply for raw product input to the processor. Specifically, we must construct similar relationships for finished product, i.e., the distributor's average and marginal revenue curves and the processor's supply curve. We assume that the distributor is a private monopsonist selling as a monopolist directly to consumers.[8]

The distributor's production function is assumed to result in constant marginal and average product in the long run (constant costs of distribution) after exhaustion of scale economies. Assuming the processing transformation involves no product losses, we can superimpose the final demand curve on the same axes as the average and marginal revenue curves. Then, for each level of distributor output beyond the level where costs become constant, we can determine consumer price, net distributor price (ARP) and marginal revenue to the monopolist distributor (MRP). The distributor's MRP curve becomes the demand curve for finished product as viewed by the processor.

To obtain processor cost and supply relationships, it is necessary to transform the raw product supply and revenue relationships derived earlier. For each level of processor output (distributor input) the processor's production permits derivation of raw product costs, based on producer's

---

[7] For historical examples of milk markets approaching bilateral monopoly, see Nicholls, p. 167; Gaumnitz and Reed, p. 28; and Black, chp. 2. More recent comparisons of raw fluid milk buyer and seller concentration ratios may be found in Cook et. al., pp. 21-30.

[8] Bilateral monopoly between cooperatives is precluded as an unrealistic possibility. Assuming the distributor sells directly to consumers permits a more direct assessment of consumer welfare.

supply, and costs of other production inputs. Assuming the latter are cons-
tant at some level of output, the shape of the producer raw product supply
curve identifies the average and marginal cost relationships for processors
expressed in terms of units of finished product. If the processor is a
private monopolist, then the marginal cost curve is the finished product
supply curve as viewed by the distributor. If the processor is a cooperative
monopolist, however, the average cost curve becomes the supply curve to the
distributor.

The conditions described above are illustrated in figure 5. On the
distributor's side of the finished product market, figure 5 shows the demand
curve facing the monopolist distributor (consumer demand); his ARP curve;
derived demand facing the monopolist processor (MRP); and the curve marginal
to MRP, denoted MMRP, which is the processors marginal revenue curve in this
setting. On the processor's side of the market, figure 5 shows the processor's
average cost (AC) and marginal cost (MC) curves along with the curve marginal
to processors marginal cost (MMC), which represents the distributor's marginal
input cost curve if the monopolist processor is a private firm.

Private Firm Solutions

Possible equilibrium solutions in the case of bilateral monopoly with
profit-seeking firms are discussed by Fellner (pp. 240-252) and Nicholls
(pp. 166-196). A unique solution does not exist; price and output depend on
the relative bargaining strength of the monopolist processor and the monopson-
ist distributor. The range of market output possibilities is Q_2 to Q_4 in
figure 5. Q_2 is the output solution if the processor dominates in the bar-
gaining process. He will equate his marginal cost (MC) with marginal revenue
(MMRP), charging a price equal to the level of ARP at Q_2. If the distributor

Figure 5.--Possible Price and Output Solutions, Bilateral Monopoly
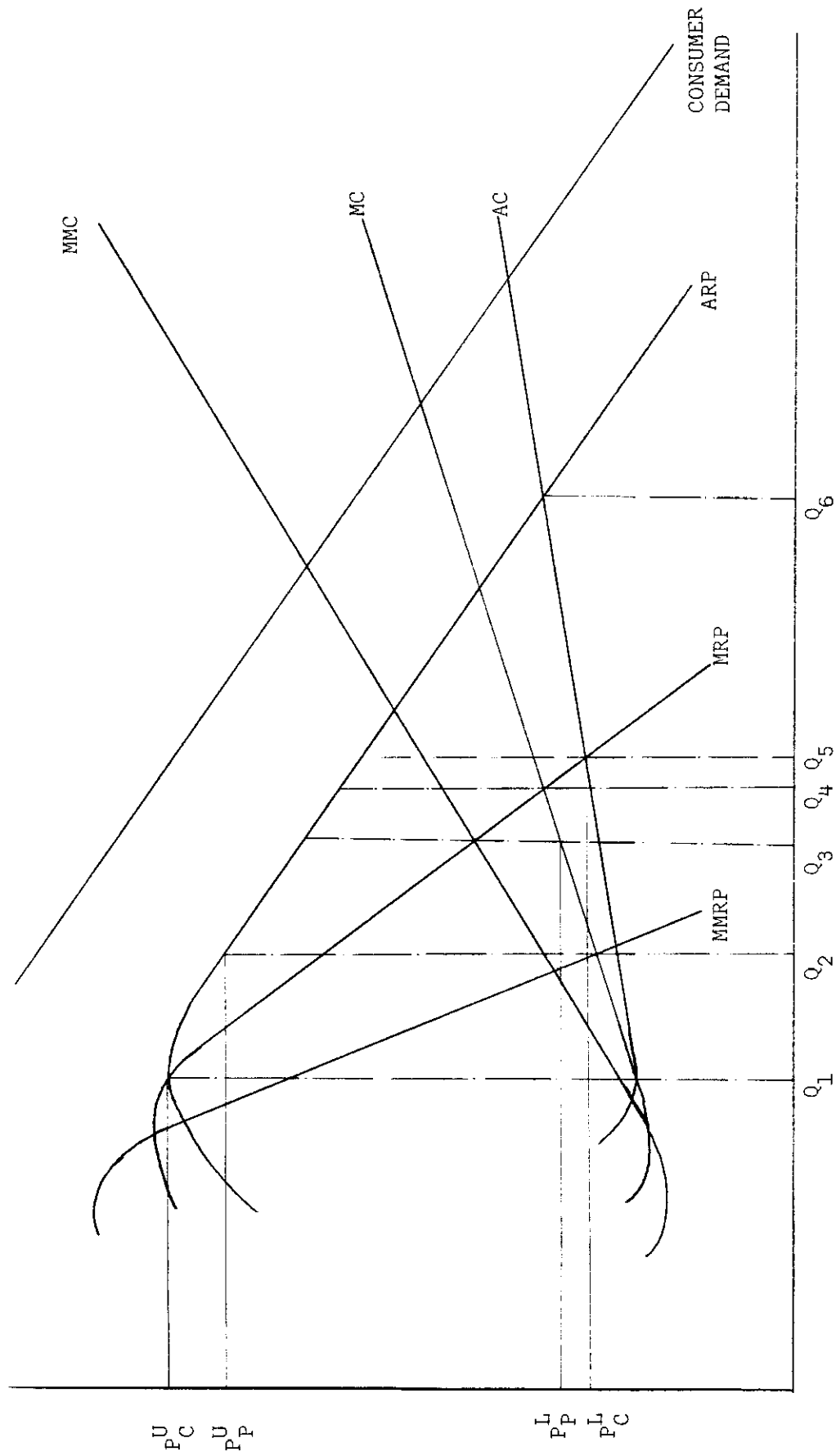
dominates, he will select Q_3 based on the intersection of his marginal revenue (MRP) and marginal cost (MMC), paying a price equal to the level of MC at Q_3. The joint profit-maximizing quantity is Q_4, where price might range between MC and ARP depending on relative bargaining strength. Given one's assumptions with respect to leadership abilities, susceptibility to bluffing, degree of interdependence, and other considerations, the finished product price received by the processor may range between P_P^L and P_P^U in figure 5. The range of consumer prices may be determined by extending the output range to the consumer demand curve.

Cooperative Solutions

Our assumptions about objectives of OM and RM cooperatives yield solutions which may lie outside the range of possibilities in the private firm case. The OM cooperative strives to maximize returns to all existing and potential members, which, given the open membership policy and the monopsony position of the cooperative, includes all existing and potential primary producers. With discretion in selecting finished product output, the OM cooperative would select Q_5, which equates AC and MRP. No larger quantity could be sold to the monopsonist distributor at a price equal to AC, and smaller quantities would yield prices exceeding AC, eliciting expanded raw product production as processor profits were returned to primary producer-members. If the distributor was permitted the upper hand, however, he would equate MC and MRP, yielding Q_4, with the distributor paying P_C^L, the OM cooperative processor's average cost.

The RM cooperative solution may result in finished product output less than the minimum for the private processor solution. The cooperative will drop members as long as returns to remaining members can be increased, pushing AC to the left in the process. If the RM cooperative had superior bargaining

ability, it would continue to spin off members until AC crossed ARP at its maximum value, yielding Q_1 and a processor price (equal to AC) of P_C^U. If the distributor dominated, the solution would depend on where the intersection of MRP and the shifting MC curve yielded a maximum AC value. This could occur at an output level even less than Q_1.

Welfare Comparisons

Again, we have encountered a market structure case wherein an OM cooperative yields a solution superior in terms of social welfare to that which would prevail with a comparable profit-seeking firm. Under bilateral monopoly, output with a monopolist OM cooperative would be at least as great, consumer price at least as low, and primary producer return at least as large as with a private firm in the same position in the marketing chain. The OM cooperative does not serve to reduce monopoly gains of the private firm to which it sells, and may, in fact, increase them over the private monopoly case. But its nonprofit nature combined with its inability to dictate member production decisions pushes output beyond the level associated with private firms on both sides of the bilateral monopoly market.

The level of output consistent with perfect competition in both the raw and finished product markets is Q_6, where the price of raw product equivalent to a unit of finished product plus processing costs is equal to the value of marginal product to the distributor. Unlike the previous two cases of imperfect competition that we have examined, the OM cooperative solution yields a supracompetitive finished product price. The assumption of a private monopsonist/monopolist in the distributor link precludes attainment of the welfare-maximizing level of finished product output. However, the OM cooperative solution does come closer to the competitive equilibrium than the private

firm solution.

Conclusions concerning the effect of RM cooperatives in bilateral monopoly are consistent with earlier cases. A cooperative practicing restricted membership may restrict output below the minimum expected level of private firms, resulting in high consumer prices and disgruntled producers without a raw product market.

Price Enhancement Criteria

Analysis of bilateral monopoly emphasizes our earlier conclusions relating to price enhancement and output restriction. Specifically, the level of consumer price is related to the degree to which primary producer supply is restricted relative to what would be forthcoming if (1) processor profits were returned to primary producers, and (2) all potential producers were able to locate a market. OM cooperatives tend to push output toward the maximum level consistent with the market structure they face as a seller. Hence, they possess little ability to increase consumer prices provided they cannot influence the supply decisions of members and potential members. RM cooperatives, motivated by a different objective than OM co-operatives, may restrict output, and hence, raise consumer prices, if they effectively exclude potential primary producer entrants.

Our earlier conclusion concerning the relationship among prices observed at different levels of the marketing system is also reinforced. It is apparent from figure 5 that low prices received by a monopolist proces-sor and, hence, his primary producer clients, may not be associated with low prices to consumers. In the finished product market, the private monopolist processor and the monopsonist distributor share any profits attributable to the absence of competitors in the markets in which they operate. It is the

<u>total</u> level of profits that is of concern to ultimate consumers, not neces-
sarily how these are shared. While on OM cooperative might increase producer
prices above what a private processor would pay, there is no assurance that
consumer prices would be lower if imperfect competition remains at higher
levels in the system.

Cooperatives and Control of Member Supply

Our expedition into the theory of cooperative enterprise in alternative
market structure settings has thus far yielded two important conclusions
concerning the effects of marketing cooperatives on consumer prices:

(1) Cooperatives with restricted membership policies may lead to
market performance inferior to that displayed by equally
efficient profit-seeking firms. In particular, a restricted
membership cooperative operating as both a monopsonist and a
monopolist may raise consumer prices and reduce output more
than a profit-seeking monopsonist/monopolist.

(2) Open membership cooperatives cannot possess market power (the
ability to raise price by restricting output) absent the ability
to control member production decisions or the distribution of
their finished product sales.

Based on the first conclusion, the incidence of restricted membership
is an important element in the process of identifying undue price enhance-
ment. This is not to say that cooperatives restrict membership solely to
raise prices and member returns; Helmberger and Youde note other reasons
a cooperative might want to limit members. But, as we will show later, the
evidence is <u>suggestive</u> in the context of monitoring prices in markets where

cooperatives are important.

Regarding the second conclusion, our theoretical analysis has shown that OM cooperatives tend to push performance toward maximum social welfare levels consistent with the structure of markets they face. Specifically, relative to private firms, OM cooperatives tend to reduce consumer prices while simultaneously increasing member returns, regardless of the cooperative's market share on the input and output sides. This result is premised on our assumption that an OM cooperative stands ready to accept all production that is offered. Since the OM cooperative returns all net revenue to members, any attempt to exploit a downward sloping ARP curve (i.e., to restrict sales when its output decision influences output price) would be met with surplus produc-tion by producers and potential producers responding to the higher raw product price. In essence, then, the OM cooperative does not possess market power.

It is important, however, to recognize that this conclusion flows from the assumptions used in the above analyses. In real-world markets, OM co-operatives may possess market power. But to do so, they must either modify their members' independent-production decisions or distribute output in such a manner as to avoid surpluses. In the first case, an OM cooperative would operate in a fashion theoretically similar to an RM cooperative. The second case involves concepts of price discrimination. We examine in the following sections what an OM cooperative would have to do to acquire market power; in other words, which of the assumptions used would have to be violated in order to negate the conclusion drawn above.

Controlling Aggregate Supply

In reality, OM cooperatives have few means of influencing the quantity their members wish to produce except through the net returns they distribute.

if unit returns for comparable quality exceed those paid by private or co-operative competitors, then the cooperative will attract members; if they are less, cooperative membership will decline. Similarly, entry and exit of producers will necessarily occur if the OM cooperative is monopsonist.

The OM cooperative may employ a long-term marketing agreement to limit member exit. These lend some stability to receipts and help the cooperative ride out short periods during which returns may not be competitive. However, cooperative membership agreements, while legally binding, are notoriously fragile (see Bakken and Schaars, pp. 307-314). Few cooperatives aggressively seek redress when members renege.

Some OM cooperatives use restrictive contracts that limit the amount individual members may market. These contracts typically entail problems of equity in allocating marketing quotas, and lead to pressure from potential new members to share in any associated gains. A cooperative may also attempt to limit receipts by imposing stringent quality standards. This would require members to locate alternative outlets for production that their cooperative will not accept, leading to member disenchantment and attrition.

Any cooperative production control program, either voluntary or mandatory, risks problems of free riders -- nonmembers gaining disproportionately from any price gains attributable to the program. The number of free riders tends to mushroom with the degree of program success, jeopardizing the existence of the initiating cooperative as members leave to become free riders. While market share of a cooperative would tend to be positively correlated with its ability to control member production, a dominant cooperative would still be troubled by free riders. Unless high barriers to entry existed or exclusionary tactics were employed, even a cooperative monopsonist would risk member spinoff

to form maverick cooperatives or engage in private sale to exploit any per-
ceptible price advantage.[9]/

Controlling the Distribution of Sales -- Price Discrimination

Attempts by cooperatives to control sales have been more common than
direct supply control methods. Typically, these involve some form of price
discrimination; exploiting differences in demand elasticities among different
markets for the same raw product. Methods used presently and historically
include classified pricing (milk) and market allocation (fruits and vegetables).

Attempts to control the distribution of sales encounter some of the same
problems as attempts to control absolute levels of production. The problem
of free riders remains -- nonmembers are induced to take advantage of price
gains attributable to a cooperative's successful price discrimination. His-
torically, cooperatives, even those with dominant positions in marketing
agricultural products, were notably unsuccessful in implementing price dis-
crimination programs because of the free ridership problem (FTC Report, pp.
141-148; Masson, Masson and Harris, pp. 189-194). However, enactment of the
Agricultural Marketing Agreement Act of 1937 and similar State legislation
provided a means for industry price discrimination through federal and state
marketing orders. Terms of prorate and classified pricing programs under
marketing orders are legally binding on all handlers, whether proprietary
or cooperative; free ridership is hence precluded.

We are not concerned here with price discrimination authorized and
policed under compulsory marketing order programs. Cooperatives and market-
ing orders are not inseparable, but a study of interrelationships is beyond

---

[9]/See Bakken and Schaars, pp. 503-524, for a discussion of unsuccessful
cooperative efforts to unilaterally exercise production control.

the scope of this analysis. The point is that while orders permit producers, acting as an entity, to achieve market power, the sanction is egalitarian insofar as the producers are concerned; cooperative members are neither greater nor lesser favored than any other covered producer. However, a cooperative may be able to practice price discrimination beyond that permitted by a marketing order. In so doing, a cooperative risks free ridership, just as it does when no order exists. But certain order provisions may facilitate auxiliary price discrimination.

Federal milk orders authorize classified pricing; establishing minimum handler prices for raw milk according to end use. The orders also clearly identify geographical markets and set rules for pooling and payment of inter-market milk transfers. Dairy cooperatives operating in federal order markets frequently negotiate a price for Class I milk (used for fluid milk products) which exceeds the order-specified minimum price. The difference between the order Class I price and the price cooperatives charge their buyers is variously denoted a Class I, overorder, or super-pool premium. This premium represents auxiliary price discrimination.

The case of price discrimination in general and overorder pricing by dairy cooperatives in specific has been analyzed by Masson and Eisenstat within the Helmberger theoretical framework. The conclusions of Masson and Eisenstat (hereafter, M&E) can be summarized quite succinctly: Cooperatives are good (lead to improved social welfare) or indifferent, provided they do not practice price discrimination. Market power manifested by a cooperative through classified pricing, either as a bargaining authority or as a vertically integrated processor, results in social welfare inferior to that associated with private firm monopsony. This position is reiterated and amplified in several other

papers authored and co-authored by M&E.[10]

M&E's analysis provides a useful starting point for discussing the implications of price discrimination by open membership cooperatives. We shall extend the M&E results, modifying their assumptions where necessary to conform more closely to the manner in which classified pricing is actually employed.

M&E explore the case of a monopsonist milk marketing cooperative facing a private monopsonist processor of fluid-class milk who is also a monopolist in bottled milk sales. This corresponds to our bilateral monopoly case with some additional wrinkles. The cooperative is merely a bargaining agent for members, incurring no costs and possessing no assembling facilities. Hence, the cooperative's supply curve is its members aggregate supply function for raw milk. One pound of raw milk is assumed to yield one pound of bottled milk, permitting producer, processor, and consumer revenue to be measured in equivalent quantity units. The processor incurs constant unit costs for all inputs except raw milk, allowing ARP to represent "a vertical displacement of the final product demand curve" (M&E, p. 58) after economies of scale have been exhausted. Primary milk producers are assumed to have an alternative outlet for raw milk with a totally elastic demand. This alternative market might be for manufacturing (Class II) milk, with price at the federal dairy price support level.

Possible solutions given these conditions are diagrammed in figure 6. M&E note that the existence of the alternative market may prevent the monopsonist from pricing on the basis of marginal input cost (not shown),

---

[10] Ippolito and Masson; Fones, Hall and Masson; Eisenstat and Masson; Masson, Masson and Harris; Eisenstat, Masson and Roddy.

Figure 6.--Fluid Milk Monopsonist/Monopolist Facing Monopsonist/Monopolist
Cooperative Supplier, Producer Revenue-Maximizing Solution.
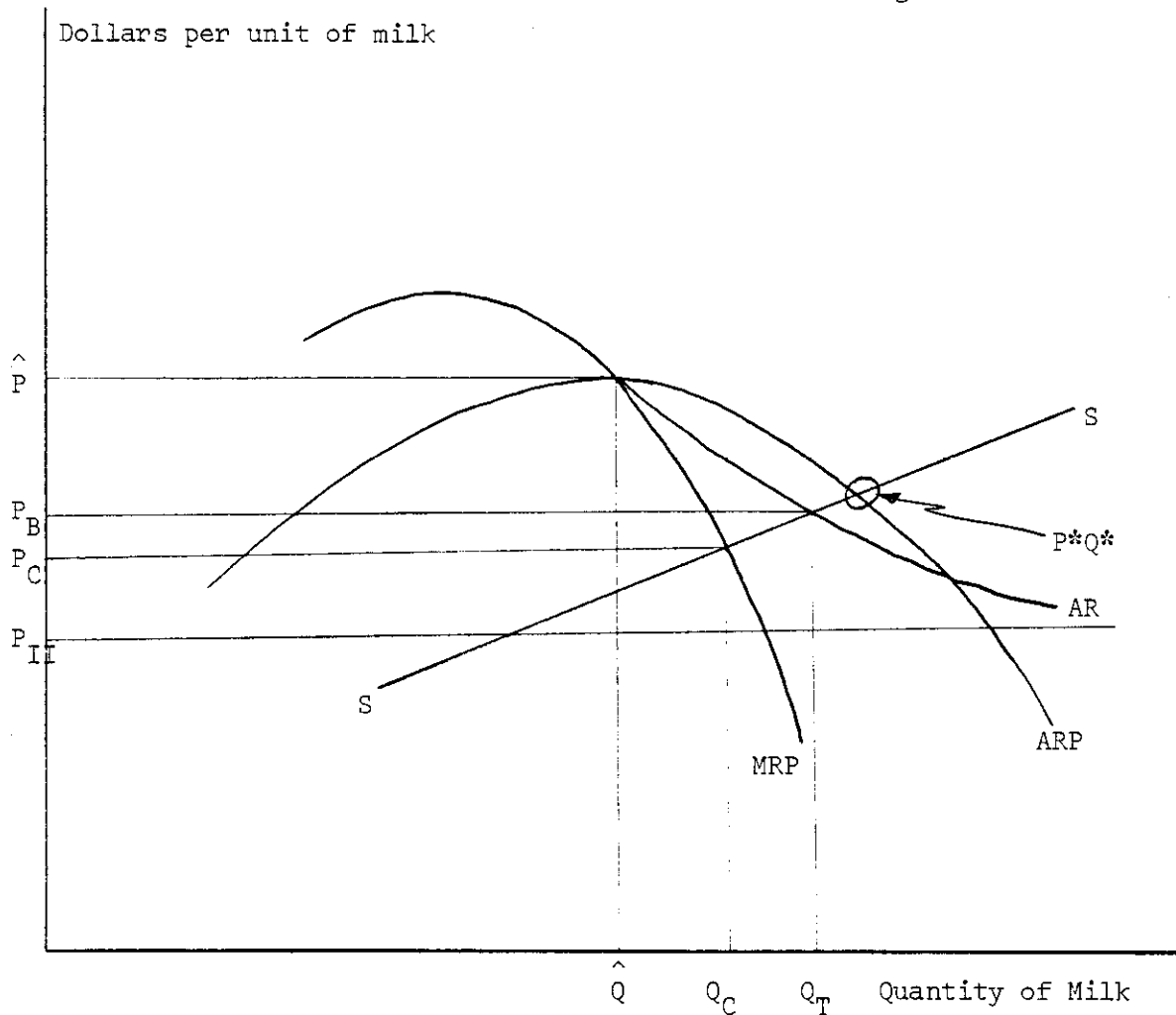
ARP = Average Revenue Product for fluid-grade milk
MRP = Marginal Revenue Product for fluid-grade milk
SS = Aggregate producer supply
P^*Q^* = Price and Output in perfect competition
$P_C Q_C$ = Price and output if monopsony power of buyer is completely countervailed
$\hat{P}\ \hat{Q}$ = Class I price and sales if cooperative practices "optimal" classified
pricing
AR = Average revenue or blend price to producers
P_B = Blend price with class I price of $\hat{P}$
P_{II} = Class II or secondary market price
Q_T = Total supply with Class I price of $\hat{P}$

since, even without a bargaining cooperative, the processor must pay at least the secondary market price to elicit milk from producers.

A bargaining cooperative which practiced "flat" pricing (that is, did not price discriminate) would seek a price of P_C, Q_C, to maximize producer benefits. This price forces maximum processor purchases, given retention of his monopoly position; prices above P_C would cause the processor to contract along his MRP curve and create milk surpluses in the process.

M&E denote P_C, Q_C the "countervailing power" solution. Monopsony gains are eliminated since the processor does not restrict raw product purchase on the basis of either its MIC curve or the price of milk in the secondary market outlet. However, monopoly gains are still evident (ARP_C - P_C per unit of raw product), and the solution is clearly inferior to the competitive solution, P^*Q^*.[11/] M&E do not indicate how the bargaining cooperative achieves P_C, Q_C if the secondary market price is less than P_C. Strong bargaining power is apparently assumed.

M&E then draw the disheartening conclusion that if entry barriers are sufficiently high that there can only be one fluid processor in the market, cooperative vertical integration through purchase of the proprietary processor will not erode monopoly gains -- farm price, and quantity will be invariant from the proprietary monopoly case (pp. 58-59). Worse, if the monopolist milk bargaining cooperative selling to the monopsonist/monopolist processor practices price discrimination (classified pricing), the resulting solution, $\hat{P}$ $\hat{Q}$, will be inferior in terms of social welfare to the countervailing power solution. M&E correctly argue that $\hat{P}$ is the fluid milk price which maximizes producer benefits. At this price $\hat{Q}$ is sold as fluid milk. Q_T is total production, based on the

---

[11/] P^*, Q^* is consistent with our earlier definition of a perfectly competitive solution.

intersection of producer supply (SS) and the "blend" price (AR) curve,
leading $Q_T - \hat{Q}$ to be sold in the secondary market at an assumed fixed price
of P_{II}. The bargaining cooperative could presumably force this solution by
assuming a "take-it-or-leave-it" bargaining stance, threatening to market
all milk in the secondary outlet.

M&E argue that the price discriminating cooperative leads to a price
"associated with the maximum monopoly markup for the processor added to the
maximum price for raw milk for fluid uses," (M&E, p. 61) -- the worst of all
possible worlds. Superficially, it would seem that a strong case has been
built for identifying undue price enhancement with classified pricing in
this type of market structure.

But, to borrow from M&E's terminology, we cannot be sanguine about this
result because a monopoly cooperative will not choose to go to $\hat{P}\ \hat{Q}$ -- at
least in the real world. This maximizing solution is feasible if and only
if the cooperative is unrestricted in setting price. In fact, very real con-
straints exist. A cooperative's fluid milk price quote is composed of two
elements; (1) the federal order minimum Class I price, and (2) the cooperative's
negotiated Class I premium. Except through the order hearing process, the
cooperative has no control over the order minimum price. The level of a
cooperative's Class I premium may or may not be related to its market power
-- the evidence is weak and equivocal.[12/] But the evidence more clearly shows
that cooperatives are not unconstrained in setting premiums (Babb, et. al.
Capper-Volstead Committee). The level of Class I premiums is strongly associ-
ated with the precision to which federal order minimum prices are geographically
aligned -- the greater the deviation of the order minimum price from the price

---

[12/] See Capper-Volstead Committee; Babb, et.al., Fones, et. al.

predicted by adding transfer costs to Class I prices in surplus milksheds, the greater the cooperative premium. Cooperatives may be employing a form of limit pricing -- the limit corresponding to the cost of alternative milk supplies -- but it is unreasonable to equate the limit price with the producer revenue maximizing price.[13]

To examine the more realistic case of constrained price discrimination by milk marketing cooperatives, it is useful to redraft figure 6. In figure 7, the monopsony solution (i.e., without countervailing power) is shown (P'Q') along with the countervailing power solution ($P_c Q_c$) and the cooperative optimizing solution ($\hat{P} \hat{Q}$) from figure 6. The intersection of marginal input cost and marginal revenue product is shown to occur to the right of maximum ARP, though this may not be the case. This yields a raw milk price above the indicated Class II or secondary market price, resulting in no Class II sales in the particular market illustrated.[14]

The cooperative's Class I price can be depicted as a differential added to P_{II}, the Class II price. As noted above, this differential consists of the federal order Class I differential plus the negotiated cooperative premium. Denoting the total differential D, we can examine various levels in reference to P', P_c, and $\hat{P}$. In each case, as demonstrated by M&E, the processors effective marginal cost curve becomes (P_{II} + D) up to its intersection with S, and the original marginal cost curve beyond this intersection.

---

[13] We also question the assumption of complete dominance in a bilateral monopoly setting where, as we noted earlier, price and output solutions are indeterminant absent a host of assumptions.

[14] This implies that the Class II market is characterized by unique and separate supply and demand relationships. While simplifying the analysis, this assumption is admittedly unrealistic. It is used for consistency with M&E.

Figure 7.---Fluid Milk Monopsonist/Monopolist facing Monopsonist/Monopolist
Cooperative Supplier, Prices and Output with Alternative Class I
Differentials
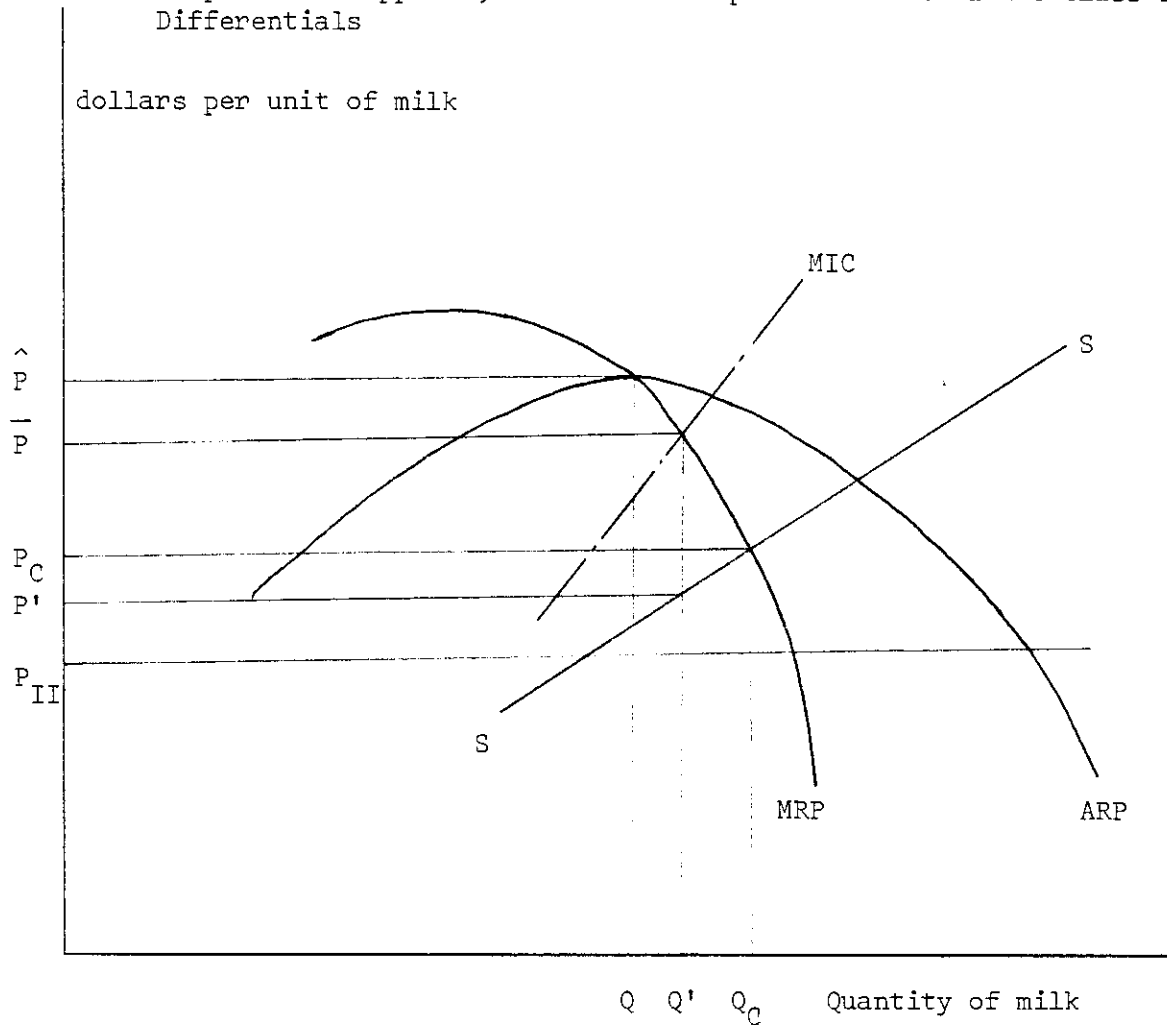
MIC	= Processor's marginal input (raw product) cost
P_{II}	= Class II price
P'	= Monopsony profit-maximizing price
P_C	= Partially countervailed monopoly price
$\overline{P}$	= Partially countervailed monopoly price
$\hat{P}$	= Cooperative monopoly maximum producer benefit price

1. $P' > (P_{II} + D) \leq P_c$: Class I differentials in this range serve
   to reduce the monopsony profits of processors. As D is increased,
   additional quantity supplied (based on SS) is purchased by the
   monopsonist up to Q_c. All milk is sold as Class I, and consumer
   prices fall as D increases.[15/]

2. $P_c > (P_{II} + D) \leq \overline{P}$: Effective Class I prices between P_c and $\overline{P}$,
   where marginal input costs and marginal revenue are equal, reduce
   the monopoly power of the monopsonist/monopolist in addition to
   eliminating monopsony power. Increasing Class I prices above P_c
   will cause the processor to contract purchases along his MRP
   curve. As supply exceeds Class I processor purchases, increasing
   Class II sales will occur, with equilibrium at the intersection of
   the supply curve and the Class I-specific average revenue (blend
   price) curve. At Class I prices below $\overline{P}$, consumers are better off
   than under the countervailing power solution. Consumers are
   indifferent between raw milk prices of P' and $\overline{P}$. With the latter
   price, producers absorb profits taken by the processor in the
   monopsony solution, and additional quantities of milk are produced
   for sale in the Class II market.

3. $\overline{P} > (P_{II} + D) \leq \hat{P}$: Class I prices in this zone further erode monopoly
   power, but at an increasingly high cost in terms of both consumer
   welfare and excess production of Class II milk. Prices in excess of
   $\overline{P}$ continue to reduce processor purchases of raw milk along the MRP
   curve, resulting in Class I milk consumer welfare losses relative
   to the monopsony solution. The size of this zone depends on where
   MIC and MRP intersect; if the intersection is to the left of maximum

---

[15/] Note that differentials resulting in Class I prices less than P' are not
feasible. The monopsonist would find it to its advantage to pay P'
without administered or negotiated pricing.

ARP, the zone disappears.

Without information on the nature of firm costs and supply and demand relationships in specific markets, little can be concluded regarding the social welfare effects of Class I price differentials.[16/] But given the constraints on cooperative monopoly price levels from surplus milk producing areas, there is little reason to believe that a cooperative could consistently achieve a price premium which maximizes producer benefits. Moreover, the use of administered classified pricing may be an effective means of eroding monopsony power in markets where cooperatives lack the market power necessary to countervail it on their own.

When does price discrimination yield unduly enhanced prices to consumers in the context of classified pricing? Permitted the luxury of examining neat theoretical models instead of actual markets, we might argue that Class I differentials resulting in producer prices higher than $\bar{P}$ in figure 7 are indefensible. They result in restricted output relative to the expected "flat" pricing solution for a private monopsonist procuring raw milk from atomistically organized producers. In contrast, differentials less than $P' - P_{II}$ are socially beneficial in this market structure setting. They force a monopsonist processor to a higher level of output than he would otherwise select, simultaneously increasing producer price and decreasing price to consumers.

Differentials yielding Class I prices in the range, P' to $\bar{P}$, are preferable to the independent monopsony solution, but consumer welfare is reduced as the

---

[16/]An important factor in determining which zone Class I prices fall is the magnitude of excess reserves (i.e., eligible Class I milk production in excess of normal fluid requirements). But care must be exercised in interpreting utilization rates, especially in markets where manufactured products are an important factor, or joint fluid/ manufacturing operation are prevalent.

Class I price is increased through the range. If we permit separate treatment

of private and cooperative market power, then limiting Class I prices to P'

would be a reasonable public policy goal. Monopsony gains are eliminated at

this producer price and consumer price is minimized subject to the constraint

that monopoly profits are unaffected. Insistence on even-handedness in the

treatment of performance resulting from imperfect competition would permit

cooperatives to charge handlers a Class I price up to $\overline{P}$. This producer

price would yield the same output and consumer price as the monopsony solu-

tion, the difference being in the sharing of profits among processors and

primary producers.

Summing Up

In this chapter, we have examined what economic theory might have to

say regarding the identification of an unduly enhanced consumer price. Our

analysis was conducted by comparing equilibrium price and output solutions

for private firms and cooperatives in different market structure settings,

and showing how these solutions compared with a perfectly competitive equili-

brium. In all cases, we evaluated output decisions of a private or coopera-

tive processor procuring raw product from atomistically organized primary

producers.

Welfare comparisons are shown in table 1. Regardless of market structure,

open membership cooperative solutions were associated with social welfare

equal to and more often superior to the private firm solutions. In three

of the five cases considered, social welfare with open membership cooperative

processors was equivalent to that under perfect competition. Restricted

membership cooperatives yielded solutions generally inferior to perfect

Table 1. -- Performance Comparisons of Private and Cooperative Marketing Firms Related to Market Structure Conditions.

	Social Welfare Norm				
	Private Firm[1]		Perfect Competition[2]		
	Cooperative		Cooperative		Private
Structure Condition	RM	OM	RM	OM	Firm
Atomistic Input Procurement - Atomistic Output Sale:					
A. Short run - excess profits	?	+	?	+	=
B. Long run	=	=	=	=	=
Monopsonistic Input Procurement - Atomistic Output Sale	+	+	=	=	-
Monopolistic Output Sale - Atomistic Output Purchase	?	+	-	=	-
Monopolistic Output Sale - Monopolistic Output Purchase	?	+	-	-	-

[1] These two columns compare cooperative market performance relative to that of private firms

[2] These two columns compare performance relative to the competitive solution

+ means superior to welfare under norm; - means inferior; = means equal to; ? means uncertain without additional information

competition in terms of social welfare, and in some cases, inferior to the private firm solution.

Concerning undue price enhancement implications, we found that consumer price enhancement, the concern of Section 2 of the Capper-Volstead Act, is related to the extent to which the supply of a commodity is restricted relative to a perfectly competitive equilibrium. Assuming perfect competition among primary producers, supply restriction is associated with three conditions: (1) excess profits to "middlemen," (2) exclusion of primary producers seeking a market, and (3) price discrimination. Consumer price enhancement is not unidirectionally related to producer price enhancement; producer prices may be raised by cooperative enterprise at the same time consumer prices are reduced.

Our theoretical analysis is, of course, subject to several limitations and caveats. We examined only monopsony and monopoly, degrees of imperfect competition never observed in real-life agricultural markets. However, our qualitative conclusions would seem to be relevant to less-concentrated market structures. The crucial point is whether the firm recognizes the price effect of its input purchase or output sale decision. If price effects are recognized, then the monopsony or monopoly models are reasonably appropriate.

In any case, simplifications concerning firm objectives, the nature of production functions, entry and exit barriers, and other conditions probably represent more serious abstractions. This is not to denigrate our theoretical observations; only to explicitly recognize the complexities of actual markets and, hence, to place our results in the proper perspective.

REFERENCES

Babb, E.M., Bessler, D.A., and J.W. Pheasant, Analysis of Over-Order Prices in Federal Milk Marketing Orders, Purdue University Station Bulletin No. 235, August 1979.

Bakken, Henry H., and Marvin A. Schaars, The Economics of Cooperative Marketing, New York: McGraw-Hill, 1937.

Black, John D., The Dairy Industry and the AAA, Washington, D.C.: The Brookings Institute, 1935.

Cook, L., et. al., The Dairy Subsector of American Agriculture: Organization and Vertical Coordination, N.C. Project 117, Monograph 5, College of Agriculture and Life Sciences, University of Wisconsin, November 1978.

Eisenstat, Phillip, and R.T. Masson, "Cooperative Horizontal Market Power and Vertical Relationships: An Overall Assessment," in B.W. Marion (ed.), Agricultural Cooperatives and the Public Interest, N.C. Project 117, Monograph 4, College of Agriculture and Life Sciences, University of Wisconsin, September 1978.

Eisenstat, Phillip, Masson, R.T., and Roddy, D., An Economic Analysis of the Associated Milk Producers Inc., Monopoly, filed with the Court in U.S. v. Associated Milk Producers, Inc. (394 F. Supp. 29 (W.D. Mo. 1975), Aff'd. 534 F. Supp. 2d 113 (8th Cir. 1976)), 1974.

Fellner, William, Competition Among the Few, New York: Augustus M. Kelly, 1965.

Fones, R.W., Hall, J.C., and R.T. Masson, Milk Marketing, Report of the U.S. Dept. of Justice to the Task Group on Antitrust Immunities, January 1977.

Gaumnitz, E.W., and O.M. Reed, Some Problems in Establishing Milk Prices, Division of Marketing and Marketing Agreements, Agr. Adj. Adm., U.S. Dept. of Agriculture, September 1937.

Helmberger, P.G., "Cooperative Enterprise as a Structural Dimension of Farm Markets," J. of Farm Econ. 46:3 (Aug. 1964), pp. 603-617.

Helmberger, P.G., and S. Hoos, "Cooperative Enterprise and Organizational Theory," J. of Farm Econ. 44:2 (May 1962), pp. 275-290.

Ippolito, R.A., and R.T. Masson, "The Social Cost of Government Regulation of Milk," The J. of Law and Econ. 21:1 (Apr. 1978), pp. 33-65.

Masson, Alison, Masson, R.T., and Barry C. Harris, "Cooperatives and Marketing Orders," in B.W. Marion (ed.), Agricultural Cooperatives and the Public Interest, N.C. Project 117, Monograph 4, College of Agr. and Life Sciences, University of Wisconsin, September 1978.

Masson, R.T., and Phillip Eisenstat, "Capper-Volstead and Milk Cooperative Market Power: Some Theoretical Issues," in B.W. Marion (ed.), <u>Agricultural Cooperatives and the Public Interest</u>, N.C. Project 117, Monograph No. 4, College of Agr. and Life Sciences, University of Wisconsin, September 1978.

Nicholls, William, <u>Imperfect Competition Within Agricultural Industries</u>, Ames, Iowa: Iowa State University Press, 1941.

Vitaliano, Peter, "The Theory of Cooperative Enterprise -- Its Development and Present Status," in B.W. Marion (ed.), <u>Agricultural Cooperatives and the Public Interest</u>, N.C. Project 117, Monograph 4, College of Agriculture and Life Sciences, University of Wisconsin, September 1978.

Youde, J.G., <u>Cooperative Enterprise in Alternative Market Structures</u>, unpublished Ph.D. thesis, University of Wisconsin, 1966.

_____, "Cooperative Membership Policies and Market Power", in <u>Agricultural Cooperatives and the Public Interest</u>, N.C. Project 117, Monograph 4, September, 1978, pp. 219-226.

Youde, J.G., and P.G. Helmberger, "Marketing Cooperatives in the U.S.: Membership Policies, Market Power, and Antitrust Policies," <u>Journal of Farm Economics</u>, 48:3, Pt. II (August 1966), pp. 23-36.