Statement of Proposed Testimony to the
Subcommittee on Fisheries Conservation, Wildlife and Oceans of the
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Executive Summary

My testimony addresses the issue of whether the guidelines for Individual Fishing Quota (IFQ) programs should require explicit mechanisms to ensure that processors are compensated for losses they might incur as a consequence of the introduction of IFQs. I begin by discussing the importance of market structure in determining the effects on processors and harvesters of rationalizing a fishery, with the primary emphasis placed on the effects of an IFQ program in which quota shares are allocated only to harvesters.

To illustrate the importance of market structure and the balance of bargaining power on the outcomes of a rationalization program, I review a recent analysis of the BSAI inshore pollock fishery that was prepared for the North Pacific Fishery Management Council (Halvorsen, Khalil, and Lawarrée 2000). The analysis demonstrates that market structure is critical in determining the distributive outcomes of IFQ programs. Because the characteristics of market structure differ greatly across fisheries, the distributive effects of rationalization policies require fishery specific analysis. It is concluded therefore that decisions concerning the desirability of mechanisms to compensate processors for potential losses, and the type of mechanism that is most appropriate, should also be fishery specific, rather than attempting a "one-size-fits-all" approach.

Next I discuss the rationales that have been advanced for compensating processors for any losses that they may incur as the result of a rationalization program. My primary emphasis is on the argument that if processors are not compensated they may block the implementation of a rationalization program, with the result that the potential efficiency gains from the program cannot be realized. I note that there are several problems with this argument. First, attempts to block a program unless distributive outcomes are altered may simply reflect an attempt to increase the size of already positive net benefits, rather than to avoid losses. Second, if harvesters become concerned that the attempt to keep processors safe from harm will result in losses for harvesters, they may also try to block implementation. Lastly, when efforts to hinder implementation are rewarded, an incentive is created for increased obstructive behavior in the future.

Following this general discussion, I consider two recently proposed concepts that have received a considerable amount of discussion in the context of rationalization programs in North Pacific fisheries. One is that rationalization programs should satisfy the criterion of being "Pareto safe," which requires that no fishery entities be made worse as a result of rationalization. The other is that an IFQ program should also involve the allocation of Individual Processor Quotas (IPQs) in what has come to be known as the "two-pie" approach.

The two concepts are linked in that the two-pie system has been advocated by Matulich and Sever (1999) as a feasible way of achieving Pareto-safe rationalization in at least some policy-relevant situations. In particular, Matulich and Sever claimed to have proven that a two-pie allocation would be Pareto safe in a bilateral monopoly, that is, a fishery with only one harvester and one processor, and asserted that their analysis of this case would be applicable to the BSAI inshore pollock fishery because it "emulated" a bilateral monopoly. However, neither of these claims is correct. First, as discussed in Halvorsen, Khalil, and Lawarrée (2000), the characterization of the BSAI inshore fishery as a bilateral monopoly was highly misleading because it ignored critical elements of the inshore fishery's market structure. Second, and more importantly, my testimony shows that the claimed proof that a two-pie allocation would be Pareto safe in a bilateral monopoly is invalid. Therefore, even if a real-world fishery could be found that was a bilateral monopoly, there is no reason to believe that a two-pie allocation would be Pareto safe.

Since there are no other market structures for which the Pareto safety of a policy feasible two-pie system has even been asserted, no credence should be given to claims that a two-pie system is a "policy-superior initial allocation of rights" (Matulich, Mittelhammer, and Reberte 1996, page 112). Instead, the inclusion of IPQs in a fishery rationalization program should be viewed as simply one possible mechanism for enhancing outcomes for processors, bearing in mind that the possible outcomes under IPQs have received very little credible economic analysis and are untested by experience in any real-world fishery.

Evaluations of the appropriateness of allocating IPQs as part of a specific rationalization program should include (i) an assessment of whether compensation for processors is desirable, given the characteristics of the specific fishery, in particular the balance of bargaining power, and (ii) the relative merits of IPQs versus other possible compensation programs, given the characteristics of the specific fishery.

Accordingly, it is desirable that regional councils have flexibility in deciding whether, and how, processors should be compensated for possible losses arising from a fishery rationalization program. Therefore, I recommend that the national standards for fishery conservation and management not require that IPQs or other specific compensation mechanisms be included in future fishery management plans and regulations.

1. Introduction

My testimony addresses the issue of whether the guidelines for Individual Fishing Quota (IFQ) programs should require explicit mechanisms to ensure that processors are compensated for losses they might incur as a consequence of the introduction of IFQs. I will discuss in turn the conditions determining the probability, extent, and incidence of such losses, and the efficiency and equity rationales that have been advanced in favor of compensation.

I will pay particular attention to two recently developed concepts that have received a considerable amount of discussion in the context of rationalization programs in North Pacific fisheries. One is that rationalization programs should satisfy the criterion of being "Pareto safe," which requires that no fishery entities be made worse as a result of rationalization. The other is that an IFQ program should also involve the allocation of Individual Processor Quotas (IPQs) in what has come to be known as the "two-pie" approach. The two concepts are linked in that the two-pie system has been put forward as a feasible way of achieving Pareto-safe rationalization in at least some policy-relevant situations by Professor Scott Matulich and his co-authors (Matulich, Mittelhammer, and Reberte 1996, Matulich and Sever 1999).

2. The Effects of IFQ Programs on Processors

Unless specified otherwise, the phrase "IFQ program" will refer to a program in which IFQs are allocated only to harvesters. In analyzing and predicting the effects of such an IFQ program on the well-being of processors, it is critical to take into account the specific conditions of the fishery being considered.

One important set of conditions concerns the market structure of the fishery. The first analyses to emphasize the possibility of processors incurring losses as a result of the introduction of an IFQ program (Plesha and Riley 1992, Matulich, Mittelhammer and Reberte 1996) assumed that the fishery was perfectly competitive, the end of the race for fish created excess processing capacity with no alternative uses, and the firms in the industry were not vertically integrated (that is, processors did not own harvesters or vice versa). Given these assumptions, they conclude that processors would be made worse off by an IFQ program because they would fail to obtain any of the rents from fish and would also lose part of the value of their capital.

However, if all other circumstances were the same, but processors and harvesters were vertically integrated (as for example in a fishery comprising only factory trawlers), then processors could not be made worse off because they would receive the full benefits of the rationalization program (Matulich and Sever 1999). In a mixed case, with some processors vertically integrated and others not, the incidence of gains and losses might differ by type of entity, with non-integrated processors being more susceptible to suffering losses than integrated (Halvorsen, Khalil, and Lawarrée 2000).

Perfect competition is one of the standard models used in economic analyses, in part because of its analytical simplicity. Examples of other standard models familiar from economic theory include monopoly (a single harvester facing perfectly competitive processors), a monopsony (a single processor facing perfectly competitive harvesters), and a bilateral monopoly (a single harvester facing a single processor). In the first case, the monopolist would obtain all the net benefits of the fishery, in the second case the monopsonist would, and in the third case the division of net benefits would depend, among other things, on the alternative opportunities available to the participants.

These three standard models also have the advantage of analytical simplicity, but are not in general directly applicable to the analysis of the effects of IFQ programs for two reasons. First, the characteristics of the market structures of real-world fisheries are more complex than such simple theoretical models imply. And second, if a fishery did conform to one of these model specifications, then it would be expected to be capable of maximizing aggregate net benefits on its own, which would preclude the development of a race for fish. For instance, a monopolist harvester would optimally allocate its fleet over time rather than engaging in a race to fish between its own vessels. Accordingly, rationalization programs such as an IFQ program would be redundant.

However, consideration of these standard models does illustrate the wide range of results possible with respect to the division of the net benefits of a fishery, and therefore the need to take market structure into account when assessing the effects of an IFQ program on the participants in the fishery. Also, to the extent that a fishery being considered for an IFQ program has characteristics similar to a standard model, some inferences may be drawn about the probability that processors could be adversely affected by the implementation of the program. For example, other things equal, implementing an IFQ program in a fishery with very few processors and many harvesters is less likely to result in processor losses than in a fishery with many processors and harvesters.

More generally, these examples suggest the importance of bargaining power in determining the distributive effects of an IFQ program, and therefore the need to use the tools of game theory to assess the possible outcomes of a particular IFQ program. These tools include cooperative bargaining theory (e.g., Nash 1953)

and non-cooperative bargaining theory (e.g., Osborne and Rubinstein 1990). A recent example of an analysis of a fishery using cooperative and non-cooperative bargaining theory is Halvorsen, Khalil, and Lawarrée (2000). This analysis, which was prepared on behalf of the North Pacific Fishery Management Council, considered the prospective distribution of net benefits from rationalization of the inshore sector of the Bering Sea/Aleutian Islands (BSAI) fishery under the American Fisheries Act (AFA).

Although most of the specific results of the analysis are directly applicable only to that particular fishery, a brief review of the main elements of the analysis is useful to illustrate the issues involved. The review also will be useful as background for the evaluation of the two-pie allocation, which was initially discussed in the context of the inshore pollock fishery.

Halvorsen, Khalil, and Lawarrée evaluated, and rejected, the suitability of several standard economic models that had been proposed for application in the inshore pollock fishery. For example, Wilen (1998) had argued that the inshore fishery was best characterized as a single monopsony, in part because of the dominant position of two firms in the main market for surimi products. Halvorsen, Khalil, and Lawarrée concluded that Wilen's analysis substantiated the hypothesis that processors had significant market power, but that the fishery was not a monopsony.

One reason given for rejecting the conclusion of monopsony was that for the processors to behave as a monopsony they would have to overcome serious economic and legal difficulties associated with being a successful cartel. Also, there was evidence that the processors had not always acted in a united way, as they would have if they were a monopsony. For example, when the Bering Sea Marketing Association (BSMA) went on strike against several processors in 1999, the largest processor in the fishery, which was not a party to the negotiations, had its fleet continue to fish, making prolongation of the strike too costly to both the members of the BSMA and their processors. The existence of the BSMA also argued against the conclusion that the inshore sector was a monopsony, because its collective bargaining is not consistent with harvesters acting as passive price takers. Lastly, as noted above, an effective monopsony would have been capable of substantially rationalizing the fishery without the intervention of the AFA.

The existence of the BSMA was considered especially important by Matulich and Sever (1999), who argued that it implied that the inshore sector was a single bilateral monopoly. They claimed that the dissemination of price information to each processor by the marketing association during the course of negotiations allowed the processors to unify even though they were not sharing information among themselves. In other words, Matulich and Sever were claiming that the BSMA, acting as the representative of independent catcher vessels, unwittingly made it possible for the processors to unite against its own clients.

One serious factual problem with Matulich and Sever's analysis is that the BSMA did not represent all of the independent catcher vessels, and the largest processor was not a party to the negotiations. Also, the theoretical analysis left two critical questions unanswered. First, why would the marketing association not take advantage of the processors' lack of communication and play one against the other by misrepresenting received price offers? Second, even if it did not do so, why would information on prices be sufficient to allow the processors to overcome the other economic and legal difficulties hindering their behavior as a single agent?

Another critical factual problem with Matulich and Sever's analysis is that it ignored the existence of substantial vertical integration in the fishery. Based on National Marine Fishery Service data, processor controlled vessels harvested approximately half the total allocation of catch to the inshore sector. This makes the existence of a united harvesting sector implausible, because processor controlled vessels would be

subject to conflict of interest issues and could not be expected to consider only the effects on harvesters of the results of negotiations with processors.

Furthermore, the degree of vertical integration was not uniform across processors. For example, two of the largest processors, which together accounted for about two-fifths of the total inshore catch, were estimated to obtain more than eighty percent of their fish from their own processor controlled vessels, whereas another large processor, with about one-fourth of the total inshore allocation, obtained virtually all of its fish from independent catcher vessels. The differences in the degree of vertical integration implied differences in the effects of a given negotiated outcome, complicating any effort of the processors or harvesters to act in unison.

Based on their assumption that the inshore sector was a bilateral monopoly, Matulich and Sever (1999) recommended that a two-pie rationalization approach be implemented, and claimed that it would result in a Pareto-safe distribution of net benefits.

However, as discussed in section 5 below, Matulich and Sever's theoretical analysis of the two-pie system under bilateral monopoly is fundamentally flawed, and their conclusion that it would guarantee a Pareto safe outcome is simply incorrect. Furthermore, even if their analysis of a two-pie program under bilateral monopoly had been correct in theory, advocacy of this particular policy approach for this specific fishery was based on a highly misleading characterization of the fishery's market structure.

Halvorsen, Khalil, and Lawarrée (2000) used concepts from game theory to evaluate the nature of competition in the industry, and the resulting balance of bargaining power. They concluded that the processors had a number of important bargaining advantages. The large portion of the harvest caught by processor controlled vessels reduced the reliance of the vertically integrated processors on supply from independent catcher vessels, while also providing processors an informational advantage because the independent catcher vessels they bargained with did not own inshore processing plants. Also, because the processing sector was highly concentrated and new entry was prohibited under the AFA, processors would be expected to realize that aggressive tactics yielding short-term gains were unlikely to be profitable in the long-run. Independent catcher vessels did have one bargaining advantage in that they were able to legally bargain as a group. However, it was concluded that on balance the processors had substantially more bargaining power than independent catcher vessels.

The Halvorsen, Khalil, and Lawarrée analysis noted that rationalization of the inshore pollock fishery was expected to result in a large increase in the effective amount of processing capacity, which would provide more opportunities for processors to engage in aggressive competition, but the long-term incentives for refraining from doing so would remain. Therefore they concluded that the rationalized fishery would be characterized by "moderate but not cutthroat competition" among processors.

These conclusions concerning bargaining power were then applied to analyze two alternative rationalization programs being considered by the Council: processor-specific cooperatives (an implicit processor compensation mechanism) and the Dooley-Hall proposal for non-processor-specific cooperatives (an approximation to IFQs). Halvorsen, Khalil, and Lawarrée concluded that there was a significant probability that some independent catcher vessels would be adversely affected by the requirement of processor-specific cooperatives. They also concluded that the Dooley-Hall proposal would be more favorable to independent catcher vessels, and less favorable to processors, than the processor-specific cooperatives.

Their conclusions concerning the relative bargaining power of harvesters and processors in the inshore

BSAI pollock fishery would also have been relevant to the analysis of the effects on processors of alternative rationalization programs including IFQs. However, it is important to note that the conclusions were based on the conditions in this specific fishery. Because market structure is critical in determining the distributive outcomes of IFQ programs, and the characteristics of market structure differ greatly across fisheries, the distributive effects of rationalization policies require fishery specific analysis. Accordingly, decisions concerning the desirability of mechanisms to compensate processors for potential losses, and the type of mechanism that is most appropriate, should also be fishery specific, rather than attempting a "one-size-fits-all" approach.

On the other hand, the basic principles underlying the recommendation that processors should be compensated for losses arising from fishery rationalization programs can be addressed at a general level. The following section discusses the principal arguments that have been made in support of compensation based on considerations of efficiency and equity.

3. Rationales for Compensation

One rationale advanced for compensating processors for possible losses is that not doing so could have adverse consequences for economic efficiency by creating impediments to the implementation of efficiency-enhancing rationalization programs. This possible source of inefficiency is emphasized by Matulich, Mittelhammer, and Reberte (1996). Having concluded that processors could suffer losses as the result of the introduction of IFQs in a perfectly competitive fishery, they note (page 112), "These losses could promote political gridlock and jeopardize adoption of an ITQ policy unless they are fully compensated or redistribution is avoided by a policy-superior initial allocation of rights to both harvesters and processors."

This argument assumes that processors do not have enough economic bargaining power in rationalized fisheries to avoid losses, but do have enough political bargaining power to block efficiency-enhancing rationalization programs. However, as the Halvorsen, Khalil, and Lawarrée analysis of the BSAI pollock fishery indicated, processors may in fact have more bargaining power than harvesters in some real-world fisheries.

Therefore, a situation in which processors seek rent-enhancing mechanisms as the price of agreeing to rationalization programs may simply reflect the desire of processors to obtain a larger share of the net benefits the program would create, rather than that they are seeking to protect themselves from suffering losses. Under these circumstances, utilizing mechanisms to enhance the processors' share of the net benefits could actually create new impediments to the implementation of rationalization programs by causing harvesters to fear that they would lose out from the implementation of the program.

The history of the American Fisheries Act is instructive in this regard. Rationalization of the BSAI pollock fishery was based on the creation of harvesting cooperatives. Processors in the inshore sector expressed concern that cooperatives might put them at a bargaining disadvantage. In response, the AFA rules for cooperatives required that they be processor-specific, and that membership in the cooperative for each processor was limited to vessels that were qualified for that processor, as determined by where a catcher vessel had previously delivered the largest share of its total catch.

In response, an association of independent catcher vessel owners expressed concern that the AFA rules for inshore cooperatives would harm them because of the restrictions placed on where they could market their fish, and proposed an alternative set of rules known as the Dooley-Hall proposal. Resolution of this conflict required extensive hearings before the North Pacific Fisheries Management Council. In addition, concerns

were raised about the effects of processor-specific cooperatives on small entities as defined in the Regulatory Flexibility Act.

Another possible disadvantage of responding to processors' resistance to the adoption of a rationalization program by incorporating mechanisms to enhance their position is that doing so might have adverse efficiency consequences in the longer run. If it appears that policy makers are willing to appease opponents of rationalization by enhancing their rewards, this will provide incentives for increased obstructive behavior in the future, and thereby imperil the implementation of rationalization programs in other fisheries.

The other principle rationale for compensating processors against possible losses is that it would be inequitable not to do so. For example, Plesha and Riley (1992) and Matulich, Mittelhammer, and Reberte (1996) argue that there is a Fifth Amendment "taking" issue if the rationalization of a fishery results in losses for processors.

Without attempting to address the implied legal issues, some observations can be made on whether investment losses from rationalization are inequitable from an economic point of few. It seems unlikely that the investments assumed to be at risk from rationalization were made with the anticipation that the race for fish was certain to be the long-run equilibrium outcome for the fishery in question. Faced with an uncertain future, processors' investment decisions can be assumed to have taken into account the possibility of various alternative scenarios, including regulatory policies to end the race for fish. Accordingly, investment decisions would be optimized to reflect trade-offs between the various possible future outcomes. For example, there might be a trade-off between further increasing investment in capacity in order to secure competitive advantages by, for example, deterring the entry of new processing firms into the fishery, versus the advantage of having the smaller amount of capacity that would be optimal if the race for fish were ended. It is not clear why losses that had been anticipated to occur under a particular scenario should instead be compensated on equity grounds when that scenario turns out to be the actual outcome.

Another equity issue concerns the distribution of net benefits within the processing sector. For example, as noted above, in a processing sector comprising some firms that are vertically-integrated and some that are not, the non-integrated processors would be more susceptible to suffering losses from rationalization than would the integrated processors. But the choice to not be vertically-integrated presumably reflects a judgement by these firms that they obtained enough economic advantages by refraining from acquiring harvesting capacity to compensate for the increased risk of losses if the fishery were rationalized. Adopting a policy to compensate all processing firms for possible losses would change the anticipated benefits and costs of these business decisions after the fact and thereby effectively discriminate in favor of the non-integrated firms, partly at the cost of harvesters.

Matulich and Sever (1999) use the term "Pareto safe" to refer to the concept of a rationalization program that is "equitable in the sense of not redistributing status quo ante wealth of historical participants" (page 204). They then argue that if a rationalization program is not Pareto safe, "politically powerful interest groups may form to block a switch to ITQ management, jeopardizing the efficiency benefits of rights-based fishing (page 215). The desirability, and feasibility, of relying on the concept of Pareto safety in designing and evaluating fishery rationalization polices is discussed in the following section.

4. Pareto Safe Rationalization

Although the term "Pareto safe" appears to have originated in the writings of Matulich and his co-authors, essentially the same concept has been long known in the economic policy analysis literature as the Pareto

criterion. "The logical criterion for proving that a policy change, or any other change, is beneficial was first stated by a nineteenth century Italian social scientist, Vilfredo Pareto. Pareto's rule is very simple: Program X improves the welfare of the society if it makes at least one person better off and no one worse off." (Gramlich 1990).

The recommendation by Matulich and his co-authors that fishery rationalization policies should be required to be Pareto safe is equivalent to saying that they should satisfy the Pareto criterion. However, the Pareto criterion only provides information on a policy's effect on economic welfare when the policy would result in no individual being made worse off. A policy that involved small losses to one individual, and large gains to many others, would fail the Pareto criterion, even though it might have a large positive effect on economic welfare. And virtually all feasible public policies result in at least one individual being made worse off.

This has led to the general rejection of the Pareto criterion as a practical basis for evaluating public policies. As Ng (1984, page 1033) summarizes, "The Pareto criterion is widely accepted as a sufficient condition for an improvement in social welfare. … However, most, if not all, changes in the real world involve making some better off and some (no matter how small the number) worse off. Thus the Pareto criterion in itself is of little practical use."

The practical difficulties of trying to implement Pareto safe fishery rationalization policies can be illustrated by considering the effects on individual harvesters of implementing an IFQ program. Matulich, Mittelhammer and Reberte (1996, page 112) indicate that an IFQ policy would be Pareto safe within the harvesting sector, because "endowing individual harvesters with fully transferable, permanent, and exclusive fishing rights is tantamount to assigning property rights over the fish stock...[an important benefit]...arises out of gains from free trade in which more efficient users of the resource are able to purchase rights from less efficient users. Such trade fully compensates the sellers." While this is a reasonable summary of the efficiency arguments in favor of IFQs, it does not provide a basis for concluding that no individual harvesters are made worse off.

There are at least two ways in which individual harvesters can be made worse off under an IFQ program. First, it is not feasible to ensure that the original distribution of quota among harvesters matches their actual participation in the fishery. For example, a standard procedure is to base quota share allocations on catch history over some historic period. If a participant's harvest was unusually low during all or part of that period he may not receive sufficient quota to leave him as well off as before. Similarly, if the catch history period is not fairly recent, a large proportion of the quota shares may go to individuals no longer active in the fishery rather than to those currently active (see, for example, North Pacific Fishery Management Council 2002, Appendix 2-7, page 8). Second, the assumption that the price of quota will fully compensate the sellers depends on the implicit assumption that the market for quotas is perfectly competitive, which need not be the case (Anderson 1991).

It should be noted that similar issues could arise in a program involving the allocation of individual processor quotas. The allocation of the quotas might not reflect an individual processor's actual participation in the fishery, for example if a facility was incapacitated during part of the historic period used to determine shares. And fisheries with a small number of processing firms, or a few large and many small firms, are particularly susceptible to market imperfections that might prevent the price of a quota from fully compensating the seller.

Thus the Pareto safe concept is not of much practical help in evaluating the effects of fishery rationalization programs at the individual participant level. Matulich and his co-authors in fact rarely refer to applying the

Pareto safe concept at this level, but instead focus on Pareto safety at the level of the aggregate harvesting and processing sectors. In particular, as noted above in section 3, they suggest that a rationalization policy is unlikely to be adopted if it would create uncompensated losses for the processing sector.

Matulich, Mittelhammer and Reberte (1996, page 126) speculate that a Pareto safe allocation might be obtained under a "symmetrical rights distribution" and suggest, "Candidates worthy of consideration include (i) a split of harvest quota shares between fishers and processors; (ii) a "two-pie" allocation, in which catching rights are awarded to fishers and processing rights are awarded to processors; and (iii) full-utilization quota shares…."

Matulich and Sever (1999) investigate the properties of the first two of these proposals, referring to the first one as a "one-pie split allocation." They first consider the application of the one- and two-pie allocations to a fishery that is perfectly competitive and conclude that neither type of allocation is capable of providing policy feasible Pareto safe outcomes. They then consider the application of these allocations to a bilateral monopoly, after asserting that the BSAI inshore pollock fishery "appears to emulate bilateral monopoly" (page 212). The one-pie allocation is again concluded to not be capable of providing policy feasible Pareto safe outcomes. However, they claim to prove that the two-pie system would be Pareto safe not only at the aggregate level but also at the level of individual participants. The validity of this remarkable claim is discussed in the following section.

5. Two-Pie Allocations and Pareto Safety

Matulich and Sever's alleged proof that a two-pie allocation would be Pareto safe in a bilateral monopoly is based on a series of dubious assumptions. The first is their assumption that the bilateral monopoly would be able to negotiate an ex vessel price that maximized joint profits under conditions of a race for fish, but would be unable to negotiate rationalization measures that would end the race for fish and thereby increase the potential joint profits. No explanation is given for this assumed constraint on the bilateral monopoly's ability to maximize joint profits. Instead it is simply implicitly assumed that the race for fish can be ended only by an externally imposed rationalization program.

In their analysis of the two-pie allocation, efficiency is assumed to be attained through quota trading, and to be independent of the bargained ex vessel price. In particular, they note that the ex vessel price might be outside of the Pareto safe range. However, they argue that the actual price will fall within the Pareto safe range because (page 214):

"While the efficient price does not guarantee Pareto safety, intrinsic bargaining behavior should, provided the bargaining association is responsive to the well being of its entire membership. Bargaining agents have internal incentives to negotiate a price that not only maximizes joint profits (efficiency) but also leaves no member worse off. …at least one Pareto-safe price exists - the open access exvessel price, P^0…As long as the parties desire to reach a Pareto-safe agreement, they can do so by settling on a rent share that implies P^0 as the ex vessel price. Thus, there are no functional impediments to achieving an efficient price that is also Pareto safe."

Matulich and Sever then use the Nash (1953) bargaining solution concept to indicate how the rent shares might be determined, given that "the bargaining agents are assumed to act so as to leave no member worse off under ITQs relative to open access" (page 214). Thus solution of the Nash model does not form part of the proof, but instead is performed under the assumption that the price must fall with the Pareto safe range.

In short, their "proof" really just consists of the assumption that bargaining agents will want and be able to set prices that are Pareto safe for all their members. This assumption is merely asserted, rather than derived from economic theory, and is unlikely to be satisfied in a real-world fishery, in which each side would contain possibly large numbers of heterogeneous participants. It is not obvious, and Matulich and Sever do not suggest, how such a difficult principal-agent problem in each sector could be structured so that the agent is constrained to leave no member worse off.

Even if it is assumed for the sake of argument that both sides of the bilateral monopoly desire agreements that are Pareto safe as among their own members, a Pareto safe price need not be the outcome of the bilateral monopoly negotiation. This can be demonstrated using a Nash bargaining model with the outside options for both sides correctly specified.

To determine the outside option for the harvester sector of the bilateral monopoly, consider what its alternative would be if it did not reach an agreement with the processor sector. Because it would have IFQs it could harvest the fish, but the processor sector could simply refuse to process the harvest. Therefore the outside option for the harvester sector is zero rent. Similarly, the harvester sector could threaten to not fish, so that the outside option for the processor sector is also zero rent, assuming that it has no processor controlled vessels. With these outside options, there is no reason to assume that the bargaining outcome would be Pareto safe. And if the processor sector does have processor controlled vessels, the outcome could be very unfavorable for harvesters, as shown in Halvorsen, Khalil, and Lawarrée (2000).

To summarize, Matulich and Sever's claim that they have provided a proof that a two-pie allocation would be Pareto safe under bilateral monopoly is invalid, and there is no other market structure for which this claim has even been made. Therefore, no credence should be given to claims that a two-pie system is a "policy-superior initial allocation of rights" (Matulich, Mittelhammer and Reberte 1996, page 112). Instead, the inclusion of IPQs in a fishery rationalization program should be viewed as simply one possible mechanism for enhancing outcomes for processors, bearing in mind that the possible outcomes under IPQs have received very little credible economic analysis and are untested by experience in any real-world fishery.

Evaluations of the appropriateness of allocating IPQs as part of a specific rationalization program should include (i) an assessment of whether compensation for processors is desirable, given the characteristics of the specific fishery, in particular the balance of bargaining power, and (ii) the relative merits of IPQs versus other possible compensation programs, given the characteristics of the specific fishery.

Accordingly, it is desirable that regional councils have flexibility in deciding whether, and how, processors should be compensated for possible losses arising from a fishery rationalization program. Therefore, I recommend that the national standards for fishery conservation and management not require that IPQs or other specific compensation mechanisms be included in future fishery management plans and regulations.

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