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Contractual Arrangements in Philippine Fisheries

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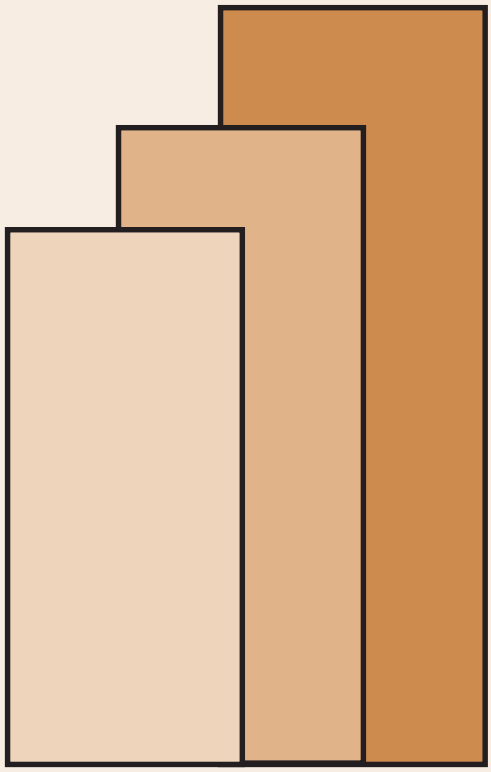

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by

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Economists have begun the quest for explanations of contractual choices in developing countries and especially for pervasiveness of informal credit and insurance arrangements and interlinkages observed in agricultural and fishing contracts. In the case of fisheries, what is needed is an in-depth knowledge of real world contract provisions and categorization of contractual arrangements to guide analysis of contractual arrangements. This paper is a modest contribution toward this particular end. The present study also draws upon modern contract theory to explain the existence of a variety of contractual arrangements in aquaculture and marine fishing.

Certain regularities to be found within the fishing economies of the Philippines include share contracts between aquaculture owner-operators and tenant/laborers and between boat owners and crew members as well as interlinkage of credit, labor, and marketing relations. Future work would entail understanding the fundamental incentives underlying contractual arrangements in fisheries that will allow one to evaluate the efficiency and equity implications of contract use and will aid in predicting their influence in the distribution of returns as their usage in the fishery sector increases.

Keywords:

Agricultural contracts, fishing contracts, contractual arrangements, fishery sector, informal credit

Contractual arrangements in Philippine fisheries

Gideon P. Carnaje[1]

I. Introduction

Hoff, Braverman and Stiglitz [1993:1] define economic institution as "a public system of rules that define the kinds of exchanges that can occur among individuals and that structure their incentives in exchange. Economic institutions include markets and property rights, systems of land and animal tenure, obligations of mutual insurance within lineage groups, and other systems of exchange that are determined by implicit contracts or social norms." This definition, however, conflate institutions and contracts [Alston 1995]. Institutions are the formal and informal laws, rules and norms of a society that constrain behavior. Contracts are a response to the constraints imposed by the institutions, inter alia. For example, property rights could be taken as an institution but not sharecropping which is a market response, according to Hoff, Braverman and Stiglitz, to issues of incentives and risk.

Contractual arrangements can change over time. Understanding the forces that prompt changes in contractual choices is therefore important for understanding the developmental patterns of societies. For example, explicit contracts may be the most efficient means of structural transactions under one institutional regime, but less formal agreements with entirely different enforcement mechanisms may be the most efficient under another. Different ways of structuring transactions may lead to different growth paths.

Economists have begun the quest for explanations of contractual choices in developing countries and especially for pervasiveness of share contracts. Much of the existing literature generalizes from the experience in agriculture which could well prove misleading. Agricultural activities are uncharacteristic of fishing economies in a number of important respects. For example, agricultural activities are unusually individualistic in task-orientation and organized almost exclusively in family firms. Also, production is discontinuously sequenced and has long gestation lags; and the risk of asset loss and misuse is minimal. In contrast, marine fishing is characterized by continuity in production, short gestation lags in production, and risk of asset loss and misuse, which are relevant to contractual choice.

The nature and extent of contractual arrangements will depend on the informational and structural environment. What is needed is an in-depth knowledge of real world contract provisions and categorization of contractual arrangements to guide analysis of contractual arrangements in fisheries. This paper is a modest contribution toward this particular end. The present study also draws upon modern contract theory to explain the existence of a variety of contractual arrangements in aquaculture and marine fishing.

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The study is organized as follows. In section II we present an overview of the setting of fishing economies. The next section presents the method of data collection. Section IV discusses modern contract theory which could be used to explain the existence of a variety of contractual arrangements in aquaculture and marine fishing. Section V documents and categorizes real world contract provisions to guide analysis of contractual arrangements in fisheries. Section VI points out some social-organizational differences between agricultural and fishing economies. In Section VII, the empirical findings and theoretical issues are summarized.

II. Methods and limitations

Research starts with the gathering of general information on the history and present situation of the research areas through reconnaissance interviews and through the study of the available literature on the subject. The next step is primary data collection which covered the period. Primary data collection was concentrated in Western Visayas and Quezon Province. Data collection involved open-ended discussion with respondents. Sampling of respondents was informal. Fish suppliers, buyers and traders randomly met along the survey trip were interviewed regarding the scope and the nature of contractual arrangements in their surroundings.

Preliminary interviews were conducted in April and May 2002 and final and supplementary interviews were conducted in January-March 2003. Interviews were conducted with municipal fishers, commercial fishers, aquaculture farm owners and operators, commercial fishing and aquaculture farm workers, fish brokers, traders, vendors, and government bureaucrats. Some of these respondents developed into "key informants" who were interviewed on several occasions. They became an important source of information on the more detailed and sensitive issues.

Frequently it was obvious that the persons interviewed knew more than they would tell us, particularly when such delicate question as family income, volumes of catch, ownership of boats and equipment were touched. Moreover, fishermen are naturally hesitant to reveal secret and successful fishing methods or good fishing places.

This study does not start with a well-defined data set and proceed to test a well-defined theoretical prediction. Examples of contractual arrangement in this paper are illustrative rather than exhaustive. To go through a number of steps refining the theory and finding data relevant to the theory, and ending up with an evaluation of the factors leading to an optimal contract, we would ideally like a time series on contract designs that we could correlate with several factors. None exists. While the evidence presented is anecdotal and qualitative, because of the objective of treating the qualitative details overlooked in ordinary sample surveys and since the observations reported here have been corroborated by field work in several developing countries, this shortcoming is less than fatal.

The major weakness of the method adopted in this study is that, unlike formal data collection methods such as cross-sectional longitudinal sample surveys, it does not generate data from which generalizations can be made for a whole population. Its major

strength is that it provides flexibility to the investigator to explore several heretofore overlooked nuances of contractual relationships that may not have been anticipated in planning the study, but that they are relevant to its purpose. The more standard empirical approach, theory-data-test, should be more fruitful when integrated with this kind of "pilot." Specifically, the tentative conclusions that are drawn here could be regarded as null hypotheses to be tested from a larger survey.

III. The setting of fishing economies

This section presents the technological, economic, and social conditions under which fish producers and traders are operating. This environment conditions the risk and information costs that underlies fish producer's and trader's contract choices.

A. Physical and social environment

Marine fishing takes place in a very heterogeneous and uncertain environment. This uncertainty stems not only from physical environment, but also from the social environment in which fishing takes place [Acheson 1981]. The sea is an alien environment in which man is poorly equipped to survive and which he enters only with the support of artificial devices; the constant threat of storm, accident, or mechanical failures make fishing at sea a very dangerous occupation anywhere else in the world. Marine ecozones typically contain very large number of species with different habits and requiring different capture techniques. Thus, the fishermen of a single culture must be adept as at several different fishing techniques. Many species are only available periodically. Not only do many species migrate seasonally, but fish populations can increase or decrease drastically in ways which are difficult for even trained fisheries scientists to predict. Widespread economic disaster, following on the heels of stock failure, is far from unknown.

The fact that fishermen are operating on a flat, undifferentiated surface and are exploiting animals that are difficult to see increases uncertainty. For fishermen, locating one's position is always problematic; and it is much more difficult—perhaps impossible—for the fisherman to learn as much about desirable species as the hunter and farmer, who can closely observe the animals and plants they exploit. In addition, one's catches can fluctuate depending on the activities of fellow fishermen, and even fishermen working with relatively primitive technology can affect the stocks of aquatic animals. In many fish markets of the world, prices fluctuate wildly so that a good catch does not always mean a good day's income.

It is also important to note that fish are a common property resource. There is a growing body of literature demonstrating that resources of all kinds owned by the public (i.e. air, rivers, grazing land, oceans) are overexploited and abused in ways that do not occur with privately owned resources. Private property is protected and maintained by its owners, who, after all, obtain benefits of any investment they make. By way of contrast, those depending on common property resources are locked into a system in which it is only logical that they increase their exploitation without limit. Why should fishermen

conserve when there is no way the benefits can be reserved for themselves? This introduces uncertainty in both the short run and long run. In the short run, it means that a fisherman's physical output is dependent not just on the resource, but on the uncertain actions of other fishermen. In the long run, it means fishermen live with the specter of complete stock failure.

B. Production environment

Fish harvest/production is characterized by uncertainty regarding the volume of output, the variety of catch, and the market price. Many fish markets have a history of periodic shortages and gluts. Sometimes prices change so unpredictably that fishermen do not know how much money they will receive for their catch when they leave port. Fishermen often see these unfortunate fluctuations as the result of a conspiracy among dealers but there are underlying economic forces involved. Part of the price instability can be traced to the periodic availability of various species of fish. Perhaps a more important factor is the nature of the demand curves involved. In many parts of the world, the demand for many species appear to be highly inelastic [Lawson 1984]. This means that a change in quantity of fish will bring a more than proportional change in the price.

The inelasticity of demand is due to the fact that fish cannot be stored for long and thus are sold mainly in small local markets, which can become saturated quickly. In some areas inelasticity of demand could also be traceable to the fact that a large percentage of the catch is consumed by restaurants and other institutions. These institutions purchase a constant supply and charge the same amount for it regardless of catches or seasonal variations, due, in part, to a reluctance to reprint menus. As a result, when there are large supplies of fish, warehouses fill up even if prices for fish are lowered. At such times, dealers do not say they will buy no more fish; they merely lower the price they will pay to an absurdly low level which says the same thing. All of the risks of production are therefore passed by on the fisherman who must not only put up with uncertain catches, but uncertain prices for the fish he does catch.

While in many industries work is highly standardized, and therefore easy to monitor owing to the mechanization of manufacturing process, harvesting in marine fishing and production in aquaculture are characterized by biological processes that are subject to infinite variations in ecological conditions. Productive tasks demand a lot of specialized knowledge and skill, much attention to detail, and the exercise of a good deal of initiative and judgment. The immediate consequence of the high skill-intensity of many fishing operations is that work quality is extremely difficult and costly to monitor, all the more so if these operations are scattered over a wide area. Even if it is possible to measure perfectly the duration and intensity of physical work, it will always be hard to assess the quality of the labor efforts.

C. Trade and credit environment

With regard to trade in the ordinary sense—trade of unlike articles between strangers—in primitive society, transaction costs are presumably high because of the costs of

information regarding the reliability of the seller, the quality of the product, and trading alternatives (that is, the market price). Lending by financial organizations in fishing communities is much more difficult than commercial lending for many reasons: the fact that adversities often affect a large number of loan recipients simultaneously, making it very difficult for local institutions to diversify their portfolios to cushion against economic shocks; the high cost of serving geographically dispersed customers; the lack of trained and motivated personnel in the fisheries sector; the frequent absence of collateral; and the common conflicts between customary law and statutory law, which contribute to the difficulty of enforcing contracts.

D. Risk, information, and contract choice

All in all, marine fishing is subject to three kinds of risk: production risk from uncertainties in both weather and marine ecology; price risk from volatile supply conditions; and risk of loss of assets and human lives from rough seas or poorly executed operations. Whereas in aquaculture the latter source of risk is rare, in marine fishing all three sources of risk are not only substantial but also closely interrelated. An action which reduces one form of risk might substantially increase another. For example, as fish markets become more integrated, price risk may decline but also become more independent of production risk, thereby lowering the extent to which the two risks offset each other [Platteau 1984]. Likewise, while mechanization may reduce production risk by extending the range of fishing operations and enabling boats to operate in rough waters, it may also raise the risk of loss of equipment and human lives [Amarasinghe 1989]. Finally, in contrast to agriculture and aquaculture, since the fish catch is generally reaped on a daily basis in marine fishing, the above-noted risks are reflected in not only seasonal but also daily income fluctuations.

The need for incentives in fishing contracts can be better appreciated in the light of the following characteristics of both fishing activities and the environments within which they are performed (several of which are quite different in agriculture). (1) Most such activities take place far from land which, for on-shore boat owners, makes direct supervision difficult. Moreover, this distance is largely unpredictable owing to continuous movements of many fish species. (2) Although most fishing activities are seasonal, the demarcations between seasons are both ambiguous and unpredictable. (3) Boats, nets, other equipment and the fishermen themselves are subject to rather substantial risks of damage and loss-of-life due to both exogenous factors like weather and endogenous ones like bad management and technical errors. (4) Because of the relative importance of weather and luck, incomes are also highly variable, making it difficult to distinguish between bad luck on the one hand and low skill and poor labor effort on the other. (5) Monitoring of the value of output is difficult either because of chaotic conditions on the beach at the time of landing or because the fish are marketed away from the unloading point. (6) Even in the absence of risk, the importance of teamwork in fishing activities, especially during the generally brief, but unpredictable, periods of time in which effort must be concentrated, makes the marginal productivities of different fishermen rather difficult to measure. (7) Since teamwork also requires careful coordination, the captain should not only be highly skilled but also a good leader

whose authority is fully respected, at least while at sea. (8) While on board the fishing vessel, both the work and relaxation of captain and crew generally take place in such close proximity that every crew member can monitor the effort and teamwork of all others.

In order to protect themselves from the possibilities of opportunistic behavior on the part of others and the harmful consequences for income and its distribution, all participants in fishing activities enter into a variety of formal and informal contractual relationships.

Moreover, in the fishing economies of developing countries, information is poor, scarce, maldistributed, inefficiently communicated, and intensely valued. There is no elaborate mechanisms for information generation and transfer upon which industrial ones depend, nor advertising and product standardization. The level of ignorance about everything from product quality and going prices to market possibilities and production costs is very high, and much of the way in which the fishing economy functions can be interpreted as an attempt to reduce such ignorance for someone or defend someone against it.[2]

These ignorances mentioned above are *known* ignorances, not simply matters concerning which information is lacking. Fish buyers realize the difficulty in knowing if a fish is of good quality or its price is right, and they realize also that it is impossible to prosper without knowing. The search for information one lacks and the protection of information one has is the name of the game. Capital, skill, and industriousness play, along with luck and privilege, as important a role in the fishing economy as they do in any economy. They do so less by increasing efficiency or improving products than by securing for their possessor an advantaged place in an enormously complicated, poorly articulated, and extremely noisy communication network.

The search for information—laborious, uncertain, complex, and irregular—is the central experience of life in the fishing economy. Every aspect of the fishing economy reflects the fact that the primary problem facing its participants is not balancing options but finding out what they are. Information search thus is a matter upon which everything turns in the fishing economy. The main energies of the producers, buyers and traders are directed toward combing the fishing economy for usable signs, clues as to how particular matters at the immediate moment specifically stand. The matters explored may comprise everything from the industriousness of a prospective coworker to the supply situation in fishery products. But the most persistent concerns are with the price and quality of goods and the high enforcement costs of labor employment. The centrality of exchange and

[2] To be sure, some sources of ignorance or uncertainty are more characteristic of modern society than of primitive society. One is specialization of knowledge, which in the modern world has advanced to the point where each of us is an ignoramus regarding most areas of human knowledge. The other is the conditions of life and work in an urbanized society—whose anonymity, impersonality, and privacy result in our knowing less or our neighbors, co-workers, and even friends and family members than we would in primitive societies. Both sources of ignorance, however, far from reflecting the high cost of information in modern society, are actually the product of low information costs, which have enabled the advancement of knowledge to the point where specialization in knowledge has become efficient, and have enabled social order to be maintained without continuous surveillance of the population.

monitoring skills (rather than production or managerial ones) put a tremendous emphasis on knowing what particular things are actually selling for and what sorts of things they precisely are. The elements of fishing economy institutional structure can be seen in terms of the degree to which they facilitate the search for information and bring its costs within practical limits.

The fact that participants in the fishing economy of developing countries do not understand the laws of nature well and lack modern communications technology—with all that these lacks imply—suggests that the costs of obtaining information are higher in developing than in developed countries: that more inputs of time or other resources are required to obtain the same amount of information. This is true of information concerning the probability that the other party to a contract will perform (there are no courts to coerce his performance) or that the quantity delivered in a sale is the quantity bargained for (there are no scales in primitive markets).

An important aspect of the conditions of information in fishing economy is uncertainty with regard to income. The risk that a particular supplier will lack an adequate income from time to time, and face hunger is considerable. Under these conditions of extreme income variance one can expect a demand for "hunger insurance".[3] Notwithstanding these risks, formal insurance markets are typically absent. Instead, the form of social organization in fishing communities is strongly influenced by consideration of insuring against a subsistence crisis. The importance of risk in determining social arrangements has been suggested by earlier studies (e.g. Anderson [1980]). Risk sharing is regarded as an important consideration in contract choice.

Fishery production is characterized by heterogeneity, seasonality, and spatial dispersion, and by large variations in weather and prices that affect similar producers within a region in the same way—implying that their incomes are covariant. These characteristics aggravate the problems caused by well-known informational asymmetries which characterize contracts for insurance, credit and labor. Covariance and informational asymmetries, have major consequences for financial and insurance markets: fish harvest/products usually cannot be insured against loss, and financial intermediation and credit markets in develop slowly and with great difficulty. Spatial dispersion, heterogeneity, and seasonality imply that hired labor, which does not share in the profits, must be closely supervised—and supervision costs are exceptionally high.

These special features of fishing areas give rise to two main consequences. First, many of the contractual arrangements in fishing areas have developed in response to specific material conditions and the resulting imperfections in financial, insurance, and labor markets. The view that social arrangements in pre-industrial societies are motivated by

[3] Where there is no uncertainty, the demand would be properly described not as one for insurance but as one for an intertemporal allocation of resources, evening consumption across periods. In the same way, one might "put money aside" (i.e. lend it) for one's children's education in order to equalize one's level of consumption over time. The uncertainty regarding the income of the individual supplier in a fishing economy warrants describing the demand as one for insurance rather than simply for intertemporal allocation.

insurance considerations is a well-established trend in anthropological literature. (For a synthesis of the economic literature, see Aldeman and Paxson [1992] and for a review of the main anthropological contributions, see Platteau [1991].) Second, the way in which rights to productive assets, especially fishing equipments, are allocated affects not only the distribution of income in fishing areas, but also the overall efficiency of the fishing economy.

IV. Analytical framework

The modern contract theory upon which we draw consists of transaction costs, on the one hand, and insurance against risk[4], on the other. It is grounded on the core idea that the existence and transformation of contracts can be explained provided that positive transaction and information costs are posited and risk-bearing is treated as an input that must also be transacted for. Economic agents, it is assumed, endeavor to minimize the sum of transaction costs and production costs by choosing the appropriate contract. From this perspective, there is no single form of contract that can reduce transaction costs to zero; every contract is vulnerable to one or more form of opportunistic behavior (in transaction cost terminology) or adverse selection and moral hazard (in insurance terminology). Because real world contracts are multidimensional, generally there are tradeoffs, different contracts having different comparative advantage. Because of unusually great vulnerability to opportunistic behavior in some sectors, the contracts chosen, though functional, are imperfect [Stiglitz 1989].

Transaction costs essentially arise from the fact that information is incomplete, asymmetrically distributed (the information available to one party to a contract is not the same as that available to the other party) and costly to acquire. "They consist of the costs of arranging the contract ex ante and monitoring and enforcing it ex post, as opposed to production costs, which are the costs of executing the contract" [Matthews 1986:906]. In fact, while some transaction costs are "purely cognitive costs of organizing and monitoring transactions" [Matthews 1986:906], others result from opportunistic behavior of the agents. The latter kind of transaction costs have actually received special attention in the literature. According to Williamson [1985:47], opportunism is "self-interest with guile"; in other words, economic agents are not only self-interested but also they do not hesitate to manipulate information if this avenue is open and can further their own interests. Therefore, their behavior gives rise to a variety of incentive problems which are usually of the moral hazard or the adverse selection kind.[5] These problems can only

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[5] In the economic theory of insurance, moral hazard arises "when an agent who obtains insurance has an incentive to take less care to avoid the contingencies which give rise to claims." As for adverse selection, it occurs "when the insurance company cannot distinguish between agents who have differing probabilities of claims, and hence must offer all the same contract," with the result that the contract only appeals to (and adversely selects) those belonging to a comparatively high risk category [Newberry 1989:278]. Since the agent seeking insurance is better informed about both prospects than the insurance company, informational asymmetries are created which can only be reduced at a cost to the insurer.

be controlled at positive (transaction) costs which may result from screening, monitoring or enforcement procedures. In such a perspective, contract change may come about because of changes in transaction costs which may themselves arise from technical innovations (in the technology of production or of information), establishment of "law and order," market development, increased resource mobility, better coordination possibilities, or other types of changes.

The modern contract theory may prove all too convenient inasmuch as it can rationalize ex-post virtually every contractual arrangement by referring to the right kind of transaction costs. This problem is further complicated by the fact that the concept of transaction costs is not only very broad but also difficult to observe or to measure objectively in many circumstances [Rao 1986:57-58], with the result that the modern contract theory explanations are often hard to test empirically. Finally, any contract theory is confronted with two distinct tasks, namely to explain the persistence and the origin of given contractual arrangements. If the modern contract theory has gone quite a way towards providing answers to the persistence question (in so far as it can be conjectured that contractual arrangements tend to persist when they are socially efficient), it is not in a position to throw light on the question of the origin of institutions as long as the mechanisms by which they are selected remain unknown. Indeed, even with atomistically rational behavior, there is no assurance that an organizational form will come into being simply because it is more efficient than existing alternatives. It seems hard to deny that that the real world is replete with harmful contractual arrangements which persist because of the lobbying power of vested interests or mutually sustaining networks of social sanctions [Basu et al. 1987:11; Langlois 1986:21; Bardhan 1989:238].

This being said, however, the point can be made that the insights provided by the modern contract theory are powerful enough to vindicate its use. At least, such an approach has micro-foundations. Besides, it allows one to formulate precise hypotheses. Furthermore, transaction costs are not independent of class and power relations. Thus, for example, where landowners enjoy monopoly power, or where employment opportunities are very scarce, supervision costs are minimized as tenants or laborers endeavor to maintain the landowner's favor [Pearce 1983:60]. Such costs tend to be high when class relations are tense and labor conflicts numerous [Hayami and Kikuchi 1981:233-237].

V. Contractual arrangements in the fishing economies of Western Visayas and Quezon Province

A. Share contracts

1. Aquaculture: Western Visayas

Brackishwater aquaculture has been identified for quite some time as a means for the Philippines to attain protein self-sufficiency. Unfortunately, not much attention has been given to the social aspects of this production sector. Compared to agriculture, work done

on aquaculture regarding such topics as tenancy, labor organization, division of wealth, and related topics has been negligible. This neglect is due to the shorter history of aquaculture than agriculture, its less important role in the national economy, and the fact that land reform has bypassed the fishpond industry.

This paper hopes to fill this gap by providing a micro-study of fishpond production in the Western Visayas region based on a sample of 31 *bangus* aqua farms. This section describes the tenancy and labor employment arrangements that exist in aquaculture farms in Western Visayas. I will consider only small-and large-scale aqua farms; that is, to those ranging from one-half to ten hectares in size and those from 20 to 400 hectares.

Western Visayas aquaculture

Aquaculture industry in the provinces of Panay mostly focus on the production of *bangus* using a semi-intensive production system.[6] *Tilapia* is also grown and cultured but in smaller quantity compared to that of *bangus*. Prawn is also produced but since the prawn production is too costly and risky, few Panay fish farmer are involved in this production. Most fish farmers in the province of Panay either own the land or are renting the land. Negros Occidental aquaculture farms also produce *bangus* but some of the producers are again growing and culturing prawn despite the high risks involved. Rental of land for production is also prominent. The proportion of leased aqua farms in Western Visayas decreases with the reduction in farm size. In Capiz, hardly any operating fishponds are leased or rented by small and middle-range producers.

In Western Visayas, a substantial proportion of the entrepreneurship involved in aquaculture has come from outside the farming or fishing community and is considered as an investment by professional persons such as engineers, legal or medical practitioners. Unfortunately, much of their operations suffer from a lack of basic aquaculture management, production being left to caretakers.

The initial investment in land clearing and establishing and stocking the farm may be very high. Production involves stocking *bangus* fry in nursery ponds and transferring them as they grow into transfer ponds. They are then placed into raising ponds from which the marketable fish are sold some three to five months later. Typically there is a harvest every four to six months.

Privately held land under mangrove, nipa, and rice has been converted to fishpond use by local traders, government employees, landlords, and other medium-level entrepreneurs. This area is now covered by numerous small-scale fishponds. In contrast to the preplanning (with respect to the layout of the new ponds, but also the production

[6] Fish farming using virtually no purchased inputs (what we call today an extensive production system) has been practiced for hundreds of years. Fish farming on a larger scale using purchased inputs, such as postlarval fish for seed stock, pond fertilizers, and some supplemental feeding using commercial feeds is a system called semi-intensive. Intensive systems of production involve high levels of inputs, especially stocking materials, commercial feeds, fertilizers, and antibiotics.

organization used) possible in large tracts in Negros Ocidental, the layout and tenancy practices of the small farms in Panay are due more to such factors as the location of preexisting property lines and the tenancy practices customary to the local rural sector.

Types of tenancy arrangements

Operators in the Western Visayas region recognize that all fishpond production units involve three distinct functions: ownership, capitalization and overall management, and daily caretaking. Individuals who carry out these functions act as owners, capitalists, and caretakers. (Hired labor is also used for harvesting, transferring and repairing.)

The responsibilities associated with these roles and the combination in which they are held by individuals are as follows: (1) *owner*: owns the production unit and leases the pond at a fixed cash rate to others; (2) *capitalist*: leases the aqua farm from the owner; he sees to the financing and general management of the pond, and is responsible for choosing caretakers; (3) *caretaker*: personally performs the daily maintenance of the pond and shares the net return with the capitalist; (4) *owner-capitalist*: owner who capitalizes and manages his own pond system and shares the return with a caretaker; (5) *capitalist-caretaker*: capitalist who performs the daily caretaking routine of the aqua farm and pays a lease to the owner; he keeps the remaining net return; (6) *owner-capitalist-caretaker*: he owns, capitalizes, and takes care of his production unit.

Remuneration and division of income

Caretakers of large-scale aqua farms usually are salaried, while those of smaller ones are share tenants. Sharing takes place annually or subsequent to each harvest, and is computed after all expenses (locally defined) are deducted. Fishpond operators in small-scale aqua farms recognize that each role—owner, capitalist, caretaker—should receive one-third of the net. Two roles occupied by one individual, therefore, ought to result in a two-thirds share. Those who own and/or capitalize are considerably better off than those who serve only as caretakers. It results from the different opportunities individuals have to either own and capitalize more than one production unit, or to enjoy high income occupations outside aquaculture.

The share contract is defined here as an employment arrangement by which the laborer is paid by the share of output. We follow the usual convention that the share contract when applied to a specific task (such as harvesting) and the worker is remunerated in proportion to the output he produces is called the piece-rate labor employment contract; it is called the share tenancy contract where a worker (caretaker) is assigned overall tasks in the fishing operation including management decisions and is paid by the share of output. The share tenancy contract is not clearly distinguishable from the permanent labor contract in which a worker is employed typically for a year or a season for various fishing tasks, especially when the arrangement is such that the permanent laborer is remunerated

by the share of output. The distinction is not absolute but relative depending on the relative allocation of management decision making between the worker and landowner.

Social relations, trust, and stratification within aqua farms

The relations between owners and capitalists and those who take care of the ponds go far beyond the purely economic consideration of running a fishpond. The need for personalized trust, especially between capitalists and caretakers, leads to this. From the point of view of capitalists, caretakers must not only be technically well versed and conscientious workers, they must be trustworthy. Caretakers have the opportunity to cheat more than anyone else involved in aquaculture. It is easy for them, for instance, to pretend a loss while actually having sold some fish on the sly. Or they can sell large fish, replace them with small ones, and insist that the growth rate is slow owing to some environmental factor beyond their control. Since capitalists and owner-capitalists are only present at the pond during harvest time, they must invest considerable trust in their caretakers. The choice of caretakers has to be considered with great care by capitalists and more often than not some social relation preexists between them, or is encouraged to evolve.

From the point of view of caretakers, capitalists must also be trustworthy. They are expected to administer the sharing process properly, to be honest on the market end, and to be willing and able to provide adequate financing, which usually includes personal loans to the caretaker.

This system of personalized vertical reciprocity approximates the patron-client relations so characteristic of social life in the rural Philippines. Only in aquaculture there are greater limits to which patrons can demand "extra" services from caretakers, due to the special assets—technical knowledge and trustworthiness—controlled by the latter.

Vertical social ties do not connect all positions on aqua farms. It is rare for any other relation than an economic bond to exist between owners and caretakers under arrangements wherein ownership, capitalization, and daily operations are performed by different persons. Instead, the capitalist is the linchpin. He chooses and employs the caretaker, not the owner; and he negotiates the contract with the owner, not the caretaker. Here the caretakers and owners are effectively insulated from one another, which strengthens the position of the capitalist.

Small-scale aquaculture (less than 20 hectares)

Small-scale farms typify this region, especially the aqua farms in Panay Island. Farm sizes vary from 600 square meters to 57 hectares. Of the 31 aquaculture farms surveyed, 23 are farms smaller than 20 hectares. In some cases one production unit of a nursery, transfer and raising pond sequences defines the boundary of a single farm. In other cases more than one production unit is owned or leased by an individual.

For small-scale aqua farms the tenancy agreement is very simple. The owner operates the unit himself, hiring temporary wage labor to help in harvesting and in repair work. In slightly other cases owners employ caretakers (tenants) to undertake the daily operation of the fishponds. It is here that share contract is encountered in aquaculture.

On small-scale aqua farms operated by caretakers share tenancy is the norm, but it differs slightly from the practice in agriculture. Reflecting the higher productivity of aqua farms than rice land, caretakers of fishponds typically receive only one-third of the net and the owners keep two-thirds—the former providing the land and capital, the former labor.

Furthermore, the relation between the parties only approximates the patron-client bond. Caretakers in aquaculture tend to be less subservient than tenants in the traditional *kasama* setup because they, more so than rice tenants, enjoy some monopoly over technical expertise and they have greater opportunities to defraud the owners. Trust is the distinguishing feature of the tenancy relation, not personalized social inequality.

In aquaculture leases have been traditional for a long time. Owners see it to their advantage to leave the capitalization and management of their ponds to others. Moreover, productivity normally is sufficiently high to provide support for a position between the owner and the caretaker.

In small aqua farms of Panay many production units have this three-tiered tenancy structure wherein the roles of ownership, capitalization (provided by the lessee), and caretaking are performed by different individuals. Capitalization of aqua farms is costly. Lease contracts run for five to 20 years and half of the total amount has to be prepaid by the lessee. In most cases the capitalists appoint their own caretakers with whom they share the return 50:50 after deducting all costs, including the lease. On the other hand, in some small aqua farms, leaseholders operate the ponds without the help of a caretaker. This way they can retain the total net, though they continue to be responsible for repaying much of the lease when the contract period begins.

Large-scale aquaculture (20 or more hectares)

Large-scale aquaculture differs from the system just described along two dimensions. Size is the most obvious one. Eight of 31 aquaculture farms surveyed range from 20 to 57 hectares. (The number of farms surveyed is too small to allow even simple percentage analysis.) Each is composed of production units that range from five to 25 hectares. On a 57 hectare farm, therefore, there may be 2 or more production units which are divided into nursery, transition, and rearing ponds respectively.

Rearing ponds, in turn, are sub-compartmentalized into different sized units to make a modular production procedure possible. In this method fish are placed into a succession of rearing ponds until they reach marketable size. This allows the caretaker to better regulate the growth stages of the fish, maximize the number of harvests (up to six per

annum are possible), and minimize the loss of fish. On well constructed and managed farms, productivity can reach 2,000 kilos a hectare.

I have already mentioned the second dimension: the greater planning that has gone into the regional layout and operation of the large-scale aqua farms than the small ones to the east. A typical large-scale farm is divided into 2 or more production units of 20 hectares each. These are adjacent to one another, are of the same shape insofar that the topography allows, and are placed along canals that jut into tidal areas at right angles from coastal rivers. In such a system owners cannot take care of the farm themselves. The operating units are too large and numerous, and the owners invariably belong to a class which cannot afford to be seen working in ponds. Instead, caretakers are assigned to every one or two production units. On a large-scale farm, therefore, there may be 2 or more caretakers.

In some cases these caretakers are supervised directly by the owner. Most owners, however, follow a practice which used to also be common in medium-scale rice cultivation. They appoint an individual as a manager ("right-hand-man") of the farm. The manager coordinates the production activities between the caretakers to enhance the efficiency of the farm; he buys the inputs, supervises the marketing, and pays the caretakers; most importantly, he is the link between the owners and caretakers, and under ideal conditions ought to be trusted by all. [In his personalized relation with the caretaking tenants, the "right-hand-man" in aquaculture has much in common with the commissioned overseer (*katiwala*) active in small- and medium-scale rice farms. Both contrast in this respect from the "farm manager" who—before land reform—worked on large estates and only represented the owner.]

Administrative efficiency is imposed through him without loss of personalism. A good manager is not only a representative of the owner, he is also a representative of the caretakers. This is particularly important in aquaculture the profitability of the operation depends so very much upon the technical know-how and goodwill of each caretaker. Indeed, the manager may just as likely be a caretaker himself of one of the production units as he may be a close relative of the owner.

Large-scale aqua farms are also leased. The contractual arrangements are the same as on small units, except that the amount of the payment is larger. Lessees are expected to appoint their own managers and caretakers. This tenancy type, then consists of four levels: caretakers, manager, leaseholder, and owner.

The balance between labor, land, and capital that typifies small-scale aquaculture wherein each productive role receives roughly one-third of the product, is not continued in large-scale units. Here land and capital, whether in the hands of an owner or divided between owner and capitalist (lessee), are allocated more than their "fair" share—usually 90%. Were caretakers on large farms to receive one-third to one-half of the product, they would earn far beyond what is considered a minimally acceptable level by local caretakers. Owners take advantage of this standard by keeping the share low. The result is an inverse relation between the share received by caretakers and the size of the

production unit they take care of, and the actual earnings of the caretakers is roughly the same irrespective of the size of their production unit.

On large aqua farms remuneration of caretakers is rationalized so as to maximize control over tenants, minimize costs, and offer incentives. Three elements are combined: a share, a wage, and credit. In some instances caretakers receive five percent of the gross return (only marketing costs are deducted), together with a monthly living allowance, part of which is *utang* (credit) to be deducted from the five percent share when the fish are sold after each harvest. The remaining amount is the wage. More frequently the caretakers' share is 10-20 percent after all expenses have been deducted, and a standard *utang* and a small wage are added. Managers receive a wage and at times a share of the caretaker's commission.

On small-scale aqua farms caretakers frequently tap owners or lessees for credit. This is one of the privileges caretakers have under the traditional share cropping agreement, and it helps support their personalized relation with those who own or capitalize the operation. What is of interest is that in large farms this credit system is formalized into standard advances given per month. Credit is part of the pay package, not a traditional feature of a diffuse multistranded relation.

Finally, there are those large aqua farms which are totally run on an administrative system: both managers and caretakers receive only a fixed wage. Here wage labor has replaced share tenancy. Owners gain because they can assign wage labor to any pond task they wish, and they can keep whatever productivity gains take place. On the negative side, trust tends to be lost between owners and caretakers with the introduction of a fixed wage, and owners have difficulty retaining caretakers because considerable opposition exists among local population to such form of pay. This explains why share tenancy continues to be part of even large aqua farms, and that more so than other production units, those operating on a wage principle employ individuals brought from other provinces.

Caretakers and casual laborers

While the characteristics of fish production are expected to make family operation (either owner/operator or tenant operated) dominant in the fishing economies under our present investigation, the seasonal nature of aquaculture production makes it difficult for owner/operator or tenant to base their operation on family labor alone. In the peak of the labor demand such as during pond preparation and harvesting, casual labor is commonly employed under a daily wage contract. The result of these types of labor is rather easy to measure so that the work of casual laborers can be supervised with relatively modest costs even under a time-rate contract or their work incentives can be enhanced by applying a piece-rate contract.

Water control and chemical applications require care and judgment, and their contribution to output is difficult to measure. Also, their labor requirements are spread

thinly over a crop season in an unpredictable manner. These tasks are carried usually by the caretaker. Unlike the casual laborer who is employed for a specific task, the scope of the caretaker's work obligations is not clearly specified even though his major obligations such as tending the fish ponds and taking care of the farm machineries are implicitly agreed upon. The various benefits provided to the caretaker by the owner and his longer run prospect for future benefits relative to the casual laborer, to some extent, discourage the employee from shirking and cheating.

Aquaculture and rice cultivation

Though dealing with fish and water, aquaculture is locally considered a land use activity rather than one allied to fishing. It is true that as a land use system, fishponds are subject to many of the same economic and social pressures and obligations which characterize agriculture. At the same time a number of crucial differences exist, which are illustrated by rice cultivation and aquaculture in the Western Visayas region. These differences involved a number of constraints.

First, there is the investment constraint. While it costs little to convert level and drained land into paddy fields (especially if unirrigated), it is very expensive to convert paddy fields (or other agrarian land) into fishponds. Individuals, therefore, must have greater financial resources when venturing into fishponds than into paddy field construction, and they must have considerable inducements to do so. Up to now this has come in the form of the high return that aquaculture has offered over the years compared to local rice production.

Next to the capital need, technical expertise is another constraint. It plays a role when fishponds are constructed and continues to be important throughout the life of the aqua farm. When owners decide to convert rice land into ponds, existing tenants are likely to lose out. The technical constraint is against them. Fishponds have to be constructed from the inside, that is, by persons already familiar with the necessary techniques and skills. Because they need experts to begin with, owners are likely to rely on them to take care of the pond. Whereas farm implements and work animals are the main ingredients rice tenants have to bring to their job, the main ingredient fishpond caretakers have to bring is know-how. This takes time to acquire. Moreover, owners are likely to lease the pond to capital-strong managers in order to recoup their high investment costs as soon as possible. As a result, the technical and capital constraints frequently lead to a three-tiered tenancy system of owner, capitalist, and caretaker in aquaculture, instead of a two-tiered one of landlord and tenant, typical in agriculture.

Aside from capital and technical needs, productivity is the third constraint influencing tenancy arrangements. Currently the high productivity of aqua farms can support three parties at a higher level of income than paddy cultivation can support two parties on the same amount of land. Three-tiered tenancy systems have existed in Philippine rice

cultivation, but they have been largely confined to situations in which landholdings are extensive enough to provide sufficient support.[7]

The final constraining factor is the degree of commercial involvement. Fish and rice differ in the degree to which they are regarded as subsistence foods by those who cultivate them. Because rice serves as a chief staple, tenants usually consume the bulk of their share, and obtain cash by selling vegetables, livestock, and other incidentals. They continue to relate to the market at arm's length. The fact that rice tenants receive their share in kind symbolizes this. On the other hand, the market is of immediate and crucial concern to caretakers, as it is for the other participants in the aquaculture production process. After harvest, *bangus* are immediately transported to the market, and it is only then, after the five to ten percent commission paid to the wholesaler has been deducted, that the cash income is divided between the caretakers and capitalists or owner-capitalists. It goes without saying that the lease payment are always in cash. High value milkfish or prawn are converted into low value rice, and usually enough is left over to occasionally acquire home appliances, something that is still rare among local rice tenants.

Relations between production units

Production units in both agriculture and aquaculture in the Western Visayas region involve patron-client relations between those who own and/or capitalize and those who serve as tenants. What about horizontal cooperation between production units? In paddy cultivation, horizontal cooperation between production units is important as is shown by the prevalence of a system of reciprocal work exchange among households—usually tenants or owner-operators—for field preparation and harvesting. Three factors encourage this exchange. First, there is the need for labor during harvest and for additional plow teams during field preparation, when time and speed are of the essence. Second, nearly all fields usually are worked by individuals who are barrio mates. This provides a social basis for work cooperation. Finally, limited cash resources of rice tenants and owner-operators restrict their capacity to hire wage labor. Work exchange is for them a more convenient means to obtain labor.

Conditions differ in aquaculture. In aquaculture, there is no equivalent need to mobilize production teams and their implements for pond preparation. Labor is needed for transplanting, harvesting, cleaning, and repairing, but most of these tasks can be completed by hand. Moreover, the ecology and tenure system of aquaculture discourage horizontal reciprocity between production units. For one, many caretakers live on dikes next to their fishponds and are socially rather isolated from one another. For another, caretakers and capitalists of adjacent aqua farms are often not barrio mates even if they live in villages. To maximize the value of the contract, owners frequently lease their fishponds to capitalists irrespective of their residence, and these capitalists may import

[7] In the *inquilino* system, which had flourished in some areas of Central Luzon, large landowners (church, absentee landlords, corporations, etc.) would contract out several extensive tracts to leaseholders (*inquilinos*), who, without supervision, subdivided the tracts among a number of share tenants.

caretakers from far away. In other words, the social basis upon which reciprocal labor exchange thrives is not well developed in aquaculture. Aquaculture is also cash oriented, and as such it is more convenient for capitalists and/or caretakers to hire individuals for harvesting and similar events than to rely on a system of reciprocal work exchange. Finally, engaging in reciprocal work exchange is inconvenient for most caretakers, because they have difficulty finding enough time to participate in a series of labor exchanges due to the daily attention fishponds require them.

Continuity and change

Technical knowledge by caretakers and trustworthiness continue to be valued and are paid for accordingly. But as the output per aqua farm increases, what owners and capitalists regard as appropriate remuneration for caretakers changes from the notion of "fair share of the net" to that of a "fair absolute amount." Should productivity increase dramatically in the future, pressure might increase to reduce the share caretakers receive and/or to change over to a wage. Wages exist in some of the larger units in the Western Visayas region. Unlike a reduction in the share, however, salaries imply a new labor relation. As share tenants, caretakers have some security of tenure during the length of the contract period, and they cannot be removed from the fishpond at the whim of the owner or capitalist. They are in effect partners. A salary lowers caretakers to mere subordinate wage labor without the traditional rights and obligations that share tenancy entails. These considerations lead many caretakers to prefer a low share, perhaps combined with a salary, than a salary alone, even if it is high. Should productivity increase markedly in the future, some owners and capitalists might press caretakers to accept a fixed wage.

2. Purse seining: Quezon Province

Seining nets of one form or another have been used by fishermen in Sariaya, Quezon Province to catch tuna, mackerel, round scad, anchovy, and a number of other pelagic fish. Beach seines, lift nets, small purse seines, and ring nets are all in use today. Adopted from the nearby province of Batangas, baby purse seining became widely used in Bgy. Guisguis, Sariaya, Quezon Province.[8]

Here I will focus on the nature of maritime share contracts in a baby purse seining fleet in Bgy. Guisguis, Sariaya, Quezon Province. As mentioned above, share contract is defined here as an employment arrangement by which the laborer is paid by the share of output. We follow the usual convention that the share contract when applied to a specific task (such as harvesting) and the worker is remunerated in proportion to the output he produces is called the piece-rate labor employment contract; it is called the share tenancy contract where a worker (master fisherman) is assigned overall tasks in the fishing

[8] The following discussion on the nature of maritime share contracts in a baby purse seining fleet in Bgy. Guisguis, Sariaya, Quezon Province draws from Abrenica [2003]. An earlier work on the same topic is Russell [1994].

operation including management decisions and is paid by the share of output. The share tenancy contract is not clearly distinguishable from the permanent labor contract in which a worker is employed typically for a year or a season for various fishing tasks, especially when the arrangement is such that the permanent laborer is remunerated by the share of output. The distinction is not absolute but relative depending on the relative allocation of management decision making between the worker and landowner.

Control of capital and work organization in modern fishing

Capitalization of fishing units

At first blush, the differences in modern fishing do not appear to result so much from new techniques but, rather, from higher levels of capitalization resulting in a shift away from fishermen control of the means of production. In most cases, however, it is hard to differentiate among the effects of increasing size of operation, more complex technology, and loss of ownership by fishermen because all three factors are strongly interrelated. As fishing technology becomes more complex, the size of the crew and the length of fishing expedition increase, leading to great differentiation of tasks and an increase in the levels and scope of authority. Higher costs of equipment require higher levels of capital investment and frequently lead to ownership by non-fishermen.

With small-scale fishermen and even middle-scale operators, the investment per fishing unit is very much lower than in large-scale, industrialized fishing. Among the former, *suki* or trading partner relationships between fishermen and operators on one hand and those who buy and market the fish on the other, form a chain of links among which loans and credit have flowed from the marketing to the production sector. A quantitative assessment of the amount of these loans through time is impossible to make, but they have been significant as a source of capital in small and also in middle-scale production.

In communities of small-scale fishermen, there are non-fishing owners of boats and gear, used by others in return for a share of the catch proceeds. Qualitatively different in socioeconomic status, however, are the non-fishing owner-operators, who today exercise the entrepreneurial function in commercial fisheries above the level of small-scale fishermen. Beginning with middle-scale and culminating in large-scale fishing, the increased capital investment costs associated with technological development are functionally related to the rise to prominence of these non-fishing owner-operators. Through time, the initial capital required for progressively more expensive boats and gear, themselves a manifestation of increasing higher levels of technology, has tended to be drawn from non-fishing sectors of the economy rather from fishing alone. This is particularly true of large-scale fishing, but has also occurred with less expensive middle-scale techniques. An important entrepreneurial function of the non-fishing owner-operator has been to tap diverse sources of capital and to channel it into the capitalization of fishing units.

Specialization in work organization

Increasing specialization in work organization has accompanied the development of fish catching methods. As fishing technology becomes more complex, the size of the crew and the length of fishing expedition increase, leading to great differentiation of tasks and an increase in the levels and scope of authority. In this process, the role of the master fisherman is of historic interest. Today all middle scale methods are under his direction. He is in charge of the crew, whom he usually recruits; is responsible for vessel and gear and their utilization; is employed by a non-fishing owner-operator; and receives a larger share of the catch proceeds than his crew. This type of organization is one feature distinguishing middle from small-scale fishing. In small-scale fishing, the master fisherman may also be the boat owner. But with the development of middle-scale techniques, the roles of master fisherman and owner diverged.

In addition to the master fisherman, a series of other specialized roles are associated with increasing technological complexity. The mechanic on middle-scale craft and the engineer and his assistants on trawlers and purse-seiners are the products of motorization of fishing vessels. Similarly, larger nets called for specialized net-cutters and repairers. Other roles came into being as functions of more complex technology. An apprentice system has been the primary basis of advancement for individuals moving from one work role to another of greater responsibility.

Work organization in purse seining

In contrast to gill net or other fishing activities popular in coastal areas of the Philippines, purse seining and ring net fishing—two of the most common forms of coastal municipal and commercial fisheries—employ larger crews and use larger boats. Crew size ranges from 6-7 individuals on smaller ring net and drive-in net operations to 10-25 individuals on baby purse seine boats, with variability depending on whether it is a peak period for fishing. Powered by sails and oars in the past, all of these outriggered boats today are powered by diesel fuel engines; otherwise, the fishing gear is labor intensive. The nets are large, and must be set and hauled by human labor. No fish-finding gear, radio communication systems, safety equipment, or formal training of skippers characterize the baby purse seine fishing sector.

Baby purse seine and ring net fishing enterprises are generally household-owned and operated. However, they are diverse in the degree to which the owner of the boat is also the skipper, the degree to which male kin of the owner or non-related males compose the crew, the degree of fishing effort throughout the season, and the degree to which loans from middlemen helped finance the purchase of a boat and gear.

Many of the boat owners are financed by large fishing merchants, to whom they sell their fish at prices lower than they could obtain on the open market. In return, these boat owners receive loans to purchase their boats and equipment. While most boat owners are

indebted to financiers who also market the bulk of their fish, boats and gear are locally owned and only a few boat owners live outside the community.

Here I focus on *pamumukot*, or "baby" purse seining. Technically, the only difference between a purse seine and a ring net in the Philippines is that the bunt of the net is in the center in a ring net. The baby purse seiners described here are such a net, but the boats, number of crew, and power of their engines are far larger than that of other ring netters (locally called *barongis*) who operate close to shore. Hence the term "baby" purse seiner, a term which primarily denotes the labor-intensive nature of this type of seining, where catches are small and neither mechanization nor radar are involved. Seining is referred to as *pamumukot*, whereas *pukot* refers to a seine net.

With the adoption of motors, the crew structure and the share system of seining also changed. Originally, boat owners always were captains, whereas owners now are captains on only about one-third of the boats. Baby purse seining boats are staffed by 10-20 crew members, including a captain who is in charge of all major fishing decisions at sea. The captain decides where to fish, how long to stay at the location, when to cast the net, and how to distribute the shares at sea. The captain and the owner of the boat decide to on the distribution of shares to the crew once the boat pulls into the home port. Seining is a multispecies tropical fishing venture, with anchovy, mackerel, small tunas and round scads comprising a large percentage of the catch. Fishing and fish vending are primary sources of income for most of the households; however, some of the households receive remittances from relatives working abroad or in Manila. Seine fishing in this area can be characterized as petty commodity fishing – a form of household-based enterprise ownership operating in a market economy. Almost all boats are owned and operated by households, with both related and unrelated crew hired to enhance household labor sources. The ability to pool household labor and income is one factor which enables petty commodity producers to compete against more heavily capitalized firms, since they can adjust their cost rapidly to cope with fluctuation in prices, wages, and output.

Because they could not attract a minimal crew, some of the seining boats become inoperative some of the time. The autonomy of crew in this form of fishing has historical roots but is exacerbated by a shortage of labor within the community, which enables young, casual crew to transfer to other boats leave the community, or join the canoe fishery. Because there are now many seining boats in the village, crew members also have the option of changing boats often unless they are indebted to a boat owner. The most common reasons that crew give for changing are to *pahiyang* ("change our luck"), a dislike for the rules and regulations of the boat's share system, or because the owner scolded them publicly once too often about their *delihensiya*.

Fishing boat owners in Guisguis, Sariaya, Quezon Province cannot compensate crewmembers or followers through substantial offers of either monetary inducements or lucrative jobs; they rely heavily on their reputations as successful skippers and their wide social networks to recruit crew. Boat owners stress their reputation as fair, hardworking captains who share the same plight as their crew. They support an average of 1-2 crewmembers in their homes, providing them with food, cigarettes and lodging. In many cases, such crew also share food with the family of the boat owner, thus comprising a

household-like unit. Boat owners also commonly make small loans to crewmembers to incur loyalty, and give larger loans (e.g., to purchase a refrigerator or a stove, for example) to the *namumukot* (or core, specialized crew, usually composed of relatives or very close friends). To a large degree, then, boat owners succeed in attracting and compensating crew by negotiating through the non-production networks that intersect most rural labor relations of production. In other words, rather than comprising an impersonal labor market, labor in fishing industries in much of the Philippines is shaped by the forces of nepotism, gossip, patronage, and friendship, *utang ng loob*, in addition to kinship.

Labor recruitment in this fishing community has much to do with the nature of interpersonal relationships that underlie the informal work contracts in the fishery. Because these contracts operate between males in the Philippines and extend far beyond family membership to encompass friends and neighbors, as well as strangers recruited from the distant areas, they are more properly understood as "coalitions" (Tilly and Tilly, 1998). Coalitions are based on exchange contracts, not wage contracts, and linked members of a work community with a household; they fall somewhere in between "firms" (characterized by markets and hierarchies) and "household" (characterized by kinship labor). As Tilly and Tilly note (1998:71-72), "Coalitions sprawl across the boundary of work and non-work, whereas kinship, friendship, and neighborhood concatenate social ties in different ways outside of the world of work." The configuration of any work contract at any time is not a determinate outcome of short-run demands for quality, power, and efficiency but an outcome of a historically contingent bargaining process set within a cultural framework. In short, the nature of labor mechanisms is itself a result of past history and social relations that affect bargaining power between groups (Tilly and Tilly, 1998:73).

The organization of labor on board the fishing boats of baby purse seiners reflects what can be described as a petty commodity form of production that adjusts flexibility to declines in income or fluctuations in output through its central reliance on kinship labor [Russell and Poopetch 1990]. All in all, the value and reasons for the persistence of kin-based forms of production in capitalist fishing and agricultural economies is largely due to their ability to adjust to declines in income or output as much as to assist resource accumulation. The shock-absorbing quality of fishing firms enable them to compensate for losses during bad periods by cutting down maintenance costs through an increased investment of their own labor.

Share contracts

Income distribution in Philippine capture fisheries

In Philippine fisheries, a share system predominates in the operation of small and middle-scale fishing units, including fish corrals and other stationary devices. On the other hand, wages are characteristic of large-scale trawling and purse-seining. The share system is of course the older. Both systems have been supplemented with bonuses in one form or another.

In small-scale fishing, a distribution between shares returned to capital (sometimes phrased as shares to the net, the boat, or the engine) and those to the crew is of long standing. The early establishment of this distinction is related to the fact that many village fishermen do not own—and probably never have owned—their own boats and gear and must borrow them from those in the community who do in return for a share of the cash proceeds. With the development of middle-scale techniques, the non-fishing owner-operator's share encompassed the return to capital and management, with master fishermen and crew allocated shares according to level of responsibility, except that on some boats the mechanic receives a monthly wage.

Where fish catches can fluctuate widely over the short term, the share system has for owner-operators an obvious advantage over wages. Share contracts in Philippine fishing are widespread in order to reduce the risk for boat owners of having to pay fixed wages when catches are poor. The shares allotted to labor and capital vary by the type of fishing and are fairly complex, but in general the largest share accrues to the owner(s) of capital. The proportion returned to capital and labor largely correspond to the degree to which each contributes to the total yield, e.g., the higher the amount of fixed capital required for a particular type of fishing, the higher the share received by the owner. In artisanal fishing without motors, the net often comprises the most important capital item.

The most evident trend in the share system lies in the middle-scale sector. With the increasing capital cost of boats and gear, the share returned to the owner has risen in comparison with that returned to the crew. Likewise, operating costs, which have also increased substantially, are usually deducted before sharing takes place, leaving proportionately less for the crew.

The share system pertains to the distribution of income among the parties involved in a single fishing operation. The total catch value of a given catch is distributed not only among primary producers and fish processors as secondary producers but also along the marketing chain stretching from the fishing unit through the marketing system to the retailer.

Share systems in "baby" purse seining

Most seining boats in Guisguis, Sariaya have adopted a system of sharing based on thirds (*sikatlo*) where the owners get two parts of the catch (one part for the expenses of the boat, one part for owning the boat and gear) and the crew receive one part to be divided among them. In this system, most boat owners deduct the cost of fish consignor's commission, marketing costs, and food for the crew when they are fishing far away (and the cost of the skipper's typical 10 percent extra share) from the gross sales. After which the remaining fund is divided with two-thirds to the owner and one-third to the crew. The crew's share is divided according to highly variable principles, but in general the division follows a distinction between most experienced crew with special tasks to perform and the ordinary crew members. The most experienced crew with special tasks to perform receive more shares according to their extra responsibilities on board the boat

or the higher physical risk they endure. A third category of a general crew member are casual laborers who request permission to join the fishing for a day or two, and are paid in fish only; they are not allowed to receive cash payment from the gross sales of the catch. Hired captains usually receive 10 percent of the catch after expenses are deducted.

Most owners try to pay a cash share to crew either after every catch or every two weeks when they dry dock the boat. A few older boat owners, however, retain the traditional practice of paying cash shares irregularly. Boat owners seldom paid cash shares to crew members that corresponded with the formal labor agreement (such as two and a half shares to the rudderman or two shares to the diver). Most boat owners alternated between (1) merely giving crew members pocket money and /or fish to take home for consumption; and (2) paying cash shares which were either evenly divided among all crew members or rewarded proportionately to long-term (or "core") crew members versus those who are still new. Boat owners claimed that given the low and sporadic catches, the common welfare of all crew members should take precedence over special individual allocations for extra work performed. Crew members on most of these boats supplemented their meager cash shares through fish grabbing and fish given to them for food by the captain, in addition to engaging in other, small-scale forms of fishing.

Boat owners in Guisguis, Sariaya are obliged to balance the costs and returns of their fishing boat with the demands of their crew. While most boat owners or their sons are the skippers, in charge of making decisions at sea, when it comes to the share system they are more akin to managing directors and must reconcile conflicting opinions and disputes among relatively autonomous crewmembers in order to get them to cooperate.

The season for seining, or *pamumukot*, is fairly erratic and has become unpredictable, with several seasons of poor fishing often followed by a good season. Several factors explain the ability of fishers to stay in operation. First, fishing boat owners rely on their ability to recruit laborers from within their kin groups and the wider community at somewhat unpredictable times throughout the fishing season. Because payment for work is in shares, rather than wages, and because the timing and number of trips depends on the variability in catch throughout a season, owners engage in a constantly shifting form of either attracting or discouraging the number of crew by manipulating formal and informal share payments. If the boat is not successful at catching fish, then owners must support their core crew in other ways until fishing improves. Usually, core crew members are relatives or neighbors of the owner. For more casual labor on the fishing boat, however, the number of crew varies with fishing success. If the boat has been unsuccessful in recent trips, casual crewmembers seek temporary piecework or wage employment elsewhere, or simply remain unemployed. Boat owners and skippers maintain a network of social relations with casual crew, however, which enable them to call on them when fishing activity intensifies.

Formal rules and informal bargaining

It is important to note that the formal division of shares between the boat and the crew give little clue to the complexities involved since it leaves unstated all the special allowances for the wide range of functions and services which are taken into account. In fishing communities, informal codes of conduct include practices wherein owners of boats often distribute shares so as to reward crew members selectively according to their extra effort, skill, or even need. It is also observed that owners often reduce the share normatively allocated to the boat when the catch is small. This practice is especially likely to occur when the owner is also a crew member and when he and the crew are co-villagers or close kin. In addition, the owners of boats usually allow crew members to take some fish home for consumption after each trip.

It is difficult to ascertain the degree of frequency with which boat owners in any one community deviate from the formal rules of sharing the catch, vary among each other in terms of how formal rules are structured, or change the rules from season to season. However, there appears to be a large amount of diversity in the formal rules of dividing the catch within any one fishing community. In some cases the formal rules may be less significant in determining actual share payments than informal bargaining between boat owners and crew.

In practice, the formal share system is followed irregularly owing to highly variable catches. By local custom, such catches are large enough to spur a variety of forms of "fish give-aways" that have typified seining operations in this area. There appears to be three basic premises (informal rules and norms): (1) All crew members on large fishing boats such as *pukotan* (baby purse seiners) have a right to receive a share whenever there is a catch. Indeed, this right supersedes the right of the boat owner (or captain, if the boat is far from the home port and the owner is not aboard) to sell fish in order to cover the expenses. It is only when this share or *pangulam* (a quantity of fish adequate for the family of the crewmember's daily or evening meal), is provided to all crew that any excess fish can be sold. If the amount if fish caught is quite small, each crew member will receive an equal amount. If the amount caught is slightly larger, the captain distributes the fish to everyone, but may reward certain crew members selectively according to their extra effort, skill, or even need (including number of dependent household members); (2) Crew members have a right to snatch fish from the net during substantial fish catch (*delihensiya*); (3) *Balato* may be defined as a portion of the bounty distributed to one's circle of supporters and other proximate individuals. The only thing that is required in order for people to expect or request a fish share is that they be present at the site if the catch at sea or at the dock space where the boats put in to shore.

Opportunism in the present system of share payments

Opportunistic behavior includes labor shirking, output underreporting, and input overreporting. For the bulk of owners using the *sikatlo* system, and who do allow *delihensiya* on their boats, there are some obvious problems associated with attempts to reward individual crew members according to the skill and effort each crew expends.

The crew most active in grabbing fish are those who have the least work to do on the boat. The core crew are busy in the center of the boat, hauling up the bunt of the net, laying it in place, and scooping fish into the hull, where it is covered in bins. The least experienced crew are at the ends of the net, relatively far from the watchful eye of the captain, and have the most opportunity to grab fish. Whereas the captain tries to make up the difference by giving the core crew the last pile of the fish after all the covering is finished to make up for the difference, crew members often quarrel over the inconsistency of the amount of fish each one received, especially if they feel their work effort was greater than that of another crew member. Boat owners and captains have to resolve these problems with disgruntled crew after each catch by trying to make it up in the distribution of shares. If the hard feelings are not evened out among the crew, then the owner faces one or more of his crew leaving.

Delihensiya therefore is a crucial aspect of the share system insofar as it determines the amount the boat owners decide to pay crew in cash, whether they pay them anything at all, and how much each crew receives. While he has ultimate (and unchecked) authority to decide expenses and the payment of cash shares, a boat owner also has to manage the finances of the boat and crew in a rather haphazard manner that leaves long term financial planning extremely difficult.

In a big catch, the difficulties of rewarding crew members according to their work effort are even worse. Boat owners complain that some crew only work for their *delihensiya*, thus allowing fish to escape the net by not pulling as hard and fast as they should. Instead, their attention is divided between hauling in the catch and piling up fish, as described earlier. Compared to a small catch, the control of a captain in a big hit is weak owing to several factors: the presence of numerous small fishermen who are begging for handouts, and the practice wherein individual crew are simultaneously selling their legitimate as well as clandestine "share' in fish to retailers at sea. These sales to retailers are almost impossible for the captain to prevent during a large catch even if he tries. The various exchanges of fish that occur during a large catch literally prevent a captain from ascertaining the exact volume of fish that were hauled up.

One strategy captains use to instill loyalty to their crew is to give them their share in fish to sell at sea. This pattern was uncommon until the time when the *pukot* fleet expanded and there are more retailers at sea. Before that time, boat owners paid shares to crew from the fish they sold to fish consignors. But now they have reverted back to paying crew sometimes a large part a large part of their share in fish in order to avoid passing on the cost of fish consignors' commissions and other charges to the division of the catch. In this way, the crew do not have to pay for the commission rate that the boat owner's fish consignor would charge. While this is another way of cheating the fish consignor, it is very popular with the crew. It also increases, however, boat owners' uncertainty over how much additional fish were sold at sea under the guise of crew payments.

B. Contractual interlinkage between markets

Anthropologists have often pointed to the multi-stranded nature of relationships in small face-to-face communities. Such a relationship is commonly called by anthropologists and sociologists a patron-client relationship:

> a special case of dyadic (two-person) ties involving a largely instrumental friendship in which an individual of higher socio-economic status (patron) uses his own influence and resources to provide protection and/or benefits for a person of lower status (client) who, for his part, reciprocates by offering general support and assistance, including personal services, to the patron [Scott 1976:8].

There is some form of patron-client relationship in aquaculture farm and purse seining labor relations. This emerges clearly from empirical studies of the main arrangements: the aquaculture farm owner who finances his tenants' consumption and working capital; the boat owner who gives advances to laborers in return for a claim on their time when he needs them or as part of a contract to employ them for a continuous, extended period; and the trader or commission agent who finances aquaculture operators and boat owners on the condition that they sell to, or through, him when the fish harvest goes to market.

The various goods and services that flowed between the patron and his clients make it evident that the tie between patron and clients also answers to the economist's definition of interlinking markets. *Interlinking* describes the simultaneous fixing of transactions between two parties over several markets, with the terms of one transaction contingent on the terms of another. An *interlinked* transaction is one in which the two parties trade in at least two markets on the condition that the terms of all such trades are jointly determined [Bardhan 1989:237]. Loosely speaking, there is a "package" or "bundled" deal, in which each element in the deal is connected to every other in an essential way. While such trades are occasionally contemporaneous, they normally involve an exchange of current for future claims, and hence an element of credit, if only an implicit one.

There is evidence of extensive interlinkage practices in the fishing economies of Western Visayas and Quezon Province.

1. Interlinking labor-credit/insurance contracts

As is typical in crop-sharing tenancy, a strong tendency exists in the fishing economy for various transactions to be interlinked in a highly personalized relationship. Aquaculture farm owners and boat owners do not simply receive a share for his contribution of land/boat to the production process, but also bears a part of the production cost (such that of chemicals and gasoline) and advances credits for production and consumption

purposes. Moreover, he often patronizes his tenant/permanent workers in such ways as giving gifts at the birth of a child or the death of a father and using his connections and influence to solve the workers' other problems.

Typically the aquaculture farm owners in Western Visayas provide consumption credit to his tenants and permanent laborers at an interest rate lower than the prevailing market rate or even free of charge. Further, the owner often shares the cost of purchased inputs, such as fish meal and chemicals with his share tenants, almost universally at the same rate at which output is shared. In this cost-sharing arrangement, the aquaculture farm operator usually provides the purchased inputs at the time of their application and deducts the amount of output corresponding to the input cost before sharing the output. The provision of inputs, therefore, involves an element of de facto production loans to tenants. Moreover, he often insures his tenant against unexpected hazards by reducing rent in the event of harvest failure, giving gifts when one of the family is sick, and using his connections and influence to solve the tenant's troubles with outside authorities such as the police. The tenant reciprocates with his and his family's loyal service not only in farm production but also in social and political activities.

It was mentioned earlier that on large aqua farms, remuneration of caretakers is rationalized so as to maximize control over tenants, minimize costs, and offer incentives. Three elements are combined: a share, a wage, and credit. In some instances caretakers receive five percent of the gross return (only marketing costs are deducted), together with a monthly living allowance, part of which is *utang* (credit) to be deducted from the five percent share when the fish are sold after each harvest. The remaining amount is the wage. More frequently the caretakers' share is 10-20 percent after all expenses have been deducted, and a standard *utang* and a small wage are added. Managers receive a wage and at times a share of the caretaker's commission. On small-scale aqua farms, caretakers frequently tap owners or lessees for credit. This is one of the privileges caretakers have under the traditional share cropping agreement, and it helps support their personalized relation with those who own or capitalize the operation. What is of interest is that in large farms this credit system is formalized into standard advances given per month. Credit is part of the pay package, not a traditional feature of a diffuse multistranded relation.

It was also discussed above that most boat owners in Dalahican and Sariaya pursue a combination of strategies to reduce problems of crew recruitment and small-scale cheating. These strategies include the practice of becoming godparents to their crew members, feeding and housing crew members when necessary, drinking with their crew, performing rituals together to increase the luck of the boat in fishing, offering secret bonuses to their long-term crew members. Boat owners also commonly make small loans to crewmembers to incur loyalty, and give larger loans (e.g., to purchase a refrigerator or a stove, for example) to the *namumukot* (or core, specialized crew, usually composed of relatives or very close friends). There is therefore some form of implicit contract in purse seining labor relations whereby crew members exchange dependable labor services for a variety of goods and services. In return, crew members receive such goods and services as credit, housing and medical assistance.

It is quite apparent that the employee-employer relations between seine owners and crew workers belong to the category of patron-client bonds: the services exchanged between the actors were diffused and it is hard to identify a specified set of services or transactions. No written contracts were involved; it was a "whole person" relationship where personal knowledge played an important role in establishing trust. Personal knowledge, face-to-face contact and the care taken by each party to provide for the needs of each other develops affinity between the actors. There is no set end to the relation, which continues over an indeterminate period.

Labor shortage and paternalism

The economic incentive to provide paternalism is enhanced by the absence of mechanization and the accompanying science-based technology in aquaculture farms and purse seining. Without scientific advances that stabilized yields, workers (e.g. caretakers or boat captains) possess location-specific farming knowledge or job-specific skill, which gave aquaculture farm owner-operators and boat owners an incentive to prevent the departure of workers with such knowledge or skill. During the period of excess demand for labor with location-specific knowledge or job-specific skills some aquaculture farm owners raided their competitors for labor and bitterly complained as their own work forces were raided. Workers were being hired away by competing employers, leaving aqua farm owner-operators and boat owners with insufficient labor to bring in the fish harvest. In fact, the practice of stealing another boat's captain by offering higher shares or percentage of the catch became problematic and boat owners are trying to disallow such practices unless the new boat promised to pay off the captain's loans with his former boat.

Because labor turnover is costly, the benefits of supplying paternalism were increased. In these circumstances, some farm and boat owners chose a new course, turning to honesty, fair-dealing, and a host of nonwage aspects of their relationship with their workers as additional margins for competition. These perquisites were seldom explicitly stipulated; owners continued to prefer verbal rather than written leases.

It appears that such paternalistic arrangements were not only complementary to tenancy and share contracts in reducing monitoring costs, but were actually more likely to be given to tenants and permanent workers than to wage workers. Wage workers were seldom the beneficiaries of paternalism—paternalism was not necessary, as wage workers were closely monitored by human supervisors, were already monitored by the nature of technology, or were reluctant to shirk because of the threat of unemployment.

A long-term relationship between owners and their tenants and permanent workers made paternalistic arrangements more effective as monitoring devices. Aquaculture farm and boat owners had to some degree solved the labor-supply problem they had faced: provision of paternalism allowed them to tie workers to the farm or boat in a world of free contracting, and where exit is an option. They were able to reduce the cost of

monitoring labor by providing workers with valuable services which they would forfeit if they were caught shirking.

The experience of today's developed countries tell us that before mechanization, monitoring labor effort was costly because workers were spread over a considerable physical distance, and linkage of reward with effort was difficult because there could be considerable variation in output the cause of which was difficult to determine. Examples abound: Did the mule go lame naturally or did the workers mistreat the mule? Was the shortfall in output due to too little rain or too little work effort?

Machines by their very nature standardize work output and limit the scope of shirking. For example, plowing or cultivating with a tractor provides less scope for shirking than plowing with a mule or cultivating with a hoe. With the tractor technology, employers could evaluate labor effort after a given task better than they could with mule technology. Mechanization therefore directly reduced the costs of monitoring labor by standardizing the production process and reducing the variation in the marginal productivity of labor.

In the absence of mechanization and the accompanying standardization of the production process in aquaculture farms and purse seining, the ability to monitor labor effort *ex post* is low, raising supervision costs and thereby part of the rationale for share contracts and paternalism. Non-mechanization also means more labor demand throughout the season, as significant amounts of labor were needed for pond preparation and harvesting. Non-mechanization therefore means a rise in the importance of permanent workers. The rise in employment of permanent workers suggests that paternalism rise as well. If aquaculture farm and boat owners provided their workers with food and shelter, they have more contact with them, become more familiar with them, and could thereby provide paternalism at a lower cost. This is because contact and knowledge allowed them to identify "good" workers more easily and provide them with greater paternalism, reinforcing in the minds of workers the causal link between performance and the receipt of paternalism.

So far we have discussed the impact of mechanization on the supply of paternalism by aquaculture farm operators and boat owners. Non-mechanization could also have affected the demand for paternalism by farm workers. Paternalism is an implicit contract between workers and employers: in return for "good and faithful" labor, employers offered protection and other services. The timing of the exchange was important. "Good and faithful" labor came first, and then the employer delivered. This relationship is maintained as long as workers expected employers to uphold their side of the bargain. Without mechanization, there is no incentive for the employers to renege, the incentive for the workers to toil in the present rises as the demand for labor rises.

There could also be a high demand for paternalism under conditions of low income and education levels, which would have raised the value of farm and boat owner intercession in many economic and social difficulties faced by workers. Without a safety net in place, many workers could not do without paternalism.

2. Interlinking trade-credit/insurance contracts

The nature and mode of operation of marketing channels are heavily determined by the local supply and demand situations and by the species landed. Where there exist a situation of permanent high demand and only a moderate supply of fish, fishermen sell their catches themselves. In case of a substantial catch of a large species, the fish will be sold to a trader—by far the easiest way to market large quantities. In some cases, the traders do not accept small species of fish because they are difficult both to process and to market through middlemen. The traders buy catches and supply fish to wholesalers or retailers. These retailers run fish stalls at the main market, selling fresh and salted fish.

A common form of interlinkage in the fisheries sector of Western Visayas and Quezon Province is between credit and marketing. A lender may require a prospective borrower to use the lender as his exclusive wholesaler for his output for several periods before a significant loan is made, as well as during the period of the loan itself. A form of trade-credit linkage is provided by brokers in the wholesale fresh fish market and traders in the wholesale preserved fish market. Brokers and traders generally require that their clients sell their harvest to, or through them. The trader-lender can easily enforce his claim by deducting it from the value of the fish sold to, or through, him.

In the wholesale market for fresh and preserved fish in Iloilo, Bacolod and Quezon, regular suppliers enter into a *suki* relationship with the brokers/traders. An important and usual feature of this relationship is the provision of loans by the brokers/traders to this suppliers. No interest is charged by the traders on these loans, nor is any security required. The relationship is a personal one of trust and confidence. The supplier, however, is obligated to sell his fish to the broker/trader. The broker/trader subtracts the amount of the loan, or a part of it, from the supplier's proceeds on the sale of the fish to the trader. When the loan is repaid, the supplier obtains another one. The arrangement allows the supplier flexibility in operating on borrowed funds, at the same time, the trader has a greater certainty of supply. Under some circumstances, however, such broker-provided credit in the wholesale market for fresh fish turns out to be limited. Some fresh fish suppliers deal with products that have no fixed harvest period. Generally, such suppliers obtain funds only by selling outright the standing fish harvest. In this case, a spot sale to a trader serves as a substitute for broker-financed credit.

In the wholesale market for preserved fish, these loans by traders are used by the suppliers to purchase fresh fish for processing, or fish already processed. Fish dryers also extend loans in turn to fishermen or middle scale fishing operators. Occasionally, the loans from traders are used to improve facilities such as drying racks. Traders who deal in salted fish advance the cost of salt and containers to their suppliers.

Wherever insurance markets are incomplete, credit markets are known to play an important role by allowing risks to be pooled over time; households borrow more when they suffer an adverse shock, and lend more when favored with a positive shock. In the wholesale market for fish the free flow of information between brokers/traders and buyers/suppliers may permit credit contracts to play a more direct role in insuring against risk.

A striking finding wholesale fish market in Western Visayas and in Quezon Province is that repayments *owed* on a loan by broker/trader appear to depend upon the random production and consumption shocks received by the borrower. [Actual repayments of loans will generally depend on the random shocks received by the borrower, as long as defaults are possible. Here owed repayments are at issue.] Credit contracts are contingent upon random production and consumption shocks that are observable by the borrower, the lender, and the community authorities who will enforce the obligations of both contracting parties. Examples of such events are harvest failure on the production side, and medical problems on the consumption side.

The institutional framework within which these contracts are made and enforced is well-suited to state-contingent contracting. As noted earlier, contractual terms are set implicitly and are enforced by community leaders. Two distinct types of state-contingent contracting are supported in this environment. The first permit renegotiation of loans after the realization of any random shocks. With rational agents this is equivalent to explicit ex-ante, state-contingent contracting, and can be enforced provided that realization of the shocks is common knowledge. Second, there may be implicit but commonly known community standards that require adjustments to loan repayments depending on the realization of random shocks. This type of contract limit the flexibility of the borrower and lender in making the loan contract, but economize on transaction costs and integrate well with the community-based enforcement mechanisms.

The simplest form of this loan contract, in which repayment depends upon the outcome of a particular project, is analogous to sharecropping in the land market. More generally, both parties may understand that if the debtor household's economic fortunes are good, the loan will be repaid earlier or with a relatively high interest rate; but if the household suffers an unexpected negative shock, the loan will be repaid later or the interest rate will be lower. Collateral is seldom used, and credit terms implicitly provided for direct risk pooling between creditor and debtor.

Many of the boat owners are financed by large fishing merchants, to whom they sell their fish at prices lower than they could obtain on the open market. In return, these boat owners receive loans to purchase their boats and equipment. While most boat owners are indebted to financiers who also market the bulk of their fish, boats and gear are locally owned and only a few boat owners live outside the community. The ownership of a boat and a house distinguish boat owners from most crew members. Merchant creditors are satisfied with some kind of payment on loans during the fishing season, and rarely attempt to confiscate boats during poor years of fishing.

There are currently two ways by which fishermen generally market their catch. Fishermen who are indebted to a fish consignor are required to sell their catch to the fish consignor and pay a 10-20 percent commission rate of the total price offered. If they are out of the consignor's jurisdiction when they sell their catch, they are obliged to remit this same commission rate to their fish consignor. In order to monitor client fishermen who may try to renege on the terms of these contracts, the fish consignor relies on a system of "spies" (local informers) in various coastal towns. The second method of marketing the catch is to sell fish at sea. The pattern of spies used by the fish consignor who independently financed the expansion of this baby purse seining fleet in the 1980s was partly in response to the growth in the number of small retailers operating from boats. These retailers hover around the bays wherever they see seining boats fishing, waiting to see which boats will catch fish. Sometimes, if the captain wishes to set the net immediately to try and catch some more fish, he will sell all of the catch at sea. Since retailers at sea do not charge a commission rate, nor charge for transportation and labor to market the fish, they also represent a very attractive market outlet to traditional fish consigners.

3. Clientelization

The preference for the multi-faceted and enduring relationship in the fishing community is often extended to commodity trades. Because of poor transportation and communication facilities, market information is scarce and costly to obtain and, hence, markets tend to be segmented into units of small local communities. The small market size in each community precludes the possibility of using modern marketing practices aimed at reducing uncertainty about product quality. In fact, the marketable surplus of fish producers is too small and variable to introduce grading and brand names. Consequently, regularized and entrusted transactions over time—labelled "clientelization" by Geertz [1978]—are preferred to a spot exchange with strangers in the market place. Geertz studied the process of (repeated) trading in non-standard markets (bazaars) and discusses how informational and other search-related problems are overcome by clientelization. A seller would have a regular clientele which comes only to him and the seller would deal or bargain only with it. That way search costs are eliminated and the bargaining process is made short and efficient. In short, informational or search-cost minimization leads to clientelization.

Marketing, middlemen and *suki* relations

The total catch value of a given catch is distributed not only among primary producers and fish processors as secondary producers but also along the marketing chain stretching from the fishing unit through the marketing system to the retailer. Marketing roles are occupied by middlemen, requiring comment on their marketing function.

In Philippine fish-marketing, one generalization seems to hold: If there is an economic niche, however small, in the distribution of a catch on its way to the consumer, a middleman will occupy it. The ubiquitous "buy-and-sell" dealers serve as bulking and

transport agents in bringing the fish to marketplaces, and likewise as agents in breaking down fish supplies into smaller, more saleable units for vendors. Brokers may sell a single catch at a beachside landing place or in much larger volume in wholesale markets. Wholesale agents direct a flow of first class fish and crustaceans from as far away as the Visayas and the Bicol area to Manila and even overseas. Retail vendors, filling the terminal role in the marketing chain, usually sell from town and city market stalls, but there are also vendors traveling by foot or bicycle through villages, towns, and the countryside. Women do not fish commercially from boats, but are active participants in the marketing sector. This proliferation of middlemen is related to small, middle, and large-scale producers, all seeking access to the market, to the wide dispersal of fishing communities, to the character of available transportation, to the organization of marketplaces, and to the nature of the commodity.

Fresh fish and preserved fish tend to follow separate marketing channels, with different set of personnel involved. This distinction is probably of long standing. With the emergence of wholesale marketplaces, those dealing in fresh fish are presided over by brokers, those for dried fish by traders, who unlike brokers take title to the commodity.

Throughout the marketing chain an important organizing principle is the *suki* system of trading partnerships [Spoehr 1980]. *Suki* relations serve to link producers and middlemen in relatively enduring relationships. In other parts of the world, it has also been observed that fishermen and middlemen form partnerships of long standing as a means of reducing uncertainty and risk [Acheson 1981:282-284; Emerson 1980:65-73]. The *suki* system is an institutionalized form of this pattern. It also is a mechanism for the extension of credit and loans from middlemen to fishermen, especially small-scale producers. Among the small-scale fishermen and even middle-scale operators, *suki* or trading partner relationships between fishermen and operators on one hand and those who buy and market the fish on the other, form a chain of links among which loans and credit have flowed from the marketing to the production sector. The question of the fisherman being unfairly exploited by middlemen fish buyers revolves around whether monopsonistic control by the buyers over prices to the fisherman exceeds the benefits they render him, including loans and credit.

Observed pattern: In Western Visayas and Quezon Province, **fishermen and middlemen establish strong and long-lasting relationships**.

1. *It is very difficult for fishermen to market their own catches successfully*. Not only must fishermen be physically absent a good deal of the time, but they operate on schedules that are simply not compatible with the opening and closing of markets on shore. Fishermen are not oriented to an ordinary business schedule, but to a world in which time is reckoned in terms of trips and tows, and in which one's schedule and decisions depend on the habits of the animal and the weather.

   In addition, success in marketing fish requires a good deal of specialized knowledge of various markets and an ability to predict the fluctuations of prices for various species of fish in different locations. There is no room for delay or

indecision, given the highly perishable nature of the product, hence the tendency to a greater development of middlemen who take these matters off the fisherman's hands.

2. *More important, fishermen establish long-lasting ties with middlemen to reduce the uncertainty of marketing fish and obtaining capital.* Fishermen have problems obtaining capital: not only boats can be moved and be lost in storms, but boats and fishing gear depreciate rapidly. Thus it is difficult to use them as collateral.

Observed pattern: **In many instances, fishermen establish ties to fish dealers which serve both to facilitate marketing and to amass capital. Such long-term ties have been noted in fishing societies in developing countries and are very common in fishing communities in Western Visayas and Quezon Province.**

Such arrangements operate so that the dealer obtains a steady supply of fish—his primary goal. The fisherman might receive access to credit, capital for long-term investment, a secure market for his fish, preferential prices for his catch, and valuable knowledge about market conditions. Exactly what the fisherman receives depends on a variety of factors such as the amount of fish the fisherman can supply, the length of time the two have been doing business and the degree of trust built up. Fishermen and dealers who cannot or are unable to establish such long-term relationships are at a distinct disadvantage.

The *suki* system is important in marketplace transactions. Thus in Iloilo, Bacolod, and Lucena[9] wholesale fresh fish market, the system prevails in organizing the relations of brokers with their suppliers on one hand, and with their buyers on the other.[10] However, in the famous Navotas wholesale market which serves the Metro Manila area, a whispered-bid auction system has been devised that has spread to other parts of the country. The Navotas system represents an ingenious grafting of an auction system (a form of competitive bid pricing) onto the *suki* system (a form of private treaty pricing between buyer and seller). The advantages of the Navotas system are: (1) as an auction system it facilitates rapid movement of large quantities of fish through the marketplace; and (2) it gives an option to the broker (seller) in that he or she can reject the high bid (all bids are secretly whispered from buyer to seller) and can take a lower bid if the bidder is a *suki* partner and presumably a better credit risk [cf. Yater et al. 1982:122]. Geertz's [1978] application of the economics of information to trading in bazaars shows how the pervasive ignorance regarding qualities of goods and reliability of traders is mitigated by "clientelization." Clientelization is the tendency for repetitive purchasers of particular goods and services to establish continuing relationships with particular purveyors of them rather than search widely through the market at each occasion of need. That way search costs are eliminated and bargaining process is made short and efficient.

[9] Information on marketing relations in Lucena City is drawn from Caballero [2003].
[10] In this paper, facts about fish marketing in Quezon Province partly draws from Abrenica [2003] and Caballero [2003].

Clientelization in wholesale fish marketing in Iloilo City, Bacolod City and Lucena City

Although the wholesale markets do not encompass all fish marketing, in the perspective of urban growth and of current consumer preferences and practices, they are primary distribution points in the exchange sector. Those dealing on a large scale in fresh fish emerged as a response to urbanization and the demand provided by town and city dwellers. Wholesale markets dealing in preserved fish are based not so much on urban demand but rather on urban centers as the hubs of transportation and distribution networks. Both types of urban wholesale fish market are also the product of technological change in transportation, involving the use of trucks and highways for land transport and of motorized fish carrier boats for sea transport, thereby making possible the movement of iced catches and fishpond harvests, as well as of preserved fish, over relatively long distances. Wholesale fish markets are also related to long-term increased production in capture fisheries through the motorization of fishing boats and the introduction of new craft and gear.

Wholesale fresh fish market

The wholesale fresh fish market has become associated with a distinct socioeconomic role, that of the fish broker, who occupies an important position in the marketing network. The wholesale market in preserved fish is organized somewhat differently, with a trader occupying a role analogous to that of the broker.

Organizing principles for market transactions

When demand is low and the fish supply is abundant, the *suki* relationship forms the organizing principle for market transactions, both between brokers and suppliers and brokers and buyers. *Suki* relationship refers to regularized trading partnership and has the following characteristics:

Selectivity. Out of a field of potential *suki*, a limited number of individuals are selected as regular trading partners.

Regularity. The relationship is a regular one in that it is patterned and sanctioned through time.

Availability of credit and loans. Credit is extended by brokers to their *suki* buyers. In the other direction, loans are made by brokers to their to their *suki* suppliers.

There are two distinct spheres or transactional fields at Iloilo and Bacolod and Lucena wholesale fish market in which *suki* relationships are expressed. One encompasses the relation between brokers and suppliers, the second that between brokers and buyers.

Brokers and suppliers

The fish supply of the wholesale market is derived from the following categories of suppliers: (1) buy-sell dealers; (2) small-scale fishermen and middle scale fishing operators; (3) trawler and purse seine operators; (4) fishpond operators; and (5) broker-owned fishing outfits. With the exception of the last category, each individual supplier enters into a personal agreement with a single broker to handle the sale of his fish. Thus one supplier engages in transactions with only one broker. They stand in a *suki* relationship to each other. The relationship can be terminated but is then supplanted by another of the same kind.

Brokers and buyers

The following categories of buyers are present in Iloilo, Bacolod, and Lucena wholesale market: (1) business firms, institutions, and government agencies; (2) retail customers; (3) buy-sell dealers; and (4) retail vendors. A broker's *suki* among his buyers are his "regular customers." They may pay cash and still be his *suki*. However, more important is the fact that only *suki* can qualify for credit, and the term is most often used to refer to those buyers, including vendors, among a broker's customers who regularly buy from him and to whom he extends credit.

When the demand is high and the fish supply very limited, an auction may be resorted to, with fish brokers or commission agents acting as auctioneers. Under such conditions, the price also tends to be high, which presumably restricts the number of buyers to a size compatible with an auction system. The buyers are mainly middlemen distributors who buy in large lots. The form of auction used is the whispered bid type. After the auctioneer announces that a lot of fish are for sale, each interested buyer whispers his bid into the ear of the auctioneer, who then announces the successful bidder.

Wholesale preserved fish market

In the Philippines, fresh-fish retailers have never absorbed the entire fish supply. Partly, this is a result of the seasonality in the catch of pelagic species, which at certain time of the year may exceed local demand for fresh fish. Also, fishing communities may be too far removed from fresh markets. The fish dryer has in consequence come to fill an important function. In the past, fishermen and fishing operators have salted and dried their own catches and small processors are numerous in many fishing communities, but through time the fish dryer has assumed an independent role, buying his fish from fishermen, fishing operators, or at wholesale fresh fish markets.

The wholesale preserved fish market deals in two kinds of preserved fish. The first category and by far the largest in volume consists of fish which have been salted and dried, or simply dried. The second and smaller category consists of fish which have been

salted only. For convenience, the first category will be referred to as dried fish, the second category as salted fish.

A difference between the wholesale fresh fish market and the wholesale preserved fish market is that whereas the central figures of the fresh fish market—the brokers—gain their livelihood from commissions on the sale of fresh fish, their counterparts in the preserved fish market are traders who buy their supplies of preserved fish and then sell them to buyers. The marketing role of the brokers of fresh fish market and the traders of preserved fish market is, therefore, different. The two markets are similar, however, in the significance of *suki* relationships in market transactions.

Traders and suppliers

Anyone with the capital sufficient to rent a bodega, build a refrigerated warehouse or rent warehouse space, and be in a position to enter into *suki* relationships with suppliers and buyers can enter into trading in preserved fish.

Although a few fishing operators dry their own fish and sell them directly to preserved fish traders, both the largest individual suppliers and the greatest number of suppliers fall into the following two categories: (1) dealers who buy fresh fish from fishing operators, dry or salt the fish with the use of their own facilities, and then transport the processed fish to the wholesale preserved fish market, where they sell their supply to the traders; (2) dealers who buy from a number of sources preserved fish which are already processed, bulk the product, and transport the fish to the wholesale preserved fish market, where they sell them to the traders.

Suppliers notify the traders by telephone or in person when fish are available. Prices of shipments are set by agreement between trader and supplier.

The regular suppliers enter into a *suki* relationship with the traders. An important and usual feature of this relationship is the provision of loans by the traders to this suppliers. These loans are used by the suppliers to purchase fresh fish for processing, or fish already processed. Fish dryers also extend loans in turn to fishermen or middle scale fishing operators. Occasionally, the loans from traders are used to improve facilities such as drying racks. Traders who deal in salted fish advance the cost of salt and containers to their suppliers. No interest is charged by the traders on these loans, nor is any security required. The relationship is a personal one of trust and confidence. The supplier, however, is obligated to sell his fish to the trader. The trader subtracts the amount of the loan, or a part of it, from the supplier's proceeds on the sale of the fish to the trader. When the loan is repaid, the supplier obtains another one. The arrangement allows the supplier flexibility in operating on borrowed funds, at the same time, the trader has a greater certainty of supply.

A supplier is not limited to one trader as a *suki* partner. An established supplier may deal with several *suki* traders, and can obtain loans from all of them. He then divides his shipments among them. This is partly the result of the fact that regardless of outstanding

loans, a single trader may not wish to buy the entire shipment of a supplier if the shipment is not diversified among several species of fish, because the trader himself needs a diversified supply to sell. And just as suppliers may have several *suki* traders, each trader generally has a number of *suki* suppliers.

Traders and buyers

Generally speaking, Filipinos of all classes prefer fresh fish to dried fish. Dried fish is a staple of mainly lower income groups, particularly farmers, many of whom are physically removed from supplies of fresh fish.

Consequently, the relation of urbanization to the wholesale market is different at fresh fish market from that at preserved fish market. The wholesale fresh fish market owes its existence to a large urban concentration of population, who consume most of the fresh fish passing through the fresh fish market. The reason the wholesale preserved fish market exists in Estancia in the northern part of Iloilo Province is not so much the presence of urban population *per se*, but rather that Estancia is the hub of transportation and distribution network, which stretches from Western and Southern Mindanao to Metro Manila. Estancia is, therefore, a logical distribution point for preserved fish. But the ultimate consumers of this product are by no means confined to Estancia.

The fact that most of wholesale preserved fish market's product is shipped outside of Estancia is also reflected in the categories of buyers of preserved fish. The most important category of buyers in terms of volume are dealers who purchase fish from the Estancia traders, transport the fish to several points inside and outside of Panay, and resell the fish to retailers. The second category of buyers is the retailer, who in some cases may also participate in wholesaling. Finally, there is the small scale retailer who sell mainly within Panay.

As is the case at wholesale fresh fish market, the *suki* buyer purchases fish on credit from a trader. After selling the fish, he then pays the trader, and purchases another lot, again on credit. The Estancia market trader is at one end of a long credit chain. If he sells a shipment to the dealer, the latter sells on credit to *suki* retailers, who in turn sell on credit to *suki* customers. Payment then goes in the other direction along the chain. The individuals involved are constantly juggling time, fish, and cash. The latter is in short supply and individuals do not reveal their financial positions.

Buyers who purchase in considerable quantity have several *suki* among the traders. An important reason is that the buyers attempt to purchase a variety of fish species to satisfy the demand of their customers. A single trader may not have in stock the varieties of fish sought by the buyer; hence the latter makes his purchases at several bodegas. In addition, it is to the buyer's advantage to have available several lines of credit.

Wholesale fresh and preserved fish market: Summary

A difference between the wholesale fresh fish market and the wholesale preserved fish market is that whereas the central figures of the fresh fish market—the brokers—gain their livelihood from commissions on the sale of fresh fish, their counterparts in the preserved fish market are traders who buy their supplies of preserved fish and then sell them to buyers. The marketing role of the brokers of fresh fish market and the traders of preserved fish market is, therefore, different. The two markets are similar, however, in the significance of *suki* relationships in market transactions.

The wholesale fresh fish market broker and the preserved fish market trader occupy nodes of distinctive positions in the exchange network lying between producer and consumer. This network involves a multiplicity of roles. On the supplier side of the fresh fish market broker and preserved fish market trader, the multiplicity is partly the result of a diverse production technology, for each level of technology differs somewhat in the organization of the individuals who make it work. On both supplier and buyer sides of broker and trader, the multiplicity of roles is also related to the scale of the operations of the middlemen dealers in the marketing sector alone. These dealers make a living by bulking fish and transporting them to the wholesale markets, or by breaking down the fish supply into units of varying size and transporting them from the wholesale markets, or by breaking down the fish supply into units of varying size and transporting them from the wholesale market. In addition, the large number of vendor-buyers at the wholesale fresh fish market is a reflection of the continuing importance of public retail markets in the Philippine economic system and of the buying habits and preferences of consumers.

The broker and the trader owe their distinctive positions in the exchange network mainly to their presiding over the flow of fish passing through the wholesale markets. The network indeed exists for the purpose of moving fish from producer to consumer. But the network is also activated by a flow of credit and loans along chains of *suki* partners. The broker and trader are primary sources of credit and loans and these give a special character to their roles in the network.

Suki relationships are fundamental to the operation of both fresh fish and preserved fish wholesale markets: it forms the organizing principle for market transactions, both between brokers/traders and suppliers and brokers/traders and buyers. There are two distinct spheres or transactional fields at Iloilo and Bacolod and Quezon wholesale fish market in which *suki* relationships are expressed. One encompasses the relation between brokers/traders and suppliers, the second that between brokers/traders and buyers.

Suki relations are dyadic and individualized, but nevertheless they exist in a milieu in which business considerations of profits to be made and losses to be avoided are the primary concerns. For the broker and the trader, the *suki* relationship is an important

means allowing him to cope with the economic uncertainties inherent in his role. Lastly, *suki* relations operate in an exchange system in which liquid capital funds are scarce.

The rationale of the *suki* relationship in public wholesale fish markets has been well-expressed by Anderson [1969] writing on Philippine entrepreneurship: "Maintaining one's *suki* buyers and suppliers is the principal device for optimizing predictability and minimizing risks in Philippine exchange." When the commodity in which the market deals is as perishable as fresh fish, risks are intensified. For the wholesale fish market, one can view the primary function of the *suki* relationship as the reduction of economic uncertainty, which includes risk.

Involved in risk and uncertainty in the wholesale fish markets is also the scarcity of liquid funds or cash matched against the number of daily transactions in the marketplace. Cash is a necessity for the wholesale marketplace to operate at all, including the initiation and maintenance of *suki* relations. But cash is in short supply and the demand for credit is high. In the absence of formal credit market and readily applicable legal means for contract enforcement, the personal dyadic bond entailed in the *suki* relationship is the medium for both credit extension and credit limitation.

When the demand for fresh fish is high and the fresh fish supply very limited, an auction may be resorted to in the fresh fish market, with fish brokers or commission agents acting as auctioneers. Under such conditions, the price also tends to be high, which presumably restricts the number of buyers to a size compatible with an auction system. The buyers are mainly middlemen distributors who buy in large lots. The form of auction used is the whispered bid type. After the auctioneer announces that a lot of fish are for sale, each interested buyer whispers his bid into the ear of the auctioneer, who then announces the successful bidder.

The auction is a form of competitive bid pricing; *suki* relations entail a form of private treaty pricing. If the auctioneer does not hold title to the commodity being auctioned, his role is equivalent to that of the broker in wholesale fresh fish marketing. If the auctioneer holds title to the goods under auction, his role is equivalent to that of the trader in the wholesale preserved fish market. Although it is difficult to specify the conditions under which auctions occur, there are situations which favor the use of auctions as price-fixing mechanism and organizing principle in wholesale fish markets:

1. The supply tends to be irregular in quantity, quality, or variety. In fishing, there is a distinct element of unpredictability in both quantity and variety, resulting in fluctuations in the day to day supply;
2. The commodity being auctioned tends not to have standard value over time. Wholesale fish prices fluctuate considerably according to the conditions of supply and demand prevailing on any given day;
3. There is a need for rapid transactions. The perishability of fresh fish encourages the use of auctions in moving fish as speedily as possible from the production into the marketing sector.
4. There is a minimum number of buyers to establish a competitive market situation.

Auctions are widely used in wholesale fish marketing in Western Europe, North America, and Japan. This raises the question as to why *suki* relations are oftentimes relied on in wholesale fish markets of the Philippines.

For wholesale markets dealing in fresh fish, the probable answer is that there are too many vendors buying in too small quantities per sale to make an auction system effective. For wholesale markets dealing in preserved fish, there are fewer buyers purchasing in large average quantities, but they tend to be so widely separated in space from the marketplace that assembling the minimum number of buyers necessary for an effective auction is too great an inconvenience and would even be a hindrance in the distribution of the commodity.

It is also important to take note that while an auction system it facilitates rapid movement of large quantities of fish through the marketplace, the *suki* system gives an option to the broker (seller) in that he or she can reject the high bid (all bids are secretly whispered from buyer to seller) and can take a lower bid if the bidder is a *suki* partner and presumably a better credit risk; thus the pervasive ignorance regarding qualities of goods and reliability of traders is mitigated by "clientelization."

VI. Notes on social-organizational differences between agricultural and fishing economies

Understanding the way in which development programs designed for agricultural communities must be modified for fishing communities is a worthy goal. Models of development planning derived from agricultural communities too often fail to realize the crucial social-organizational differences between agricultural and fishing communities. For example, to introduce the entire land reform package into aquaculture might prove to be counterproductive because of the special character of fishpond culture. Moreover, there are informal rules and rights of sharing harvest that are unique to relations between capture fishers and other community members; the rules that surround the appropriation, distribution, and allocation of rights to fish may confound the enforcement rules of access to common pool resources. Another important thing to note is that the nature of transaction costs in maritime share systems differ from that of agricultural sharecropping systems; this would have implications on the policies that attempt to mitigate constraints in the negotiation of a new share system which would reduce certain inefficiencies.

Effects of land reform on aquaculture

The portion of the land reform program dealing with government backed tenancy security covers not only rice and corn cultivation, but also land producing other products by "tenant-tillers," including aquaculture. Since 1976 caretakers under normal circumstances cannot be removed by owners except with consent of the caretakers. Usually that involves some mutually agreed upon compensatory severance pay by the owner.

Tenancy security is nowadays the same in aquaculture as on rice/corn land. Yet the context remains different. Granting of tenancy security on rice/corn land has been part of a more general reform package which includes the breakup of large estates, a shift from share cropping to state decreed lease tenancy, and the encouragement, however hesitant, for tenants to acquire the land they work. None of these additional reforms have been introduced into aquaculture, with the result that the position of share caretakers has been upgraded without that of the owners (or leaseholders) being weakened. The continued strength of the latter is particularly marked in large-scale farms. Owners of these retain the power accrued them through control over extensive pond areas and their ability to manipulate remuneration and credit.

From one perspective the imposition of tenancy security in aquaculture has been less dramatic than it appears. Even before this event, tenants tended to be associated with particular owners or lessees for long periods of time, sometimes over generations. But from another perspective the impact has been important. Two points stand out.
First, although actual turnover rates of caretakers have always been low, the constant possibility of being removed from tenancy by the owner exacerbated the unequal relation between the two. The reform is helping to alleviate this condition. But it does so to a lesser degree than expected because of the second point. Under one circumstance it has always been traditional to replace caretakers, and that is when a change in the ownership of the farm takes place. It is here that the impact of land reform has fostered a contradiction between three elements: tenancy security, the need for trust between those who manage and those who operate, and the process of land transactions. Under present conditions the first element is incongruent with the other two. This is especially true on large aqua farms because the stakes are so very high.

To understand this tension we have to adopt for a moment the perspective of the pond owners. To owners of aqua farms, trustworthy caretakers are as important as ever because owners continue to receive large portion of the output, the productivity of fishponds is strongly influenced by know-how of the caretakers, and it is easy for the latter to cheat during the production cycle. The fact that most caretakers receive all or part of their pay in the form of a share only reinforces the need for trust. Individuals hoping to acquire a fishpond, therefore, have every reason to bring in their own caretakers and/or manager. The larger the farm the stronger the incentive to do so and the greater the power of the owners to carry it out; but also the greater the capacity for caretakers to resist it, especially if the manager sides with them.

Not surprisingly, open conflict is the outcome. Whereas before the introduction of tenancy security the power distribution was such that owners could remove caretakers with little difficulty, caretakers now have improved their position with respect to this matter. Yet the power of the ones who control land and capital has not been otherwise diminished. To put it differently, the extension of land reform into aquaculture has enhanced the position of one class while maintaining that of another over an issue about which both parties are bound to disagree. Moreover, the new power constellation is not in balance or entirely clear to the parties involved, and therefore it is difficult to regulate.

Owners and lessees have retained an overall advantage which, however, they can only keep if they engage in various, often illegal, means to undercut the tenancy security enjoyed by caretakers. In this way they retain some flexibility in the event land transactions take place.

What about landless agricultural labor? One of the more perverse effects of land reform in the Philippines has been to make it virtually impossible for agricultural labor to move into the tenancy position. In rice/corn cultivation the breakup of the monopoly power of large owners and the enforcement of tenancy security has shifted the conflict from landlord and tenants downwards to between tenants and landless labor.

In aquaculture, especially on large-scale units, tenancy security without the removal of monopoly power of owners has intensified the conflict between those who own and capitalize and those who operate. What is the fate of the floating labor here? There are two conditions which have so far kept the tension from building up to the degree it has in agriculture.

First, landless labor in aquaculture derives much of its sustenance from working in agriculture as well. Many members of this class therefore do not regard fishpond caretaking as a likely avenue along which to be socially mobile. This overlap of labor between the agrarian sector and aquaculture is especially characteristic in Iloilo and the other provinces in Panay where small farms predominate, rather than in Negros Occidental where large farms predominate.

Second, there is the difference between small and large-scale aquaculture with respect to tenancy security. Among the small-scale ones a caste-like occupational group in the form of secure tenants is forming which makes in-mobility of laborers a rare event, even for those who have acquired over the years the requisite technical knowledge. In the case of large-scale ones, the manipulation by owners to prevent tenancy security has kept the door ajar for the movement by pond labor into (salaried) caretaker positions. After all, for landless labor insecure tenancy is better than seasonal labor. For the owners this floating labor force serves as a reservoir to be tapped only when labor needs are high in the production cycle, but also when they perceive an opportunity to change from share tenancy to wage labor.

Taken as a whole, two problems exist with the manner in which land reform has been extended into aquaculture in the Philippines. First, it involves a program designed for agriculture, not aquaculture. Second, aspects of it were introduced into aquaculture only as an afterthought, not as part of an integrated plan to improve conditions in the fishpond sector. It should not come as a surprise, therefore, that the negative consequences have dominated the results.

Attaching tenancy security to share cropping without any reform creates a tenancy condition which is just as semi-feudal as the one it is supposed to replace. It has the potential to slow down labor mobility almost as much as would be the case under serfdom, and the dominant position of the patron (owner/lessee) remains untouched.

Furthermore, caretakers face the constant possibility that the terms of remuneration will be changed to their detriment. True, caretakers can leave if they want to; but usually they don't because no alternative opportunities are available—and what could their offspring inherit?

This combination of factors is especially serious in aquaculture where technical requirements need managerial flexibility. In the Philippines production methods customary in aquaculture are already inefficient. Tenure security without any other organizational changes is likely to fossilize these methods even more. Furthermore, although the reform was supposed to protect the rights of tenants, it has actually galvanized tension between those who own and those who operate, and in this respect lowered the security of caretakers. Particularly on large-scale farms conflict, which was previously muted, is now open.

One reaction by landlords of subsistence cropland to the threat of land reform during the 1960s and 1970s was to mechanize. By this means they hoped not only to lower labor requirements but also to replace share tenants with seasonal wage labor. Mechanization of aquaculture has not progressed sufficiently to replace much labor. But there is a definite trend to replace share tenants with wage labor, a trend which is now reinforced by provisions of the Land Reform Code. Instead of protecting share tenancy in aquaculture, the introduction of legal tenancy security has speeded its eventual demise.

A solution is not easy to come by—it is never easy to combine the goals of equity, security, and efficiency as many land reform programs try to do. To apply features of land reform as developed in the Philippines to aquaculture only as an afterthought will not do because it leads to more problems than solutions. To introduce the entire land reform package into aquaculture would also be inappropriate because of the special character of fishpond culture.

Recently there has been a call to reformulate land reform in the Philippines into genuine agrarian reform which would involve local participation and would cover all social components of the rural population, including landless labor. Aquaculture should be part of this effort. But there is a proviso. The effort has to be sensitive to the peculiar characteristics of aquaculture compared with other rural production regimes. As conditions now stand, no reform at all would be better than the incidental extension into aquaculture of part of a program designed for subsistence agriculture.

Informal rules and enforcement rules of access to common pool resources

The notion that "everyone has right to survive" has limited the development of de facto rules that determine rights of access to the open sea. Small fishers expect a share of fish during a good catch by a seining boat as a matter of course; after all, they say, that boat already has a lot of fish. These exchanges are acts of generalized reciprocity and are done without fanfare both on shore and at sea. Moreover, informal rules and rights of sharing fish are part of a larger strategy that historically has developed to govern relations between capture fishers and other community members in many parts of the Philippines.

The rules that surround the appropriation, distribution, and allocation of rights to fish may co-exist with, or even confound, the enforcement rules of access to common pool resources. The usual dichotomy between open access and restricted access resources makes little mention of the notion of "porous" or negotiable territorial boundaries where reciprocal and long-standing exchanges among fishers regulate access to the product rather than the resource itself. Fishers' indigenous rules of appropriation and exchange may pose formidable obstacles to the implementation of programs designed to promote communal territories.

Transaction costs

The nature of transaction costs in maritime share systems has received little discussion, yet it is likely that these institutions have even higher transaction costs than agricultural sharecropping systems owing to the greater risk and uncertainty surrounding the timing and amount of the "harvest" and because of the much greater frequency with which shares usually are divided throughout the fishing season. This uncertainty surrounding the frequency and amount of fish which will be caught poses heavy demands on share contracts in areas undergoing marine resource depletion, particularly when the number of crew members is large and fishing is the primary form of income generation. In these circumstances, share systems must often be renegotiated during a fishing season or perhaps balanced over several seasons in order to support the needs of both boat owners and crews. The low, uneven and unpredictable nature of the catch also encourages opportunism among the casual crew and relatively high monitoring enforcement costs. Bray and Robertson [1980] argue that in horticulture, for example, the frequency of harvesting tends to complicate the sharing process, and hence in horticulture transaction costs may be lower with wage contracts or fixed rent tenancy. Cheung [1969:64] also notes that transaction costs increase as the number of participants and contractual exchanges increases.

Future studies should seek to examine whether the share arrangements that have evolved over the last century operate less effectively today, and why boat owners and crew members are constrained from negotiating a new share system which would reduce certain inefficiencies that now characterize these contractual arrangements.

VII. Stylized facts and economic theories

Fishing communities, we now begin to realize, constitute a social category distinct from the urban societies upon which orthodox theories are molded. Much of the fishing economies in developing countries is rural and contains a variety of contractual arrangements not found in modern urban centers. The works of maritime anthropologists have noted that fishermen the world over have sought to reduce uncertainty and spread risks through the use of a set of norms, contracts, and networks of various types (see, for example, Acheson [1981]). While fishermen cannot control the weather and location of fish, they can reduce some of the uncertainty of fishing by entering into agreements with each other. Some of these contractual arrangements and norms reduce risk by insuring

fishermen some part of the catch or at least a chance to catch fish; others operate to reduce the costs of fishing; and still others to increase revenues from the sale of fish. For example, if one cannot control the weather and fish, one can use social ties to organize an effective crew, obtain information on concentrations of fish and have privileged access to them, and be assured of a secure market for the catch. Moreover, fishermen establish long-lasting ties with middlemen to reduce the uncertainty of marketing fish and obtaining capital.

The significant contributions of the anthropology of fishing therefore stem from studies focusing on the way that human beings have adapted to earning a living in the uncertain and risky marine environment. But most anthropological writing was descriptive rather than theoretical. It did not provide a theory of economic behavior, and the lack of theoretical focus in maritime anthropology as a whole keep the discipline from producing generalizations significant in both fishing and non-fishing communities. Specifically, it failed to explain the origins of contractual arrangements in fishing society and therefore were not in a position to predict how the institutions might change in response to new economic conditions—as change they did in the course of time.

In order to understand the problems that beset the fishery sector in the Philippines and to increase our chances of improving the lot of fishing communities, it is absolutely necessary to arrive at some understanding of the peculiar contractual arrangements by which most fishing communities still live. Like all understanding, this one requires more than a mere recital of facts; it calls for discovering a rationale behind the facts, which in the case of contractual arrangements means to discover their internal logic. If, in our reformist zeal, we do not pay enough attention to the underlying economic rationale of pre-existing contractual arrangements and their interconnections, and try to hack away parts of them, we may not always improve (and may even worsen) the lot of the poor tenant-laborer-borrower, the intended beneficiary of the reform program.

This study begins with the hypothesis that there are certain regularities to be found within the fishing economies of the Philippines, and that economic theory should be able to explain, or at least shed light on these regularities. By regularities we don't mean phenomena that are *universal* among fishing economies in the Philippines, but phenomena that occur with sufficient frequency that they cannot simply be dismissed as anomalies, for which an explanation based on the peculiar circumstances and history of the economy in question will suffice. At the same time, one needs to emphasize the diversity among fishing economies in the Philippines; one is not looking for a single model which will describe all fishing economies, but a general framework, which, with appropriate adaptation, can be made relevant to most fishing economies.

Among the regularities we seek to explain are:

1. **share contracts between aquaculture owner-operators and tenant/laborers and between boat owners and crew members**. Share contract entails some form of cost sharing for other inputs between the aquaculture owner-operators/boat owners and the tenant/laborers/crew members;

2. **interlinkage of credit, labor, and marketing relations**. The interlinking takes the form of (1) aquaculture owner-operator and boat owner do not simply receive a share rent for his contribution of land/boat to the production process, but also bears a part of the production cost (such that of fish fry, chemicals, gasoline, etc.) and advances credits for production and consumption purposes, or of (2) simultaneous deals in the commodity and credit markets between a trader and a fisherman where the latter gets credit on the pre-commitment of future crop delivery to the former.

Economic theories of fishery organization ought to explain the regularities observed in fishing economies. Economic theories ought to explain why certain contractual arrangements are commonly chosen. Why are they common or under what conditions are they common? The main questions in the study fishery contracts therefore are the determinants of contract choice and the relative efficiency of various contracts observed in fishing economies. In the following discussions, we apply the risk and transaction cost micro-analytical framework outlined in Section 3 to share contracts and market interlinkages found in fisheries.

Share contracts and their rationale

From the perspective of transaction cost theory, there is no single form of contract that can reduce transaction costs to zero; every contract is vulnerable to one or more form of opportunistic behavior. There are advantages and disadvantages of the basic forms of contract (under the generally valid assumption that the owners do not directly supervise their crew). When fixed (time) wage contracts are employed, the vessel owner bears all the production and price risks. Also, labor shirking, asset mismanagement, output underreporting and input overreporting are all important sources of opportunistic behavior. With piece rates, the production risk is shared but the price risk is borne entirely by the owner. Serious moral hazard problems exist with respect to input overreporting and quality shirking. With fixed rent contracts, asset misuse is the only serious form of opportunistic behavior, but the workers have to bear the entire burden of production and price risks. Finally, with share contracts, risk is shared but, since the worker receive only a fraction of the marginal product of his labor, share contracts are vulnerable, at least partially, to labor shirking, asset misuse, input overreporting and output overreporting.

In reality, matters are more complicated; the form in which wages are paid (cash or kind), the means of allocating costs and sharing losses can also vary. Even when these complications arise, actual contractual choice may be influenced by (1) the relative ability to bear risk, (2) the relative importance of the various kinds of risk and opportunistic behavior, (3) the proximity of the boat owner to fishing operations, and (economies of scale and scope in detecting and penalizing opportunistic behavior, all of which may vary substantially from one situation to another.

Given the difficulties of achieving adequate self-insurance, both fishermen and boat-owners seek to mitigate the above risks in their contractual relationships with each other. Whereas in agriculture and aquaculture (as long as the transaction costs thereof are not prohibitively high) risk-sharing can be accomplished by mixing wage and rent contracts, this alternative to share contract is infeasible in marine fishing because of asset infeasibility (a boat owner can hardly split his boat in two!). Hence, share contracts may be chosen when neither the owners of fishing assets nor the crew members are willing to bear the entire risk burden.

The risk-sharing problem is much less serious with capital-intensive vessels since these undertake fishing voyages that are much longer, considerably less vulnerable to weather conditions, and much more mobile (thereby allowing them to move more quickly to more promising fishing grounds). Since those who can afford ton buy capital-intensive boats are much better able to bear risk than either their crew members or owners of simple fishing boats, crew members on sophisticated vessels usually receive a more significant part of their income in the form of fixed wages.

The costly nature and the asymmetric distribution of information cause incentive problems and make it difficult to enforce contracts and property rights [Binswanger and Rosenzweig 1986:507-8]. The term "moral hazard" is used to describe the problems of opportunistic behavior that appear in these circumstances, which range from failing to divulge information to deliberately distorting it, and from failing to work as hard as possible in unsupervised conditions to stealing when the identity of the thief is easily hidden [Williamson 1975]. Because of the greater vulnerability of fishing to output underreporting and input overreporting than in the case of agriculture, the minimization of these costs is a far more serious challenge than has been suggested in the literature on agricultural contracts. In large part these problems are controlled in the case of fishing by contractual details, such as the way in which the shares are calculated (share of the net, as opposed to share of the gross, proceeds).

The question of the comparative (in)efficiency of share contracts can obviously not be disconnected from that of the motivation of such contracts. Revealingly, those economists who adhere to what Stiglitz has called the "imperfect information paradigm" tend to view sharecropping as a second-best solution since it involves a principal-agent relationship and, therefore, gives rise to incentive problems (such as input pilfering, asset mismanagement, labor shirking, underreporting of output, etc.) that become more serious as potential productivity increases and decisions become more complex [Stiglitz 1986].

Interlinkage of credit, labor, and marketing relations

Economists' theories built to account for the phenomenon of market interlinkages can be roughly classified into two categories. In the first line of approach, market interlinkages are analyzed in terms of exploitation. This means that they are considered as an oppressive devise commonly used by the stronger sections to increase their exploitative power in backward rural areas. This is done by dispersing exploitation over different

markets [Bhaduri 1973 and 1983]. However, such an analysis is not complete since it does not say where the monopoly power comes which enables "exploitation" in the sense of driving the "exploited" to reservation utility.

In the second line of approach, market interlinkages are analyzed in terms of considerations of allocative efficiency. Interlinked transactions are viewed as a response to various kinds of market imperfection and, in particular, they are seen as an answer to the need to find insurance in the face of uncertainty. In a world dominated by many economic hazards and by problems of asymmetrical information (about the willingness or the capacity of the borrower to repay; about the quantity of efforts the tenant is able or willing to apply; about the availability of labor and the level of wages), and in the absence of written, legally enforceable, contracts, interlinkages would serve the function of economizing on the costs of monitoring work, of contract enforcement, of search and recruitment, as well as the costs of acquiring information. The last function is supposed to be achieved through the implementation of various screening devices and through the internalization of the externalities generated by "moral hazard" considerations. [Indeed, through an interlinked system of personalized transaction, the possible discovery of dishonesty or shirking by an agent in one transaction is made "too costly for him in terms of its spillover effects threatening other transactions (and the general loss of goodwill in the small closed world of a traditional village)" [Bardhan 1980:86]]

In the following, we will use the idea that market linkages may be a way of achieving insurance in the face of uncertainty to account for two specific kind of credit transactions, typically found in artisanal fishing communities. These linking transactions will be explained by reference to the combined presence of substantial risks, moral hazard, and high information and transaction costs.

Insurance-motivated credit arrangements

Credit systems in Third World's rural communities are highly complex: loans often take multifarious forms and, at best, debt is an elusive concept. Credit not only plays a crucial role but also performs a variety of functions. Credit in traditional village societies can be interpreted as a form of insurance against various types of risk. Since in less developed countries rural inhabitants are typically subject to substantial risks and numerous forms of economic uncertainty (with the result that the variance in their expected incomes is quite large), they are willing to enter into arrangements that insure that insure them against the vagaries of nature. Posner even goes so far as to say that in these village economies, insurance is the principal good exchanged [Posner 1981:158]. However, to the extent that insurance markets are non-existent or poorly developed, credit can serve as "a close substitute for desirable insurance" [Binswanger and Rosenzweig 1986:512].

In the following discussion we will deal with two types of insurance through credit: (1) credit given with a view to minimizing the risk of income losses due to lack of labor; and (2) credit given to make access to output as secure as possible.

Credit as a labor-tying device

The dependence on natural conditions in fishing not only makes the timing of each individual operation somewhat unpredictable, it also means that when the time comes the job has to be done very quickly and there are various risks and costs of delay. This is particularly relevant in the case of pelagic fisheries since pelagic species like mackerels and anchovies tend either to appear in large shoals yielding high catches or fail to appear at all. Success depends on being at the right place at the right time, and employers typically put a high premium on quick and ready availability of labor.

The employers' desire to reduce the risk of being short-handed when the season starts therefore drives them to offer multiple contracts in which credit and labor relations are interlocked. The employer has a special incentive to lend to his attached laborers, not only because recovery of loans is easier, but also because it helps cement the labor-tying arrangements. As for the crewmen, it is of course their need of a dependable source of cheap and quick credit that prompts them to enter into mixed labor-credit relations.

Free loans known as "wage advances"—and , possibly, further complementary loans—are offered by employers to willing laborers who, in accepting the money, commit themselves to work for the lender-employer at least during the next season. If money advances by owner-employers are insurance-motivated, the interest foregone may be treated as risk premia which employers are willing to pay in order to ensure themselves of a dependable supply of labor, to enhance the stability of their crew, to use their productive assets more fully and, thereby, to improve their income-earning capacity.

The owner of fishing assets may be able to control labor desertion by pre-assuring crew stability, for example, by recruiting kinsmen and/or by introducing credit-cum-labor-tying arrangements. Both practices have the effect of raising the sanctions on desertion. With respect to the latter, it should be noted that labor-tying loans are generally free of explicit interest and need not be repaid as long as the crew member stays with the employer-creditor. Notably, employer-creditors often refuse early repayment in order to maintain their hold on good fishing crews.

Indeed, consumption loans from employer to employees are very important in the remuneration of crew labor and not simply an appendage in the form of interlinked credit and labor relations. Consumption loans are granted on short notice for special needs (marriages, funerals, sickness, etc.), on days of technical unemployment (that is, when the boat is not taken out to sea because of rough seas or poor fishing prospects) and sometimes even during slack season. To the extent that such loans carry no interest, the cost of credit saved by the crew may appropriately be regarded as income received in times of distress. This advantage may more than compensate them for possible income losses resulting from reduced mobility. Alternatively, the ready availability of free credit can be considered as insurance, the price of which is only the cost of reduced mobility. From the owner's viewpoint this arrangement also has a decisive advantage over the payment of fixed allowances on days of unemployment because the latter reduces the

fishermen's incentive to go out to sea in risky conditions, thereby causing the fishing gear to be underutilized.

Instead of providing consumption credit when crew subsistence is at risk, owners may reduce or waive their (capital) share in times of poor catch. In most cases, they do so without asking future compensation. The distribution scheme is also sufficiently flexible that the owner can make allowances for special social conditions which are admitted by his crew on grounds of equity.

In the traditional societies, it is the moral responsibility of owner-employers to look after the most vital needs of the crew. This explains why the share system of remuneration is supplemented with insurance mechanisms capable of helping the fishermen to tide over bad days. These mechanisms may be eroded, however, by market integration and capitalist penetration (and hence more anonymous and abstract production relations).

Credit as an output-securing device

In artisanal fishing villages, fish is usually disposed of through small-scale channels of petty trading. The wives of the fishermen may play an important role in the marketing of small quantities of low-priced fish. When catches are more substantial and when the species of fish caught is more valuable, local fish merchants and middlemen enter into the picture to auction, buy and re-sell the fish the fish to other merchants or to the final customers.

In the same way as owner-employers compete among themselves for securing the right labor at the right time, local merchants and intermediaries enter into competition with each other to gain access to the fishermen's catches or to obtain the right to auction them. During times of peak fishing operation and massive fish takings, they are keen to secure a reasonable portion of the landings because unit prices tend to be depressed and because this is the time of the year when, like the fishermen themselves, they can expect to earn the larger part of their yearly incomes. And they are equally eager to secure sufficient catches during the off-season since this is a time of dearth when incomes are low and each income unit has therefore a high utility.

In the above context of stiff competition for access for access to the fish catches, middlemen and merchants are understandably willing to secure against the risk of poor trade transactions, as a result of which they may try their best to buy their supply of fish forward. In the absence of organized forward markets for fish, one obvious way of doing this is to link up credit with marketing relations by offering loans to owners of fishing vessels on the security of future catches. By using his money for long-term financing of fixed capital and by linking up credit given with the right to sell or to auction the catches of the debtor, he minimizes the risk of low business turnover during future operations.

The relation between a middleman and a fisherman financially tied to him has a clear element of patronage, which follows from the fact that the former has an obvious interest

in the latter remaining in good health and fit for work. This explains why merchants may also provide owner-operators with consumption credit when pressing needs arise.

Features of insurance-motivated systems of credit

Three specific features of these insurance-motivated systems of credit deserve strong emphasis.

First, loans are given only if the debtor agrees to enter into a broader relationship with the creditor, and to commit himself to fulfilling certain obligations that lie beyond the initial loan transaction proper. In the case of labor-tying loans, where the money is also used for the purpose of day-to-day consumption, the debtor enters into a tacit contract for future commitment of labor and agrees that he will respond quickly to any call for work on his creditor's vessel when the season is on. In the case of sales-tying arrangements, he pledges his future catches to the lender-merchant and confers upon him the exclusive right to dispose of them. Here, loans are normally intended for productive expenditures.

Second, the time for the repayment of the loans is uncertain, and the repayment may even be conditional upon the decision of the debtor to stick or to break out of the broader relationship he has entered into with the lender (in the case of interlinked transactions).

Third, the price of credit is either formally zero, or it is blurred in a way that renders its assessment especially difficult. The interests forsaken by the credit-giver—either because the interest charged on credit transactions are nil, or because they are lower than the dominant interest prevailing in the local informal credit market—can be construed as risk premia he is willing to incur to reduce risks of inadequate labor supply or of insufficient flow of output in the future.

Policy implications

Implicit in the present study is the belief that sound policies for the fisheries sector of the Philippines must be based on an understanding of the fundamental incentives underlying contractual arrangements in the fisheries sector of developing countries. If, in our reformist zeal, we do not pay enough attention to the underlying economic rationale of pre-existing contractual arrangements and their interconnections, and try to hack away parts of them, we may not always improve (and may even worsen) the lot of the poor tenant-laborer-borrower, the intended beneficiary of the reform program. A well-intentioned land redistribution program may, for example, be rendered counter-productive by the absence of a simultaneous program of credit reform; even in credit reform, public banks spreading to reach out to the peasants may meet with limited success in the face of the potential borrower interlocked in her credit-cum-land or –labor relationship with the local lender-landlord-employer. Piecemeal laws trying to put a ceiling on rents or interest rates or a floor to minimum wages may be rendered ineffective by suitable readjustments of prices or selective rationing in interlinked transactions.

The obvious policy implication of our analysis is that any attempt at replacing old share contracts and personalized credit arrangements by new mechanisms and institutions ought to give primary attention to the insurance functions which these arrangements may perform. If this is not done, various efficiency losses might result from the de-linking of credit and other relations. Indeed, the economic theory of market interlinkages has shown that, by reducing information and transaction costs they may be expected to improve allocative efficiency in a world beset with hazards and uncertainties. This is an important result to bear in mind even thought the equilibrium thus reached remains a second-best optimum given the absence of some markets and the imperfection of others. Also, if sufficient attention is not paid to the risk-reduction aspects of credit transactions, the interests of the poorer sections are likely to be especially hurt since they have a particularly strong need for a dependable source of quick credit for subsistence consumption as well as for basic production expenditures.

As mentioned earlier, sound policies for the fisheries sector of the Philippines must be based on an understanding of the fundamental incentives underlying contractual arrangements in the fisheries sector of developing countries. On the other hand, in trying to understand the micro foundations of pre-existing contractual arrangements, we should not be blind to their adverse consequences. For example, the very nature of rationale for personalized interlinking may at the same time act as a formidable barrier to entry for other parties and may give the dominant partner in the transaction some leverage.

Moreover, it is important to take note of the link between wealth distribution and contractual arrangements that is emphasized by modern economic theory [see Hoff and Stiglitz 2001]. Wealth distribution affects the severity of agency problems (for example, access to financial markets), vulnerability to risk, and the contractual arrangements that arise to cope with agency problems and risk (such as sharecropping). These factors affect outcomes directly and also indirectly through the effect on prices, wages, interest rates, and the distribution of wealth in succeeding generations.

Perhaps the clearest illustration of the effect of wealth distribution on contracts is sharecropping, which is ubiquitous in developing countries. Sharecropping arises as a result of in the distribution of wealth (landholdings) and the absence of better ways to share risks, or the limited ability of the tenant to absorb losses. It creates a principal-agent problem between landlord and tenant that imposes potentially huge costs on the economy—the distortions associated with a 50 percent share are similar to those associated with a 50 percent marginal tax rate [Hoff and Stiglitz 2001].[11]

[11] Hoff and Stiglitz [2001] notes that it is easy to lose sight of this, perhaps because the "first generation" of principal-agent models were *partial* equilibrium models. What might be called the "second generation" of principal-agent models differs from the first in that it analyzes moral hazard under *general* equilibrium, where agency problems may affect wage rates, interest rates, and the path of asset prices.

All in all, the thin line between understanding a contractual arrangement and justifying it is often blurred, particularly by careless interpreters of the theory. In future studies we should keep both kinds of consideration in mind in discussing certain common types of contractual arrangements that characterize fishing economies in some poor countries.

Areas for future research

The analysis of incentives underlying the nature and extent of different contractual arrangements promises to be a fruitful line of research. Understanding the fundamental incentives underlying contractual arrangements in fisheries will allow one to evaluate the efficiency and equity implications of contract use and will aid in predicting their influence in the distribution of returns as their usage in the fishery sector increases. Future work would entail detailed applications of the risk and transaction cost micro-analytical framework outlined above to the ever-changing special characteristics of both fishing activities and their surrounding environments (e.g., market integration, increased labor mobility, growth in community size, increased formal education, technology change, ecological decline, and the decreased effectiveness of traditional sanctions).

Informal credit and insurance arrangements and interlinkages observed in agricultural and fishing contracts can, in most cases be thought of as arrangements that make relatively little use of formal contractual obligations enforced through a codified legal system. However, such arrangements do seem in general to disappear as economies develop. The decline of this type of arrangements in the development process vividly illustrates the idea that they use certain information structures and enforcement technologies that are eroded by the transformation to a modern economy. Studying the rapid development experience of countries where market alternatives to traditional institutions are being developed, will prove fruitful.

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List of Persons Interviewed

Aquaculture (Western Visayas)

1. Danny Janero – caretaker - Sapao, Dumangas, Iloilo
2. Nicario Dumago – caretaker -Sapao, Dumangas, Iloilo
3. Mr. Francis Griño – owner/operator – Tipong's, Nabitasan, Leganes, Iloilo
4. Wilfredo Condino – caretaker – Brgy. Serallo, Anilao, Iloilo
5. Benito Dobi – caretaker – Brgy. Serallo, Anilao, Iloilo
6. Miguel Buenseceso – owner – Brgy. Serallo, Anilao, Iloilo
7. Melchor Sesera – caretaker - Brgy. Serallo, Anilao, Iloilo
8. Romeo Darador – caretaker - Brgy. Serallo, Anilao, Iloilo
9. Sonia Formacion—owner-lessee—Leganes, Iloilo
10. Carlos Juanico - Bato, Pan-ay, Capiz
11. Ruby Vargas Roblete – owner/caretaker - Bato, Pan-ay, Capiz
12. Romeo Vargas - caretaker - Brgy. Aslum, Ibajay, Aklan
13. Anicitas dela Cruz - caretaker/owner - Brgy. Aslum, Ibajay, Aklan
14. Gabriel Estoque – caretaker - Brgy. Aslum, Ibajay, Aklan
15. Ludovico Cabales - caretaker - Brgy. Aslum, Ibajay, Aklan
16. Leoncito Calizo - caretaker/owner - Brgy. Aslum, Ibajay, Aklan
17. Romeo Bernardo - operator - Brgy. Aslum, Ibajay, Aklan
18. Mario Cirilo – caretaker - Brgy. Aslum, Ibajay, Aklan
19. Crecesiano Dionio III - owner/caretaker/ operator - Brgy. Agram, New Washington, Aklan
20. Rachel Tiongson – owner/caretaker – Cadiz City, Negros Occidental
21. Jesus Ernesto Barrameda – operator – Brgy. Tinampaan, Cadiz City, Negros Occidental
22. Esteban Maravillas – caretaker - Brgy. Tinampaan, Cadiz City, Negros Occidental
23. Susano Junio – caretaker/technician - Brgy. Tinampaan, Cadiz City, Negros Occidental
24. Ernesto Deling – owner/caretaker – Sitio Kanipaan, Brgy. Bangkeruhan, Cadiz City, Negros Occidental
25. Reynaldo Banilla – caretaker – Purok Kabugnason, Brgy. Zone III, Cadiz City, Negros Occidental
26. John Bonnin – owner/operator (U&B Farms) – Brgy. To-oy, Himamaylan City, Negros Occidental

27. Rolando Gatanilla – caretaker – Brgy, Crusher, Himamaylan City, Negros Occidental
28. Danilo Montero – caretaker/technician – Sitio Malusay, Brgy. Caliduan, Himamaylan City, Negros Occidental
29. Elli Brusola – caretaker – Brgy. Crusher, Himamaylan City, Negros Occidental
30. Mario Unson – U&B Farms – Brgy. Matab-ang River, Talisay City, Negros Occidental
31. John Poras – owner/operator – Brgy. Luna, Cadiz City, Negros Occidental

Fishers/Traders/Government officials (Western Visayas)

1. Marlon Olvido – operator – Pala-pala, Banago, Bacolod City, Negros Occidental (CF)
2. Bonnie Tan – salesman/fish broker – Pala-pala, Banago, Bacolod City, Negros Occidental (CF)
3. Aka "Wyndel" – comprador – Pala-pala, Banago, Bacolod City, Negros Occidental (CF)
4. Jeffrey Peleño
5. Edmund Quiñoles
6. Danilo Danisco - buyer and exporter - Brgy. 1, Rizal St., Hinigaran, Negros Occidental
7. Remary Narandan - fish vendor - La Paz Public Market
8. Ed Arhendain - "panting" - Compania Fundidor, Molo Timawa
9. Rene Betita, son of Mr. Edilberto Betita, owner, operator of *super hulbot*. (Modified Danish seine), Brgy. Bancal, Carles, Iloilo
10. Donna Ganancial, daughter of Mrs. Delia Ganancial, hook-and-line fisher, Brgy. Poblacion, Carles, Iloilo
11. Abdun Cantiller (Key Informant), Municipal Agriculture Officer, Municipality of Carles
12. Florentino Losañes (Key Informant), Staff, Municipal Planning and Development Office, Municipality of Carles
13. Junior Arevalo – operator , Kalibo, Aklan
14. Ronse Villaruel – in-charge, Kalibo, Aklan
15. Jeffry Bernabe – truck driver, Kalibo, Aklan
16. Roberto Espinosa—OIC, BFAR-VI
17. Edwin Maliwat—Acting Port Manager, Philippine Fishport Development Authority

Fishers/Traders/Government officials (Quezon Province)

1. Agusto Valentin, Gulang-gulang, Lucena City, Key informant, employee PFDA.
2. Rodel Bernaldez, Bayan, Lucena City, Key informant, assessor PFDA.
3. Jesus Luna, Jr., Silangang Magpog, Marinduque, Patron/ kapitan of a commercial fishing vessel (17.05 tonage), Engaged in a baby muro-ami fishing.

4. Anatolio Pitallar, Talao-Talao, Lucea City, “namamalakaya” or fisherman, deals exclusively with the consignacion named FR Fish Broker.
5. Dante Dela Rosa, Dalahican, Lucena City, Kargador, In contract with the company.
6. Fernando Lijana, Brgy. Dalampasigan, Pitogo, Quezon, “katiwala”/ receiver/ salubong of a pangulong .
7. Rodger Santos, Dalahican, Lucena City, Receiver/ katiwala/ salubong.
8. Jesus Santos, Dalahican, Lucena City, Receiver/ katiwala/ salubong.
9. Marietta Alvarez, Market View, Lucena City, Right hand of DA Fish Broker.

10. Anthony Ballejos, Brgy. 6, Quezon, Quezon, Fisherman, commercial fishing.
11. Amy Lucino, Brgy.4, Lucena City, Retailer, Free lancer.
12. Aning Abril, Pantoc, Lucena City, Retailer, Buys& exclusively deals with SMN Fish Broker, 50 years in business.
13. Francisco Sistual, Dalahican, Lucena City, Fish retailer, Does not deal with a broker but acts as a broker himself. Has 20 fisherman-employees.
14. Teresita Velasco, Key informant, Statistician, PFDA.
15. Romeo España , Key informant, Market checker PFDA.
16. Antonio Trinidad, Key informant, Market checker PFDA.
17. Ronald Villaverde, Brgy. 2, Lucena City, Wholesaler/ retailer.
18. Jay Villanueva, Purok 6, Dalahican, Lucena City, Labor, Employee of a broker.
19. Nora Magpantay, Mayao Crossing, Lucena City, Engaged in fish drying business.
20. Isidro Enuncillas, Dalahican, Lucena City, Retailer of dried fish, Deals exclusively with Mrs. Magpantay.
21. Fortunate Bebiro, Key informant, Market Supervisor, PFDA.
22. Mang Rodel, Bgy. Guisguis, Sariaya, biyahero.
23. Mang Jay-R, Bgy. Guisguis, Sariaya, biyahero.