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## The Determination of Contracts in Agricultural Economies

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# The Determination of Contracts in Agricultural Economies

## Abstract

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This paper aims to analyze how contracts are determined and modified given diverse agricultural settings and to examine the implications of these changes with respect to their efficiency, distribution and sustainability. The contract model presented here differs from previous contract models as the enforcement issues regarding contracts across various agro-climatic and output conditions are considered. Emphasis is placed on the effects of the shifts in production resulting from historical changes in both policy and production environments on the development contracts. Moreover, the consequences of the enforcement costs of contractual arrangements will be examined. Although much of the focus is on the rice economy, this paper attempts to provide an integrative description of the various agricultural contracts in different places in the Philippines. This will integrate the papers written on the contracts found in the fishing industry, the contract growing arrangements in Mindanao, and the contracts in swine, vegetable and mango production. Along with secondary data, the methodology for gathering data for this research includes rapid appraisal surveys, and field interviews.

Keywords:

Agricultural contracts, agriculture production, contract growing, contract model

# **The Determination of Contracts in Agricultural Economies**

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## ***1. Introduction***

The Philippine economy has evolved over time in line with the development strategies of the various administrations. Initially, a protectionist industrial strategy was established to favor import-substituting industries by means of tax exemptions, favorable credit terms, market protection and so forth. The situation however changed in 1990 with the implementation of an economic stabilization program supported by a stand-by credit facility from the international financial institutions. This paved the way for reforms in trade and investment that were subsequently expanded, leading on the average to greater (although uneven) welfare for all workers (Lanzona, 2000).

However, trade liberalization has not been felt significantly in agricultural economies because of continued government programs aimed at protecting the sector. The government's policy in agriculture remains protectionist, even as the reforms have seemed to have affected the other agricultural products, particularly fruits and vegetables, causing changes in the relative output prices of goods. At the same time, the country's agrarian reform program has also to a large extent brought about a redistribution of land ownership in various areas despite the limited amount of support services provided. This has resulted in a more active form of land market. More important, the subsequent movements in the land and labor markets, particularly in the form of greater land transfer in the form of land pawning and international migration, have resulted in changes in the relative cost of labor, land and capital.

Furthermore, the changes both in aggregate economic variables and in household composition and incomes have resulted in changes in the structure of contracts in the agricultural sector. Because workers have a considerable discretion over their actions, and because the actions of workers have an important effect on the landlord's expected profits, the landowner has an incentive to induce workers to behave in a way he would like them to behave. Since the behavior of the worker is affected by the relative output prices as well as the relative costs of inputs, the landowner, by altering the terms of the contracts he negotiates with the workers, not only can induce the worker to produce more, but also induce the worker to undertake activities that are favorable to the landowner.

In particular, the behavior of the worker is affected in important ways by the amount that he borrows, and the terms at which he obtains credit, as well as by the inputs he can sell, the goods he can purchase and the prices that he buys (Braverman and Stiglitz, 1982). Because of recent changes in the sector, one of the main features in agricultural arrangements might be the intensity of the interlinkages among land, labor, credit, and product markets. The landowner can become more often the supplier of

credit; he may more frequently purchase and market the output of tenant farmers; and he can more often sell intermediate inputs and even consumption goods to the tenant farmers.

Due to the recent changes in agriculture, the increased intensity of interlinked markets might also be accompanied by the increased use of permanent labor arrangements. Assuming a situation of labor shortage due to increased labor mobility, landowners can more expectedly tie workers to engage in longer, more extensive contracts. Product shifts can also make monitoring more difficult to undertake, making permanent workers more preferable. Workers close to subsistence can choose to engage in permanent labor arrangements instead of seeking other uncertain forms of employment both within and outside their present work locations. Permanent workers typically enjoy a significantly higher annual income (though perhaps lower daily wage rates) than a casual worker. In addition, permanent workers often get consumption loans, homesteads and other patronage benefits, while casual workers can be more mobile but face a great deal of uncertainty on the labor markets.

Finally, the increased commercialization and marketability of various agricultural products and inputs can cause changes in the agricultural structure itself. Assuming changes in technology even in terms of marketing and distribution, access to credit and hence to the credit market can be enhanced. Improving household conditions can also make the household's ability to offer collateral. Functionally, access to credit is equivalent to access to factors of production, thereby allowing households to become self-cultivators, landowners or capitalist through their optimal allocation of time.

The study aims to explain the determination of contracts found in diverse agricultural settings and examine the implications of these changes with respect to their efficiency, distribution and sustainability. The contract model in this paper differs from previous contract models in that the possible enforcement issues regarding contracts across various agro-climatic and output conditions are also being considered. A consideration of the shifts in production is taken into account as a result of changes in both policy and production environments, and their subsequent effects on the contracts. Moreover, the costs of enforcement of contractual arrangements will also be examined in terms of their impacts on contracts. As Coase (1937) has indicated, when enforcement of private property rights is costly or in a case where transaction costs are present, a market, and the associated contractual arrangements, may or may not be the best allocation system. Under this situation, a modified industrial and production organization may be a substitute for formal enforcement mechanism. These organizations then provide the context with which consequent contractual arrangements are enforced. The understanding of these organizations and the presence of transaction costs should then be considered as part of the theory of contracts.

For example, among the various contractual arrangements examined in the paper are agricultural land-labor contracts that have evolved in Central Luzon over time. The trend towards globalization first in the 1800s and then in the early 1990s appeared to have given way to three related structural changes in the agricultural economy that

continue to affect the economy even up to the present period. First, in agricultural areas not characterized by economies of scale, small family holdings became the main organizational form of production. Agricultural production in the Philippines, but not particularly in the Central Luzon, initially was dominated by collective state farming systems that were imposed at the start of the colonization (such as tobacco plantations), and then evolved into to small household farm systems that were created in certain areas at the end of the Spanish regime and prevailed up to the present. Farm lands in Central Luzon which at the late nineteenth century were essentially unoccupied and were cultivated immediately as small farm households devoted to staples. Second, sharecropping arrangements emerged as a dominant production relation in order to resolve the information problems that underlie much of the landlord-tenant relationships. This process also meant the elimination of the former intermediary between the landowner and the farmer cultivator, the *inquilino* (leaseholder), and in recent period the *kasama*. Third, because of imperfections in the credit market, the practice of land pawning has become crucial to the production process as farmers and moneylenders who own capital accumulated more landholdings to secure greater returns from the land. In the early 1990s, similar land pawning transactions were increasingly observed, but this time the development seemed to have been started by the agrarian reform program. Land pawning arrangements were induced to some extent by the restriction in the program that prevents the use of beneficiary lands as collateral in credit markets and eventually suppresses the land market. A land reform beneficiary may be able to meet only part of his (working) capital requirements in the credit market because of the unsuitability of unharvested crop and the land as collateral. Other farmers may be in a better position to provide the beneficiary with credit and actuarially fair insurance because of economies of scale of scope in supervision and informational advantages concerning the value of the tenant's unharvested crop. The major transformation in these periods then can be the unforeseen changes of property rights on land.

Although much of the focus is on the rice economy, this paper attempts to provide an integrative description of the various agricultural contracts in different places in the Philippines. This will integrate the papers written for this research project on the contracts found in the fishing industry, the contract growing arrangements in Mindanao, and the contracts in swine, vegetable and mango production. Along with secondary data, the methodology for gathering data for this research includes rapid appraisal surveys, and field interviews. The basic questionnaire for the rapid appraisal and field interviews is attached in the Appendix.

The remaining parts of the study consist of three main sections: The second section will present the model of contracts which takes into account both the principal-agent issues found across various farm production activities in rice economies. The model will consider how various types of contracts will emerge.

The third section will involve an analysis of the secondary data that will help support the hypotheses presented in the model. A history of the transforming contracts in rice will be presented. Rice is most fundamentally a production activity. In order to understand the whole set-up of contracts, from production to processing, the contracts

found in other products will also be analyzed. The last part will provide policy directions, particularly in making these contracts more efficient and sustainable as well as more welfare-enhancing to all households.

## 2. *Theoretical Models*

In the literature, there are two types of contractual models in agriculture. First is the principal-agent model which attempts to determine the effects of production uncertainty in the allocation of resources and distribution of output. The second is the set of models based on the presence of transaction costs in the evaluation and the monitoring of goods and resources. The evolution of the contracts thus depend on how transacting parties deal with uncertainty and the

### A. Principal-Agent Models

Most models of land-labor arrangements in terms of principal-agent relationships assume only one decision variable for the agent (or in this case the tenant). However, quite often, the agent controls more than one decision variable, especially when there are several inputs. A case in point is the decision of the tenant to pawn part of his land, while keeping a certain proportion of the land to himself. If the tenant were to pawn his land, there may then be funds available for other inputs and in general lead to an efficient utilization of the other inputs. Pawning the land thus allows possible receipt of future earnings presently in order to pay for the current interest expenses.

At the same time, land pawning has to be seen from the side of the pawner and the pawnee. For the pawner, as discussed above, the arrangement is an opportunity to access credit informally (Nagarajan, David and Meyer, 1992). In this view, the funds received from pawning are used for consumption and other household investments, separate from production. In the absence of support services, since these funds are fungible, some proportion can also be used for production. Without these funds, the amount spent for the inputs will obviously be lower as the household's savings will be spent for other household expenses. Moreover, if only part of the household's land is offered for the pawnbroker, the total production of household production will not be severely affected.

For the pawnee, this arrangement is a form of tenancy that aims to mitigate risks and improve earnings from the land (See Nagarajan, Quisumbing and Otsuka, 1991). It is a disguised form of subtenancy contract in which the pawnee implicitly pays the rent in the form of foregone interest earnings. Yet, the earnings he or she gets from the land is higher than the rents actually paid for the arrangement. Hence, the arrangement clearly benefits the pawnee.

For a given input,  $x$ , say land, labor or fertilizer, consider a case where the agent's pay is a linear function of output:

$$y = \alpha + \beta b - \rho C(x) \tag{1}$$

This payment scheme consists of three components: a fixed wage  $\alpha$ , an incentive pay  $\beta b$  where the magnitude of  $\beta$  measures the strength of the incentives, and costs derived from the use of the inputs, including the interest expenses from the use of inputs, in particular land pawning. The term  $\rho$  refers to the cost share of the agent to production which includes the land rents and interest rate set by the landowner or pawnee, respectively. Under this framework, the following contracts can be:

$$\left. \begin{array}{l} \alpha > 0, \quad \beta = 0, \quad \rho = 0 \\ \alpha = 0, \quad 0 < \beta < 1, \quad \rho = 0 \\ \alpha = 0, \quad \beta = 1, \quad \rho = 1 \\ \alpha = 0, \quad 0 < \beta \leq 1, \quad 0 \leq \rho < 1 \end{array} \right\} = \left. \begin{array}{l} \text{fixed wage/permanent worker} \\ \text{sharecropping/piece rate} \\ \text{fixed rent} \\ \text{land pawning} \end{array} \right\}$$

This model follows the “general model” of agricultural contracts in which land tenancy, labor employment, owner cultivation and land pawning are modeled together as substitutes along a continuous spectrum of contract choice (see Bardhan, 1984; Otsuka, Chuma, and Hayami, 1992). Because of this, the model will have to consider the role of credit and insurance contracts which are often interlinked with land and labor contracts. At the same time, since information is assumed to be costly, all dimensions of input contribution cannot be correctly measured and the efficient allocation of inputs and outputs cannot be achieved through a system of prices. As such, the contracts that specify both the output-share and the cost-share represent more ideally the incentives offered to the agent or tenant since a combination of contracts can be identified.

Suppose that the output  $b$  is a continuous function of input  $x$  plus a random noise in order to account for uncertainty:

$$b = B(x) + e \quad (2)$$

where the mean of  $e$  is zero and the variance is  $\sigma^2$ . Furthermore, let the agent’s utility from an uncertain income stream  $y$  be represented by the mean-variance form:

$$U = E[y] - r \text{ var}[y] \quad (3)$$

where  $r$  is the degree of risk aversion (Silberberg and Suen, 2001).

Given the assumed linear payment schedule, the agent’s net income from choosing input level is:

$$y = \alpha + \beta B(x) - \rho C(x) + \beta e \quad (4)$$

Expected income is therefore  $E[y] = \alpha + \beta B(x) - \rho C(x)$ , and the variance is  $\text{var}[y] = \beta^2 \sigma^2$ . With a mean-variance utility function, the agent chooses  $x$  to maximize

$$\alpha + \beta B(x) - \rho C(x) - r\beta^2\sigma^2 \quad (5)$$

The first-order condition for maximization is

$$\beta B'(x) - \rho C'(x) = 0 \quad (6)$$

With respect to the agent, the following conclusions can be noted:

*(a) Effects of changes in the incentive payment*

An agent's input depends on the strength of the objectives, i.e.,  $x = x(\beta)$ . Unless  $\beta = 0$  and  $\rho = 0$  (i.e., the inputs required are clearly specified in the model and contracts are completely enforceable and a fixed wage will be sufficient), or unless  $\beta = 1$  and  $\rho = 1$ , (i.e., the fixed rent contract holds), the amount of inputs supplied by the agent will not be optimal. Otherwise, simple basic comparative analysis yields the following results:

$$\frac{\partial x^*}{\partial \beta} = \frac{-B'}{\beta B'' - \rho C''} > 0 \quad (7)$$

The above results are based on the diminishing marginal benefits from increasing inputs, that is,  $B'' < 0$ . The principal can then indirectly influence inputs by manipulating the strength of these incentives. Nevertheless, raising the input level by strengthening the objectives leads to lesser marginal benefits from the contract.

*(b) Effects of changes in the cost share:*

Upon the settlement of the contract, the effect of contracts on inputs can be strengthened by reducing the marginal cost of inputs or by reducing the agent's share to the cost of production (see Bardhan, 1984). The former can be in the form of a technological change, while the latter can be in the form of some credit or production loans that allow the agent to mitigate part of the costs related to the access to funds. The latter effect can be derived from Equation (9) which suggests the following result:

$$\frac{\partial x^*}{\partial \rho} = \frac{C'}{\beta B'' - \rho C''} < 0 \quad (8)$$

A reduction in cost share of production will mean that the optimal contract entails farmers having greater access to credit or other forms of capital than they would have without their participation in the contractual arrangements. The availability of credit for example means a reduction in the short-term of the cost share of production to the tenant.

On the other hand, assuming that the principal is risk-neutral, the optimal contract either specifies a  $\beta$  and  $\rho$  that will maximize his share of the expected income:

$$-\alpha + (1 - \beta)B(x) - (1 - \rho)C(x) \quad (9)$$



subject to the following constraints:

$$\begin{aligned} \alpha + \beta B(x) - \rho C(x) - r\beta^2\sigma^2 &= \mu_0 \\ x &= x^*(\beta, \rho) \end{aligned} \tag{10}$$

The first constraint is the participation constraint: The agent's expected utility from working for the principal at least must be equal to his reservation utility. The second constraint is the incentive-compatibility constraint: The principal must design a contract such that it is the agent's self-interest to carry out the action which to be implemented. Substituting these two constraints into the objective function of the principal leads to the following maximization problem:

$$\max B(x^*(\beta, \rho)) - C(x^*(\beta, \rho)) - r\beta^2\sigma^2 - \mu_0$$

This yields the following first-order condition for this problem:

$$\begin{aligned} [B'(x) - C'(x)] \frac{\partial x^*}{\partial \beta} - 2r\beta\sigma^2 &= 0 \\ [B'(x) - C'(x)] \frac{\partial x^*}{\partial \rho} &= 0 \end{aligned} \tag{11}$$

where  $\frac{\partial x^*}{\partial \beta}$  and  $\frac{\partial x^*}{\partial \rho}$  are given by equations (7) and (8). Once the optimal incentive parameter  $\beta^*$  and  $\rho^*$  is determined from (11), the fixed wage  $\alpha^*$  is determined from the participation constraint.

From (11), the following types of land-labor contracts emerge:

i) *Share Tenancy*

The first term in the above equation refers to the marginal gain from raising  $\beta$  in the contract, and the second term is the marginal cost. If  $r > 0$  and  $0 < \beta < 1$  (and  $\rho = 0$ ), the inputs utilized will be less than optimal, as  $B'(x) > C'(x)$ , and so raising  $\beta$  will lead to greater efficiency, leading to a share tenancy arrangements. However, raising the incentive pay  $\beta$  will make the contract more risky, and thus given that tenants are averse to raising the marginal cost, the utility of the contract to the agent is reduced. Tenancy arrangements then can lead to a 50-50 sharing to square off the marginal benefits and costs.

ii) *Permanent Labor*

If the agents are extremely risk averse, the principals are risk neutral and  $\beta$  is restricted at zero, the optimal contract can mean a fixed wage as well as some provision of inputs, and only requires the setting of amenities that are given to the worker. The permanent labor contract or “attached labor contract” is then established as an employment contract for a crop season or a year (Otsuka, Chuma and Hayami, 1992). Permanent laborer are paid a fixed amount with various fringe benefits such free board and lodging and cheap credit (or a share of output or combination of fixed payment and output share with an agreed predetermined value adjusted equal to the worker’s reservation utility).

Unlike the casual worker who is employed to perform a specific task, the scope of the permanent worker’s work is not clearly specified although a multi-task contract is commonly agreed upon. The increased payment and the various benefits provided to the permanent worker and the longer run prospect for future benefits relative to the casual worker discourage the employee from shirking and cheating.

Moreover, while the permanent worker can get less of the residual farm profit than the tenant, his work incentive is not necessarily smaller as the risks in the production system increases.

iii) *Fixed Rent*

If the agent is risk neutral ( $r=0$ ), the marginal cost of the incentive payment will be zero, and thus the marginal benefit of share tenancy must also be zero. This means that the optimal contract will be a fixed rent with no payment incentive ( $\beta = 1$ ), and no cost sharing arrangement ( $\rho = 1$ ). In other words, there is no need for risk sharing, and the optimal contract will make the agent the full residual claimant to the output.

iv) *Land Pawning*

If we differentiate (10) with respect to  $r$ , and use the second-order (sufficient) condition for maximization, it can be shown that  $\frac{\partial \beta^*}{\partial r} < 0$  and  $\frac{\partial \beta^*}{\partial \sigma^2} < 0$ . Hence,  $B'(x)$  becomes equal to  $C'(x)$  as  $\beta$  approaches one, and  $r$  and  $\sigma^2$  approaches zero. Taking the total derivatives of (10), one can show that  $\frac{\partial \rho}{\partial \beta} < 0$ , implying the substitutability of these two terms. This means that as  $\beta$  approaches 1,  $\rho$  approaches zero, leaving the principal to carry the full cost of the inputs. Hence, land pawning arrangements can then be seen as a rational response to lower risks and uncertainty, as well as means of inducing the agent to participate in the contract. In this case,  $0 < \rho < 1$ , depending upon the types of interest paid, the leasehold rate, the cost of land and the output shares, in relation to the agent’s reservation utility.

In other words, as  $\beta$  approaches one, cost-sharing should be reduced for the pawnee, allowing her to pay less than the opportunity costs of the inputs. In effect, the agent (i.e., the pawnee or the prospective landowner) pays a fixed payment in terms of the foregone interest from the money he gives to the pawner, but in return receives the income generated from cultivating the land. Here, there is no incentive to shirk on the inputs as both parties are able to benefit from the transaction.

However, the principal (in this case, the owner of the land or the pawner) may have to contend with a lower income since in exchange for the credit afforded to him by the agent, he has to forego earnings from the land, or from lower leasehold rates. Thus, there is cost-sharing but not at the margin, or at their most efficient levels. The emergence of the land pawning can thus be inefficient due to laws that impose a restriction in the practice of land sales, which prevents markets from determining the prices of land and leasehold rates, and the absence of the government income support that would smoothen out the consumption of the pawners.

Because of these, there can be two reasons why the rent was lower for the pawnee and the share of the cost-sharing was substantially higher for the former pawner. First, the leasehold rate as set by the law and paid to the pawnee can be restricted to be below the market interest rates. Second, the cost of the land can also be valued below market rates.

A number of problems on the principal-agent exist (Bardhan and Udry, 1999). The most important deals with the assumption found in any general theory of agency which implies that payments received by the landlord and the tenant depends on all observable and verifiable information that is correlated with the unobserved random variable that affects outcomes. However, many contracts relating to return of the agent depends also upon the yields of other farms, area or weather. As shown in the next section, the enforceability of the contract is not as straightforward as the theory suggests. It is this particular issue that we now deal with.

## **B. Transaction Costs Models**

These models explain how specialization in trade can be hindered due to certain institutional factors. Gains from specialization in trade are possible and desired, but specialization requires agreement as to the terms of trade, and the enforcement of the contract. Trade almost always involves “asymmetric information”, i.e., one party of the contract knows more about the arrangement than the other party. In particular, one usually knows what one is giving up than what is about to be received. Contracting individuals then will have to consider whether the other parties are living up to the terms of the contract. Commodities often have many dimensions and are difficult to measure perfectly. Production and exchange involve many individuals, each with their own self-interest, and some may find opportunities to violate the contract. Because of this, what is expected from marginal analysis may not be necessarily realized.

Unlike taxes which can be analyzed through the usual market analysis, transaction costs are the lost gains from any trade due to the imperfect evaluation and monitoring of

the exchange, resulting from the heterogeneity of what is being exchanged. Under these conditions, Pareto optimality—the property where arrangements can no longer be modified in a way that can make no one worse-off while making others better-off—may not be achieved. However, contracts can evolve in order to realize the gains from trade despite the presence of these constraints. The structure of contracts can change to accommodate the realization of maximum gains from trade under varying constraints.

An example of the role of transaction costs in relation to the allocation of resources can be seen in the 1960 classic article of Coase. The nature of transaction costs in this case is the presence of “technological externalities”, a situation for instance where the production of one good is a negative input in the production of the other. The classic case is one where straying cattle owned by one farmer invariably trample on the neighboring farmer’s crop. In this situation, the social marginal costs are greater the private marginal costs. With the marginal damage caused by the cattle on the farmer’s crop, a positive difference between social marginal costs and private social costs of producing cattle,  $MC^s(x) - MC^p(x)$  exists. Assuming a fixed price of cattle, the production of cattle will be greater than what is socially efficient since the cattle producer will not consider the social marginal costs and just focuses on his/her private marginal costs.

Coase’s argument is that the above situation is only possible because the cattle farmer and the crop farmer have been somehow prevented from contracting with one another. A possible contract is for the cattle farmer to incur a legal liability, giving the right to the crop farmer to maintain his product. Any cattle farmer who does not pay damages for the trampled crops will be held legally responsible for the costs.

This model has two main features. First, the payment by the cattle farmer to the crop farmer for the resulting damages constitutes merely a “transfer” of endowments or assets only, and not a change in the production possibilities or utility preferences. This differentiates this particular model with the previously discussed principal-agent model which ultimately leads to a modified production and output arrangement or scheme. Second, the reallocation of the endowments will ultimately depend on which party is able to secure the right to own, decide and work in a particular activity. In which case, though the contract can restore Pareto efficiency, it does not mean that the gains from the contract will be equally shared. The importance of rights in this model is in the way the acquisition of these rights affect the distribution of resources.

If transaction costs were zero, the foregone losses from trade would have also been zero. The parties involved would not have any incentive to forge contracts in order to extract mutual benefits. However, because transaction costs are not zero, different contracts can have different negotiations and enforcement costs associated with them. Moreover, mergers or outright purchases of one farm by another farm can be used to internalize the social costs produced. In which vertical integration can be used in order to limit the market costs of engaging with other resource owners through markets.

### ***3. Examples of Principal-Agent Models***

#### *A. The historical evolution of land-labor contracts in Central Luzon*

This section analyzes the historical emergence of the various land-labor contracts in Central Luzon, based on the above principal-agent model. The late nineteenth century was period of dramatic integration of commodity markets as railways and steamships experienced lower costs (North, 1958; Fletcher, 1958), and Europe moved towards free trade in the wake of the 1860 Cobden-Chevalier treaty (Williamson, 1997). These events resulted in trade-induced price shocks that affected most of Europe. A clear example is the drop in grain prices, which fell by forty-five percentage points from 1870 to 1912 (Williamson, 1997). Furthermore, prices of all tradable goods declined throughout the world significantly.<sup>1</sup>

More importantly, a convergence in the living standards of countries was noted at least in most of Europe and America (Williamson, 1997). Economic theory argues that as products are traded here and abroad, product price differences across countries will be reduced and later equalized. This means that, if the (previously higher) grain and other product prices in Europe declined, the (previously lower) prices of other products in their countries of origin would then be higher after trade. Such price movements then serve as incentives for promoting production in the exporting countries (such as the United States). Furthermore, the costs of imports are expected to be lower as the trade restrictions are removed, making it easier to countries to industrialize.

It is not obvious whether countries in the so-called Third World and in Eastern Europe benefited from these changes. In the process, a global inequality between those who were actively engaged in trade and those who weren't affected may have occurred. Nevertheless, in the case of the Philippines, there were also significant changes. With the reduction of transport costs, two other main forces propelled the Philippines towards greater trade openness (see Corpus, 1997). First, the entry of foreign trading houses, mainly British and American, stimulated trade by providing credit mainly to planters, particularly in the sugar and abaca industries, to ensure outgoing cargo. While the trading companies were collaborating with local planter-entrepreneurs to produce more goods for exports, they were also bringing in and selling foreign goods from abroad.

Second, in 1828, the Spanish government created a board of tariffs, whose function included the formulation of a new set of tariff schedules. The previous tariff rates were based mainly on the origin of goods, with Spanish and Mexican imports being charged with higher rates relative to those coming from Asian countries. With the entry imports coming from other countries, the new set of tariffs implemented in 1832 had the

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<sup>1</sup>The decline in the tariff barriers induced by the General Agreements on Tariffs and Trade (GATT) after the 1940s, which triggered globalization movements of the last quarter century, was measured by World Bank to have come from about 40 percent in the late 1940s to 7 percent in the 1970s, a drop of roughly 33 percentage points. However, even this spectacular drop is smaller than the estimated forty-five percentage points decline in trade barriers between 1870 and 1913, resulting from the improvements in transport (Williamson, 1997).

following objectives: to increase government tariff revenues mainly from goods coming from non-Hispanic countries; to protect and promote agriculture and crafts; and to expand trade. To achieve these goals, the application of new tariff rates were based on (a) the nature of commodities, thereby replacing the existing ad valorem system to a system of specific duties; (b) the country of origin; and (c) the flag of the carrier ship. In order to protect Spanish interests, the new set of tariffs in effect charged lower preferential rates on Spanish ships, favoring goods brought in by Spanish vessels.

This shift in the tariff schedules had a significant effect on imports brought into the country. Not only did Spanish imports increased, imported goods from other countries also increased and in sum even surpassed Spain. According to Corpus (1997), European cargoes for Manila were stocked in London to be loaded later on Spanish ships, or were first brought to English colonies like Hongkong and Singapore and then transferred to Spanish ships enroute to Manila. Consequently, in 1894, the top imports come mostly from Spain (37.6 percent), followed by England (25.4), China (16.5), Germany (6.8) and the United States (2.5).

Exporters on the other hand benefitted from the lower transportation costs found worldwide. In 1890, Philippine exports were expanded to other countries, such England (40 percent), and the United States (30), aside from Spain (22) (Connolly, 1992).

Economic theory predicts that the growing importance of trade in goods would have also resulted in substantial trading of different factors in markets in the domestic economy. However, the basic features of agriculture make it difficult to trade factors of production through unknown market-based channels. Moreover, because of varying agricultural conditions, major differences across regions in the distribution of labor and land contracts are expected.

In the early nineteenth century, during most of the Spanish occupation, given the substantial power of the state, all lands whether occupied individually or communally at the time of the conquest belonged to the royal domain. Subsequently, these lands were partly assigned to some prominent *indios* who settled in or adjacent to new communities established by the Crown's representatives. These lands could be transmitted to legitimate heirs, but could not be sold without consent of the fiscal of the *Audiencia* (McLennan, 1982). Title lands were held in fee tail and ostensibly reverted to the crown after the failure to cultivate the land for a specified period of time.

It was in this milieu that the dominance of estates, including those owned by the Church, emerged. Similar to almost all countries during the period, large farm systems were established and maintained over a long period of time in the Philippines. Land grants were given to private individuals and religious orders (de la Costa, 1964), and by 1700, most of the best lands were placed under the control of large estates (Cushner, 1976). To reinforce these estates, the Spanish government initially instituted the *encomienda* system—the right of the landowner to collect tribute from workers—and then exempted hacienda workers from the imposed state obligations, the so-called *reserva de polo* or *casa de reserva* system (Roth, 1982; Cushner, 1976). The latter effectively

distributed low-cost workers to these haciendas, similar to the repartimiento system used by the Spanish in Latin America to provide large landowners with drafts of corvee labor.

However, neither the establishment nor the persistent presence of large farms was due to any economic rationale or the existence of scale economies in agricultural production (Binswanger et al., 1995). The landed estates were created because of government intervention in favor of large landholders by means of land grants and differential subsidies and taxation. As the government gradually withdrew these privileges, these estates eventually disintegrated. With increasing trade in the late nineteenth century, the leaseholder or *inquilino* system became the dominant tenurial arrangement (Cushner, 1976; Roth, 1982), especially in the landed estates.<sup>2</sup> The *inquilinos* are usually born in the area, and are able to bequeath their position to their children. The land is rented to them for a fixed annual payment.<sup>3</sup> Cushner (1976) noted that the *inquilinos* were considered socially superior to the permanent and casual workers and to small farming arrangements found in the borders of the estates. By association, the estate owner is represented by the *inquilino* who exercise arbitrary power over certain grazing and forestry lands that the natives normally use.

The key feature of this arrangement is that the *inquilino* is made to carry all of the risk in production. Cushner (1976, p. 50) indicates the following:

The use of the *inquilinos* was a method employed by employers by owners to reap profits from the land without having to work it themselves. If the land needed clearing, the *inquilino* was allowed to cultivate the land for four years free of charge. He then began paying a fee, in either specie or kind, called a *terrazgo* in the eighteenth century. The *inquilino* in reality rented land on a lease basis. He was sometimes called an *arrendatario*, or renter, but this was usually used for renters whose lease was for nine years.

The leasehold system thus emanates from the cultivator's initial investment in effort, and being a leasehold arrangement with a fixed rent, the right to cultivate is dependent on the quality of work he provides thereafter. Even then, the lease contract is not necessarily permanent, thus making it a risky venture.

Several features characterize the agricultural sector in developing nations that can be found not only in the past but in the present as well (see Binswanger and Rosenzweig, 1987). These conditions can be proven to make share tenancy superior to either leasehold or fixed wage arrangements (Otsuka, et al., 1992). First, agricultural production is characterized by uncertainty both in the volume of output and its market price. With greater exposure to the world market, uncertainty is actually increased since market prices tend to fluctuate more. Moreover, because of the risks involved, formal insurance markets are absent, necessitating the creation of varied forms of social

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<sup>2</sup> Clearly, sharecropping as well as other labor arrangements can exist at the same time. However, a difference exists between a pure labor contract and a land contract incorporated within a labor arrangement. In this section, the latter, i.e., land tenancy contract interlinked with labor, credit, and insurance contract, is analyzed.

<sup>3</sup> Roth (1982) indicates that there are two ways of charging rent. On irrigated haciendas, a fixed number of *cavans* of *palay* was paid for each unit of land. On the unirrigated areas, rent was also paid in *palay* but was fixed based on its value given the price of the *palay* at harvest time.

organization in agrarian communities to insure farmers against unforeseen calamities. Second, agricultural production is affected by high enforcement costs of labor employment which limit the growth of farm firms or plantations based on unattached hired labor. Unlike industrial production where inputs can be mobilized, agriculture is constrained by seasonal time sequences and location specificities. Hence, different agricultural activities cannot be performed concurrently in one or a few locations, and the division of labor into managerial and supervisory functions and direct labor may be unprofitable, given the difficulty of observing effort. For the latter case, the difficulty of monitoring hired labor becomes greater in the face of more complex farming processes. Third, information is very costly. The transmission and the acquisition of information involve time and resources. Usually, information can only be acquired cheaply through the final product or consumption decision one is concerned about.

In Central Luzon, from 1890 and onwards, as most of the lands were already being cultivated, tenurial arrangements were converted from leasehold to sharecropping with the complementary credit arrangements<sup>4</sup> (McLennan, 1982; Fegan, 1982). This transition had profound effect on the region's social development. The arrangement was established as a partnership (or *kasamahan*) between the landowner and the tenant. The landowner provided the land and advanced cash for expenses, while the tenant contributed his family's labor and other assets, usually a buffalo and some tools. After deducting the costs of seeds and some hired labor, they shared the net crop equally.

Given the conditions found in the agricultural sector, there are a number of advantages of share tenancy over leaseholding as well as other types of contracts (Otsuka, et al., 1992). First, since the payment to the owner is based on the observable output, the landowner's costs of the monitoring the tenant's effort is minimized. The use of share tenancy is actually prevalent in areas where the probability of detecting a tenant's shirking is low, due to the landlord's inexperience, the lack of familiarity to his workers, and the uncertainties in production. In other activities, as long as monitoring is possible and not costly, a fixed wage is likely to be used. Furthermore, in societies where the loss of reputation is a sufficient deterrent for cheating, the use of share tenancy may be limited. However, as markets became more prevalent, reputation became less important as individuals can migrate to urban areas and live in anonymity.

Second, the choice of a share rate tenancy over a fixed rate is also based on the merit of sharing production risk under this contract given the tenant's risk aversion. If the tenant were not averse to risk, the fixed rate would have been preferred since the cultivator is able to earn higher incomes, and acquire the residual rent. If the tenant is risk averse, he will prefer share tenancy to leasehold because of the smaller income variability under the former than the latter contract. Under share tenancy, the tenant is willing to pay a risk premium to the landowner who will have to share part of the risk. Hence, a lower expected income under share tenancy because the rent paid to the landowner is greater. Nevertheless, risk is minimized under this contract.

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<sup>4</sup> In contrast to other farms in the Philippines, there were no large plantations in Central Luzon. Small farm landholdings were the dominant arrangements.



Third, share tenancy offers the tenant some dynamic advantages. Because both tenant and landowner both benefit from a reduction of risk, both will be open to adopting modern technology that reduces uncertainty. As long as modern technology increases efficiency relative to traditional production processes, tenants under a share contract will tend to benefit more from its use. Landlords meanwhile will be willing to use modern technology, as long as the gains from doing so exceed the optimal losses that can possibly occur.

The efficiency of the share tenancy can be gleaned from Table 1, which was taken from a national survey conducted in 1902. This table is used not to describe the conditions in the late nineteenth century agriculture but to show in a general sense the dominance of share tenancy to leaseholding.

This table is divided into two panels. Panel A shows the distribution of farm sizes, and Panel B features the land arrangement for the same areas. There are several important points from this table. First, roughly 45 percent of the farms throughout the whole country surveyed were less than three hectares. Furthermore, farms between two and five hectares had the highest percentage at 22 percent. Second, note that the leasehold contracts were the least used arrangement, and were employed mostly in the larger farm sizes. Owner cultivation was the most widely used type of land arrangement, but these were mostly the small cultivation type farming. Share tenancy was found in 19 percent of the farms, with a slightly higher average farm size than the owner-cultivated farms. Third, most of these farms were actually not cultivated fully. The highest percentage of cultivation was the leasehold farms at 54 percent, followed by share tenancy at 50 percent and owner cultivation at 46 percent.

One can surmise that the leasehold arrangements were found primarily in the commercial type plantations that were now found only in limited areas in the country. The leaseholding cultivators can thus be presumed to be less risk averse, and because of economies of scale, expected to be more efficient. Owner cultivation and share tenancy may be more identical in terms of production processes, and the most prevalent. Nevertheless, note that share tenancy is able to take more advantage of economies of scale with its larger farm size, and can be seen to be more efficient as a greater percentage of the land is cultivated.

The share tenancy contract can thus be viewed as solution to a principal-agent problem where the principal (or the person who possesses a certain objective) has to hire an agent to perform certain tasks necessary for the attainment of the objective. A problem in this type of relationship exists since the principal, in this case, the landowner, should motivate the agent, or the tenant, to act for the landowner's benefit rather than following self-interest. The share tenancy contract is seen as a solution to the problem because of its ability to provide incentives for the tenant to report truthfully to the principal on the production conditions they face and the action they take, and to act for the landlord's benefit as well his own.

This discussion suggests that, with the gradual weakening of the authoritative Spanish state due to the greater commercialization, the Philippine agricultural sector should undergo significant structural changes. Such changes were evident in Central Luzon, particularly in the rice areas. The Philippine rice hacienda, as a system of resource and labor allocation, first emerged on the friar estates in the area of Manila Bay in the late eighteenth century. Induced by expanding commercial trade in sugar and rice, large haciendas began to lease pasture and idle lands to agricultural entrepreneurs, especially in Northern and Southern Luzon. Hence, the land arrangement established by large landowners was primarily with leaseholders (*inquilinos*), who in turn hired permanent laborers paid on either a fixed rate or piece-rate basis. For the leaseholders, the main attraction of this contract was the claim on the residual profits; and for friars, the lease payment plus the greater care and effort exerted by the leaseholder were enough to engage in this contract.

The idea of the landownership at that time carries with it a certain quasi-political authority over the *inquilinos*. Hence, while there was already some form of share tenancy existing, these were primarily labor contracts, primarily labor exchanges, and no land arrangement, intended mainly as a device to minimize monitoring and turnover costs. The control of the land remained with the friars or later with the so-called caciques who leased their land to agricultural manager.

Nevertheless, from the unoccupied lands, called *realangas*, some were assigned to the natives. This was the agrarian reform of the period. The lands awarded to the peasants were called pueblo lands, as distinguished from haciendas owned by the friars and caciques. Moreover, these lands were not demarcated and were not titled to the occupants. These grants were given as *mercedes*, or favors from the king.

Furthermore, in 1891, a new Philippine tariff system was imposed which was highly protectionist and Hispanic in nature, i.e., exempting Spanish goods and ships from duties and increasing duties on foreign goods (Connolly, 1992; Corpus, 1997). While Corpus (1997) cites some literature stating that this only aggravated the already serious level of smuggling and fraud, the trade liberalization process was gradually abated right before the eve of the Philippine revolution.

The situation in this region at the end of the 19<sup>th</sup> century was characterized by cultivation of Central Luzon and the indirect exploitation involving small landholdings owned by a native upper class who were made responsible for delivering labor and commodities to the Spanish authorities. The institutional changes were gradual, but ultimately, as will be shown, led to the three structural effects: the break-up of the dominance of estates; the rise of sharecropping tenancy arrangements; and the emergence of land pawning.

The Chinese mestizo, even during the 18<sup>th</sup> century, began to rise to economic power. The Philippines was beginning to feel the impact of a commercial revolution based on the export of such crops as sugar, tobacco, and indigo. Moreover, at an even earlier date the consumption needs of Manila were supporting a lucrative internal trade. Chinese eventually gained control of the trade routes, linking Manila with Central Luzon.

Because of this, the friars leased land to the Chinese mestizo class, comprising a dominant part of the *inquilinos*. In the process, this lease arrangement along with the with the emergence of the social business class led to the break-up of the well entrenched estates and state farming managed by the friars and caciques.

Many of these mestizos and some of the traditional cacique later invested their wealth derived from commerce and inquilino operations in the purchase of land by extending credit to the tenant. For the duration of the loan period, the peasant who possessed the land engaged in sharecropping with his creditor. If the peasant failed to repay the loan, he relinquishes his claim to the land to the creditor. However, from an economic perspective, this exchange can be seen as mutually beneficial. The peasants were willing to engage in such arrangements since this gave them access to capital and risk-sharing options with the creditor. This possibility for risk-sharing is a central feature not found in the leaseholding or *inquilino* system.

Finally, legally or not, mestizos acquired land through a money-lending device called *pacto de retroventa*. In this arrangement, the moneylender secured the protection of their loan by taking immediate control of the land. Even by 1866, the influence of *pacto de retroventa* in the rural areas, particularly in Pampanga, Bataan, Manila and other provinces, has been noted to be profound, making it impossible to determine who actually owns the land. The Spanish regime eventually had to give up any measure to prevent it and decided to legalize by giving it official sanction in the Civil Code of 1889 (Lynch, 1988).

The acquisition of the land through the *pacto de retroventa* in turn led to the following developments. First, land ownership paved the way for the social acceptance of the mestizos by the caciques and finally supplanting the most traditional elite in those areas most characterized by commercial activities and cash cropping. Eventually, though these lands were not consolidated by the mestizos, large tracts of land were acquired.

Second, the acquisition vastly extended the use of share tenancy or the *kasamahan* system. Commercialization and tenancy however did not cause one another, or preceded each other. Instead, both flourished simultaneously.

Third, because acquisition depended on money-lending activities, the pattern of land ownership can be described as “scattered holdings”. Ultimately, a few landholding classes were able to consolidate their power through the accumulation of land because of the seemingly low costs of these lands relative to the gains earned from it . This then completes the three structural changes discussed in the model found in the previous section.

The key question however is why the landlords in the first place were able to consolidate the land. Based on the previous section, the emergence of land pawning may have evolved from the failure for the state to define the rights for both the landowner and the workers, and the need to secure adequate production inputs at the crucial periods, especially for land owners who were efficient in production. The difference between the

returns to the land and the minimal costs of acquiring them became a crucial incentive. Moreover, the importance of these rights would not have been necessary if labor had been very productive, and if there was certainty in the accomplishment of the contract, particularly on the part of the tenant.

Historical data actually indicate significant uncertainty in securing and maintaining workers. There are two sources of uncertainty. First, there was a significant migration to urban areas during the period. Table 1 shows the sources of origin of migrants in Manila by the year 1893. There are a number of reasons for migrating to the urban areas. The most significant may be the promise of “greener pastures” in the areas where trade and markets are thriving. In the absence of any legal right or usufructuary rights to recover the land they might have lost, along with the other compensation they can get from the land, the individual would generally expect to earn more in the urban areas. However, if net benefits of staying within a contract are greater than net benefits of leaving such a contract, then one would rather stay, even if this decision entails the loss of perhaps even more individually beneficial arrangements.

Note that while migration was substantial in other areas, it was lower in Central Luzon. Presumably, because the land arrangements were mutually beneficial, there were no incentives to break the contract. The table may thus be an indication that the sharecropping arrangement as well as the succeeding exchanges between the worker and employer and enormous costs of moving made the option of staying in the farm as beneficial, if not more profitable, than migrating to Manila. In any case, there continued to remain the possibility migrating, making labor less specialized and skilled in the areas of origin.

The second and perhaps more compelling source of low labor productivity was the health situation. A commonly unexamined reality that confronted the country during the period was the high frequency of epidemics afflicting the people, especially in the rural areas. This includes a range of maladies from malaria, smallpox, tuberculosis, dysentery, measles, beriberi, typhoid fever, influenza, to cholera. A number of reasons contribute to this high level of health problems. One was the deficient sanitary condition in these areas. Another was the lack of a secure, potable and unpolluted source of water, which accounted for the spread of cholera, dysentery, typhoid fever and other enteric disorders. Third reason is nutritional deficiency, a condition that is prevalent among the poor.<sup>5</sup>

The effects of mortality on the population can perhaps be viewed in Table 2, which shows the inter-censal population growth rate in the Philippines and Central Luzon from 1818 to 1896. Note that in the early half of the century, a substantial increase in the population can be noted, but this was followed by sharp declines at the end of the century. Gealogo (1998) attributed this decline in the population growth rate to a “crisis mortality when violent epidemics of smallpox and cholera created depopulation

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<sup>5</sup> Larkin (1993) narrated that the barrio people in Pampanga were at the time of the Philippine revolution reduced to eating boiled banana stumps. The food scarcity felt during the years 1896 to 1900 was aggravated by several years of drought as well.

experiences greater than the society can bear.” In Central Luzon, the decrease in the population growth rate in the same period was even greater. Since migration was shown to be almost insignificant at the same time, this decline can then also be attributed to a high mortality rate.

The poor health conditions might have had three major consequences. First, labor productivity was low, making it more difficult for the tenant to assert their right to claim the land and to acquire capital from the available credit markets. Second, the absence of any health facility might have induced people to migrate towards areas where such facilities exist. Third, the uncertainty in the supply of labor, leading to the “commitment problem” might have drawn landowners to acquire land, and be in control in periods when unforeseen events unfolded.

The failure of the state to provide for adequate public goods and the well-defined rights to the workers at that period to some extent can be made culpable to this problem. This strengthened further the reciprocal relationship of the landlord and the tenant. This weakness of the legal system and the lack of support given to labor productivity increased the tenant’s vulnerability and dependence on the landlord, who in turn felt a greater need to control and to accumulate land as a way of mitigating risks.

Although globalization and increased capital mobility again emerged in the mid-1980s, the changes in land-labor contracts in the rice economies were attributed to a large part to the implementation of the agrarian reform program. Similar to the 1800s, it was difficult to liberalize the sector because of some protection from the government.

Large ownerships by select individuals continued until the twentieth century. This changed however when the land reform program was implemented under different Presidents dating back in the 1950s. The major land reform program under the 1972 Presidential Decrees effectively converted share tenants into leaseholders or amortizing owners. This situation became similar to our history during the leasehold systems of the *inquilinos*. However, under the land reform program, the beneficiaries were not allowed to lease their land to others. The land reform beneficiaries have been granted usufruct rights, but not the right to transfer land, through subtenancy arrangements or through sales, except to legitimate heirs.

There are two emerging contracts that can be attributed to the implementation of agrarian reform. First is the permanent contract, known as *kasugpong* in Central Luzon (Hayami and Otsuka, 1993; Otsuka, Chuma and Hayami, 1993). When share tenancy is not allowed, as is inferred in the agrarian reform programs, permanent workers became an option. The landless tiller is offered a higher utility when he engages in permanent labor contract, relative to casual labor employment. However, since permanent labor contracts are imperfect substitutes for share tenancy, this will be less efficient than tenancy contracts or owner-operated farming. Permanent workers are examples of moral hazard problems, which will require additional amounts of supervision and monitoring costs in order to solve.

The second emerging contract is land pawning. The weak support system of the government contributed to the rise of these land arrangements. The declining profitability of rice farming due to declining rice prices, and increasing overseas employment opportunities has drawn more investments in human capital and caused an increase in the demand for investments. At the same time, financial paucity raised the demand for consumption loans.

Nagarajan, David and Meyer (1992) claimed that land pawning is primarily a credit arrangement where land is used as a collateral for loans intended for non-farm investments, including the financing of overseas employment and education investments. However, Nagarajan, Quisumbing and Otsuka (1992) also hypothesized that the pawning contract as a disguised form of tenancy and subtenancy, similar to the model presented in the paper. It is likely that both motives can exist at the same time. In this case, land pawning can be seen more in more productive irrigated areas, but at same time utilized by households in need of immediate cash. This means that the land pawning is caused likely by the difference between the returns from the land gained by the pawnee and low leasehold rents demanded by the pawner.

A rapid appraisal in February 2003 by the author of two different villages in Munoz, Nueva Ecija yielded the following results. First, land pawning was more prevalent in the irrigated village (roughly equal to 80 to 90 percent of the total number of households) compared to the less favorable village (amounting to only 40 to 60 percent of the total number of households). The benefits to the pawnee from such a contract apparently is greater in the more productive areas. The risks and the variance of income are limited in the favorable area, thereby increasing the demand for such contracts.

Second, the contract would usually last for three years, after which time the pawner recovers the land after paying for the credit. The usual amount of the loan in the favorable area was P120,000 per hectare, payable in three years. This rate is roughly based on estimated (net) income of P20,000 per hectare per season. The rate is substantially lower than the market price of land which is P500,000 per hectare. At the same time, the foregone interest earnings from acquiring the land is lower than the leasehold rate of 12 cavans per hectare per season. The difference between the value of pawned land and the market price of the land, and the difference between the leasehold rate and the interest earnings foregone are the reasons the demand for the transaction exists. The earnings from the land between P10,000 to P20,000 per hectare are greater than these costs.

For the pawners, the principals in this arrangement, the reason for engaging in the transaction was the need for cash in the absence of the support services from the government. As Nagarajan, David and Meyer (1992) indicate, loans from pawning out is used mostly for overseas travel, education and medical purposes. In the process, however, they give up their piece of land at a price lower than the market price, and they forego an income higher than the market interest rates. In this way, they share in the costs of the pawnee. In cases where the pawner is not able to pay the principal of the

loan, the contract is continued to more than three years until the loan is paid. This means that the cost sharing arrangement remains.

Third, in cases where the owner who pawned in the land has no worker to bring in to the land, the farmer who pawned out the land ends up being the worker. In such cases, the usual arrangement is share tenancy, although there have been reported some fixed wage arrangements. Under situations where land is scarce, the pawning contract thus involves output sharing as well as a way of guaranteeing the continued presence of labor as well as of sharing risks. This is consistent with the view that pawning contract is subtenancy contract that limits the risks of the pawnee.

Fourth, the persons who pawn out their land in most cases leave half of their owned land for their own production. In these cases, part of loan from pawning ultimately affects their production and improves the use of the inputs in farming. This means that pawning is not just a credit arrangement, but also a way of sharing risks since the pawnee by providing credit helps to smoothen the pawner's consumption needs and reduce the risks of production.

Finally, in the less favorable area, the households are able to engage in certain non-rice production. Since the production risks are more significant, share tenancy arrangements become a more viable option than land pawning. The investments are usually divided more definitively between capital and labor.

The recent land-labor contracts found in Central Luzon have strong similarities with previous land-labor contracts stretching back to the nineteenth century. A common thread runs through all these arrangements: the importance of risk sharing, the interaction of a cost and output shares, the value of support services and the ineffectiveness of legal restrictions in the face of market forces. This propensity for state controls could possibly lead to inefficiencies and inequitable distribution of assets in the agricultural structure. First, in lieu of share tenancy, the emergence of permanent worker contracts that are similar to those found in landed estates before the break-up of lands into small household farms in the nineteenth century. Second, the widespread use of land pawning can eventually lead to the consolidation of the land by former large landowners.

The net effect of land pawning arrangements is a movement from land abundant, financially deficient household to labor dependent and capital-owning households. It is not clear whether these are necessarily efficient or are simply second-best response to the imperfection of capital markets. Such land redistributions and eventually the unequal distribution may have been avoided had the state (including the succeeding regimes) played a more active role in addressing these issues. In particular, the government could have provided further means of improving and maintaining labor productivity. The substantial migration rate towards Manila was a clear indication that people were looking for better incomes either as a worker or a producer. Also, this meant that migration was being used to match their own individual preferences for the types of goods and commodities available in Manila and other countries.

More importantly, the poor health conditions in the country at that time made investments based on labor productivity alone impossible. In the absence of any guarantee that the severe disabilities will not threaten production and long-term commitments, there was greater incentive on the part of the tenants or recent land reform beneficiaries to give up their land in order to obtain capital and insurance from further calamities. This made it possible for the elite and to acquire the land that they developed.

### *B. Mango, Vegetable and Swine Contracts in Central Luzon<sup>6</sup>*

Similar to rice production, other forms of agricultural production face risks such as rain, pests and diseases, price risks due to variability of input and output prices. Such risks are then shared by the principal and the agent. Through such contracts, farmers are able to diversify, if not insulate themselves from these kinds of risks.

Under the output-sharing scheme, the grower (or agent) share in the risks is associated with price variability of output. In contrast, under the leasehold contract, except for the risks involved in case of deterioration or death of trees or swine which the farmer faces, all risks are borne by the contractor (principal). In mangoes, for instance, contract spraying and 50:50 sharecropping of mango is the best available mode of production to generate income for mango growers and at the same time harnessed the technical expertise and ensure a reasonable return for contractor's capital.

For most of the agricultural production, including rice as well as livestock, there is always a choice between small scale (or backyard) or large scale (or commercial) production. For instance, in swine production, small scale hog-raising is the most important segment of the hog industry and will remain as the dominant production scheme considering the constraint in capital of farm households. For large scale arrangement, the arrangement is based on integrator type of contract, similar to a fixed wage contract. The company advances all feeds, piglets, and technical assistance under strict production management. Growers provide the facilities such pigpens and equipment, labor and secure the necessary business permits, in return for a fixed payment rate plus additional incentives in case of good performance. The grower in effect can be rewarded or fined on the basis of observed performance.

In contrast, backyard raisers (agents in this case) take charge of raising animals up to marketable age and establish their own contact with traders in marketing their produce. The backyard scheme is a modification of the "paalaga" system wherein the farmer grower provides housing, labor, light and water utilities and raised the pigs for 120 days (4 months) more or less. The trader or contract buyer (principal) provides the feeds or cash advances has the exclusive privilege of marketing (buying-back) the produce at prevailing market price or sometimes lower or higher by one or two pesos. The 50:50 and 60:40 sharing schemes are the most prevalent arrangement wherein a farmer-grower shares 40-50% of net income after all expenses (feeds, cash advances and cost of piglets) have been deducted and the remaining portion goes to the contract buyer. There are no

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<sup>6</sup> This section is drawn from de la Cruz (2003).



technical performance standards to be met by the grower under this contract scheme. This kind of arrangement ensures the trader/middleman a steady supply of animals for trading or slaughtering.

In the case of mango, contractual arrangements have flourished after the introduction of commercial flower inducers which has solved the problem of seasonal fruiting or biennial characteristics of mango, thereby increasing the productivity of mango trees and making possible the production of mango almost throughout the year. Because the technology is relatively new, lack of technical knowledge and limited capital has encouraged farmers to seek contract-spraying services of sprayers or sprayer-traders.

There are three types of contract in growing, namely: i) leasehold contract ii) output-sharing scheme and iii) contract buying. Under both leasehold and contract sharing arrangements contractor performs production activities such as flower induction, pruning, deblossoming, foliar fertilization, pest control, fruit bagging, safeguarding of the trees, harvesting and marketing. In addition, the farmer-grower performs such other activities like irrigation, fertilization, pruning, weeding and other cultural management practices. Leasehold contract consists of fixed payment to farmers ranging from P 200.00 (for small sized trees) to P3500.00 per tree (for century old trees) in exchange for temporary ownership of trees for a period of one year or more. Under the output-sharing arrangement, the gross harvest of fruits is shared between the farmer and the contractor under 50:50 or 40:60 ratio. On the other hand, contract buying contracts, similar to land pawning and other forms of cost sharing contracts, entail principals (contract buyers) who will specialize in the marketing of mango fruits beginning with the assembly of fruits during harvest time, provision of harvesting and packaging materials, exporting and selling of fruits to final consumers.

Among the three types of mango contract arrangements, output-sharing is the most popular and has flourished since the advent of flower inducers. This involves contract spraying which provides a cushion for mango growers with financial constraints, limited time or inadequate knowledge on cultural and management practices of mango trees. Contract spraying ensures marketing outlet and guaranteed returns to farmers. Contractors (principals) on the other hand, exercise input control to minimize costs and risks and maximize profit as it expand volume of production to attain economies of scale. Both mango grower and contractor gain from the contract arrangement although most of the time the contractor (sprayer or trader) benefits more because he is able to dictate prices of output to farmers and is more knowledgeable of supply and demand situation.

In the case of vegetables, contractual arrangements are confined to a small or limited scale. Usually it is limited to vegetables for export such as onion and okra or for off-season vegetables such as tomato, watermelon or vegetables for processing such as cucumber. The usual contract is a cost sharing type that involves the exporter (principal) who finances production including the provision of seeds, fertilizers, chemicals and technology. The company becomes the exclusive buyer of the output at pre-agreed price. As a requirement, the farmer (agent) strictly adheres to the cultural and management practices recommended by the company.

New production and marketing systems are actively operating to facilitate minimum types of contracts in vegetables. The interactions between land, labor, material inputs and output markets result in varied levels of efficiency associated with various contracting systems. Because of production risks such as seasonality, perishability, labor and material intensiveness of cultivation, production and marketing tie-up with firms or traders has gained wide acceptance in vegetable production. This tie-up was necessary to dispose output immediately and minimize losses due to perishability and the high transportation cost. Contracting out his land with a firm (like land pawning) ensures a guaranteed profit to the farmer based on fixed price per unit of output. For export vegetable crops, high prices serve as incentives for landowners and permanent laborers to maintain intensive cultivation. The intensive and specialized nature of vegetable production in addition to capital constraints has induced labor contracts. During lean months, most farming households lack the liquidity to pay wages of hired labor. This prompted farmers and workers to look for better cost sharing arrangement. In the face of risk, and given resources to cultivate the land, sharecropping can be an alternative to wage employment opportunities and through time induces loyalty and productivity of farm labor.

Overall assessment of mango contracts reveals that contract spraying and equal sharing of output or sales will help backyard growers secure a guaranteed return for their mango trees. To avoid the problem of death of trees, a restriction on the frequency of flower induction and pesticide application as well as close supervision and monitoring should be an important component not only of leasehold contracts but all other mango contract systems. For large-scale farms, contract growing involving own spraying of trees will be more profitable and efficient since economies of scale can easily be achieved. This will warrant full returns to owner's efforts and a sharing of the costs. Moreover, technical assistance and training on proper mango cultural and management practices will help growers maximize the productivity of their trees and thereby, profit. Manufacturers of mango flower inducers and chemicals can be tapped to provide technical assistance and extension services to our farmer-growers.

For hogs, backyard raisers strive to improve the production and quality of their animals through proper selection of swine breeds and good feeding practices as this will command better prices for their output and thereby increase their profit. The existing production modules/contracts for backyard raisers would be more efficient if raisers would organize themselves and to share costs. Cooperatives can provide capital thru credit, serve as venue for trainings and seminars on profitable piggery enterprise and provide discounts for volume purchase of feeds and piglets. It can also function as marketing arm of raisers, with better bargaining power in determining market prices. However, in the absence of credit markets, commercial raisers with sufficient capital, independent growing scheme will often provide better control of both production and marketing aspect of operation. For raisers with limited capital, the integrator contract like land pawning ensures guaranteed income, stability of operation and guaranteed products. However, this is also achieved at a lower level of equilibrium.

The nature, process and degree of the different contracting systems in the four selected agricultural commodities have been diverse. In most cases, however, the different contracts were outcomes of the farmers' need to adjust to the different production and market conditions surrounding the agricultural sector. The pervasiveness of sharecropping in many agricultural crops such as mango, rice and vegetables underscore the farmers' difficulty in raising capital, due to missing credit and insurance markets. The associated risks, seasonality and specialized nature of agricultural production has likewise, complicated the production process and patterns of contracts in these commodities. However, access to credit and marketing institutions and functioning of insurance and land markets are often inadequate for the transformation of subsistence-oriented asset-poor farmers, leading to inefficient forms of cost sharing programs.

#### ***4. Examples of Transaction Costs Models***

##### *A. Contractual Arrangements in Fishing Industries<sup>7</sup>*

Fishing takes place in very varied and uncertain conditions in both physical and environments. The sea in particular is an alien environment in which man is poorly equipped to survive. Fishermen operate in a flat, undifferentiated surface, thereby increasing uncertainty.

More importantly, fish is a common property resource. Resources of all kinds owned commonly by the public are overexploited and abused in ways that do not occur with privately owned resources. Unlike private property that is protected and maintained by its owners who obtain benefits of any investment they make, common property resources cannot be reserved by owners and are locked into a system that is exploited without limit. 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.

If access to the sea is unrestricted, anyone then becomes a "squatter" to the resource. Since workers share equally in output, each one receives the value of the average product. In order to raise their incomes, fishermen can form "communes" and other forms of organizations that allow a higher return for members involved. In making a choice between joining the organization and striking on their own, workers compare their alternative earnings,  $w$ , with their average product from the resources. At labor inputs less than what they offer under common proprietorships, workers can invariably own from joining organizations. This additional income derives from the rents acquired from joining the group. With unrestricted access, the rent on the resource becomes a nonexclusive income workers compete with each other until it no longer exists or exceeds the cost of acquiring it. Nevertheless, workers can join these different types of contracts or organizations until the marginal gain from joining equals the alternative earnings,  $w$ , leaving no advantage from the case with unrestricted access. In order to avoid this, the contract can then include restrictions and other forms of liabilities that

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<sup>7</sup> This section is drawn from Carnaje (2003).

cause the workers to commit themselves to the limits imposed by the organization. This presumes the absence of transaction costs so that the workers will be induced to stick to their end of the contract.

Carnaje (2003) pointed out five forms of arrangements that allow for a better allocation of these resources:

1. share contracts between aquaculture owner-operators and tenant/laborers and between boat owners and crew members: contract entails some form of cost sharing for other inputs between the aquaculture owner-operators/boat owners and the tenant/laborers/crew members. The arrangement is seen as some form of tax system that limits the labor inputs to more socially acceptable levels
2. interlinking of contracts between markets (simultaneous fixing of transactions between two parties over several markets, with the terms of one transaction contingent on the terms of another): combination of contracts 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.
3. paternalism: an implicit contract whereby workers exchange dependable labor services for a variety of goods and services
4. two-tiered structure of labor markets: contracts in which permanent or attached laborers employed for a crop season or longer receive higher remuneration than casual laborers employed on a daily basis;
5. clientelization: regularized and entrusted contracts which reduced transactions over time

The success of these arrangements depends on the extent of institutionalized cheating which emerges and raises the transaction costs for everyone concerned. What are the different transaction costs in this system of share payments? For the bulk of owners using the *sikatlo* system (one-third to the owner and two-thirds for the workers), and who do allow *delihensiya* on their boats (whereby workers are allowed to snatch whatever they can from the catch), 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 is the one who has the least work to do on the boat. The core crew is 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 is at the ends of the net, relatively far from the watchful eye of the captain, and has 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.

Most boat owners 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, and offering no interest loans to crew.

For those boat owners who are also captains, instilling crew loyalty is easier owing to their participation in the work process and general conviviality on board the canoe. Those owners who are too sickly or too old to captain their own boat generally rely on their captains to perform these forms of social control.

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 around 1980 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 does 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. Contract Farming of High Value Products in Mindanao*<sup>8</sup>

In Mindanao, contract farming is prevalent in most agricultural products for a number of reasons. Firstly, as what can be extrapolated from the benefits and costs outlined in Table 2.1, contract farming is being pursued either to reduce costs, minimize uncertainty or eliminate externalities. Secondly, contractors and vertically integrated firms may exercise market power. These refer to large firms dominating the industry, and their products are differentiated and branded. For example, the contractors in the commodities covered in any number of products like poultry, pineapple, and banana are multinationals (Dole and Del Monte for banana and pineapple) and large domestic firms (San Miguel Foods/Purefoods Inc., RFM, United Robina Corporation, Vitarich, JAKA for poultry). These firms operate in concentrated industries where few firms dominate the industry. Thirdly, there are contractors that are also vertically integrated firms like the case of Del Monte where they produce pineapples through leaseback arrangement and export these under their Del Monte brand. Vitarich Corporation processes their dressed chicken and operate a number of retail outlets for their poultry products under the Vitarich brand name.

Contract farming dominates large-scale production in the advanced industrial in many advanced industrial economies. The relative importance of this form of organization lies in the structure of residual claims, which encourages large-scale, risky investments. These companies are effectively open corporations that sell common stocks, the least restricted residual claims in general use, which minimize the potential conflict between utility maximization (shareholders) and maximization of the market value of the firm. When the shares receive an unbiased evaluation and are traded in the stock markets, the corporate owners can trade the shares for other financial claims in order to match the time pattern of cash flows with their preferred pattern of consumption. In which case, the owners' primary concern is the maximization of share values. Moreover, the property of limited liability is a key factor in lower the cost of trading shares. If liability were unlimited, the financial status of the share owners would become a central concern at the time of transfer and sharply raise the cost of transacting, and an anonymous exchange of shares would not be feasible. Hence, limited liability guarantees the continued existence of the firm and enables more complete capitalization of anticipated results into current corporate stock values and managerial decisions.

A further advantage of the open corporation is that shareholders are able to diversify their portfolios by holding any number of shares in one or more corporations along with other financial institutions. By diversifying their assets, the owners lower the costs of risk bearing, which makes risky ventures more attractive to them and gives a competitive advantage to the corporate form in production requiring large-scale risky investments.

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<sup>8</sup> This section is drawn from Digal (2003).

The open corporation enables individuals to specialize in risk bearing, on the one hand, and in management the other. With the separation of the two functions, the set of top managers is no longer restricted to wealthy individuals who are willing to take risk. The specialization of the risk-bearing function has given rise to an effective market for residual claims that continuously evaluate the firms, and by implication, the performance of the agent-managers.

All of these companies are also engaged in vertical integration where these companies lease the land from farmers and landowners, and hire them to harvest and process the produce. These arrangements can be likened to land pawning, except that the basis for this arrangement is not risk sharing and the leasing is made on a much larger scale. Aside from the fact that Mindanao is not visited by the typhoons and storms, the markets for these produce are readily available, making these companies more able to exploit scale economies. The basis for vertical integration is the more efficient coordination of the use of resources. As a result of vertical integration, the firm can eliminate market transactions, and the allocation of resources becomes a result of administrative decision, not the pricing system (Coase, 1972). Firms are willing to carry the burden of the costs of establishing and running the administrative structure because the costs of doing so are less than those incurred in the market. Although not all market contracting costs are eliminated, the firm does not have to make a series of contracts with the owners of the other factors with whom it is cooperating within the firm.

Products engaged in contract farming are more likely involved in highly competitive markets in the international markets. In the case of bananas, the risk can be found in its engagement in the world market. Cavendish banana is considered a staple fruit in most major export markets such as Japan and New Zealand. The latter albeit its small population, has the highest per capita consumption at 1-2 boxes a week or 18 kilos per capita. This is higher than Japan's 12 kilos per capita. Export demand is projected to increase only by 3% annually according to the Philippine Banana Exporters Association (PBGEA). This meager increase is due to economic recessions experienced by traditional export markets. Some exporters see no growth in export unless the Philippines gains access to Australian market with expected sales volume of 18 million boxes. Major suppliers such as Lapanday Foods, Tagum Agricultural Development Company (TADECO), Marsman-Drysdale, Dole- Stanfilco, and other smaller exporters are not only competing against other brands but also with other fruits. The economic downturn in major markets, such as Japan that accounts for 43% of total banana exports is expected to lower demand and price. According to PBGEA, buyers in Japan are asking suppliers to reduce price ranging from 10 to 20% even for those contracts already negotiated.

However, within the domestic economy, the firms are highly collusive. For bananas, major exporters are Lapanday Foods (25% share producing 28 million boxes of Cavendish bananas), TADECO – Del Monte Fresh Produce (20%), while Dole-Stanfilco, Marsman-Drysdale and other exporters shared the remaining 55%. Moreover, each exporter has its own cooperatives or farmers' associations that supply fresh bananas. They too have their own brand and support enterprises such as box plant, trucking,

cooling warehouse, shipping, packing sheds, etc. Rivalry is not that intense because each has its own established market or brokers in the export market. In fact, they have a local association dubbed PBGEA or Philippine Banana Growers and Exporters Association. Through this association, they were able to set a common input acquisition price from suppliers, same rental rates on leased lands, and act as a strong lobby or advocacy group on issues such as Agrarian Reform. They acted as a group in determining incentives, labor rates and per piece rates, standardize the demand for a P750,000 per hectare land value on 'CARPable' land, etc.

These attempts for collusion can be seen as way of strengthening their ownership or property rights on the products. Private parties can enforce property rights through their individual efforts, but there is no presumption that such enforcement will have any optimality properties. If the owner does not incur enforcement cost, then by assumption, other individuals will have free use of his property. The benefits to an owner form reinforcing his property rights that he can hire labor to work on his natural resource and can collect economic rents. Rents will be then be higher the lower the reservation wages of workers. As discussed in Hoff and Stiglitz (2001), in equilibrium, the reservation wage of workers itself depends on how many other owners are establishing their property rights. As the fraction of property owners who enforce these rights increases, the outside opportunities of workers fall and so does their reservation wages.

### ***5. Conclusion and Policy Implications: Linkages between Wealth Distribution, Sustainability and Efficiency***

The above discussion of contractual arrangements in agriculture shows the inseparability of distribution, institutions and efficiency. In the case of a principal-agent relationship, the link between wealth distribution and efficiency is seen from the fact that the principal controls the resource that he entrusts to another individual, his agent, in a situation where imperfect information exists. Given that the principal cannot perfectly monitor the actions of the agent, the task of the principal is to design an incentive scheme to try to align the agent's incentives with his own. Contract provisions that can achieve this are collateral, bonds, and provisions that shift the risk of the poor output onto the agent. The greater the agent's ability to post collateral, put up a bond, pay rent in advance, or absorb risk, the greater the agent's incentive to acquire the residual rent, and not to engage in seemingly inefficient cost sharing arrangements contract growing and land pawning. In these ways, an agent's wealth will affect his incentives and productivity.

Policies then should allow for greater access to markets. The source of the inefficiency is the imperfections in the market which prevent households from obtaining the greater inputs for production. Policies which fail to take note of the costs of production and the imperfections in the factor markets are bound to lead to uneven growth. In the Central Luzon area, these were noticeable effects in the agrarian reform program. The paper showed that the movement towards increasing commercialization and agrarian reforms appeared to have given way to three related structural changes in the agricultural economy. First, small family holdings became the main organizational form



of production. Agricultural production in Central Luzon evolved from collective state farming systems that were imposed at the start of the colonization (such as friar lands or haciendas) to small household farm systems that were created in certain areas at the end of the Spanish regime. Second, sharecropping arrangements became the dominant production relation in order to resolve the information problems and uncertain conditions that underlie much of the landlord-tenant relationships. Third, the imperfections of the capital markets, as is usually the case in agricultural economies, and the seeming absence of support systems from the state can result in the unequal distribution of assets. In light of these conditions, the solution is not to restrict the movements of land markets, but to impose a comprehensive land tax that will reduce the rents of the prospective landowners and discourage them from accumulating large tracts of land.

In the case of transaction costs models, private bargaining is seen to provide an antidote to the inefficiency arising from engaging in the market. In the same way, the establishment of property rights is seen as way of reducing the wastes in the economy that can lead to the unsustainability of the production process. Without property rights, resources, like fisheries, become a common property, making it subject to abuse and depletion. However, bargaining and the establishment of property does not eliminate these imperfections because precisely of these transaction costs. Given the presence of transaction costs, the distribution of wealth and property rights does affect production efficiency. That is, the initial distribution of resources will not cause productive resources to gravitate into the hands of the persons who value them the most and who can use them most efficiently. The distribution of wealth can be so unequal that some persons have more wealth to put their skills to best use, while others cannot obtain credit to undertake a productive project. This is contrary to the conventional (unconstrained Pareto equilibrium) belief that ownership has no impact on efficiency.

The point is that transaction costs are important in the design of policies. Economic theory emphasizes that transaction costs depend on institutions. Moreover, such institutions are endogenous and are influenced by policies, implementing rules and governance. Through these institutions, the effect of distribution on efficiency can be modified; wealth can be more catalytic (instead of being just an input for production); and government policies can lead to greater welfare.

## References

- Bardhan, P. 1984. *Land, Labor and Rural Poverty: Essays in Development Economics*. New York: Columbia University Press.
- Binswanger, H., K. Deininger, and G. Feder. 1995. "Power Distortions, Revolt and Reform in Agricultural Land Relations" in J. Behrman and T.N. Srinivasan (eds.), *Handbook of Development Economics, Volume III*. Amsterdam: Elsevier North Holland.

- Boserup, E. 1965. *Conditions of Agricultural Growth*. Chicago: Aldine Publishing Company.
- Bhagwati, J. and T. N. Srinivasan. 1983. *Lectures on International Trade*. Cambridge, MA: MIT Press.
- Braverman, A. and J. Stiglitz. 1982. "Sharecropping and the Interlinking of Agrarian Contracts," *American Economic Review*, 72, 695-715.
- Castro, A. 1982. "Foreign Trade and Economic Welfare in the Last Half-Century of Spanish Rule" in *Essays in Development Economics in Honor of Harry T. Oshima*. Manila: Philippine Institute for Development Studies.
- Carnaje, G. 2003. Contractual Arrangements in Philippine Fisheries. Mimeo. Manila: Philippine Institute for Development Studies.
- Coase, R. 1960. "The Problem of Social Cost," *Journal of Law and Economics*, 3, 1-44.
- Coase, R. 1972. "Industrial Organization: A Proposal for Research" in V. Fuchs, (ed.), *Policy Issues and Research Opportunities in Industrial Organization*. Cambridge: National Bureau of Economic Research.
- Connolly, M. 1992. *Church Lands and Peasant Unrest in the Philippines: Agrarian Conflict in 20<sup>th</sup> Century Luzon*. Quezon City: Ateneo de Manila University Press.
- Corpus, O. 1997. *An Economic History of the Philippines*. Diliman, Quezon City: University of the Philippines Press.
- Cushner, N. 1976. *Landed Estates in the Colonial Philippines*. Yale University Southeast Asia Studies Monograph Series No. 20.
- De la Costa, H. 1965. *Readings in Philippine History*. Makati City: Bookmark, Inc., 1992.
- De la Cruz, A. 2003. Contractual Arrangements in Agriculture (Northern and Central Luzon Component). Mimeo. Manila: Philippine Institute for Development Studies.
- Digal, L. 2003. Agricultural Contracts in Mindanao: The Case of Banana, Pineapple and Poultry. Mimeo. Manila: Philippine Institute for Development Studies.
- Doeppers, D. and P. Xenos. 1998. "A Demographic Frame for Philippine History" in D. Doeppers and P. Xenos (eds.), *Population and History: The Demographic Origins of the Modern Philippines*. Quezon City: Ateneo de Manila University.
- Doeppers, D. 1998. "Migration to Manila: Changing Gender Representation, Migration Field, and Urban Structure" in D. Doeppers and P. Xenos (eds.), *Population and*

- History: The Demographic Origins of the Modern Philippines*. Quezon City: Ateneo de Manila University.
- Fegan, B. 1982. "The Social History of Central Luzon Barrio" in A. McCoy and E. de Jesus (eds.), *Philippine Social History: Global Trade and Local Transformation*. Quezon City: Ateneo de Manila University Press.
- Gealogo, F. 1998. "Los Componentes de la Dinamica de la Poblacion en Filipinas en Siglo XIX." *Cuadernos de Historia*, Numero 2 y 3: 37-62.
- Lanzona, L. 2000. "Labor, HRD and Globalization: An Integrative Report" in L. Lanzona (ed.), *The Filipino Worker in a Global Economy*. Makati: Philippine APEC Study Center Network and Philippine Institute for Development Studies.
- Hayami, Y. and K. Otsuka. 1993. "Kasugpong in the Philippine Rice Bowl: The Emergence of New Labor Institutions After the Land Reform," in K. Hoff, A. Braverman, and J. E. Stiglitz, eds., *The Economics of Rural Organization*. Oxford University Press.
- Hoff, K. and J. Stiglitz. 2001. "Modern Economic Theory and Development" in G. Meier, and J. E. Stiglitz, eds., *Frontiers of Development Economics*. Oxford University Press.
- Nagarajan, G., A. Quisumbing, and K. Otsuka. 1991. "Land Pawning in the Philippines: An Exploration into the Consequences of Land Reform Regulations," *The Developing Economies*, 29, 125-144.
- Nagarajan, G., C. David and R. Meyer. 1992. "Informal Finance Through Land Pawning Contracts: Evidence from the Philippines," *Journal of Development Studies*, 29, pp. 93-107.
- Otsuka, K., H. Chuma, and Y. Hayami. 1992. "Land and Labor Contracts in Agrarian Economies: Theories and Facts," *Journal of Economic Literature*, 30, 1965-2018.
- Otsuka, K. H. Chuma, and Y. Hayami. 1993. Permanent Labor and Land Tenancy Contracts in Agrarian Economies, *Economica*, 60, 57-77.
- McLennan, M. 1982. "Changing Human Ecology on the Central Luzon Plain: Nueva Ecija, 1705-1939" in A. McCoy and E. de Jesus (eds.), *Philippine Social History: Global Trade and Local Transformation*. Quezon City: Ateneo de Manila University Press.
- North D. 1958. "Ocean Freight Rates and Economic Development 1750-1913," *Journal of Economic History* 18: 538-55.

- North, D. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.
- Silberg, E. and W. Suen. 2001. *The Structure of the Economics: A Mathematical Approach –Third Edition*. New York: McGraw-Hill.
- Williamson, J. 1997. “Globalization and Inequality: Past and Present.” *The World Bank Research Observer*, 12(2): 117-135.
- Xenos, P. 1998. “The Ilocos Coast since 1800: Population Pressure, the Ilocos Diaspora, and Multiphasic Response” in D. Doepfers and P. Xenos (eds.), *Population and History: The Demographic Origins of the Modern Philippines*. Quezon City: Ateneo de Manila University.

Table 1. Migrants in Manila in 1893 by Gender and Province of Origin, as a Percentage of Migrants and as a Rate of Source Area Population				
Province of Origin	Migration (1893) per Source Area Population (1903)(rate per 1,000)		Migrants by Gender and Province(Percentage)	
	Female	Male	Female	Male
Rizal	6.92	4.4	32.57	25.04
Bulacan	5.14	4.18	37.26	35.09
Bataan	2.99	1.68	4.25	2.94
Cavite	1.42	0.9	6.14	4.56
Laguna	0.74	0.78	3.55	4.4
Pampanga	0.7	0.52	5.01	4.4
Ilocos Sur	0.27	0.42	1.52	2.7
La Union	0.18	0.42	*	2.01
Batangas	0.24	0.37	2.03	3.48
Ilocos Norte	0.09	0.37	*	2.4
Tayabas/Quezon	0.13	0.27	*	1.55
Nueva Ecija	0.14	0.27	*	1.31
Total			100	100

Source: Doeppers (1998). \*Denotes negligible percentage.

Table 2. Inter-Censal Population Growth Rate for the Philippines and Central Luzon in the Nineteenth Century			
Year	Population	Average Annual Amount of Change	Rate of Growth
Philippines			
1818	2,026,230		
1840	3,096,031	48,627.32	1.9
1850	3,800,163	70,413.20	2.04
1870	4,698,477	44,915.70	1.06
1887	5,984,727	75,661.76	1.42
1896	6,261,339	30,734.67	0.5
Central Luzon			
1818	273,636		
1840	400,537	5,768.23	1.71
1850	504,038	10,350.10	2.29
1870	533,298	1,463.00	0.28
1887	601,179	3,993.00	0.7

Source: Gealogo (1998).

Appendix  
**Module Questionnaire for the Contracts Study**

**I. General Information:**

Name of Respondents:

\_\_\_\_\_

Type of Respondent:  Key Informant, specify: \_\_\_\_\_  Farmer

Name of Barangay: \_\_\_\_\_ Province / Region

\_\_\_\_\_

Agroclimatic Conditions: (pls. check appropriate box)

- Rainfed upland
- Rainfed lowland
- Irrigated lowland

Commodity/Crop planted/Industry:

	Area planted/operated (has.)		Amt. of Output (kg/mt)		Ave. Value of Output (P)		Ave. Value of Inputs (P)	
	Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season	Wet Season	Dry Season
<input type="checkbox"/> Rice								
<input type="checkbox"/> Mango								
<input type="checkbox"/> Banana								
<input type="checkbox"/> Pineapple								
<input type="checkbox"/> Poultry								
<input type="checkbox"/> Fishery, specify								
<input type="checkbox"/> Others, specify								

**II. Organizational Structure:**

1. Type of Ownership Structure: (pls. check appropriate box)

- |   | Year established | Initial Capital (P) | Present Capital (P) |
|---|------------------|---------------------|---------------------|
| <input type="checkbox"/> Corporation: _____       | _____            | _____               | _____               |
| <input type="checkbox"/> Partnerships: _____      | _____            | _____               | _____               |
| <input type="checkbox"/> Proprietorship: _____    | _____            | _____               | _____               |
| <input type="checkbox"/> Financial mutuals* _____ | _____            | _____               | _____               |
| <input type="checkbox"/> Non-profit org. _____    | _____            | _____               | _____               |

\* Organizations founded primarily in financial activities.

## 2. Type of Production Organization: (pls. check appropriate box)

- Merchant-coordinator: supplies the raw materials, owns the work-in-process, and makes contract with individual entrepreneurs
- Federated/Associative/ "Community" mode: Independent, autonomous stations are located side by side in a common facility and area so as to avoid the need for supervision or continuous coordination. Each station of the production makes bilateral contracts with the proceeding as well as prior stations in terms of the production process
- Inside contracting mode: A capitalist provides land, machinery, raw material, working capital, and the sale of the final product
- Authority relation: standard corporate structure characterized by hierarchical relationships.
- Others: Please describe: \_\_\_\_\_

## 3. Description of labor/employment contract:

## a) No. of people employed

Activity	Wet Season	Dry Season
Plowing		
Seeding		
Planting		
Harvesting		
Processing		
Marketing		

## b) Terms of payment\*\*:

Activity	Wet Season	Dry Season
Plowing		
Seeding		
Planting		
Harvesting		
Processing		
Marketing		

## \*\* Code

- 1 - Fixed arrangement with owner: a - Daily wage/rate b - Rent for capital inputs  
c - Pakyaw d - boundary
- 2 - Leasehold arrangement with the owner
- 3 - Sharing arrangement: a - Output share b - Input share c - Mixed input-output
- 4 - Permanent Labor
- 5 - Others: specify \_\_\_\_\_



c) Amount of supervision required\*\*\*

Activity	Wet Season	Dry Season
Plowing		
Seeding		
Planting		
Harvesting		
Processing		
Marketing		

\*\*\*Code:

- 1 High (everyday)
- 2 Low (weekly or monthly)
- 3 None

## II. Employment of Factors (Arrangements)

1. Activities/stages in production (description of the production process)

2. Types of risks encountered (Agency Issues):

a) Production/output risks (pls. check appropriate box)

- Weather
- Pests
- Others, specify \_\_\_\_\_

b) Price risks (pls. check appropriate box)

- |  | % Increase | % Decrease |
|--|------------|------------|
| <input type="checkbox"/> Variability in output prices: | _____      | _____      |
| <input type="checkbox"/> Variability in input prices:  |            |            |
| <input type="checkbox"/> Labor                         | _____      | _____      |
| <input type="checkbox"/> Chemical                      | _____      | _____      |
| <input type="checkbox"/> Others, specify:              | _____      | _____      |

c) Availability of alternative inputs in the community (pls. check appropriate box)

- |   | Always Available         | Partly Available         | Not Available            |
|---|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> Labor                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Capital                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Credit                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Intermediate inputs (list) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

d) Other types of risks specify:

\_\_\_\_\_

3. Performance indicators for *each* activity/stage of production

Activity	Type of contract	No. of hrs. worked	Rel. Share of output	Wage Rate (P)

## 4. Existence of the tied contracts: (pls. check appropriate box)

Describe Arrangement or Contract:

 Labor with credit:

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 Labor with intermediate inputs:

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 Labor tied to land:

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 Labor tied with other services/insurance:

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