

A New Institutional Approach to Pro-Poor Agricultural Development: Lessons from Asia

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Seiji Naya has been one of only two instructors of a course unique to the University of Hawaii called, “The Economics of Cooperation.” He was an early observer of the *deliberation councils* and other institutions whereby the investment coordination problem was partly solved by extra-market cooperation in the East-Asian “miracle” countries. Indeed, these insights contributed to a University of Hawaii sponsored volume, *The Economics of Cooperation* (1992), that anticipated the findings of the *East Asian Miracle* (1993) by a full year. A central theme of the book--the role of government as facilitator--was then advocated by the State of Hawaii when Dr. Naya served as director of the Hawaii Department for Business, Economic Development and Tourism. Reconsidering government as facilitator, not as a replacement for markets, is one of the primary contributions of the New Institutional Economics. In this chapter, I develop this perspective in another context--that of agricultural development.

Agricultural growth has long been characterized as stimulating pro-poor economic development, due to its linkages to food prices, labor demand, and growth of the modern sector. Balisacan (2004) suggests that agricultural development is capable of reducing poverty by three to four percentage points for every one percent of economic growth. That these high elasticities of poverty reduction have not been realized in practice is presumably because of misguided policies. Subsidies have accelerated rent-seeking and stagnated growth. Even investments in research and infrastructure have not lived up to their advocates’ promises, due to poor incentives and institutional design.

In what follows, I provide some examples of policy failures and show how faulty reasoning was partly to blame. I then provide an overview of the New Institutional Economics and discuss in various contexts how it acts as a corrective to the interventionism that has prevented pro-poor rural development from taking place.

I. Policy Failures

Agricultural development is the intellectual backwater of economics. Even after the economic-development interventionists were driven into retreat during the “neoliberal” 1980’s, the economics of agricultural development remained largely anti-market. How did this come to pass?

The *old interventionism* follows the legacy of A.C. Pigou. Markets in rural areas of developing countries are underdeveloped: They either fail to exist, or they exist with widespread externalities. In either case, market failure is pervasive and governments must adjust economic incentives with taxes, subsidies, and regulations, including outright bans of some economic activities. Harold Demsetz (1969) christened this form of economic reasoning the *Nirvana Fallacy*, because Pigouvian reasoning implicitly compared a straw man version of voluntary cooperation with a perfect government.

As economists became increasingly aware of the logical pit of Pigouvian thought and witnessed widespread government failures in both design and implementation of government policies, intellectual support for the old interventionism waned. But it was quickly replaced by the new interventionism advocated by Joseph Stiglitz and followers.

The most general interventionist doctrine is based on the Greenwald-Stiglitz (1986) theorem according to which a competitive equilibrium is not constrained Pareto-optimal, i.e. is not on the feasible utility-frontier, whose limits are determined by feasible government actions as well as technology, factor endowments, and consumer preferences. This theoretical result is interpreted to mean that government can always find a coercive intervention to increase economic efficiency over that achieved by voluntary contracting and competitive markets. In this “New Information Economics,” market failures are not limited to the usual cases of externalities, public goods, and non-convexities, but far more pervasive, including failures due to moral hazard, adverse selection, or other information problems.¹

Similarly, de Janvry, Fafchamps and Sadoulet (1991), while acknowledging the role that transaction costs play in rural organization, nonetheless conclude that “indirect sources of market failure need to be eliminated” including access to credit and insurance markets. Both de Janvry Fafchamps and Sadoulet (1991) and de Janvry and Sadoulet (2000) have been misconstrued to mean that government should intervene in such markets with mandates and subsidies (see e.g. Weber et. al. 2002). Some investments in agriculture, notably in agricultural research, are prematurely rejected in this view as mere “technofix.”

These propositions bear a strong family resemblance to Nirvana Fallacy, however. The equilibrium concept in question is a straw man in two important respects. First, it does not admit multilateral voluntary contracting. Second, it does not admit private governance of moral hazard and other information problems, e.g. as described in Jensen (2000). Even if the Greenwald-Stiglitz theorem were generalized to allow for multiple distortions and even if some pervasive efficiency-improving interventions were found, the results would still suffer from *blackboard economics*.²

Large farm inefficiency and land-to-the-tiller reform

As an illustration of both forms of interventionism, consider the long-held belief among agricultural economists that the inverse relationship between farm size and yield per hectare is evidence of the inefficiency of large commercial farms. The old interventionists simply asserted that there was labor-market dualism whereby commercial

¹ Stiglitz (1993).

² Note that “blackboard economics” should not be taken as a general condemnation of rigor, but rather of equilibrium concepts that abstract from real-world institutions, which internalize spillovers and mitigate information problems.

farms paid a higher institutional wage than the peasant or subsistence sector. Accordingly, they concluded that land-to-the-tiller reform would improve resource allocation and boost agricultural productivity.³ Clearly, however, they assumed inefficiency in order to conclude there was room for increased efficiency – hardly a viable general argument.

The new interventionists provide a more sophisticated explanation of the inverse relationship but draw the same land-to-the-tiller conclusion. Inasmuch as small farms rely on family labor, they are said to economize on the transaction costs of hiring labor on which commercial farms depend. Accordingly, hired labor is characterized as inefficient (Otsuka, 2002). Deininger (2003, p. 84) notes that these “labor market imperfections result in the productive superiority of family farms.” Using the ICRISAT village data, Frisvold (1994) found that family labor is indeed more productive than hired labor, even before deducting the costs of supervision. Similarly, Hayami (2003) finds that, while plantation agriculture was an efficient institution for the exploitation of Western colonies in Asia, family farms have more recently “proved to be equally or more efficient producers of tropical export crops using the family labor of low supervision costs, relative to plantations based on hired labor.”

However, these studies fail to account for why labor is hired, for which tasks, and for the incomplete substitutability of hired and family labor. They also fail to account entirely for the role of land quality in crop choice and intensity of cultivation. It is not surprising, therefore, that one can find contradictory empirical results. Indeed Benjamin (1992) found that hired labor cannot be said to be significantly more or less productive than family labor. This may simply be because there are both gains and losses involved. For example, hired labor facilitates specialization. On the prototypical farm in which both family and hired labor are employed, rational choice implies that there will be a non-random division of tasks between family and hired labor and that, at the margin, the difference in their productivities will be equal to the difference in opportunity costs.

Moreover, commercial farms enjoy economies-of-scale in marketing their products Reardon *et. al.* (2003). The interventionists conclude that this is not a real advantage, however, because small farmers can simply form cooperatives and exploit the same gains.⁴ This is a remarkable inconsistency. Small farms are said to be more efficient because they avoid the additional contracting costs associated with hired labor. But the proposition that small farms can simply overcome diseconomies through contracts blithely ignores the requisite contracting costs. Indeed farmer cooperatives are notorious for broken agreements and favoritism, both of which undermine the sustainability of group contracts.

The alleged inefficiency of share tenancy

³ See e.g. Berry and Cline (1979).

⁴ See e.g. the review of literature and discussion in Deininger (2003).

Relatedly, substantial interventionist ink has been spilled asserting the inefficiency of another institution – share tenancy. The old interventionist view was based on the so-called Marshallian model, which was perfect Pigouvianism, albeit before Pigou.⁵ According to Marshall’s famous footnote, the rational tenant equates his marginal opportunity cost of labor with only his share of the marginal product. This conclusion has been used to justify the other primary plank of land reform – the banning of share tenancy. Cheung (1969) debunked this view, observing that the Marshallian model could hardly be an equilibrium contractual solution inasmuch as the landlord and tenant could renegotiate over the share and amount of output or inputs that must be provided or used, thereby making both parties better off.

Stiglitz (1974) proposed a principal-agency model wherein sharecropping is viewed as a pairwise-efficient means of incentivizing labor, relative to wage contracts, without the cost of risk-bearing that would be imposed under rent contracts. He thus resurrected Marshallian inefficiency and the proposition that share tenancy should be outlawed. Indeed Stiglitz (1993, 2002) has often used the institution of share tenancy to exemplify how economic organization can be in equilibrium but massively inefficient, asserting that a landlord’s output share of 50 percent would have the same disincentive effects as a 50 percent income tax. The model has had a long and successful run in agricultural development circles. Hayami and Otsuka (1993) concluded that the risk-aversion vs. moral hazard model indeed “justifies the existence of share tenancy in the theoretically most consistent manner...” and econometric studies (e.g. Shaban, 1987) have concluded that the model is empirically sound.

As is the case with the literature on the inefficiency of large farms and hired labor, however, this conclusion is premature. First, the canonical model does not imply, as originally claimed (Stiglitz, 1974), that the optimal share, β , varies positively with the tenant’s degree of risk aversion. Risk aversion also blunts the tenant’s incentive to shirk. Second, the model is incapable of explaining the empirical distributions of tenant shares, which cluster around of 50%, with a smaller cluster around 2/3.⁶ But the larger problem is that the theory fails to recognize the nature of share tenancy, a typically long-term contractual arrangement for bringing management together with land and that facilitates the tenant’s learning-by-doing about production decisions (Reid, 1976; Murrel, 1983; Eswaran and Kotwal, 1986; Roumasset, 1995). Share tenants themselves hire substantial amounts of labor, especially for the more arduous and routine tasks. On the other hand, share contracting is a popular labor contract for specific tasks. Indeed, share tenants often hire casual workers on a share basis to do harvesting, weeding, and transplanting.

These rationales for land reform fail to acknowledge the complexity of economic cooperation. The principle of comparative advantage implies that different characteristics

⁵ It is easy to show that Marshallian underemployment is readily cured by a Pigouvian labor subsidy.

⁶ Deweaver and Roumasset (2001) show that for parameters representative of the Philippine case, the Stiglitz model predicts that the optimal tenant’s share is U-shaped in tenant's risk aversion and never falls below 80 percent.

of land and landowners will call for different intensities and composition of inputs and organizational forms with unlimited differences in architecture. Judging the relative efficiency of different organizational forms commits the most fundamental fallacy in economics – judging performance without understanding the nature and causes of the phenomenon of interest.⁷ Prescribing policy reforms based on the premise that politicians, bureaucrats, and academics can socially-engineer institutions superior to those shaped, tested, and improved in the crucible of evolution is a recipe for government failure.

For example, land reform in the Philippines outlawed share tenancy. As a result, land reform beneficiaries hired permanent workers who were paid a fixed amount for the season. Hayami and Otsuka (1993) concluded that this has been an inferior substitute for share tenancy. Another Philippine example concerns the failure to properly base landlord compensation on quality. By basing compensation on the principle that 25% of yield is a fair rent, reform confiscates value from owners of good and average farms but actually over-rewards owners of poor-quality land (Roumasset and James 1979). As a result, friends and relatives of poor-quality landowners submit bogus claims that they have been working the land as tenants so that the landlord receives more than the land is worth (and landownership remains in the family).

Middlemen: Credit and Output Markets

According to the old interventionism, usury laws are needed to control exploitative moneylenders (who often are ethnic Chinese). However, usury laws curtail the amount of loanable funds, cause excess demand, and increase the share of available funds going to the non-poor. This led to an explosion of directed credit programs beginning in the 1970s, whereby rural banks were given loanable funds on concessionary terms on the condition that they would lend to targeted clients. However, funds were inadvertently diverted to the non-poor (Meyer and Nagarajan 2000), and the credit subsidies indirectly penalized the informal credit sector (Roumasset 1986). Beneficiaries of subsidized credit correctly perceived that the subsidies were part of a system of political patronage and that they were not obligated to repay the loans. Rather than abandon the directed credit approach, however, many governments attempted to patch them up with new tranches of funding and loan guarantees that, in turn, only increased moral hazard. This is *band-aid economics*.

The new interventionism only increased support for such programs. Advocates commonly cite Stiglitz and Weiss (1981) as showing that competitive credit markets are constrained-Pareto inefficient.⁸ As already discussed, however, these are straw-man arguments in the sense that they fail to account for private governance and voluntary multilateral contracting.

Uncertainty

⁷ In Coasean terms, this is known as *blackboard economics*.

⁸ See also Bardhan and Udry (1999).

The old interventionism asserts that low-income farmers are especially risk averse, that the new technologies offered to them are highly risky, and that they therefore under-invest in high yielding varieties and other components of the recommended package of practices. Thus uncertainty becomes a cover a panoply of government interventions, from crop insurance to fertilizer subsidies. The new interventionism augments this case by asserting that moral hazard and adverse selection inevitably cause private insurance markets to fail.

The case for subsidizing crop insurance and allegedly risk increasing inputs does not hold up to either logical or empirical scrutiny, however. Traditional analysis has equated risk aversion with variance aversion. But if the threshold income is high, low-income farmers may be variance preferring. In common parlance, this is known as desperation.

Empirically, it turns out that modern inputs thought to increase risk often decrease risk or exhibit a U-shaped relationship between risk and the amount of the input applied. In a study of Philippine farmers, it was shown that risk typically decreases in fertilizer either up to or almost up to the expected profit-maximizing quantity (Roumasset 1976). Moreover, crop insurance distorts farmer behavior, causing farmers to neglect available strategies of risk reduction such as pest control (Roumasset 1979).

The efficiency case for parastatals in developing countries is that a substantial fraction of the population is poor and risk-averse, that markets are incomplete, and that insurance fails to compensate for missing state-contingent and futures markets due to moral hazard and adverse selection (e.g. Just 1988). The proper conclusion from these observations is that there *may* be some form of government intervention that can result in a welfare improvement from the competitive equilibrium. By some leap of imagination, it has often been assumed, however, that the failure of the competitive equilibrium to achieve a first-best optimum implies that there are benefits from price stabilization.⁹ For example, in their response to Just, Bigman et. al. (1988) stated that “attempts to quantify the net efficiency benefits of institutional attempts to reduce risk suggest that they are usually small and possibly negative.”¹⁰ This in turn is interpreted to mean that the theoretical benefits are substantial but may not be realized in practice (Timmer 1989). Again, these propositions turn out to be wrong in theory (Wright and Williams 1990) and fallacious in practice (Roumasset 2003).

Agricultural parastatals are charged variously with providing low and stable prices to consumers, sufficiently high and stable prices to producers, promoting agricultural modernization, insuring food security, and reducing poverty. These goals are not only fiscally irresponsible but are in conflict. Not only does pursuit of some of the goals prevent the achievement of others, but actual programs thwart the development of

⁹ The typical scheme envisioned involves a buffer stock administered to maintain domestic prices between set ceiling and floor prices.

¹⁰ Quoted in Timmer (1989).

the private marketing sector; artificially inflate consumer prices relative to producer prices; and motivate corruption. Calculations for the Philippines show that interventions in the rice market alone caused excess burden of more than one billion dollars in one year (Roumasset 2002; David 2003).

Parastatals are also illustrative of *black-hole economics* (Roumasset 2003). Like the drug wars, parastatals increase and destabilize consumer prices, i.e. make the problem worse. Like prohibition, this induces more government effort, which further worsens the problem, thus setting a vicious circle in motion. In principle, there is no limit to the resources that can be sucked into the hole.

In summary, interventionist economics is bankrupt, primarily due to a problem of misplaced exogeneity and the Nirvana fallacy. In the next section, I offer an alternative to the Pigouvian blackboard economist and the postmodern information economics.

II. The New Institutional Economics of Agricultural Organization

The alternative to misplaced exogeneity involves characterizing the true nature and seeking the fundamental causes of behavior and organization.¹¹ In a cross section of farms, for example, which type of land is allocated in large parcels, to which economic actors, and why? How has the composition between family and hired labor changed and why? Under what conditions do landlords choose to contract with tenants to manage their land?

The central decision-making model of development microeconomics is the farm-household model. A simple version is depicted in Figure 1, which shows the household labor supply schedule of a representative farm household and three possible labor-demand schedules, depending on (quality-adjusted) farm size.

¹¹ Coase (1988) and Barzel (1989)

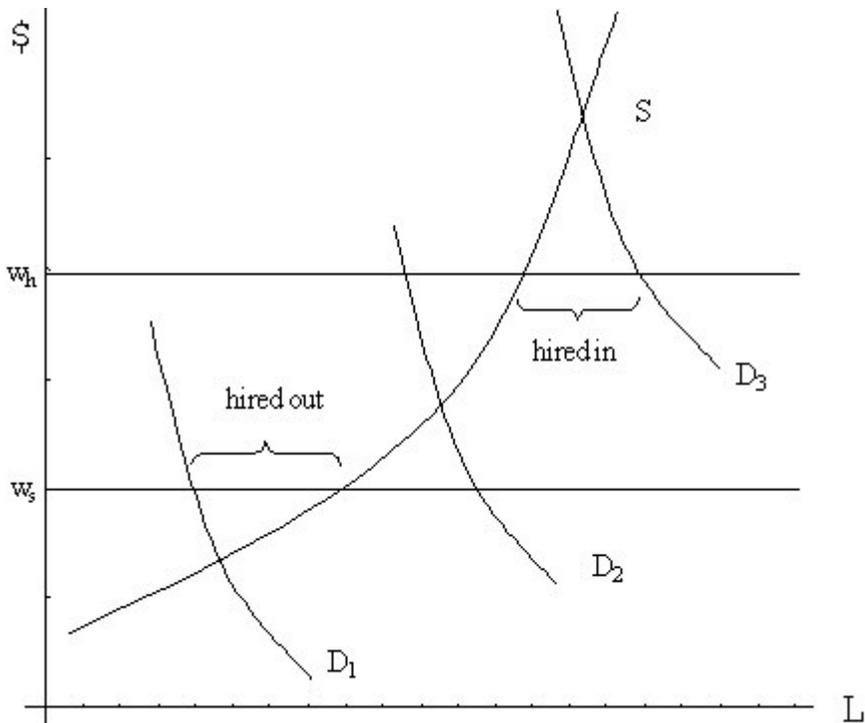


Figure 1: Quasi-separability of farm labor demand and farm household supply

For D_1 , the family exports its excess labor, and the relevant shadow price of labor is w_s , the “selling wage” after deducting journey to work and other necessary expenses from the nominal wage. For D_3 , the farm-household imports hired labor, and the shadow wage is w_h , the hiring wage after including the employer’s agency cost—which includes recruiting and supervision costs and the residual costs of labor shirking (see discussion above). If labor demand intersects household supply in the intermediate range between w_h and w_s , the shadow wage rate is given by the household’s marginal opportunity cost of labor, S_L .¹² Accordingly, the rational farm household can be said to be maximizing shadow profits, based on the shadow-wage schedule,

$$\begin{aligned} w &= w_s, & L < L_1 \\ & w_h, & L > L_2 \\ & S_L, & L_1 < L < L_2 \end{aligned}$$

The profit maximization problem of the farm is only quasi-separable from the household utility maximization problem, inasmuch as the labor supply schedule is not independent of farm income.

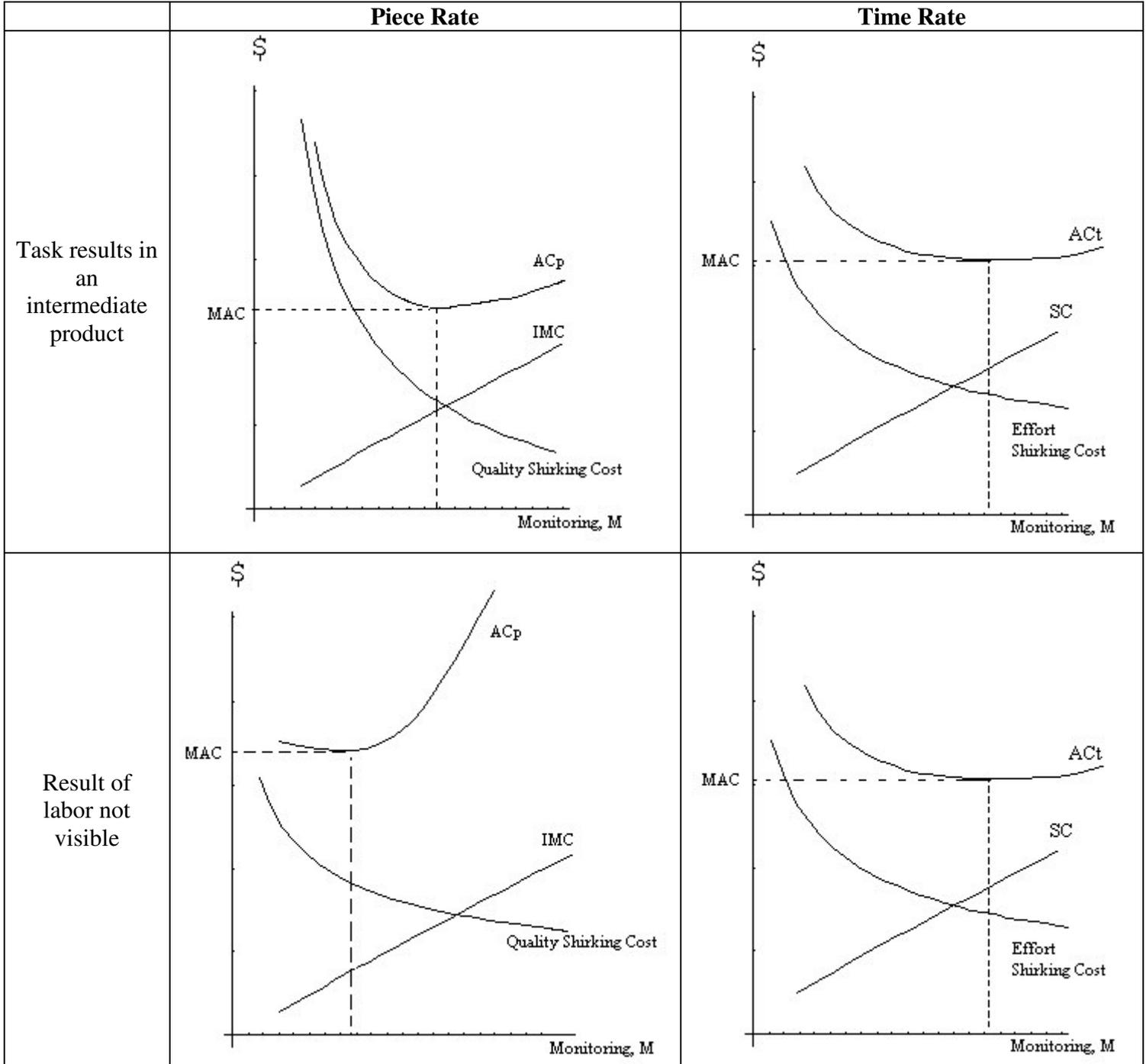
Similarly, the household-farm produces the shadow profit-maximizing quantity of the agricultural commodity, where the shadow price is bounded by the buying price and the selling price and coincident with the household demand schedule in between. Again there is a limited source of non-separability, inasmuch as household demand is dependent

¹²For further details of this model, see Roumasset (1981). A similar model and circumscribed comparative statics are provided in de Janvry et. al. (1991) and Sadolet and de Janvry (1995). Roumasset (1979) extends the model to include behavior under uncertainty.

on farm income. The “wedge model” contrasts with the household-farm model of Lau et al. (1981) and Ahn, Singh, and Squire (1980) wherein household consumption is determined recursively, based on the profit-maximizing behavior of the farm. Nonetheless a recursive algorithm can be employed to solve the wedge model, albeit by guessing household consumption and iterating until the guessed consumption level is consistent with both the household utility function and shadow profit-maximizing farm income.

However, the wedge model begs the question regarding determination of the unit transaction-cost wedge. That is provided by agency theory. Figure 2 illustrates agency theory in the context of alternative labor contracts. Piece rates are commonly used in situations where the product of labor is easily observable, for example, sizing and sharpening the cane stalks prior to planting, and the planting of stalks at uniform spacing. These tasks are tantamount to intermediate products delivered to the farm operator, who pays according to quantity. This institution economizes on minimum agency cost, i.e. the minimum sum of supervision and shirking costs. For tasks that are not amenable to *ex post* inspection, supervision is used to concurrently monitor the labor activity in question and workers are paid according to the time spent on an activity, not its result. The four panels illustrate the comparative-statics proposition that if tasks are sufficiently easy to monitor through *ex post* inspection, then the corresponding agency cost at optimal monitoring will be lower than the agency cost of wage contracts. The opposite is true for tasks that are difficult to monitor. For each task, the unit transaction cost is given by the least of the two minimum agency costs (MAC) for the task in question.

Figure 2: Specialization of contracts by task



The wedge model can be used to explain behavior of the household-farm—the basic building block for theories of agricultural development. The agency-cost model can be used for explaining rural institutions. Both are essential for understanding the consequences of contemplated policy reforms.

The New Institutional Economics (e.g. Roumasset 1978) also recognizes that different levels of analysis may be appropriate for the analysis of different problems. Models that recognize transaction costs such as the two above are classified as *second best*.¹³ When the subject of inquiry is the terms of agricultural organization, e.g. tenant and harvesters share of production, the first-best model, which abstracts from transaction costs, has been found to be appropriate. In *first-best* analysis the terms of contracts are set such that factors receive their marginal products, just as if there were competitive markets.¹⁴ *Third-best* analysis or *political economy* allows for multilateral opportunism in the pursuit of favorable government treatment by special interests (Dixit 1996).

Land, labor and the nature of the farm

Consider the evolution of hired labor. In the Marxist view, the new rice and wheat technologies that swept through Asia in the 1970s disenfranchised the peasantry and led to falling wages and increased unemployment. In the induced innovation view (Binswanger and Ruttan 1978; Ruttan 2003), the causation was just the reverse. Population pressure on limited land resources drove down wages thereby inducing land-saving technological change. In effect, this allowed “biological capital” (modern varieties and chemical inputs) and labor to substitute for land. The increased demand for labor had a positive effect on wages, just not enough to offset the effect of population pressure (Hayami and Kikuchi 1982).

The induced-technological-change explanation just described is a first-best argument. However, not only did labor per hectare increase, its composition changed dramatically. In the 10 years following the adoption of the new rice varieties in the Philippines, hired labor in weeding for example increased from less than 20 percent of total labor to more than 80 percent (Roumasset and Smith 1981). Figure 3 illustrates the use of the wedge model to explain this dramatic institutional change.

¹³ Note that while both models accommodate transaction costs, the first regards them as being exogenous while the second determines unit transaction costs endogenously.

¹⁴ This is the implicit theoretical underpinning of Hayami and Kikuchi’s (1982) study of rural institutions in the Philippines and Indonesia. Sufficient assumptions and a theoretical demonstration of market and contract equivalence are provided in Roumasset (1979).

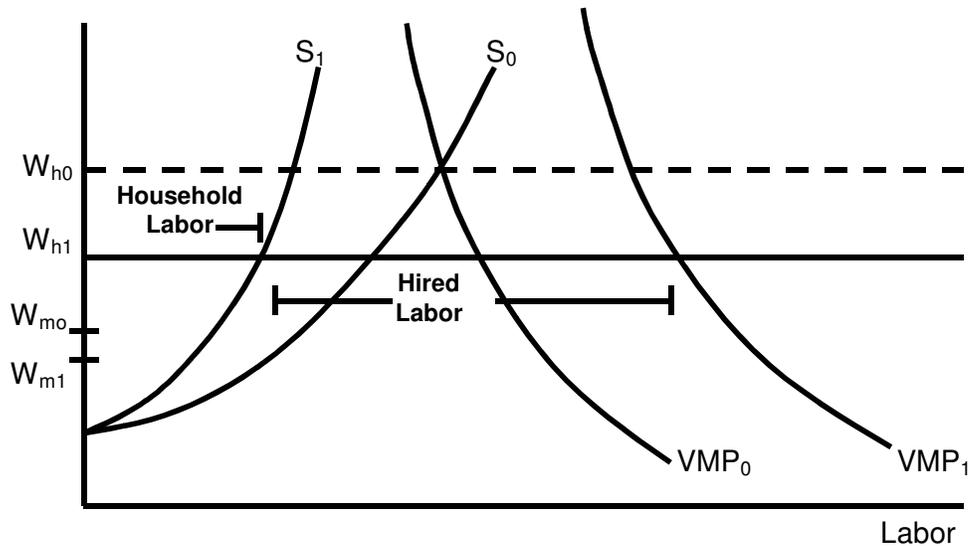


Figure 3: HYVs and the advent of labor markets

The graph represents a typical farm household in the province of Laguna and shows how four factors combined to increase hired labor dramatically. First, and most importantly, the intensification of production, ultimately caused by increasing land scarcity and accommodated by the new rice technology, increased the demand for labor per hectare. This is illustrated by the shift in the demand curve to the right. Secondly, increased farmer incomes resulted in increased schooling of farm children. This combined with the increased specialization among farm workers lowered the amount of farm-household labor per hectare. These higher opportunity costs and lower substitutability for skilled labor are illustrated by the shift in the labor supply curve to the right. Thirdly, the market wage went down (from W_{m0} to W_{m1}) as population growth, including in-migration, increased by more than enough to supply the increased labor demand. Fourthly, the transaction cost wedge between the market wage and the gross hiring wage decreased due to the advent of labor contractors and other new institutions of labor contracting (Roumasset and Uy, 1980). The third and fourth factors are illustrated by a downward shift in the gross hiring wage (from W_{h0} to W_{h1}).

As hired labor increased, a menu of agricultural contracts emerged for incentivizing labor in different tasks. We have already discussed figure 2, which shows how agency theory can be used to explain the tendency for piece rate contracts to be chosen when the task amounts to delivering an observable intermediate product. Statistical analysis of sugarcane contracts in the Philippines confirms this tendency (Roumasset and Uy 1980). For example, cane stalks are prepared for planting (uniformly sized and sharpened) and laid out for inspection. The farm operator simply inspects them

for quality and uniformity. Next the stalks are planted, and the operator inspects for proper height and spacing.

Gama or *Ilani*, as practiced in the Philippines, is an institutional arrangement whereby the worker contracts to weed and harvest a specified parcel for typically 1/6 of the rice harvested for that parcel; *ceblokan*, practiced in Indonesia, typically requires transplanting, in addition to harvesting and weeding, for the same 1/6 share (Roumasset 1978; Hayami and Kikuchi 1982).¹⁵ These arrangements were preceded by *hunusan* in the Philippines and *bawon* in Indonesia, wherein only harvesting was done for the share of the harvest, typically 1/6. Before the new institutions of *gama* and *bawon*, the share was sometimes lowered to 1/8 (Roumasset 1978).

Why did the share settle at one-sixth and the work increase instead of the share simply declining? Hayami (1998) suggested that another function of *gama/ceblokan* was to provide an explicit selection mechanism for choosing who would weed/harvest and to allocate a specific parcel to each group of workers. In addition to selection, this provides improved incentives over the open *hunusan/bawon* systems that were open to anyone in the village. Under the old system, a kind of free-riding occurred wherein workers would harvest faster than efficiency warrants in the attempt to harvest more land than their competing harvesters. Moreover, having workers harvest the same plot that they weeded (and sometimes transplanted) provided additional incentives to weed/transplant with greater care. Thus while first-best principles can explain either the falling harvesters share or the increased work required, second-best considerations are required to understand why one institution was favored over the other.

¹⁵ Remarkably, a similar arrangement was documented in *The Constitution of Athens* almost 3,000 years ago. Workers contracted under a sharing arrangement in ancient Greece were called *Hectomori* or “sixth partners.”

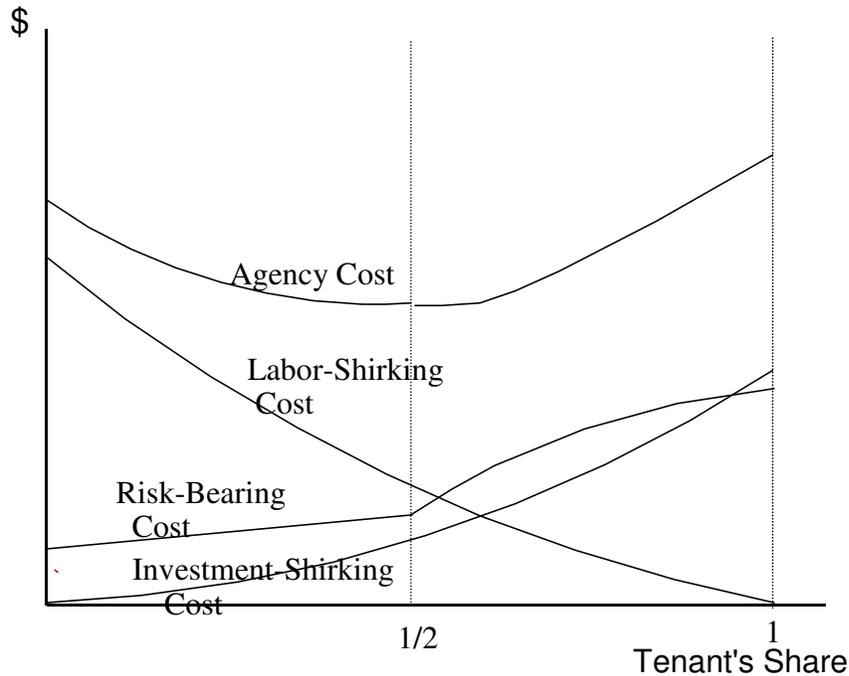


Figure 4: An Eclectic Theory of Share Tenancy

Figure 4 provides a second-best efficiency explanation of the institution of share tenancy. The larger the tenant share, the less the agency costs of labor shirking (defined as monitoring cost plus residual shirking costs). On the other hand, the greater the tenant share, the greater the tenant's incentive to over-use or under-maintain land quality. Share tenancy (with a tenant's share of roughly one-half) minimizes the agency cost of both sources combined. There is nothing inherently inefficient in the contract, just explicit recognition of the contracting costs inherent in specialization.

Inasmuch as the tenant is the farm manager, not a worker, it is futile to classify "forms of tenure" as share tenant, lessee, or wage worker. Rather, we need to classify organizational forms by which ownership, management, and labor are connected. Figure 5 illustrates a taxonomy of firms classified according to degree of specialization. Note

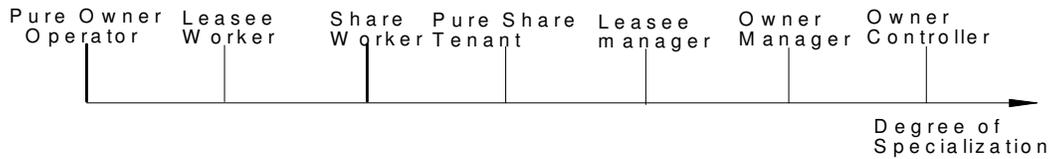
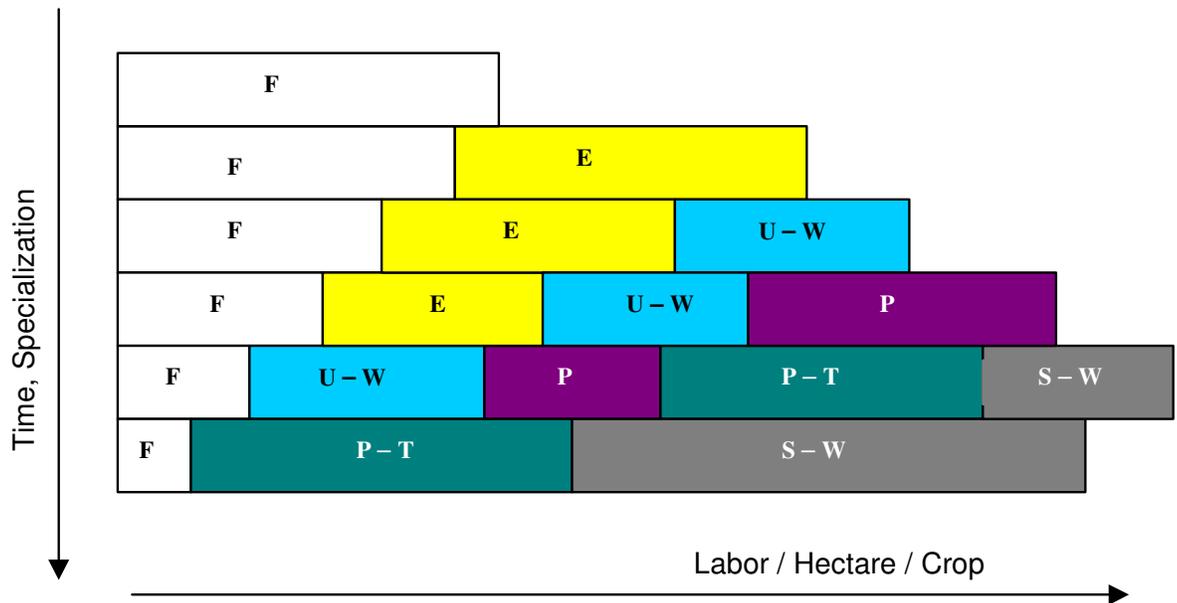


Figure 5: A Spectrum of Agricultural Firms

that the pure owner-operator and the owner-manager are on opposite sides of the specialization spectrum, even though the conventional taxonomy classifies them both as owner operator. The pure owner-operator household does all the management and all the labor. There is no hired labor. The owner manager hires most of the labor and reserves for himself only those tasks which are bundled with managerial discretion, e.g. fertilization. Share tenancy is characterized by an intermediate amount of specialization – the tenant does most of the management, all discretionary tasks, and some other tasks, e.g. land preparation. Evidence from the Philippines and Nepal confirms that specialization is driven by intensity of cultivation, which is driven in turn by favorable land quality, location, and economic environment (Roumasset 1995). Intensification can also be driven by population pressure, demand growth, and rising land values. Not only does intensification warrant more specialized agricultural firms, but the organization of hired labor itself becomes increasingly specialized. This is elaborated in the following section.

The nature of economic integration: transaction costs and specialization

As farm production intensifies, labor inputs increase, until the last stage wherein capital-labor substitution overcomes input intensification. Labor contracts are increasingly specialized, eventually with labor contracts made on a task-by-task basis. Thus intensification and specialization are coevolutionary. Figure 6 helps to resolve the



Notation:

- F: Family labor
- E: Exchange labor
- U – W: Undifferentiated wage labor
- P: Piece rate labor
- P – T: Piece rate with team labor
- S – W: Specialized wage labor

Figure 6: Evolution of Labor Contracts

fundamental paradox that total transaction costs increase as economic development proceeds (North and Wallis 1982). Unit costs of transportation and communication (*unit transaction costs*) are falling and improved institutions lower the *agency costs* (defined as supervision plus residual shirking costs) per unit of labor hired. But because more labor is hired and because specialization increases the number of contracts (even normalized by yield per hectare), *transaction expenditures* increase.

Facilitating specialization in input and output markets

As unit transaction costs fall and incomes rise with economic development, the number of both final and intermediate goods increases as does the number of distinct labor tasks and opportunities for learning-by-doing. Thus economic specialization and integration are part of the same evolutionary process (Yang 2003). However, natural market deepening is impeded by market-distorting interventions including trade restrictions, price interventions, shipping and other regulations, and failure to provide public infrastructure, including quality standards. Parastataals, such as the National Food Authority in the Philippines, exemplify how government policy can stagnate the natural evolutionary process and thereby stagnate an industry. Economic integration can be enhanced by removing these policy distortions and by focusing on facilitating actions

such as agricultural research and the provision of transportation and communication infrastructure.¹⁶

By considering institutional choice as endogenous, we can understand two beneficial effects that are often overlooked. First, inasmuch as institutional change is induced by changing factor prices (Ruttan 1978; 2003), e.g. falling wages relative to rents, it allows greater substitution of labor for land, thus partially ameliorating downward pressure on wages. Second, to the extent that institutional change facilitates specialization and the external economies associated therewith (Yang 2003), it may actually overcome the original downward pressure on wages (Roumasset and Van Assche 2004). Econometric studies showing that hired labor is less productive than family labor fail to account for the specialization going on and for the fact that the farm operator's labor is considerably more valuable than the shadow price of hired labor. In other words, the inefficiency arguments ignore the principle of comparative advantage.

III. Conclusion: Stop, Push, and Facilitate

There has long been a tendency among economists and others to use statistical evidence and stylized facts to castigate behavior and organization in developing countries as sources of inefficiency and inequity and to propose coercive mechanisms for reshaping the economy. These attempts illustrate that empirical analysis cannot be stronger than the underlying theory. Unless the theory accounts for the nature and causes of economic organization, econometric analysis can only deliver statistical patterns. It cannot be used as the basis of policy recommendations.

Relatedly, the assertion that government intervention can always improve efficiency is based on a straw man version of the market in which neither private governance nor multilateral agreements are allowed. Even if such circumscribed characterizations were accepted, the theory leads only to the claim that some kind of efficiency-improving intervention exists. However, the nature of the theory and the available evidence make it infeasible to prescribe specific policy reforms or to determine their consequences (Besley 1994).

When a more fundamental approach is taken, we find substantial evidence that institutional change evolves in much the same way as would be warranted by efficiency. A healthy respect for institutional evolution leads us to the conclusion that governments should *stop* trying to engineer behavior and organization. Rather the focus should be on *facilitating* economic cooperation through the provision of information, a legal

¹⁶Frequent reference to Philippine agriculture as the least integrated in Southeast Asia is misleading. Statistical measures of integration have not been informed by correct theory. The naïve measures used presume that equality of shadow prices across space and across economic agents is the efficient benchmark. Even more sophisticated theory that equates shadow price differentials with transport costs is correct only where positive transport costs exist. Moreover, it is misleading to separate space from time. As noted above, optimal trade and transportation of grain calls for exporting from the south following their peak harvest and importing to Manila preceding the wet season harvest on Luzon. During periods when the efficient transport cost is zero, shadow prices differentials can be less than transport costs.

infrastructure, and opportunities for multilateral cooperation. The prerequisites for cooperation will render the time-honored strategy of *pushing* agricultural development through investments in research and infrastructure even more effective, especially if modern principles of public administration are employed.¹⁷

The economics of rural organization with endogenous behavior and organization is in its infancy. There is a promising body of theory featuring specialization as the central pillar of economic organization, e.g. Yang 2003, and a rich tapestry of rural institutions waiting to be described and explained. Much remains to be done.

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¹⁷ Laffont and Tirole (1993).

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