The Economics of Institutional Change In Agriculture

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The key role of institutions in mediating rural markets, and thus in influencing economic change in agriculture, is explored. Pertinent theories of institutional change are reviewed and the place of external intervention, whereby outside agencies attempt to assist market mediation, is examined. The institutional cases of plantations and smallholdings in tree crop agriculture are scrutinised, and their respective performances are compared with a focus on market failures. The case of traditional land rights is investigated in similar vein. The analyses indicate that government interventions to remedy market failures may be helpful in improving information, capital, land, and output markets, but should be carefully designed to match economic and social circumstances. The economics of institutional change is shown to be a vital sphere, deserving further consideration.

1. Introduction

Institutions of production, marketing and consumption, including those relating to agriculture, are of major significance in economic development. Family, share, and corporate farms; land, labour, capital, and product markets; downstream processing organisations; contractual arrangements; and traditional and modern patterns of rights and rules may all, by virtue of the particular configurations of variables associated with them, have key effects on economic outcomes. They accordingly deserve careful scrutiny. Government itself as a major economic element in most situations also invites analysis in the light of its institutional impacts. The economic effects of all such institutions have grown with the widening cash economy, and with the consequentially increasing role of markets and other structures linked to these markets.

The role of institutions has been neglected in economic analysis, partly because social and political variables are also involved and are difficult to identify separately. There is no doubt, however, that the economics of institutions is a key factor, and that progress in understanding institutional organisation would help in supporting applied studies and policy formation.

As noted by Feeny (1988), the economics of institutions are seen as especially relevant by economic historians and development economists. The former confront over time the interplay between changing institutions and economic progress, while the latter confront over space a variety of institutional structures with manifestly different influences on growth. The purposeful creation of new institutional arrangements (by government in particular) has been a feature of special interest for both groups of specialists, as attempts have been made over the last century or so to intervene positively in economic improvement.

While endowments, technologies, and preferences have been the traditional pillars of neoclassical economic theory, rules or institutions have all along been recognised, albeit implicitly, as a key additional element (see, for example, Samuelson 1970, p.8). Indeed, there seems no reason why institutional considerations cannot be incorporated more fully into the framework of modern neoclassical economics, using extensions or modifications of existing theory. The claim, for instance, by Samuels (1987, p.864), that " (a)part from Marxism ...institutional economics [in the Commons and Veblen-Ayres traditions] has been the principal school of heterodox thought in economics" is certainly overblown and, if followed at the expense of neoclassical analytical techniques, would probably be unrewarding. But there is still no doubt that the work of institutional scholars including Commons, Coase, Williamson, North and even Marx himself have much bearing on extensions to economic theory regarding institutions, and should be actively taken into account.

The aim of this paper is to review current ideas of the economic role of institutions in both general and agricultural development. First, an account is

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given of the economic nature of institutions. Major theories of institutional change and their implications are then scrutinised. Next, certain illustrative institutional cases, and key governance and other aspects associated with them, are examined in relation to the theories. Finally, the need for a better understanding of the mechanisms of institutional change is emphasised, with a view to formulating more effective policies of institutional improvement.

2. The Nature of Institutions

It is convenient, in discussing the economic justification of institutions, to use as a 'straw man' the Walrasian model of a frictionless competitive economy. This describes a general equilibrium situation where commodities are identical, rights are perfectly delineated, agents are fully informed about the terms of exchange, and there are no transaction costs. In this situation prices are sufficient for efficient allocation, and institutions are superfluous.

But in the real world transactions are not frictionless and there are what Coase (1937), in his classic study of the institutional nature of the firm, termed 'the costs of discovering prices'. These are the costs of measuring the attributes of what is exchanged, of enforcing agreements made, and of otherwise organising transactions. Because there are economies of scale in performing these roles an institution called a 'firm', which may be viewed as a "contractually related collection of resources of various cooperating owners" (Alchian 1987, p. 1032) emerges to conduct these tasks. Such institutionalisation also helps (as part of the measurement role) to reduce uncertainty and to lessen the difficulties of handling unreliable data. In practice, many kinds of institutions including firms, families, community groups, non-profit agencies, and government instrumentalities have arisen to undertake activities of both exchange and transformation not mediated by the invisible hand of the market.

Inevitably all such activities entail a structure of governance, and this is naturally in a form or framework adjusted to the specific economic and social roles being undertaken. As well, each institution is characteristically hedged around by formal and informal rules or 'constraints' (North 1990). Formal rules are those promulgated by government, or agencies external to the institution, to regularise its operations. Informal rules (or norms), on the other hand, spring from the traditions and customs of the particular socio-cultural context. In a world of limited information and computational ability, such rules help reduce the costs of human interaction and lessen uncertainty. One important type of rule, often regarded as an institutional arrangement in its own right, is that pertaining to property rights. These rights accord ownership of resources to particular individuals or groups (Barzel 1989). Yet rules may also be economic constraints, and act as barriers to institutional flexibility and change.

All these institutional activities of measurement, enforcement, supervision, and production incur transaction costs (Cheung 1983). One object of economising activities is to reduce such costs or add value to the output secured, identifying institutions or intra-institutional procedures which are superior in this respect. This is the focus of the growing subdiscipline of transaction cost economics (Williamson 1985).

Institutions by their nature are bound around by social and political as well as economic imperatives and, as indicated below, the former may dominate and obstruct tendencies toward economising. Indeed, Marxian historical materialism (see, for example, the English translation in Marx 1970), which denoted class interests represented by the state as the overruling factor in institutional (and all historical) development, certainly has pertinence to past and present institutional evolution, and is a major factor to be considered in any institutional analysis.

3. Theories of Institutional Change

It is useful, in reviewing the economics of institutional change, to separate out the chief sets of ideas attaching to its underlying mechanisms. One major set is that inspired by the work of Coase. Further contributions have come from the theories of induced innovation, structural form, and the need for external intervention.

Coasian theories, as elaborated by Cheung, Barzel, and North amongst others, basically see the institutional structure as importantly influencing the economic opportunities of those who live within its contractual and other arrangements. There is an element of 'lock-in' or path-dependence in this situation where, for example, the formulation of the adaptive expectations which influence decisions made will depend very much on the rules, norms, and other constraints of the structure. Hence certain kinds of asymmetric information flow are characteristic of particular institutions and influence their pattern of development, while established social norms reflected through the governance structure confine what is done to a restricted range of possibilities. Within Coasian theory there is naturally an emphasis on reducing transaction costs, and Williamson (1985) has explored these and underlying behavioural characteristics in regard to governance, contractual and other aspects.

Change takes place incrementally within the Coasian framework, and results from the perception of entrepreneurs that they can secure increasing returns at some margin. But while most formulations are fundamentally optimistic in respect of the orientation of economic activity to growth, there is also a recognition (with Marxian undertones) that political and social actors may not exercise such positive effects. Jones (1988), using an essentially Coasian approach, pinpointed the predominance of rent-seeking by politically powerful individuals as the chief explanation for defeated tendencies to growth which have featured in history for much of the last two to three thousand years. Technological innovations have frequently been made and successfully applied in limited situations, with potentially much enhanced returns to participants. But the political control of relevant institutions by certain actors has confined the benefits to the latter, thus undermining possibilities of further economic expansion and change. However, in other (more democratic) situations political forces can be advantageous, forcing control from powerful rent-seekers so that development is less constrained and its benefits distributed more widely.

In contrast to Coasian ideas, which focus on the behaviour of actors within institutions, the **induced innovation** approach looks more generally at the response of institutions to outside influences. The key concept derives from the work of Hicks (1932), who postulated in his *Theory of Wages* that technological change is induced by alterations in relative factor prices. Substituting institutions for technologies and adding output prices gives the skeleton of the induced innovation model, in which relative factor and product prices, technology, endowments, preferences and the constitutional order are exogenous. Most aspects of institutions other than the latter are treated as endogenous, however, responding to perceived economic advantages flowing from changes, not only in prices, but also in the other exogenous items (Feeny 1988). Thus institutions adjust their format in reaction to external stimuli, and in doing so facilitate economic growth.

Induced innovation theory was applied by North and Thomas (1973) to the vast canvas of institutional change in the 700 years of European development up to 1500, while Hayami and Kikuchi (1982) and Feeny (1988) have used the model to explain, respectively, institutional re-arrangement in Philippine agriculture and Thai property rights. Yet, although these primarily descriptive analyses have appeared to possess interpretive power, they are all characterised by unexplained effects which throw doubt on conclusions reached. Hence they have been justly criticised by Field (1981 and 1984) and Grabowski (1988) for undue endogenising of the complex of institutional variables, and for inadequate specification of the variables involved. These critics allege that it is hard to measure social factors in this framework and that, especially in times of significant change, the economic variables of interest may also be difficult to identify.

Structural form theories of change have yet another thrust, in that they seek primarily to establish which government and other institutional arrangements are most commensurate with good economic performance at particular junctures of economic, social, and political circumstances. These theories are grounded on the observation and measurement of both historical and current developments in various settings, and have two main strands.

One strand is the institutional element of the 'stages of growth' approach, whose best known exponent is probably Rostow (1960). Galeski (1972), who

viewed rural development in a Marxian frame having regard to both material and social conditions of production, pointed to a desirable evolution from a feudal serfdom to peasant smallholdings, to large-scale state enterprises. Marx (1970) himself postulated a further stage beyond the latter, entailing a 'withering away' of the state and a devolution of all functions of the former official apparatus to a sophisticated and self-managing society. This last stage is becoming increasingly popular in development circles today.

The other strand of structural form theory looks at institutional development needs in specific modern settings, usually relating them to what are judged economically-successful patterns elsewhere. Johnston and Kilby (1975) compared the broad-based 'unimodal' strategy of rural improvement, which attempted to promote widespread change through institutional arrangements and techniques matched carefully to existing structures and practices, with the 'bimodal' and dualistic strategy focussing on the capital and management-intensive development of privileged enclaves. Johnston and Kilby related their 'unimodal' model to the rural development paths followed first in Togukawa and Meiji Japan (and later in Taiwan), whilst their 'bimodal' strategy matched the approaches which they perceived had been taken in Mexico and Colombia. They considered, after careful analysis, that the former strategy was superior in both distributional and total economic growth terms in most modern settings. Again, in the well-known African debate, the Ghanaian economist La-Anyane (1969) argued in similar vein to Johnston and Kilby that progressive economic 'transformation' based on existing institutions was superior to 'improvement' linked to the imposition of government-arranged structures from outside. The fact that structural form theories have been formulated with a view to promoting actual paths of institutional change in particular circumstances also connects them to the interventionist ideas now discussed.

Finally, amongst ideas of institutional change, there are those of **external intervention** which, given widespread market imperfections and failures in rural economies, have great relevance to bridging the consequent social-private divergencies. There has been a multiplicity of interventions by government agencies, so perhaps it is unexpected that (despite theories of public choice and the structural form ideas) concepts of institutional intervention in economic development have been barely developed.

The main over-arching theory is that of Gershenkron (1962), who was concerned chiefly with promoting industrialisation in backward economies. Based on German and other European experiences in the late 19th century, Gershenkron postulated a 'tension' created by the contrast between relative backwardness and the promise of economic development. There was a consequent inducement of state action to innovate institutions and hence substitute for the absent preconditions for growth. With greater backwardness there was a need for greater state action in this respect.

It is perhaps a measure of the larger experience with state action since Gershenkron's reference period that the adverse economic and social consequences of large-scale institutional intervention in rural improvement are now frequently stressed (Taylor 1987). These consequences flow partly from the regular failures of such interventions (see, for example, World Bank 1988), owing to fundamental flaws in their design. Hence, they are often informationally infeasible and incompatible with natural incentives, so that participants are encouraged to violate basic rules. The adverse consequences also stem from the destruction of local institutions and initiatives which commonly accompanies too strong a presence by the state.

In these circumstances the alternative avenue of low-level Marxian community mediation of markets is coming to the fore (Oakerson 1988), where 'external' intervention is taken as involving local groups and other non-government organisations (NGOs) in tackling deficient institutional arrangements. Despite their 'nearness' to the circumstances concerned, such groups can undertake this role in view of their better access to information, capital, and power than actors concerned in day-to-day institutional operation. Again, it is manifestly important for more substantial theoretical ideas to be developed in this sphere.

4. The Case of Plantations and Smallholdings

One case which serves usefully to illustrate important facets of institutional nature and change is that of 'plantations' (or 'estates') and 'smallholdings' growing tree crops in tropical Southeast Asia, Africa and Latin America. This case is of special comparative interest, in that two extremely different kinds of institutional arrangement undertake very similar economic activities side by side in the same regions. The case also has wider relevance, in that plantations are basically members of the class of large corporate farms growing a wide range of crops around the world. Smallholdings belong to the vast group of little family farms cultivating cash and subsistence crops in poorer agricultural economies.

Plantations are very large agricultural concerns, whose operations generally cover hundreds of hectares of a single tree crop, and whose governance structure is hierarchical, entailing a workforce controlled by managers and foremen. Both the size and governance of plantations confer advantages, which are reflected in their patterns of economic performance and change. Their size provides economies of scale in 'measurement' and 'enforcement', particularly in access to capital, labour, information and output markets, but also in some phases of production including processing. Their governance facilitates transfers of information, as well as linkages to other institutions of control and technological adaptation. These size and governance effects are hard to separate, however.

Plantations have been most successful in cultivating certain kinds of tree crops in a wide range of countries, and in adjusting to economic changes over time (Courtenay 1980). They were able in the great period of tree crop expansion early this century to use their large size, corporate structure, and public shareholdings in this structure for gaining access through banks and merchandising agencies to capital markets in Europe and North America (Allen and Donnithorne 1954). The small proprietary plantations owned by private individuals were unable to establish such links and, being short of capital generally, did not survive this phase.

Indeed, the rapid corporatisation of the large plantation structure in the 1900s is a good example of induced institutional innovation, in response to high prospective returns and the availability of share capital on faraway markets. The size and hierarchical structure of plantations at that time also facilitated the marshalling and control of the huge workforces required under labour-intensive methods of tree crop establishment and cultivation. The same feature expedited the subsequent great retrenchment of labourers, which was undertaken during the low commodity prices of the 1930s Great Depression, and enabled plantations to remain economically viable.

Economies in access to technological information, and the suitability of their governance structure for testing and adopting new technologies, have become significant for plantations in recent years as they have quickly taken up modern high-yielding production methods. An important element of this has been the adjustment of institutional arrangements towards applied research and technology adaptation, in response to prospective high revenues from using recently available scientific ideas and rising relative prices of land and labour. This is another instance of induced institutional innovation where, as is common, institutional and technical innovations went hand in hand.

A further significant shift in the plantations' institutional form, this time in response to consumer demand, has been the movement of enterprises 'downstream' in a vertically integrated structure, sometimes reaching to the wholesaling of manufactured products in consumer countries (soaps, oils, beverages). In the competitive world of commodity marketing, such moves may be seen as following the transaction cost scenario of Williamson (1985), in which vertical integration eliminates previous contracting hazards, and better utilises human or physical capital specific to contracting relationships between parties.

Despite these economically advantageous adjustments of the plantations, it is clear that their size and governance restrict them to relatively few crops, notably oil palm, rubber, cocoa and tea. These are crops in which large-scale routine management is feasible, and where scale economies are signifi-

cant. For tree crops with more variable cultivation requirements, plantation management is too inflexible and the regimes of small farms more versatile. This feature relates to the Marxian argument of Binswanger and Rosenzweig (1986), who view agricultural organisation as a consequence of the interplay between asymmetric information and the 'material conditions of agriculture'. Thus, differences between crops and technologies have important effects on the organisation of production.

Politico-social influences have been crucial in the institutional evolution of plantations, and have not always been positive from broader economic and social viewpoints. The frequently major economic role of plantations and their connection with powerful political interests has brought them the help of government which, during the colonial era, facilitated both the initial marshalling and subsequent retrenchment of labour forces. Again, in this era, plantations were bolstered against smallholdings through discriminatory policies in mechanisms of land allocation and output control (Bauer 1948, Pelzer 1978). This prevented the entry of lesser-cost producers and a more equitable distribution of returns. More recently, and since independence, governments have often acquired controlling shares in plantations, and have then given them privileged access to capital and other markets (Barlow 1989). This has distorted the economic allocation of capital and other inputs, and has led to an undermining of management efficiency (see, for example, World Bank 1985). Further, prevailing social norms which have developed within plantations have led to the locking in of huge dependent workforces, often at below market wages and with little opportunity for migration (Beckford 1972, Stoler 1985).

In contrast to plantations, tree crop **smallholdings** are typically family-operated units. Their scope is limited by the size of the family workforce, and they usually grow other cash and subsistence crops to complement trees in a diversified household economy. This small organisation cannot obtain substantial economies of scale, but its governance structure nonetheless offers other significant advantages, which help explain its persistence as a viable economic institution. These advantages include very low costs in the measurement and enforcement phases of monitoring and supervising workers, linked to the altruistic and sharing characteristic of the family-based structure (Pollak 1985). As well, the family unit with its close liaison is adaptable to many tasks, with the further flexibility that family members are sometimes prepared to work at below market rates. Hence smallholdings are generally more effective than plantations for cultivating tree (and other crops) needing more intricate husbandry, such as coffee, cloves, and cashew (and also vegetables, legume crops, and rice). But, as a negative feature, family governance and its accompanying informal rules place limits on enterprise expansion, in that monitoring large numbers of hired workers is difficult within this structure.

A further significant institutional trait is the small-scale, production-confined nature of smallholdings, meaning that (to a far larger extent than plantations) external market transactions must be mediated through other organisations. This was not a problem in the early years when the huge and profitable expansion of smallholder tree crop agriculture, accompanying that of plantations, was both enabled and encouraged by a marketing nexus of private dealers. These supplied the limited purchased inputs required by the primitive technologies of that era and, in an even more vital role, handled commodity outputs.

Reliance on external markets was far less satisfactory with the advent of capital-intensive new crop technologies. While smallholdings, like plantations, faced rising prices of land and labour and could benefit from high-yielding varieties, they did not command the institutional structure to enable either an institutional or technical response to this. To adopt these varieties effectively they needed access to technical information, to capital (which with long tree crop gestations might only be repaid in 8-10 years), and to considerable purchased inputs. Neither information nor long-term capital was supplied by existing private markets in the rural areas of any country, and there was thus good reason for government intervention to overcome the social-private divergence. This was essentially done by two routes, one involving special institutions to provide extension and capital for individual smallholders, and one entailing integrated improvement schemes where small farmers were grouped

in large blocks with central supervision along the lines of a plantation. These routes essentially matched the Johnston-Kilby structural form paradigm, where the individual approach followed unimodal lines while the block strategy (which in practice concentrated on a few favoured localities) was extremely bimodal.

Although results from these public institutional interventions to mediate information and capital markets have been mixed, a review covering many countries denotes the former as generally more economically successful and profitable to the farmers concerned (Barlow and Martin 1991). In some block schemes the initiatives have failed disastrously (Barlow, Shearing and Ridwan 1991). Much has depended on the success of official sponsors in making their institutional structures compatible with the natural economic incentives of participants (including both participating officials and farmers), while discouraging them from free riding, excessive rent-seeking, and other violations of basic rules. One critical element has been political, in that the ability of participating smallholders to criticise problems and suggest helpful adjustments can be seen as important to success. Indeed, it should be added that grass-roots rural pressures have usually been vital in encouraging governments to attempt substantial interventions in the first place (Ness 1967). A further key feature has been the management ability of officials.

All types of official interventions to assist small farms have generally worked better in the annual crop case. The latter has featured much lower transaction costs, a requirement for short-term capital only, and the marked additional characteristic of growing market mediation by private interests, once public activities have served to provide requisite information and reduce uncertainty (see, for example, Birowo 1987). Many studies of 'group farming', as an institutional initiative by government to bring together cultivation in either block schemes or other cooperative arrangements, have been presented by Dorner (1975) and Wong (1979). These studies, which cover tree and annual crops around the world, generally confirm the difficulties of achieving successful outcomes in such ventures, and the significance in this of the compatibility factors cited above. They further denote the pertinence of background social conditions, where tightly structured Northeast Asian societies, for example, lend themselves well to building group enterprises on the base of existing community structures.

Where no major official attempts have been made to mediate the market, most smallholder tree crop producers have remained trapped in technological situations which have changed little over the last half-century (for example, Indonesian smallholder rubber and Nigerian smallholder oil palm). But even in these instances there has sometimes been low-level community mediation, informed by a slow diffusion of new ideas emanating largely from adjacent plantations or research institutions, and channelled through small local groups of enterprising private individuals. Within the limits imposed by undeveloped capital markets this has enabled some progress, which is nonetheless likely to accelerate over time.

In comparing plantations and smallholdings, it is clear that their different institutional forms have had significant implications for economic performance. On short-run economic efficiency grounds the former appear superior. Privately-operated plantations have given larger returns than smallholdings to land and capital, as well as successfully mediating input and output markets and avoiding needs for costly and often ineffective official attempts to correct market failure. Their effectiveness is well illustrated by their dynamic prosecution of oil palm and cocoa cultivation in Malaysia and Indonesia from the 1970s, which bypassed in a few years the sluggish smallholding sectors producing these crops in Nigeria and Ghana.

But in a wider assessment, taking account of social and political factors as well as long-run economic efficiency, the conclusion is not so straightforward. Even given the closing of historical disparities between plantation and smallholding wages, the relative social utilities attaching to employment are unclear, although members of the plantation underclass can certainly be expected to prefer farming their own smallholdings.

In the long run, the social stability attaching to smallholdings and the damage from political rent seeking attaching to plantations (and intervention-

ist smallholder schemes) become important considerations, and themselves influence the sustainability of economic efficiency, meaning that choices between plantations and smallholdings (and between corporate and small farms) become a more open question. Other problems of plantations have been treated above. While little can perhaps be done with existing institutional structures, these issues are highly significant for policies towards creating new institutions or modifying old ones for future development.

5. The Case of Land Rights

Another case, which illustrates the problems surrounding changes in institutional rules, is that of land rights. Property rights (including those to land) are the formal and informal rules that hedge around institutional operations, and help reduce transaction costs in resource use. They may be defined as "powers to consume, obtain income from, and alienate the assets concerned" (Barzel 1989, p.2), and play a key role in the economics of institutional change. In certain senses, at least, such rights are "constraints" (North 1990, p.46), not only because they limit behaviour for good economic reasons, but also because they do so for bad reasons when they have become inappropriate. Property rights are again perfectly delineated in the Walrasian frictionless model, which implies zero transaction costs. But, in practice, defining and enforcing them does incur costs, and defining them fully, prohibitively so. Thus, rights are never completely described, and there are always economic incentives for actors to capture ill-defined attributes.

The case of land rights is fundamental to agricultural development, and usefully illustrates key aspects of institutional change. Boserup (1965) has indicated how increasing population pressures on land have been accompanied by both more intensive cultivation and land tenure modifications to facilitate this. She postulates tenure systems as endogenously subject to rising relative land prices, and the concomitant evolution of revised husbandry techniques.

Such tenure transition has historically touched most of world agricultural growth, but is especially pertinent today to the huge regions on the peripheries of major economic growth nodes. There, traditional systems of land rights are breaking down, not only with local population increases, but also with advancing encroachment of business and political interests from metropolitan centres. Such outside forces of induced innovation are spurred by the high potential returns seen as obtainable by transplanting new technologies, in the presence of both reduced transportation charges obtained through infrastructure improvements, and of what appear to them (but not to local cultivators) as low land costs.

In extreme circumstances, where rights to land are completely absent and its rent entirely dissipated, users (both local and from outside) will exploit its unpriced attributes to the hilt. They will respond to average land output and will use the resource until the value of this output is reduced to the level of their marginal cost. But, since the marginal output from the land is less than the average output to each user, marginal costs may well exceed marginal returns, with consequent 'over-exploitation' and degradation of the resource (see the Appendix).

This may not always be the result, however, since high land access costs (and consequently high marginal costs), for instance, may prevent the start of degradation from being reached. But the situation just portrayed is general enough to have led already to widespread overgrazing and overcultivation in many peripheral areas, threatening both agricultural sustainability and the livelihoods of vast populations.

5.1 Re-definition

In practice, agencies external to the rural institutions (in this case local and outside farming interests) constrained by inappropriate land rights may move to correct these, in pursuit of the economic and social benefits perceived to flow from such action. These reformers will attempt to better specify land attributes subject to excessive speculation, but may also try to capture profits from redefining rights to take account of new technologies. Once more they have the challenge of fashioning rules so as to avoid the exercise of moral hazard and other opportunistic behaviour.

The nature of re-defined land rights will again usually depend greatly on social and political as well as economic considerations. While an adjustment to full private rights can be expected to lead to maximised economic returns in a competitive market where land is priced according to its potentials and exploited accordingly (Appendix), such re-definition may not be appropriate in the situations just described. This is because it would strongly favour outside interests with good access to information and capital, while excluding from land ownership local farmers who, despite age-old links with the land, did not have such access and were still emerging from subsistence cultivation. This key equity consideration may rule out full private rights, although they may still be favoured in external government interventions made either without full understanding of the circumstances, or under pressure from outside cultivators with political influence.

The alternative route of group action at the community level to modify institutional arrangements over land is a markedly different path which, nonetheless, may better suit the transitional circumstances being treated here. This route, which is very much in the unimodal tradition may, like the tree crop smallholding developments, be expected to suffer from lack of information and capital, and may also be subject to local political pressures which undermine equity. But, given that better information and guidance can be secured from outside, this route can lead to a profitable and equitable adjustment for local people.

As a compromise between the very different routes just outlined, a third approach of instituting a market in leases for such land has often been followed by governments. Yet, these leases again need careful specification to be effective and have to run, for instance, over sufficient years to enable adequate returns to be earned on capital investment. Frequently, in fact, this third route may be followed alongside the second, permitting controlled access for outside interests which bring in new information also usable by the surrounding villagers. Once the third route, or a combination of the second and third routes, have been followed for a period and led to progressive commercialisation and improvement, a move to the first route of private freehold rights may ultimately become possible.

These various modifications of inappropriate land rights highlight the crucial role of external intervention in facilitating adjustments to basic organisational rules. Such adjustments cannot be undertaken by actors locked into the Coasian framework of individual institutions, who can do little to modify such constraints on their own account, and usually in their economising activity cause further degradation of the resources involved. Similar needs for intervention often apply to other institutional rules.

6. Conclusions

This paper has attempted to demonstrate the cardinal role of institutions in mediating rural markets and, accordingly, in influencing economic change in agriculture. Institutions stamp characteristic patterns on economic activity, and a better understanding of them is integral to the study of economic development. The past neglect of institutional influences may only be seen as an unfortunate omission.

The paper has also denoted the complex nature of most institutions, with their varying structures of governance, formal and informal rules, and background social and political factors which affect economic outcomes. Furthermore, it has illustrated the constraints on positive economic change posed by inappropriate rules and designs that encourage opportunistic behaviour, and by widespread failures in surrounding markets.

Several theories of institutional change provide helpful insights in analysis. The **Coasian** framework is pertinent to understanding the economising behaviour of actors within institutions, and of how this is influenced by structural and other characteristics. Again, ideas of **induced innovation** indicate how institutions in a broader context respond to economic (and social and political) signals in their directions of change. **Structural form** theories look at the roles of clusters of particular types of institutions at various junctures of economic change and, in doing this, help to complement perceptions from induced innovation, as well as informing policy discussions. Finally, **external intervention** ideas which seem the least elaborated, explore the avenues through which government and other outside agencies can assist in mar-

ket mediation. A crucial aspect of such intervention, which again seems to have been given little attention, is that of appropriate institutional design, on incentive compatibility lines, to secure desired outcomes. All four sets of ideas lend themselves to empirical analysis, although it is hard to properly specify the variables involved.

A notable feature of recent rural development policies has been attempts to correct market failures and bridge social-private divergencies through government interventions, either to modify existing institutions or establish new ones. Efforts to better mediate markets through public institutional arrangements have been prominent throughout world agriculture during the 20th century, and have been discussed here in relation to tropical tree crops and the utilisation of peripheral lands. Manifestly, there is a need to scrutinise in further detail the mechanisms of such arrangements, with a view to avoiding the failure that has too often characterised past efforts. Specific aspects demanding attention are information, capital, land, and output markets, where existing institutions are often inadequate, and where the differing forward routes expressed in the 'unimodal-bimodal' paradigm may have contrasting outcomes in social and political as well as economic terms. The paper has also highlighted the vital aspect of rule modification, notably in relation to land and property rights.

The paper has further emphasised the need to examine external interventions entailing more active roles for community groups, in conjunction with private agencies including businesses or NGOs, or with government itself. Additionally, other avenues of private market adjustment at a higher level, like those which occurred in the linking up of capital, labour, and output markets for plantation tree crops, should be scrutinised.

With his 1934 book, John Commons launched a distinctive approach to institutional economics, emphasising both the vital role of institutions and the importance of their structure in influencing the behaviour of concerned actors. Commons' work contributed much to understanding, which has since been enhanced through the ideas of those quoted in this paper. But more needs to be done in elucidating the mechanisms of change, and where can this be more useful than in relation to world agriculture?

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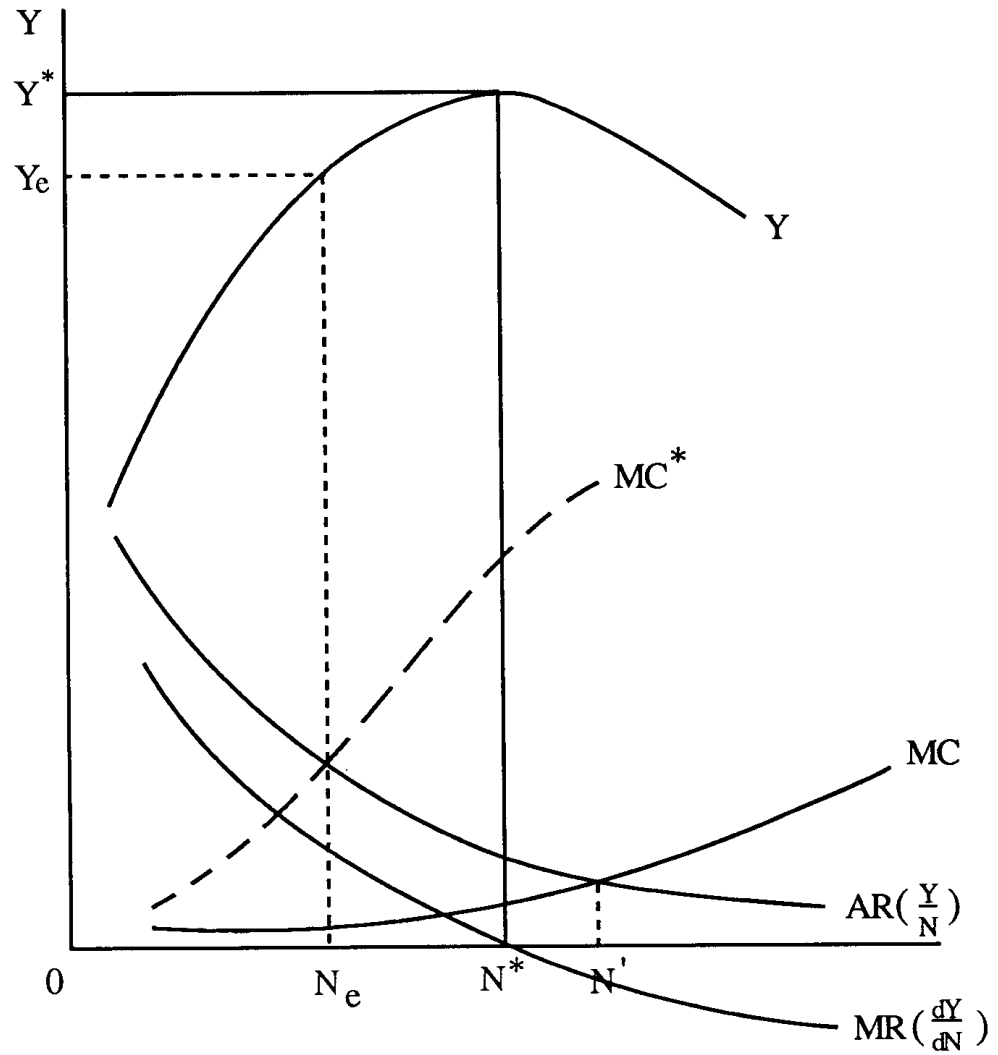
Appendix

Consider a finite fixed resource which is exploited to yield total output Y. The number of exploiters of this resource, say N, determine Y, with Y being subject to diminishing returns. This is shown in Figure 1. Marginal returns (or MR) are declining throughout: they are equal to zero at the point of total maximum output Y*, and negative thereafter.

The maximum carrying-capacity of the fixed resource can be defined as the maximum number of users that will yield Y*. This point is reached when there are N* users of the fixed resource. If the number of users is less than N*, the fixed resource is 'under-exploited'. However, if there are more than N* exploiters, then the fixed resource is 'over-exploited' and total output drops with further increases in N.

Consider now the likely behaviour of users. The average return to users (or Y/N), shown as AR in Figure 1, is always positive but falls towards zero very fast as N increases. In turn, the marginal cost (or MC) for exploiting or accessing the resource rises as N increases. If all users have free access to the fixed resource with all users sharing equally (such that each obtained the average return), then each user responds to the average output. The point

Figure 1



where average output is brought down to marginal cost determines the number of eventual users. In Figure 1, this is shown to be N', where marginal yield is less than marginal cost. In addition, the marginal yield from the resource is lower than the average yield to each user. As a consequence, 'over-exploitation' of the resource may arise, since aggregate yields may be lower than the maximum yield with fewer users. If this situation persists, it will involve subsequent declines in total yields (or a drop in the yield curve) with the degradation of the fixed resource. The result is a decline in sustainability of production, and a drop in the livelihoods (or average yield) of those exploiting the fixed resource.

Note, however, that if marginal costs (or the cost of accessing the fixed resource) are high, this may prevent the 'over-exploitation' of the resource. In Figure 1, if marginal costs were described by MC*, the number of users is only $N_e < N^*$, with total output $Y_e < Y^*$. High access costs can prevent the start of 'over-exploitation' and/or degradation of the resources from being reached.

Additionally, the shifting of marginal costs, as shown in Figure 1, can be interpreted in an alternative way. Consider the case where local (traditional) users, who have age-old links to the resource, exploit it using a homogeneous technology with high marginal costs described by MC*. Outside interests with good access to information and capital may have lower marginal costs structures thereby shifting MC* to MC. If these outside interests were allowed free entry, then they would be favoured and the number of users of the resource would increase at the expense of traditional users who may have original claims to the resource. This is true whether all output is equally shared by all users (AR=MC), or whether there are marketable rights to exploiting the resource such that for all users MR=MC.

In the case where incumbent users can block free entry of additional users through the institution of property rights, 'under-exploitation' of the resource is a likely outcome, even though outside interests could eventually take over incumbent users. The final number of eventual users (or where MR=MC) is less than or equal to N*. However, this 'under-exploitation' may very well guarantee the sustainability of production from the scarce resource, as well as the livelihoods of existing users.