

**Common Property, Equality and Development**

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## *Abstract*

The appeal of common property ideas may be traced in large measure to the fact that they seem to embody widely held values of equality. On the other hand, empirical examination of common property institutions reveals that they can coexist with significant inequality. In this paper, the relationship between common property and equality is examined. It is argued that the role of common property can only be understood in the context of the associated private property institutions. Common property in agriculture is interpreted as part of a system based on small-scale peasant proprietorship of arable land. Common property institutions provide a method of capturing scale economies and thereby increasing the efficiency of small-scale peasant proprietorship in competition with large scale production based on wage labor.

# Common Property, Equality and Development

## 1. INTRODUCTION

Over the last twenty years, considerable progress has been made in the economic analysis of common property. Initially the main tasks were critical and descriptive. Difficulties arose because economists had long used the term ‘common property’ as a synonym for ‘no property’. As long as this terminology was confined to the study of open access resources, as in the work of Scott (1955), the problem was simply one of semantics. The economist’s usage of the term ‘common property’ applied to a situation where no property rights existed (*res nullius*), whereas historians and anthropologists used the same term to refer to a system of collective property rights (*res communes*). This did not affect the validity of Scott’s analysis as it applied to open access resources. However, when economists in this tradition, such as Demsetz, were confronted with actual common property institutions, they readily assumed that their open access model was applicable. Thus Demsetz (1967, p. 354) proposes a typology of three idealized types of ownership — communal, private and state ownership. He states “By communal ownership, I shall mean a right which can be exercised by all members of the community. Frequently the rights to till and to hunt the land have been communally owned. The right to walk a city sidewalk is communally owned. Communal ownership means that the community denies to the state or to individual citizens the right to interfere with any person’s exercise of communally owned rights.”

Demsetz gives no examples of communal rights to till the land. Since two individuals cannot till the same piece of ground, it is not clear how such rights could exist unless land was so abundant as to be a free good. Communal rights to land in the sense described by Demsetz have not existed in any system of agriculture more developed than slash-and-burn, and perhaps not even there. It seems reasonable to infer from Demsetz’ discussion that his analysis of communal ownership is intended to apply to actual common property systems, which have frequently prevailed.

The influence of Demsetz' analysis, itself a development of ideas developed in Coase (1960), is apparent in Hardin's (1968) 'tragedy of the commons' description of the medieval open field system<sup>1</sup> and the accompanying argument for private property rights solutions to modern environmental problems. Hardin's tract, with its invitation to "Picture a pasture open to all" and its conclusion that "freedom in a commons brings ruin to all" popularized the erroneous equation of 'common property' with 'no property'.<sup>2</sup>

The work of Ciriacy-Wantrup and Bishop (1975) and Dahlman (1980) refuted Hardin's description of the open field system by referring to historical sources such as Thirsk (1964) and Tawney (1912). These writers showed that use of land for both cultivation and grazing was strictly controlled. Cultivation was essentially private, and members of the community had rights to graze only a limited number of animals on the common pasture. More recent work (Jodha 1986, Wade 1987) has described the actual operations of contemporary common property systems in less developed countries (LDC's). The demonstration that common property systems could work effectively is important in the presence of pressure for land reforms based on pure private property models derived from the earlier neoclassical tradition.

With widespread (though still not universal) acceptance of the basic points that common property systems are not equivalent to open access and may be superior to private property in some circumstances, has come the need for theoretical models of resource use in common property systems, and comparative analysis of private and common property.<sup>3</sup> Much of this work has been focused on the analysis of common property in agricultural and grazing land. However, there is potential for the application of common property ideas to more general environmental issues such as the management of airsheds and watersheds (Quiggin 1988a).

<sup>1</sup> Hardin based his tragedy of the commons story on a similar analysis of the commons by Lloyd "Two Lectures on the Checks to Population. Oxford U.P." (reprinted in part in Hardin, ed. Population, Evolution and Birth Control, Freeman, San Francisco, 1964.). It may be noted that Lloyd was writing just when the final wave of the enclosure movement had eliminated the possibility of an empirical test. Earlier critics of the open field system, such as Young (1801) were more circumspect.

<sup>2</sup> Dasgupta (1982, p13). observes "It would be difficult to find another passage of comparable length and fame containing as many errors."

<sup>3</sup> Some examples of such work include Runge (1981) and Bromley (1990).

One issue which has received limited attention in this literature is the relationship between common property and equality. The appeal of common property ideas may be traced in large measure to the fact that they seem to embody widely held values of equality. On the other hand, empirical examination of common property institutions reveals that they can coexist with significant inequality.

In this paper, the relationship between common property and equality is examined. It is argued that the role of common property can only be understood in the context of the associated private property institutions. Common property in agriculture is interpreted as part of a system based on small-scale peasant proprietorship of arable land. Common property institutions provide a method of capturing scale economies and thereby increasing the efficiency of small-scale peasant proprietorship in competition with large scale production based on wage labor.

The analysis presented here has been derived primarily from a study of traditional common property institutions. However, the same logic may be applied to consideration of programs of land reform and to the study of cooperatives. Property rights structures of the type discussed here with private ownership and cultivation of land and collective ownership of large-scale capital represent a model of land reform that has gained favor at the expense of fully collective systems. The implications of these structures for equality have been discussed, most notably by Putterman (1983). Putterman argues for purely collective systems, and against 'parcellation' partly on the grounds that the collective system is more likely to promote equality. It is necessary to reassess his arguments in relation to the more complex systems of common property discussed here.

The final section of the paper provides a number of examples of common property systems in traditional agriculture, fisheries and foraging and LDCs. Both the technological basis for the emergence of a common property system and the implications for equality and inequality are considered.

## 2. SCALE ECONOMIES AND LABOR MONITORING

The main interest in this paper is the relationship between equality and various property rights structures. In order to place this question in a theoretical context, it is necessary to consider some issues affecting the operation of various property rights in agriculture. Among the most important are size economies, labor monitoring and finance.

In the analysis of size economies, Baumol, Panzar and Willig (1982) make a useful distinction between economies of scale and economies of scope. Economies of scale arise when the average cost of producing a given bundle of outputs decreases as the total amount produced increases. Economies of scope arise when it is cheaper to produce one or more products jointly than to have them produced by separate firms. These economies of scope are critical to an understanding of the rôle of common property in agricultural production, taken broadly to include fisheries and foraging as well as cropping and livestock industries.

Crop production is not generally characterized by scale economies, once a minimum efficient size is reached. Typical studies of cost curves in more developed countries (MDCs) have produced an L-shaped pattern, in which average costs reach a minimum at a moderate level of output and remain at that minimum over a substantial range<sup>4</sup>. Vlastuin, Lawrence and Quiggin (1982) argue that this pattern may be explained by the need for a farm area large enough to fully employ the labor of the farm family. The literature on LDC agriculture yields implicit support for this conclusion. The central observation is that yields are negatively correlated with farm size (Carter 1984a). Because of the greater labor intensity of LDC agriculture, and the difficulty of imputing an appropriate opportunity cost for family labor, no direct conclusion on the presence or absence of scale economies may be drawn. However, the data is consistent with a pattern in which constant returns to scale prevail, but in which poor households are constrained to a higher land-labor ratio than wealthy households, exactly as in the MDC case analyzed by Vlastuin et al.

<sup>4</sup> For a recent survey of the evidence, see Castle (1989) and the references cited there

The fact that the observed range of farm sizes is bounded may be explained by the observation that it is costly to observe and monitor labor input. This fact is particularly important in agriculture and especially in extensive agriculture. The nature of the work involved means that direct supervision is often impractical. Because of the uncertainty associated with agricultural production, it is also difficult to use actual output to make inferences about the level and intensity of labor input. For example, if yields in a particular field are lower than normal, it may be the result of inadequate effort in preparation and plowing. However, it is equally possible that low yields are the result of adverse micro-climatic conditions or worse than average attack by pests. Thus, the performance of property rights systems will depend on the degree to which workers can be induced to provide effort without direct monitoring.

Other activities associated with agriculture may involve significant scale economies. Extensive grazing is an important example, particularly in traditional and LDC contexts. In these contexts there are likely to be economies of scope between the grazing activity and small-scale activities such as the use of livestock for plowing and for subsistence production of milk. Significant scale economies may also arise in the provision of inputs (for example large-scale agricultural machinery and irrigation) and in the processing and marketing of outputs.

The final issue which must be considered in an explanation of property rights structures is that of power. There are a number of hypotheses relating to which of a number of competing property rights systems will prevail. The view associated with the Chicago school, and particularly Demsetz, is that the most efficient system will prevail. This claim has been criticized on empirical and theoretical grounds. Allen (1982) claimed that 18th century enclosures redistributed the surplus from land but did not increase its net value. Allen's evidence tends to support the Marxian "expropriation" analysis, based on the claim that changes in property rights will be introduced if they benefit the ruling class.

A central argument of the present paper is that common property systems tend to yield more equal allocations of income and wealth than private property alternatives.

However, wealthy groups tend to have a disproportionate political influence, particularly in LDCs. These groups would benefit from a shift to private property even in some situations where the total social surplus was reduced, and *a fortiori* whenever the common property system was less efficient. The survival of the common property system over long periods therefore implies that it must have yielded efficiency advantages over alternative systems, sufficient to offset the losses to politically powerful groups associated with their reduced share of the total surplus.

### 3. PRIVATE PROPERTY RIGHTS

The object in this section is to describe a range of private property rights systems in the light of the discussion above. Each of these systems has advantages and disadvantages. No private property system can simultaneously overcome the problems of scale economies and labor monitoring. This creates the possibility that, in some circumstances, common ownership will be superior.

#### (a) Peasant proprietorship

The term ‘peasant proprietorship’ refers to an ownership structure in which all labor, land and capital is supplied by members of a household and all returns accrue to that household. In MDCs this structure is usually referred to as a ‘family farm’.<sup>5</sup> The family farm structure reduces uncertainty associated with labor monitoring. Assuming that maximization of household welfare is taken as the objective, there will be no asymmetry of information and hence no need for monitoring (Roumasset and Uy 1987). The modification of the ideal family farm structure to admit some hired labor reintroduces monitoring costs. However, as long as the ratio of hired to household labor is low, monitoring costs will also be low. As the proportion of hired labor increases, monitoring costs will approach those of a hierarchical firm.

<sup>5</sup> Especially in the United States, there has been a long tradition of defining family farms in terms of more or less arbitrary size limits. This approach is not adopted here. The sole criterion is that the farm household should supply the resources used in production. If this definition is modified to permit the used of debt capital, and small amounts of hired labor, it covers nearly all farms in the United States and other MDCs.

Problems arise in the presence of scale economies. If the minimum efficient scale of operation is larger than can be achieved with the household's endowments of labor, land and capital, the cost of production will be above the minimum level and returns will be correspondingly lower. A related problem is that of inadequate capital and land. This inadequacy may be reflected in either a sub-optimal scale of operation or in a suboptimal capital–labor ratio.

A brief discussion of the internal structure of the household may be worthwhile. In this paper, it will be assumed that the household acts as a single optimizing unit. Two underlying assumptions about the household members may be used to motivate an assumption of collective optimization. The first is that household members are mutually altruistic and each maximize a collective utility function. Alternatively, it may be assumed that contact between household members is so close, and so long-lasting, that labor input can be monitored costlessly. A more realistic model would incorporate weaker versions of both assumptions and would admit the possibility of shirking within the household, as well as exploring the impact of unequal distribution of power and consumption (typically favoring males).

#### (b) Latifundia

At the opposite extreme from the system of peasant proprietorship, are privately owned estates (*hacienda* or *latifundia*) employing large numbers of hired workers. Within this class, two basic forms may be distinguished. The first is dependent on inherent scale economies in the agricultural activity under consideration. Such scale economies are uncommon in cropping, but are often present in extensive grazing operations, and also in modern intensive livestock operations such as those found in the pig and poultry industries.

The second form, associated with plantation agriculture, is based on scale economies in labor organization. This form of organization is relevant when production techniques are sufficiently intensive and sufficiently routine to require large inputs of unskilled labor which can be monitored comparatively easily.

The other characteristic feature of latifundia, the absence of corporate ownership, generally reflects the poorly developed capital markets typical of LDCs. When well-developed capital markets are present, large private enterprises typically adopt a corporate structure. The corporate structure is designed to spread risk. Corporations can make better use of futures markets and bond markets to achieve a balance between risk and expected returns. By contrast, individual farmers are unable to issue bonds. They must rely on personal credit contracts. Transactions costs for these contracts are high, so that interest rates on loans exceed the corporate bond rate by several per cent in MDCs and by much more in LDCs. Apart from transactions costs, the cost to an individual farmer of becoming informed about, and acquiring an understanding of, the operations of, say, futures markets, will often exceed the benefits. Privately or publicly funded extension programs may mitigate these costs but cannot eliminate them.

The advantages of the corporate enterprise in the handling of capital are offset by difficulties in the handling of labor. All labor must be hired on a wage or piece-work basis. Thus, effective monitoring of labor, by observing either inputs (attendance, apparent diligence, and so on) or outputs, is essential. A large part of the corporate structure is dictated by this need for monitoring of labor input. The most notable are the hierarchical management structure and the existence of a class of staff paid solely or primarily for supervision of other workers rather than for actual productive effort.

#### 4. THE ROLE OF COMMON PROPERTY

Common property institutions vary widely. However, the critical defining feature of the institutions considered here is collective management by a finite group of (not necessarily coequal) owners. Membership of the group is frequently determined by ownership of an associated private property right. Common property rights are not normally transferable, except in the sense that common rights associated with a transferable property right, say, a parcel of land, change hands along with the private right. Thus, to take a modern example, the community areas in a condominium would be regarded as common property. Similarly a partnership or co-operative would be regarded

as a common property institution. On the other hand, a broadly held public corporation, with shares traded on the stock market, would not.

As the example of the public corporation shows, property rights that initially have a common property component may gradually become nothing more than passive claims on income. For example, the common owners may find management too onerous, or may disagree among themselves and may choose simply to contract their collective asset out to one or more private entrepreneurs. Arguably, this has occurred in contemporary China, although, as discussed below, state-imposed forms of ‘common property’ must always be analyzed with caution.

There are two main dangers in the analysis of common property. Both arise from the failure to recognize that common property is, in fact, property. Economists of the private property rights school have disregarded common property systems and treated them in terms of open access. At the opposite pole, there has been a romantic tendency to regard common property as transcending any individual interest, and hence to disregard the fact that common property rights are the rights of particular individuals.

Where this romantic tendency has been translated into reality, in utopian and state-imposed systems of collective agriculture, the most common model has been that of the large, labor-managed firm. The organization of production is essentially similar to that of large-scale capitalist agriculture, except that, at least formally, rights of management and control, and the right to receive any profits, are vested in some collective body representing the workers<sup>6</sup>.

There is a large literature on the performance of the labor-managed industrial firm, focusing primarily on issues such as the choice of capital structure and factor intensity. Some writers, such as Jensen and Meckling (1979), have concluded that the performance of the labor-managed firm will be distinctly sub-optimal, but this view is by no means unanimous (Vanek 1969).

Compared with the large capitalist firm, the labor-managed firm is likely to have

<sup>6</sup> In practice, the distinction between collective ownership and state ownership is often blurred. For example, the purported collective ownership in the Russian Kolkhoz system was merely a façade for state control aimed at maximizing the extraction of surplus.

both advantages and disadvantages in labor monitoring. One advantage arises from the fact that workers, as shareholders, have some economic incentive to exert effort in the absence of monitoring. Unless the firm is small, this factor will not be very important. A more potent advantage arises from feelings of solidarity which will discourage shirking. On the other hand, the traditional systems of monitoring in the capitalist firm are likely to work less effectively in a collective setting Meyer (1989, p. 1259) observes that under the collective system introduced in the Dominican Republic land reform of 1972, "Due to the difficulty of accusing friends of feigning illness or docking a neighbor for running an errand in town, in general everyone was reported as having worked every day". In the absence of effective sanctions, the existence of a small number of overt shirkers is likely to undermine collective solidarity. Overall, then, there is no clear conclusion on the relative performance of labor-managed and capitalist firms.

In any case, this type of comparison is not particularly relevant to an assessment of collective agriculture, because the basis for comparison is a capitalist firm of similar scale and using similar technology. Because of the critical rôle of labor monitoring such firms are rare in extensive agriculture. Instead the appropriate basis for comparison is likely to be some combination of peasant proprietorship and sharecropping. Carter (1984b) adopted the framework of the labor-managed firm literature in an analysis of the performance of the Peruvian Agricultural Production Collective (CAP) system. He found that both the CAP farms and the large *haciendas* they replaced were inefficient relative to small and medium-scale peasant agriculture.

Under peasant proprietorship (and even under sharecropping, though to a lesser extent), the incentive to exert effort in the absence of monitoring is greater than in large (labor-managed or capitalist) firms. In the absence of strongly held ideological or religious commitments, it does not appear that motives of solidarity can act as a long-term substitute for economic incentives. Hence it seems unlikely that this form of collective ownership will yield satisfactory outcomes. This general conclusion is confirmed both by empirical studies and by the general abandonment of the purely collective model of agriculture. Latin American and Eastern European experience with this model is sum-

marized in Dorner (1977). Some more recent references are given by Meyer (1989).

The purely collective system is not the only, or even the most important, form of common property. Except in cases where collective institutions have been imposed by *fiat*, it is rare to find systems based wholly on common ownership. Far more common is a combination of private and common ownership — privately owned cows grazing on common land, common property irrigation systems watering private cropland, jointly owned agricultural machinery harvesting private crops and so forth.

This pattern may be understood in terms of the distinction between peasant proprietorship and latifundia presented above. In a peasant proprietor system based on a constant-costs activity such as cropping, it is nonetheless likely that some opportunities characterized by scale economies may be present. In particular such opportunities are likely to arise in a system where small-scale cropping is combined with extensive grazing. Common property provides a mechanism through which these scale economies may be captured. In related work (Quiggin 1992a), I have presented a formal model showing how scale economies affect the relative performance of common property, peasant proprietorship and latifundia. Common property performs best in a range of cases characterized by economies of scope between cropping and grazing.

One alternative possibility is that the activities characterized by scale economies may be undertaken by separate firms dealing with peasant proprietors through market transactions. There are, however, two main reasons why this arrangement may not emerge. First, if the minimum efficient scale is such that an entire village may be served at least cost by a single firm, that firm will exercise significant monopoly power. Ben-Ner (1988) discusses this motive for the formation of consumer cooperatives. He shows that consumers (or in this case farmers) are in a position to choose, it is likely at least some groups will prefer a jointly owned and operated firm to a private monopolist. Second, in many cases, the operation involving scale economies will be closely integrated with crop production. This means that decisions must be made jointly and precludes a system of market transactions based purely on price.

Common property systems require the group of owners to make management

decisions. In stable environments, it is possible for management to be undertaken on the basis of customary rules which evolve slowly over time. If the environment is complex or subject to rapid change, customary rules will not be adequate and there will be a necessity for explicit group decisions to be made, by consensus, by majority vote or by some group of leaders.

The difficulties associated with group decisions become greater when the resource is very fragile and easily abused. Two dimensions of the issue are worthy of comment. The first is the case where the carrying capacity of the resource is known, but where the costs of monitoring users is high. In this case, a private owner with a focused interest in the long-run value of the resource is likely to outperform a group of owners, or any agent they may appoint to monitor the use of the resource. The second is the case where carrying capacity is subject to considerable uncertainty. In this case, market processes are likely to allocate land to those with the most optimistic expectations and therefore to generate excessive degradation (Quiggin 1992b).

## 5. EQUALITY AND PROPERTY RIGHTS STRUCTURES

Property rights structures have consequences for the total amount produced and for its distribution. Conversely the structure of property rights will be affected both by efficiency implications and by the distribution of power and wealth. Economists in the Chicago tradition have generally stressed efficiency as the determinant of property rights structures. The primary concern of this paper is with the relationship between property rights and distributional issues.

### Equality and Efficiency

The approach may be illustrated by consideration of sharecropping.<sup>7</sup> Cheung (1969) and others have explained sharecropping in terms of risk sharing between peasants and landowners. This analysis takes as given the marginal risk attitudes of landowners and

<sup>7</sup> Although risk-sharing is the most usual explanation of share-cropping, it has been challenged by writers sceptical of the empirical importance of risk-aversion. The work of Roumasset and Uy (1987) provides the basis for an alternative explanation based on agency costs. Many of the points made here apply equally to this alternative analysis.

sharecroppers. Since there is no reason for these two groups to be characterized by different basic attitudes to risk, the difference in risk attitudes is derived from the fact that landowners have substantial wealth and sharecroppers do not. Given the assumption of decreasing absolute risk aversion, this is sufficient to yield the difference in risk attitudes presupposed by Cheung. It follows that inequality in wealth holdings tends to support the emergence of sharecropping rather than peasant proprietorship. Conversely, the hypothesis of decreasing absolute risk aversion implies that peasant proprietors will behave in a less risk-averse fashion than share-croppers, and hence that the total costs of risk-bearing will be less under peasant proprietorship. As a result, it would be expected that total factor productivity would be higher under peasant proprietorship than under a system of share-cropping.

#### Inequality and the State

The fact that, in the absence of large scale economies, total factor productivity will be higher under peasant proprietorship suggests that over time, this organizational form should tend to displace sharecropping. This tendency can be offset only if there are factors which tend to restore inequality in wealth. One such factor would be a higher propensity to save on the part of landlords. However, there does not appear to be evidence for a systematic propensity of this kind. A second, and more frequently operative, factor is a regressive taxation system. Under regressive taxation, the fact that returns to land are concentrated in the hands of a small number of landlords, rather than a large number of farmers, reduces the tax burden on land. This may be sufficient to offset the efficiency advantages of peasant proprietorship.

For a complete analysis, it is necessary to consider the tax-expenditure system as a whole. The post-Reconstruction Southern economy in the United States illustrates the way in which such a tax-expenditure system reinforces sharecropping at the expense of peasant proprietorship. Black sharecroppers were subject to regressive poll taxes and commodity taxes, but, under the system of segregation, were largely denied access to

the public goods these taxes financed.<sup>8</sup> This systematic discrimination, in combination with various forms of extra-legal repression, served to perpetuate a skewed distribution of income, and to preserve the sharecropping system<sup>9</sup>.

Other forms of land tenure are even more dependent on inequality. Plantation systems can rarely survive in the presence of free labor markets. They typically depend on some form of state-backed forced labor, and may be interpreted as a mechanism for the extraction of a maximum surplus from that labor<sup>10</sup>. In the Americas, the primary mechanisms were slavery, and, to a lesser extent, debt peonage. The plantation system in most areas did not survive the abolition of slavery. The analysis of Fogel and Engerman (1974) indicates the basic approach. Fogel and Engerman argue that the economic success of the plantation system was dependent on the use of the coercive power associated with slavery to realize economies of scale in labor management. However, they estimate the non-pecuniary loss associated with forced labor outweighed the pecuniary gains by a factor of three.

In African colonial settings, where the only access to currency was employment in the plantation economy, forced labor was commonly extracted by a poll tax, although direct compulsion was also employed. However the poll tax mechanism will generally not be sufficient to induce workers to accept plantation employment where there is any form of alternative money economy. Another colonial device was the importation of indentured labor, from groups ethnically different from the indigenous population. Etherington (pers comm, July 1991) observes that, because these groups frequently have no alternative to plantation employment, plantation systems originally based on indentured labor may survive the colonial system, at least for a time.

<sup>8</sup> The primary complaint against the black-supported Reconstruction governments was that of 'fiscal irresponsibility'. The defeat of the Reconstruction governments, which had used property taxes and debt to finance public expenditures, especially for education, was followed in most Southern states, by explicit constitutional limitations on property taxation and public spending, and a consequent reliance on poll taxes and direct charges. See Foner (1988).

<sup>9</sup> The inequitable nature of the tax-expenditure system was only a minor part of the oppression experienced by blacks. However, the lack of political rights alone would not explain the persistence of the share-cropping system. Systematic regressive redistribution of income is a necessary feature of any explanation of share-cropping.

<sup>10</sup> See Etherington (1971), and the references he cites for evidence on this point.

The argument presented above suggests reasons why systems of plantation agriculture have tended to break down in post-colonial settings. Conversely, it is supported by observations of successes such as the Kenyan smallholder tea system. Here the basic production activities were transferred from plantations to peasant proprietors. Parts of the system, such as processing and transport, that were characterized by technical economies of scale, were undertaken by state or commercial institutions.<sup>11</sup>

In summary, because agriculture in general is not characterized by scale economies, plantation systems will be viable only if they are backed up by state intervention yielding a supply of forced labor. More generally, a skewed distribution of wealth can only be maintained by a regressive tax-expenditure system.

(a) Common property and equality

Thus, in the absence of scale economies and distorting state intervention, a relatively egalitarian system of peasant proprietorship is likely to emerge. Where scale economies are present in some activities, common property systems may emerge to capture those economies. In addition to this technical precondition, however, common property systems depend on some degree of equality for successful operation.

The relationship between common property and equality may be viewed in a number of ways. First, the fact that common property institutions can capture scale economies reduces the likelihood that a large-scale capitalist or *latifundia* system will replace peasant proprietorship.

Common property may also be considered relative to a system of pure peasant proprietorship. In any system of this kind, endowments of land, labor and capital will be unevenly distributed. Relatively well-endowed households will be better placed to undertake activities involving scale economies than poor households. Hence, if scale economies are important and common property systems are unavailable, factor returns will be higher for well-endowed households, and income will be distributed more unequally than endowments.

<sup>11</sup> See Etherington for further details.

(b) Group decision-making

If all owners of the common property resource have roughly similar endowments, management decisions which benefit one owner will tend to benefit all the others. If their endowments differ, there is more potential for decisions to yield redistribution within the group of owners. For example, wealthy groups will favor decisions, such as the adoption of less labor-intensive production methods, which increase the return to land and capital at the expense of labor. Jodha (1984, 1985) gives evidence to support the view that common property institutions in India are associated with reductions in inequality, as well as observations on the problems which arise when wealthy groups have disproportionate access to political power.

In other work (Quiggin 1988b), I have sought to formalize the idea that equality in endowments is essential to the successful management of common property institutions. The central analytical tool is the ratio  $N/G$ , where  $G$  denotes the gross benefits of a decision (that is, the benefits accruing to gainers) and  $N$  denotes the net benefits (after taking account of adverse effects on losers). The ratio  $N/G$  is 1 for a Pareto improvement and 0 for a zero-sum redistribution. Following the rent-seeking analysis of Krueger (1974), it is argued that, the lower is  $N/G$ , the greater is the amount of resources which will be consumed in intra-group conflict before a decision is reached.

There are a number of potential dimensions of inequality which are relevant here. The obvious one is inequality of wealth. Whenever inequality of wealth is substantial, actions which change the relative returns to labor and capital (taken here to include land) will correspond substantially to redistributions of income within the group of common owners.

However, in a common property system, divergences in the pattern of endowments or in tastes may be equally important. The often observed phenomenon of scattered or fragmented landholdings may arise in part from a desire to reduce intra-group conflict by ensuring that “the strips of the different holdings should lie so scattered over the fields that each holding partook in equal proportion of the good and bad soils and

locations of the village” (Homans 1970, p. 90).<sup>12</sup>

This type of fragmentation, with landholdings organized so that all members of the community have holdings with similar proportions of various land types is a characteristic feature of common property systems. In many cases, proportionality is reinforced by periodic pooling and redistribution of land. This redistribution did not affect the relative size of landholdings, but re-established the proportionality principle to the extent that it may have been offset by land transactions, inheritance and marriage.

The effect of redistribution along these lines is to reduce the potential for group decisions to redistribute income. In the polar case when all individuals are identical, any beneficial policy must benefit all equally and hence must satisfy  $N/G = 1$ . Redistribution aimed at establishing proportionality of endowments maintains  $N/G = 1$  for all decisions that are neutral as between holdings of different sizes. For the example of medieval common property systems, scattering was estimated to raise  $N/G$  from 0.56 to 0.94 (Quiggin 1988).

The difficulties associated with reaching agreement when endowments are of unequal size are discussed further in Quiggin (1991). One problem is that households with large endowments gain less from the realization of scale economies through common property than do households with small endowments. Hence they may withdraw, or threaten to withdraw in order to secure a larger share of the benefits. A second problem arises if inequality in endowments is taken to refer to inequality in holdings of land and other assets relative to household size and labor endowment. Disagreements will then arise over the desirable output mix. Following the reasoning of the Stolper-Samuelson theorem households with large land endowments, relative to their endowment of labor, will prefer an output mix favoring the land-intensive activity, usually that which is characterized by scale economies. Households with small land endowments will favor more output of the labor-intensive good. This raises the question of whether an equilibrium decision can be reached.

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<sup>12</sup> Scattering also has benefits in reducing risk (McCloskey 1976) These benefits are additional to those discussed here.

The literature on voting arising from Arrow's (1951) Impossibility theorem, summarized in Mueller (1979), yields, among other things, the result that voting systems may yield stable results when there is only a single dimension of conflict, so that preferences may be arrayed on a spectrum, such as the Left-Right spectrum typical of many modern political systems. In addition to reducing the degree of inequality, it is desirable to reduce, as far as possible, the number of dimensions of inequality.

If inequality of wealth is an established fact, as in the manorial open field system, the importance of minimizing other dimensions of inequality is enhanced. Conversely, a common property system is more robust to divergent patterns of endowment when the distribution of wealth is relatively egalitarian. Since flexible adjustment to changed external circumstances, requires the ability to change patterns of land-use, the need for an egalitarian distribution of wealth is even greater in this case.

Differences in tastes may also be important. For example, a common property analysis would suggest that management of National Parks by groups of users might yield improvements over management by a State bureaucracy. However, if the group of users is divided into say, hunters and conservationists, it is unlikely that common property institutions will work well. (In these circumstances any management institution is likely to face considerable stress.)

In summary, group decision-making procedures required for the management of common property resources will work only if the group of common property owners is relatively homogeneous. Sharp inequality in incomes or divergences in other dimensions reduce the likelihood that a generally acceptable pattern of resource use can emerge.

The idea that divergences in tastes and endowments create difficulties for collective decisions is not a new one (for a recent exposition see Hansmann 1988, 1990 on worker controlled firms). However, the example of scattering illustrates a converse point. The adoption of a common property system will typically be accompanied by measures aimed at increasing the homogeneity of the group.

(c) Dynamic processes

The discussion above has been concerned primarily with inequality in a static setting. In the debate over the relative merits of collective agriculture and parcellation, considerable attention has been paid to dynamic issues such as ‘restratification’. Putterman (1983) and Carter (1987) argue that even if landholdings are initially divided equally, sales and purchases of land may lead to a re-emergence of the previous pattern of inequality.

Two factors are likely to drive such a process of reconcentration. First, the existence of activities with inherent scale economies renders a pure system of peasant proprietorship unstable. Second, differences in individual abilities and random fluctuations in yield are likely to mean that some families do better than others, thereby creating a position where poorer families are forced to sell some or all of their land.

The analysis presented above supports these concerns. Households with large endowments of land, labor and capital will be better placed to exploit scale economies and will therefore receive higher total factor returns. Income will be distributed even more unequally than endowments and hence any random deviation from equality will be reinforced. This tendency to increased inequality will operate up to the point where the wealthy households shift from peasant proprietorship to an operation based largely or wholly on hired labor, at which point factor returns will tend to decline, and the tendency to inequality will be bounded.

The common property system discussed here mitigates this tendency because activities involving scale economies are undertaken collectively. The existence of income from these collective activities also mitigates the risk problems associated with peasant proprietorship, noted by Carter (1987).

Nevertheless, random fluctuations combined with free sale of land will lead to the emergence of some inequality, even given an equal initial division of private landholdings. To a limited extent, this is conducive to efficiency. For example, if some individuals are more able or hardworking than others, output will be maximized by an allocation which

gives them more land. Such an allocation will tend to emerge naturally from sales and purchases of land. On the other hand, the common property system constrains tendencies towards inequality. Since activities involving scale economies are undertaken collectively, households that acquire more land than they can work themselves, and hence resort to hired labor, will suffer the diseconomies associated with labor monitoring without any compensating economies. They will therefore achieve a lower average return to land. Hence, although random fluctuations will generate inequalities, the system will tend to return to an equilibrium in which all households have equal landholdings (or, more precisely, landholdings proportionate to their endowments of labor). The level of inequality at any point in time will be determined by the balance between random fluctuations and the equalizing tendencies of the system.

The form of common property system proposed here avoids a dynamic problem associated with the pure collective form, that of inequality between different collective groups. Suppose that one group of common property owners happens to obtain better land than another, or that, following an initially equal division, there is a technological change that raises returns to land and labor for the first group. In the pure collective system, there is no remedy for this inequality. The first collective will have no incentive to admit new members from the second. Thus the inequality will persist. Various schemes of differential taxation have been proposed to cope with this problem (Putterman 1983), but none appears very satisfactory, particularly when production is largely for subsistence. Furthermore, no such scheme can overcome the efficiency associated with the fact that labor intensity will be too high in groups with poor land and too low in groups with good land.

In the common property system discussed here, mobility between groups of common owners is feasible. The simplest case is where all common property rights are tied directly to the ownership of land. In this case, individuals can sell all or part of their holdings, along with the associated common property rights, to new entrants. In this case, if one group initially has better land than another, migration and land purchase will tend to equalize returns to labor. Of course the initial inequality in land holdings

will be reflected in the gains realized by members of the better placed group. However, unlike the pure collective situation, these members will not receive an additional benefit in the form of higher long-run returns

## 6. EXAMPLES

The literature on common property systems is large and growing rapidly. Martin's (1989) bibliography contains nearly 5000 items. The ubiquity of common property systems, typically occurring as part of a larger system which includes well-defined private property rights, is revealing in itself. It gives little support for the ideas that private property is always superior to common property or that common property only exists for goods which are not sufficiently valuable to justify the definition and enforcement of private rights.<sup>13</sup> The purpose of the examples presented here is to illustrate the relationship between common property and the technology of production and between common property and equality.

### (a) Traditional agriculture

In the medieval open field system, the primary scale economies were those associated with grazing. Land was divided into commons and arable. The arable, while in use for cropping, was privately owned and worked. The non-arable land was owned collectively by the entire community. The community made collective decisions on where the (privately owned) cattle should be grazed and on the pattern and timing of crop rotations. Often, it also hired a herdsman to take the cattle to and from the pastures. The English open field system is discussed extensively by Dahlman (1980). Similar systems in Switzerland, which have survived down to modern times, are described by Netting (1976). A noteworthy feature of the English experience is that it did not display the linear progression from common to private property implicit in the work of Demsetz. Many areas were privatized under the Tudors as subsistence agriculture was replaced

<sup>13</sup> The latter claim can be presented in a way which makes it correct, but tautological. Common property rights will be preferred to private rights only when the net benefits of a shift to property rights are less than the costs of such a shift to the relevant decision-makers.

by grazing enterprises with wool as the chief output (so that ‘sheep ate men’). Some of these areas subsequently reverted to a common property system based on mixed cropping and grazing, before being finally enclosed in the 17th and 18th centuries. Similar shifts between common and private systems are observed by Bauer (1985) among the Tigray of Ethiopia, where the main motivating factors appear to be responses to population pressures. In modern LDC contexts, scale economies in grazing remain important. Systems of common property in grazing land in Southern Africa have been studied extensively (Peters 1987).

#### (b) Fisheries and Foraging

The use of the term ‘common property’ as a synonym for ‘open access’ has been a prominent feature of the economic literature on fisheries. Nonetheless, there are important examples of true common property institutions in fisheries. An example which illustrates a number of the points raised here is the Maine lobster fishery described by Acheson (1987). Although legally this fishery is subject to open access (for anyone who holds an appropriate license), in practice much of the fishing area is divided into territories which are the collective property of groups known as ‘harbor gangs’.<sup>14</sup> The collective property rights of these groups are enforced by a variety of extra-legal sanctions. The controlling group acts to mitigate the externality problem associated with open access by restricting the number of fishermen in a given area, and through a variety of conservation measures such as closed seasons and restrictions on gear.

Although the fishery is collectively owned and managed, fishing operations are private. Individuals and families own their own boats and gear and receive the revenue from the lobsters they catch. Acheson shows compares areas where common property rights are effectively enforced (perimeter territories) and areas where rights are less clearly defined (nucleated territories). He finds that returns to effort, and biological measures of management, such as average size of lobsters caught, are higher in perimeter

<sup>14</sup> Within these territories there are some sub-areas which are effectively the private property of individuals or small groups. However, the majority of the territory is available for use by all members of the controlling group.

territories than in nucleated territories.

In terms of the analysis presented above, we may observe that the fishery is characterized by scale economies in the area managed. Fishermen receive higher returns by jointly managing and exploiting a large area than they would if each individual had rights to fish in an exclusive area. This is because ‘concentrations of lobsters are found in different places over the annual cycle and from year to year’ (Acheson, 1987, p. 61). A system which prevented fishermen from exploiting high concentrations would be technically inefficient. In addition to these technical considerations, the costs of defending territories are lower when a large territory is jointly defended. Obviously, these scale economies are eventually exhausted, so that the size of each territory is bounded.

A sole private owner could internalize these scale economies and operate the area using hired labor. However, fisheries represent an ideal example of an activity where labor monitoring costs are high. Thus, the common property solution is superior to small-scale individual ownership and to corporate forms of organization.

In the absence of legal sanctions, the collective property rights described by Acheson can only be defended by cohesive groups. These are characterized by family ties, traditions of mutual assistance and an absence of sharp disparities in wealth. Further discussion of common property in traditional and modern fisheries is given by Berkes (1985, 1987), Johannes (1982) and Stocks (1987).

The analysis of common property in fisheries offered here is applicable to a wide range of the foraging activities that are frequently subject to common property rights. Rights to gather fuelwood are probably the most universal example. Open access may lead to resource depletion (and has done so in contexts where traditional systems have broken down under the pressure of population growth or as a result of the non-recognition of collective rights). However, as in the fisheries example, economies of scale arise when foraging can be undertaken over a large area. Effective collective rights can prevent, or at least limit overuse of the resource.

These collective property rights exist in combination with private cultivation, and economies of scope are common. Dasgupta and Maler (1990) cite the example of

extraction of babassu (a Brazilian palm tree) products, examined in detail by Hecht, Anderson and May (1988). They observe (p. 115) “The complementarity between this extraction activity and agricultural work is striking, especially for women.” These activities are by no means peripheral, especially for the poor. Jodha (1986) estimates that the poor in arid regions of India derive between 15 and 25 per cent of their income directly from common property.

(c) Access to credit markets

One of the great disadvantages of peasant proprietorship, particularly in LDCs, has been the lack of access to credit markets. Since this lack of access has sometimes been taken to be self-evident, and not to require explanation, it may be worth exploring in a little more detail. The simplest explanation of why poor farmers cannot obtain credit is that they are bad risks. That is, they have few assets and a highly variable income and hence are unlikely to repay their loans. To the extent that this explanation holds, it is unlikely that a shift towards a common property system (or indeed, any other change that did not increase the net wealth of the farmers concerned) could remedy the problem. Economies of scale in borrowing would simply enhance the capacity for lenders to lose money.

The case for collective institutions for the provision of credit is more subtle. It rests on a combination of economies of scale and economies of scope. The economies of scale are well known; the most important arise from the risk reducing effects of a diversified loan portfolio. Economies of scope in this case reflect the idea that a locally based lender or group of lenders will have better access to information concerning individual credit risk than will outside institutions such as banks. This combination of economies of scale and scope may be realized by a specialist moneylender. However, unless the financial system is sufficiently well developed to permit the development of competitive markets at the local level, moneylenders will exercise monopoly power. The adverse effects of monopoly may be avoided or reduced through collective organizations.

#### (d) Irrigation systems

Irrigation systems provide a promising basis for common property systems. In most cases, there are significant economies of scale in the construction of such system. Two main alternatives to common property systems are relevant here. The first is a plantation system in which both the land and the irrigation system are owned by a single individual or firm. The second, and more frequently observed, is the case where the irrigation system is owned by a (private or public) firm which sells water to peasant proprietors. The choice between this market solution and a common property system will depend on the degree to which farm planning must be integrated with the planning of the irrigation system (and possibly also on concerns about monopoly exploitation). If the required degree of integration is high, a common property system will be preferred.

Communal irrigation systems in Sri Lanka have been examined by several writers.<sup>15</sup> In these systems, a community of about fifty families owns and operates a small dam and the associated irrigation system. The (privately owned and operated) village rice land is an area located immediately beneath the dam. Water from the dam is released periodically and conveyed to the rice fields by way of field channels. The community as a whole is responsible for maintaining the dam and channel system and for decisions on the timing and volume of water releases.

The need to minimize inequality, and particularly the number of dimensions of inequality is illustrated by the system of water sharing known as *Bethna*. The rice area is divided into a number of sections at varying distances from the dam, and each of the villagers is entitled to cultivate a portion of each section proportionate to their overall landholding. Thus their total landholding is divided into a number of separate parts, as in the open field system. In periods of water shortage, only the sections nearest to the dam are irrigated. The procedure yields a higher output per unit of water than if the water allocation were spread over the entire field. It follows that the decision to restrict the area irrigated in periods of water shortage will yield a Pareto improvement under

<sup>15</sup> See, for example, Farmer, (1957), Leach ( 1961) and Mahendrarajah (1981).

the *Bethna* system. By contrast, if all landholdings were consolidated, such restrictions would involve redistribution of wealth. Mahendrarajah (1981) analyzes the yield increases obtained through optimal water allocation and estimates the benefits yielded by the system.

(e) Cooperatives

Cooperative systems in modern MDC contexts are frequently associated with large capital investments, such as processing and packing plants. A major motivation in this case is the avoidance of exploitation by private monopolists.<sup>16</sup> On a smaller scale, groups of farmers may jointly own and operate capital items such as harvesting equipment for which the minimum efficient scale involves a land area larger than that of their individual farms. Here the motivation for choosing this arrangement, as opposed to hiring outside contractors, is likely to arise from the need to integrate the management of the harvesting equipment with the general operations of the farms concerned. (The argument here is analogous to Coase's explanation of why activities are undertaken within firms, rather than being put out to markets.) As in the previous examples, this common property is used on privately owned and operated land.

A similar system appears to be emerging from the process of land reform in Latin America. Meyer (1989) describes recent developments in the Dominican Republic, where an 'associative' system has been developed in response to dissatisfaction with the previous collective systems established under the initial agricultural reform and the pure peasant proprietor systems arising from parcellation. In the associative system, land is owned privately and operated by the proprietors, but scale economies in activities such as purchase of fertilizers and tractor services and access to credit markets are captured through the associative structure. Meyer reports significant improvements in productivity (in some cases to levels well above the national average) following the shift to an associative system.

<sup>16</sup> Since processing plants will typically buy farmers output, their operators are technically speaking, monopsonists rather than monopolists. In the present paper, the transaction is viewed as the sale of processing services.

## 7. IMPLICATIONS FOR DEVELOPMENT

The descriptive and analytical work undertaken in the 1970s and 1980s has invalidated facile condemnations of common property institutions based on the mythical tragedy of the commons. However, the fact remains that European common property systems were swept away in the transition to modern capitalism, and that many traditional common property systems in LDC's are breaking down in the face of the combined stresses of economic change and rapid population growth<sup>17</sup>. Similarly, the accumulation of capital in the early stages of industrialization has usually been accompanied by an increase in inequality, and in some cases by an absolute reduction in the living standards of the poor. It is necessary to consider the hypothesis that, whatever the desirable aspects of common property institutions, they are viable only in traditional societies and are essentially incompatible with development and growth.

Some possible bases for this hypothesis may be considered. First, it might be argued that common property systems are inherently too inflexible to permit the adoption of new technology. Evidence against this argument is provided by Dahlman (1980), who shows that significant innovations such as the construction of water meadows were undertaken in the English open-field system.

Dahlman argues that the disappearance of the open field system may be accounted for by the need for flexible individual responses to changing market circumstances, as the economy moved from a subsistence to a cash basis. This argument would also suggest that common property systems are essentially incompatible with modern capitalism. However, it should be noted that the open field system was a highly restrictive one, especially as regards the choice of crop rotation. Other common property systems may allow more individual flexibility in cropping decisions, while preserving group control over assets characterized by large scale economies.

Another line of argument is consistent both with Marxian notions of expropriation and with the private property rights school. The basic idea is that the rising power of the

<sup>17</sup> Vondal (1987) gives one of many examples where the shift from subsistence to commercial production has led to the breakdown of previously stable common property systems.

entrepreneurial class sunders traditional property relations (Marx and Engels' motley ties which bound men to their natural superiors') and permits members of the rising class to enrich themselves by appropriating what was previously collective property. In the Marxian tradition, this process was an unattractive but historically necessary stage in the primitive accumulation of capital. Private property rights theorists, such as Demsetz, have simply ignored the pre-existing common property institutions and have interpreted this process as the creation of property rights where none existed before, in response to the rising value of resources associated with capitalist development. More recent ideas of unproductive entrepreneurship (Baumol 1990) suggest a less sanguine view. To the extent that institutions make efforts at expropriation profitable, they are likely to divert entrepreneurial effort away from activities yielding net positive returns.

The notion of primitive accumulation suggests its own converse. Just as an approach to modernization based on increasing concentration of wealth requires the appropriation of the commons, an approach based on increasing equality requires their preservation. In the early development literature, it was often assumed that the crucial requirement for an egalitarian development strategy was a strong central government. However, the actual performance of governments in LDCs has cast doubt on this conclusion, particularly as it affects the rural poor. Central government activity has been associated with urban and metropolitan bias, and with extensive dissipation of resources in rent-seeking activities. In addition, the supply of educated professionals has not been sufficient to permit the implementation of many plans for the centralized management of resources.

The common property approach suggests that, with an appropriate structure of rights, many of the decisions required to manage resources in an egalitarian fashion could be made at a local level. The main requirements for central government would be the adoption of a progressive basis for major taxation and expenditures, and the protection of democratic local institutions. This approach has many appealing features. The informational difficulties associated with central planning are largely obviated, and the potential for large-scale rent seeking is reduced.

The difficulties should not be understated. Local governments, perhaps even more

than central governments, are subject to capture by powerful interests, and may make decisions which are not in the general interest and particularly which are inimical to the survival of common property institutions. For example, Jodha (1984) has argued that elected Indian village councils (Panchayats) are actually less likely to preserve common property or to respond to the needs of the lower-income groups who depend on the commons than were the previous feudal rulers.

## 8. CONCLUDING COMMENTS

Common property is a much misunderstood concept. On the one hand, economists persist in misusing this term to describe situations of open access. On the other, it carries a baggage of utopianism which, while enhancing its appeal, has made it resistant to analysis. The analysis presented here has stressed the point that common property institutions are never purely communal. On the contrary, they must be understood in relation to the private property rights systems with which they are intimately associated. Common property rights have been interpreted as a method by which scale economies can, at least in part, be captured by groups of small-scale landholders. There may be considerable inequality within these groups. Nevertheless, compared to the alternative in which scale economies are captured by a single owner, the common property system may be regarded as egalitarian.

The principal difficulty with common property systems is the need for collective management. In order to mitigate this difficulty, participants in common property systems have instituted costly procedures such as land fragmentation and periodic re-apportionment. Despite these costs, some common property systems have functioned successfully for many centuries. Others have not.

The pressures on common property resources are particularly severe in the context of development. The shift from subsistence to market production has the potential to increase both income inequality and divergence in other dimensions. The challenge is to promote patterns of development which maintain the egalitarian values inherent in common property institutions and encourage the emergence of common property systems

adapted to the needs of modern and modernizing societies.

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## ENDNOTES