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**Property Rights and Institutional Objectives of the Household
Responsibility System in China: Implications for Agricultural Investment**

Plan B Paper

by

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1. Introduction

The Household Responsibility System (HRS) in China replaced collective farms by individual household farming units; a radical alteration in the organization of production. The major institutional changes of the HRS were individualizing income rights by distributing land use rights at the household level and decentralizing decision making power from central to village level authorities (Liu, Carter, and Yao, 1996). Linkage of effort to return provided work incentives to farmers, inducing the extraordinary agricultural growth rate of 7.5 percent annually, during the years, 1979-1984 (Lin, 1988; 1992; McMillan, Whalley and Zhu, 1989). Decentralization of power on the other hand has brought regional variation in land rights, influenced by relative land scarcity and off farm income earning opportunities, (Putterman, 1993; Kung, 1995).

After 1984, the rate of growth slackened, the gains from this policy being reaped. Following the slowdown of the growth, there has been continued debate that land rights should be further privatized to develop factor markets (land and labor), provide greater incentives to farmers for effort, investment, and opportunity for using their land as a collateral. Recommendations vary between total privatization of land rights and privatizing only selected rights of use or transfer, or of increasing tenure security (Prosterman and Hanstad, 1990; Zhou, 1991, Feder, Lau, Lin, and Lou, 1992; Yao and Carter (unpublished)). In general, individualization is the recommendation.

Parallel to this, there is a general opinion among policy makers and economists that maintaining collective rights will threaten the sufficiency of food production in the future. This might result from low incentive for an individual household to invest in land (i.e., land

leveling and conservation, irrigation systems and organic fertilizer), nonavailability of credit and inefficient resource allocation, threatening the productivity in the long run. It is frequently mentioned in the literature on Chinese reforms that the frequent redistribution of land and the encumbrance of use and transfer rights reduce the opportunity for households to internalize the benefits of long term investment. Low farmgate prices and procurement quotas on staple food crops are also considered responsible (Kung, 1995).

This paper presents the argument that although property rights certainly provide incentive for economic activity, simply linking rights to productivity levels or farm investment will be an abrupt and incomplete approach. Before holding the property rights responsible and argue for them to be changed, it is essential to step back and consider the organizational objectives for which the rights are defined. The HRS might seem the result of a drastic change in the institutional structure but a slightly closer look reveals path dependence; the major characteristic of collective agriculture, egalitarianism, prevails. Just as collective farms had to deal with the issues of resource mobilization (transfer of agricultural surplus from rural to urban areas), production and equity in consumption (Kung, 1994), these continue to be the conflicting organizational objectives for the HRS. Only equity in consumption is modified to equity in opportunity. From this perspective, the argument of individualizing land rights implies that to increase productivity through privatization, other objectives will remain unfulfilled. For example, if farm gate prices are increased, the benefit to the urban consumers will reduce, and by further privatizing land rights, the assurance of availability of land will be reduced.

Keeping this concern in view, first the changes in property rights of land under the HRS are reviewed. Factors are identified which shape the institutional preferences of the peasant households and village governments - the final decision makers for land rights. This clarification is essential to understand the pattern of changes in rights and predict future changes. Different dimensions of rights are summarized, identifying their link with the organizational objectives which they help in achieving.

Second, one of the repeated issue in the literature of Chinese rural economy, insufficient investment in land, is reviewed. Privatization will not result in necessary investment. Simply maintaining the collective rights will not achieve the objective of equal opportunity for farmers. The literature tends to ignore the fact that households are individually incapable of long term investment in common infrastructure, such as irrigation, technical research and food sector structure. Government support and an institutional structure are necessary. If the egalitarian objective is to be maintained, privatization is not an option; new forms of organization are to be developed. This is illustrated here by the case of the irrigation system in China. With individual responsibility at the beginning of HRS the irrigation system had suffered great damage. Maintenance of the system is now organized at village level. A new organizational structure has been adapted: the Water Resources Contract Responsibility System (WRCRS). The success of this system illustrates the potential of collectives formed to overcome the investment problem.

The paper is organized as follows. The basic concepts of institutions, property rights and organizations are discussed in the next section. This condensed review of the concepts

set up the framework for the discussion on institutional and organizational structure in Chinese agriculture.

The Household Responsibility System is briefly summarized in section three. Rights assigned to households and retained by the local government are discussed and in section four they are linked to the institutional objectives of the HRS. The likely exposure of these objectives resulting from privatization of rights is discussed.

Section five reviews the problem of lack of investment in land. Forming collectives for the purpose of investment is proposed. The potential of their success is illustrated by the irrigation institution in China. Section six concludes the paper.

2. **Institutions, Property Rights and Organizations**

Institutions are “sets of ordered relationships among people which define their rights, exposures to the rights of others, privileges, and responsibilities.” (Schmid, 1972). They are the “rules of the game.” Institutions reduce uncertainty by providing a structure to human interaction. It is important to keep in perspective that institutions determine the nature and scope of individual opportunity sets which allow or prohibit the selection of maximizing decisions, defining efficiency and *for whom*.

An institution can be considered a set of interrelated property rights, or as is sometimes referred to as a ‘bundle of rights.’ *Property rights*, as defined by Schmid (1987), are the ‘relationship of one person to another with respect to a resource or any line of action.’ The term institution and property rights are sometimes used interchangeably, but an individual right is a component of an institution. Rights determine the interdependence amongst individuals and within a society. They create incentives and freedom for the right holders to use the ‘property’ and restrictions for nonholders when interests (in reference to the property) conflict.

The nominal existence of a property right alone is not of any value from an economic point of view. It is important for the right holder to have an external authority that sanctions and protects the right so other players in the society agree to comply with the rightholders’ interests. The state commonly plays this enforcing role. It is also essential that the majority of players themselves accept and respect the rights.

As mentioned above, an institution is an aggregation of rights grouped into sets. This set is also referred to as ‘bundle of rights.’ Bromley (1989) has listed and discussed

these 'sticks' of the bundle, which include right to possess, right to use, right to manage, right to income, right to the capital, right to security, transmissibility, absence of term, prohibition of harmful use, liability of execution. and right to the residuary character. A bundle of rights can include all or only selected rights. The particular sticks in the bundle, and the party possessing them shapes the social (and legal) relationships

Institutions can be formal (rules) or informal (conventions) and can be seen as social or legal relations. The relationship between any two individuals (or groups was elaborated upon earlier by W.N. Hohfeld (1913) and John R. Commons (1968 [1928]) and recently by Bromley (1989). The relationships in the institution are summarized as four legal correlatives, illustrated in figure 1.

Figure 1: The legal correlations

	Individual A		Individual B
Static Correlates	right	⇒	duty
	no right	⇐	privilege
Dynamic Correlates	power	⇒	liability
	no power	⇐	immunity

Bromley (1989).

Existing property rights provide an expectation or assurance to Individual A that Individual B will behave in a particular way and it is the other individual's duty to do so. If A does not have the right, B has the privilege to act without he consent of A. The dynamic correlate portrays the relationship when forming new legal relations or modifying existing ones. When individual A has power to create a right which affects B, the

individual B has to comply. If A does not have the power, B is not subject to A's attempt to create a new relationship. These relationships are illustrated later in the paper.

It is necessary to mention the distinction between institutions and organizations. North (1991) defines organizations as 'groups of individuals bound by some common purpose to achieve objectives.' As mentioned above for institutions, organizations also provide a structure for human interactions, with the distinction being that institutions determine the framework determining costs and benefits, the organization is the framework. Or as illustrated by North, institutions determine the rule of the game whereas organization is the team that plays the game and may try to change the rules. This distinction will help in better understanding the HRS.

Institutional Change

Institutional change is an ongoing *process* which can not be accounted for in any single event. It can be considered a collective action by potential gainers who join their effort if the expected gain from the possible change is greater than the transaction cost of organizing the effort to bring about the change (Bardhan, 1989). The factors that are likely to come into play are the number of players, the expectations, control of government, ideology, whose interests are being served, and what the previous rights were. The change usually is a path dependent process.

The evolutionary approach to law and economics suggested by Samuels (1989) provides an explanation to the process of institutional change. Samuels suggests that law and economics are not independent but mutually create (and recreate) each other, referring to

this as the "legal-economic nexus." The legal economic nexus is the social sphere and process wherein rules of law and morals (the institution) are both outputs and inputs. The distribution of income and wealth is in part a function of law, in the same way as law itself is partially a function of the of the distribution of income and wealth.

Although the economy and the government (the law makers) are generally conceptualized as independent, they are interdependent and change together due to the legal economic nexus. The key questions in this process are that "who controls the government, for what purpose" and "whose interests are to count, how , and how much," (Samuels, Schmid and Shaffer, 1994). Being the power holder, the government might shape the opportunity set for a society or prevent the society from bringing a change in their favor. The state is known to have responded favorably to one of various interest groups and lobbies, allowing rent-seeking behavior (Bardhan, 1989). This is inevitable; the state has to support some group in society in making its decision when there is conflict of interest between groups. On the other hand, the involvement of the state is essential for institutions to be implemented and be effective in society. Absence of the state might result in chaos.

Bromley (1989) has presented the same idea of the relation between the structure of institutions and the economic conditions in the society. Two types of transactions are identified. "Commodity Transactions" which refer to buying and selling of goods and services, and "Institutional Transactions", the institutional change which determines the institutional structure that defines the economy or a set of ordered relationship. The institutional arrangements determine the opportunity set of the households. A change in institution will bring about a change in the opportunity set, affecting the economic

transactions, which determine the economic condition. Just as the institutional structure determines the nature and scope of commodity transactions, the economic conditions will be important in determining institutional transactions which result in institutional structure.

Ideology has also been emphasized as a key driving force. Ideology enforces an internal code of behavior in individuals "constraining them by their socially imbibed notions of legitimacy of the system, fairness of contract, and ethic of reciprocity" (Bardhan, 1989). This might induce them to act contrary to their own benefit, and in favor of society as a whole, i.e. forgo opportunistic free rider behavior. An ideology might be a force in adopting an institution to solve the problem of common pool resources, or a change in ideology might lead to failure of previous institutions and bring about new ones.

Institutional change can be summarized under four types of institutional transactions that influence the institutional structure. (i) Institutional transactions that increase productive efficiency and (ii) Institutional transactions that redistribute income, are nonseparable. For any change in rights with the objective of increasing productivity, rights of one individual will have to be transferred to another. The other two are, (iii) Institutional transactions that redistribute economic opportunity. The redistribution of economic opportunity is driven by changing nature of attitudes and preferences in society. They represent a realignment of new economic conditions to the new vision of whose interests count. The last is, (iv) Institutional transactions that redistribute economic advantage. This explains rent seeking behavior in society. If a group can influence the policy level to change institutional structure in their favor, although others might lose, the change would be considered a transaction that redistributes economic advantage.

When economic and social conditions change (such as ideology), members of society will undertake effort to modify the institutional arrangements to bring them in line with the new interests and opportunities, distribution of wealth or tastes and preferences (Bromley, 1989). However, organizations are also formed (or modified) for achieving group objectives subjected to the constraints of the opportunity set. In the process of achieving their objectives, the organizations become the agents of institutional change (North, 1991). This view is adapted in this paper.

3 Institutional Setting of Agricultural Production in China

The Collective System

Before 1978, all land rights in China were collective, with agricultural production organized in the commune system. The commune consisted of brigades and the brigade was formed by production teams. The production team was the basic unit of production, consisting of 20 - 30 households with management by a government appointed team leader.

Team members worked collectively, distributing surplus returns according to work points after deductions for taxes, a welfare fund and basic needs of households. The work points were based on quantity and quality of labor. The work point system was at least theoretically, not an inefficient incentive system. A worker has incentive to put in more effort to increase output for basically two reasons. First, the greater the total output, the greater everyone's absolute share. Second, with greater effort, the higher the work points, and thus the workers share. However, since the total output is shared by all there exists a problem of linkage of effort and return. With every individual expecting the others to put in greater effort, the incentive to free ride rises. Also, the effort can be recognized only with greater monitoring. Therefore the incentive to work is positively associated with the amount of monitoring. Monitoring is itself expensive in agriculture, due to the sequential nature and spatial distribution of work, plus stochastic factors, such as weather. Consequently, to reduce the transaction cost, the amount of monitoring was fairly low, not providing the incentive for work. Without a farmer's effort being recognized, the work point system did not provide any

reason for greater effort, leading to labor shirking, eventually reducing total productivity (Lin, 1988), which was in opposition to the initial objectives of the commune system.

Productivity was only one of the objectives of the commune system. Equity of living standards (in rural areas), another objective, was achieved. Also, resources were transferred from the rural to urban areas. The dualistic Chinese policy forced the agriculture sector to operate with a low capital-output ratio, with most resources being allocated to the industrial sector, and to provide the urban sector with low priced food products.

The Household Responsibility System

Under the HRS, the land remains collectively owned. The right to use and retain net profit from the output is individualized to the household. In effect, the households become separate farming units using land leased to them by their village (the previous collective) for a "rent" in the form of state and local taxes, contribution to collective funds and implicit taxes in the form of obligatory grain sales at quota prices (which is below market price).

The local government does not interfere in the operations of the household, as long as it fulfills the responsibilities (quota, taxes). Land use rights are revoked if land is left unused or not properly utilized. Selection of crops is influenced by the state through the quota restriction (Liu, et al., 1996).

Land distribution methods were generally egalitarian, with variation based on the principle of distribution according to the number of members of the household or total labor force in household, or a combination. Land is distributed under two categories; food plots, distributed according to the size of household, and responsibility plots, according to number

of laborers in the family, or based on negotiated contract. In addition, households continued to have rights to their private plots, as under the commune system, without tax, quota, or collective obligations (Putterman, 1993).

Since 1956, under the collective ownership of land, any market transaction of land was prohibited. Disregarding the prohibition however, individuals transferred property rights to land under short term leases with the start of the HRS. Due to collective ownership, sale was not (and still is not) possible. Long term leases were not possible due to the frequent reallocation of land by the local governments. These short term transactions were mainly between neighbors or acquaintances, since a market for land did not exist. Neither were there any formal contracts. These transactions became open by mid-1983. In 1984, realizing the need for land transfers, the state amended its policies, first extending the length of contract of land to households to 15 years and later encouraging farmers to transfer land. In 1985, compensation for the transfer of land was legalized (Wenfang and Makeham, 1992), although it was not till 1988 the state formalized the legalization of land use right transfer, although most local governments still require approval. This condition acts as a transaction cost, discouraging transfer. Also, due to small land plots and an undeveloped land market, formal land transfer remains infrequent (Liu, et. al., 1996; Dong, 1996). Land is usually transferred to relatives or friends within the village, with occasional transactions with members from other villages (Wenfang and Makeham, 1992). Land transactions are also reduced because labor markets are nascent. Households need to hire labor to operate larger farms.

When HRS was first introduced, hiring labor was also explicitly prohibited. Since labor hiring was potentially beneficial for both employers and employees, the regulation was

widely disregarded in China. As this practice increased, the government realized that the labor transactions were beneficial for the economy. The prohibitive policy was reversed, but a household was limited to hiring not more than eight workers. Over the years, this limit is known to have been repeatedly violated. This violation is ignored by the government since it increases output, which is in accordance with the state's objectives (Lin, 1989).

Land tenure security also has an impact on the performance of individual households. Liu et. al. (1996) define individual tenure insecurity in China as "the prospect that a household must relinquish land as a part of an administrative reallocation of land across households". At the introduction of the HRS, the land rights were considered very insecure, mainly due to the short tenure length. The tenure was increased to 15 years and recently to 30 years (Kung, 1995). Tenure rights now vary from 15 - 30 years in different parts of China (Dong, 1996). However, local authorities have repeatedly violated the terms, redistributing the land. These violations have caused uncertainty amongst households even though an official tenure length is declared. Although households know they will have an equal share of land available to farm on, there is uncertainty whether the same plot will remain in their possession which results in the land user not having certainty to claim the full stream of income produced through his or her use of and investment in the land.

As mentioned earlier, the ownership of land remains collective. There is no clarification of who owns the land but the administrative village, the level at which local government is established, operates in assigning land use rights and collects "rent" from households for the right to use land in the form of taxes and quota.. Collective ownership allows them to control the use of and transfer of land, and redistribute land when necessary

implying that the rights which have been individualized, in effect remain under collective control. The local governments possess these rights since it is their responsibility to meet the grain production quotas, for which they depend on individual farmers. They are unwilling to let go of this right due to the uncertainty of grain production from completely decentralized, individual decision making of land users. The right to impose sanctions means that the land endowment will not be unutilized. The grain quotas are also a control on the choice of use of land, ensuring the production of grain.

4. Institutional Objectives of the Land Rights Structure

Path dependence is evident in the institutional structure of the HRS. The land rights awarded to individual households show that the institutional objectives of the commune system have carried over to the family farming system. Productivity, which is a prime consideration improved considerably, but slowed within a decade of adoption of the HRS. This slowdown had raised the argument that land rights should be further privatized to continue the increase in production rates, ignoring that increasing productivity by further individualizing rights can only be achieved at the expense of income and wealth equality, another carried over objective of the state. The current rights structure certainly aims to maintain the objective of providing equity in opportunity for all households. There is also frequent objection to the low farmgate prices and quota restrictions, as it benefits the urban consumers and acts as a disincentive for the farmers. These policies are also evident of the continuity of the objective to transfer resources to urban areas.

The link of land rights with the objective it supports is discussed individually below. This clarification provides a base for analyzing the likelihood of future changes in rights and provides a base for the discussion in the next section on the problem of agricultural investment in China. Table 1 summarizes the relation each right has with the state objective.

Ownership

Collective ownership (at village level) facilitates the authorities to maintain equity of opportunity and income as much as, as is common in many developing countries. On the other hand, collective ownership and periodic reallocation of land is generally not opposed by

individuals (Kung, 95). It provides an insurance that in the future, with growth of family size, the household will have access to more land, securing food and income earning opportunities though this is not possible in the aggregate.

Table 1: The link between land rights and policy objectives of the state

Property Rights	State Objectives		
	Productivity	Equity in opportunity	Resource Mobilization
Ownership	Collective ownership prevents land from remaining unused	Collective ownership provides opportunity to redistribute land when household sizes change	
Use rights	Individualization of rights links effort to return, providing incentive for greater effort.	Rights allocated equally	Quota restrictions and controlled farm gate prices
Transferability rights	Permit land to be used when household to which land is allocated can not.	Transfer is short term discouraging farm size growth	
Security of rights	Insecurity affects investment by individual households reducing productivity in the long run.	Insecurity of tenure acts like insurance to households, assuring proportional land will be available when household size grows	Insecurity enforces land to be utilized according to official interests, fulfilling needs of off-farm population.

Second, collective ownership facilitates that land will not remain unused or improperly used, thus maintaining productivity. If any household does not cultivate land allotted to it, the village authorities have the right to take back part or all the land.

Use Rights

By individualizing land use rights, the linkage of effort to return was established, which acts as a catalyst for increased effort, raising productivity. The high agricultural growth rate during the years 1979 - 1984 was considered to arise mainly due to the distribution of these rights (Lin, 1988; McMillan, et. al., 1989). The use rights are also equally distributed within the village, to provide equal opportunity to all households. Third, the rights are encumbered by the village authorities to assure that the regional production quotas are met, land is appropriately used and for the continuation of the resource mobility objective. The authorities control the choice of land use and provide low farm gate prices of the produce to farmers to confirm the demands of urban consumers are being met.

Transfer Rights

As mentioned in the previous section, transfer rights have gradually increased for the farmers, but land transactions remain infrequent. A well functioning transfer system could potentially assure the land is being well utilized so production targets and quotas are met, and to provide greater opportunity to households with increased needs although land markets are still nascent in China.

Security of Tenure

There is frequent mention in the literature that insecurity of tenure is the major cause of low investment by households, providing a threat to productivity in the long run. Individuals might benefit from deeper privatization of property rights to assure the security

of future source of income. Further privatizing would also provide greater incentive to invest in land, along with continued incentive to work.

The interest of households and the institutional objectives are much more complex. No doubt households will benefit from greater security but they will also be exposed to another threat. The current tenure flexibility means that they can potentially increase their landholdings in the event of household expansion. This might also be done if land could be purchased from others. Even if legal, credit may not be available. The tenure insecurity is a transaction cost they need to pay to have available future opportunity, which is also the objective of the government. By not securing the tenure rights, the authorities secure the right to redistribute land when considered necessary.

Interpretation of the Property Rights Structure in China: The Exposure of State Objectives

Property rights of land in China are regularly undergoing decentralized institutional innovation. The changes in property rights are determined by the local governments, keeping in view the above discussed policy objectives of the state: equal opportunity to rural households for land use, maintain productivity and satisfy the needs of the urban consumer. The rights are influenced by the heterogeneous situational characteristics. Variations in situational characteristics includes (but is not limited to) population density, soil fertility and off-farm income opportunities. They also depend on the balance of the interests of the individuals and the state/local governments, making the future changes in property rights of land in China uncertain.

The rights granted to households and retained by the authorities affect the realization of the state objectives, i.e. the expectation whether a certain set of rights will become a promoting or hindering factor in achieving the state's objectives.

The 'exposure' to the state can be explained by the static correlates of the property rights relationship between the household (Individual A) and the state (Individual B) illustrated in Figure 1. When land rights are assigned to the households, the state will have the duty to respect those rights and make sure each household respects each other household rights. Having granted the rights, if the household is unwilling to use the land for a purpose that the state wishes, the state will not be able to control the decision of the household. This will expose the interests of the to the individuals' decisions. On the other hand if rights are not granted to households, the state will enjoy the privilege of controlling their decisions.

Exposure depends on objective and subjective factors (Liu, et al., 1996). Objective factors determine the intensity of the interests which are at stake. In areas of low agricultural productivity the state has little to lose if greater privatization allows individuals to use resources for purposes other than producing staple food crops. Another objective factor would be the likelihood of an individual's decision to use resources counter to the states preferences. This expectation can be assessed from the opportunities the local economy provides other than agriculture. In a region with rural industries, the state interests will be more vulnerable. The subjective factor is the state's confidence in the decision making ability of individuals, and expectation of decentralized market coordination.

Apart from the effect of this relationship, there has been considerable change in the economic conditions since the innovation of the HRS. Rapid industrialization has continued

in urban and rural areas which has pulled labor out of agricultural activities, and further attracts labor due to the higher wages and living standards. Control on urban migration has prevented massive flow of population to large cities, but not completely. Rural enterprises are also known to employ labor from other villages (Dong, 1996).

The terms of trade for agricultural products have also been declining since the mid-80s leading to further incentive for the farmers to engage in non-agricultural activities. Crop area has declined constantly during the past few years. Land abandonment and land conversion have emerged as important land use problems due to a rural-urban income gap and increase in industrialization (Carter, et al., 1996).

Controlled food prices in urban areas have continued, resulting in controlled farm gate prices, causing another disincentive for farmers, who look for substitute income earning opportunities to abandon their agriculture practice.

All these factors combined, add to the exposure of the state. The state's willingness to grant more rights depends on the confidence the decisionmakers have on the household's ability to satisfy the interests of the government.

An important factor to consider is that any such decision will concern 'whose interests are to count.' As long as the urban consumers have the greater representation in government decisions, the resource mobilization through price controls and quota restrictions might continue. Any change in the rights will be preceded by shift in power to make the group previously immune to the other's choices liable to their decisions.

Having reviewed the land rights in China, their objectives and the relationship, it will not be a total misjudgment to expect that the state will maintain collective rights for greater

control on the agriculture sector. This is likely even though it does not offer a solution to the problems resulting from collective rights. The next section discusses the most frequently mentioned issue of low agricultural investment blamed on the land tenure system.

5 The Problem of Low Farm Investment

In the literature on Chinese economy, there is a general opinion that investment problems have a direct link with the structure of property rights (Prosterman, 1994a; West and Pan, 1994; Wen and Zhang, 1993; Feder et. al., 1992). This is also frequently mentioned in the literature of land tenure (Hoff, 1991; Feder and Feeny, 1993). It is commonly hypothesized that individualizing land rights (increase the tenure length and security) will provide incentive to households to invest in agricultural land. This hypothesis has been empirically tested in several African regions with varying results, although only two studies are available for studying the link between land tenure and investment in China.

A study by Feder, Lau, Lin and Luo (1992) found a very weak link between tenure security and farm investment. They looked only at mobile assets, therefore the results are not directly relevant to the discussion which is in reference to land intensive investment. The study however reported small farm size as a factor limiting investment even though the investment was seldom below optimal level. Limited transfer rights and nonavailability of credit also were a hindrance. An interesting finding was that where investment in mobile assets was not low the assets were not utilized to capacity; the indivisibility of assets led to overinvestment. The potential overinvestment is considered a misleading factor in the weak link found between tenure security and farm investment. The study did not find evidence of the households pooling their resources to avoid overinvestment and underutilisation.

Another ongoing study has provided preliminary results finding strong relationship between tenure security and land investment. Yao and Carter (unpublished) used measures of planting green manure and labor input in land maintenance activities such as tilling and

weeding the land as indicators of investment. The empirical tests of the study found that investment has a direct link with tenure security, freer use rights and better trade conditions. The researchers argue that productivity will be dampened unless land rights are individualized. Similar arguments are provided by Wen and Zhang (1993), Prosterman, et. al (1994a,b), Gitomer (1996), and Carter et. al. (1996)

These arguments might carry some weight. Prosterman and Hanstad (1990) found that peasants were not assured that they will be able to hold on for a sufficient period to benefit from their investments, even though the contracted period was 15 years. They were reluctant to invest in land. The restrictions on land use rights might also be a disincentive to invest. The quota restriction enforces the farmer to cultivate grain crops which might not be the most lucrative crop for the land in a particular region. Also, farmers do not have the right to leave the land uncultivated when they find better income earning opportunities; the land will be confiscated without compensation for the investment. The lack of a land market and low farmgate prices are also unfavorable conditions (Kung, 1994).

What is not being considered in these arguments is that the potential prerequisites for individuals to invest in the land are not only appropriate land rights, but also availability of resources and nonavailability of better options essential for increased agricultural investment. The current situation in China indicates these factors are unlikely to be present. Households do not have access to credit, have small areas of fragmented land available, and the quotas and low farmgate prices act as a disincentive for investment. Farmers are increasingly pooling available resources in rural enterprises instead of agriculture (Perkins, 1994) or looking for opportunities to migrate to urban areas (Dong, 1996). Plus, the general

conclusion that can be arrived at from the discussion in the previous section is that there is low likelihood of further individualization of land rights, mainly due to added exposure of state interests and preference of urban community's interests in the state's decisions. Also, the periodic redistribution of land is a form of welfare system for the rural population. Kung (1995) found in a study that farmers were not much concerned with the redistribution of land. In a region with low off farm opportunities the readjustment of land was an acceptable institutional practice, with a high expectation of being awarded the same plots of land. In addition, land investment and infrastructure development is beyond the capability of peasants. Investment and coordinated effort by the state or local government is required.

These factors offer an interesting question that if the generally proposed solution to low investment in Chinese agriculture, i.e. privatization, is unlikely, how can this problem be approached.

Village cooperatives: a possible solution for low farm investment

The HRS system is an institutional arrangement which provides incentives for agricultural production by linking effort to return. To increase investment, a similar link needs to be established with the returns, which are more long term and gradual. A separate institutional structure, parallel to the HRS needs to be set up to fill the need. A possible option is to organize collective investment effort at village level.

Forming village level cooperatives can play a positive role in promoting and administering farm investment. These cooperatives can pool resources from households and state, distributing the investments uniformly over the village. The organizations will also be

in a position to borrow from lending organizations. The cooperative organization operating at a larger scale will also be a catalyst for the development of a credit market. There is evidence of increased availability of credit to smallholders through cooperatives (von Pischke, J.D., D. W. Adams, and D. Gorfon, 1983).

The village cooperatives will be an organizational setup with which individual households can coordinate effort. The cooperative will be in a position to plan medium and long term investment which is not possible at household level. Just as crop production is partially planned at village level to fulfill the regional staple crop requirement, the investment decisions can also be planned accordingly. Village level planning will allow utilization of economy of scale. The government can also employ these organizations to manage state investment. Indivisible assets like farm machinery can be leased out by the organizations to farmers who are not able to invest.

By separating investment from production, the problem of low investment due to redistribution of land will be partially overcome. Individuals will be less concerned with recovery of capital before a piece of land is taken away from them because the next piece of land they receive will have investment from the cooperative. Also, if investment responsibility is assigned to individual farmers, the cooperative will provide a structure for monitoring and evaluation of the effort and value of investment.

The cooperatives suggested are different from the old collective farms. Those farms which existed before the HRS were production collectives in which all individuals were practically involved. For the purpose of investment, service cooperatives are a potential solution, in which all farmers' interests are involved, not essentially their effort. Each

individual would be pooling resources but the collective's role would be to coordinate and handle resources for investment. This form of organization can operate parallel to individual farms, transferring the responsibility of farm investment from the farmers to the cooperative.

This argument is supported by an illustration of the irrigation management system adopted in China. Water distribution and maintenance of irrigation infrastructure faced the same problem as farm investment; a sharp drop in capital from the government without replacement from the households. A collective organization system, the Water Resources Contract Responsibility System (WRCRS) has been adapted which has proved to be successful in overcoming the setback of withdrawal of government interest.

The Water Resources Contract Responsibility System

During the commune era, the irrigation system was publicly managed with water being allocated according equally to collective farms. The irrigation system became dysfunctional with the introduction of the HRS; the rural investment by the state dropped sharply, the professional managers of the irrigation work posts lacked incentive to work, having better income opportunities available and the farmers lacked incentive to invest time or money.

The lack of interest resulted in a chaotic atmosphere, without any new construction, existing wells and canals being filled in, the projects being damaged further due to mismanagement (Gitomer, 1996). There was "theft, grabbing and seizure of water" all the

time, without any law or organized system to enforce order or manage the water resources projects (Bai, 1982). Total irrigated area in China began to fall.

With the introduction of the "Water Resources Contract Responsibility System" (WRCRS) the irrigation system was divided into small and medium scale units, according to existing work posts. A work post is a local controlling unit for water distribution. If source of water is tube well, a single work post controls the whole distribution system. If the source is from larger canals, irrigation ditches and water gates, from which distribution channels emerge are controlled by a single work post. This makes the whole irrigation system divisible, for every region.

The work post was leased out to previously employed managers, with the responsibility of providing water to the farmers dependent on the work post at a rent charged for the service. This converts every work post into a firm, similar to a utility company. The larger dams and water gates of major canals were controlled by the Ministry of Water Resources.

The irrigation firms created were allowed to use the leased out assets (irrigation ditches, water pumps, buildings, land) for other profit making purposes, as long as the responsibility of providing the water to farmers was fulfilled. Property rights are a critical factor affecting the viability of organizations for water management (Rosegrant and Meinzen-Dick, 1996). Rights are divided between the firm (the manager or lessee), the farmer and state. The state retains ownership and transfer rights of the assets, plus right to retake at the end of contract period or earlier if water is not allocated properly. The firm retains right to use the assets, paying a rent or tax.

There was regulation on the minimum amount of water to be supplied, at a ceiling price. The rent was charged to each farmer in proportion to the area of land held. The price, however was below the marginal cost, the difference being a subsidy to the farmer. The irrigation firms made up for this loss from involvement in other profit making activities.

This system proved successful in water distribution management. Also, the problem of maintenance of the work post assets was solved. The right to use the assets for other profit making purposes provided an incentive to the firm managers to maintain them.

These rights however, did not solve the problem of maintaining the water channels. The farmers themselves were made responsible for this job. To assure that all farmers provide equal effort, every village government made it a part of the "responsibility" for every farming household holding user rights of land under the HRS, to provide a user fee plus a fixed number of days of work. This effort could be compensated with payment equivalent to the value of labor.

This system has proved to be successful in provision of water to farmers, plus overcoming the problem of maintenance of the irrigation system, which was seriously damaged by the government's reduction in investment in agriculture and lack of incentive to farmers after the privatization of use rights of land by the HRS.

In summary, the WRCRS appropriately presents the potential success of collective effort to solve investment problems in Chinese agriculture. Promoting privatization for this purpose becomes a weak argument when compared with this form of organization. Instead, emphasis is required on developing well specified collective rights.

6 Conclusion

The discussion in the previous sections can be summarized in two statements: (i) the institutional objectives of the state suggest that greater individualization of land rights are unlikely, and (ii) individualizing land rights will not entirely solve the investment problem - setting up an organizational structure for collective investment is also required.

These conclusions complement the arguments that moving from collective rights to greater private rights will increase productivity and land intensive investment. Any institutional transactions to increase productivity are inseparable from an institutional transaction that redistributes income. This means that the state is willing to constrain productivity to achieve the objective of equity in opportunity. Neither are any institutional transactions likely that will shift economic advantage from the urban community to the peasants. This leaves only the possibility of an institutional transaction that reallocates economic opportunity. This reallocation of opportunity can be achieved by setting up an institutional structure for cooperatives at the village level to implement agricultural investment (in areas such as irrigation system). With continued low investment, the institutional setup will provide an opportunity to the farmers to increase their contribution and effort, having specified rights to obtain the returns, even after redistribution of land. Such rights will be a prerequisite for collective organizations to operate successfully at village level. Although such organizations provide a fair amount of success potential, their potential can not be determined before trial.

This solution to the investment problem might only be temporary. The state will have to give up some of its power and provide greater rights to households in the long run. To make sure the state objectives for performance of the food system are met, markets for land, labor and credit need to be developed. When land use decisions are transferred to individuals, existence of these markets will provide greater opportunity for the land to be appropriately utilized. The price structure of agricultural outputs can not be neglected for long, although as mentioned this is a political.

These conclusions, however, are partially hypothetical based on logic, or on the limited research publications available. For better understanding of the tradeoffs and costlines of changes in property rights in China, more research and trial is required.

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