

LAND MANAGEMENT AND PROPERTY RIGHTS

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Summary

This topic level contribution presents an overview of the issues surrounding land management and property rights. The chapter provides an overview and summary of property rights issues and then analyses a specific issue of land property rights: land reform. The overview and summary of property rights issues bridges land and intellectual property rights issues brought up in the other chapters of this section. Property rights regimes are described as a continuum from open access to individualized property. The incentive effects of stronger property rights are then reviewed showing how security, collateral, and trade can increase investment incentives. Some caveats to the benefits of stronger property rights are presented

including how property rights can reduce the freedom to operate. Property rights enforcement issues are also discussed.

In the land reform section the first part describes the logic of a land reform program while the second describes the logic and conduct of a market assisted land reform program. The market assisted land reforms discussed in that section are often suggested as ways to address property rights reform in areas such as the former Soviet Union and South Africa. The text puts specific emphasis on the institutional arrangements necessary for a successful market assisted land reform program.

1. Introduction

The chapters in this topic address the changing landscape of property rights and their direct effects on land and genetic resource management and agriculture production. Issues of property rights have become increasingly important in both land and genetic resources. The chapters in this topic address these changes and provide tools for understanding the policy implications.

Recent thinking on property rights in land has reasserted the need for reforms in some traditional property rights forms, while others have been shown to be efficient rules in a constrained world. At the same time changes in governments in Eastern Europe, the former Soviet Union, and South Africa have led to opportunities to reform the property systems on major parts of the world's agricultural lands. The debate on how best to proceed with such a reform has put property rights issues back into the focus of many countries and development planners.

The free exchange of international germplasm and genetic resources in agriculture has been the operative procedure for all but the last 100 years of world history. The international exchange of germplasm, has created a situation in which many crops are produced primarily in areas distant from where they were first developed. Changes in global markets in the last twenty years have dramatically changed both the ownership and potential values associated with genetic diversity in agriculture. New ownership rules have increased economic values, while at the same time potentially disenfranchising former owners of genetic diversity.

In the realm of intellectual property rights in agriculture there have been many recent changes both in the technology of crop generation, especially genetic engineering, and in the laws governing ownership regimes both within countries and internationally. The rise in importance of intellectual property rights in agriculture has added a new focus on property rights rules in agriculture. Whereas previously seed varieties and genetic resources in general moved between countries with few if any intellectual property rights, recent developments have made these movements both more valuable and more difficult.

This chapter presents an overview of the issues surrounding land management and property rights. There are three additional chapters in this section on land ownership and property rights, patents and other intellectual property rights, and valuation and ownership of international germplasm. The rest of this section provides a summary of

those chapters. The remainder of this chapter provides an overview and summary of property rights issues and then analyses a specific issue of land property rights: land reform. The overview and summary of property rights issues tries to bridge land and intellectual property rights issues brought up in the other chapters of this section. In the land reform section the first part describes the logic of a land reform program while the second describes the logic and conduct of a market assisted land reform program. The market assisted land reforms discussed in that section are often suggested as ways to address property rights reform in areas such as the former Soviet Union and South Africa. The text puts specific emphasis on the institutional arrangements necessary for a successful market assisted land reform program.

2. Chapter Summaries

2.1 Land Ownership and Property Rights

The issues of land tenure and its relationship to poverty, inequality and economic growth has waxed and waned in public policy. The topic is back on the public policy agenda thanks to the evolving political situations of countries such as South Africa and the former Soviet Union and persistently concentrated landholdings in much of Latin America. Recent research has explored the limits of market mechanisms to provide land access for the poor in the developing world and has found these mechanisms inadequate. Primary among these policies is land titling (or land registration), the formal registration of land that had previously been used without a formal title. Land titling is intended to lead to economic development by providing farmers access to credit, providing the incentive to invest in the land and stimulating land markets. Research has found these programs generally have mixed results. Farmers with greater market access or larger farms are more likely to benefit, hence these programs are not likely to benefit the poorest farmers or to lead to a broader, more equitable distribution of land.

2.2 Patents and Other Intellectual Property Rights

The chapter reviews intellectual property rights (IPRs), with some emphasis on the protection of agricultural and life sciences innovations. The main institutional features of IPRs are first discussed, along with a brief historical background and an articulation of the main rationale for the existence of such rights. This is followed by an overview of the principal economic issues related to IPRs. The main benefits/costs trade-offs of allowing patents and other IPRs are explained, and specific issues are then analyzed in some depth, including the scope of patent protection, the effects of patent races, and the problems arising when IPRs concern cumulative and/or complementary innovations. The economics of IPRs are further illustrated by a discussion of instruments alternative to patents, such as prizes and government procurement contracts.

Private property of intellectual assets carries both benefits and costs to society. The IPR system that has evolved over the centuries can be credited with many achievements. But change, in a broad sense, is also inevitably associated with innovations. The relentless pace of scientific and technological advancements not only makes old products less appealing and old techniques obsolete, but it can similarly threaten with

obsolescence seasoned IPR institutions. Continued monitoring of the efficiency of existing IPR systems, and attention to the economic trade-offs involved, is warranted.

2.3 Valuation and Ownership of International Germplasm

The chapter reviews the current state of genetic resource ownership rules. It then assesses their potential value, first by developing theoretical models and then empirical models. A following section develops models of searches for valuable genetic traits. The last section discusses a number of issues for the future including the roles of the public and private sector, genetic use restriction technology, and how biotechnology may change the use and value of genetic resources.

Issues of international ownership rules for agricultural genetic resources are still under debate and may not be quickly resolved. Overall, there are high economic values associated with germplasm and genetic resources in agriculture. Those values, however, are dispersed throughout many different areas of the world.

3. Types of Property Rights

Property rights are in fact a continuum of different rights of asset ownership. These rights generally allow the owner to exclude others from using the asset, to trade or sell the asset, and to make decisions to modify, improve, or destroy the asset. Along the continuum of property rights are laws that allow different combinations and degrees of these rights. Generally “stronger” property rights are considered to have more rights for an individual or group to exclude, trade, and modify the asset.

3.1 Individualized Property Rights

At the strongest level are individualized (private) rights that give the right to sale, trade, or modification. Most developed country land laws allow owners individualized ownership with rights of excludability, sale, and modifications. Although even in this case the law limits the degree of excludability and some types of sale and modifications. In the case of intellectual property, patents generally provide the strongest individualized rights and include the right to exclude others from using an idea and the right to sell an idea. Intellectual property rights also allow the owner some control over modifications of the intellectual property by others. Land rental and licensing of intellectual property provide two examples of differences between individualized rights and shared property rights. The rights a person renting a piece of property would include the right to exclude others from the property (with the possible exception of the landlord), but do not give the renter the right to trade or sell the asset or make modifications to the property. In the case of intellectual property, in exchange for paying a fee a licensee of a patent generally gains the right to sell the asset and some guarantee of having others (competitors) excluded from using the asset.

3.2 State Ownership

State ownership of property rights fits in between an individualized property right and a multiple owner property right. In this case a nation state, or governmental entity,

controls an area of land, or an intellectual property, such that generally members of the nation state may have some use rights but the government retains ownership. Such a state ownership regime can operate similar to a common property, with a fixed set of users choosing how to manage the property, if the government devolves control to the users.

States will also often retain ownership of certain rights within an individualized property rights regime. For example state sanctioned zoning boards often control the right and the manner in which buildings are built on private land. In the case of intellectual property rights many states have provisions of national exigency that can invalidate patents or force licensing of patents in certain national emergencies.

In many cases the important differences come from the degree to which the state exercises and enforces its own property right to land or intellectual property. For example some West African countries such as Mali have a property rights system in which all their land is technically owned by the state. However, because the state rarely exercises and enforces that ownership a de facto common and individualized property rights system operates for most issues. Similarly compulsory licensing or invalidation of patents in developed countries is rarely exercised, leaving a de facto individualized ownership property regime.

3.3 Multiple Owner Property Rights

At the other end of the property rights continuum are multiple owner property rights including open access and common property regimes. These are property rights in which multiple people can claim ownership. In contrast to individualized property rights, most communal property rights regimes have only minimal levels of excludability, trade, and modification.

At the extreme end is an open access regime in which no one is excluded from use of the property, has the right to trade, sell, or modify the asset. In reality a true open access regime represents the absence of property rights in that no one has any claim on the asset. As an example a fishery resource in international waters might be considered open access in that all people can freely fish the resource. The intellectual property embodied in most wild plants are generally governed by an open access regime in that one can not assert ownership of a naturally occurring set of genetic resources in a way to bar others from using them.

In practice true open access regimes are rare to find because there are almost always barriers to access. In the example of a fishery access to the resource is limited to those who own a boat and a fishing net. In the case of wild plants rules exist on one's ability to modify or destroy certain types of species (e.g. endangered species) and one is limited by access to the right climate to plant a species. However, such limits are not property rights constraints but costs to participation, thus while they limit access they do not constitute rights per se.

The more widespread case is that of a common property regime. In this case the rights of access or ownership are limited to a specific group of people. There exists a

continuum of different common property regimes, from a joint ownership of an asset guaranteed by a handshake to a village common grazing ground guaranteed by a set of town leaders and enforced by a police force. Common property regimes exclude those who are not a member of the group and thus from the non-member's point of view are similar to individualized rights. A common property which consisted of a group of identical individuals with identical preferences who coordinated their actions would in principle operate in the same manner as an individual asset owner.

Limiting the number of potential owners of an asset can facilitate coordination over a system of open access. Compared to individualized property rights, common property provides weaker rights of exclusion. However, in situations in which the actions of one member of a group affect the outcomes for another member of the group (i.e. there exist externalities between members) common property regimes can provide benefits over individualized property rights, so long as the members are able to coordinate their efforts.

Note that some common property regimes which have relatively low excludability requirements act in a manner similar to open access regimes. In other words, as the access requirements become less of a binding constraint the behavior of resource users under a common property regime will behave increasingly like those under an open access regime.

There is a great deal of confusion in the literature about communal property rights. Much of the confusion stems from differences in language around the different degrees of excludability in communal property rights. Very often "open access" is confused with "common property". The difference as noted above is that open access has no excludability, while common property has some rule that excludes certain members of the population.

3.4 Tragedy of the Commons

When the incentives of joint property ownership are too weak to maintain the quality of an asset, communal property ownership can lead to over-exploitation of and under-investment in that asset. The over-exploitation occurs because each individual uses the asset without heeding the costs of their usage on the other users. Such a situation following the nomenclature of Garrett Hardin is commonly called the "tragedy of the commons."

The reader will note that in fact the tragedy of the commons applies primarily to open access regimes rather than common property regimes. In common property regimes, the ability to limit the number of people using an asset will provide some of the incentives for asset conservation that open access regimes lack. Although as the number of people included in a common property regime expands and the value of the resource increases, the possibilities for a tragedy of the commons outcome increases.

A typical story of over-exploitation in open access regimes comes from nomadic herders grazing their cattle on a common piece of land. The herders each have an incentive to increase the number of cattle they graze up to the point at which it is no

longer individually profitable to increase the number of cattle. In a Nash equilibrium each herder will take the total number of cattle grazing (i.e. the reactions of the other herders) as given and set his choice of the number of cattle so as to maximize his own profits. A herder will ignore the costs inflicted by his cattle on the resource. In other words the marginal cost to an individual of adding more cattle is merely the price of cattle not including the cost to the rangeland. In equilibrium, with each herder responding the same way, the herders will add cattle until profits are driven to zero. Since the herders do not bear the marginal cost of their grazing, the zero profit condition will equate average costs with the price of cattle. Depending on the price of cattle this can result in over-exploitation of the resource.

The tragedy of the commons outcome hinges on the inability of individuals with access to the asset from coordinating their actions. This would be the case when there is no means to exclude people from the asset. If the ability to exclude people from an asset exists, trades among the asset owners can lead to a cooperative outcome, which preserves the asset. Such cooperative outcomes would likely hinge on the enforcement mechanism. Enforcement could come from participants interacting often enough such that short term gains from deviating from the cooperative outcome were dwarfed by the long term benefits of remaining in the cooperative scheme. Alternatively, enforcement could come in the form of legal or governmental restrictions and policing.

4. The Incentives of Property Rights

Property rights are a set of entitlements to ownership to a set of assets. There are a number of key reasons for the maintenance or establishment of both land and intellectual property rights. Property rights clarify the ownership of goods allowing the owner a degree of exclusivity in his/her rights to the good. Property rights provide a set of incentives that in many situations can increase the efficiency of resource allocations. They are seen as doing so by “internalizing” many of the externalities associated with multiple owners.

One of the key areas in which property rights become important is in investment decisions which depend on the future (unknown) ownership or profitability of an asset. Stronger property rights can allow owners to optimize investments by 1) creating security of ownership, 2) codifying an asset so as to allow it to be used as collateral, 3) creating the ability to trade an asset. In general the process of optimizing investments caused by stronger property rights increases investments from a low level due to incentive problems with communal properties. As shown below there are some situations in which the opposite process would take place. The remainder of this section explores investment, security, collateral, and tradability issues in more detail as they apply to both land and intellectual property.

4.1 Investment Incentives

In both land and intellectual property it is generally considered the case that stronger levels of property rights will induce higher levels of investment in that asset. In the case of land property rights the guarantee of ownership in a future period provides an incentive to make the optimal level of investment. This guarantee of ownership

increases *ex-post* efficiency because in the previous period the owner will have made the optimal investments.

In the case of intellectual property rights, the guarantee of ownership provided by an IPR system provides *ex-ante* incentives for investments through an *ex-post* reward of property rights. As suggesting in the chapter on intellectual property rights, while the incentives *ex-ante* improve efficiency by creating investment in a situation in which there would ordinarily be under-investment, the *ex-post* reward of an exclusive right can create economic inefficiencies. Any intellectual property rights regime will be a trade-off between the increased *ex-ante* incentives for investing in research versus the *ex-post* inefficiencies created by the monopoly power from granting an exclusive right to sell an idea or product.

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Biographical Sketch

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