

ANALYSIS

Property rights issues involving plant genetic resources: implications of ownership for economic efficiency

Timothy Swanson ^{a,*}, Timo Göschl ^{a,b}

^a *Department of Economics, School of Public Policy and CSERGE, University College London, Gower Street,
London WC1E 6BT, UK*

^b *Faculty of Economics and Politics, Cambridge University, Cambridge CB3 9DD, UK*

Received 4 August 1998; received in revised form 19 January 1999; accepted 18 May 1999

Abstract

The economic theory of property rights is applied to the issue of the conservation of plant genetic diversity, an issue often discussed in terms of benefit sharing, in order to demonstrate that the assignment of property rights is important for reasons of efficiency as well as for equity. Given the existence of transaction costs within an industry, the location of a property rights assignment is a crucial factor determining the incentives for efficient levels of investment at various levels of that industry. In the context of plant genetic resources, this means that property rights that are located at the retail end of the pharmaceutical and plant breeding industries may not have sufficient effect to generate the incentives to supply adequate amounts of plant genetic resources to the research and development sectors at the base of these industries. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Economics of property rights; Biodiversity; R&D

1. Introduction

This article applies some of the economic theory of property rights and industrial structure to the issues concerning the conservation of plant genetic resources. First it outlines the role of property rights in the determination of the incentives for the continuing supply of plant germ plasm to the industries which rely upon it. It

assesses the adequacy of the current system of rights in providing these incentives. There is an already-existing literature examining the issues of property rights and plant genetic resource, many of these analyses primarily concerned with the important issues of benefit sharing and community/farmers rights (see e.g. Shiva, 1991; Posey, and Dutfield, 1996). This article takes a different approach to the same issue. If it is agreed that one of the primary functions of plant genetic resources is to supply the informational inputs required by basic human industries such as agriculture, then

* Corresponding author.

there are important efficiency, as well as equity, considerations involved in the specification of property rights in these resources. This article focuses upon the need for efficiently constructed property right regimes, so that society will receive the appropriate levels of investment in the resource base that supports some of its most fundamental industries. It then examines the current system of property rights in regard to plant genetic resources in light of this theory, in order to assess the efficiency of that system. By efficiency here we mean allocative efficiency within two specific sectors of the economy, namely the plant breeding and the pharmaceutical industry.¹ It is the capacity of the economic system for allocating resources between activities in proportion to their marginal social values in these activities. Specifically, we are interested in whether the existing system of property rights is able to attract the appropriate quantities of inputs required to sustain R&D in agriculture.

The article proceeds as follows. In Section 2 it reviews some of the basic economics of property rights, and some of the economics of industry and research and development (R&D). In Section 3 it begins to apply this theory to the area of plant genetic resources by discussing the nature of the R&D processes that are most reliant upon these resources. In Section 4 the role of property right regimes as instruments for providing incentives for investing in R&D is discussed, and the nature of intellectual property right systems is described. In Section 5, the impact of such property right regimes on investments in the supply of genetic resources is surveyed. In Section 6 the efficiency of the existing regime is analysed. In Section 7 the scale of the problem is indicated. Section 8 concludes.

¹ An analysis of the global efficiency of plant genetic resource allocation would require a comprehensive assessment of all those sectors that have (potential) use for biodiversity and the wildlands that support them.

2. Economics of property rights: right allocation and efficient Investment

The economic theory of property rights commenced with the seminal article by Coase (1960) in which he demonstrated that the social desirability of the outcome was invariant to the initial distribution of property rights, so long as the various participants in an industry were able to contract with one another to move property rights to their most efficient location. For example, he discussed how two neighbouring property owners might agree to discontinue an inefficient use of one of the properties (such as the operation of heavy machinery next to a residential area) *even if the person undertaking the inefficient use had the right to do so*. All that was required, argued Coase, was for the two individual property owners to agree to coordinate the use of their properties together in order to maximise their joint value, and then compensate any additional injury from the additional value obtained from pursuing the first-best activity. Essentially, the so-called Coase Theorem stated that the attainment of maximum social welfare (efficiency) was invariant to the initial assignment of property rights, so long as property rights were well defined and the individuals involved were able to transact with one another to re-allocate the property rights efficiently.

The unrealistic nature of these assumptions led to the initiation of a field of study known as ‘transactions cost’ economics, in which the focus was not on the efficiency of market outcomes but rather on the frictions within market economies that led to inefficient outcomes (Williamson, 1985). When the activity that required coordination involved many individuals rather than two, or individuals separated by space or time, then the costs of transacting between them might be too high for efficiency to be obtained. Then the final outcome would be crucially dependent upon the specific nature of the initial allocation of rights.

The literature then turned to the question of who should receive the property right when the assignment mattered for efficiency reasons. The initial exploration of this issue occurred within the realm of law and economics and in the context of

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات