

PROPERTY RIGHTS AND LAND USE REGULATION: A COMPARATIVE EVALUATION

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This paper reviews the rationale for policies aimed at limiting the conversion of farmland to non-farm uses from the perspective of the economic theory of property rights. Policy measures to restrict the conversion of agricultural land to non-farm uses are commonplace in many countries. Typically, these policies are introduced to address long-run food security issues and possible externalities associated with incompatibility in land uses.

The paper argues that the presence of externalities in the land market does not warrant farmland protection policies. Farmland protection policies in themselves can be a source of policy failure. It concludes that well-defined property rights along with nuisance and trespass laws, are necessary and sufficient for efficient allocation of land and can be a better alternative to farmland protection policies.

EIENDOMSREGTE EN GRONDGEBRUIK REGULASIES: 'N VERGELYKENDE EVALUASIE

Hierdie navorsing gee 'n oorsig oor beleid gemik op die omskakeling van boerderygrond na ander grondgebruike vanuit die ekonomiese teorie van eiendomsreg. Die argument word gevoer dat die voorkoms van eksternaliteite in die grondmark nie addisionele grondbeskeringsmaatreëls noodsaak nie.

1. INTRODUCTION

Public concern about conversion of farmland to other uses has prompted many governments to interfere with market transactions in the allocation of agricultural land. Such interference involves the institution of laws and regulations like *the Subdivision of Agricultural Land Act* (in South Africa) and zoning by-laws. Land use regulation can limit land to agricultural, residential, commercial or industrial uses. It can also limit the densities of use on such land, prohibit certain types of activities, specify the minimum lot size or maximum heights of buildings.

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The problem of land allocation is linked to the issue of scarcity. The pressure to change property rights emerges as a resource becomes increasingly scarce relative to society's wants and as the consequences of harmful interdependence become more apparent (North & Thomas, 1973 and Demsetz, 1967). In a land abundant society, land allocation is not a problem, since parcels of land are always available for use.

The economic debate since Pigou (1920) and Coase (1960), as to whether the government can do better in the allocation of resources compared to the free market, continues. The concept of externality³ has been at the centre of the debate. Pigou (1920) argued that government intervention is needed to correct externality problems. Coase (1960) on the other hand, stated that the presence of externality does not necessarily imply that government intervention is warranted.

The other alternative to government intervention is the establishment of well-defined property rights structure. Hayek (1945) concluded that the structure of ownership of property matters in resource allocation. Demsetz (1967), Barzel (1989), North (1990), Osterfeld (1992) and many other economists and philosophers have reached similar conclusions as Hayek & Coase on the relationship between property rights and resource allocation. Grunebaum (1987) outlined the importance of property rights and argued that forms of ownership affect society's economic organisation differently. How society produces and sustains itself is based on the existing ownership regime.

Brubaker (1995), stated that traditional common law property rights, together with nuisance and trespass laws, shielded the environmental interest of property owners from those who would attack them and that rights brought with them strict environmental responsibility. Brubaker further asserted that, at the minimum, trespass law will remain a powerful tool for protecting oneself against visible encroachment and where it fails as a remedy for environmental wrongs, nuisance law, which has traditionally dealt with less material infractions, may succeed.

The purpose of this paper is to investigate the rationale for policies aimed at preventing farmland from being converted to non-agricultural uses from the perspective of the economic theory of property rights and to propose that other

³ *Externality is said to exist whenever somebody's actions unintentionally impose costs or benefits to someone else. Demsetz (1967) has argued that externality is an ambiguous concept and covers all benefits and costs that arise from any human interaction.*

alternatives to farmland protection policies exist for efficient⁴ land allocation.

2. PROPERTY RIGHTS AND OWNERSHIP

Property rights and ownership have been defined from different perspectives. Three different theories of property rights have been employed in the political economic literature; Legal Positivism, Classical Liberalism and Utilitarianism. A discussion of these different theories of property rights is important because the result of any economic analysis of land ownership and regulation is determined by the theory of property rights employed.

2.1 Legal positivist theory of property rights

Legal positivists talk about property rights as originating from the existing legislation and consisting of a bundle of rights that change with changes in the legislation. In other words, legal positivists argue that property rights exist whenever there is a legislation that outlines duties and bind individuals to those duties. Hallowell (1943), Ciriacy-Wantrup & Bishop (1975) and Bromley (1992) have defined property as a social relationship involving benefit streams, right holders and duty bearers. Randall (1987) also defined property rights as the proper relationships among people with respect to the use of resources and the penalties for violating those proper relationships. Bromley (1991) further defines rights as the capacity to call upon the collective to stand behind one's claim to a benefit stream. Different rights may be distributed in various combinations among natural and legal persons, groups and several publics, including the many units of government (Ciriacy-Wantrup & Bishop, 1975). Randall (1987) also defined ownership as a legal device that assigns the right to use.

The legal positivist considers rights as transitory and that rights change with changes in legislation. The respect for individual rights and the legislation required to ensure that those rights are respected, differentiates the legal positivist from the classical liberal and the utilitarian.

2.2 Classical liberal theory of property rights

Classical liberals argue that a property right is an unalienated right in the use and transfer of something owned. They believe that social welfare can only be realised through the process of voluntary exchange (Rothbard, 1977). The rights regarding

⁴ *Efficiency means distributing resources to their highest valued use. By pareto criterion, a resource allocation is said to be efficient if it is impossible to make one person better off without making anyone else worse off.*

the institution of property influence the economic decisions that individuals make (Barnett, 1992). Barzel (1989) defined property rights over an asset as the rights or powers to consume obtain income from and alienate that asset.

Fox (1994) defined ownership as the power to exclude. Thus, a property owner has the power to exclude others from the use of what he owns. When there is no power to exclude in the use of a given resource, then there is no ownership. Ownership carries with it the right to use. Becker (1977) also defined ownership as the right to use, transfer and exclude others from the property owned.

Grunebaum (1987) argued that resources that are owned can be considered the object of the ownership relation. The persons who are capable of owning resources can be considered the subject of the relation, and the rights and duties can be considered the content of the relation. A specific form of ownership, therefore, is a unique combination of the subject, object and content of the relation from among the many possible ones. Thus, specific forms of ownership, for example, private and common property ownership, differ from each other in terms of the subject, object and the content of the relation. Variation is possible within the subject of the ownership relation. The set of possible objects may also vary from one specific form to another. The content of the ownership relation may also vary from one specific form to another. The rights and duties exercised over a given resource under a private or several property regime are different from that under common property regime. Owning something implies that the owner has rights over what he owns which non-owners lack.

Unlike legal positivists and utilitarians, classical liberals do not consider rights as transitory and assert that no legislation is required in the allocation of rights. Classical liberals argue that if an individual owns a property, that individual has unalienated and unlimited rights to that property within its physical boundaries and must be allowed to exercise his rights with respect to the use of that property.

2.3 Utilitarian theory of property rights

The utilitarian considers property rights as a system of name tags that specify an individual's right to possession, use and disposition of property (Ivy and Fox, 1996). Utilitarians also look at property rights as instruments in the distribution of rights between parties that will lead to the highest sum of utilities in society (Miceli & Segerson, 1994). Dale (1968) defined property as a bundle of potential utility-yielding services that can be used in alternative ways. Dale (1968) defined ownership as a bundle of legally-defined user rights to an asset. The utilitarian believes that the government is capable of making efficient benefit-cost

calculations and allocating rights on the basis of that calculation to maximise the total welfare in society.

The utilitarian theory of property rights differs from the legal positivist in the sense that it considers the allocation of rights that will lead to social efficiency, whereas the legal positivist is only concerned with the respect for individual rights and the legislation required to ensure that those rights are respected. The Utilitarian theory also differs from the classical liberal theory of property rights in that the utilitarian theory considers rights as instruments for achieving social efficiency and transitory whereas the classical liberal theory considers rights as unalienated.

The notion of rights advanced by the legal positivists and utilitarians as transitory may make it difficult for property owners to make long-term decisions over the efficient use of their property. This is because both legal positivists and utilitarians consider rights as transitory. This implies that a property owner's rights over a given property may change over time. There is also an information problem, in that a landowner may not be aware of conditions that will warrant social efficiency in the future, since he does not know how rights will be allocated and what legislation will exist for the allocation of rights.

3. THE STRUCTURE OF OWNERSHIP

A clear-cut definition for various property regimes is very important in determining their economic implications and their relative efficiencies. Knight (1921) and Gordon (1954) demonstrated the role of ownership in resource allocation and adopted a property rights framework in analysing economic problems. Both Knight and Gordon, however, considered just two modes of ownership. These two modes of ownership are what present day economists refer to as private or several property ownership and open. Demsetz (1967), Hardin (1968), Dales (1968) and Weitzman (1974), following Knight and Gordon, have defined common property as no ownership. With the use of inconsistent definitions for various property regimes, it is difficult to interpret some research writings. The following section, is therefore, focussed on finding consistent definitions for various ownership structures and the relationships existing between them. There are basically four property regimes; Open Access, Common Property, Private Property and State Ownership.

3.1 Open access

Open access is a situation where no one possesses the power to exclude. Thus, there are universal rights of access under open access. No one can exclude

another from the use of the resource and the resource can belong to the party who first exercises control over it by using it. Without scarcity, a given resource may be in a state of no ownership. Demsetz (1967) has argued that if a resource is in abundant supply, diverse attempts to enjoy the benefit stream accruing from the use of the resource can be undertaken without conflict. With no scarcity, *asset-units*⁵ can be large. As asset-units increase in size, it becomes more difficult to assign property rights. This is because of the high enforcement cost that may be associated with larger asset-units. Open access can therefore result from a situation where the enforcement of property rights is impossible or costly. Open access can also result from the absence or breakdown of an authority system whose very purpose was to assure compliance with the set of behavioural conditions about the resource (Bromley, 1992). A given resource regime can become open access through a series of institutional failures. As discussed above, there will be no ownership if property rights cannot be enforced.

3.2 Common property

A common property resource is one for which the power to exclude is vested in the group in which membership is voluntary (Bromley, 1992). Ciriacy-Wantrup and Bishop (1975) also used common property to refer to a distribution of property rights in resources in which several owners share the rights to the use of resource. The common property groups are social units with definite membership and boundaries. Each social unit has certain common interests with at least some interaction among members, with common cultural norms and often with their own endogenous authority system (Bromley, 1991). For example, each member of a given family has the right to use a given family resource or property from which non-family members are excluded. A common property resource is therefore not available for use by everyone as in open access. Potential resource users who are not members of the group of owners are excluded from the use of the common property resource. Thus, common property is a management regime that closely resembles private property since all others are excluded from use and decision-making (Ciriacy-Wantrup & Bishop, 1975). The property of excludability links common to private property.

There is a critical difference between open access and common property ownership. In open access, there is the likelihood of using a given resource without considering the future benefits. Individuals do not manage the resources and the benefit streams because someone else may benefit from his management activities. In common property there is a well-defined group whose membership

⁵ *Asset-unit, following Dales (1968), is used here to refer to the smallest physical amount of the resource to which it is practical to enforce exclusivity of use.*

is restricted. With open access, however, membership is unrestricted. There is also the need for group management of both the resources and the annual stream of benefits to make sure that the system continues to yield benefits to the group. Common property involves excludability of non-owners with open access characterised by non-excludability. In other words, the group can exclude non-members from using and benefiting from the property.

3.3 Private ownership

Private property regime involves ownership by one individual. The individual has the right to exclude non-owners from using the resource. Common property is just private ownership by a group. The main difference between private ownership that distinguishes it from common property is that there is usually one owner in private property but more than one owner in common property. This has some impacts on the transaction costs involved in the exchange of property. When a group has joint rights to an asset, an individual who wishes to acquire rights to that asset must negotiate with all individuals in the group. The group nature of common property ownership thus increases the transaction costs relative to private property ownership.

The classical liberals argue that the rights regarding the institution of private property influence the economic decisions that individuals make (Barnett, 1992). In that regard, the inalienable right to private property functions as an institution that protects the least cost method of organising economic association amongst individuals (Ivy & Fox, 1996).

3.4 State ownership

Bromley (1992) and Fox (1992, 1994) have discussed state ownership as another type of ownership structure. In state ownership, the power to exclude is vested in the state. The state has the right to exclude others from the use of the resource. However, the state often faces substantial political obstacles which limit the exercise of that power (Fox, 1992). This characteristic of state ownership differentiates it from open access. The fundamental difference between state ownership and common or private property is that the state possesses the powers to tax and take (Fox, 1992). Private or common property owners, on the other hand, have no power to tax. The ability to tax allows the state to offset losses. The power to tax acts as a disincentive for efficient management of resources.

3.5 Characteristics and relationship between different ownership structures

There are several shades of each ownership structure, which had developed with

the evolution of different societies. What was known as open access fisheries can no more be referred to as open access. This is because government regulations have caused some individuals to be excluded from fishing. Government regulations in fishery can also create fishing rights that are transferable. Such government regulations change an open access resource into state ownership. Private ownership, in reality, may not exist since private owners in most cases do not have unrestricted rights within the physical boundaries of what they own. A good example is land ownership in North America. Government policies in North America over land use prevent private landowners from exercising their full rights over the use of the land they own. This is just state ownership of some of the attributes of land.

Table 1 below summarises the characteristics of the different ownership structures in terms of power to exclude, transaction costs and ability to tax. The table identifies three types of transaction costs; search, negotiation and enforcement costs. Exchange requires information. Such information includes the identification and location of potential buyers and sellers, ascertaining the terms on which they are prepared to trade and checking the quality of the property to be exchanged and the bundle of rights attached to it. The cost of obtaining such information is what is referred to as search cost. Negotiation cost involves the cost of bargaining and agreeing on some terms of trade. Enforcement cost is the cost involved in ensuring that no trading partner reneges on the terms of trade agreed on.

Relative performance of each ownership structure varies with each factor. Table 1 indicates that a private property owner has high power to exclude, relatively low search, negotiation and enforcement costs and no power to tax. Common property owners also have high powers to exclude. This power to exclude is vested in the group. Each member of the group has limited powers to exclude. With common property ownership, the size of the group influences the enforcement and transaction costs. Common property owners may have rules with regard to the use of their property. As the size of the group increases, more effort may be needed to ensure that each member of the group respects and obeys those rules. The costs of searching, negotiating and enforcement may therefore increase as the size of the group of owners increases. The costs of transactions may therefore be moderate relative to that of a private property regime and may increase with increases in the size of the group. Common property owners also have limited powers to tax. The state has high power to tax. Since there is proliferation of stakeholders, state ownership involves high negotiation and enforcement costs. The search cost, however, is low and depends on the ambiguity of jurisdiction (Fox, 1994).

Table 1: Characteristics of different ownership structures

| | Private property | Common property | State property | Open access |
|------------------|-------------------------|--|---|--|
| Power to Exclude | High | High | High | No power to exclude |
| Search cost | Low to moderate | Moderate - Depends on size and cohesiveness of group | Low - Depends on the ambiguity or clarity of jurisdiction | Very High- Involves several people |
| Negotiation cost | Low | Moderate - Depends on size and cohesiveness of group | High | Very high - Has to negotiate with everyone |
| Enforcement cost | Low | | High - Limited enforceability of promises | Very high - involves everyone |
| Power to tax | No | No | Yes | No |

In open access, there is no power to exclude, with high search, negotiation and enforcement costs. From the point of view of the legal positivist, there is no property in open access and therefore nothing to negotiate for and consequently no negotiation costs. This is because the legal positivists define property as a social relationship involving benefit streams (Hallowell, 1943, Ciriacy-Wantrup & Bishop, 1975 and Bromley, 1992). However, following the classical liberals' notion of property, we will define property as the "object" or "thing" over which rights can be assigned and argue that there is a property in open access, for which everyone has the right to use but no one has the power to exclude someone else from using it. An open access resource can belong to the party who first exercises control over the resource by using it. As soon as a party legally exercises control over an open access resource, the resource can no longer be regarded as an open access resource. However, the possibility of several parties claiming to be the first to exercise control over a given resource is high. To allocate the rights to use of the resource will therefore involve a high negotiation cost. Demsetz (1964), has argued that if land and resources are communally owned⁶, then resources will be depleted quickly. However, communal owners could undertake negotiated agreements to slow depletion, but as Demsetz further argues, the costs of negotiations can be high.

This discussion does not necessarily imply that everything should be privately owned. Clearly there is no requirement that things that are not economic goods be privately owned (Fox, 1994 and Demsetz, 1967).

4. THE ECONOMICS OF PROPERTY RIGHTS

In this section, we will adopt the classical liberal theory of property rights in explaining and exploring the relationships between ownership structure and the exchange process, externalities, input use and economic growth in an attempt to answer the question of whether property rights matter in resource allocation. This is because classical liberal theory of rights does not call for legislation to allocate rights and does not look at rights as transitory but inalienable.

4.1 Property rights and the exchange process

The classical liberal asserts that it is through a system of voluntary transfer can it be said that society is better off as a result of exchange (Rothbard, 1977). The classical liberal further argues that the inalienable right to private property functions as an institution that protects the least cost method of organising economic association amongst individuals (Ivy and Fox, 1996). One can transfer

⁶ Demsetz used communal ownership in this context to refer to open access.

rights over a given parcel of land to someone else in exchange for something, for example money. Thus, one can sell land to someone if he has the right to transfer the land. Without this right there will be no incentive to exchange since no one will own anything and no one will be prevented from using what someone possesses (i.e. the individual has no right to exclude others from what he possesses). Also, since no gains from exchange will occur if there are no rights to title, there will be no reason to exchange. Under open access, where no one has the power to exclude others from the use of a given property, efficient exchange is not possible. Where individuals have the inalienable right to use and sell what they own, efficient exchange can take place. The right to exchange is not necessarily contained in all rights of title since some specific forms of ownership limit the kinds of objects that can be exchanged. Any system that limits what can be exchanged will not lead to efficiency because in the process of coerced exchange, at least one person will be left worse off (Rothbard, 1977). The classical liberal argues that any government action that violates an individual's right to possession, use and exchange of property, cannot be said to be pareto superior since at least one person will be worse off than before. This is because government actions do not allow for voluntary exchange.

A market is an institution in which individuals or groups of people exchange property. The neo-classical economic notion of efficiency focuses on a perfectly competitive general equilibrium. Perfectly competitive equilibrium is characterised by homogeneity of products, many firms and perfect knowledge. Transaction costs are also assumed to be zero. When there is perfect competition, prices are enough to allocate resources to their highest-valued uses. The efficiency problem is one of allocating resources to their highest valued use, implying a single scale of values upon which comparisons can be made (Cordato, 1992). In the real world, however, products are not completely homogenous and individual consumers and producers are not fully informed. Two stores may sell identical shoes at different prices. If everyone is fully informed, then no one will buy shoes from the store with higher prices. If marginal rates of substitution are not the same for individuals over the allocation of resources, then an inefficient allocation is said to exist. If there is inefficiency, then mutually advantageous exchange could not take place. The question then is, why is exchange not taking place if it is advantageous to the parties involved. Inefficiencies may persist because of incomplete control over assets, information asymmetry and high transaction costs. These factors are inter-related.

Incomplete control over assets hinders the exchange process. North & Thomas (1973), have stated that by providing the proper incentives, a fully efficient economic organisation would ensure that the private and social rates of return were the same for each activity and that both were equal among all economic

activities. Each individual has the exclusive right to use as the individual sees fit his/her land, labour, capital and other possessions and that he/she alone has the right to transfer the resources to another person. If the power to exclude and transfer is not complete, then exchange of property cannot take place efficiently.

Besides the resources used in directly producing goods, resources are also used in exchanging these goods. The transfer of goods between economic agents requires the provision of information about the opportunities for exchange, negotiation of the terms of exchange and determining procedures for enforcing the contract (North and Thomas, 1973). The cost of providing all the services involved is termed transaction costs. In the Walrasian perfectly competitive equilibrium model, zero transaction costs are assumed. In reality, transaction costs are not zero, because people are not fully informed regarding the exchanged commodities, and the terms of trade are not always perfectly clear. High transaction costs have the potential of preventing full transfer of property. When a group has rights over an asset, an individual who wishes to acquire the right to that asset must negotiate with all individuals in the group. Each individual in the group may attach different values to the asset. This will mean high transaction cost and may lead to incomplete transfer of property relative to a world of full information.

4.2 Property rights and externalities

With imperfectly defined or enforced property rights, private and social returns in some activities diverge because some of the benefits or costs due to an individual who uses or transfers his resources will accrue to a third party. If such benefits or costs accruing to a third party are not compensated for, then externalities are said to exist. Externalities prevent resources from moving to their most valued uses (Demsetz 1967). Demsetz further argued that the primary function of property rights is that of guiding incentives to internalise externalities⁷. Dales (1968) agrees with Demsetz's assertion by stating that the existence of a natural pricing system depends crucially on the institution of ownership. Dales further explained that the great virtue of the pricing system is that it solves and avoids all sorts of complexities, particularly those that arise from various interdependencies between uses and users of goods. Demsetz (1967) again asserted that, all that is needed for internalisation of externalities is ownership which includes the right of sale, and the output mix that results when the exchange of property rights is allowed is efficient and independent of who is assigned ownership.

⁷ Externalities are said to be internalised if individuals take into consideration the external costs or external benefits that may result from their actions.

Demsetz (1967) argued that if a single person owns land, he/she will attempt to maximise the present value by considering alternative future time stream of benefits and costs. He/she will then select that one which he/she believes will maximise the present value of his/her privately-owned land. A private landowner acts as a broker whose wealth depends on how well he considers the competing claims of the present and the future. On the other hand, in open access, there is no broker and the claims of the present generation will be given an uneconomically large weight in determining the intensity of land use or resource use (Demsetz, 1967). Thus, the effect of a person's activities on his neighbours and on subsequent generations will not be taken into account in open access decision making. Maximisation of benefits from resource use in open access will take place as long as average revenue is not exceeded by average cost. This is because the individual has no right to exclude others from enjoying the benefits from his efforts. With private property rights, the owner can efficiently manage those resources from which he has the right to exclude others. Internalisation of externalities is, therefore, accomplished under private property regime. The cost of negotiating over externalities will also be reduced under private property regime.

The externalities that accompany private ownership of property do not affect all owners. Demsetz (1967), following Coase (1960), asserted that it will therefore be necessary for only a few owners to reach an agreement that takes these effects into account. Taking a common property regime, the increase in number of individuals within the group will lead to an increase in the cost of internalisation. Thus, as the number of individuals in the group that manages a common property increases, the degree of externalities approaches that of open access regime. Conversely, as the number decreases, the degree of externalities approaches that of a private property regime. The source of an externality is typically to be found without fully defined property rights. The implication is that in some instances a detrimental externality can be eliminated, by redefining property rights appropriately.

4.3 Property rights and input use

Apart from the imposition of taxes with the view of correcting for externalities, the state can also offset losses by imposing taxes on citizens. Consequently, the need to manage property efficiently by the state is reduced. Thus, the state can decide to use less or more of a given resource relative to the optimal level. Open access is also characterised by overcrowding. Since no rents or tolls are paid, firms will apply their variable inputs to any property which offers them the highest product per unit.

Taking for instance a fertile land with no owner, each firm will apply variable inputs to the land and that will lead to overcrowding on that piece of land. This is similar to what Hardin (1968) referred to as the "Tragedy of the Commons". This is a situation where there is a pasture land opened to all herdsmen. As with any businessman, each herdsman's goal is to maximise his/her gains. It is therefore expected that each herdsman will try and keep as many cattle as he/she can on the common pastureland in order to maximise gains. Each herdsman will continue adding one additional cattle to his/her herd till the point where he/she can no longer improve his/her gains. Hardin (1968), further argued that there is the strategy where each herdsman is locked into a system that compels him to increase his herd without limit in a world that is limited. This strategy of increasing herd count will lead to overgrazing and consequently erosion and other environmental problems. This can be averted by institution of private property or something formerly like it (Hardin, 1968). Under private ownership regime, however, the fertile land or pastureland will mean paying a competitively rental rate. The rental rate will deter some firms or herdsmen from using the land. This will therefore reduce the chances of overcrowding.

Weitzman (1974) developed a formal model to characterise and compare alternative static allocations of resources which occur under conditions of open access and private property. He assumed n pieces of resources or property with each acting as a fixed factor in the production of an output when combined with a variable factor, X . Weitzman then used the model to characterise open access and private property regimes and concluded that, under an open access regime, firms will produce where product price is equated to the value of average product. Weitzman explained that competitive variable input units can and will move freely to that property which offers them the highest product per unit under open access regime. Therefore independent units of the variable factor ignore the effects of their actions on the average product of others in considering only the product they stand to gain or lose by a proposed change. This usually results in the creation of external costs to others. Under an open access competitive equilibrium, a variable factor is allocated such that there is equalisation of average product on all properties that are used. Weitzman further explained that with private ownership in perfectly competitive markets, the marginal value product of the variable factor is equated to its price. In this case, the variable factor will be hired at a competitive price and self interested renters will hire that amount of variable input which maximises their profits.

Under open access, individuals or firms do not think about the discounted benefits that can be obtained in future. This is because if they do not use the resource now, to get the benefits, somebody else will use it in the next period. In

fisheries, for instance, open access can result in overfishing and even extinction. Consider an ocean in which every individual can fish freely. A catch of one unit of fish by any one individual has the effect of reducing the expected catch to the others. Thus one additional unit of fish taken out of the ocean imposes an extra cost on any additional unit of fishing effort. The result of individual maximising behaviour in this case will be an excessive level of fishing activity. An individual's fishing activity imposes cost to other fishermen and thereby generates a marginal social yield lower than the value of marginal product in other activities. This leads to the generation of a detrimental externality which can be corrected by transferring the ocean from the public to a private owner. The private owner will employ fishermen up to the point where the value of his marginal product is equal to the wage he pays to these fishermen and this outcome will be socially efficient. This can be applied to all non-renewable resources, for example oil drilling in an open access regime.

5. WHY LAND USE REGULATION?

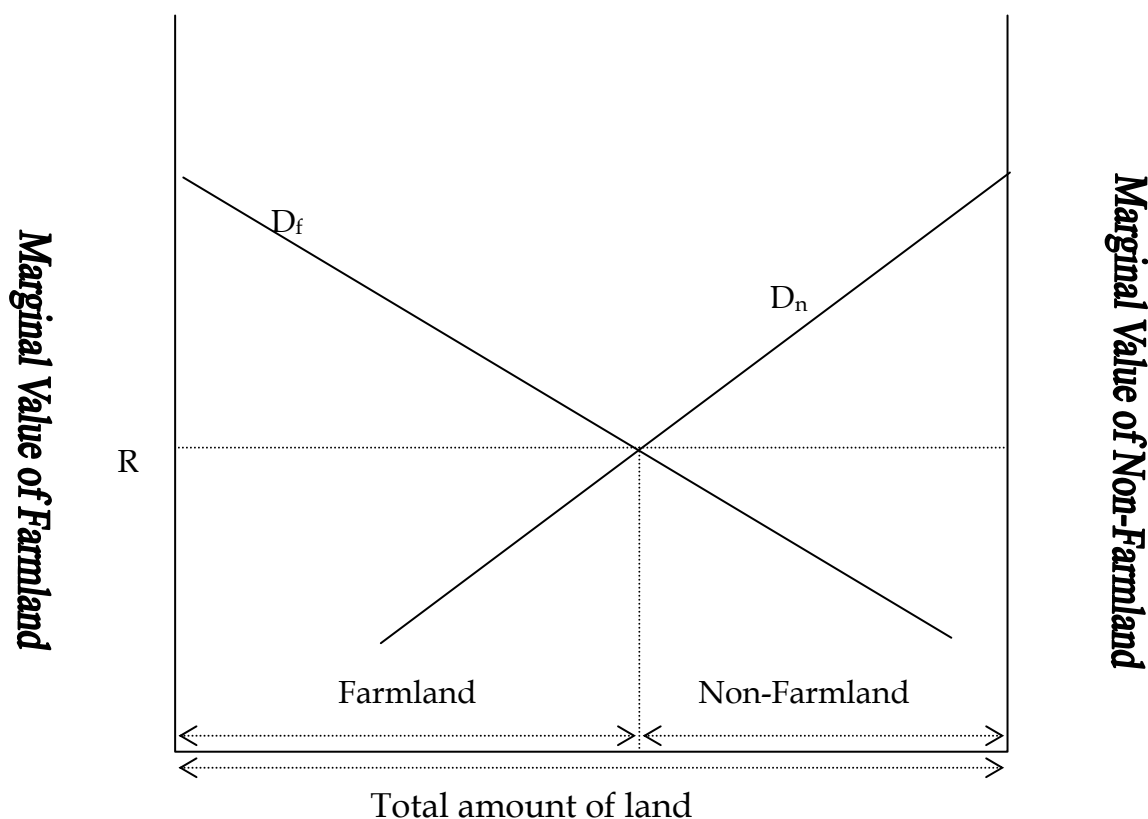
In this section we will discuss how farmland protection policies affect ownership of land and the implications to efficiency in the land market.

Government regulation of private lands is common in many countries. Government regulation of private lands usually involves the institution of farmland protection policies. One reason for farmland protection policies is the elimination of incompatible land uses. Incompatible land uses occur when the use decision of a landowner imposes a disservice on users of adjacent parcels of land. This is what economists term externality, which is a potential source of market failure. An example is when a pig farmer is located on land adjacent to a residential area. The pig farm generates noise, odour, dust and polluted run-off which affects the residents in the area. This activity of the farmer, however, may not be considered an incompatible land use or an externality if a non-farm resident is not located close to the farmer.

Externalities exist in the land market, but this may or may not prevent optimal allocation of land resource to the extent of warranting farmland protection policies. Coase (1960) suggested that the existence of externalities does not necessarily warrant government regulation. Coase stated that in the absence of transaction costs all externalities are internalised, regardless of the initial assignment of property rights. Bargaining or negotiations between parties would lead to arrangements being made that would maximise wealth regardless of the initial assignment of rights. Followers of Pigou, however, do not agree with Coase's assertion and argue that the government should intervene to correct externality problems that may exist. The question then is how effective are

farmland protection policies in internalising externalities in the land market relative to free market with well-defined property rights.

Land is a fixed resource subject to competing demands. Let's assume a downward sloping demand curve for both agricultural and non-agricultural land markets. If property rights are well defined, demand for land for agriculture and non-agricultural uses will interact to determine price of land. The demand for land will represent the marginal value product of the land. As the marginal value product of land in agriculture increases, more land will be demanded for agriculture and as the marginal value product of land for non-agricultural development increases more land will be demanded for non-agricultural development. Since land is a fixed resource, changes in demand for land for different uses will cause land to be transferred from one use to another. As illustrated in Figure 1, the demand for farmland and the demand for non-



D_f represents the demand for farmland.
 D_n represents the demand for non-farmland.
 R is the equilibrium price for land.

Figure 1: Competitive land allocation

farmland intersect to determine the price of land. As the demand for farmland and non-farmland changes, the price of land will also respond by changing.

A shift in the demand for farmland, for example, will result in the establishment of a new equilibrium price. Thus, land will move to its highest-valued use without farmland protection policies.

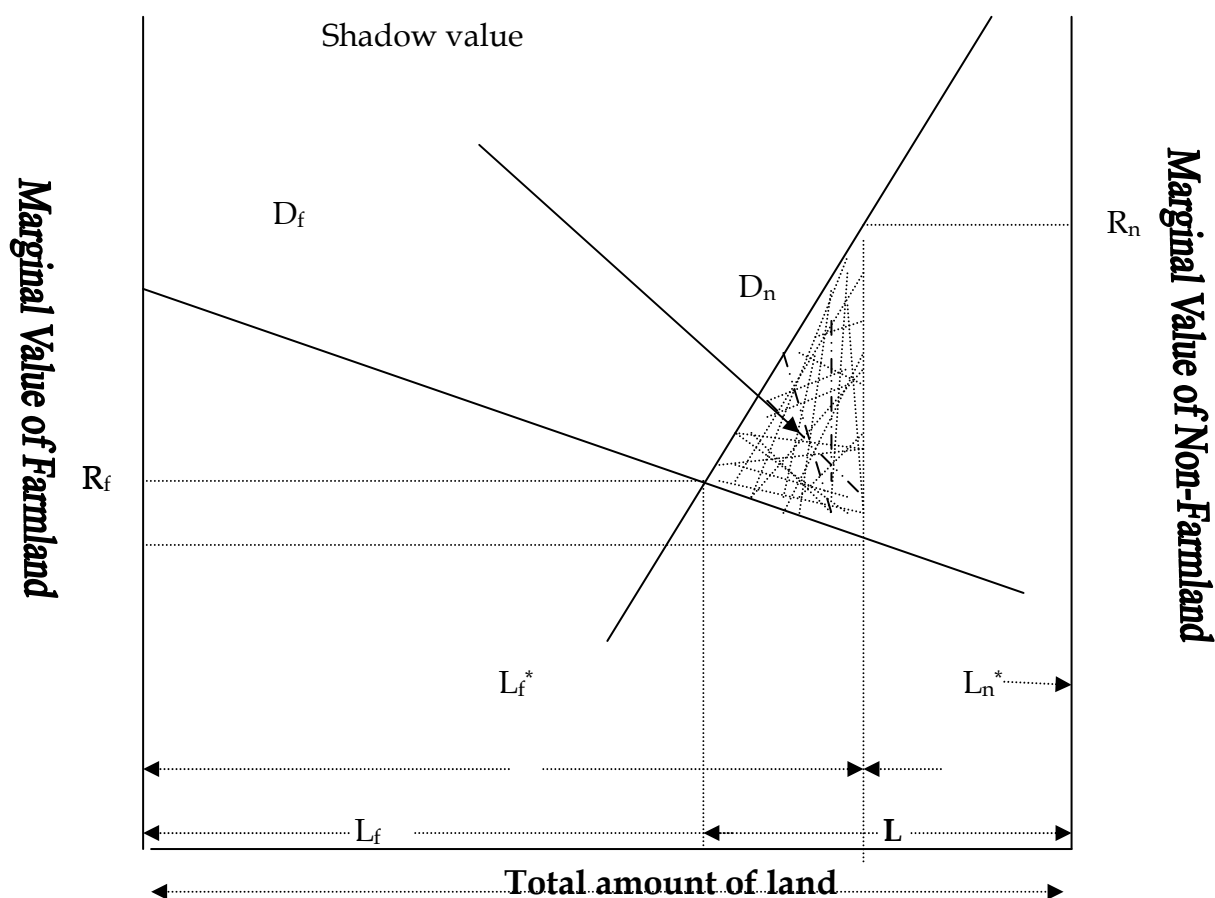
Farmland protection policies restrict private landowners' rights to exclude and exchange land. It may prevent the price mechanism from operating and thus lead to policy failure. As illustrated in Figure 2, farmland protection policies can lead to the establishment of different price levels for competing land uses. Price of farmland may be lower than the price of non-farmland. This is because it will cause more land to be conserved for agricultural production with a small proportion of the total land area distributed among other land uses. Figure 1 further illustrates that a shadow value⁸ will result with farmland protection policies. The shadow value indicates that there is a potential for exchange. A simple example can be used to illustrate this. Let us assume that the average farmland rental rate in a given township is R1500 per ha per year, and that farmland protection policies lead to the preservation of 500 ha⁹ of land in the township. Let us also assume that the purchase price of land used for non-farm purposes is R50,000 per ha and that the purchase price of non-farmland is the benefits expected to accrue over an infinite period of time. In order to make the purchase price of non-agricultural land comparable to the farmland rental rate, the R50,000 value should be annualised. Assuming a 10% discount rate, the rental value for non-farmland can be computed to be R5000 per ha per year. With this scenario, the price wedge between farmland and non-farmland is R3500 per ha per year. If exchange is allowed to take place, land will be transferred to the higher value use. Unrestricted exchange will also lead to an equilibrium farmland rental rate higher than R1500 and lower than R5000 per ha per year. However farmland policies restrict transfer of land and may prevent efficient allocation of land among competing uses. Assuming that the demand functions in Figure 1 are linear, this example will imply a shadow value of R875,000¹⁰ per year for the township. This, however, does not imply that farmland protection policies are not justified. This shadow value must be compared to the benefits of farmland protection policies, such as future food security and preservation of amenity benefits. The policy however, can be considered to allocate land efficiently only if

⁸ *Shadow value is used here to refer to the benefits that could be obtained from forgone alternatives. It can also be considered the social cost of farmland protection policies.*

⁹ *This is the extra amount of land kept in farms as a result of the policy over the equilibrium amount under a free market situation and corresponds to $L_f - L_f^*$ of Figure 2.*

¹⁰ *This can be represented as the shaded area of Figure 2, where in this example $R_n = R5000/ha$, $R_f = R1500/ha$, $L_f - L_f^* = 500$ ha. The shadow value or social cost is thus computed as $1/2 * (R5000 - R1500) * 500$.*

the discounted sum of the benefits associated with preserving the 500 ha land is equal to or greater than the shadow value of farmland protection policies.



- D_f represents the demand for farmland.
- D_n represents the demand for non-farmland.
- R_f is the observed price for farmland.
- R_n is the observed price for non-farmland
- L_f is the observed quantity of farmland
- L_f^* is the equilibrium quantity of farmland

Figure 2: Effects of land use policies on land allocation

6. COMMON LAW PROPERTY RIGHTS VERSUS LAND USE REGULATION

In this section, we will discuss common law rights and argue that private property rights backed by common law, is a better alternative to land use regulation in internalising externalities in the land market.

Two main bodies of laws exist in many countries; Statute law and common law.

Law can either be imposed from above by some coercive authority, such as the king, a legislature or the supreme court, or law can develop from the "ground" as customs and practice evolve. According to Benson (1990), law imposed from above; authoritarian or statute law, typically requires the support of a powerful minority, whereas law developed from the bottom up; common or customary law, requires widespread acceptance. Common law is the body of rules established by judges over the years and intended primarily to be a tool for resolving disputes between individuals. Statute law, on the other hand, refers to laws passed by elected representatives in the provincial legislature or federal parliament. Estrin & Swaigen (1993), simplified this by describing common law as private law and statute law as public law. Some statute laws are used to regulate land uses in most provinces in Canada and many other western countries.

Customary law or common law is recognised not because it is backed by the power of some strong individual or institution, but because each individual recognises the benefits of behaving in accordance with other individual's expectations, given that others also behave as he expects (Benson, 1990). Benson further asserted that the alternative to common law, statute law, will require much more force to maintain social order than is required when law develops from the bottom through mutual recognition and acceptance. Under customary law, offences are treated as torts¹¹ and not crimes or offences against the state and a potential action by one person has to affect someone else before any question of legality can arise (Benson, 1990).

There are many common law tools¹² that can be used, in the place of land use regulation and other statute laws, to prevent or obtain damages from incompatible land uses or environmental wrongs. Prior to the rise of governmental controls, land uses were regulated through suits in common law, especially trespass and nuisance and private covenants. Covenants that remain common today, are contracts between buyers and sellers restricting the uses of property. Uses damaging to adjoining property owners may be eliminated by the entire neighbourhood through private covenants attached to property deeds (Coyle, 1993). As stated by Estrin & Swaigen (1993) nuisance is the most common law tool used to address air and water pollution, noise, vibration, smells, soil contamination, flooding and many other intrusions upon the peaceful use and enjoyment of one's land or property. Estrin & Swaigen further discussed two types of nuisance; private and public nuisance. A private nuisance consists of the unreasonable interference with another's use or enjoyment of land he or she owns

¹¹ *These are private wrongs or injuries.*

¹² *For more information on common law rights, see Estrin & Swaigen (1993).*

or occupiers. The reasonableness of the interference depends largely on the degree of impact that it has on a neighbour's enjoyment of his or her land or property, rather than on how useful, necessary, or diligent the offending activity. Public nuisances are also activities that unreasonably interfere with the public's use of public lands and waters, obstruct the access of occupants of neighbouring lands to the public land, or interfere with people's access to premises adjacent to public lands.

The common law of trespass refers to the physical intrusion of people or objects onto one's land, or even over it without the consent of the owner or occupant (Estrin & Swaigen, 1993). Under common law, it is a trespass to place anything on someone else's land. With an intentional intrusion, the intruder is liable for any harm that results directly from the intrusion. The intentional trespasser is liable for any damage done while on the land even if his or her motives are good (Estrin & Swaigen, 1993).

Since each member of a society recognises customary law, private property rights and the rights of individuals are likely to constitute the most important primary rules of conduct in legal systems (Benson, 1990). This is because voluntary recognition of laws and participation in their enforcement is likely to arise only when substantial benefits from doing so can be internalised.

Brubaker (1995) also suggested that owners of transferable property rights can do better than governments, and questions whether the current property system is up to the job of preserving resources and protecting the environment. The free market environmentalism school argues that there is nothing special about the environment that cannot best be protected through the market. Individuals who are disturbed by the effects on the environment can respond through the market, which will force them to pay the full social cost for their preferences. Brubaker (1995) had argued that rather than passing laws by the legislature, common law property rights which have evolved in the courts through the ages, can function as environmental protection laws.

The police power, which allows the government to regulate private property and the power of eminent domain which allows government to take property are the chief legal tools by which state control is exercised. Paul (1987), along with other libertarians, argued that these coercive powers destroy community and individual satisfaction. Siegan (1980), stated that there is no greater public interest than the rights of individuals to be secured against the state. Epstein (1985), argued that any diminution of the rights to possess, alienate or use property is a taking that must be compensated by the state. Individual property rights are a key element in keeping regulation reasonable. Rights when enforced, keep

procedural hurdles and substantive outcomes from becoming too abusive (Coyle, 1993). Coyle (1993), further argued that, statutes or local ordinances that authorises land uses or provide procedural safeguards may benefit property owners, but rights imply a moral foundation and a permanence that do not characterise the pragmatic legislative compromises of shifting political forces.

The common law remedies discussed above are not without problems. Estrin & Swaigen (1993) discussed some drawbacks of the common law rights and asserted that exercising one's common law rights is expensive and often takes several years. They further argued that the outcomes of common law remedies are often uncertain. This is because it is difficult to predict what a court will consider reasonable or unreasonable. On the contrary, with common law rights, when a dispute arises, the parties involved must expect the benefits of resolving the dispute and establishing a new rule through the courts to outweigh the cost of resolving the dispute and enforcing the resulting judgement or they would not go to court but try to resolve the dispute through negotiations. Also if an individual landowner knows that, under the common law, he/she is liable for damages caused to his/her neighbouring land owner and that such damages would far exceed the benefits he/she gains for that particular action, he/she would avoid that damage by not proceeding with that action. Put another way, a well-defined property rights system, backed by common law, governs who has the right to use land and the environment in which ways, establishes who must pay whom in order to exploit or protect land and other resources and influences the costs that polluters and trespassers must take into account before making decisions. These can lead to more internalisation of externalities than farmland protection policies and other statute laws.

7. CONCLUSION

This paper establishes the relationship between property rights and efficiency. Properly defined property rights are necessary for efficient allocation of resource. A property rights system which is not well-defined is characterised by high external and transaction costs. The high transaction costs can hinder the exchange process.

The paper also addresses the rationale for farmland protection policies and concludes that any restrictions on the use of land can adversely affect efficiency in the land market. Land is a fixed resource subject to competing uses. With properly defined property rights system, demand for land for various uses will interact to determine price. Farmland protection policies may not be able to solve the problems they are intended to; internalisation of externalities. It rather may result in policy failure. Externalities may exist in the land market. However, with

well-defined property rights, bargaining and negotiations between parties can lead to much internalisation of the externalities. Farmland protection policies may be efficient in the long-run if the sum of the discounted benefits from the preservation of land is equal or greater than the sum of the discounted dead-weight losses.

In general, regulation of land ownership restricts freedom of expression, erodes personal privacy and creates obstacles for economic opportunities and growth. The other alternative to farmland protection policies is the use of common law property rights, nuisance and trespass laws which have evolved in the courts through the ages.

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