

## Comment

# Property institutions and the limits of Coase

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**Abstract.** Coase's (1960) contractual single-exchange framework is challenged by Arruñada (2017) as a framework that cannot be used to understand the complex nature of property law and related institutions. Arruñada proposes the sequential exchange model as an alternative framework. Differences between the two approaches are considered and some applications in land and natural resources are used to evaluate his critique. These cases support Arruñada's critique of the simple contracting approach to property, showing that for many natural resources private contracting has not been the solution and that a mix of property institutions govern. Contrary to Arruñada, however, I argue that the limits of the single-exchange framework arise not because of sequential exchange, but because assets (parcels of land) are complex and physically connected.

## 1. Introduction

Ronald Coase's work on social cost (1960) has been the foundation for the economic analysis of property rights<sup>1</sup> and of law. This 'Coasian' approach became embedded in economics and thus makes the critique offered by Arruñada (2017) both important and challenging. This short paper will examine the critique of what Arruñada (p. 1) calls the 'contractual single-exchange framework' used by Coase and then generations of economists. I argue that his critique is mostly well taken but that further consideration of the complex nature of property (land and related assets) is a further source of the limitations of the Coasian framework. I also consider some applications that lend support to his framework and his critique.

## 2. The sequential exchange critique of the classic Coasian approach

Arruñada argues that the law and economics of property (or the economics of property law) is limited by its strong linkage to the single-exchange model

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1 Gordon (1954) on open access waste, and Demsetz (1967) on property rights regimes as economic choices, were other early important contributors to property rights.

developed by Coase.<sup>2</sup> The single-exchange model, exemplified by Coase's case of the farmer and the rancher contracting for use of land, leads to biases in the analysis of property. These alleged biases are, first, an excessive focus on the initial allocation of rights; second, too little attention to legal rights; and third, an overemphasis on the power of private ordering. In addition to its focus on single exchanges, the Coasian framework also implicitly focuses on *in personam* rights (contractual rights) rather than *in rem* rights (property rights).<sup>3</sup>

In Arruñada's framework the classic Coasian model breaks down when there are sequential exchanges. Sequential exchanges are those that take place with respect to a single asset (in the simplest case) over a period of time, and among more than two parties. His example of a hidden lien to a parcel of land that is concealed from other parties will lead to what are labelled 'exchange externalities'. In his words (2017: 5), 'given that the root cause of exchange externalities is the enforcement of potentially secret contracts, free private contracting with unconditional enforcement (that is, enforcement that does not depend on a public disclosure condition) not only does not solve the problem but exacerbates it'. This extension of the original contracting problem addressed by Coase cannot be solved by simple contracting, and opens the door for more sophisticated collective action (p. 6). A crucial part of this analysis is that Arruñada views 'transaction costs' somewhat narrowly as trading costs (see note 3) rather than as a broader view of the costs of defining, enforcing and transacting rights (Allen, 1991).<sup>4</sup>

In his discussion of 'Coasian assumptions' (section 3) Arruñada correctly notes that Coase was unaware (or possibly unconcerned) about *in rem* rights. Recent literature (Hansmann and Kraakman, 2002; Merrill and Smith, 2000, 2001; Smith 2012) on this subject is less than two decades old and still somewhat self-contained in law schools rather than among economists generally. Coase in 1960, and most other property rights economists now, dismiss or ignore the legal structure of property. Indeed Arruñada argues (2017: 6) that this lack of attention to *in rem* rights, 'despite being useful for Coase's original purpose of studying the "influence of the law on the working of the economic system" [,] must be abandoned for exploring the structure of property law'.

The Coasian approach is a static use conflict over a simple asset (e.g. land for wheat or cattle). Arruñada notes (p. 7):

in the single-exchange and *in-personam*-enforcement world, there is no justification for mandatory rules constraining parties' freedom to structure their

2 Others, including Arruñada (2012) have been critical of this approach.

3 Arruñada discusses a small but growing literature in law (and the economics of law) that examines the structure of contract law *versus* property law.

4 These different views of what comprises 'transaction costs' can be crucial to the interpretation of the Coase Theorem but I will ignore these differences and focus on the analysis of property institutions.

rights: the only externalities arising are use externalities, and the transaction costs incurred to contract them are internalized by the parties themselves.

He further notes ‘under such an assumption of single exchange, it is understandable that property law has been seen just as a starting point for contract law’. This framework leaves little need for the various mandatory constraints that are found in property law and related institutions, such as the various limitations on servitude and the doctrine of *numerus clausus*. This point leads to his critique of the virtues of ‘private ordering’ that often flow from the Coasian approach.<sup>5</sup> Private ordering in his sequential exchange model leads to externalities from the contracting process itself. ‘Public’ institutions arise to mitigate these externalities and much of the structure of property law can be viewed as a similar response to them. Arruñada’s approach thus offers an economic rationale for the observed complex nature of property law and related institutions, such as registries and cadastres. He concludes (p. 23), ‘In order to better understand property institutions, we need to focus on the transaction costs involved in sequential exchange with interaction between contracts, a type of exchange that is essential for specialization in contractual functions.’

### 3. The institutions of property: land and natural resources

In this section, I discuss some applications in land and natural resources that show the complexity of property institutions. Arruñada is correct that the Coasian legacy on the structure of property has been barren, ignoring the overall structure and complexity of property.<sup>6</sup> Indeed, the single-exchange focus of Coase is virtually institution free in the sense that law simply sets a rule for property rights assignment in the particular cases at hand. I differ with Arruñada slightly on the source of the problem. My focus here is on illustrating the deeper institutional complexity that often seems to be missing in the literature on property rights. I illustrate these issues with discussion of the structure of property law, land demarcation, and the governance of water, wildlife and minerals. All of these cases show a mix of private and public ordering and the limits to pure private contracting.<sup>7</sup>

#### *Land as a complex asset*

Land is complex because it consists of a varying mix of physical characteristics and neighbouring landowners (adjacent, or even distant) sharing assets.<sup>8</sup> Land

5 While Arruñada is not clear on what ‘private ordering’ is, I take it to mean outcomes driven solely by private contracting; in its purest version, enforcement is also private.

6 This point was also made by Lueck and Miceli (2007) and little has changed since.

7 Libecap’s (1989) important work takes a contracting approach to creating property rights but also recognizes the roles of law and politics in creating and shaping rights. He does not examine the detail of property law.

8 This complex asset view of property rights has roots in Barzel (1982, 1997).

is comprised of topsoil and the bedrock below it, underground minerals and water, surface water that may be connected hydrologically to groundwater, fish and wildlife populations that inhabit the land and the water, and the air that envelopes the land.<sup>9</sup> Ownership of land typically takes four possible forms (Lueck and Miceli, 2007) – open access or no ownership, private property, common property, or state property.<sup>10</sup> Within private property, the law of servitudes, leases, licences and profits offers further complexity in ownership. In reality land and its various attributes are governed by a mix of ownership regimes. For example, a farmer owns a parcel in fee simple, but that parcel might have an easement for access to another parcel and the rights to the minerals might be severed from the land surface and owned by another party. A stream flowing across the land might be governed by a legal doctrine that gives equal rights to all riparian landowners (i.e. a common property resource), and the wildlife stocks could be subject to government regulations on harvest. This is a realistic scenario and one in which the use of the various attributes of the land affect the other attributes. It is not a particularly ‘Coasian’ setting.

The structure of property law is consistent with this complex multi-attribute nature of land. The doctrine of *numerus clausus* limits the forms of enforceable property and consequently limits impacts on parties not linked to property conveyances. The law of servitudes similarly limits interests that run with the land. Dnes and Lueck (2009) argue that these limits on servitudes and the variance in them over time and across jurisdictions is best explained as an institutional response to the adverse selection problem that can arise from interests in land that are hard to measure and enforce. Arruñada would call these ‘secret’ contracts. Dnes and Lueck further argue that these limitations on servitudes actually reduce the costs of transactions in the market. Legal doctrines of nuisance and trespass also address border issues, essentially indicating what attributes of land will be enforced. Nuisance doctrines, especially concerning public nuisance, create principles for defining rights to air and water resources, primarily those that are attached to land. Land demarcation (discussed below) and land registries are also property-coordinating institutions that work with the law of property.

### *Land demarcation*

The ownership of land requires boundaries, and boundaries beget neighbours, both those with shared borders and beyond. As a consequence it is self-evident there will be ‘neighbourhood effects’, or externalities, as owners use their land because of the inherent physical connectivity of land, air and water. Boundaries are determined by land demarcation institutions that describe the rules for

<sup>9</sup> To make matters more complicated, these natural features tend not to be aligned in size or shape when projected on to a surface map.

<sup>10</sup> The governance of state property is the subject of bureaucracy and political economy.

defining and mapping parcel borders and for limiting the size and shapes of parcels. There are primarily two types of land demarcation regimes: metes and bounds (MB) and rectangular systems (RS).<sup>11</sup> In MB, parcels are demarcated by defining a perimeter anchored largely by notable geographical features, while in RS parcels are identical and square anchored by a point of origin. Both systems have rules and constraints on sizes and shapes of parcel that shape the contracting of land. Arruñada (p. 18) rightly calls demarcation a legal process for *in rem* enforcement, and also notes that ‘land demarcation is also the product of both purely private contractual exchange and the functionally “public” gathering of consents [that is] characteristic of property transactions’. In the common law of property in the US where both MB and RS are used, the common law doctrines of property apply though they probably take different forms as incentives vary under the two regimes.<sup>12</sup> Libecap and Lueck in their study of central Ohio (2011) find that RS leads to higher land values and fewer legal disputes.

### *Natural resources*

The institutions of natural resources (e.g. wildlife, water, minerals) are complex and do not easily fit the single-exchange model. A simple way to think about these institutions is to divide land into two assets: the surface and the natural resource (e.g. groundwater basin, wildlife population, airshed). Some of these assets are above the surface, some are below, some run across the surface and some flow through it. The property doctrine of land from *ad coelum* initially gave surface owners the right to everything from the surface below to hell and above to the heavens (Gevurtz, 1977).<sup>13</sup> This doctrine led to the rule of capture in oil, gas and groundwater where small surface owners, often in large numbers, had common access to large-scale resources.<sup>14</sup> Open access often became the governing regime, and waste was excessive, leading to increasing pressure for institutional change. Private contracting generally could not solve the problem.<sup>15</sup> For oil and gas the rule of capture in the US was replaced by state laws, most notably compulsory unitization statutes that force landowners and their lessees into a contract to manage the resource as a ‘unit’. For groundwater in the US, state regulations limiting pumping have been the most common response.

11 See Libecap and Lueck (2011) for details. Hunter-gatherer territories are also a form of demarcation, clearly the MB type.

12 It is an open question, ripe for study, as to how the doctrines vary by demarcation regime.

13 The name *ad coelum* comes from the Latin – *Cuius est solum, ejus est usque ad coelum et ad inferos* – roughly translated as ‘whoever owns the soil, it is theirs all the way to heaven and all the way to hell’. As Gevurtz notes, this doctrine has broken down in nuisance and trespass cases since the advent of the airplane.

14 These problems have been documented in many works, such as Libecap (1989) and Lueck (1995).

15 In some cases with small numbers of surface owners, contractual solutions did emerge *à la* Ostrom (1990).

The governance path for other natural resources has led similarly to a mixed ownership regime. For wildlife, the open access problem could not be solved by private contracting in the US but largely was in the UK (Lueck, 1989). In the US, state governments regulate the harvest of fish and wildlife, while private landowners still control habitat and access. Surface water in the US has two regimes. In eastern states water is tied to riparian landownership, cannot be severed, and might be considered a case of *numerus clausus*. In the western states generally rights to surface water are severed from the land and can be transferred subject to restrictions on what Arruñada would call exchange externalities. The legal institutions of wildfire are perhaps the most unusual. Wildfires regularly impact a group of landowners, and do so in an unpredictable fashion. As Merrill (2012) notes, the law has evolved to give third-party fire fighters (often the state) an emergency authority to enter private property while the fire is active and to further grant firefighters immunity for damage to private assets that occur during active fire control. This takeover of private property is justified by the large scale of many fires, by the fact they spread to adjacent landowners, and because the suppression effort has an emergency component in the rapid response that is crucial for effectiveness (Lueck and Yoder, 2015) These cases show that for many natural resources private contracting has not been the solution and a mix of property institutions governs. They also support Arruñada's critique of the simple contracting approach to property.

## Summary

In his seminal paper on social cost Coase opened the door to economic analysis of property rights and contracting. The Coase Theorem proposition about a world of costless trading led to a focus on contractual solutions to externalities. Arruñada calls this legacy into question as it applies to property law and property institutions. His general critique of this legacy of the single-exchange model of property rights is compelling but I suggest the real source of the problem in property is that assets (parcels of land) are complex and physically connected. The simple contractual approach to property rights is limited in such a world.

The argument in Arruñada is subtle and unorthodox for most economists who work on property rights. It is unorthodox because it is guided by an understanding and appreciation of property law and institutions that is rare among economists. Economists do not understand property law and property lawyers do not understand economics. The few scholars that have this joint understanding are the same few scholars who, like Arruñada, find Coase's original approach limiting in its understanding of the structure of property law and its implications. Arruñada's claim that 'The problem of social cost' is the causal force in the path of the economics of property rights is not established, nor is it likely that it could be. Coase, however, should not bear the costs of the limitations in the development of the literature on property rights that he

spawned. Indeed, prior to Coase, economists working on property rights such as Armen Alchian, Scott Gordon and Anthony Scott, similarly ignored the details of the law.

Coase (1960) is among the most cited economics papers of the 20<sup>th</sup> century.<sup>16</sup> It has led to the economic analysis of legal rules, property rights, contracting, and perhaps most importantly the comparative analysis of institutions. This comparative approach is also recognized by Arruñada:

Coase (1960) points out the diverse means available for solving it [the problem of social cost], by both private and public means, encouraging a comparative perspective and clarifying the role that judges and governments may play in reducing transaction costs to facilitate private exchange.

This legacy of Coase is a wide social science literature on institutions and governance. That legacy should be recognized.

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16 Google Scholar shows 29,760 cites (it is the second most cited paper).

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