

Contracting for the Environment: Lessons from the Structure of Conservation Easements

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Introduction

This paper studies the structure of conservation easements with the primary goal of learning how the terms in easements mitigate transaction costs and asymmetric information problems in a complex contracting environment. In doing so, the paper contributes to the law and economics literature on contracting for environmental services and resource use (e.g., Deacon and Murphy 1997; Leffler and Rucker 1991) that also emphasizes the role of transaction costs in shaping contract terms. The paper also identifies strategies used by land trusts to contract around enforcement and asymmetric information problems that have limited contracting for environmental services in other settings (see Salzman 2010, Ferraro 2011).

The study of conservation easements is important for three reasons. First, the use of conservation easements is exploding with approximately 50,000 easements held by land trusts and government agencies across the United States. The growth in conservation easements is among the most impressive trends in American conservation, and continued growth is likely with the recent expansion of tax subsidies and direct government monies for easement acquisitions (see Parker and Thurman, forthcoming). Second, the terms decided upon by the original grantor and grantee “run with the land” in perpetuity. This fact amplifies the potential impacts of transaction costs and information asymmetries and therefore raises the stakes when specifying

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permitted, prohibited, and regulated land uses in agreements meant to last forever. Third, with over 30 years of experience with conservation easements drafting, this setting enables the study of how contracting terms have evolved over time in response to changing conditions.

This study makes two central contributions. The first is the identification of rules, standards, and vetoes as alternative ways for easements to regulate the use of land. The concepts of rules and standards are focal points in law school courses; they are discussed frequently in the legal literature on contracts; and these concepts are also prominent in certain analysis of environmental regulations. Rules, standards, and vetoes are mentioned (but not highlighted) in some practitioner reports on conservation easement drafting (see following section) and in one academic study (see Boyd et. al. 2000). By highlighting rules, standards, and vetoes, this paper connects important concepts from general legal theory on contracting to the problem of drafting perpetual environmental agreements that is a critical concern within the land trust community.

The second contribution is development and analysis of a detailed database on conservation easements. The data used in the present paper come from my coding of a random sample of 320 out of 1600 conservation easements held in Montana. We chose Montana because every easement is available electronically through the Dept. of Revenue (in most states they are held in county courthouses) and because Montana leads the nation in the number of acres held in conservation easements. For each easement, we have coded the easement purposes, the types of land uses that are regulated, and whether they are regulated by rules, standards, and vetoes. Eventually these data can be matched with GIS data on easement location and land characteristics to test hypotheses about how transaction costs and asymmetric information affect the relative use of rules, standards, and vetoes. By documenting trends and correlations in the data we aim to inform the literature on contracting and hopefully also the land trust community.

The literature review also seeks to show this research is at the intersection of both current legal theory of rules and standards as well as the Land Trust Alliance's (LTA) guidelines for conservation easement drafting. This research seeks to not only combine those two areas of literature, but also add to each. There is abundant legal study on contract theory in general, but none of it focuses on the issue of perpetuity that concerns and drives easement drafting. This research will add to the typical contract theory by noting the special consideration of drafting for perpetuity. In contrast, LTA has put forth literature on drafting conservation easements in perpetuity, but fails to recognize tradeoffs in contracting for either rules or standards. LTA discusses using precise and clear language as well as measurable terms, but there is barely any mention of how to use rules or standards effectively to both allow for the purpose of the easement to be met as well as maintain the economic viability of the land in perpetuity. Both rules and standards have their own strengths and weaknesses, and practitioners need to be aware of these tradeoffs when drafting conservation easements to ensure maximum protection of the land's value over time.

Background on Conservation Easements

The burgeoning use of conservation easements in the U.S. is an apparent success story in private management of environmental goods. Conservation easements are legally binding agreements that typically prevent landowners from commercial development but may also regulate agricultural, forestry, and other practices. The growth of conservation easements is striking at the national level. Private land trusts in the U.S. hold approximately 25,000 easements covering an area of land exceeding 10 million acres compared to about 1 million acres in 1984 (Parker and Thurman, forthcoming). Conservation easements are prominent in Montana with

more than twenty organizations in Montana alone holding over 1,600 easements covering an area of land exceeding 1.4 million acres. Table 1 gives summary statistics from these easements.

Law of Easements in Brief

How Easements Differ from Typical Contracts

Although conservation easements are property rights and not contracts, a contracting phase is still required in determining exactly what rights are to be given up and how to define those terms through perpetuity. An important difference between contracts and easements is that easements bind both the original landowner as well as all subsequent landowners (Walliser 1997). This is what is meant when an easement is said to “run with the land.” This is an important distinction to make because it affects future conflicts as to whether the dispute is between the original parties or not. Traditionally contracts cannot be enforceable against those not originally involved in the formation. Common law can be used to enforce contractual rights between the original parties, but the common law is more dubious in enforcing property rights in regards to subsequent landowners (Dana and Ramsey 1989). For this reason, the enforceability of conservation easements relies on statutory rather than common law. In principle conservation easements can require either affirmative or negative rights, but in practice the use of affirmative rights is somewhat uncommon. A negative right prevents a landowner from using the property in such a particular way (Walliser 1997; *see also* Dana and Ramsey 1989 [discussing traditional common law for negative easements]). Conservation easements are generally restrictions on the landowner for certain types of land use that could frustrate or even harm the purpose the easement. Though, some easements go further in also imposing affirmative rights or obligations

onto a landowner such as to “[r]estore the land to a certain condition, manage the land in a certain way, [or] open all or part of the land to public recreational use” (Hamilton 2008, 128; *see also* Zuckerman 2011 [discussing affirmative farming clauses in conservation easements]). An affirmative right typically involves allowing the grantee a right to undertake a specified activity on the property (Walliser 1997). Affirmative rights for conservation easements, however, often impose some burden on the landowner in regards to the property.

Statutory Requirements

Conservation easements rely on state statutes for validity and enforcement. Statutes vary across states, but most contain provisions on who can enforce in the event of a violation, what conservation purposes are allowed, and how long easements must last. Over half the states model their statutes off the Uniform Conservation Easement Act (UCEA) or a modified version of it. One of the basic goals of the UCEA is to negate basic common law defenses against easements as well as to enact guidelines for how to take advantage of federal tax guidelines.

Montana’s statute, however, was originally enacted in 1969 and amended in 1975, before the drafting of the UCEA in 1981. Although Montana’s statute predates the UCEA, it preempts many of the issues concerning conservation easements like negating common law defenses addressed in the UCEA. Montana allows conservation easements to either be granted in perpetuity or a term not less than 15 years (M.C.A. § 76-6-202). The purposes a conservation easement may be created for are to preserve “significant open-space land and/or the preservation of native plants or animals, biotic communities, or geological or geographical formations of scientific, aesthetic, or educational interest” (M.C.A. § 76-6-204). M.C.A. § 76-6-104(4) states

that qualified holders of an easement are public bodies (defined as state, counties, cities, towns, and other municipalities) and private organizations that qualify under IRC § 501(c).

In order for a easement donor to receive a federal tax deduction, the donated conservation easement must also fulfill the requirements of the IRS code § 170(h). IRC § 170(h)(1) states that a conservation easement donated must be of a qualified real property interest to a qualified organization exclusively for conservation purposes. IRC § 170(h)(5)(A) also requires the easement be protected in perpetuity in order to receive the tax deduction, and IRC § 170(h)(5)(B) states there can be no surface mining on the property. IRC § 170(h)(3) defines a qualified organization as either a governmental entity or a charity under IRC § 501(c)(3).

Amendments

Conservation easements should be carefully drafted to be in effect for the ages, but there is always a chance of unforeseen events that require an easement to be altered. With conservation easements being so new, “[a]mendment decisions now occur in a time of legal uncertainty with little precedent” (Land Trust Alliance 2007). The IRS has become increasingly concerned with amendment practices for easements that have received tax deductions, which is reflected in its regulations and inclusion of amendment questions on the IRS Form 990 filed by tax-exempt organizations. There are several limitations on amendments, however, such as state and local laws including conservation easement enabling laws, land trust governing doctrines, federal guidelines for tax deductible easements, and contractual obligations (Land Trust Alliance 2007). One limitation on amendments is that landowners and land trusts must mutually agree to an amendment, which helps foster ongoing discussions about the best use of the land, both for the conservation values as well as economic viability. Another limitation on the land trust is that

they have legal and ethical obligations to ensure the perpetual protection of the conservation purpose (if the easement is perpetual in nature) as a result of having federal tax-exempt status. Therefore land trusts have incentive to use amendments sparingly, typically for unforeseen events that change the landscape, more stringent restrictions on the property, or more efficient provisions as drafters learn new techniques.

While there is no federal law yet denoting the specific requirements for an amendment, there are guidelines the Land Trust Alliance (2007, 17) has put forth to serve as the floor:

1. Clearly serve the public interest and be consistent with the land trust's mission.
2. Comply with all applicable federal, state, and local laws.
3. Not jeopardize the land trust's tax-exempt status or status as a charitable organization under federal or state law.
4. Not result in private inurement or confer impermissible private benefit.
5. Be consistent with the documented intent of the donor, grantor, and any direct funding source.
6. Have a net beneficial or neutral effect on the relevant conservation values protected by the easement.

The three most important requirements to note are that amendments cannot confer private benefit, have detrimental effect on conservation values of the property, or be inconsistent with the purpose of the easement. These three together show that amendments must be in good faith and give possible ways to dispute poorly written or malevolent amendments to ensure conservation easements are not abused.

Structure of an Easement

Conservation easements are flexible tools for conserving land, and can be formulated to meet any variety of circumstances. The basic structure of an easement remains fairly constant for consistency of interpretation. While there are slight variations, the typical structure looks like this:

- a. Statement of property's "conservation values"
- b. Reference to supporting documentation of the property's legal description and present "baseline" conditions
- c. Statement of the purpose of the easement
- d. A description of "affirmative rights" granted to the land trust
- e. A list of rights retained by landowner (conforming uses)
- f. A description of regulations that govern allowed activities (e.g., rules, standards and vetoes)
- g. A list of prohibited land uses (nonconforming uses)
- h. Miscellaneous provisions, including:
 - i. Enforcement or dispute remedies
 - ii. Indemnity and liability disclaimers
 - iii. Procedural directions for notices and approvals
 - iv. Amendment and extinguishment clauses

Perhaps the most important provision within a conservation easement is the purpose. The role of the purpose is to set forth the reason for granting the easement, the values the easement aims to protect, and the reason those values are important (Hamilton 2008). This makes it important because it "will be the standard against which current and future activities on the protected land will be evaluated. Therefore, it is *imperative* that [drafters] spend time crafting a

clear, unambiguous and sufficiently detailed purpose clause that can withstand the test of time and avoid a generic purpose clause” (Hamilton 2008, 112). Thus, the purpose of the easement is crucial because it is one of the first places a court will turn should a dispute over a term ever arise.

Case Law

Because conservations easements are relatively new compared to other legal tools, there are relatively few cases regarding the actual terms of the easements. It is still useful, however, to examine prior litigation concerning either the contracting phase of drafting an easement or regarding a later violation that reveals flaws in the original drafting phase.

Courts have been clear that parties should be precise in drafting terms and boundaries of an easement or else the court will rule against them (*Racine v. US*, 1988; see also *Davison v. Wyoming Game and Fish Commission*, 2010). They should also either anticipate future events or be flexible enough to adapt, as courts will not allow easements to be construed to take unstated future events into account even if they would have been included originally (see, e.g., *US v. Johansen*, 1996, court would not allow additional wetlands created from rain over time to be added to specified protected wetland areas within easement). Therefore parties should take the time to weigh the tradeoffs of how to draft each provision within an easement to ensure the proper amount of specificity or flexibility.

When analyzing an easement, courts will apply the reasonable person rule in the interpretation of provisions (*Goldmuntz v. Chilmark*, 1995; see also Dana 1999). This means that words are given “ordinary and usual meaning” as judged by this reasonable person (*Sagalyn v. Foundation for the Preservation of Historic Georgetown*, 1997; see also Dana 1999). If the

language in the contentious provision is unambiguous, courts will merely look at specific provisions as well as the purpose of the easement and will not look to extrinsic evidence (*Foundation for the Preservation of Historic Georgetown v. Arnold*, 1994). On the contrary, if ambiguity is found within the provision, “the court must determine the intent of the parties at the time the instrument was drafted, gathered from the language used and the circumstances which existed at its formation” (*Thomas v. Campbell*, 1984, 339). This poses an interesting problem for conservation easements because they are enacted in perpetuity. Thus, it will become more difficult as time passes to determine intent of parties unless there are extrinsic documents such as correspondence or other supplemental materials (Dana 1999). Over time courts could begin to have more leeway in interpreting ambiguous statements as credible evidence of original parties’ intent becomes less readily available. One constraint on the courts that can lessen judicial discretion is the purpose provision of the easement because it should be written in such a way as to indicate the intent of the parties in drafting the easement.

If the circumstances do not reveal how the ambiguous term was intended the court will then look to the rules of construction (*Foundation for the Preservation of Historic Georgetown v. Arnold*, 1994; see also Dana 1999). Courts have also looked to common law for how to interpret a specific term if it has been litigated before in other contexts (*US v. Ponte*, 2003). Generally courts will construe ambiguously worded land use restrictions in favor of the free use of the land (*Foundation for the Preservation of Historic Georgetown v. Arnold*, 1994; see also *Chatham Conservation Foundation v. Farber*, 2002 [courts will construe terms in favor of landowner], Dana 1999). Though, some courts have also resolved ambiguous language in favor of the land trust as well (*US v. Park*, 2009). That being said, however, courts have generally been more favorable to land trusts outside the context of legal interpretation.

Theory of Tradeoffs of Rules and Standards

Legal Literature on Rules and Standards

To motivate the analysis of rules versus standards in easements, we build from the literature describing the tradeoffs of using rules and standards when drafting legislation. This literature is informative because the drafting of a conservation easement is analogous to the drafting legislation in important ways. Although contracts also employ rules or standards, the tradeoffs are better illustrated by analogy to legislative drafting. Like conservation easements, legislation typically has no end date, even though most legislation does not actually last in perpetuity. Therefore, the drafting stage of both legislation and a conservation easement typically involves assessing the terms for the ages and not merely a set term. Also, both legislation and conservation easements are intended to be for the public benefit. IRC 170(h) allows a tax deduction for conservation easements because they are for the public benefit. Another similarity is the way in which laws and conservation easements are interpreted. As the case law above shows, the courts typically look to the purpose of an easement first when deciding what the initial drafters intended. This is analogous to how courts interpret statutes by first looking at the legislative history to determine what the lawmakers who wrote it envisioned. After courts appeal to either the purpose or legislative intent, they assign ordinary meaning to disputed terms and determine whether the provision is ambiguous should be interpreted with its plain meaning. If the provision is ambiguous courts then look to common law and precedents for further guidance

for both types of legal documents. Therefore it is important to look at the literature on how rules and standards are used in legal documents such as statutes and regulations.

Aside from the statement of purpose, the substance of conservation easements is contained in how particular land uses are regulated. The substantive content in this regard is whether governed activities are regulated by a rule, a standard, a discretionary veto, or some combination of these. With rules there can be little (if any) disagreement as to when the terms are violated, or reasonable minds cannot differ. An example of a rule is “Grantor may run up to fifty (50) head of cattle on the Property. Additionally, Grantor may keep up to five (5) horses and five (5) mules.” In contrast, standards are when reasonable minds could differ. An example of a standard is “to conduct farming, ranching and other agricultural activities, including raising and managing livestock and planting, raising, and harvesting agricultural crops, provided that such activities do not result in degradation of the Property’s soils, plant communities, water resources, or fish and wildlife species or other natural habitats.” Discretionary veto typically implies the land trust has final authority over a new use for the land, but can also include a requirement that calls for mutual agreement between landowner and land trust.

There is abundant literature discussing the legal ramifications of using either a rule or a standard that applies to the analysis of conservation easements. A rule “signal[s] to all of us, in a clear and distinct language, precisely what our obligations are and how we may take care of our interests” (Rose 1988, 577). The virtues of a rule are certainty, uniformity, stability, and security (Schlag 1985). Legal consequences are determined ahead of time based on well-specified triggering facts. Therefore adjudicators only need determine whether those relevant facts are present or absent, which lowers administrative costs for dispute resolution. This also makes it less likely for a conflict to go to trial because parties can determine if the specified facts are

present more effectively than if they are trying to determine if a standard is met (see, e.g., Cooter and Rubinfeld 1989).

Rules are most effective when disputes are frequent and involve similar facts. This is because rules are more costly to promulgate because they require an advance determination of the law's content. Because that cost of matching the set of facts to a legal consequence is only borne once, it is spread over a large number of transactions if there are many disputes (Korobkin 2000). Also, if there are similar facts occurring frequently, it is more preferable to be precise to avoid inconsistency or unwanted results.

Rules have drawbacks, however, with issues of regimentation, rigidity, and closure (Schlag 1985). This makes them difficult to alter with changing circumstances, which can be an issue with the regulation of certain land uses in perpetual easements. This is where the advantages of standards come in. The virtues of standards are flexibility, individualization, openness, and dynamism (Schlag 1985). Standards are a "legal pronouncement that specifies no triggering facts that have defined legal consequences" (Korobkin 2000, 27). Therefore a standard requires an administrator to not only analyze the specific facts but also give content to the standard each time a dispute arises.

This is what allows standards to be better able to keep up with changing circumstances. They are "given content in a definitive way when they are applied to a particular conduct" (Kaplow 1992, 616). Therefore, a standard can be applied directly and given specific context each time a dispute arises, regardless of any changing facts across disputes. Thus, standards are more cost effective for lawmakers to administer when disputes are infrequent or have facts that are too wide ranging to be specified in a single rule (Korobkin 2000). If conflicts do not occur often, it is more efficient to bear the costs only when the unique circumstances arise on a case-

by-case basis because cost for a rule would be spread over fewer disputes (Korobkin 2000). It may not be worth spending time to get a precise result with a rule for certain issues because that would only be useful in a handful of instances rather than many. Standards are not only useful with material differences between facts, but also when facts change over time. This is especially important for conservation easements on economically viable parcels of land, or parcels that generate a profit for the owner such as a ranch or farm, to allow for changing technology (see, e.g., Hamilton 2008). Standards also allow for a more focused application of underlying norms of a community because they allow general norms to be applied in concrete instances and can even adapt to changing norms over many years (Kaplow 1992).

While standards have many applications for easements, particularly for working farms and ranches, there are dangers drafters should be aware of before simply applying only standards. Standards can be at risk of manipulability, disintegration, indeterminacy, and adventurism (Schlag 1985). Standards can leave both landowners and land trusts uncertain where the legal boundary is for an unforeseen circumstance without some form of judicial interpretation. This can make it more costly for either party, or their legal advisors, to predict the proper action or for enforcement authorities to apply the standard appropriately because of the later determination of the law's content as well as discovering the facts (Kaplow 1992). A further impediment of which land trusts must be wary is that standards can essentially become rules through legal precedent, and therefore litigation should only be sought when there is little doubt this is a precedent that will be effective across all easements and not merely in one instance (Kaplow 1992). Therefore, land trusts and landowners should contemplate alternative dispute resolutions if possible when unsure to avoid setting bad or unintended legal precedent.

LTA Literature on Conservation Easement Drafting

While none of the law review articles specifically mention rules and standards in the context of conservation easements, the Land Trust Alliance (LTA) clearly recognizes the tradeoffs between each.¹ LTA's *The Conservation Easement Handbook* addresses these issues vaguely when discussing the tradeoffs in flexibility and specificity when drafting a conservation easement (Byers and Ponte 2005). The authors discuss how specificity is preferred except when it "alienate[s] landowners and complicate[s] the task of monitoring" (Byers and Ponte 2005, 295). Byers and Ponte (2005) also discuss the use of qualitative versus quantitative restrictions in an easement, suggesting a tradeoff in specifying a specific quantity for an action or whether a verbal description is more appropriate due to changing circumstances.

More importantly, however, is LTA's discussion of prescriptive and performance standards. Hamilton (2008, 124) defines a prescriptive standard as "prohibitions that are often quantifiable (e.g., no construction within 100 feet of the stream bank)." Likewise, performance standards are "limitations on activities based on goals (e.g., the house shall not be visible from the public road)" (Hamilton 2008, 124). This language almost directly mirrors the definitions of rules and standards used in this research. What LTA terms performance standards are particularly useful for provisions concerning natural resource based economic activity (Byers and Ponte 2005). This is partly because many of these land uses are more resilient and can withstand temporary violations, and also because these uses are economically viable and it is crucial the landowner adapt quickly to changing circumstances to maximize the value of the land while remaining subject to the purpose of the easement. LTA also notes that it is common to use

¹ The Land Trust Alliance is an organization comprised of over 1,700 land trusts across the United States that seeks to preserve land through private methods of conservation such as conservation easements.

both types of restrictions to make sure the purpose of the easement is more likely met (Hamilton 2008).

Regardless of whether a prescriptive or performance standard is used, LTA recommends the standard be one that is measurable (Hamilton 2008). A performance standard can still be measurable if there is a well-drafted goal, and “[g]rievous departures should be easy to demonstrate, and courts are likely to enforce against them” (Byers and Ponte 2005, 296). If measurable standards are impracticable, however, the easement could make reference to accepted standards of a third party, such as Forest Service guidelines for timber harvest (Hamilton 2008). These could either be governmental or private natural resource conservation agencies (Hamilton 2008). The advantage of this is that the terms act with the concreteness of a rule in that there is a specific outside guideline or standard with which to appeal to, and in the event of litigation an expert from that group can be used to accurately represent what that guideline says and is meant to achieve. Likewise, an appeal to a third party also has characteristics of a standard in that it can evolve over time as the agency adapts to changing circumstances.

Economic Theory of Rules and Standards in Easements

This section imposes more precision on the concepts of rules and standards by framing the tradeoffs in a simple economic model. In addition to adding precision, the model points to certain tradeoffs that are not considered in the literature just surveyed. The goal is to provide a coherent framework for predicting how different conditions will affect the choice to use rules or standards when drafting conservation easements.

A. Setup

Assume that a tract of land can be employed towards the production of marketable output (Y), conservation output (C), or some combination of the two. Marketable output includes commodities such as minerals, corn, beef, timber and residential and commercial facilities and services. Conservation outputs include wildlife habitat, open space scenery, and other “ecosystem services.”

The amount of marketable output produced depends on the quantity of two landowner actions, x and z . The production function for non-conservation output is strictly concave in the landowner’s actions and is written

$$(1) \quad Y = Y(x, z).$$

Actions x and z are normal in the sense that expansion paths are positively sloped. The prices of actions x and z are w_x and w_z respectively. The landowner’s profit from the marketable output is given by

$$(2) \quad \pi = \pi(x, z, w_x, w_z, p)$$

where p is the per-unit price of Y .

Because the production function is strictly concave in x and z the profit function has a unique maximum and we assume this is an interior solution. Profits depend positively on p , x , and z and negatively on action prices w_x and w_z . The level of conservation output, C , (e.g., the length of grass for wildlife foraging or the quality of natural scenery) is determined by the actions of the landowner as well as environmental factors, E , in the following way:

$$(3) \quad C = C(x, z, E).$$

The effect of x on C is negative. The effect of z on C could be either positive or negative but we initially focus on an action z that is detrimental to conservation. Examples of actions that

could affect C include the location and depth of surface mining; the amount, timing, and location of livestock grazing; the footprint, height, and color of residential buildings; the location and intensity of timber harvest; the level of care and precision in applying pesticides on target crops; and the level of care taken to re-establish natural conditions after using a part of the property for commodity production. We distinguish x from z below.

The land trust's goal with an easement is to ensure that a minimum level of conservation, $C \geq C_{MIN}$, will be produced on the parcel into perpetuity. We take as given the chosen value of C_{MIN} and suggest that it is determined by complex goals of the landowner and land trust, and the relative conservation and marketable value of the land.

The variables over which easements are defined must satisfy three conditions; the landowner must wield some control over it, the land trust must be able to observe it to verify compliance, and the parties have to know about their existence at the time of drafting. The assumptions above indicate that a landowner wields control over the amount of C produced (albeit imperfect control because of environmental conditions). We assume the land trust can observe action x but that action z is either hidden (and therefore non-contractible) or impossible to define when easements are drafted (and therefore non-contractible). When z is a hidden action, it might indicate the level of care taken when applying pesticides or the effort put forth to re-establish natural conditions after a new land disturbance.² When z is an unforeseeable action, it might indicate the use of new technique for sequestering carbon under the surface of a property.

Our central interest is in modeling the tradeoffs in relying on standards or rules. An easement that requires $C \geq C_{MIN}$ but does not regulate action x is an easement that employs a

² With these examples of action z , an increase in z can be interpreted as a *decrease* in care or effort.

“standard”. An easement that requires $x \leq x_{MAX}$ but that does not require a minimum level of C , is an easement that employs a “rule”. The following sections illustrate the tradeoffs of rules and standards.

B. First-Best Easement

We first consider an analytical benchmark in which parties to an easement can perfectly and costlessly observe the contribution of environmental factors, E , to the conservation output. The analytical benchmark also assumes costless measurement of standards. Figure 1 illustrates this first-best case. It shows iso-profit contours for combinations of landowner actions. Absent a conservation easement, the landowner will choose x^* and z^* and his profit is maximized at π^* . With the constraint of meeting the C_{MIN} standard, the landowner will choose x_{FB} and z_{FB} and his profit is π_{FB} . (A less stringent conservation constraint would be further from the origin). The competitive price of the easement is the foregone profit, $\pi^* - \pi_{FB}$; this is consistent with how conservation easements are appraised in practice.³ The situation is first-best in the sense that the easement goal is met at minimum cost. The first-best easement is therefore a standard that allows the landowner to freely adjust his actions subject to the conservation constraint.

C. Rules

We continue to assume that the ultimate goal of the land trust is to have $C \leq C_{MIN}$ met, but now we suppose the trust regulates land use with a rule rather than a standard. The rule takes the form of $x \leq x_R$ where the subscript “R” denotes “rule”. Referring back to the earlier

³ In principle, the landowner could be compensated for the value of C . Here we assume that C is not directly priced and that its value is pegged to the opportunity cost of its provision. This is how conservation easements are appraised in practice.

discussion, a rule may state “Grantor may run up to fifty (50) head of cattle on the Property” in which case x is the head of cattle and $x_R = 50$.⁴

For illustration purposes, we initially assume the rule is set at the level of x that the landowner would choose in the first-best scenario (i.e., $x_R = x_{FB}$). Figure 2 illustrates the landowner’s optimal actions with this rule, assuming the landowner’s profit maximizing response is to increase z to z_R . Profits for the landowner exceed the first-best profits (because $\pi_R > \pi_{FB}$) but the conservation goal is not met (because $C_R < C_{MIN}$). The goal is not met is because the landowner increases his use of the non-contractible action, z .

The land trust could try to ensure the conservation goal is met by setting a more stringent rule on x such that $x_R < x_{FB}$. Figure 3 depicts this case. The conservation goal is met because the landowner chooses the profit maximizing actions x_R and z_R , and this yields the outcome of C_{MIN} . Profits are lower than under the first-scenario because $\pi_R < \pi_{FB}$, however. This implies that the competitive price of an easement that meets the conservation goal via rules is higher than the competitive price of a first-best easement.

There is a special case in which a rule could achieve the conservation outcome at the same price as the first-best standard. This is the case in which the conservation goals are a function of x but not z . Figure 4 illustrates this case. Here C_{MIN} is a vertical line and the first-best outcome can be achieved with a rule at $x_R = x_{FB}$.

To summarize, there is a wedge between the first-best and rule-based price of an easement except in a very special case. When there is a very specific relationship between the conservation goals and contractible activities x , the wedge created by using rules is likely to be small. For example, when the desired goal is an unobstructed viewshed from the public

⁴ A special case of a rule is when a particular observable land use is prohibited (i.e., of $x_R = 0$). For example, the prohibition of a feedlot or a billboard is effectively a rule.

highway, then a rule can limit where new structures can be erected in such a way that it would be difficult for the conservation goal to be undermined by action z . By contrast, the wedge created from using rules should be larger when the goal is less precise and less exclusively related to conspicuous landowner actions.

D. Standards

We now consider the use of standards and allow for two layers of complexity relative to the first-best scenario. First, we allow environmental factors, E , to affect C in ways that cannot be perfectly identified. This implies the land trust will not be able to separate the contribution of environmental factors from the effects of the non-contractible action z .

To express this complication in a simple way rewrite equation (3) in the more specific form of

$$(4) \quad C = E + C(x, z).$$

Suppose that E is usually zero but takes a value of \underline{E} if a “bad” environmental shock occurs.

We assume $\underline{E} < 0$ with $\Pr(E = \underline{E}) > 0$ and $\Pr(E = 0) = 1 - \Pr(E = \underline{E})$. To illustrate, let C be the

density of forage for elk and E represent the encroachment of an invasive species on the

property. In normal conditions, the landowner has control over forage through his actions x and

z . An unusual shock, such as an influx of an invasive plant or animal species, decreases wildlife forage for reasons independent of landowner actions.

An enforceable standard is one in which the landowner is required to provide C_{MIN} under all circumstances. A bad environmental shock will impose profit-decreasing costs on the landowner who will either have to adjust his actions x and z to accommodate the shock or face penalties imposed by the land trust. In anticipation of bad shocks, the competitive price of an

easement will increase relative to the first-best scenario because expected profit will fall. The easement price is increasing in $\Pr(E = \underline{E})$ and in the absolute value of \underline{E} .

The second complication is that certain standards are necessarily qualitative. Qualitative standards include those that reference the quality of wildlife habitat or scenery relative to some benchmark condition that is not completely quantified. We assume the initial parties to the easement agree to a common definition of “quality,” but as time passes the common understanding erodes.

Qualitative standards can be interpreted in three ways: $C = C_{MIN}$ (the interpretation intended by the initial parties), $C = \underline{C}$, or $C = \bar{C}$ with $\underline{C} < C_{MIN} < \bar{C}$. The \bar{C} interpretation is a more stringent conservation standard than initially intended and the \underline{C} interpretation is more lax. Figure 5 illustrates.

The lack of clarity in the standard creates incentives for each party to exert effort in measuring, monitoring, and documenting the property conditions to protect themselves against interpretations that are adverse to their interests. The lack of clarity in the standard also creates an impetus for future litigation, especially if the landowner and land trust believe that courts will agree to a particular interpretation with equal probability (see Cooter and Rubinfeld 1989). These transaction costs arise from incompletely specified property rights and will dissipate the value of the easement relative to the first-best scenario in which standards are perfectly clear.

We propose that clarity in property rights arises, in part, from disparities in the command over legal resources between the two parties, (W_L/W_{LT}) . Here W_L represents the wealth of the landowner and W_{LT} represents the wealth of the land trust. A ratio of one will give rise to higher transaction costs because neither party has an obvious advantage in court. A ratio less than one will lead to $C = \bar{C}$, and a ratio greater than one will lead to $C = \underline{C}$. With asymmetry

there is a clearer winner in court and this lowers the transaction costs of relying on qualitative standards.

E. Preliminary Implications

Rules and standards fall short of first-best contracting outcomes for different reasons. The following implications seem consistent with the logic of the theory if we assume that easements are drafted with the goal of minimizing the social cost of achieving the conservation goal.

- The inefficiencies of using rules increase with increases in the productive value of the land for commodity production. *We expect the prevalence of rules to decrease with increases in the commodity value of the land, ceteris paribus.*
- When the goal of an easement is very specific and targeted, the inefficiencies of using rules are less pronounced when compared to easements with broader goals. *We expect rules to be more prevalent with increases in the specificity of easement goals.*
- The use of qualitative standards generates transaction costs of measuring, monitoring, and enforcing easements. These transaction costs can be mitigated by asymmetric legal resources or by the use of rules. *We expect the prevalence of rules to decrease relative to standards with increases in asymmetry of landowner and land trust wealth.*

Statistical Analysis

Overview of Data

The empirical results in this section summarize the easement database, identify time trends in easement terms, and provide initial assessments of the preliminary hypotheses. The primary data source is the collection of 1500+ conservation easements held in Montana as of 2010. We were able to obtain these documents because Montana law requires that copies of all conservation easements be sent to the Montana Dept. of Revenue and made available to the public.

We sampled from the full set of conservation easements in the following way. The conservation easements are grouped by land trust (there are 20 land trusts holding conservation easements in Montana), with Montana Land Reliance (MLR) being divided by county. A random sampling of each land trust was performed by taking the first 25 percent of each land trust, or by county for MLR, with the easements being listed alphabetically either by original landowner name or name of property. MLR contained duplicates as some easements extend across multiple counties and an easement is required to be filed in each county in which it resides. Therefore the duplicates were accounted for and deleted from the sample.

The end result is a sample of 320 conservation easements, hopefully representative of the statewide population of easements. Table 2 compares the means of the sample against the means of the population of Montana easements for those attributes for which we currently have sample and population data. As the table shows, t-tests for differences in means fail to reject the null that the means from our sample are equal to the population mean. We should note that these tests are imprecise because the year reported in the population data is inflated by the fact that those data are based on the most recent easement amendment date whereas the dates in our

sample are based on the date the original easement was recorded. For the next draft, we plan to have more variables to compare the population and sample means with (e.g., proportion of easements held by out-of-state landowners, proportion of easements donated) and we plan to acquire acres information for each of the 320 easements in the sample (we currently have acreage data for 133 observations).

Easement Coding and Summary Statistics

After a cursory review of a random selection of six easements, we decided on a scheme for coding the qualitative data in the easements⁵. The 27 different land uses that we reviewed for this research are listed in List 1. The current coding system primarily looks at purpose, uses, content, and communication.

The five legitimate purposes for easements in Montana's easement-enabling statute are open space, wildlife protection, outdoor recreation and education, scenic enjoyment, and working forest. The most common appears to be open space, with wildlife protection a distant second. While many conservation easements acknowledge outdoor recreation or education and working forests, these are rarely the stated purpose of the conservation easement. Likewise, many easements discuss scenic enjoyment but do not specify it as the purpose. Many easements also indicate a specific purpose beyond the five general purposes. We noted any easement that used a specific purpose as well what the specific purpose was.

For each of the 27 land uses, we coded the use is permitted, prohibited, or silent. Permitted and prohibited uses are freely allowed or entirely disallowed. An easement is silent on a particular land use if that use is neither explicitly permitted nor explicitly prohibited.

⁵ The appendix gives a detailed breakdown of the coding scheme.

The bulk of our empirical analysis focuses on choice to use rules and standards for those land uses that are explicitly permitted but also regulated. Our coding of rules and standards matches the literature discussed above. We also code for quasi-rules. Quasi-rule is used when a term contains a list that is not exhaustive as a rule would require (“including, but not limited to...”). Other important content of note are whether a provision also included a building envelope, management plan, or an appeal to a third party.

For each land use we have also coded for whether communication between the landowner and the land trust is required. This communication can be in the form of notice, reasonable approval, or discretionary veto. Notice is when a landowner merely has to let the land trust know a specified action has taken place. Discretionary veto is used when the land trust has final veto power over a specified action. Reasonable approval is similar to discretionary veto in that it gives final authority to the land trust, but adds the element of requiring the use must not be unreasonably denied.

We also collected from the easements data on year recorded, number of acres, whether or not the landowner resides in Montana, whether or not the landowner is a corporation, easement length in terms of the number of pages, and our crude proxy for asymmetric wealth between landowner and land trust. The asymmetric wealth variable equals “1” if the land trust is national (Nature Conservancy, Ducks Unlimited, Trust for Public Land) and the landowner is in-state. The asymmetric wealth variable also equals “1” if the land trust is local (e.g., Five Valleys Land Trust, Bitterroot Land Trust, Gallatin Valley Land Trust) and landowner is out of state. Out of state landowners within the sample include Charles Schwab, Tom Brokaw, and Ted Turner. The asymmetric wealth variable equals “0” if the landowner is out-of-state and the land trust is national or if the landowner is in-state and the land trust is local.

This coding scheme was used consistently for each of the 320 conservation easements. Table 3 gives summary statistics for the variables collected from the sample of easements. . Figure 6 gives histograms of land use aggregates (e.g., the number of rules appearing in an easement and the number of permitted land uses). Table A in the appendix summarizes the proportion of each land use that is regulated by rules, building envelopes (which are special type of rule), quasi-rules, and standards.

Linear Trends

We begin the analysis by testing for the presence of linear time trends in the data.⁶ Panel A of Table 4 shows OLS regression results for each of variables summarized in the histograms. The first row shows results from a regression in which the only right-hand side variable is a linear time trend (the easements range from 1976-2010). The second row adds holder specific effects for each of the 20 organizations that hold conservation easements in Montana. The trust-specific effects control for factors such as the identity of the lawyer that drafts easements for a particular organization. Panel B mimics the same regressions but does so with a Poisson model to account for the count nature of the dependent variables.⁷

Several results are noteworthy. First, easements are getting longer over time at an estimated rate of approximately one page every decade. This may be because the number of permitted uses is also growing over time, which in turn may be due to a growing number of legal cases in which the land trust has prevailed over the landowner in a land use dispute. Permitted

⁶ In the future we will allow for more flexibility in the time trends as it is probably not the case that learning in easement drafting has a linear functional form.

⁷ The results are qualitative similar when using a binomial regression model.

uses that are explicit provide insurance for landowners who are concerned about retaining their rights.⁸

Second, the use of rules is growing over time and there is some evidence that standards are becoming less prevalent. Our economic theory is effectively silent on why rules or standards would trend, but these results are consistent with the legal literature on rules and standards cited above. That literature points out that specifying rules involves high fixed costs, and the marginal cost of mimicking rules is low.⁹ It may be the case that, in the early years, rules were avoided because of the high costs of specification. In more recent years, as the land trust movement has expanded and as resources for land trusts have grown (e.g., the formation of the LTA with its booklets on how to draft easements), land trusts are able to mimic not only their own language in rules but also the language of other land trusts. In any event the finding that rules appear to be displacing standards over time is inconsistent with our conversations with land trust practitioners, who told us that trusts are moving away from the use of rules.

Third, the use of vetoes, management plans, and third party references have all trended upward. The veto and management plan approach share the common virtue of implementing flexibility in future land use regulation. For example, both leave open ended the question of whether and how a certain land use is regulated. This allows more fluid adaptation to changed circumstance but it seems to aggravate the problem of appraising conservation easements (because it is uncertain what will be permitted and what will be prohibited). The 3rd party

⁸ In particular two court cases in 1995 and 1996 were significant victories for land trusts in that they interpreted silence in favor of the land trust. Including a post-1995 effect in the permitted land use regression does not diminish the significance of the linear time trend and the post-1995 coefficient is positive and significant.

⁹ A prominent conservation easement drafter in Montana, Andy Dana, told us that the vast majority of his time spent drafting conservation easements is spent specifying rules.

validation, and especially the veto, provide for a more complete contract relative to easements relying on qualitative standards.

Preliminary Tests

The economic theory identified the following factors as determinants of the relative use of rules and standards: the inherent non-conservation value of the land, the specificity of the easement purpose, and the asymmetry of the landowner and land trust wealth. Table 5 shows simple tests for conditional correlations between these factors and easement terms. The model is a Poisson but OLS and negative binomial models yield similar results. Columns 2 and 4 control for the number of land uses regulated (i.e. not permitted or prohibited) to account for the maximum possible number of rules and standards.

Starting first with Rules, we see that the corporation variable is negatively correlated with the use of rules and nearly statistically significant. Assuming the corporation variable is a valid indicator for a higher commodity value of the land, this result is consistent with the economic theory. The positive coefficient on easements with specific purposes indicates that rules are more likely when the easement has as specific purpose, for example to protect grizzly bear habitat. Apparently rules allow for more precise regulation of landowner actions that might conflict with the specific goal. The asymmetric wealth variable is negatively related to rules, suggesting that standards, vetoes, or some other alternative is preferred when there is asymmetry. This is consistent with the idea that asymmetry is a substitute for rules in terms of clearly defining property rights.

The Standards results are less often statistically significant and perhaps less meaningful. One possible reason is that standards are often innocuous in terms of their enforcement bite.

Qualitative standards are also very cheap to include in easements. For these reasons, it is not so surprising to find little relationship between the variables and the use of standards.

Finally, Table 6 presents estimates of the correlations between our right-hand side variables and the use of vetoes, management plans and third parties. Column 1 shows that easements with more general purposes are more likely to employ vetoes than easements with specific purposes. This is perhaps because, when the easement is very specific, there are few issues left for later reconsideration. In the second column we see that asymmetric wealth is negatively related to the use of management plans. This may be because management plans serve the function of carefully articulating rules and standards whereas asymmetry in wealth already establishes clear rights without further contracting through management plans. Finally, column 3 shows that third party references are more common for corporate entities than for non-corporate grantors. This is probably because corporate entities in Montana are often involved in intensive commodity production and third party best management practices for these land uses are readily available from public agencies.

To summarize there are empirical correlations that are consistent with the legal literature on rules and standards and the logic of the preliminary economic theory. In the next draft, we hope to refine the analysis by 1) allowing for more flexibility in the time trends; 2) combining quasi rules, rules, building envelopes, and prohibited uses into a more comprehensive measure of ‘rules’; 3) adding variables to control for easement acres, whether the easement was donated or purchased, and the water area within the property by matching our data set with GIS data of Montana conservation easements; 5) finding better proxies for variables like the commodity value of the land and asymmetries in landowner and land trust wealth.

Conclusion

The tradeoffs involved with regulating land uses with rules or standards are especially important in the drafting of conservation easements meant to last for forever. Rules are measurable and therefore enforceable but have the disadvantage of being rigid. Indeed, rules create the problem that Baker (2002) has described as “contracting for A and hoping for B”. By contrast, standards are more difficult to measure and enforce but allow for flexibility in obtaining the ultimate conservation goal. Our preliminary findings are consistent with a theory that assumes that land trusts and landowners weigh these tradeoffs when deciding whether to rely on rules or standards. We also find that land trusts have been creative in devising hybrids of rules and standards (e.g., management plans, third party rules, and building envelopes) and in using vetoes in apparent attempts to capture the benefits offered by rules and standards while minimizing the drawbacks.

This type of adaptation found in conservation easements could be very helpful for other types of environmental contracting such as payments for ecosystem services. Although conservation easements are not contracts, they still require a contracting phase that is similar to other forms of environmental contracting. Also, the provisions laid out in both conservation easements and environmental contracts specify ways land can be utilized or specific outcomes desired and thus can inform each other on language and terms.

The preliminary analysis in the paper informs the literature on contracting for environmental services and it should help easement drafters make more informed decisions, but there is still work to be done. Future research will broaden the data set with more easements and augment it with other data containing GIS information about the characteristics of land held in

easements. One of the ultimate goals is to extend the data set so that it can be used to help identify the terms in easements that increase the risk of future violations and litigation.

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Lists, Tables, and Figures

List 1: Analyzed Land Uses

Farming	Commercial Animals	Domestic Animals	Personal Recreation
Commercial Recreation	Subdivision	Road	Fence
Maintenance	Residential Development	Commercial Development	Non-commercial Timber
Commercial Timber	Agrichemicals	Invasive Plant	Problem Animals
Residential Business	Personal Mining	Commercial Mining	Use/Divert Water
Sever Water Rights	Dumping	Utilities	Mobile Home
Motor Vehicles	Feedlot	Billboards	

Table 1: Summary Statistics of Montana Conservation Easements

Average Draft Year of Easements	1999.5
Average Acreage of Easements	920 acres
Percent Purchased	20.8%
Percent of Out of State Landowners	25.67%

TABLE 2
COMPARISON OF SAMPLE AND POPULATION MEANS

	MEAN FOR STATE OF MONTANA (1595 OBS.)	MEAN FOR SAMPLE (322 OBS.)	T-STAT FOR DIFFERENCE
YEAR	1999.32	1998.90	1.15
ACRES	920.14	996.63	0.36

Note: Only 133 observations for sample acres, and 320 observations for sample year. The out-of-state landowner definition for the sample differs from the definition used for all Montana easements.

TABLE 3
SELECTED SUMMARY STATISTICS FOR SAMPLE

	OBS.	MEAN	ST. DEV.	MIN	MAX
YEAR	320	1998.9	6.51	1976	2010
ACRES	133	996.6	2440.4	3.5	12,963
OUT OF STATE LANDOWNER	322	0.33	0.47	0	1
LANDOWNER IS CORPORATION (=1 IF YES)	321	0.31	0.46	0	1
ASYMMETRIC WEALTH	322	0.35	0.48	0	1
PAGES	319	15.2	5.96	2	90
PURPOSE IS SPECIFIC (=1 IF YES)	322	0.20	0.40	0	1
INCLUDES PURPOSE OTHER THAN OPEN SPACE (=1 IF YES)	322	0.21	0.41	0	1
# OF LAND USES PROHIBITED	321	5.19	2.25	0	13
# OF LAND USES PERMITTED	321	1.60	1.63	0	7
# OF LAND USES SILENT	321	6.97	3.06	1	23
# OF USES REGULATED BY RULES	321	0.81	0.97	0	5
# OF USES REGULATED BY QUASI-RULES	321	1.66	1.02	0	6
# OF USES REGULATED BY STANDARDS	321	9.96	3.09	0	17
# OF USES REGULATED BY MIX	321	2.25	1.64	0	7
# OF USES REGULATED BY VETOES	321	3.21	1.64	0	9
# OF USES REGULATED BY MNGMT. PLANS	321	0.94	1.02	0	4
# OF USES REGULATED BY 3 RD PARTY	321	1.29	1.27	0	5

TABLE 4
LINEAR TIME TRENDS IN OUTCOME VARIABLES

	PAGES	PROHIBITED	PERMITTED	SILENT	RULES	QUASI RULES	STANDARDS	VETOES	MNGT PLANS	3 RD PARTY
<i>PANEL A: OLS</i>										
(1) LINEAR YEAR TREND	0.101* (1.98)	-0.040* (2.08)	0.083** (6.28)	-0.006 (0.25)	0.027** (3.26)	0.011 (1.33)	-0.032 (1.21)	0.031* (1.96)	0.031** (3.66)	0.019 (1.82)
(2) TREND + TRUST FIXED EFF.	0.885 (1.64)	-0.035 (1.92)	0.097** (7.70)	0.004 (0.15)	0.023** (2.67)	0.006 (0.70)	-0.063** (2.60)	0.030 (1.88)	0.023** (2.68)	0.019 (1.63)
<i>PANEL B: POISSON</i>										
(3) LINEAR YEAR TREND	0.007** (3.00)	-0.007* (2.04)	0.062** (7.65)	-0.001 (0.29)	0.037** (3.47)	0.007 (1.03)	-0.003 (1.18)	0.010* (1.99)	0.037** (3.77)	0.016* (2.02)
(4) TREND + TRUST FIXED EFF.	0.006* (2.40)	-0.006 (1.62)	0.073** (8.32)	0.0005 (0.15)	0.032** (2.76)	0.004 (0.52)	-0.006* (2.14)	0.010 (1.84)	0.028** (2.68)	0.015 (1.77)

Notes: t-statistics are in parentheses. ** denotes significant at $p < 0.01$ for a two-tailed test; *denotes significant at $p < 0.05$ for a two-tailed test.

TABLE 5
POISSON REGRESSIONS OF RULES AND STANDARDS

	RULES (1)	RULES (2)	STANDARDS (3)	STANDARDS (4)
LINEAR YEAR TREND	0.034** (2.97)	0.029* (2.53)	-0.006* (2.21)	-0.007* (2.49)
CORPORATION	-0.177 (1.19)	-0.254 (1.70)	-0.009 (0.23)	-0.019 (0.46)
PURPOSE IS SPECIFIC	0.614** (2.88)	0.428 (1.92)	-0.105 (1.48)	-0.127 (1.78)
PURPOSE OTHER THAN OS	-0.214 (0.81)	-0.181 (0.66)	0.081 (1.03)	0.088 (1.12)
ASYMMETRIC WEALTH	-0.462** (2.97)	-0.395* (2.53)	-0.003 (0.07)	0.0003 (0.01)
# USES REGULATED	NO	YES	NO	YES
TRUST EFFECTS	YES	YES	YES	YES
CONSTANT	-1.07 (1.92)	0.217 (0.36)	2.37 (13.23)	2.545 (13.17)
OBSERVATIONS	320	320	320	320
LR χ^2	72.02	95.53	129.24	134.92

Notes: z-statistics are in parentheses. ** denotes significant at $p < 0.01$ for a two-tailed test; *denotes significant at $p < 0.05$ for a two-tailed test.

TABLE 6
POISSON REGRESSIONS OF SUBSTITUTES FOR RULES AND STANDARDS

	VETOES (1)	PLANS (2)	THIRD (3)
LINEAR YEAR TREND	0.007 (1.31)	0.027* (2.53)	0.008 (0.91)
CORPORATION	0.118 (1.68)	0.119 (0.89)	0.257* (2.42)
PURPOSE IS SPECIFIC	-0.391* (2.90)	0.297 (1.47)	-0.232 (1.11)
PURPOSE OTHER THAN OS	-0.007 (0.05)	0.088 (0.40)	-0.032 (0.14)
ASYMMETRIC WEALTH	0.125 (1.72)	-0.318* (2.10)	-0.152 (1.33)
# USES REGULATED	YES	YES	YES
TRUST EFFECTS	YES	YES	YES
CONSTANT	2.42 (1.92)	0.120 (0.21)	1.99 (5.78)
OBSERVATIONS	320	320	320
LR χ^2	136.07	82.61	133.47

Notes: z-statistics are in parentheses. ** denotes significant at $p < 0.01$ for a two-tailed test; *denotes significant at $p < 0.05$ for a two-tailed test.

Figure 1: First-Best Easement

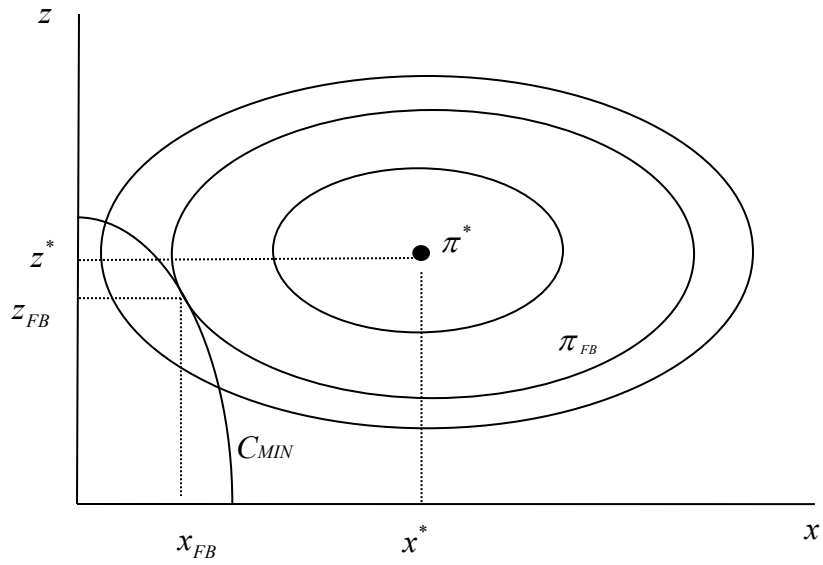


Figure 2: Easement with Rule at First-Best Action x

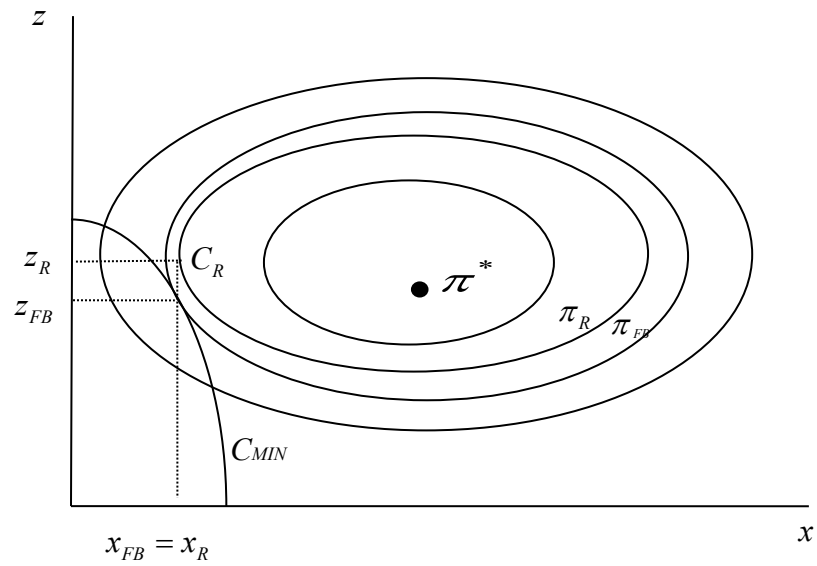


Figure 3: Easement with Rule set to Achieve Conservation Goal

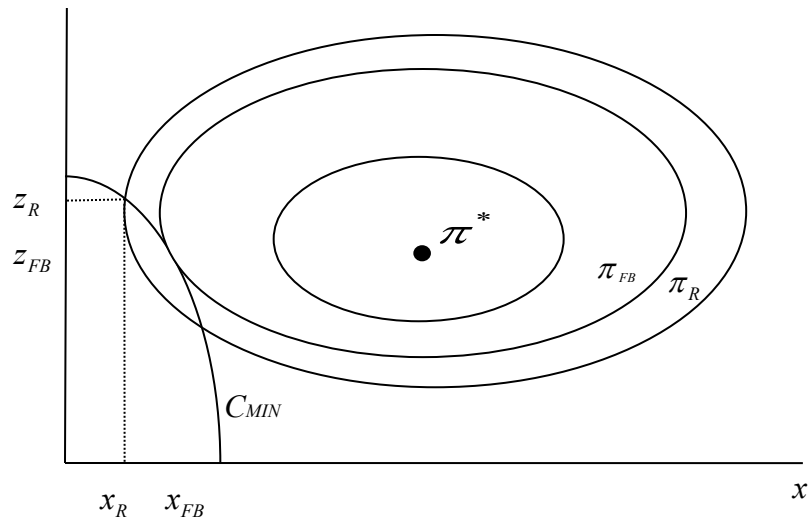


Figure 4: Special Case in which Rule Yields First Best Outcome

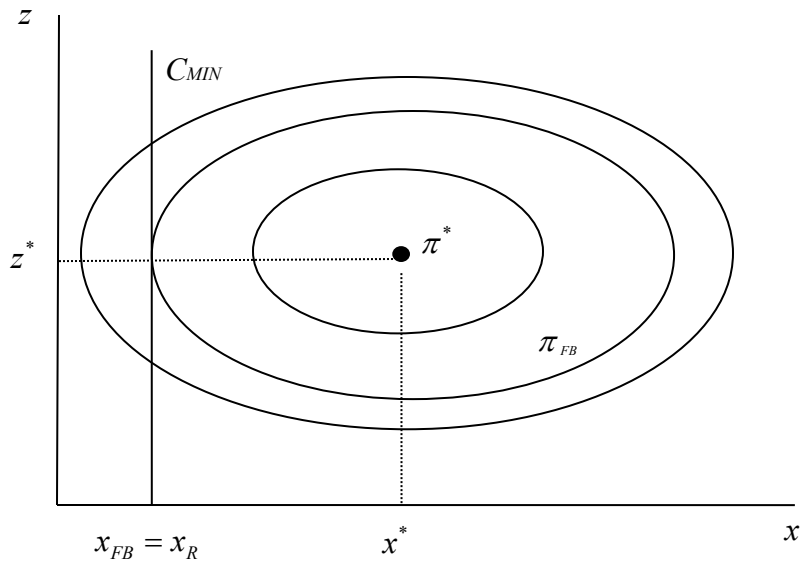


Figure 5: Easement with Qualitative Standard

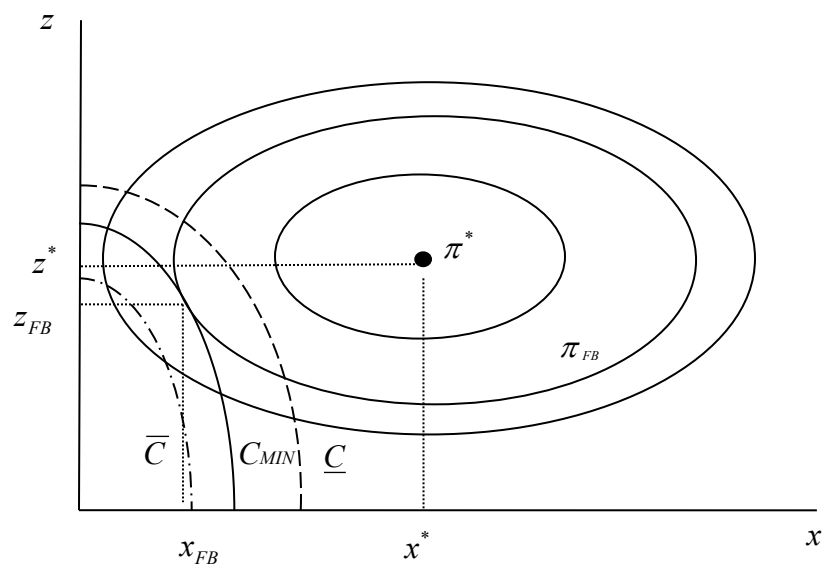
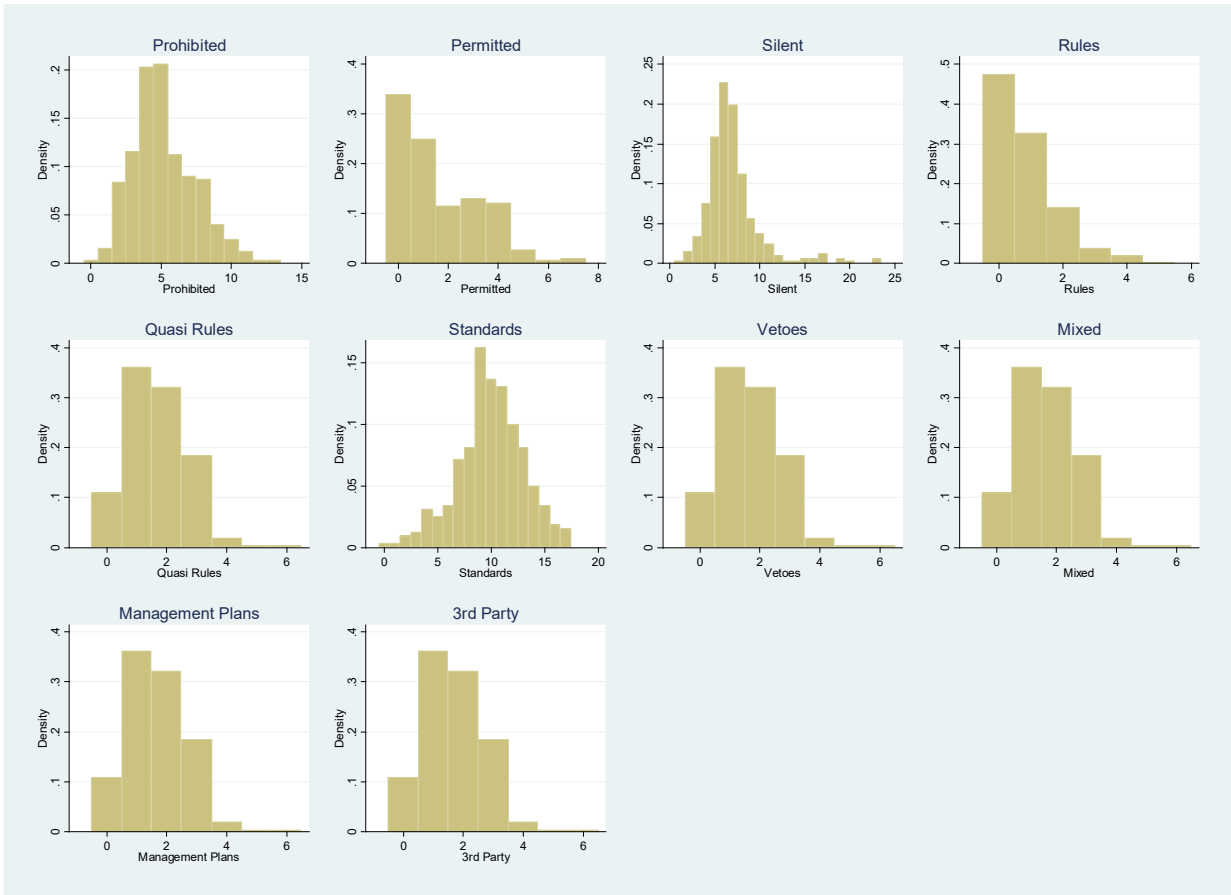


Figure 6

Histograms of Land Use Aggregates



Appendix: Detailed Coding Scheme

Basic Information Pertaining to the Easement

Before any analysis and coding begins, the conservation easement must first be renamed. Each land trust was given a three-digit code that is listed in the easement folder, and then each easement is assigned a three-digit number starting with 001. So for example, the first easement coded for The Nature Conservancy was renamed TNC001. This easement id is found in Column A of the Easement Data Sheet. This enables someone looking at the folder containing conservation easements to quickly know both which ones have already been coded as well as easily finding a specific easement from the database.

This unique easement id is separate from the actual holder of the easement, located in Column B. The three digit id number stems from which folder the easement is contained in (as supplied by the Department of Revenue), whereas the holder of the easement comes from the text of the easement itself. This is important to note because some easements have been transferred to another land trust, and are currently contained in one folder while the original holder on the easement is another land trust.

The next important information to extract from the easement is the year the easement was drafted, the county in which the property is located, the total acreage under the easement, and the length of the easement. Some easements are located in multiple counties, so both Column D and E are used. Also, easements must be filed in the county they are located so if an easement is located in multiple counties one of them must be deleted from the easement folder so as to remove duplicate information. When examining the year, Column C is for the original year of drafting, not for any subsequent amendments. Amendment years are recorded in Column V and

then the information concerning the terms of the amendment is entered into the separate tab labeled “Amendments.” The total acres under the easement are entered into Column F, which includes any additional land added after the initial drafting via an amendment or modification. The length of the easement is recorded both in pages in Column G and when possible word count in Column H (if not in pdf form). When recording both pages and words, the only relevant portions are the boilerplate terms and both prohibited and permitted uses, as they are often contained in separate exhibits after the document. For example, some easements contain information like baseline data that is not recorded as part of the actual length of the easement. Nor are pages that contain only parties’ signatures.

The last bit of basic information concerning the easement is pertaining to who owns the property upon which the easement is being placed. First, if the donor is a private landowner a ‘0’ is placed in Column N, whereas if the owner is a corporation or group a ‘1’ is entered. If the donor is a private landowner, his or her name is entered into Column I, with any second landowner’s name entered into Column J. The landowner’s home state and city are then placed in Columns K and L, respectively. If the owner is a corporation or group then that name is entered into Column O and the state of incorporation entered into Column P. Likewise, if the donor is a city or county, a ‘1’ is entered into Column M and the name of the city or county is entered into Column I.

The purpose is one of the most important provisions within an easement, if not the most important. Therefore, it is important to note exactly for what purpose the easement was intended. Montana law allows for five general purposes for a conservation easement: outdoor recreation and education for the public (E); wildlife protection (W); open space and natural land (O); scenic enjoyment (C); and working forest (F). Each purpose given in a particular easement is entered

into Columns Q, R, and S with the letters in parentheses after each type of general purpose. For example, suppose an easement was for wildlife protection and open space and natural land. That particular easement would be coded with an 'W' in Column Q and an 'O' in Column R, with Column S left blank as there is no third purpose. Some easements also specify a more particular purpose for the easement than the five general purposes allowed by Montana law. An example of this could be an easement that was donated for wildlife protection, but went on to further state it is intended to protect the grizzly bear habitat on the property. In circumstances such as this, a '1' is entered into Column T along with a short description of what the specific purpose of the easement is. This is important to note because a specific purpose can override any conflicting provisions within an easement more effectively than a general purpose can.

The last remaining basic information concerning an easement relates to public use, mediation or arbitration, extinguishment, and assignment. A '1' is entered if the easement allows for public use or access, a '0' if it does not, and an 'H' if the easement is silent on whether the public is allowed to use the property, that is there is no reference to public access in the document. If the easement specifies mediation or arbitration as a preliminary step in conflict resolution before litigation, then a '1' is entered into Column W and a '0' if not specified. This is important to note because it shows whether there is a trend over time for favoring alternative dispute resolutions to avoid costly and needless litigation. If the easement specifies the manner and method of possible forms of extinguishment, then a '1' is entered into Column X and a '0' if it is silent. Easements typically also allow for assignment of the easement from one land trust to another in limited situations. The method of assignment is entered into Column Y for whether it restricts holder from being the government (G); specifies a particular land trust for which to assign (enter name of specified land trust); defers naming organization but requires mutual

agreement (D); defers naming organization but the landowner's consent is not required (U); or is silent on assignment (H).

Specified Provisions within the Easement

This database codes for 27 particular land uses commonly found in conservation easements¹⁰. The same variables are used for each land use. These variables are broken down into four categories: uses, content, communication, and miscellaneous. Each of these categories is discussed in more detail below. Any of the 27 provisions within an easement can have any combination of the different variables, but they are always entered in the order of use, content, communication, and miscellaneous for the sake of consistency.

The four uses are permitted (K), regulated (L), prohibited (X), and silent (H). Permitted and prohibited uses are either freely allowed or entirely disallowed. An example of a permitted use is “the right to raise livestock on the property” and an example of a prohibited use is “no billboards are permitted on the property.” Not every land use is mentioned in each easement, so if the provision is not included in the easement an ‘H’ is used to signify the easement is silent. Permitted, prohibited, and silent provisions are used entirely alone and include no other variables. The only use allowed with other variables is if the land use is regulated within the document. A land use is regulated if it is specified in multiple locations within the easement (roads specified both in prohibited and permitted uses of the property), states that the use is “prohibited except where permitted,” there are varying and different rules or standards within a particular land use, allows for some uses within that category (“maintain or repair fences but not

¹⁰ The 27 land uses are specified in the table below.

construct new ones”), or there are explicit limitations to the particular use (“limited only to grantor and heirs” or “new roads can be constructed only if new residences are built”).

The most important variables for purposes of this project are content. The four variables for content are rule (R), standard (S), quasi-rule (Q), and mixed (M). Rules and standards are given their ordinary meaning given by the legal literature, discussed above. Rules are coded for when reasonable minds could not differ on the meaning of the provision. Examples of when to use a rule include exhaustive lists (“right to keep dogs, cats, and horses for personal use”), defined size limits (“grantor may build a house no larger than 2000 square feet”), and specified amounts (“grantor may keep up to 50 cattle on the property”). Standards are recorded when reasonable minds could differ on the meaning of the provision. By nature standards are harder to define, but there are general things to look for. Examples of when to code for a standard are if something within the provision must be “reasonable,” involves something on a “regular” or “temporary” basis, or must not “adversely impact the quality of the environment.” Quasi-rule is when a term comes close to the specificity of a rule, but still leaves room for interpretation. This includes non-exhaustive lists (“permitted uses included, but are not limited to...”) or terms that do not have a concrete meaning (“simple tools”). The use of a quasi-rule for anything besides a non-exhaustive list is very rare. A mixed use is a combination of both a rule and a standard within a particular provision.

Also coded is whether the provision requires communication between the landowner and the land trust. This communication can be through notice (N), reasonable approval (A), or discretionary veto (V). This will determine who has final decision-making and whether this correlates to bargaining power. Notice is when the landowner merely has to inform the land trust that a specified action is about to take place (“grantor may build new roads so long as notice is

given to the grantee before construction”). Discretionary veto is used when the land trust has final authority over whether a specified action can occur or mutual agreement is required (“grantor can harvest timber for commercial purposes subject to prior approval by the grantee” or “grantor can construct a new residence and the location chosen by mutual agreement with grantee”). Reasonable approval is similar to discretionary veto in that it gives final authority to the land trust, but adds the element of requiring the use must not be unreasonably denied (“grantor can build new structures necessary for farming subject to prior approval by the grantee, but that approval must not be unreasonably denied”).

The final group of variables is the miscellaneous category. These include building envelope (B), management plan (P), and appeal to third party (3). A building envelope is any description of where new buildings can be constructed. For example, an easement may give specific parameters of the only locations for new construction or simply say new construction may be build within a building envelope to be decided at a later date with approval of the grantee. A management plan is most often used for timber, but is also sometimes used in conjunction with new road construction, farming, and ranching. This requires a landowner to submit a plan to the land trust for approval to state what actions may be taken for a specified amount of time. A management plan allows for more flexibility than simply stating something in the easement because circumstances for uses such as timber harvest and agriculture can change over time, and a management plan can be redrafted every ten years for example to account for these changes. Though, the requirements of the management plan must always satisfy the purpose of the easement and not conflict with any other provision located within the terms of the easement. An appeal to third party can happen in one of three ways: reference to third party rights on the property such as mineral rights; stating an action must be performed by a third party

(“grantor must submit a timber harvest plan prepared by a forestry professional”); or reference to a third party rule (“grantor may harvest timber subject to U.S. Forest Service guidelines, practices, and regulations”). The third party rule is especially important because it is a sort of hybrid of the benefits of both rules and standards. It allows for the specificity of a rule by pointing to an outside source that can always be appealed to. If litigation were to happen a representative of the third party agency could testify as to what the rule is intended to mean and how it should be applied in that instance. In contrast, the third party rule also has the flexibility of a standard in that it can be altered over time unlike a rule specified in the easement itself. Presumably the third party agency can alter their rules or guidelines as circumstances dictate and thus allow for changing norms, practices, technology, or ecosystems.

27 Coded Land Uses

Farm	Right to farm
Coman	Right to animals for commercial purposes
Water	Right to use water resources including altering/installing water courses/basins
Rec	Right to hunting, fishing, and general recreation including camping, off-road vehicles, trails, etc. for recreational purposes
Comrec	Right to hunting, fishing, and general recreation including camping, off-road vehicles, trails, etc. for commercial purposes
Maint	Right to maintain current structures and build new accessory structures and appurtenant utilities
Resdev	Right to Residential Development Rights/New Residences
Comdev	Right to Commercial/Industrial/Recreational Development
Chems	Right to use agrichemicals
Nc-timber	Right to cut down timber for non-commercial purposes
Com-timber	Right to cut down timber for commercial purposes
Invplant	Right to plant non-native species
Subdiv	Right to subdivide land
Fence	Right to build, maintain, and repair fences
Road	Right to build, maintain, and repair roads.
Proban	Right to control problem or predatory animals
Resbiz	Right to conduct residential business
Mining	Right to Subsurface Mining Rights for non-commercial purposes
Commin	Right to Subsurface Mining Rights for commercial purposes
Feedlot	Right to maintain and use a feedlot
Bboards	Right to allow billboards
Dumping	Right to dump trash, waste, etc. on property
Utilities	Right to allow non-appurtenant utilities along land
Mobhome	Right to allow mobile homes, trailers, and similar structures.
Motveh	Right to use motorized vehicles for off-road purposes
Waterright	Right to sever or alter water rights
Doman	Right to domestic animals

TABLE A
PROPORTION OF LAND USES REGULATED BY RULES AND STANDARDS

	RULES	AREA ENVELOPES	QUASI- RULES	STANDARDS
FARMING	0.012	0.003	0.000	0.429
COMMERCIAL ANIMALS	0.019	0.000	0.012	0.477
WATER RESOURCES	0.003	0.003	0.763	0.894
PERSONAL RECREATION	0.025	0.000	0.018	0.208
COMMERCIAL RECREATION	0.049	0.003	0.012	0.090
FACILITY MAINTENANCE	0.015	0.267	0.237	0.453
RESIDENTIAL DEVELOPMENT	0.202	0.486	0.021	0.018
COMMERCIAL DEVELOPMENT	0.014	0.053	0.021	0.651
PESTICIDE OR AG-CHEMICAL USE	0.000	0.000	0.371	0.427
NON-COMMERCIAL TIMBER HARVEST	0.009	0.000	0.021	0.626
COMMERCIAL TIMBER HARVEST	0.009	0.000	0.003	0.348
PLANTING NON-NATIVE SPECIES	0.006	0.047	0.000	0.555
SUBDIVISION	0.287	0.003	0.000	0.018
FENCING	0.012	0.000	0.112	0.346
ROADS	0.012	0.003	0.003	0.828
CONTROL OF PROBLEM ANIMALS	0.012	0.000	0.006	0.037
RESIDENTIAL BUSINESSES	0.009	0.006	0.015	0.377
NON-COMMERCIAL MINING	0.047	0.000	0.003	0.367
COMMERCIAL MINING	0.000	0.000	0.000	0.292
FEED LOTS	0.003	0.000	0.000	0.000
BILLBOARDS	0.003	0.000	0.000	0.028
DUMPING FOR TRASH	0.000	0.000	0.012	0.854
UTILITIES	0.012	0.003	0.009	0.573
MOBILE HOMES	0.201	0.374	0.000	0.613
OFF ROAD VEHICLES	0.000	0.003	0.016	0.342
WATER RIGHTS	0.003	0.000	0.000	0.037
PETS AND DOMESTIC ANIMALS	0.021	0.000	0.003	0.062