Using Rights of First Refusal for Farmland Retention

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Abstract

How can rights of first refusal protect prime agricultural land? This paper develops a model for ex ante valuation of rights of first refusal based on differences in the value of a particular property, and likelihood of time of sale A procedure is outlined for governments to use these rights to prevent conversion.

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This paper establishes a set of conditions under which rights of first refusal (ROFR) have ex ante value and then applies the conceptual model to situations in which the government may use ROFR to achieve farmland preservation goals. Black's Law Dictionary defines ROFR as the "right to meet terms of proposed contract before it is executed" (Nolan 1990). Unlike options in which the right holder (buyer) triggers the transaction, ROFR are conditional only on the seller's decision to market the good. ROFR also differ from options in that they do not require a specified time period in which they can be exercised (Wheat 1987). ROFR take many different contractual forms and may merely be one of many terms of agreement. Importantly, ROFR do not have to be officially recorded, and so potential buyers of a good may not know there is an encumbrance until after an offer is made.

The Evidence on the Value of Rights of First Refusal

The simple fact that a market for these rights exists in the real world suggests that they have ex ante value. For instance, a survey of case law in Delaware suggests that numerous real estate litigations involve ROFR. State courts, however, have faced difficulties in distinguishing ROFR from options (Wheat 1987). Nevertheless, courts often find that ROFR have value, legally, in that ROFR with unspecified length of terms are ruled invalid, violating the "law against perpetuities" by permanently encumbering fee-simple land, see Stuart Kingston, Inc. v. Robinson, 596 A.2d 1378 (1991). Other real-world applications suggest ROFR have ex ante value. ROFR have been recommended as a tool for land conservation (Information Center for the Environment

2001, for example). In addition, real estate scholars accept as fact that ROFR have value (see Blumenfeld and Rowe 2000).

Given that existing markets and noneconomists treat ROFR as though they have value, it is rather surprising that economists have yet to develop a theory explaining the ex ante value of ROFR. The only two economic approaches to date have assumed that ROFR have ex ante value, and then derived implications based on this assumption (Walker 1999, Kahan 1999). Kahan (1999) develops a game-theoretic model to show that ex post value derives from reducing the incentives for costly strategic bargaining. Kahan (1999) also shows that this value varies directly with transaction costs, is not affected by imperfect information by a right holder, and is affected by imperfect information by a third party. Using a different approach, Walker (1999) finds the main source of ex post value to arise from the way that ROFR discourage third-party buyers from making offers, which in turn decreases demand. Because this tends to reduce the price the right holder will eventually be asked to match, sellers require compensation. Walker (1999) also criticizes traditional legal explanations for ROFR value: (1) a way to avoid costly breakdown in bargaining and (2) a way to prevent sale to an undesirable party. The economic conditions that would inspire a potential buyer to purchase an ROFR at an indefinite time before a property is to be sold (if the property is ever sold) have not yet been examined in the literature. This paper investigates the emergence of ROFR by explaining ex ante value. The second section builds the theory and the final section interprets the results in terms of public policy for farmland preservation.

An Economic Model of ROFR Value

To begin we establish the ex post valuation of ROFR.[2] We introduce the case where there is no ROFR on the property sold. A certain piece of property comes on the market at some time T, which the owner must sell; that is, he must accept the highest bid. Consider a large number of bidders, represented by two buyers, R, whose value for the property at the time of sale is $V_R(T)$, and B, whose value $V_B(T)$ is the maximum of the values of all other bidders except for R. If $V_R(T) \geq V_B(T)$, bidder R purchases the property at price $V_R(T)$. if $V_R(T) < V_B(T)$, then bidder B buys the property at price $V_B(T)$. Now assume that bidder R holds an ROFR on the property. Bidder R does not make a bid, but rather will purchase the property at price $V_B(T)$ if $V_R(T) \geq V_B(T)$, with bidder B purchasing the property if $V_R(T) < V_B(T)$. Thus, the ROFR has value to bidder R if $V_R(T)$ is greater than $V_B(T)$ plus the present value (at the time of sale) of the cost of the ROFR. Thus, for the ROFR to hold economic value, $V_R(T) \geq V_B(T) + p_R e^{\delta T}$, where p_R is the price paid for the ROFR and δ is the rightholder's discount rate. So, at the time of sale, the value of the ROFR is:

$$p_R < [V_R(T) - V_B(T)] e^{-\delta T}. \tag{1}$$

We now turn our attention the *ex ante* valuation of ROFR. Rather than consider the price already paid for the ROFR, we measure the value of the ROFR at time $T = 0$ on a property that is to be sold at some time $T > 0$ as an upper bound on a price an interested party would be willing to pay. We denote this value as w_R. Bidder R will not accept any price greater than w_R for the ROFR. Since at the time the ROFR is purchased it is not known with certainty when the time of sale will occur, T is a random variable with

[2] In our model of ROFR valuation, we do not suggest any specific market clearing mechanism, nor do we assume that other potential bidder's valuations for the property will be influenced by the existence of the ROFR.

probability density function f(t), and thus the quantity on the right-hand side of Equation 1 is also a random variable. The present value of the ROFR to the purchaser is the expected discounted present value of the difference between the purchaser's value and the value of the highest bidder besides the purchaser, that is

$$w_R = \int_0^{\infty} [V_R(t) - V_B(t)] f(t)\ e^{-dt}\, dt\,. \tag{2}$$

To show how the value of the ROFR is influenced by the knowledge bidder R has about the different factors, we consider some illustrative cases.

Case 1: Bidder R value constant, bidder B value uncertain and time-invariant, time of sale distribution uniform.

The value bidder B has for the property is an important, yet unknown factor in bidder R's valuation of the ROFR. This case where the potential buyer of ROFR has perfect information regarding her own value, but limited information about competitors likely values or the sales time of the property. Describe bidder R's knowledge of bidder B's value for the property as uniformly distributed on the interval $[V_0, (1+\alpha)V_R]$, where V_0 can be thought of as an estimate of the seller's reservation price, or some other value that places a lower bound on the estimate of bidder B's likely value. Parameter α defines the likely upper bound of bidder B's bid relative to the value of bidder R. Assuming that the time of sale is uniformly distributed on $[T_0, T_0+T^*]$, substituting into Equation 2 yields:

$$w_R = \frac{1}{T^*} \int_{T_0}^{T_0+T^*} [V_R - \overline{V}_B]\, e^{-dt}\, dt \tag{3}$$

where $\overline{V}_B$, the expected value of V_B, is $((1+\alpha)V_R + V_0)/2$. Simplifying this expression gives the value of the ROFR to bidder R

$$w_R = \frac{e^{-\delta T_0}\left(1 - e^{-\delta T^*}\right)}{\delta T^*}\left[\left(\frac{1-\alpha}{2}\right)V_R - \frac{V_0}{2}\right] \tag{4}$$

As expected, ROFR has greater value when T_0 is small (sale of the property will occur sooner, rather than later) and when T* is of short duration (less uncertainty about when the sale of the property will occur). Also, ROFR has positive value only when the term in brackets is greater than zero, or when the following inequality holds

$$V_R \geq \frac{1}{1-\alpha}V_0 \tag{5}$$

Bidder R has absolute certainty that her value for the property will be greater than that of bidder B if α is equal to (or less than) zero. Since $V_R > V_0$, levels of α slightly greater than zero will lead to satisfaction of the inequality. For α between zero and one, bidder R's confidence declines in the degree to which her value will be higher than that of bidder B. There is a critical level of α where the expected value for bidder B will be equal to that of bidder R. This critical level is $1 - V_0/V_R$. When α exceeds this level, the expected bid of bidder B will be greater than that of bidder R, and the ROFR will have no value to bidder R. Thus we find that ROFR has less value to bidder R the greater the uncertainty in knowledge of competitor's likely bid.

Case 2: Bidder R value constant, bidder B value increasing and certain

In this situation, it is assumed that $V_R(0) > V_B(0)$, and $V_B(T) = (1+\beta t)V_B(0)$, with $\beta > 0$. The only unknown factor is the time of sale. At some time T_R, the values of R and

B will be equal, with the B's value for the property exceeding that of R at times later than T_R. This relationship between the values of the bidders is represented in Figure 1. Clearly, ROFR only has value to bidder R if the sale takes place before T_R, whereas it will have value to bidder B if it takes place after T_R.[3] The time T_R is defined by

$$T_R = \frac{V_R - V_B(0)}{bV_B(0)} \tag{6}$$

If the initial value of bidder R is sufficiently close to that of bidder B or the rate of increase in bidder B's valuation is large enough, then T_R will be in the not-too-distant future. Consequently, in addition to the relative valuations of the two bidders, prior knowledge about the likely sale of the property is of paramount importance. Since it is assumed that bidder R knows T_R *a priori*, the valuation must take this into account. After time T_R bidder R will not exercise the ROFR or, if the ROFR is transferable, sell the ROFR to bidder B (who would subsequently base his own valuation for the ROFR on his own value for the property and that of another bidder). The shaded area in Figure 1 represents the expected gain to bidder R if the property is sold before time T_R. Therefore, it is necessary to apply Equation 2 conditioned on the likelihood that T will occur before T_R, which gives

$$\mathrm{w_R} = \mathrm{P(T \le T_R)} \int_0^{T_R} [\mathrm{V_R} - \mathrm{V_B(t)}]\mathrm{f(t)}\ \mathrm{e}^{-dt}\, dt \tag{7}$$

For a uniform distribution for sales time, the value of ROFR is

$$w_R = \left(V_R - V_B(0)\right)\frac{1}{dT^*} - bV_B(0)\left(\frac{1 - e^{-dT_R}}{d^2 T^*}\right) \tag{8}$$

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[3] This feature implies that ROFR has ex ante value to bidder B if he believes that sales time is likely to occur later than T_R.

The first term on the right hand side of Equation 8 reflects the importance of the initial difference in bidder's values, with the second term adjusting for the rate at which bidder B's value changes over time. The more rapidly the value of bidder B is expected to increase over time, the lower the value of the ROFR to bidder R. Large initial spreads in the property value contribute to a higher valuation.

Uniform likelihood implies maximum uncertainty of the sales time. Information regarding the distribution of sales time would affect bidders R's *ex ante* value of the ROFR. An expectation that the property is likely to be sold before T_R is likely to increase bidder R's valuation, whereas the opposite expectation is likely to lead to a reduction in valuation. Note that any non-zero probability of sale before T_R will lead to a positive value for ROFR under the property value assumptions outlined in case 2.

To demonstrate how the distributional assumption on sales time affects the value of an ROFR, sales time is modeled using uniform, exponential and lognormal distributions. The parameters for each distribution were chosen so that the value of $P(T \leq T_R)$ are equal for each case so that this does not affect the valuation. Exact solutions are obtained for the uniform and exponential distributions. Under the lognormal distribution, the value is solved for using Monte Carlo simulation. Table 1 shows how the valuations change under the different distributions. The more likely the sale of the property is to occur closely to the sale of the ROFR, the greater the value. The more likely the sale is to occur in the future decreases the willingness to pay for ROFR by bidder R.

T_R	$P(T\leq T_R)$	$f(t)$	w_R

5	0.25	U(0,20)	21.3
		Exponential(17.4)	22.5
		Lognormal(7.7, 3.85)	8.1
10	0.5	U(0,20)	36.8
		Exponential(14.5)	42.2
		Lognormal(11.2, 5.6)	16.0

Table 1: ROFR values under different sales time distributions. (V_R = 1000, V_R/ V_B(0) = 1.25, d =0.1)

In summary, the value a potential buyer of a property places on an ROFR on that property is a function of not only the her own assessment of the value of the property, but of judgments relating to the additional buyer's valuations and the time at which the property will come on the market. Improved information in the form of reduced uncertainty on these factors will help the buyer to make a better valuation. The model we have presented for valuing ROFR has few institutional or behavioral constraints. It is likely that modifications to the model that explicitly consider such issues will affect the value placed on an ROFR.

Application

We are interested in how ROFR can be used to protect prime agricultural land. It has been shown that there is value to holding ROFR if the holder has a higher value for a property than any likely competing purchaser.

Governments (and private organizations dedicated to preserving natural areas) may use the ROFR market to achieve farmland retention goals. ROFRs could be obtained through eminent domain or as a condition for receiving a governmental benefit, like use-value assessment. Governments that buy parcels in this way can resell to farmers with a severed development right, i.e., a “salvage value”. Such a mechanism ought to be the most cost-effective land-preservation tool if the desired policy goal is defined as prevented conversions. This is because government intervention occurs only when the conversion decision is made.

Conclusion

This paper develops a model which explains the ex ante value of ROFR and which corresponds to actual behavior arising in law and markets. The model shows the way in which a right holders' value is affected by the uncertainty associated with other buyers' values and the time of sale. Results also suggest how buyers make ex ante decisions about purchasing ROFR and the effects of ROFR on the behavior of buyers at the time of sale. The policy application discussed how governments might use the power of eminent domain to secure ROFR on agricultural and environmentally sensitive land. The model helps value these rights for compensation under the eminent domain clauses of state and federal constitutions. Public securing of ROFR may be a less expensive way to protect these lands, which generates positive externalities, since large expenditures are only required at the time the land is actually threatened with conversion – not in anticipation of such harms.

An implication of this work arises from the social efficiency effects of ROFR for land. Without formal empirical work, we can only speculate that there are social inefficiencies associated with ROFRs and the market for developable land. For instance, in many locations experiencing development pressure, developable-land markets are dominated by a few developers and characterized by oligopsony and speculation. ROFR also may introduce an unnecessary information asymmetry into the land market, which may promote rent-seeking in the form of the advance purchase of market share. Moreover, ROFR may even be a negative-sum game among developers because they are forced to purchase market share in a advance or exit. Exit, in turn, intensifies the effect of oligopsony. Although ROFR may be privately optimal contracts between right holder and seller, ROFR may sustain and exacerbate the aforementioned market imperfections. Undoubtedly, ROFR allow for the exploitation of naive landowners by savvy developers. Taken as a whole, the social efficiency outcomes within the developable-land market may be improved with more formal public participation. As discussed in the policy application section, a first step is to introduce the government as a buyer of ROFR for land conservation purposes. A second step may be to disseminate more widely information about the existence of ROFR. An easy way to implement this is to require ROFR to be recorded and made available to the public if they are to be enforced.

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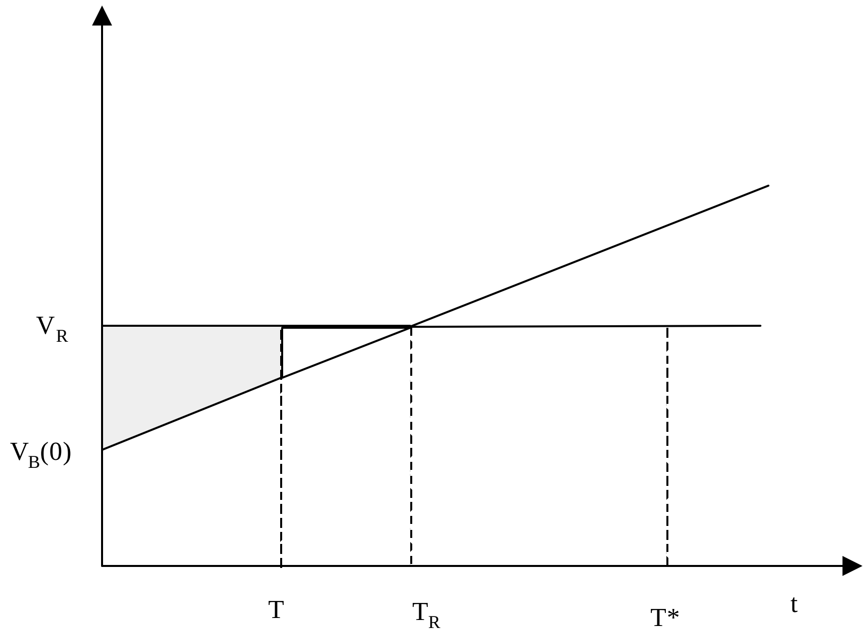

Figure 1: Increasing values for bidder B