APPENDIX D

Pilot Forest Landowner Survey

Sergey S. Rabotyagov[1]

Pilot Forest Landowner Survey Results

Abstract

A forest is a source of important ecosystem services with the total economic value which might exceed the private value associated with conversion of forest land to non-forest uses. Thus, compensating forest landowners for keeping their land in forest uses and for managing their forests for ecosystem services can be sound economic policy. We estimate the "supply curve" for working forest retention and ecosystem service-enhancing forest management. The public, and/or conservation organizations would have to specify the terms of the "demand curve" reflecting the public values attached to preventing forest conversion. Results are consistent with existing economic theory and empirical evidence of forest landowner program participation: landowners prefer larger per acre annual incentive payments, they prefer to commit to shorter contract duration, and they require extra compensation to engage in ecosystem production-enhancing forest management. The value of development option (however far removed into the future) is confirmed: landowners strongly dislike permanent conservation easement programs. Landowners concerned about the development pressure on their forestland appear more willing to participate in forest preservation programs. We do not expect these findings to change when the comprehensive survey results become available.

Introduction

A forest, even when managed for timber revenues, is a source of important ecosystem services with the total economic value which might exceed the private value associated with conversion of forest land to non-forest uses (e.g., residential development). In particular, certain forest management practices have been demonstrated to enhance the production of ecosystem services. Finally, many forest landowners might have a strong stewardship ethic and, thus, might be willing to forego some of the benefits of forestland conversion in order to ensure that their land remains a functioning forest. Thus, it is important to investigate the incentives which can be provided to small forest landowners in order for them to keep their land in forest use and potentially enhance the production of ecosystem services from their land.

Economic theory provides strong justification for rewarding those activities which carry with them a public benefit. Thus, compensating forest landowners for keeping their land in forest uses and for managing their forests for ecosystem services can be sound economic policy. However, the compensation ought to be administered in a cost-efficient way: the landowner should be given just the minimum amount that he or she is willing to accept: providing a higher incentive is wasteful both in terms of use of conservation funds and in terms of foregoing ecosystem service production elsewhere.

For example, if a landowner is concerned only with monetary return from his or her land and is choosing between forest use and development, the amount needed to compensate a landowner for

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giving up the development option is the difference between the developed value of the land and the forest value of the land. Irreversibility of development also gives rise to an option value which ought to be a part of compensation.

In any case, the compensation necessary to induce a profit-maximizing landowner to keep land in forest uses can be estimated using available data on forest productivity, developed land values, interest rates, and so on. No survey (stated preference data) would be needed, and the necessary incentives could be computed based on market (revealed preference) data. However, such calculations may be seriously biased for two main reasons. First, the value that forest landowners place on the development option would be very difficult to observe from available data, and would require strong assumptions on the discount rates and beliefs about the future value of land and forest outputs. There is strong anecdotal evidence that landowners dislike abandoning the option to develop in perpetuity (behavior observed in other contexts by Capozza and Sick, 1991). Second, many landowners are not profit-maximizers, but instead, might place significant value on knowing that they are good stewards of the land and/or on their identity as forest landowners. This value would emerge as a willingness to accept less compensation that a purely financial analysis would indicate. Since this is private information which is not readily available in the market, a survey method is appropriate.[2]

In essence, we are trying to get an estimate of the "supply curve" for working forest retention and ecosystem service-enhancing forest management. The public, and/or conservation organizations would have to specify the terms of the "demand curve" reflecting the public values attached to preventing forest conversion.

We present the landowners with contract alternatives for working forest conservation easements. A working forest conservation easement precludes the conversion of forest land to non-forest uses but might leave substantial flexibility to the landowner in terms of forest management.

Each contract alternative varies in terms of the per acre annual payment, contract duration, extent of participation (expressed as a share of forest stand), and the presence of a particular forest management requirement. A "biodiversity pathway" management (CFR, 2007) is chosen as a modification of a standard timber-profit maximizing forest management. Following this management plan is likely to produce a diverse forest structure resembling that of an old-growth forest (CFR, 2007). A copy of the pilot survey questionnaire is attached below.

We use a "choice experiments " method (Louviere, Hensher, and Swait, 2000) to elicit the small forest landowners' willingness to participate in a working forest conservation easement contract. An optimal fractional factorial experimental design was created using experimental design software (SAS-MktEx, Kuhfeld, 2005), and a design of 32 choice sets was split into two survey versions. Each respondent was presented with 16 choice sets, involving two conservation easement programs and a no-participation option. Each choice set has the constraint that longer contracts come with a higher per acre payment in order to compensate for giving up the development option for a longer time period. 94 usable responses were collected as a part of the pilot survey, for a total of 94x16=1,504

[2] One source of such information would be a collection of information on the details of conservation easement contracts. However, since there is no organized market for conservation easements, and many contracts are a result of private negotiation, information on actual payments for conservation easements is difficult to obtain. This remains a viable direction for future research. In addition, since non-permanent conservation easements are not common, this data might have little to say about the value of the development option to landowners.

choice occasions presented to the landowners. Respondents were instructed to treat each choice set on its own, without considering contract attributes from other choice sets.[3]

The survey questionnaire was developed in consultation with UW College of Forest Resources faculty, staff, and graduate students. A focus group including small forest landowners was conducted at the offices of Family Forest Foundation in Chehalis, WA. A pilot survey was administered in two ways: an email survey and a mail survey. An electronic version was sent out to about 1,750 landowners, of which 67 were returned, and a printed version was sent to 247 randomly chosen landowners in Western Washington, of which 27 were returned (11% response rate).[4]

Table 1. Summary statistics

Variable name	Description	Mean	Standard deviation	Minimum	Maximum
PMT	Incentive payment, $/acre/year	96.09	66.40	25	200
Length	Duration of non-perpetual contract	31.67	16.41	10	50
Extent	Share of forest enrolled in the program (1=0-1/3; 2=1/3-2/3; 3=2/3-1; 4=entire stand)	2.5	1.15	1	4
Pathway	"Biodiversity pathway" management required (1="yes", 0="no")	0.46	0.50	0	1
Perpet	Permanent contract offered (1="yes", 0="no")	0.25	0.25	0	1
Totacre	Total forest acres owned	801.87	5610.82	3	53865
Snglsta	Single stand of forest (1="yes", 0="no")	0.41	0.49	0	1
Devpgm	Development pressure: "great" or "moderate"	0.41	0.49	0	1
HighEd	Share of respondents answering as completed college or graduate school	0.81	0.39	0	1
Age	Age category (1="< 30", 2="30-50", 3="51-70", 4="> 70)	2.88	0.63	1	4
Income	Household income categories[5] (1="< $20K/yr", 2="$20-40 K", 3="$40-60 K", 4="$60-80 K", 5="> $80K"	4.01	1.04	1	5
Tenure	Exp. owning forestland , years (1="< 5", 2="5-10", 3="11-20", 4="? 20")	3.12	1.11	1	4
Male	Gender (1="Male", 0="Female")	0.82	0.39	0	1

[3] Copy of the survey questionnaire is attached

[4] A low response rate is a concern we address in the administration of the larger survey. The survey length has been reduced, and a monetary reward for completion of the survey has been promised (in the form of a raffle).

[5] This variable was not collected as a part of the mail pilot

Model: theory and specification

The underlying modeling assumption is that of *random utility maximization (RUM)*: in each choice set, respondents select an alternative (easement program A, B, a no-participation option) which yields to them the highest level of utility, conditional on program attributes, and observable and unobservable respondent characteristics. A more detailed and accessible introduction can be found, e.g., in Hensher, Rose, and Greene (2005).

In terms of the empirical specification, the utilities of alternatives are specified as:

$$U_q^{jt} = \beta_q^{pmt} \cdot pmt_q^{jt} + \beta_q^{length} \cdot length_q^{jt} + \beta_q^{perpet} \cdot perpet_q^{jt} + \beta_q^{extent} \cdot extent_q^{jt} + \\ + \beta_q^{pathway} \cdot pathway_q^{jt} + \varepsilon_q^{jt},$$

where $j = A, B$ indexes conservation easement contract alternatives, $t = 1, \dots, 16$ indexes a choice occasion, and q indexes individual respondents. The independent variables are described in the Table 1 above. In order to be able to include the impact of sociodemographic characteristics which do not vary over contract alternatives, the utility of the no-participation alternative is specified as:

$$U_q^{None,t} = \beta^0 + \beta_q^{HighEd} \cdot highed_q + \beta_q^{totacre} \cdot totacre_q + \beta^{snglsta} \cdot snglsta_q + \\ + \beta_q^{DevPGM} \cdot devpgm_q + \beta^{donate} \cdot donate_q + \beta^{tenure} \cdot tenure_q + \beta^{male} \cdot male_q + \beta_q^{hiinc} \cdot \\ hiinc_q + \beta^{medinc} \cdot medinc_q + \beta_q^{age} \cdot age_q + \varepsilon_q^{None,t}$$

We fit a mixed logit model (also known as random parameters logit: Train 2003; Hensher, Rose, and Greene 2005) to account for unobservable heterogeneity in respondent preferences and to allow the possibility of errors correlated over choice alternatives and over choice sets. Subscripts q indicate random parameters, while parameters without the individual respondent subscript were estimated as fixed.

Table 2 presents the parameter estimates. Random parameters are presented first, followed by fixed parameters. Derived standard deviations of random parameters conclude the table.

Table 2. Random Parameters Logit Model Estimates.

Variable	Coefficient Estimate	Standard Error	Estimate/s.e.	Level of significance
β_q^{pmt}	0.0097	0.0011	9.2660	0.0000
β_q^{length}	-0.0227	0.0044	-5.1340	0.0000
β_q^{perpet}	21.0029	4.2151	4.9830	0.0000
β_q^{extent}	-0.0449	0.0522	-0.8610	0.3894
$\beta_q^{totacre}$	0.0005	0.0003	1.5520	0.1206
β_q^{hiinc}	-0.1843	0.1903	-0.9690	0.3326
β_q^{age}	0.8104	0.2028	3.9950	0.0001
β_q^{HighEd}	-0.5967	0.2257	-2.6440	0.0082
$\beta_q^{pathway}$	-0.3835	0.1117	-3.4330	0.0006
β_q^{DevPGM}	-0.5621	0.1750	-3.2110	0.0013

β^0	0.9737	0.4298	2.2650	0.0235
$\beta^{snglsta}$	-0.0561	0.0862	-0.6510	0.5148
β^{donate}	-0.2442	0.0424	-5.7610	0.0000
β^{tenure}	0.2060	0.0738	2.7900	0.0053
β^{male}	-0.2377	0.1981	-1.2000	0.2303
β^{medinc}	0.0988	0.1770	0.5580	0.5766
σ_q^{pmt}	0.0071	0.0025	2.7920	0.0052
σ_q^{length}	0.0007	0.0007	1.0180	0.3088
σ_q^{perpet}	0.9270	0.6228	1.4880	0.1366
σ_q^{extent}	0.0121	0.0876	0.1380	0.8902
$\sigma_q^{totacre}$	0.0009	0.0006	1.6230	0.1047
σ_q^{hiinc}	0.4078	0.4320	0.9440	0.3451
σ_q^{age}	0.0560	0.2293	0.2440	0.8071
σ_q^{HighEd}	0.2941	0.2033	1.4470	0.1479
$\sigma_q^{pathway}$	0.0278	0.1753	0.1580	0.8741
σ_q^{DevPGM}	0.0137	0.1963	0.0700	0.9442

Model parameter interpretation

Effect of payment. As expected, the promised annual per acre payment has a positive impact on the probability that a landowner will choose a particular working forest conservation easement program. The estimate of the parameter is positive and highly statistically significant. Since the estimated standard error of the payment parameter is statistically significant, we can conclude that there is some unobservable heterogeneity among forest landowners with regard to their preference for monetary compensation.

Contract duration. Economic theory suggests that landowners have preferences toward shorter-term, non-permanent programs (e.g., Capozza and Sick, 1991). In other words, landowners are likely to demand compensation for placing a permanent encumbrance on their land rights (compensation for loss of option value). Empirical results support this conjecture: contract duration is negatively associated with the probability of landowner choosing a contract, and the relationship is highly statistically significant.

Share of stand enrolled. The pilot survey suggests that the option of choosing only a partial enrollment of a stand is not an important factor in landowner preferences for the structure of working forest conservation easement contracts. The theoretic rationale for including this variable is similar to including the option to choose contract duration: that is, landowners might not wish to enroll the entire stand in order to preserve an option to utilize land differently in the future. Although the pilot survey did not find a statistically significant relationship between the share of forest stand enrolled and the probability of program participation, the relationship will be fully explored in the larger survey.

Biodiversity pathway management requirement. As expected, all other things equal, landowners are less likely to participate in a working forest conservation easement program if there are "strings attached" on the type of forest management.

Forest Acreage owned. The area of forestland owned is not found to have a statistically significant relationship with the likelihood of program participation.

Household income. The self-reported household income was not found to have a statistically significant relationship with the likelihood of program participation.

Respondent Age. Respondents who are over 50 years old have a lower likelihood of participating in any working forest conservation easement program than respondents who are younger than 50 years of age.

Respondent Gender. Gender was not found to be statistically significant in determining program participation.

Respondent Education. Respondents who either have completed college or graduate school are more likely to participate in a working forest conservation easement program. This is consistent with the notion that education is a proxy for skill and ability to engage in a more sophisticated and complex land management activities.

Development Pressure. Pilot survey suggests that landowners who report that their forestland is under "great" or "moderate" development pressure are *more likely to participate in a working forest conservation easement program.*

Willingness to donate to public benefit. Respondents who indicated that they are willing to dedicate a greater percentage of their land to the public benefit are more likely to opt to participate in a working forest conservation easement program.

Simulations

The partial interpretations above are helpful in understanding the qualitative impact of contract and respondent attributes on the likelihood of working forest conservation easement contract acceptance, but the coefficient magnitudes are not easily interpretable on their own, especially given that a mixed logit model was estimated. Thus, simulations are more helpful in understanding the quantitative relationships between different variables and contract acceptance. Simulation results below allow one to interpret the impact of the following important variables on the likelihood of program participation:

1. Contract duration and the impact of offering a permanent easement.
2. Contract incentive payment
3. Presence of a specific management requirement
4. Self-reported conversion pressure

Table 3 below presents the likelihood of conservation easement contract participation for a range of contract durations and incentive payment levels, in the case that the "biodiversity pathway" management *is not required*, full stand enrollment is assumed, and all other respondent attributes represent the sample values.[6]

6 Strictly speaking, the percentages represent the share of choice occasions where a respondent selects to participate in a conservation easement contract.

Table 3. Likelihood of contract participation, percent, no biodiversity management requirement.

Payment, $/acre/yr / Duration of contract, years	10	25	50	75	100	125	150	175	200	225	250
10	64.4	65.5	67.3	69.1	70.7	72.3	73.6	74.9	76.0	77.0	77.8
30	61.2	62.2	64.0	65.8	67.5	69.2	70.7	72.2	73.4	74.6	75.6
50	58.2	59.2	60.8	62.6	64.3	66.1	67.7	69.3	70.7	72.0	73.2
100	52.5	53.2	54.4	55.7	57.2	58.8	60.5	62.2	63.8	65.4	66.8
Perpetuity	32.6	33.7	35.7	37.8	39.9	42.1	44.4	46.5	48.7	50.7	52.6
Decline in participation between a 100 year and permanent contracts	20.0	19.5	18.7	18.0	17.3	16.7	16.1	15.6	15.1	14.7	14.2

For example, should a 30-year working forest conservation easement, paying $50 per acre annually were offered, 64% of the survey participants would choose to participate in such a program. As expected, higher incentive payment increases the likelihood of participation for a contract term. Also, survey participants prefer shorter contract durations: likelihood of participation declines with an increase in contract duration.

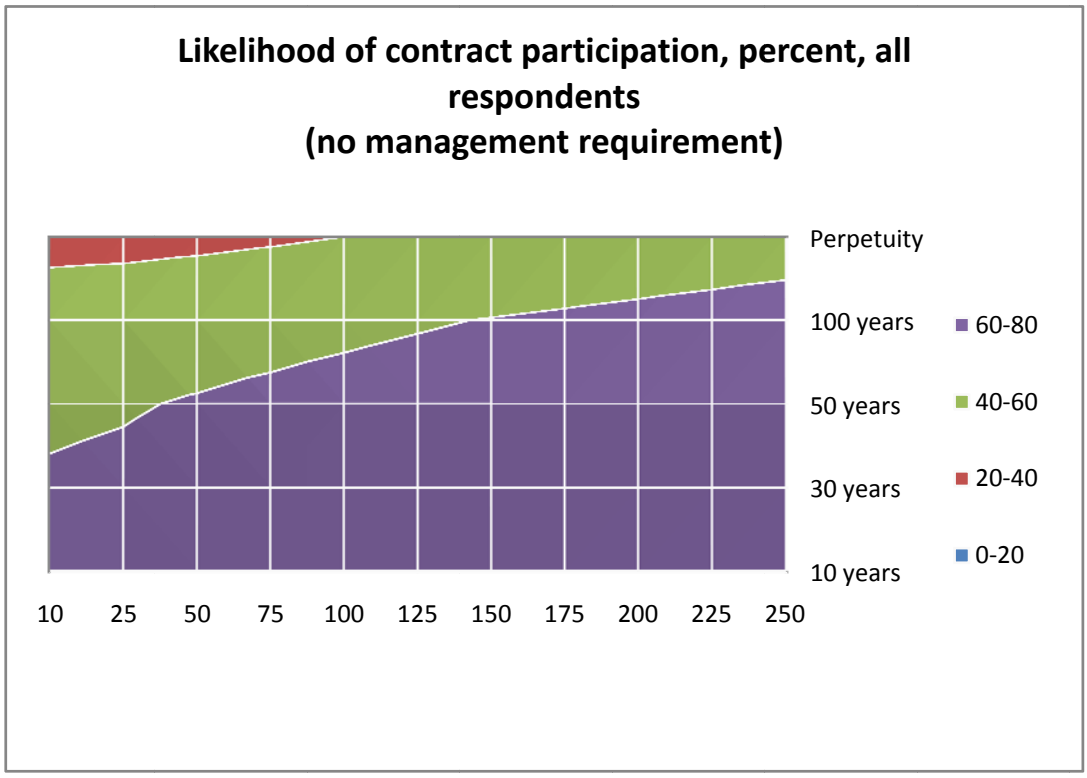
The impact of requiring a permanent easement is remarkable: on average, requiring a permanent contract as opposed to a 100-year contract reduces the likelihood of participation by 17%, even though the perpetual payment stream yields somewhat greater compensation in present value terms. This is a striking evidence of existence of option value: landowners appear to be willing to forego development rights for long periods of time but require significant additional compensation to forego that right permanently. Interestingly, for most respondents, agreeing to even a 50-year contract implies that they will not be able to exercise the development option, yet the respondents appear willing to preserve that option for their descendants. Further note that the decline in the likelihood of participation decreases in absolute value as incentive payments increase (from 20% at $10 payment to 14.2% at $250 payment).

The apparent dislike of permanent land rights encumbrances leads to significant implications for conservation policy: consider, that, according to Table 1, landowners would need to be offered $225/acre annually in perpetuity in order to have a 50% participation rate in a permanent easement contract, whereas a *higher* participation rate can be achieved by offering a $10/acre annual payment for a 100-year term easement contract.

Figure 1 below summarizes the same information graphically, in terms of regions of contract acceptability. The area highlighted in red shows the combinations of contract term and per acre

annual payment which induce between 20-40% program participation rate, the green area is bounded by lines of 40% and 60% participation, and the purple are represents the area where the participation rate is predicted to be between 60 and 80%.

Figure 1. Regions of contract participation likelihood, all respondents, no requirement for "biodiversity pathway" management



Such figures can be used to determine what minimum per-acre annual payment would be required to induce a certain percentage of landowners to participate in a working forest conservation easement of a given term. For example, in order to induce a 40% participation rate in a permanent conservation easement contract, a payment of $100/acre per year would be needed (the rightmost edge of the red area on top of the figure). Or, in order to achieve a 60% participation rate in a program which removes development rights for 100 years, a payment of about $150/acre/year would be required. Similarly, the chart can be used to provide a tradeoff between increasing participation rate and the term of forest protection: e.g., $100/acre/year can yield a 40% participation rate in a permanent easement program, or it can increase the participation rate to 60%, but the easement program could only have a roughly 75 year term.

The impact of "biodiversity pathway" management requirement

A contract which requires the landowner to follow a specific management plan, designed to enhance biodiversity, represents an additional cost to the landowner in terms of loss of management flexibility. Thus, we expect that contracts which come with such a management requirement would have to offer better terms to the landowner relative to the no-management-obligation contracts. Indeed, this is what we find. Table 4 below shows the predicted likelihoods of participation for contracts which require a ecosystem service-enhancing management obligation.

Table 4. Likelihood of contract participation, percent, biodiversity management requirement.

Payment, $/acre/yr / Duration of contract, years	10	25	50	75	100	125	150	175	200	225	250
10	61.4	62.4	64.2	66.0	67.8	69.4	71.0	72.4	73.6	74.8	75.8
30	58.4	59.4	61.0	62.8	64.6	66.3	68.0	69.5	70.9	72.2	73.4
50	55.8	56.6	58.1	59.8	61.5	63.3	65.0	66.6	68.1	69.6	70.9
100	51.0	51.5	52.6	53.7	55.1	56.5	58.1	59.7	61.3	62.9	64.5
Perpetuity	29.6	30.7	32.5	34.4	36.5	38.6	40.8	43.0	45.2	47.3	49.3

Figure 2 presents the regions of contract participation likelihood with management requirements. As can be seen from Table 4 and Figure 2, higher payments and/or lower contract durations would have to offered to landowners in order to ensure a comparable level of program participation. In the "$100" column in the two tables above, we see that the contract duration would have to be reduced from 50 to 30 years in order for 64% of landowners to agree to a conservation easement contract.

Figure 2. Regions of contract participation likelihood, all respondents, "biodiversity pathway" management requirement.

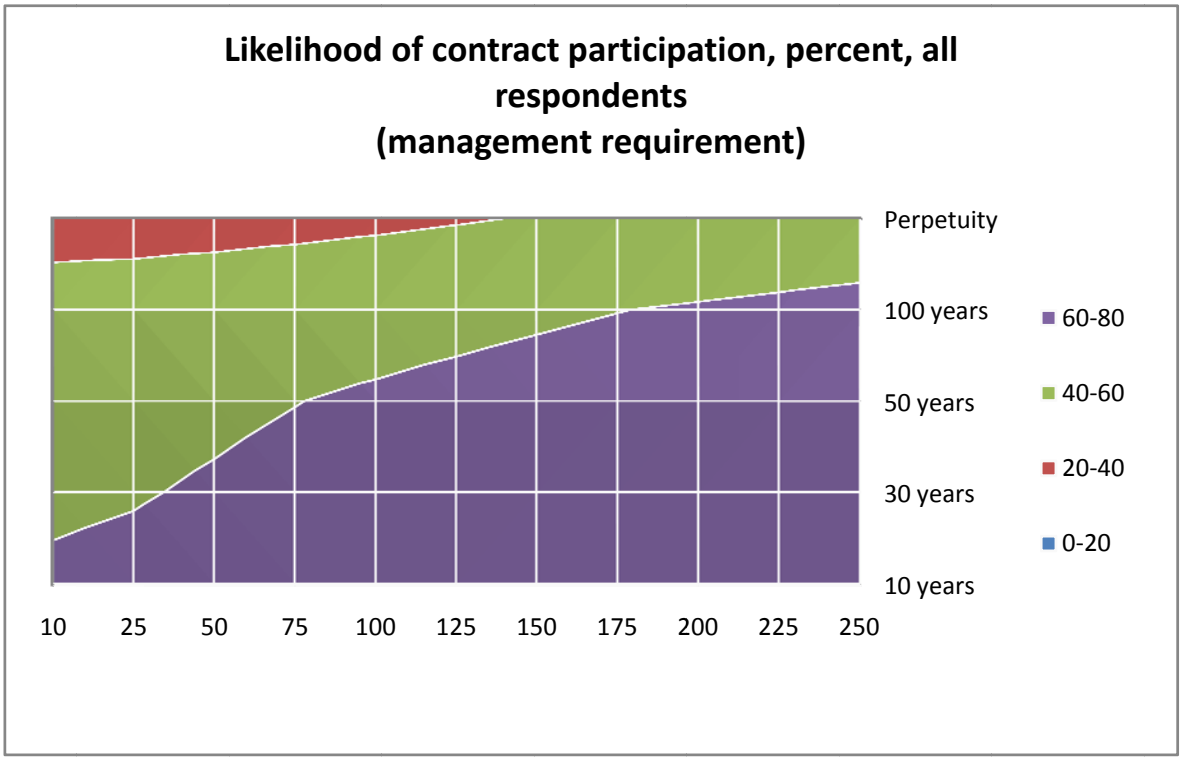


Table 5 shows the net change in likelihood of program participation as a result of including a management requirement into a working forest conservation easement program.

Table 5. Net impact of "biodiversity pathway" management requirement on likelihood of participation.

Payment, $/acre/yr / Duration of contract, years	10	25	50	75	100	125	150	175	200	225	250
10	-3.0	-3.0	-3.1	-3.0	-3.0	-2.8	-2.7	-2.5	-2.4	-2.2	-2.1
30	-2.7	-2.8	-2.9	-3.0	-2.9	-2.9	-2.8	-2.6	-2.5	-2.4	-2.2
50	-2.4	-2.5	-2.7	-2.8	-2.8	-2.8	-2.8	-2.7	-2.6	-2.5	-2.3
100	-1.5	-1.6	-1.8	-2.0	-2.2	-2.3	-2.4	-2.4	-2.4	-2.4	-2.4
Perpetuity	-2.9	-3.0	-3.2	-3.3	-3.4	-3.5	-3.5	-3.5	-3.5	-3.4	-3.3

The results above suggest that it is more difficult, all other things being equal, to have landowners commit to a particular management regime in perpetuity. However, the hurdle is not as high for fairly lengthy term contracts (50 or 100 years). The survey respondents appear to have preferences for preserving forest management flexibility, even if that flexibility can only be realized in decades.

Differences in likelihood of participation between respondents owning forest at high- and moderate-risk of development.

The survey questionnaire asked the landowners to rate the development pressure on their forest stand. 41% of respondents rated the development pressure as high or medium. Here we provide simulations similar to ones provided above and try to assess whether those who feel that their forests are at risk of development would be more or less willing to participate in working forest conservation easement programs.

Economic theory would suggest that those who own forests which also represent attractive development opportunities would require a higher level of compensation or greater degree of flexibility (e.g., no management strings attached), or, alternatively, would be less likely to agree to participate than those whose forests are not at risk. However, we need to realize that the risk of development is a self-reported measure and might not accurately represent the true development pressure. In particular, if a conservation easement contract is appealing to a landowner, he or she might have an incentive to over-inflate the development risk in the hopes of increasing his or her chances of being offered an actual contract. In addition, those landowners who do wish to retain their land in forest uses might also have an incentive to report that the development pressure is great or moderate. Then, this self-reported measure might serve as a proxy for conservation or land stewardship ethic.

Finally, it is also likely that the landowners have much more information regarding their forest use and development opportunities, and as such, self-reported measures of development risk should not be overlooked by policymakers striving to strategically retain working forests. For the pilot survey,

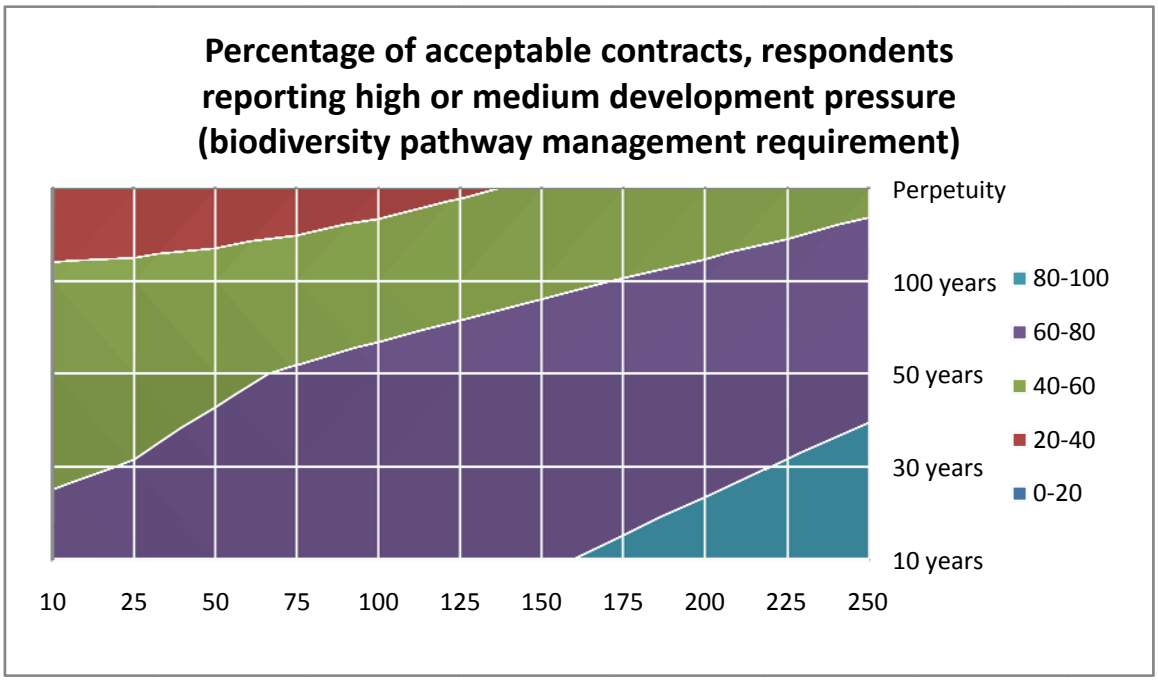
since the majority of responses were collected anonymously via email, we have no easy way of checking the self-reported strength of conversion risk against the magnitude of the difference between land value in forestry and its alternative use value. A survey of over 7,500 Washington forest landowners is currently underway, and we will be in position to compare the self-reported development risk with proxies for development risk developed based on land value assessments.

With these caveats in mind, it is nonetheless surprising that *those respondents who rated the development pressure on their forest as high or moderate are significantly more likely to agree to participate in a working forest conservation easement program.* This is an interesting finding and it remains to be seen whether the more comprehensive state-wide survey will produce similar results.

Table 6. Likelihood of contract participation, percent, biodiversity management requirement, great or moderate development pressure reported.

Payment, $/acre/yr / Duration of contract, years	10	25	50	75	100	125	150	175	200	225	250
10	64.2	66.0	69.1	72.1	74.8	77.2	79.3	81.1	82.6	83.9	85.0
30	58.6	60.4	63.4	66.5	69.4	72.2	74.6	76.8	78.7	80.3	81.7
50	53.7	55.2	58.0	61.0	64.0	67.0	69.7	72.2	74.4	76.4	78.1
100	44.9	45.8	47.6	49.7	52.2	54.8	57.6	60.4	63.1	65.6	68.0
Perpetuity	20.8	22.7	26.2	30.0	34.0	38.1	42.2	46.1	49.8	53.2	56.4

Figure 3. Regions of contract participation likelihood, respondents indicating great or moderate development pressure, "biodiversity pathway" management requirement.



Comparing Tables 6 and 7, and Figures 3 and 4, we see that landowners who appear to be concerned about development pressure on their forestland are more likely to participate in a working forest conservation program.

Table 7. Likelihood of contract participation, percent, biodiversity management requirement, no great or moderate development pressure reported.

Payment, $/acre/yr / Duration of contract, years	10	25	50	75	100	125	150	175	200	225	250
10	57.4	59.1	62.1	65.2	68.2	70.9	73.5	75.7	77.7	79.4	80.9
30	52.6	54.1	56.9	59.8	62.8	65.7	68.5	71.1	73.4	75.4	77.2
50	48.7	49.9	52.2	54.9	57.8	60.7	63.6	66.3	68.8	71.1	73.2
100	42.3	42.9	44.2	45.8	47.8	50.0	52.5	55.2	57.8	60.4	62.9
Perpetuity	14.7	16.2	19.1	22.3	25.9	29.8	33.7	37.7	41.6	45.3	48.7

Figure 4. Regions of contract participation likelihood, respondents indicating great or moderate development pressure, "biodiversity pathway" management requirement.

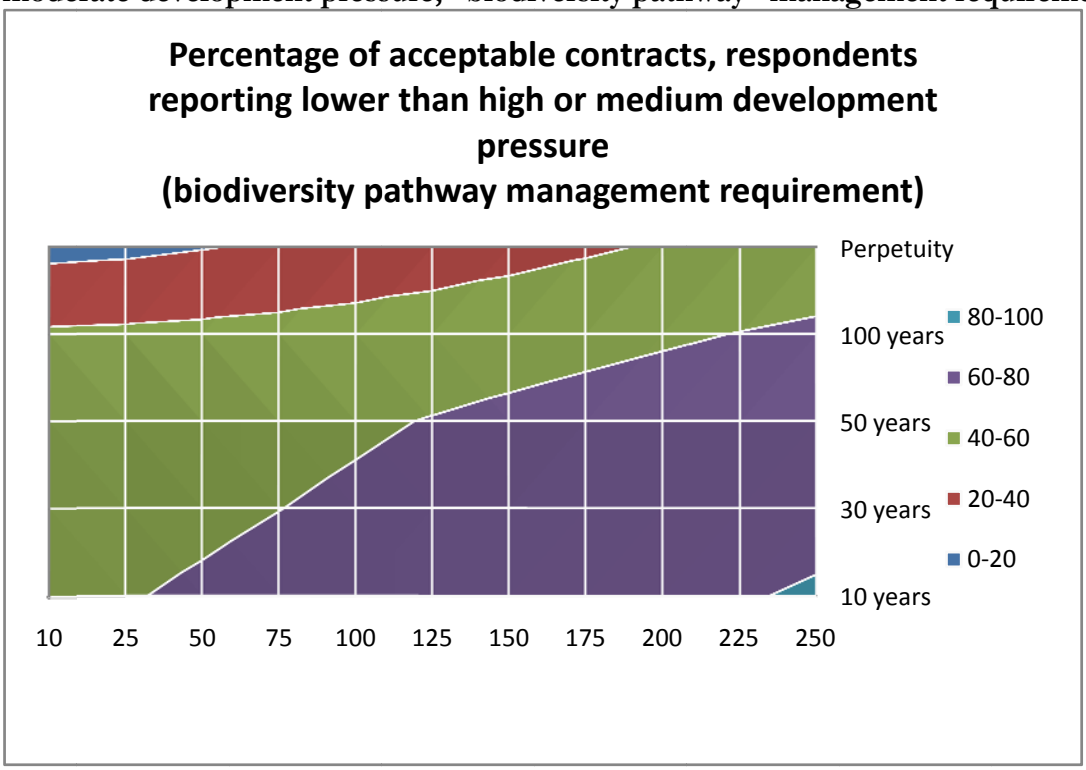


Table 8. Net impact of self-reported high or medium conversion pressure on likelihood of participation.

Duration of contract, years \ Payment, $/acre/yr	10	25	50	75	100	125	150	175	200	225	250
10	6.8	6.9	7.0	6.9	6.6	6.2	5.8	5.4	4.9	4.5	4.1
30	6.0	6.3	6.6	6.7	6.6	6.4	6.1	5.7	5.3	4.9	4.6
50	5.0	5.3	5.8	6.1	6.3	6.3	6.1	5.9	5.6	5.2	4.9
100	2.6	2.8	3.4	3.9	4.4	4.8	5.1	5.3	5.3	5.2	5.1
Perpetuity	6.2	6.5	7.2	7.7	8.1	8.3	8.4	8.4	8.2	7.9	7.6

For non-permanent easement contracts, on average an additional 5.5% of respondents are willing to participate, and that figure increases to 7.7% for permanent easement contracts. This suggests that while those who are concerned with development pressure, while still disliking perpetual commitments, are relatively more willing to accept permanent conservation easement obligations than those who do not report their forest as being at risk of development. This would be consistent

with the conservation ethic interpretation: those who are concerned with development pressure might be more willing to insure that their land remains in forest uses in perpetuity.

Discussion

While policy recommendations would probably be best withheld until the results of the comprehensive, state-wide survey become available, we believe that the salient features of landowner preferences would be maintained. Despite a moderate sample size of the pilot, each respondent had a chance to evaluate 16 distinct contract alternatives, which provided us with a fairly large dataset (1,504 observations) of landowner contract preferences. Results are consistent with existing economic theory and empirical evidence of forest landowner program participation (e.g., Langpap 2004, Layton and Siikamäki 2007, Matta et al. 2007): landowners prefer larger per acre annual incentive payments, they prefer to commit to shorter contract duration, and they require extra compensation to engage in ecosystem production-enhancing forest management. The value of development option (however far removed into the future) is confirmed: landowners strongly dislike permanent conservation easement programs. We do not expect these findings to change when the comprehensive survey results become available.

Large premia demanded by forest landowners for perpetual encumbrances to their development rights should provide a food for thought for policymakers and conservation organizations alike. Tradeoffs between the number of forest landowners participating in forest preservation programs and the length of such programs become apparent. Decisions on the desirability of a wider program coverage at the expense of their permanence will have to be made.

Finally, landowners concerned about the development pressure on their forestland appear more willing to participate in forest preservation programs either due to their intrinsic concern for the future of their forest or due to the desire to affect the probability of being accepted into such a program. We should note that even the highest levels of incentive payments offered might not be sufficient to make up the difference between the value of land in non-forest uses and value of land in forestry. The possibility of an individual landowner manipulating a conservation easement program is minimal; however, preliminary results suggest that forest retention efforts could be informed and made more effective by paying attention to landowners who are concerned with forestland conversion.

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