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ORIGINAL ARTICLE

How financial compensation changes forest owners' willingness to set aside productive forest areas for nature conservation in Denmark

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Abstract
Agri-environmental schemes' ability to increase the provision of environmental goods has been questioned because such schemes may pay landowners for something they would have done anyway. Contributing to this discussion, the aim of this paper is to investigate how financial compensation changes forest owners' declared willingness to set aside productive forest areas for nature conservation. The study is based on a survey of forest owner attitudes and ownership objectives in Denmark. First, it was analyzed how forest owners' declared willingness to set aside productive forest area for nature conservation changed when they were offered financial compensation. The majority of forest owners (64%) increased their willingness to set aside forest when offered financial compensation, whereas for others, compensation resulted in no change or, for a few respondents, even decreased the willingness. Hence, financial compensation may help to increase the provision of environmental goods but it is necessary to be aware of groups not motivated by financial incentives. Secondly, a binary logit model showed that the greatest likelihood of financial compensation increasing the motivation for setting aside forest is observed for owners who are young, female, live in the western part of Denmark and own farmland. Policy makers can use such information to target subsidy schemes at particular groups.

Keywords: *Binary logit model, effectiveness of policy instruments, forest policy schemes, owner motivation, unmanaged forest.*

Introduction

Private forest owners may be important agents in nature conservation. In Denmark, for example, forests host 54% of all red-listed species (Stoltze & Pihl, 1998) and 68% of the forest area (367,000 ha) is privately owned (Nord-Larsen et al., 2008). Financial incentives (e.g. agri-environmental schemes) are commonly used means to induce nature management on private land (Wilson & Hart, 2001). Recently, schemes for setting aside forest areas as unmanaged have also been introduced, e.g. the Finnish Metso programme (Horne, 2006; Mäntymaa et al., 2009). Previous research found that financial incentives are an important motivation for participating in schemes (e.g. Wilson, 1997; Wilson & Hart 2001; Church & Ravenscroft, 2008). However, participation rates are considered as "indirect measures of the effectiveness of schemes, where the ultimate objective is improvements in environmental conditions ..." (Hanley et al., 1999, p. 72). For example, Wilson and Hart (2001) found that landowners are more likely to accept agri-environmental schemes that are in line with current management plans. This indicates that compensation does not necessarily lead to changes of landowners' management plans. Therefore, there is a need to investigate how the offer of financial compensation changes willingness to protect and enhance the environment. To the authors' knowledge, this change has not received much attention. Previous research on financial incentives (often agri-environmental schemes) has focused on reasons for participation and non-participation (e.g. Morris & Potter, 1995; Wilson, 1996, 1997; Wilson & Hart, 2000; Vanslembrouck et al., 2002; Polman & Slangen, 2008), which does not make it possible to examine how financial incentives influence the share of protected area. Similarly, forest owners' values and

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attitudes have been investigated in ways that limit the potential to separate the effect of financial incentives on forest management (e.g. Karppinen, 1998; Uliczka et al., 2004; Ingemarson et al., 2006).

The aim of this paper was to investigate how the offer of financial compensation changes forest owners' declared willingness to set aside productive forest areas for nature conservation. The results will contribute to the discussion of whether, and to what extent, financial incentives increase the provision of environmental goods.

Possible reactions to financial incentives

When forest owners are presented with financial incentives they can potentially respond in three different ways: (1) by increased willingness to set aside forest (positive); (2) by reduced willingness to set aside forest (negative); or (3) by no change in willingness to set aside forest (no change). The following review includes examples of all three types of responses.

Landowners may be positive towards financial incentives. Such incentives can be considered a way to minimize risk, maximize profit (Siebert et al., 2006) or secure income (Wilson & Hart, 2001). Hudson and Lusk (2004) investigated stated scheme preferences and their results support the importance of financial incentives as a way to increase income and minimize risk. Kabii and Horwitz (2006) proposed that landholders are more likely to be positive towards incurring a perpetual conservation covenant on their lands if they are less economically dependent on their property (in terms of income, debt and productivity of land). Young owners with only a short period of land ownership are likely to be financially more vulnerable and therefore more positive towards such encumbrance. Kabii and Horwitz (2006) proposed that old owners would be more sceptical about setting aside land as they would not see the benefits in their lifetime. At the same time, old owners may be interested in setting aside nature areas if they perceive that continued protection of those areas otherwise will not be prioritized by subsequent generations (Kabii & Horwitz, 2006). Ulizcka et al. (2004) found that young women with high formal education have the most positive attitude towards conservation.

No response to financial incentives is also possible. Siebert et al. (2006, p. 333) reviewed farmers' participation in biodiversity policies and found that "economic interests are important, but not the only, determining factor for farmers' decision making". In line with this, Schenk et al. (2007, p. 77) found that "authorities cannot 'buy' farmers' acceptance", indicating that other factors are important as well. Church and Ravenscroft (2008) identified a group of landowners not involved in commercial forestry who are less likely to respond to financial incentives.

It may be that the initial decision of setting aside or not is more important than the incentive offered. Even if a proposed environmental scheme provides full financial compensation, farmers may reject the scheme if it implies a loss of social and cultural capital (Burton et al., 2008). Having a farming background or owning a farm implies a creative production orientation towards the land (see review by Beedell & Rehman, 1999). Setting aside land as unmanaged removes the skill requirement for managing land and thus prevents farmers from performing identity-enhancing behavior (Burton et al., 2008). That the proposed nature conservation approach (setting area aside) is passive (as opposed to active, like restoring ponds and lakes or carrying out enrichment planting) may therefore in itself be a reason for an owner with a farming background to be less motivated to participate. This may explain why Ulizcka et al. (2004) found that Swedish forest owners with a land-use-related occupation show a less positive attitude towards nature conservation than others.

Similarly, owners who depend financially on the forest are expected to be less willing to set aside areas for nature conservation both without and with financial compensation as they prefer to maintain "room for manoeuvre" and are therefore more reluctant to allow restrictions on part of their land area. However, previous studies found a positive effect of flexibility in the contract design, e.g. the ability to cancel the contract (Wilson, 1997; Wilson & Hart, 2000; Hudson & Lusk, 2004; Horne, 2006). Horne (2006), for example, investigated forest owners' acceptance of incentive-based policy instruments in forest biodiversity conservation. Her results support the importance of maintaining owner authority since the forest owners prefer to initiate and to be able to cancel the contract.

A study of Swedish forest owners also showed that dependence on income from the forest is associated with a less positive attitude towards conservation (Ulizcka et al., 2004). Similarly, Kline et al. (2000*a*, *b*) found that US forest owners whose income is earned primarily from the sale of timber are less willing to forgo harvest within riparian areas (for 10 years to improve habitat) than respondents who do not depend on timber sales for income. However, Kline et al. also found that the willingness to forgo harvest does not seem to depend on income as such (i.e. whether owners are more or less affluent).

Lönnstedt (1989) found that non-farm forest owners in Sweden are less financially motivated

than farm owners in their cutting decisions therefore to non-farm owners leaving the forest unmanaged is a cheap and fair investment alternative (Lönnstedt, 1989).

Finally, some landowners may be negative towards financial incentives as a policy instrument, wanting to set aside less area with than without compensation. This can be understood in various ways: as an ideological protest against the idea of state intervention on private forest land, a protest against the possible risk that financial incentives will erode the intrinsic motivation of good forest stewardship ethic, or a fairness reasoning (Adams, 1963), e.g. "if others are paid for setting aside even less area, then I will be willing to set aside less area as well".

This review shows that attitudes towards financial compensation have often been investigated in relation to attitudes towards nature conservation in general. Although it is difficult to separate the two, this study aimed to isolate the effect of financial compensation by asking for willingness to set aside forest with and without financial compensation.

Materials and methods

The study was based on a country-wide survey among private forest owners in Denmark focusing on the forest, the owners, and their perceptions of forest ownership, management attitudes and practices. The population consisted of all private, personally owned forest properties with an area of 2 ha or more ($N = 17{,}991$) (Larsen & Johannsen, 2002). The mail questionnaire was distributed to 1986 forest owners in February 2002 Stratified sampling was applied to ensure a sufficiently large sample of owners of large forest properties. Sixty-three people were omitted from the sample as non-relevant as they turned out not to own any forest. Of the remaining 1923 forest owners 1553 responded and, hence, the response rate was 80.8%. For details see Boon et al. (2004).

This study focused on two questions about forest owners' willingness to set aside productive forest areas for nature conservation, "without compensation" (Q1) and "with appropriate financial compensation" (Q2). Of the 1553 respondents, 1056 answered Q1, 800 answered both Q1 and Q2, and 711 also answered the questions that were used to characterize the respondents (Table I).

Statistical methods

The analysis of survey data was conducted in two steps. First, the study analyzed how forest owners' declared willingness to set aside part of the productive forest area for nature conservation changed when they were offered financial compensation, compared with a reference situation with no compensation.

Next, a binary logit model was developed to explain/predict increases in owners' willingness to set aside areas for nature conservation when offered financial compensation. Only few owners (2%) responded negatively to the compensation offer. In the model, therefore, the decision was made to distinguish only between a positive effect of compensation and no change; hence the choice of a binary model. As alternatives to the logit link function the probit and complementary log–log functions were tried out, but the logit function provided the best fit. Variable selection was not affected by the choice of link function and the model is therefore deemed robust. The analysis was carried out using the procedure Logistic of the statistical software package SAS (SAS Institute, 1999, pp. 1901–2043).

When developing the logit model, a wide range of background variables was initially considered (Table I). To identify the final model, a large number of combinations of variables was tried out, using stepwise as well as backward elimination and forward selection approaches. A level of significance of 10% was used as the basis for choosing which variables to include, and these are discussed accordingly.

Limitations of the study

The trustworthiness of stated willingness to set aside productive forest areas should be considered. Unfortunately, it is considered impossible to design a survey of revealed preferences owing to the difficulty in creating "policy on"/"policy off" conditions at the same point in time (Morris & Potter, 1995). In this survey it was the same owners, at the same point in time, who stated their willingness to set aside productive forest with and without compensation. However, stated preferences always imply a need to consider strategic answers.

The ambiguity of the two questions (willingness to set aside areas for nature conservation without and with appropriate financial compensation) should be considered: (1) For how long should the areas be set aside and starting when? (2) How is the owner compensated and what is "appropriate compensation"? This term may lead to overstatement as some owners may imagine unrealistically high levels as being appropriate. (3) What restrictions and change of use rights does "setting aside" imply? In addition, some may perceive the two questions as identical, except for the offered financial compensation. Others may perceive the questions as fundamentally different: in the question "without compensation"

Table I. Explanatory variables used in the analysis.

Variable	Definition	Population [a] ($N=17{,}991$)	Subsample ($n=711$)
Gender	Male owners	86%	88%
Owner's age	Age of owner	53 years	52 years
Owner of farmland	Owner also owns farmland	84%	84%
Owner type	Full- or part-time forest owner (self-perceived)	31%	41%
	Full- or part-time farmer (self-perceived)	62%	52%
	Other	7%	5%
Region (east/west)	Forest located in the eastern part of Denmark	19%	28%
	Forest located in the western part of Denmark	81%	72%
Agricultural affiliation	Owner born on farm with forest	50%	58%
	Owner born on farm without forest	25%	16%
	Not born on farm but near family or friends with agricultural affiliation	13%	13%
	Not born on farm but has other agricultural affiliation	1%	4%
	No agricultural affiliation	11%	9%
Agricultural education	Owner has agricultural or silvicultural education	57%	61%
Way of acquisition	Inherited	9%	17%
	Bought from spouse, relatives or friends	35%	34%
	Bought on the open market	40%	40%
	Owner planted the forest him/herself	12%	7%
Forest area	Tree-covered area	14 ha	88 ha
Annual no. of visitor days	No. of days owner visits his/her forest during a year	106 days	134 days
Annual no. of hunting days	No. of days owner visits his/her forest during a year for hunting purposes	6 days	9 days
Annual no. of recreation days	No. of days owner visits his/her forest during a year for recreation purposes	54 days	57 days

Notes: The table shows the estimated percentages and mean values for the population of Danish private forest owners with a forest area of 2 ha or more, and the subsample of owners used for estimation of the parameters of the binary logit model (Table IV).
[a] Estimated values based on the area-based stratified sample of owners.

the owner may assume that he or she maintains the right to start managing the area again at any time he or she wishes, whereas the question "with appropriate financial compensation" may be understood to imply a future loss of all rights to manage the area.

The sample used in the logit model may differ from the population of Danish forest owners because of the stratified sampling procedure and a non-response bias among small forest owners. Comparison of the subsample used in this analysis with the calculated average responses for the population of Danish forest owners showed that the subsample owned large forests and spent more days in the forest (Table I). This means that the analysis mainly provides a picture of how owners of large forest properties respond to financial incentives.

The survey was carried out in a period characterized by relatively low timber prices, i.e. to a forest owner, the wood sales income potentially lost when setting aside productive areas for nature conservation would appear lower than in periods with higher prices.

Finally, the questions may have been perceived as irrelevant to some owners given the type of forest they owned, e.g. a monoculture stand of exotics or a small forest where it does not make sense to set aside a percentage for nature conservation.

Results

The willingness of forest owners' to set aside productive forest areas for nature conservation without and with financial compensation is presented in Table II. Financial compensation made a considerable number of respondents change their mind from, e.g., Nothing and 1–5% to 11–20% or even >20%. Unfortunately, 32–39% of the owners either answered "don't know" or did not respond. In the analysis below these respondents have been omitted. A chi-squared test of the homogeneity of Table II showed that the change in the distribution of responses was highly significant ($\chi^2=346.7$; $p<0.0001$).

Considering the group of owners who were willing to set aside productive forest, the largest group *without compensation* included owners who want to set aside 1–5%, whereas the largest group *with compensation* included those who want to set aside more than 20%. Thirty-two per cent of the owners were unwilling to set aside areas for nature conservation without compensation, whereas 10% were unwilling even if they were offered appropriate financial compensation (Table II).

Table III shows how responses changed when forest owners were offered financial compensation. For example, 63 owners where initially willing to set 11–20% aside. Of this group three owners moved three categories down (-3) and 43 owners moved

Table II. Willingness to set aside forest areas for nature conservation.

"To show concern for nature conservation may imply setting aside part of the productive forest area. How large a share of your productive forest area can you imagine setting aside for nature conservation?"		
Share of forest area	Without compensation	With appropriate compensation
Nothing	32.3 (502)	10.0 (155)
1–5%	11.6 (180)	6.1 (94)
6–10%	8.7 (135)	9.3 (145)
11–20%	5.7 (88)	10.9 (169)
More than 20%	9.7 (151)	24.4 (379)
Don't know	17.5 (271)	22.5 (349)
No response	14.6 (226)	16.9 (262)
Total	100.0 (1553)	100.0 (1553)

Notes: Data are shown as: % (observations).

one category up (+1). A small group of 18 owners was willing to set aside less area (2%) than without compensation. Thirty-four per cent did not change their willingness, whereas 64% showed an increase in willingness to set aside forest areas.

Logit model

The aim of the logit model was to explain or predict changes in owners' willingness to set aside areas for nature conservation when offered financial compensation. Four of the variables in Table I and the initial willingness were found to significantly influence the willingness to increase the area set aside (Table IV). Interaction effects were tested but were not statistically significant.

The strongest influence on the probability of increasing the set-aside area was observed for the initial willingness. It is noteworthy that owners who were willing to set aside 1–5% or 6–10% without compensation were more likely to respond positively to financial compensation than owners who were willing to set aside 11–20% without compensation. The group that initially expressed that they would set aside "Nothing" without compensation was less likely to respond positively to the compensation offer than any of the other groups.

The second most influential variable was the owner's age and the probability of increasing the set-aside area when offered compensation decreased considerably with increasing age (Figure 1). The effects of the remaining three variables were more limited but, in general, the parameter estimates indicate that women were more likely to respond positively to the compensation offered than men, that forest owners in the western part of the country were more likely to respond positively than owners in the eastern part, and that owners who did not own farmland were less likely to respond positively to financial compensation than owners who did.

Four model outputs are illustrated in Figure 1. A comparison of the four illustrations shows that owners who were initially unwilling to set aside area (top left, Figure 1) were less likely to be motivated by financial compensation than others. Owners with an intermediate willingness (1–5 or 6–10%, top right and bottom left, Figure 1) were most likely to be motivated further. Regardless of the initial willingness, young and female owners who lived in the western part of Denmark and own farmland were most likely to be further motivated, as they are represented by the upper line in each of the four model illustrations. Similarly, old owners and men who lived in the eastern part of Denmark and did not own farmland were least likely to be motivated by financial compensation.

Differences in initial willingness are illustrated in Table V. Only variables included in the binary logit model are included. This table supports the interpretation of Figure 1. Homogeneity was rejected for farmland ownership ($p = 0.01$) and region ($p < 0.001$). Some other key observations are as follows. Twenty-two per cent of female owners were willing to set aside more than 20% compared with 13% of the male owners. Among owners of farmland 50% were not willing to set aside forest without compensation, whereas for owners who did not own farmland only 38% were unwilling to set aside area. With regard to differences between regions there was a tendency towards small set-aside percentages in the eastern part of Denmark (25% setting aside 1–5%) and larger percentages in the western part of Denmark (16% setting aside more than 20%). With respect to age differences, the youngest and the oldest groups were less willing to set aside areas. However, the youngest group, in particular, was small (15 respondents), making these results uncertain.

Table III. Initial willingness to set aside forest areas for nature conservation without compensation and change in willingness when offered appropriate financial compensation.

	"How large a share of your productive forest area can you imagine setting aside for nature conservation?" (Without compensation)							
Change [a] in response category when offered compensation	Nothing	1–5%	6–10%	11–20%	>20%	Total (row)	Total (broader groups)	
−4	–	–	–	–	100 (4)	100 (4)	2.2 (18)	
−3	–	–	–	100 (3)	0 (0)	100 (3)		
−2	–	–	83.3 (5)	0 (0)	16.7 (1)	100 (6)		
−1	–	20.0 (1)	20.0 (1)	0 (0)	60.0 (3)	100 (5)		
0	50.7 (138)	12.1(33)	6.3 (17)	6.3 (17)	24.6 (67)	100 (272)	34.0 (272)	
+1	27.5 (47)	25.1 (43)	22.2 (38)	25.1 (43)	–	100 (171)	63.8 (510)	
+2	36.4 (56)	28.6 (44)	35.1 (54)	–	–	100 (154)		
+3	51.0 (50)	49.0 (48)	–	–	–	100 (98)		
+4	100 (87)	–	–	–	–	100 (87)		
Total no. of observations	378	169	115	63	75	800		

Notes: [a] For example, if a respondent is willing to set aside "Nothing" for nature conservation without compensation, but > 20% when offered financial compensation, the change is +4.
– = Changes that are not possible: If the owner initially is not willing to set area aside, then he or she cannot be negatively influenced by compensation. See "Nothing" column and minus categories.

Discussion

In general, the offer of financial compensation led to positive or no change of willingness to set aside forest. Only 2% of the applicable part of the sample was negatively affected by financial incentives.

Positive

Financial compensation motivated 64% of the owners to set aside more area than they would without compensation. The largest group with compensation included those who wanted to set aside more than 20%, indicating high willingness to set aside with compensation. Thus, financial compensation would potentially help to increase significantly the supply of untouched forest areas. The term "appropriate financial compensation" may, however, lead to overstatement as some owners may imagine unrealistically high compensation levels. Furthermore, 22.5% answered "don't know" when asked about their willingness to set aside areas if offered compensation. This could be interpreted as a need for more information about the agreement before deciding, indicating motivation factors other than financial. This is in line with typology studies supporting that other motivation factors are important as well (Karppinen, 1998; Boon et al., 2004; Ingemarson et al. 2006). The overrepresentation of larger owners may result in more positive responses, as typology studies categorize large owners as being more likely to be financially motivated (Karppinen, 1998; Boon et al., 2004; Ingemarson et al. 2006). Still, however, in the present study , more than half the owners from the entire sample (787 out of 1553) (Table II) responded positively to financial compensation.

Owners of farmland were more likely to increase their willingness to set aside forest areas than other forest owners ($p = 3.1\%$, Table IV). This is interesting in the light of previous research findings that even full compensation may not be enough to convince farmers to participate in schemes, owing to loss of social and cultural capital (Burton et al., 2008). The present findings may be explained by owners of farmland initially being less willing to set areas aside (Table V). Receiving subsidy is, however, an integral part of being a farmer today and farmers use it as a way to secure income, minimize risk or maximize profit, as suggested by other researchers (e.g. Siebert et al., 2006).

As expected, young owners were more sensitive towards financial compensation ($p < 0.1\%$, Table IV), maybe because they were financially more vulnerable and less well consolidated than older owners. The group of young owners was small, making it difficult to judge whether the positive

Table IV. Estimated parameters of a binary logit model expressing the probability that an owner is willing to increase the forest area set aside as untouched when offered compensation.

Variable	Value	Estimate	SE	$Pr > \chi^2$
Intercept		2.7114	0.4155	< 0.0001*
Initial willingness to set aside forest as untouched	Nothing	–0.6536	0.1403	< 0.0001*
	1–5%	0.3580	0.1852	0.0532
	6–10%	0.5677	0.2308	0.0139*
	11–20%	0	–	–
Gender of owner	Male	0	–	–
	Female	0.2688	0.1463	0.0661
Owner's age		–0.0290	0.0067	< 0.0001*
Owner also owns farmland	Yes	0	–	–
	No	–0.2490	0.1153	0.0307*
Region	East	0	–	–
	West	0.1541	0.0984	0.1172

Notes: 66 respondents initially willing to set aside the maximum of > 20% and 18 respondents reacting negatively to the compensation offer were omitted from the analysis ($n = 711$).
*Significant at the 5% level.

effect of financial incentives is a result of initial conservative attitudes towards conservation.

Gender differences were found ($p = 6.7\%$, Table IV), as female owners were more sensitive than male owners to financial compensation for environmental services. This is further supported by a tendancy fact that women were also more willing than men to set aside areas without compensation (Table IV). If young people, and women, both have a more positive attitude towards conservation (Uliczka et al., 2004) and are more sensitive to financial incentives, as found in this study, it may influence future conservation potential, depending on whether the currently young owner generation maintains their positive attitude.

Forest owners living in the western part of Denmark were more likely to increase the area set aside, although not at a statistically significant level ($p = 11.7\%$, Table IV). This may be due to lower opportunity costs because of areas with less productive conifer forests on sandy soils.

No response

The fact that 34% of owners were not further motivated by financial compensation supports previous findings that compensation is not the only motivating factor, e.g. because the initial decision of setting aside or not is more important. This is supported by the fact that this group consists of approximately half of the owners setting nothing and half of them setting something aside (Table III).

Only 10% of the forest owners were unwilling even with compensation (Table II). This can be interpreted thus: that, fundamentally, there appears to be flexibility and confidence among forest owners towards public management and the expectation that a fair arrangement will be achieved. That is, setting aside areas for non-production purposes is at least partly compatible with forest ownership objectives.

Policy implications

Since 64% of the forest owners responding increased their willingness to set aside forest if offered financial compensation, there is a potential effect of the instrument. However, it is worth considering whether there is also a risk of a crowding-out effect. That is, once forest owners have been paid to provide a form of forest management that was formerly made without payment, they will be less inclined to provide this service in the future if financial incentives are removed (Frey & Oberholzer-Gee, 1997). This seems particularly relevant as typology studies show that forest owners also value environmental, hobby and recreational aspects of forest ownership (e.g. Karppinen, 1998; Boon et al., 2004; Ingemarson, 2006). The notion of a crowding-out effect may explain why owners of farmland initially were less likely to set aside areas without compensation (Table V), whereas the logit model shows that ownership of farmland is related to a comparatively greater increase of willingness to set aside: owners of farmland preferred to provide set-aside areas with compensation. Since 36% of the owners were willing to set areas aside without compensation, there is a risk of losing these free-of-cost areas if offering financial compensation leads to a crowding-out effect. Future research could investigate how the mere existence of financial incentives affects the way forest owners and the

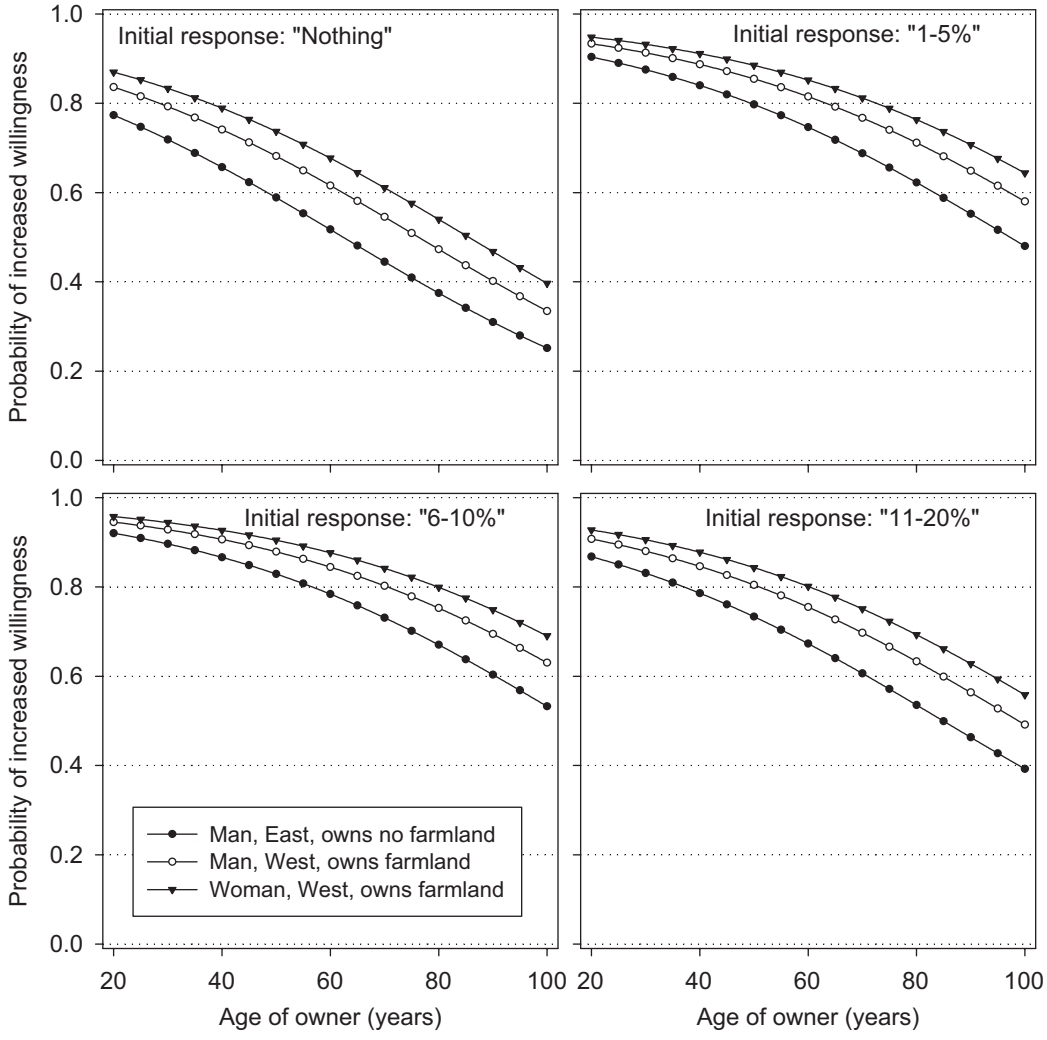

Figure 1. Model predictions ordered by initial willingness. Note that the predicted probabilities are only relevant for respondents who have (1) answered both questions, (2) not answered "don't know", (3) not provided protest responses (negative change when offered compensation), and (4) not offered the maximum of $>20\%$ without compensation. Each figure includes a line for the most sensitive category of owners (women who own farmland and live in the western part of Denmark), the least sensitive owner category (men who do not own farmland and live in the eastern part of Denmark) and the typical owner category (men who own farmland and live in the western part of Denmark).

public look upon forest management, private and public goods, rights and responsibilities.

The non-response bias also indicates that to many (smaller) forest owners, the question of setting aside areas was simply irrelevant (e.g. Christmas tree growers) or not of interest. Of the original sample of 1553 owners, 32% either did not respond or answered "don't know" to the question about their willingness to set aside areas for nature conservation without compensation, and when offered compensation, 39% did not respond or answered "don't know".

The results stress the need to target policy tools at different types of forest owners, as also pointed out by, for example, Ingemarson et al. (2006) and Boon and Meilby (2007). Clearly, in a societal perspective, it would be inefficient to offer compensation to those who are willing to set aside areas anyway. Other tools may be better suited here, such as authoritative tools (e.g. legislation), capacity building (e.g. providing information or skills enabling forest set aside), symbolic and hortatory tools (e.g. associating unmanaged forest with positive values) or learning tools (e.g. teaching why setting aside forest is important) (Schneider & Ingram, 1990). Investigation of how to choose and design appropriate policy tools should combine landowners' motivations and interests with society's nature conservation interests to increase the likelihood of reaching societal goals of increased provision of environmental goods.

Table V. Distribution of owners with respect to their willingness to set aside areas without compensation.

			"How large a share of your productive forest area can you imagine setting aside for nature conservation?" (Without compensation)					
Variable	Definition	Test of homogeneity	Nothing	1–5%	6–10%	11–20%	> 20%	Total
Gender of owner	Male	$\chi^2 = 7.3$	48 (446)	17 (160)	13 (118)	8 (77)	13 (122)	99 (923)
	Female	$p = 0.12$	42 (56)	15 (20)	13 (17)	8 (11)	22 (29)	100 (133)
Age of owner	< 30		67 (10)	20 (3)	7 (1)	0 (0)	7 (1)	101 (15)
	30 ≤ age < 50	$\chi^2 = 17.0$	50 (207)	16 (68)	13 (52)	7 (30)	14 (56)	100 (413)
	50 ≤ age < 70	$p = 0.15$	43 (231)	18 (96)	14 (77)	10 (52)	15 (79)	100 (535)
	70 ≤ age		58 (54)	14 (13)	5 (5)	6 (6)	16 (15)	99 (93)
Owner also owns farmland	Yes	$\chi^2 = 12.8$	50(428)	17 (144)	13 (109)	8 (70)	13 (110)	101 (861)
	No	$p = 0.01$	38 (74)	18 (36)	13 (26)	9 (18)	21 (41)	99 (195)
Region	East	$\chi^2 = 23.2$	48 (122)	25 (64)	11 (29)	7 (17)	8 (21)	99 (253)
	West	$p < 0.001$	47 (380)	14 (116)	13 (106)	9 (71)	16 (130)	99 (803)

Notes: Data are shown as: % (observations).

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