

CentER



Discussion Paper

No. 2004–23

**OPINIONS ON TAX DEDUCTIONS AND THE CONSENSUS  
EFFECT IN A SURVEY-EXPERIMENT**

By E.C.M. van der Heijden, J.H.M. Nelissen, J.J.M. Potters

February 2004

ISSN 0924-7815

## **Opinions on tax deductions and the consensus effect in a survey-experiment\***

Eline van der Heijden \*\*, Jan Nelissen \*\*\*, and Jan Potters \*\*

February 2004

### **Abstract**

We present the results of a survey-experiment – using a representative sample of the Dutch population – in which we relate respondents' opinion about the tax deductibility of mortgages to their estimates about other people's opinion. The experiment employs three treatment variables: monetary incentives, the provision of arguments pro and contra, and ambiguity of the question posed. We find that respondents are characterized by a significant consensus effect. Respondents' estimates of others' opinions are strongly related to their own opinion. The size of the effect, however, is not affected by ambiguity of the question posed. Information by means of the provision of arguments pro and contra the tax provision does reduce the consensus effect significantly, though. Monetary incentives appear to have only a weak effect. We also find a strong effect of house ownership. Not only are house owners more in favor of the tax provision, they are also characterized by a significantly stronger consensus effect. These results suggest that both cognitive factors and motivational factors are responsible for the consensus effect.

JEL-codes: A13, C99, H29

Keywords: consensus effect, experiment, survey, taxation

\*\* CentER and Department of Economics, Tilburg University

\*\*\* CentER Applied Research, Tinbergen Institute and Erasmus University Rotterdam

---

\* We thank Marcel Das and Corrie Vis of CentERdata for their excellent support in conducting the survey experiment and Dirk Engelmann for helpful comments. Financial support from the Faculty of Economics and Business administration is gratefully acknowledged.

## 1. Introduction

From the social psychological literature it is known that expectations about the behavior of others are positively correlated with one's own behavioral inclinations. This is called the consensus effect (or social projection). It refers to the tendency of individuals to see their own choices and judgments as relatively common while viewing alternative choices and judgments as relatively uncommon (Ross et al., 1977).<sup>1</sup> The consensus effect is in particular observed when people are asked their political preferences. One can think of candidate preference (Brown, 1982), approval for performance of politicians (Goethals et al., 1979), agreement on specific policy decisions (for example boycotting the Olympics) and consent for political movements (Manstead, 1982). The existence of a consensus effect is also of importance from an economic point of view. If people are affected by a consensus effect this might imply that economic decision-making does not result in efficient outcomes. If traders, for example, overestimate the extent to which their own opinions are representative for those of other traders, asset prices may be biased (Forsythe et al., 1992).

Several explanations for the consensus effect have been advanced. Broadly speaking, these explanations rely on motivational and cognitive factors (Marks and Miller, 1987, Mullen and Hu, 1988). Motivational explanations emphasize the functional value of a person's position relative to the position of others. Similarity between self and others may serve to validate the appropriateness of a person's position, to maintain self-esteem, and to reduce tension in anticipated social interaction. It makes people feel better if they perceive and report similarity between their own position and that of others. Cognitive explanations, on the other hand, refer to the reasoning and informational process that underlie the reported position of others on an issue. Here, two channels may bring about a correlation between a person's own position and the perceived position of others. One is what may be called selective exposure. To form an estimate of the positions of others in general (the whole population) it is

---

<sup>1</sup> In the psychological literature there seems to be little doubt that the consensus effect is a judgment bias. Therefore, it is often called the *false* consensus effect. If both sides on an issue regard their own preference as relatively common at least one side must be wrong. But as Dawes (1990) has put forward this is not necessarily the case. One's own preference is an informative signal about the population distribution of preferences. Oneself is a sample of size one, and if the prior belief about the underlying population distribution is rather imprecise, it is rational to update this prior in the direction of one's own preference.

reasonable to rely, at least in part, on the positions one knows that some people have (a sample), including one's own position. To the extent that this sample is biased, it will bring about a consensus effect between own position and position of others. A second cognitive channel is what is called object construal. Issues and questions are usually ambiguous to some extent and open to interpretation. The particular interpretation a person gives to an issue may affect one's own position as well as the estimated position of others. Insofar as interpretations differ across individuals they may lead to correlations between own position and perceived position of others.

Here, we want to shed some light on the causes of consensus bias. To that end we performed a survey-experiment using a representative sample of about 1500 Dutch households. First of all we asked the respondents their opinion on the tax deductibility of the interest on mortgages. This tax provision has been under serious attack in the Netherlands for some time. We also asked them to estimate the average response to this question in the panel. The design allows us to see whether there is a consensus effect by relating respondents' own opinions to their estimates of the average opinion. Our contribution is twofold. First, we examine how the relationship between own opinions and estimated opinions is affected by three treatment variables. Possible treatment effects can be used to discriminate between motivational and cognitive explanations for the consensus effect. Our second contribution is that we use a representative sample of (Dutch) households as our subject pool rather than students as is usually the case. The sample allows us to relate the consensus effect to respondents' socio-demographic background variables.

The consensus bias has received only little attention in the economic literature. In a step-level public good experiment, Offerman et al. (1996) look at individual value orientations and expectations about the behavior of other subjects using incentive compatible mechanisms. Among other things they wanted to see whether behavior is determined by expectations (the so-called triangle hypothesis), or whether expectations are determined by behavior (the consensus hypothesis). They find that persons with a cooperative value orientation contribute more than individualists do, but cooperators do not expect more contributions of the others than individualists do. Expectations were not affected systematically by behavior, which gives little support for the (false) consensus hypothesis. Selten and Ockenfels (1998), on the other hand,

report the presence of a consensus effect – as a by-product – in the analysis of expectations about the gifts of others in a conditional three-person-gift game. A very clever experiment by Engelmann and Strobel (2000) is explicitly designed to examine whether the consensus effect is false. In a session there are 16 subjects who make a choice between two options. Then a subject receives information about the choices made by 4 other subjects in the session. Subsequently, each subject is asked to predict the choices of the remaining 11 subjects. The results indicate that subjects do use their own choice when forming an estimate about the choices of the other 11 subjects, but that they do not weight their own choice more heavily than the choices of the other 4 subjects they are informed about. In other words, the authors find a consensus effect but no *false* consensus effect.<sup>2</sup> Note that our study is not directly oriented towards the question whether the consensus effect is truly false.

The remainder of the paper reads as follows. We start by describing the experimental design and hypotheses. Section 3 gives the results with respect to the hypotheses testing and it considers the role of background variables. In section 4 we present some additional results on the accuracy of the estimates, the memory of the subjects, and we examine more closely the effect of monetary incentives. Section 5 concludes.

## **2. Experimental Design and Hypotheses**

The survey-experiment was conducted under the members of a large-scale panel. The panel is set-up and maintained by CentERdata, a survey research institute, specializing in Internet-based surveys, which is affiliated with Tilburg University in the Netherlands. The panel consists of some 2000 households in the Netherlands, whose members fill in a questionnaire on the Internet at home every week. The panel is representative of the Dutch population. The survey was conducted in week 50 of the year 2001, and it was repeated one week later (with the same respondents). A total of 1761 subjects participated.

---

<sup>2</sup> A follow-up study by Engelmann and Strobel (2004) suggests that representative information about others destroys the false consensus effect only if this representative information is presented to subjects on a 'silver platter' (like in their earlier study). If a small cognitive effort is required to retrieve the information then it tends to be ignored and the false consensus effect reappears.

The topic considered in the survey-experiment is the tax deductibility of mortgages, a provision that has been highly debated in the Netherlands for quite some time. The current situation is such that people can deduct the total amount of interest they pay for their mortgage from their income, and the remaining income is liable for tax. Obviously, this tax provision is beneficial for people who have a high mortgage and for people who face a high marginal income tax rate. Proposals to change the tax provision include (i) to restrict the amount that can be deducted, irrespective of the level of the mortgage, (ii) to restrict the amount that can be deducted in case the mortgage is more than say 180000 euros.

We employed three treatment variables, in a 2x2x2 factorial design in which respondents were randomly assigned to one of the eight treatments. The first treatment variable refers to the specificity of the question posed. Half of the respondents were confronted with a general and somewhat ambiguous policy proposal (Ambiguous). They were asked Question A1: 'Do you think a restriction of the mortgage deductibility is fair? Denote your opinion as a grade from 1 (very unfair) to 10 (very fair)'. The other half were confronted with a general, more specific proposal (Specific), Question A2: 'Do you think a restriction of the mortgage deductibility for mortgages above 180000 euros is fair? Denote your opinion as a grade from 1 (very unfair) to 10 (very fair)'.

The second treatment variable relates to the incentives the respondents received to provide accurate estimate of others' opinion. In one treatment (No-pay), respondents were not given a monetary incentive in order to report an accurate estimate. They were asked Question B1: 'What do you think the average answer (grade) is by the members of the panel to the question whether a restriction of the mortgage deductibility is fair?'. In the other treatment (Pay), the respondents were in a contest for a prize of 100 Euro to report an accurate estimate. They were asked Question B2: 'What do you think the average answer (grade) is by the members of the panel to the question whether a restriction of the mortgage deductibility is fair? If you are from 100 respondents the one who estimates this grade best you will earn 100 euro'.

A third treatment variable determined whether or not respondents were confronted with a set of arguments pro and contra the policy proposal before they gave their

estimate. In the treatment with information (Arguments), we posed Question C: ‘Below you find six arguments concerning the mortgage deductibility. Could you divide a total of 100 points over these arguments? Please assign most points to the argument you consider most important, and the least points to the argument you consider least important’. Half of the respondents who got these arguments, received them before they were asked the estimation question (B1 or B2), whereas the other half received the arguments after the estimation question. This design characteristic provides us with further information on the role of the consensus effect; see section 3.

All respondents were asked Question A1 or A2 first. One third of the people in both the Specific and Ambiguous treatment were then asked Question B1 or B2, but not Question C. Another one third were asked Question B1 or B2, and next Question C. The last one third had to answer Question C first (after answering A1 or A2), and thereafter Question B1 or B2. This means that one third received information before estimating the average grade (Question B1 or B2), and two thirds had not received any information when estimating the average grade. The exact formulation of the questions can be found in Appendix 1 as well as an overview of the treatments and the number of respondents per treatment (Table A1).

Depending on whether the consensus effect is due to motivational or cognitive factors, we expect to find different effects of the three treatment variables. First consider the specificity of the policy proposal. The cognitive explanation of the consensus effect suggests that questions that are open to wide latitude of construal show a stronger consensus effect than questions that are rated as permitting only a more narrow interpretation. In our study the policy proposal in which a specific upper limit on the mortgage is mentioned (Specific) is expected to be open to less wide interpretations than the more general proposal (Ambiguous), which does not mention any limits. If the consensus effect were due to motivational factors, however, we would not expect the consensus effect to be related to the specificity of the proposal. This gives our first hypothesis:

Hypothesis 1a (motivational): Ambiguity does not affect the consensus effect.

Hypothesis 1b (cognitive): Ambiguity increases the consensus effect.

The second hypothesis concerns the effect of monetary incentives. If the consensus effect is related to motivational mechanisms such as self-esteem maintenance and need for social support, one could argue that the impact of these motivations is reduced by payment. Being right becomes a substitute motive to being similar if accuracy is financially rewarded. On the other hand, if the consensus effect is due to cognitive factors it is less likely that payment has an effect. This yields the following hypothesis:

Hypothesis 2a (motivational): Monetary incentives decrease the consensus effect.

Hypothesis 2b (cognitive): Monetary incentives do not affect the consensus effect.

The last treatment hypothesis concerns the provision of arguments pro and contra the proposed policy change. Some argue that people process information in a self-serving fashion, placing greater weight on information that is consistent with their preferences. This may reinforce their opinion and also strengthen the perceived similarity between self and others. On the other hand, the arguments could also act as a kind of debiasing device because all subjects know the same things, and they know that other subjects have the same information. Moreover, the provision of information could also reduce the range of interpretation (object construal) and hence the consensus effect may decrease. Together these arguments result in:

Hypothesis 3a (motivational): Provision of arguments increases the consensus effect.

Hypothesis 3b (cognitive): Provision of arguments decreases the consensus effect.

### **3. Results**

In Table 1 we report the results with respect to the questions posed to the respondents. The answer to Question A1 or A2 will be indicated by 'Opinion' and the answer to Question B1 or B2 by 'Estimate'.<sup>3</sup> The average Opinion in the Specific scenario appears to be almost one point higher than in the Ambiguous scenario. The difference is highly significant ( $Z=5.42$ ,  $p=0.000$ , using a non-parametric Mann-Whitney  $U$ -

---

<sup>3</sup> For Opinion, only the distinction in ambiguous and specific scenario matters, whereas for Estimate we should show the mean Estimates by treatment. However, here we only want to give some general



test).<sup>4</sup> This difference is as expected, as the Specific scenario is the more moderate proposal and it may thus be considered as fairer. Furthermore, in the Ambiguous scenario, the average Estimate and Opinion are virtually identical, whereas the average Estimate is lower than the average Opinion in the Specific scenario.

Table 1: Average Opinion on the fairness of restrictions of mortgage deductibility by scenario

Scenario	Opinion	Estimate	# subjects
Ambiguous	4.88 (2.93)	4.87 (2.09)	814
Specific	5.70 (2.88)	5.26 (1.99)	731

Note: standard deviations between parentheses

Before we formally test the treatment hypotheses formulated in section 2 we first give an impression of the size of the consensus effect in the various treatments. To that end we have proceeded as follows (see Table 2). Both the Ambiguous and the Specific group, i.e. respondents who answered question A1 and A2, respectively, are subdivided into two more or less equal-sized subgroups: one with an Opinion below 6 (the unfair group), and one with an Opinion of 6 and more (the fair group).<sup>5</sup> For each group we have calculated the mean Estimate of others' opinions. As a measure for the consensus effect we use the difference in mean Estimates between the fair and the unfair group (6<sup>th</sup> column). The last column of the table indicates whether this difference is significantly different from zero. As an example, consider the Specific scenario, where information has been provided, but no monetary incentives. Those who report an Opinion below 6 (Unfair) give an average Estimate of 4.71, whereas those who report an Opinion of 6 and over (Fair) give an average Estimate of 5.85. So, the difference amounts to 1.14 and this is significantly different from zero ( $p = 0.001$ )

---

impression; the mean Estimates for each of the eight treatments separately can be found in Table A2 in appendix 2.

<sup>4</sup> Unless mentioned otherwise, all tests are two-sided non-parametric Mann-Whitney  $U$ -tests.

<sup>5</sup> Results are not sensitive to this choice. We have also performed the ensuing analyses with the group median as the cut-off point. This leads to very similar results. Because of the Dutch grading system in school, taking 6 as a cut-off point seems a natural thing to do.

Table 2: Mean Estimates by Opinion (fair / unfair) and treatment.

Scenario	Arguments	Paid	Group	Estimate	Difference	Sign (p)
Specific	Yes	No	Unfair	4.71	1.14	0.001
			Fair	5.85		
		Yes	Unfair	5.01	0.68	0.101
			Fair	5.69		
	No	No	Unfair	4.18	1.60	0.000
			Fair	5.78		
		Yes	Unfair	4.61	1.56	0.000
			Fair	6.03		
Ambiguous	Yes	No	Unfair	4.34	1.50	0.000
			Fair	5.84		
		Yes	Unfair	5.07	0.56	0.183
			Fair	5.63		
	No	No	Unfair	3.93	1.67	0.000
			Fair	5.60		
		Yes	Unfair	4.06	1.83	0.000
			Fair	5.89		

The table shows that in the two treatments with Arguments and Payment the consensus effect is small and not significant at the 10% level, whereas it is significant in the other six treatments. The strongest treatment effect appears to be whether or not respondents are provided with a list of arguments before they give their estimates. In all four pairwise comparisons, i.e. when we control for the treatment variables Ambiguous and Payment, the consensus effect tends to be smaller with these Arguments. The decrease in the consensus effect is strongest when subjects are paid for their estimates. The effect of information is in the direction predicted by the cognitive explanation for the consensus effect (Hypothesis 3b). The conclusions on the other two treatment variables are less clear, and do not allow us to distinguish clearly between the motivational and cognitive explanations for the consensus effect. Therefore, we will now turn to a more formal and systematic test of the hypotheses. In the next section we perform regression without taking the socio-demographic

background variables into account, while in section 3.2 we extend the analysis by adding the background variables.

### 3.1 Treatment hypotheses

In order to test the hypotheses more formally we perform a simple linear regression (OLS) in which we take Estimate as the dependent variable. The Opinion of the respondent is included as an independent variable in order to measure the consensus effect. We also include dummies for the three treatment variables, and interaction effects between Opinion and the three treatment dummies, allowing us to test whether any of the treatment variables strengthens or weakens the consensus effect. Hence, we estimate the following equation.<sup>6</sup>

$$\text{Estimate}_i = \alpha + \beta \text{Opinion}_i + \gamma' \text{Treat} + \delta' \text{Treat} \times \text{Opinion}_i \quad (1)$$

where  $\alpha$  and  $\beta$  are coefficients,  $\gamma$  and  $\delta$  are vectors of coefficients,  $\text{Estimate}_i$  is respondent  $i$ 's estimate of the average Opinion,  $\text{Opinion}_i$  is respondent  $i$ 's opinion on restricting the tax provision, and  $\text{Treat} = (\text{Specific}, \text{Paid}, \text{Arguments})$  are the treatment dummies. Results can be found in the first three columns of Table 3.

Note first of all that the regression results verify the existence of a consensus effect: the estimated coefficient  $\beta$  is positive, 0.353, and clearly significant at  $p=0.000$ . This can be interpreted as the average size of the consensus effect in the Ambiguous treatment, without Arguments and without Payment, i.e. when all treatment dummies are equal to zero. All interactions between Opinion and the treatment dummies reduce the size of the consensus effect, but only the coefficients for the interaction with Arguments and Payment are significantly different from zero. That is, providing Arguments reduces the consensus effect significantly with about 0.10. Monetary incentives decrease the consensus effect somewhat less (almost 0.07), and this effect

---

<sup>6</sup> As the dependent variable  $\text{Estimate} \in [0,10]$  a transformation of it is appropriate. However, using  $\log((\text{Estimate}/(10-\text{Estimate}))$  does not give better or other results, whereas the error term when only Estimate has been used also appears to follow the normal distribution. We therefore use the latter specification, which is easier to interpret.

is almost significant at the 5%-level. Ambiguity does not seem to affect the consensus effect much.<sup>7</sup>

Table 3: Regression results for Estimate without and with background variables as explanatory variables

	all respondents, specification (1)		all respondents, specification (2)		house owners		tenants	
	coeff	p-value	coeff	p-value	coeff	p-value	coeff	p-value
Intercept	2.903	0.000	2.874	0.000	2.002	0.000	4.130	0.000
Opinion	0.353	0.000	0.304	0.000	0.477	0.000	0.134	0.053
Specific	0.363	0.082	0.455	0.043	0.455	0.071	0.374	0.452
Paid	0.578	0.005	0.414	0.038	0.554	0.025	0.395	0.428
Arguments	0.865	0.000	0.839	0.000	1.247	0.000	-0.898	0.106
Opinion×Specific	-0.037	0.274	-0.047	0.200	-0.058	0.181	-0.020	0.796
Opinion×Paid	-0.066	0.051	-0.036	0.327	-0.078	0.067	0.009	0.905
Opinion×Arg.	-0.105	0.004	-0.097	0.014	-0.159	0.000	0.145	0.086
Owner			-0.631	0.026				
Opinion×Owner			0.105	0.018				
Old			0.721	0.001	0.811	0.001		
Opinion×Old			-0.061	0.096	-0.098	0.022		
Poor			0.642	0.005	0.577	0.022		
Opinion×Poor			-0.067	0.077	-0.058	0.184		
R <sup>2</sup>	0.16		0.18		0.21		0.06	
N	1453		1223		887		335	
F	41.12		21.21		22.59		4.19	
σ <sub>ε</sub>	1.89		1.87		1.86		1.90	

The consequences for the hypotheses are mixed. The significant effect of Arguments lends support for the cognitive explanation of the consensus effect (Hypothesis 3b). On the other hand, the marginally significant effect of Payment points into a motivational direction and is evidence in favor of Hypothesis 2a. As Specific appears to have no significant effect on the size of the consensus effect this points in the direction of Hypotheses 1a (motivational).

<sup>7</sup> If we include higher order interaction terms of Opinion and the treatment dummies none of them turns out to be significantly different from zero.

### 3.2 *The effect of socio-demographic variables*

Contrary to many other experiments our subject pool does not consist of students. Our panel is constructed to be a representative sample of Dutch households. In addition, due to the panel features we have data on several background variables. For example, we have data on gender, age, religious orientation, family composition, profession, income, political orientation, and whether they are tenants or house owners. This latter variable seems particularly interesting in the present context, since house owners have a much larger stake in maintaining mortgage deductibility. It is often argued that the strength of a (false) consensus effect may depend on the importance of the item or topic under consideration (Marks and Miller 1987, Campbell 1986, Crano 1983). There exist two competing predictions with regard to the effects of topic relevance on the consensus effect. Crano (1983) reports that subjects give higher consensus estimates for opinions on which they have a vested interest. On the other hand, Campbell (1986) finds that opinion relevance is associated with smaller consensus effects.

We examine the effect of background variables by including demographic variables (which are all transformed into binary variables) in specification (1). To examine whether any of the background variables affects the consensus effect we incorporate interaction terms between Opinion and each of the demographic variables. This results in the following specification:

$$\text{Estimate}_i = \alpha + \beta \text{Opinion}_i + \gamma' \text{Treat} + \delta' \text{Treat} \times \text{Opinion}_i + \lambda' Z_i + \mu' Z_i \times \text{Opinion}_i + \varepsilon_i \quad (2)$$

where  $Z_i$  is a vector of eight dummy variables which take on a value of one, respectively, if respondent  $i$  (a) is female, (b) is above the median age of 45, (c) has a college education or higher, (d) is religious, (e) is a student, (f) is married or cohabiting, (g) has children, (h) is a house owner, and (i) is poor, i.e. has a net household income below the median value (< € 2045 per month). Information on the various variables can be found in Table A3 in Appendix 2.

The estimation results of specification (2) are shown in the fourth and fifth column of Table 3. In the table, only the significant estimates for the background variables are displayed.

The regression results bear out the consensus effect: the estimated coefficient  $\beta$  is somewhat lower than in specification (1), namely 0.30, but still clearly positive and highly significant ( $p=0.000$ ). Furthermore, the results indicate that of the interactions between Opinion and the treatment variables now only Opinion  $\times$  Arguments is significantly different from zero at the 5% level. The coefficient is negative, indicating that Opinion is less important as an explanatory variable for Estimate if the respondents are provided with Information pro and contra. This confirms the “objectivizing” (or debiasing) effect of this treatment variable. The interactions Opinion  $\times$  Paid and Opinion  $\times$  Specific both have negative coefficients but neither is significantly different from zero. Note that in specification (1) the interaction term with Paid was more negative and marginally significant ( $p=0.051$ ). So while first monetary incentives seemed to weaken the consensus effect, this effect disappears when background variables are incorporated.

Of the background variables ( $Z$ ), in particular the distinction between tenants and house owners proves relevant (we will elaborate on this below). Only for this variable both the  $\lambda$  and the  $\mu$  coefficient are significantly different from zero at the 5% level. The interaction effect with Opinion is significantly positive ( $\mu > 0$ ) indicating that on average house-owners submit Estimates that are more closely related to their own Opinion than do tenants. Furthermore, elderly people give significantly higher estimates, whereas the interaction effect with Opinion is significantly negative at the 10%-level. People with an income below the median give a significantly higher estimate. Again, the interaction effect with Opinion is negative ( $p=0.077$ ), suggesting that relatively poor people are less affected by the consensus effect. Finally, note that we also included a dummy variable for the 39 (2.2%) students in the panel. This dummy and its interaction with Opinion are not statistically significant. The students do not display a consensus effect that is different in magnitude than others in the population. Also other background variables have no effect on the size of the consensus effect.

The foregoing results confirm our findings in section 3.1. We find evidence for cognitive and motivational explanations. In particular, the significant impact of

Arguments pleas for the role of cognitive factors, whereas the (strong) effect of ownership and the (weak) effect of monetary incentives point to the relevance of motivational factors.

### 3.3 The effect of house ownership

As house-ownership is obviously one of the most important variables we conclude this section by dwelling somewhat more on the effect of this variable. About 68% of the sample are house owners (see Table A3 in Appendix 2). Given the interests involved it seems likely that Opinions and Estimates differ between house owners and tenants. Table 4 shows the mean values of these variables for both categories, split by scenario (Ambiguous/Specific), as well as the correlation coefficient between Opinion and Estimate.

Table 4: Mean Opinion and Estimate for owners and tenants by scenario

Scenario	Owners			Tenants		
	Opinion	Estimate	Correlation	Opinion	Estimate	Correlation
Ambiguous	4.45	4.72	0.433	5.94	5.11	0.232
Specific	5.57	5.20	0.379	6.10	5.44	0.237
Total	4.97	4.94	0.420	6.02	5.28	0.235

A first remarkable observation from the table is that for owners the Ambiguity of the proposal clearly matters, whereas this distinction seems much less important for tenants. Not unexpectedly, owners judge the proposal as less fair than tenants. This holds for both the Ambiguous and the Specific proposal and the differences are highly significant. The same tendency can be observed for Estimates, but only in the Ambiguous scenario the difference is significant. The higher correlation coefficients for owners support the previously made statement that owners display a stronger consensus effect than tenants. This is in line with Crano’s findings that subjects give higher consensus estimates for opinions on which they have a vested interest (Crano, 1983).

To get more insight in the impact of house ownership on the consensus effect and the relative importance of the factors that may affect the size of the effect, we re-estimate

specification (2) for owners and tenants separately. The results are presented in columns 6 and 7, and 8 and 9 of Table 3 respectively.

A first thing to notice is that the estimate for the consensus effect is much higher for owners than for tenants, 0.477 versus 0.134. Furthermore, while for owners the provision of information leads to significantly higher Estimates and a significantly smaller consensus effect, for tenants both effects are just the opposite (both significant at the 10% level). Similarly, it appears that owners are affected by monetary incentives but tenants are not. The dummies for the background variables old and poor have some impact on the consensus effect of owners but not of tenants. Actually for tenants none of the variables is significant at the 5% level, which results in a very low  $R^2$  of 0.06. The observed differences between the results for owners and tenants suggest that motivational factors are important for the consensus effect.

#### **4. Additional results**

In this section we present some additional results on the accuracy of the estimates, the memory of the subjects and incentive effects.

##### *4.1 Accuracy*

First we examine whether the treatment variables have an effect on the accuracy of respondents' predictions. For each respondent we compute the error as the absolute value of the difference between the Estimate and the mean value of Opinion in the relevant scenario (Specific or Ambiguous). Table 5 shows the mean errors by treatment for all respondents (first four columns, the last four columns will be discussed somewhat later).

From the table we can infer that the mean errors are not much affected by the treatment variables. Whether or not Arguments are provided before the Estimate does not have any effect on the average error. Remarkably, paying the subjects for making accurate estimates does not make errors smaller. In fact, errors are larger with Payment, and this is the only effect that is statistically significant, if we run a simple OLS regression with the absolute error as the dependent variable and dummies for the treatment variables as explanatory variables.



Table 5: Mean absolute errors by treatment

Scenario	Arguments	All respondents		Owners		Tenants	
		No pay	Pay	No pay	Pay	No pay	Pay
Ambiguous	No	1.59	1.89	1.63	1.88	1.47	1.89
Ambiguous	Yes	1.66	1.99	1.72	2.00	1.51	1.93
Specific	No	1.65	1.70	1.70	1.79	1.53	1.50
Specific	Yes	1.54	1.89	1.48	1.97	1.70	1.74
Total		1.60	1.83	1.63	1.88	1.54	1.71

Marks and Miller (1987) and Campbell (1986) argue that the absolute accuracy of estimation increases as opinion relevance (i.e. personal importance of the issue) increases. Applied to our situation this suggests that house owners make more accurate Estimates. To test this claim we consider the mean errors by treatment for house owners and tenants separately (see the last four columns of Table 5). The results do not lend support for the claim: if anything, house owners make less accurate estimates than tenants. Indeed, if we extent the above-mentioned analysis with the absolute error as dependent variable by adding ownership as explanatory variable in addition to dummies for the treatment variables, it turns out that the estimated coefficient for owner is significantly positive, as it is for Payment.<sup>8</sup>

#### 4.2 Memory

In this section we briefly look at the memory of the respondents. In the information treatments subjects had to distribute 100 points over six arguments (see Appendix 1). One week later the subjects in these treatments were asked which arguments they could remember and reproduce. Most of the people, 918 of the 1110 subjects (82.7%) did not reproduce any argument (perhaps because they were not incentivized to do so). The remaining 192 subjects could reproduce a total of 301 arguments, most of them (110) producing only one;<sup>9</sup> 23 persons remembered three or more arguments.

<sup>8</sup> Campbell also argues that subjects may have been less biased and more accurate on relevant opinions because they are better informed on personally important issues, thus suggesting an interaction effect between information and ownership. Our results do not support this.

<sup>9</sup> Note that some people ‘reproduced’ arguments not mentioned in the survey. More specific, 15.61% of the reported arguments were arguments that did not belong to the list mentioned in the first week.

If we consider which arguments are remembered it turns out that the strongest arguments pro and contra are remembered most often. Argument 2 about possible financial problems, which can be seen as an argument against restriction of the mortgage deductibility, was reproduced 82 times while argument 4, that the rich benefit more, i.e., an argument in favor of restriction, was reproduced 57 times. We can relate the memory of arguments to the Opinions (and Estimates). Respondents who remembered arguments against (in favor) tended to have a lower (higher) Opinion score, 5.23 versus 6.31, suggesting that people remember the arguments that support ‘their’ opinion. This way of remembering might strengthen their consensus effect but we find no evidence for this. The difference between the subjects who remember arguments contra and pro does not show up in the Estimates of the average grade by others (4.74 versus 4.83).

We can elaborate a bit on this by looking at the relation between Opinion and Estimate at the one hand and memory on the other hand. It has been argued that memory for specific instances may be irrelevant (Shedler and Manis, 1986), and that no study has included a measure of memory for assessing the correlation between immediate recall and magnitude of projection (Marks and Miller, 1987). Although we cannot say too much about it, our data allow for some analysis. It turns out that the correlation between Opinion and Estimate is strongest for the people who remembered arguments in favor (0.475), weakest for the respondents who remembered arguments against (0.248) while for the respondents who could not reproduce any argument it is in between (0.359).<sup>10</sup>

### *4.3 Incentive effect*

The analyses in the previous sections suggest that paying or not paying the subjects has at most a marginally significant effect on the size of the consensus effect. But does this imply that there is no incentive effect at all? When we look more closely at

---

Furthermore, being a tenant or a house owner appeared to have little effect on how many and which arguments were remembered.

<sup>10</sup> When computing these correlations we control for possible differences between proposals. While the differences in correlations between the scenarios were very small for respondents who could remember no arguments or only arguments in favor of, they were very large for respondents who remembered arguments against (+ 0.410 for the Ambiguous proposal versus -0.031 for the Specific proposal). We see no obvious reason for this difference.

the answers, some remarkable differences between the payment and the no-payment treatment can be observed.

First, the fraction of "I don't know" answers to the estimation question is considerably lower in the payment treatment (8.5%) than in no-payment treatment (17.3%). This, of course, makes sense. Even if people really have no clue, they still have an incentive to submit an Estimate in order to be eligible for the 100 Euro in the payment treatment.

Table 6: Logistic regression for Prominence with treatment dummies, background variables and interaction effects with payment

	Coefficient ( $\beta$ )	Exp ( $\beta$ )	p-value
Specific	-0.210	0.810	0.117
Paid	-2.730	0.065	0.000
Arguments	0.061	1.063	0.666
Education	0.420	1.521	0.038
Education $\times$ Paid	-0.683	0.505	0.015
Partner	-0.576	0.562	0.045
Partner $\times$ Paid	0.580	1.786	0.123
Female	-0.221	0.802	0.264
Female $\times$ Paid	0.632	1.882	0.020
Old	0.093	1.098	0.666
Old $\times$ Paid	0.513	1.671	0.084

-2Loglikelihood = 1655, n = 1515

Moreover, the number of people who chose a prominent number (i.e. x.00 or x.50) is clearly affected by monetary incentives. The fraction of subjects estimating such numbers is 74.9% (n=729) in the no-payment, but only 24.4% (n=804) in the payment treatment. So although Payment does not lead to qualitative differences, it seems to affect people and to motivate them to make other (but not more precise) estimates. Therefore we perform a logistic regression with Prominence (being 1 if a prominent number has been given and 0 otherwise) as the dependent variable, and the treatment variables and socio-economic variables as the independent variables. Also we include interaction terms between the socio-economic variables and the Pay treatment

variable. The results (see Table 6) indicate that Payment is a highly significant variable, reducing the number of prominent estimates. The other two treatment variables have coefficients that are not significantly different from zero. (Why would they?) From the interaction effects with Pay we can infer that younger, male and more educated respondents are more strongly affected by the Pay treatment, giving fewer prominent estimates when paid for making accurate estimates.

## **5. Conclusions**

Our study started from the observation in the social psychological literature that expectations about the behavior of others are positively correlated with one's own preferences. This consensus effect has received only little attention in the economic literature. In this paper we consider the role of the consensus effect in relationship to an economic issue that is under discussion in the Netherlands, to wit the proposal to abolish the tax deductibility of interest payments on mortgages. In addition, we try to explain where the consensus effect – if present – has been rooted. Does it stem from motivational factors or are cognitive factors at work?

We do find clear indications for the existence of a consensus effect in our experiment. The regression results suggest that if a person's own support for the tax proposal increases by 1 point (on a scale of 1 to 10), this person's estimate of others' support on average increases by about 0.35 points. Moreover, the results indicate that the consensus effect decreases if people are provided with arguments for and against the proposal. Also providing people with a monetary incentive to give an accurate estimate about others' opinion affects the consensus effect. This suggests that both cognitive and motivational factors determine the consensus effect.

If we look at socio-demographic variables by far the most important factor is house ownership. House owners indicate a much lower support for the tax proposal. More interesting is that they also display a much stronger consensus effect. As house ownership can be considered to be a measure of topic relevance and vested interest, this finding suggests that motivational factors are at work here.

Another remarkable finding is that incentivizing subjects to make accurate estimates does not lead to better estimates. On the contrary, payment is found to reduce the accuracy of the estimates. At the same time, it is not the case that the payments have no affect at all. When people are paid to make accurate estimates the frequency of "I don't know" responses decreases. Also they tend to give less prominent numbers (in order to increase their chances of winning). This suggest that subjects really try to make good estimates, but that paying them to do so simply does not help.

The finding that cognitive and motivational factors are of influence implies that the consensus effect might be relevant for economic applications. For, whereas a consensus bias due to motivational factors can be opposed quite easily by means of monetary incentives, a consensus effect due to cognitive factors cannot always be combated in a simple way. Our results also illustrate that it is not straightforward to determine the relative importance of both explanations, and that the forces at work may be quite complex and subtle.

## References

Brown, C.E. (1982), A false consensus in 1980 presidential preferences, *Journal of Social Psychology* 118, 137-138.

Campbell, J.D. (1986), Similarity and uniqueness: The effects of attribute type, relevance, and individual differences in self-esteem and depression, *Journal of Personality and Social Psychology* 50, 281-294.

Crano, W.D. (1983), Assumed consensus of attitudes: The effect of vested interest, *Personality and Social Psychology Bulletin* 9, 597-606.

Dawes, R.M. (1990), The potential nonfalsity of the false consensus effect, in: R. Hogarth (ed.) *Insight in Decision Making. A Tribute to Hillel J. Einhorn*, Chicago: Chicago University Press.

Engelmann, D., and Strobel, M. (2000), The false consensus effect disappears if representative information and monetary incentives are given, *Experimental Economics* 3, 241-260.

Engelmann, D., and Strobel, M. (2004), The false consensus effect: Deconstruction and reconstruction of an anomaly, mimeo, CERGE-EI, Charles University, Prague.

Forsythe, R., Nelson, F., Neumann, G.R. and Wright, J. (1992), Anatomy of an experimental political stock market, *American Economic Review* 82, 1142-1161.

Goethals, G.R., Allison, S.J. and Frost, M. (1979), Perceptions of the magnitude and diversity of social support, *Journal of Experimental Social Psychology* 15, 570-581.

Manstead, A.S.R. (1982), Perceived social support for opinions: A test of the magnitude and diversity hypotheses, *British Journal of Social Psychology* 21, 35-41.

Marks, G., and Miller, N. (1987), Ten years of research on the false consensus effect: An empirical and theoretical overview, *Psychological Bulletin* 102, 72-90.

Mullen, B., and Hu, L. (1988), Social projection as a function of cognitive mechanisms: Two meta-analytic integrations, *British Journal of Social Psychology* 27, 333-356.

Offerman, T., J. Sonnemans and A. Schram (1996), Value orientations, expectations and voluntary contributions in public goods, *Economic Journal* 106, 817-845.

Ross, L., Greene, D. and House, P. (1977), The 'false consensus effect': An egocentric bias in social perception and attribution processes, *Journal of Experimental Social Psychology* 13, 279-301.

Selten, R. and Ockenfels, A. (1998), An experimental solidarity game, *Journal of Economic Behavior and Organization* 34, 517-539,

## Appendix 1. Survey questions and overview of the treatments

A1: Do you think a restriction of the mortgage deductibility is fair? Denote your opinion as a grade from 1 (very unfair) to 10 (very fair).

A2: Do you think a restriction of the mortgage deductibility for mortgages above 400000 Dutch guilders<sup>11</sup> is fair? Denote your opinion as a grade from 1 (very unfair) to 10 (very fair).

B1: What do you think the average answer (grade) is by the members of the panel to the question whether a restriction of the mortgage deductibility is fair?

B2: What do you think the average answer (grade) is by the members of the panel to the question whether a restriction of the mortgage deductibility is fair? If you are from 100 respondents the one who estimates this grade best you will earn 100 euro.

C: Below you find six arguments concerning the mortgage deductibility. Could you divide a total of 100 points over these arguments? You assign most points to the argument you consider most important, and the least points to the argument you consider least important.

Argument 1: A majority of the Dutch population expects that the mortgage deductibility will disappear within the next 10 years.

Argument 2: Restriction of the mortgage deductibility causes major financial problems to a lot of households.

Argument 3: Restriction of the mortgage deductibility will reduce traffic jam problems.

Argument 4: From every guilder paid as rent, house owners with a high income receive more tax money back than those with a low income.

Argument 5: The regulation for mortgage deductibility differs among countries.

Argument 6: Restriction of the mortgage deductibility will lead to high unemployment in the construction industry.

Table A1: Overview of the treatments

Treatment	Scenario	Arguments	Monetary incentives	Question order	# respondents
1	Ambiguous	No	No	A1, B1	278
2	Ambiguous	Yes	No	A1, C, B1	103
3	Ambiguous	No	Yes	A1, B2	288
4	Ambiguous	Yes	Yes	A1, C, B2	131
5	Specific	No	No	A2, B1	197
6	Specific	Yes	No	A2, C, B1	151
7	Specific	No	Yes	A2, B2	282
8	Specific	Yes	Yes	A2, C, B2	103

<sup>11</sup> 400000 Dutch guilders are about 180000 euros.



## Appendix 2. Additional information on estimates and socio-demographic variables

Table A2 displays the mean Estimate of the others' opinion for each of the eight treatments along with the number of subjects in each treatment.

Table A2: Mean Estimate of Opinion by treatment

Scenario	Arguments	No pay		Pay	
		Estimate	# subjects	Estimate	# subjects
Ambiguous	No	4.67 (1.93)	278	4.85 (2.17)	288
Ambiguous	Yes	4.99 (2.02)	103	5.27 (2.23)	131
Specific	No	5.09 (1.96)	197	5.34 (1.97)	282
Specific	Yes	5.29 (1.94)	151	5.31 (2.19)	103

Note: standard deviation between parentheses

The pairwise comparisons of the treatments give an impression of the effect of the treatment variables Specific, Arguments and Payment on Estimate. It turns out that the Estimates in the Ambiguous and the Specific scenario are significantly different if respondents receive no Arguments before ( $p < 0.02$ ) but are not significantly different if estimations are made after the subjects have received Arguments pro and contra. The effect of Arguments seems limited; only in the Ambiguous scenario with Payment the provision of Arguments leads to significantly higher estimations ( $p = 0.075$ ). The other comparisons reveal no significant differences.

Table A3 presents information on the sample means of the socio-demographic variables that are used in specification (2) along with the average Opinion and Estimate.

Table A3: Sample means of background variables

	N	Minimum	Maximum	Mean	s.d.
Estimate	1533	1.00	10.00	5.058	2.051
Opinion	1422	1.00	10.00	5.300	2.920
Net household income (€ per month)	1644	0	8182	2220	1080
(a) Female	1761	0	1	0.442	0.497
(b) Old	1761	0	1	0.507	0.500
(c) High education	1761	0	1	0.371	0.483
(d) Religious	1761	0	1	0.587	0.493
(e) Student	1761	0	1	0.022	0.147
(f) Partner	1761	0	1	0.760	0.430
(g) Children	1761	0	1	0.403	0.649
(h) Owner	1453	0	1	0.684	0.465
(i) Poor	1761	0	1	0.403	0.649

Note: only net household income  $< € 10000$  per month included