

# Study on the Impact of Environmental Governance Effectiveness on Public Participation in Pro-Environmental Behaviour

-- An Empirical Analysis from CGSS2021 Data

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**Abstract.** In recent years, the disharmonious relationship between human beings and the natural environment has become increasingly evident, and ecological and environmental problems have become progressively more serious. Public participation in pro-environmental behaviour is an important measure for the effective protection of the ecological environment and the realisation of harmonious coexistence between man and nature. However, few current studies on pro-environmental behaviours have analysed pro-environmental behaviours from the perspective of the effects of environmental governance. Therefore, based on the theory of "attitude-behaviour-situation", this study constructed an ordered probability unit model to investigate the impact of environmental governance on public participation in pro-environmental behaviours. The empirical test was conducted by using data from a sample of 7617 households from the 2021 China General Social Survey using stata 17.0 software. The results show that environmental governance effects significantly influence citizens' private domain pro-environmental behaviour, while the effects are insignificant in terms of public domain pro-environmental behaviour. Meanwhile, through the heterogeneity test, it was found that age and socio-economic status positively motivate public participation in private pro-environmental behaviours, while the number of family members negatively motivates public participation in private pro-environmental behaviours. The results of this paper have some implications for environmental governance.

**Keywords:** CGSS2021; Environmental Governance Effectiveness; Public Participation in Pro-Environmental.

## 1. Introduction

The ecological environment is the basis for human survival and the key to achieving sustainable development (Cai Shanquan, 2023). With the rapid development of social economy, the ecological environment has gradually changed, and people's attention to environmental pollution has gradually increased (Zhang Jingwei, 2024). The report of the 20th CPC National Congress clearly puts forward, "Promote green development and harmonious coexistence between human beings and nature, firmly establish and practise the concept that green water and green mountains are golden silver mountains, and plan development at the height of harmonious coexistence between human beings and nature". Whether or not the public can adopt pro-environmental behaviours that "reduce the burden and negative impacts on the environment" in their daily lives is the key to effectively protecting the ecological environment and implementing the strategy of ecological civilisation (Zheng Wenjuan, 2024). According to existing research, the main reason for the current low level of pro-environmental behaviours is that people are far away from the natural environment and have low natural empathy (Wang Hairong, 2023). Therefore, pro-environmental behaviours need to be explored more fully in this context to stimulate the motivation of all sectors of society to participate, and to truly modernise the harmonious coexistence of humans and nature.

Pro-environmental behaviour is a hot spot of academic research at home and abroad. The current research on pro-environmental behaviour mainly examines the factors affecting pro-environmental behaviour through quantitative analysis and conducts predictive analysis on them. Micro-level factors include reputation claims (Xu Zhigang, 2016), environmental literacy (Guo Qinghui, 2020), and



environmental risk perception (Liu Zheng, 2018), etc., and macro-level factors include having an informal system (Guo Lijing, 2014), social capital (Zhu Qinghai, 2018), environmental regulation, and digital information channels (Gao Peng, 2024). Some studies have also explored the role played by internal and external factors in the formation mechanism of pro-environmental behaviour (Li Suwan, 2024). For example, scholars such as Li Wenming found that nature empathy and environmental education perception played the role of mediating variables for tourists' participation in pro-environmental behaviours (Li Wenming, 2019); scholars such as Liu Xianwei indicated that environmental concern played a partially mediating role between self-interested values and pro-environmental behaviours of private domains, and a fully mediating role between ecosystem values and pro-environmental behaviours of private domains (Liu Xianwei, 2013); some scholars also explore the chained multiple mediating role of media use on pro-environmental behaviours by constructing a pro-environmental theoretical model from the perspective of media education function (Shi Zhiheng, 2018). In conclusion, from the exploration of influencing factors, prediction analysis to the analysis of the formation mechanism, the current research on pro-environmental behaviour has been continuously deepened and gradually enriched. However, few researchers have analysed pro-environmental behaviour from the perspective of environmental governance effects.

Compared with the existing literature, the marginal contribution of this paper is reflected in three aspects. First, this study complements existing research on the factors influencing public pro-environmental behaviour by systematically exploring the effects of environmental governance on public participation in pro-environmental behaviour. Previous studies have categorised the influencing factors as cognitive factors, demographic characteristics, social structure, culture and social capital (Du Wencui, 2022), but less attention has been paid to the results of environmental governance effects leading to public participation in pro-environmental behaviours. In this study, a regression model with environmental governance effect as the explanatory variable is constructed for systematic analysis by introducing from the public's evaluation of the current environmental governance effect.

Secondly, previous studies have seldom examined public and private domain behaviours in pro-environmental behaviours in the same framework, and identifying the impact of environmental governance effects on the two types of pro-environmental behaviours is also one of the innovative and marginal contributions of this paper. In some of the studies on pro-environmental behaviours, there are contradictory results due to the lack of effective division between public and private domain behaviours, for example, in exploring the influencing factors of pro-environmental behaviours of lodging customers, it was found that subjective norms have a significant positive influence on pro-environmental behaviours (Sun Lin, 2022), while in the study of influencing factors of pro-environmental behaviours of colleges and universities, it was found that subjective norms had no significant influence on the pro-environmental behaviours of college students (Li Su, 2022). behaviour (Li Suwan, 2022), among others. Therefore, this study makes the results more convincing by dividing pro-environmental behaviours.

Thirdly, the research in this paper provides new insights into the mechanisms by which environmental governance effects influence pro-environmental behaviour. Specifically, this paper conducts a heterogeneity test in the domain of private domain pro-environmental behaviours by grouping and dividing the three variables of age, number of family members, and socio-economic status of the respondents to further explore whether individuals respond differently to the relationship between the variables and to make the conclusions more general and representative.

## **2. Research Hypothesis**

Based on the existing analyses, this paper constructs a theoretical model with environmental governance effects as the explanatory variables and residents' pro-environmental behaviours as the explanatory variables, so as to further analyse the mechanism of environmental governance effects on public participation in pro-environmental behaviours.

## **2.1. There is a Positive Influence of the Effectiveness of Environmental Governance on Pro-Environmental Behaviour**

Pro-environmental behaviour is a series of positive actions that individuals or groups take the initiative to take in order to protect as well as improve the environment (Li Suwan, 2024), which is a kind of behaviour that respects nature, adapts to nature and protects nature, and a kind of behaviour that realizes the harmonious coexistence between human beings and nature (Sheng Guanghua, 2021). Currently, scholars have classified pro-environmental behaviour into two dimensions: private domain pro-environmental behaviour and public domain pro-environmental behaviour by categorising and summarising the three classifications on pro-environmental behaviour proposed by Stern in 2000, i.e., radical environmental behaviour, non-radical environmental behaviour in the public sphere, and environmental protection behaviour in the private sphere.

### **2.1.1. The Effect of Environmental Governance on Public Participation in Pro-Environmental Behaviour in the Private Domain**

Private domain pro-environmental behaviours refer to the adoption of behaviours in the private domain that are more conducive to environmental change, such as green purchasing, green travelling, reduced consumption and recycling behaviours (Suwan Lee, 2024). "Attitude-Behaviour-Circumstance Theory (ABC Theory)" suggests that an individual's behaviour is influenced by the interaction of attitude and situation (Guagnano, 1995). Among them, residents' perception of the effectiveness of their own environmental behaviours has been shown to be one of the important influencing factors for them to engage in environmental behaviours, e.g. How Xingbang (2024) et al. argue that citizens' perception of the effectiveness of their own environmental behaviours is an important underlying condition for the conversion of environmental problem perceptions into pro-environmental behaviours, and plays a very important moderating role in pro-environmental behavioural participation. In addition, consumers' perceived effectiveness will also promote the conversion of ecological and altruistic values to ecological consumption behaviour (Zhu, 2019). Based on the above analysis, we propose the following hypothesis:

**H1a: Environmental governance effectiveness positively influences public participation in private domain pro-environmental behaviour**

### **2.1.2. The Effect of Environmental Governance on Public Participation in Pro-Environmental Behaviour in the Commons**

Public domain pro-environmental behaviour refers to activities in the public sphere that are conducive to environmental change, such as participation in or initiation of environmental social organisations in the public life sphere, in order to promote the resolution of environmental issues, which often relies on the mobilisation of organisations (Li Suwan, 2024). Based on the "challenge-response" model, Inglehart proposed the pollution-driven hypothesis, that is, due to the more prominent environmental problems in the backward countries, the residents of the region are more concerned about the environment and more willing to invest their energy and money to adopt environmental behaviours (Wang Xiaonan, 2017). Among them, environmental pollution perception is an important influence on public participation in public domain environmental protection behaviours, for example, Xie Hongzuo (2012) et al. argued that the public's knowledge of climate change and perception of negative hazards are all important factors influencing their participation in pro-environmental behaviours. In addition, the public is more supportive of environmental protection in countries with relatively serious pollution (Wang Yujun and Han Donglin, 2016). Based on the above analyses, we propose the following hypothesis:

**H1b: Environmental governance effectiveness has a negative impact on public participation in pro-environmental behaviour in the commons**

### 3. Research Methodology

#### 3.1. Theoretical Analytical Framework

##### 3.1.1. Ordered Probabilistic Unit Models

In this study, by drawing on Du Wencui et al.'s (2022) method of measuring public pro-environmental behaviours by dimensions, public participation in pro-environmental behaviours was divided into two dimensions, i.e., Y1=public private pro-environmental behaviours, Y2=public public pro-environmental behaviours, and public willingness to participate in pro-environmental behaviours was classified as "very unwilling", "not very willing", "not necessarily", "relatively willing" and "very willing". The public's willingness to participate in pro-environmental behaviours was classified into five levels, namely "very unwilling", "not very willing", "not necessarily", "quite willing" and "very willing", and assigned to "very willing" and "very willing". and "very willing", and assigned a progressive relationship of 1~5. Therefore, the ordered probability unit model is selected to better fit the more complex data set and improve the accuracy of the estimation results. In this paper, the ordered probability unit model is selected to examine the influence of each external factor on tourists' pro-environmental behaviour. The basic form of the model is shown below:

$$Y_i = \alpha_i + \beta_1 improve + \beta_2 X_i + \varepsilon_i$$

Where Y denotes the explanatory variable public pro-environmental behaviour, i=1 or 2, which is assigned a value of 1 if the public engages in private-domain pro-environmental behaviour, and 2 if the public engages in public-domain pro-environmental behaviour. the explanatory variable improve denotes the effect of environmental governance, and X is the control variable, coefficients to be estimated, and a disturbance term.

##### 3.1.2. Ordered Logistic Regression Models

In order to provide assurance of the stability and rigour of the explanatory power of the indicators, the robustness of the research findings will be tested by adjusting the parameters of the explanatory variables, data samples or analytical models, thus further arguing for the reliability of the findings. In this paper, the robustness test is carried out by the model substitution method, specifically by using the Logit model for regression processing, the basic form of which is shown below:

$$Y_i = \alpha_i + \beta_1 improve + \sum_{j=1}^n \gamma_j X_{ij} + \varepsilon_i$$

### 3.2. Data Sources

The data for this study come from the Chinese General Social Survey (CGSS), which adopts a multistage stratified sampling method, with 22 provinces, 4 autonomous regions (excluding the Tibet Autonomous Region), and 4 municipalities directly under the central government (excluding Hong Kong, Macao, and Taiwan) as the primary sampling units, and systematically and comprehensively collects social data from communities, households, and individuals at multiple levels. It is recognised as authoritative data in many fields of research, including economics and management. Compared to previous years' questionnaires, the CGSS 2021 questionnaire covers demographic characteristics such as gender, age, education, number of household members, income, socio-economic status, marital status, region, and other information relevant to this study, such as the effectiveness of environmental governance. By removing some of the missing information from the 8,148 household sample data obtained, 7,617 valid sample data were finally retained for analysis in the baseline regression study.

### 3.3. Definition of Variables

#### 3.3.1. Explained Variables

The CGSS2021 questionnaire was designed with a scale question, "To what extent are you willing to make a little effort in order to solve the various challenges of waste disposal?" . The scale question asked about the extent to which the public is willing to take action on segregating waste, recycling items, discussing environmental programmes, participating in voluntary environmental public service activities, increasing taxes to improve the environment, and taking up the issue of waste disposal with the relevant authorities, using the example of solving the problem of waste disposal. In this study, the first three are categorised as private domain pro-environmental behaviours and the last three are categorised as public domain pro-environmental behaviours for unified analysis as shown in the table below. Based on the option setting, this study assigns a value of 0 to 4 to "Very reluctant" "Less reluctant" "Not necessarily" "More reluctant" "Very willing" to participate in a pro-environmental behaviour respectively. The higher the value, the higher the willingness of the respondents to participate in a pro-environmental behaviour.

**Table 1.** Statistics on respondents' willingness to participate in pro-environmental behaviours (%)

Participatory approaches to pro-environmental behaviour	Very reluctant	Less reluctant	Not necessarily	More reluctant	Very willing
Separate and dispose of waste generated from household life	1.58	6.75	8.41	47.02	36.25
Recycling of household goods	1.46	7.11	6.92	49.94	34.57
Discussing the waste separation programme with other residents	2.13	12.06	18.01	42.81	25.00
Private domain pro-environmental behaviour	1.72	8.64	11.11	46.59	31.94
Regular participation as a volunteer in public service labour to maintain environmental cleanliness and tidiness	2.98	13.47	17.25	40.46	25.84
Governments are willing to accept a reasonable increase in taxes that can be used exclusively to solve the problem of municipal waste disposal.	6.53	18.61	16.83	39.81	18.22
Taking the initiative to negotiate with the government, environmental organisations, experts, waste disposal providers and other relevant authorities on waste disposal issues	2.52	14.00	19.54	41.88	22.06
Pro-environmental behaviour in the public domain	4.01	15.36	17.87	40.72	22.04

#### 3.3.2. Core Explanatory Variables

The CGSS2021 questionnaire was designed to include a scale question on the public's evaluation of the effectiveness of environmental governance, specifically "In general, do you think the quality of the environment in the area where you live is better than it was five years ago?" .The options for respondents to choose from were "no improvement", "some improvement", "not sure/can't say", "more improvement", "a lot of improvement", "can't choose", and the "can't choose" option was excluded from this study. ", "much improved", "cannot choose", and the sample of questionnaires with the "cannot choose" option was excluded from this study. According to the progressive relationship of the options, this study assigns a value of 0 to 4 to each of the above options, and the higher the value, the better the respondent evaluates the effectiveness of the governance of the environment.

#### 3.3.3. Control Variables

Demographic characteristics such as gender, age, number of family members, marital status, etc. were introduced in this study to analyse their influence on public participation in pro-environmental behaviour. In addition, in order to control the influence of individual endowment factors on residents' pro-environmental behaviours, this study also introduced indicators such as education level, income, socio-economic status, and area of residence as control variables. The female respondents were

assigned a value of 1 and the male respondents were assigned a value of 0; Marital status is classified according to "unmarried", "cohabiting, first marriage with spouse", "remarried with spouse, separated but not divorced", "divorced, widowed", etc. as 0, 1, 2; Educational attainment is assigned according to different educational levels such as "illiterate", "private school, literacy class", "primary school", "junior high school", "vocational high school", "general high school", "secondary school", etc. The interval is 0~12; Socio-economic status is based on the design of the questionnaire, which classifies the respondents' evaluation of their own social class as "lower class", "lower-middle class", "middle class", "middle-upper class", "upper class", and assigns the value of 0 to 4 in turn. Considering the heterogeneity of residence areas, the 19 provinces and cities in the sample are divided into the western region (Gansu Province, Ningxia Hui Autonomous Region, Shaanxi Province, and Chongqing Municipality), the central region (Anhui Province, Henan Province, Hubei Province, Hunan Province, Jiangxi Province, Inner Mongolia Autonomous Region, and Shanxi Province), and the eastern region (Beijing Municipality, Fujian Province, Guangxi Zhuang Autonomous Region, Hebei Province, Jiangsu Province, Liaoning Province, Shandong Province, and Zhejiang Province), and assigned the values 0, 1, 2.

In the empirical part of this study, the three demographic characteristics of age, number of family members and socio-economic status are analysed for heterogeneity. Since the original sample data is graded more, it is again effectively graded according to its mean value here, and the grouping variables of the above three sample demographic characteristics are shown in Table 2.

**Table 2.** Variables grouped by demographic characteristics of the proposed sample

variable	Characteristics	Number of persons (persons)	Percentage (%)
age	≤54	3,518	46.19
	>54	4,098	53.81
number of family members	≤2	4,421	58.05
	>2	3,195	41.95
socio-economic status	Lower-class	1,747	23.44
	Middle-class	5,666	76.03
	Upper-class	39	0.52

### 3.3.4. Descriptive Statistical Analysis of Variables

**Table 3.** Descriptive statistics of variables

Variable	Observations	Mean	Standard deviation	Min	Max
Willingness to participate in pro-environmental behaviour in the private domain	2,695	2.93	0.83	0	4
Willingness to participate in pro-environmental behaviour in the commons	2661	2.55	0.94	0	4
Environmental Governance Effectiveness	2,710	1.7	1.26	0	4
sex	8,148	0.45	0.5	0	1
age	8,148	54.64	17.57	21	102
Educational level	8,127	4.31	3.31	0	12
Income	7,333	5.12	33.24	0	1000
Number of family members	8,148	2.44	1.86	0	17
socio-economic status	7,969	1.27	0.90	0	4
marital status	8,148	0.99	0.51	0	2
area	7,616	1.24	0.78	0	2

Prior to the empirical analysis, the study conducted a descriptive statistical analysis of the numerical characteristics of each variable and the results are presented in Table 3. Table 3 shows that the mean value of public participation in private or public pro-environmental behaviour is 2.93 and 2.55, indicating that the majority of citizens have a high willingness to protect the environment, and this result is in line with the main trend of current social advocacy, but there is still room for improvement. In addition, the mean value of the effectiveness of environmental management is 1.26, indicating that a large proportion of citizens believe that the current environment has improved, but the effect is not very significant, in line with the complexity and long-term nature of the current environmental pollution problem.

## **4. Empirical Results**

The testability results section of this paper discusses two main elements. The first is to verify whether there is any multicollinearity in the data; the second is to apply the ordered probability unit model to regress the variables such as environmental treatment effect in order to explore the mechanism of environmental treatment effect on public participation in pro-environmental behaviours and to verify whether the research hypotheses are valid.

### **4.1. Model Estimation Results**

In this paper, the data were correlated using the ordered probability unit model using stata 17.0 software and the regression estimates are shown in Table 4 below. Through the comparative analysis method (Ji Jinxiong, 2023), the degree of environmental improvement and the public private domain pro-environmental behaviour and the public public domain pro-environmental behaviour were introduced into the model as variables, and model (1) and model (2) were constructed, and the explanatory and control variables were included in the regression at the same time to obtain model (3) and model (4), and the effects of the variables on the public pro-environmental behaviour were comprehensively considered. Therefore, it can be seen that model (3) (4) has more indicator variables that are the focus of this paper and has more explanatory power, so this paper focuses on exploring the effect of environmental governance effects on public pro-environmental behaviour by analysing the results of model (3) (4).

#### **4.1.1. The Effect of Environmental Governance on the Pro-Environmental Behaviour of Residents**

The regression results of models (1) to (4) in Table 4 show that environmental governance effects have a significant positive effect on public private domain pro-environmental behaviours, but not on public domain pro-environmental behaviours, i.e., the stronger the effect of environmental governance, the more it will lead the public to private domain pro-environmental behaviours, but will not cause them to engage in public domain pro-environmental behaviours. The root cause: when residents see the success of environmental governance, their beliefs and attitudes may change, becoming more convinced that individual environmental behaviours can improve the environment and more willing to commit to those behaviours. And coupled with the fact that pro-environmental behaviours in the private domain are easier to implement than in the public domain and do not require additional resources and incentives, the effect of environmental governance is significant on private domain environmental behaviours, but not on public domain pro-environmental behaviours.

#### **4.1.2. Robustness Tests**

As the ideas of probabilistic unit model and regression model are similar, but there are some differences in the specific calculation methods and assumption premises. Therefore, in order to further verify the reliability of the results of the model in this paper, the main regression model is introduced into the logistic regression model for regression by adopting the way of transforming the model, drawing on the related research method of Jinxiong Ji et al. (2023). The size of Prob>chi2 values in Table 5 shows that the LR chi2 values of model (5) and model (6) are significant at the 1%

significance level, and the R2 values are also improved, and the overall model fit is better, which further indicates that the results of the study have good robustness.

**Table 4.** Ordered probability unit model regression estimates

Variable	Modle(1)	Modle(2)	Modle(3)	Modle(4)
	Private pro-environment	public pro-environment	Private pro-environment	public pro-environment
Environmental Governance Effectiveness	0.26*	0.12	0.62*	0.14
	(0.12)	(0.07)	(0.25)	(0.07)
Number of family members			0.15	0.02
			(0.10)	(0.04)
sex			0.54	0.53**
			(0.44)	(0.20)
age			-0.01	-0.02**
			(0.01)	(0.01)
Educational level			0.14	0.02
			(0.12)	(0.04)
Income			0.21	0.01
			(0.14)	(0.03)
socio-economic status			-0.11	-0.01
			(0.18)	(0.09)
marital status			-0.15	0.22
			(0.36)	(0.21)
area			0.06	-0.07
			(0.20)	(0.11)
_cons	2.22***	2.02***	1.49	2.68***
	(0.18)	(0.13)	(1.04)	(0.50)
N	2135	2108	1851	1830
LR chi <sup>2</sup>	6.20	3.39	31.25	26.76
Prob>chi <sup>2</sup>	0.01	0.07	0.00	0.00
Pseudo R <sup>2</sup>	0.05	0.01	0.30	0.10

Note: \*, \*\*, \*\*\* indicate that the variables are significant at the 5 per cent, 1 per cent and 0.1 per cent level of significance, respectively, and values in parentheses are standard errors.

#### 4.2. Heterogeneity Analysis

In this paper, heterogeneity analysis was used to validate the model relationships based on the overall data, and the three demographic variables of age, number of family members, and socio-economic status of the public were grouped together so as to further explore the relationships among the variables, and the results of the analyses are shown in Table 6.

**Table 5.** Ordered logistic regression model estimation results

Variable	Modle(5)	Modle(6)
	Private pro-environment	public pro-environment
Environmental Governance Effectiveness	1.45**	0.33
	(0.55)	(0.18)
Number of family members	0.35	0.05
	(0.24)	(0.10)
sex	1.28	1.35**
	(1.11)	(0.52)
age	-0.02	-0.05**
	(0.04)	(0.02)
Educational level	0.29	0.05
	(0.27)	(0.10)
Income	0.46	0.03
	(0.34)	(0.07)
socio-economic status	-0.22	-0.01
	(0.42)	(0.23)
marital status	-0.37	0.51
	(0.83)	(0.50)
area	0.14	-0.19
	(0.47)	(0.27)
_cons	2.93	5.52***
	(2.58)	(1.26)
N	1851	1830
LR chi <sup>2</sup>	29.84	26.46
Prob>chi <sup>2</sup>	0.00	0.00
Pseudo R <sup>2</sup>	0.29	0.10

Note: \*, \*\*, \*\*\* indicate that the variables are significant at the 5 per cent, 1 per cent and 0.1 per cent level of significance, respectively, and values in parentheses are standard errors.

#### 4.2.1. Age

By statistically organising the age of the whole sample, the average age of the sample is calculated to be 54 years old, so the whole sample is divided into the sample group of "people below or equal to the average age of 54 years old" and the sample group of "people above the average age of 54 years old". The sample was therefore divided into two groups. Columns (1) and (2) of Table 6 present the results of the sub-sample regressions based on age groupings, where the regressions in columns (1) and (2) are both significant at the 0.1 per cent level, with coefficients of positive signs, and where members of the public who are older than the average age are more affected by the effects of environmental governance than those who are younger than the average age. A possible explanation for this is that as they grow older, the public gradually shift their personal focus from their work and future to the quality of their future life and the well-being of their children and grandchildren, and become more appreciative of and caring for the existing environmental resources, and want to leave a better living environment for future generations. Together with the more leisure time and more stable economic situation they already have, they have more motivation, time and resources to participate in pro-environmental behaviour in the private domain.

#### 4.2.2. Number of Family Members

This paper calculates that the average number of family members in the whole sample is 2 by statistically collating the number of family members in the whole sample, so the whole sample is divided into the sample group of "the number of family members is less than or equal to 2" and the sample group of "the number of family members is more than 2". Therefore, the whole sample is divided into the sample group of "number of family members less than or equal to 2" and the sample group of "number of family members greater than 2". Columns (3) and (4) of Table 6 show the results of the subsample regressions based on the number of household members, where the sum regressions in columns (3) and (4) are significant at the 0.1% level, the coefficients have a positive sign and the probability of publics with fewer household members being involved in private pro-environmental behaviours subject to the effects of environmental governance is greater than that of publics with a larger number of household members being involved in private pro-environmental behaviours. The possible explanation for this is that in a smaller family structure, communication and negotiation among family members may be more efficient and direct, with less need for coordination and management, which gives them more time and energy to pay attention to environmental issues and to reach a consensus and take action on environmental protection issues, which directly motivates them to adopt more private domain pro-environmental behaviours.

#### 4.2.3. Socio-Economic Status

**Table 6.** Results of heterogeneity analysis

Variable	age		Number of family members		socio-economic status		
	$\leq 54$	$> 54$	$\leq 2$	$> 2$	Lower-class	Middle-class	Upper-class
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Environmental Governance Effectiveness	0.14***	0.23***	0.21***	0.18***	0.26***	0.18***	0.20
	(0.02)	(0.02)	(0.02)	(0.02)	(0.03)	(0.02)	(.)
control variable	control	control	control	control	control	control	control
constant term	2.48***	1.96***	2.18***	2.53***	2.58***	2.27***	6.38
<i>N</i>	848	1003	1092	759	436	1409	6
<i>R</i> <sup>2</sup>	0.07	0.18	0.13	0.12	0.17	0.11	1.00

Note: \*, \*\*, \*\*\* indicate that the variables are significant at the 5 per cent, 1 per cent and 0.1 per cent level of significance, respectively, and values in parentheses are standard errors.

Through statistical collation of the overall sample's socio-economic status evaluation, this paper classifies the respondents' evaluation of their own socio-economic status into three sample groups: "low socio-economic status", "average socio-economic status" and "high socio-economic status". Columns (5), (6) and (7) of Table 6 show the results of the sub-sample regressions based on socio-economic status, where the coefficients of the regression results in columns (5) and (6) are positive and significant at the 0.1% level, whereas the coefficient of the environmental governance effect in column (7) is insignificant, suggesting that the improvement of the effectiveness of the environmental governance promotes the active participation of publics with an average or low socio-economic status in the pro-environmental behaviours of the private sphere and has no effect on publics with higher socio-economic status. A possible explanation for this is that this differential response may be due to the different socio-economic groups' perceptions of environmental issues,

their level of concern, and their dependence on environmental resources. Members of the public with average or lower socio-economic levels tend to be able to more directly perceive the negative impacts caused by environmental problems, and therefore when the effectiveness of environmental governance improves significantly, they are able to more intuitively perceive these changes, and are thus more motivated to engage in private domain pro-environmental behaviour. In contrast, people with higher socio-economic status tend to commit to pro-environmental behaviours indirectly rather than personally, to the extent that their perception of environmental problems is weaker and the effects of environmental governance have no significant impact on them.

## **5. Conclusion and Policy Implications**

### **5.1. Conclusion**

This study, based on CGSS 2021 data, found that the effect of environmental governance is able to translate into citizens' willingness to behave pro-environmentally in the private domain to some extent, while willingness to behave pro-environmentally in the public domain about the public domain is not significant. And the stability test supports the result as well. In addition, this study found that the variables of age, number of family members, and socio-economic status had an effect on public participation in private pro-environmental behaviours. Age and socio-economic status are positively related to public participation in private pro-environmental behaviours. The number of family members has a negative effect on public participation in private pro-environmental behaviour.

### **5.2. Policy Implications**

Based on the above analysis, the following policy recommendations are made:

(1) In order to meet the needs of residents for pro-environmental behaviour, environmental education and publicity programmes should be stepped up to promote a culture of environmental responsibility. Besides relying on citizens' own environmental perception, another effective way to present the effects of environmental governance is to publicise them. Promoting the effects of current environmental governance, as well as environmental protection knowledge and concepts in schools, communities and the media, will help to cultivate the public's awareness of environmental protection and sense of responsibility, promote the formation and transmission of environmental protection values, and guide the public to actively participate in environmental protection actions, thereby promoting the widespread implementation of environmental protection actions.

(2) In order to meet residents' needs for pro-environmental behaviour, environmental facilities should be made more accessible to increase the public's motivation to engage in pro-environmental behaviour. For example, in public areas where the number of residents is concentrated, additional bins, public rubbish sorting facilities, energy-saving street lights and other environmental infrastructure should be installed to achieve full coverage of environmental protection behaviours, and to effectively solve the problem of the difficulty of public participation in pro-environmental behaviours due to insufficient environmental protection facilities.

(3) In order to meet residents' needs for pro-environmental behaviour, community participation and cooperation should be supported to promote grass-roots environmental projects. For example, by encouraging communities to set up relevant environmental organisations or groups and providing them with the necessary resources and guidance, as well as supporting environmental co-operation and exchanges between different communities to solve environmental problems together, the government can, to a certain extent, make up for the lack of apparent willingness to engage in pro-environmental behaviours in the public sphere, so as to promote citizens' active adoption of pro-environmental behaviours in both the private and public spheres, and to work together to promote the sustainable development of the society.

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